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8 May 2013

MetalBulletin

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Centenary special

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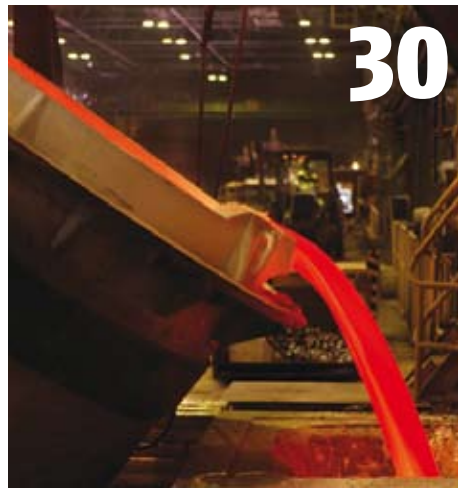

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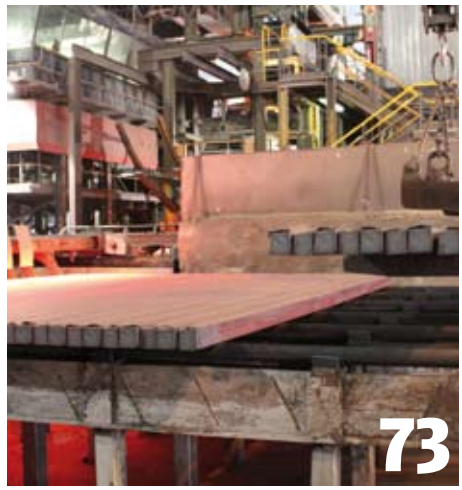

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Alex Harrison, Editor

Snapshots from the market 100 years after MB launched

Consider some key market snapshots 100 years after Metal Bulletin began publishing news and information.

Nickel stocks on the London Metal Exchange are at all-time highs of about 180,000 tonnes, which speaks volumes about poor demand from the stainless steel sector.

Copper is in a surplus for the first time in years.

Ferro-alloy assets have been sold – in the case of Vale's manganese alloys assets in Europe, or are up for sale – in the case of Mechel's ferro-alloys plant in Bratsk.

Major mining companies are seeking to divest peripheral businesses to focus on the businesses that really matter to them.

As Metal Bulletin reported, Citigroup has been appointed to examine a sale of BHP Billiton's Temco manganese alloys smelter in Australia, for example, while Rio Tinto has

100 pages, 100 years

One hundred pages on metal markets to celebrate the centenary, reflecting the interest of Metal Bulletin's subscribers and journalists.

Metal Bulletin's newsrooms and guest contributors rose to the task with gusto.

They have polled the market to find out how bulk ferro-alloy prices in China are likely to shape up this year; considered the future of aluminium production in Europe, the Middle East, China and India; and asked how falling oil prices will affect miners.

They have looked at the effect that the smartphones and tablets pioneered by Steve Jobs have had on the image of aluminium, and demand for minor metals.

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Fax: +44 20 7928 6892 and +44 20 7827 6495.
E-mail: Editorial@metalbulletin.com
Website: http://www.metalbulletin.com

created a separate division, Pacific Aluminium, to divest its non-core aluminium assets.

New regulation threatens to reshape how LME brokers do business for their clients, by extinguishing their capacity to offer free credit, thus making hedging by industrial clients more expensive.

It is not the best of times, then, for the markets that Metal Bulletin has been covering since May 8 1913.

But nor, as former Metal Bulletin chairman Trevor Tarring's continuing survey of the history of Metal Bulletin and the markets makes clear, is it the worst.

Markets are, after all, cyclical.

So it is likely that every divestment that takes place now will be followed at some point in the future by an acquisition or a consolidation.

And if copper prices fall to $5,950 per tonne as some Deutsche Bank modelling suggested last week, it will put further pressure on projected mine supply.

Société Générale analyst Robin Bhar points out in this issue that "today's famine in copper prices is tomorrow's feast".

But if markets move in waves, it is hard to see how far the tide will rise on other issues that define the way in which they operate.

One manifestation of this is in the regulation of financial markets.

The Emir regulations, as Metal Bulletin discussed earlier this year and London Metal Exchange ceo Martin Abbott writes about on page 20, threaten to eliminate the cheap or free credit that has always been a feature of life for brokers on the LME.

Still, the move to bring OTC deals into clearing also offer opportunities to brokers.

Discussions over the fair apportioning of proceeds from mining and smelting between companies and countries are also likely to continue over the years ahead, and change in this area is likely to continue.

Metal Bulletin is following very closely the attempts to implement an export ban on cobalt concentrates from the Democratic Republic of Congo, which result from the country's latest attempts to ensure that more beneficiation takes place within its borders.

Not least, Metal Bulletin is looking at the effects on prices, which have been at the core of Metal Bulletin for 100 years.

Pricing too looks set to develop.

More transparency about prices upstream and downstream is a given in the years ahead, as is the process by which those prices are published and discovered.

They have focused on key regions for mining in Latin America, and on crucial industry developments in the ferro-alloys market in India and the future of copper mine supply.

They have written fascinating pieces on the history of China's cobalt industry, and pondered the future of that market.

Anybody interested in pricing — the only thing that anybody gets out of bed for, according to one former Metal Bulletin editor — can sink their teeth into the world's first ever log of bauxite prices, and a discussion about a new form of ferro-tungsten.

Oh, and there's not a bad Hotline page either, if you want to read about the latest moves at Glencore, ENRC and the LME — or a very tough breakfast meeting.

And a huge mining deal, Glencore's takeover of Xstrata, was also concluded last week, meaning that Metal Bulletin could run on its website a number of embargoed interviews it had done with outgoing Xstrata ceo Mick Davis.

We have picked one of those interviews for the magazine, in which Davis reflects on the way in which Xstrata's shareholding structure meant that the company's relationship with its one-time largest minority shareholder had to change.

Other mining companies are watching the newly merged company closely, to gauge the degree to which Glencore's trader-producer model succeeds when extended to cover Xstrata's assets.

As Hotline reports the heads and joint heads of the divisions of GlencoreXstrata on page 98, it is clear that the model is expressed in the structure.

Davis discussed with Metal Bulletin the decentralised structure of Xstrata and compared it with what he described as the centralised structure of a trading firm.

Combining the two companies, and taking on the mining companies that are still bigger than his, will be top of GlencoreXstrata ceo Ivan Glasenberg's agenda in the months ahead.

Advertising: Tel: +44 20 7827 5220 Fax: +44 20 7827 5206. E-mail: advertising@metalbulletin.com
Advertising Sales Team: Julius Pike, Abdul Zaidi
USA Editorial & Sales: Metal Bulletin, 225 Park Avenue South, 8th Floor, New York, NY 10003.
Tel: +1 (212) 213 6202. Toll free: 1-800-METAL-25.
Editorial Fax: +1 (212) 213 6617. Sales Fax: +1 (212) 213 6273.
North American Editor (Steel): Jo Isenberg
Singapore: Catalpa Suite 11/F 9 Battery Road, Straits Trading Building, Singapore 049910. Tel: +65 6597 0923 Fax: +65 6597 7099
Asia Editor: Martin Ritchie
Senior Correspondents: Shivani Singh, Weilyn Loo
Reporter: Daisy Tseng
Senior Sub-editors: Catherine Yates, Cecil Fung
Sub-editor: Deepali Sharma
Shanghai: Metal Bulletin Research, Room 305, 3/F, Azia Center, 1233 Lujiazui Ring Road, Shanghai 200120. Tel: +86 21 5877 0857
São Paulo: Rua Tabapua 422, 4th Floor CJ 43/44, CEP: 04533-001, Sao Paulo, Brazil. Tel: +55 11 3078 9331. Fax +55 11 3168 5867.
Latin America Correspondent: Juan Weik
Latin America reporter: Carolina Guerra
Metal Bulletin Focus:
Editor, Richard Barrett;
Associate Editor, Steve Karpel. Tel: +44 (0)20 7827 9977
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You can call me Al One of the founding visionaries behind the critical and commercial success of Apple products, Steve Jobs used polished metal to bring geek chic to a global clique

Steve Jobs – the man who made aluminium sexy

NEW YORK
BY ANDREA HOTTER

Steve Jobs' list of achievements is long, and one of them includes being the man who made aluminium sexy.

Most of us recall the buzz surrounding the launch of an Apple product, with queues around the block for what are probably the most instantly recognisable and highly desired items in the consumer electronics marketplace.

So enamoured with aluminium was Jobs that the Apple co-founder, who died of cancer in 2011, even created a super yacht – named *Venus*, after the goddess of love – made out of it.

It was not just the look of the metal that Jobs fell in love with; its properties allowed him to create the products that have become synonymous with smartphones and tablet computers.

Gone are the mobile phones the size and weight of a brick. In their place are slick, innovative, beautifully designed smartphones, such as the aluminium-dominated iPhone 5.

Banished too are the plastic or painted-metal laptops of the past decade. In their place are modern designs, like the brushed aluminium iPad and MacBook Air.

Forget battery-operated plastic Walkmans that frequently cracked and destroyed the tapes they played; they're obsolete, replaced by iPods in eight different colours of anodised aluminium that clip like a tie pin.

Jobs changed the face of consumer electronics and with it the consumers' perception of aluminium.

Why aluminium?

Apple's use of aluminium has not significantly increased demand for the metal, used elsewhere in aerospace, transportation and construction.

Actual consumption volumes in the consumer electronics sector are tiny, relatively speaking.

Jobs' desire to use aluminium as the dominant material in Apple products, however, has made the metal instantly recognisable in a way that few, if any, other metals can match.

"Aluminium was the ideal choice for the product, because it provides the thinness and lightness that we want in the portable category, [it has] a great strength-to-weight ratio and it also provides us with some really nice options from a finishing perspective," Dan Ricchio, senior vp of hardware engineering at Apple, said.

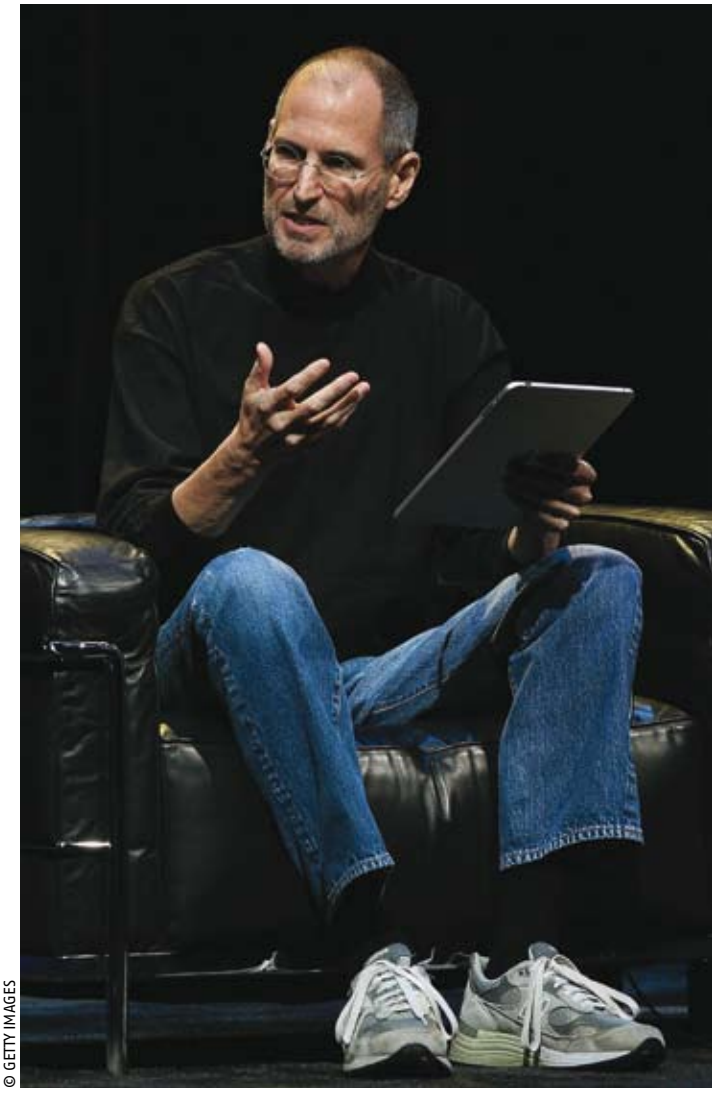
"We've chosen both materials and processes that are the best in the industry from an environmental perspective," he added.

Apple – which will not discuss its suppliers – has not always picked aluminium as its metal of choice, however.

"Initially, the company used plastic, but as technology evolved and processes got smaller, Apple needed something less bulky for its products," Kevin Green, global director, electronics, appliances, industrial, and power business units at US aluminium firm Novelis, said.

"It turned to aluminium and its use of brushed metal became

> 'Aluminium was the ideal choice, providing thinness, lightness and nice finishing options' *Dan Ricchio*



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Machined from solid: Jobs' products – and his views on quality

© APPLE INC

The iPad features recyclable materials – and a 9.7 inch display and an HD camera

Apple and aluminium recycling

Jobs' desire to maintain a green environmental footprint meant that aluminium – which is 100% recyclable – had a headstart when it came to picking his materials.

"Apple's approach to recycling begins in the design stage, where we create compact, efficient products that require less material to produce. The materials we do use – including arsenic-free glass, high-grade aluminium and strong polycarbonate – are reclaimed by recyclers for use in new products," the company's website states.

The drive to recycling came as consumers grew more concerned about where the materials in their products originate.

"The consumer recognises that aluminium is a green material. They differentiate it from other materials. It's an additional selling feature for aluminium in consumer electronics," Alcoa's Leighton Cooper said.

Apple operates or participates in recycling programmes in 95% of the regions where its products are sold, which means any iPad, iPhone, Mac or PC – desktop or notebook – may qualify for reuse or free recycling.

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Tim Cook speaks to Apple employees at a celebration of Jobs' life

synonymous with the Apple brand," he added.

Apple did not pioneer the use of aluminium in consumer electronics. In the late 1990s, Motorola was the first original equipment manufacturer to use aluminium with any real visibility, in its Razr phones.

In fact, Apple's first attempts to create the look that dominates its portfolio of products today involved using painted titanium, which in many instances easily scratched and peeled.

Determined to get it right, Jobs drove the push to find a material that would give Apple products a more natural look, which – in his book – ruled out painted plastic or magnesium, as well as chrome-plated steels.

Aluminium was the winner and the rest is history.

The halo effect

Jobs and Apple arguably set the standard for product development for the rest of the information technology world, as well as the materials it uses.

One of the biggest differences between Apple and other consumer electronics manufacturers is that it selected aluminium as a strategic material in the early 2000s, and now takes it across the company's four primary platforms – iPods, Macs, iPads and iPhones.

"Apple took the leadership position in consumer electronics and the halo effect has been felt throughout the industry. This is twofold – there's a mechanical, internal component, and an industrial design factor [related to] the look and feel of Apple's products," Novelis's Green said.

"Apple products are built to exacting standards of fit and finish, so much so that they use the same machine vision systems in their manufacturing processes that are used to craft fine watches. Other consumer electronics companies are following suit," Green added.

Certainly, other manufacturers have recognised the appeal to consumers of Apple product design. But few have been able to match it, despite trying similar matt-finished anodised appearances for their products.

Other consumer electronics manufacturers that use aluminium do so mostly in niche applications, which they sell at a premium.

Yet the huge promise of the Apple brand presents the company with an enormous challenge to live up to.

Much has been made of the advances made by Samsung Electronics, which has upped competition with Apple in terms of high-end smartphone sales and now outsells its rival Nokia in the low-end phone market.

Samsung is already using a new technology developed by Alcoa called ColorKast, which produces colour-anodisable aluminium diecast components.

The South Korean firm used it on its new NX210 digital camera and other consumer electronics original equipment manufacturers are preparing to apply ColorKast to their own products.

Design

Apple's score is off the charts when it comes to the level of perfection in its devices, something helped by the new Unibody design, as the company's senior vice president of industrial design, Jonathan Ive, has explained.

"The huge breakthrough that we had with the MacBook was to replace all of [the multiple] parts with just one part. That one part we call Unibody," he said.

The only way to make this one part was to machine it from a single piece of aluminium.

> 'Apple products are built to exacting standards of fit and finish. Other electronics companies are following suit' *Kevin Green*

"Machining gives us a level of precision that was completely unheard of in this industry. We have been fanatical in the tolerances of how we machine and build the product," Ive added.

This fanaticism is clearly working. The company reported record revenue exceeding $54 billion and sales of over 75 million iOS devices in the first quarter of fiscal 2013.

Apple's drive to create simple, seamless design has put it head and shoulders above many of its competitors, although Samsung is intensifying the rivalry by adopting a larger screen, upgraded processor and new applications for its Galaxy S4 smartphone.

Mobility

Jobs took the view that aluminium's lightweight properties matched the need of the consumer to be mobile.

"Consumer demand for portability is driving the need for electronics manufacturers to create thinner, lighter devices. As the consumer has gone from being in front of a desk to being much more mobile, there's been a tremendous growth from desktops to notebooks and on to smartphones, and it's all driven by the need for portability," Alcoa's Leighton Cooper, director of technology, Global Rolled Products, said.

To this end, the smartphone has become the desk.

"This mobility factor has driven the need to use lighter-weight materials with stiffness and durability, at a cost-effective price. As a result, you don't see painted steel or stainless steel being used, because it is heavy compared with most other materials," Cooper added.

Jobs was well aware of the changing consumer environment, describing Apple in 2010 as a "mobile devices company", an expression reiterated by his successor, Tim Cook.

Electronics industry leads conflict minerals fight

NEW YORK

Consumers have been putting pressure on electronics companies to ensure that the products they buy are not sourced from conflict zones.

While Apple Computing ceo Steve Jobs cannot be held solely responsible for driving the world's technology firms toward supply-chain traceability auditing, his was certainly one of several key companies that signed up to having strict controls over where it sourced its raw materials.

Apple is a member of the Electronic Industry Citizenship Collaboration (EICC), a coalition of electronics companies working to improve efficiency as well as social, ethical and environmental responsibility in the global supply chain.

'Greater awareness'

The organisation, established in 2004, was incorporated in 2007 as a formal industry association to ensure greater awareness of its code of conduct and to expand its adoption across the industry.

The EICC counts nearly 80 global electronics companies as members, including Cisco, Dell, Samsung and Tom Tom International.

"For nearly eight years, the EICC has created an unprecedented degree of collaboration between competitors, suppliers and customers in high-tech industry," EICC chairman Tim Mohin says.

Apple has adopted a Supplier Code of Conduct at the heart of its supply chain, based on standards created by the EICC, the International Labor Organization and the United Nations.

Core EICC violations include the use of under-age or involuntary labour, falsification of audit materials, worker endangerment, intimidation or retaliation against workers participating in an audit, and significant threats to the environment.

Apple requires all its suppliers to certify in writing that they do not use conflict-area minerals.

In practice, however, even Jobs once admitted – in a now-public exchange on conflict minerals with an Apple customer – that it is hard to be 100% sure that supplies are not compromised.

Much of the original work on supply traceability stems from the Democratic Republic of Congo (DRC), whose eastern province of Kivu is plagued by regional conflict.

There has been added impetus from the Dodd-Frank Wall Street Reform and Consumer Protection Act in the USA, which covers reporting requirements related to conflict minerals.

SEC rules

Rules imposed by the USA's Securities & Exchange Commission (SEC) took effect in August 2012, with initial reporting required by May 2014.

Conflict minerals are defined as tantalum, tin, tungsten and gold originating from DRC.

Since there are currently no dedicated due-diligence guidelines for the superalloys industry, with regards to ensuring a conflict-free supply chain, the melting industry has started to adopt the EICC certification requirements, Steve Munnoch of Avon Metals told Metal Bulletin.

"I believe that [the EICC certification requirements] will become the de facto standard for both the electronics and the superalloys industries," he said.

According to information and analytics provider IHS, when Dodd-Frank was signed in 2010, every smartphone made contained $0.15-worth of tantalum.

In 2012, IHS estimates, this would have amounted to $93 million-worth of tantalum in smartphones.

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'EICC certification will become the de facto standard for electronics and superalloys'
Steve Munnoch

© APPLE INC

NEW YORK

Cobalt gets the call for battery demand from smartphones

Smartphone development has had a significant effect on demand for cobalt, a key material in rechargeable batteries.

In the mid 1990s, just 1% of cobalt was used in rechargeable batteries for electronics.

That figure has risen to around 35% and will climb further on the back of the increased demand of electronics and electrical vehicles, industry participants say.

Apple uses lithium-ion polymer batteries in its products.

The lithium-ion polymer battery accounts for 24 grams of the materials in Apple's latest iPhone, according to the company, making it the largest single raw material component in the entire product.

By comparison, aluminium accounts for around 21 grams of the iPhone 5, a minuscule drop in the ocean for the metal in terms of overall demand.

The iPad, meanwhile, uses a lithium-ion polymer battery with 205 grams, versus 135 grams of aluminium.

Batteries

Cobalt's use in batteries grew from the late 1990s onwards, with electronics eventually superseding superalloys as the metal's biggest user sector by demand.

The first generation of rechargeable batteries for electronics were nickel cadmium (NiCad), but this eventually moved to nickel-metal hydrate (NMH) for a few years, and then to lithium.

All of these batteries contained cobalt, which is used as an additive in NiCad and NMH, and as the main metal in the cathode of most lithium batteries.

"If the rechargeable battery market had not used cobalt, there would be a completely different demand dynamic for the metal [...] not least geographically, as Asia is now by far the biggest cobalt-consuming region in the world," Dirk Uytdewilligen, consultant at Antwerp-based Vitosi and formerly senior vp of Umicore's cobalt and specialty material division, said.

Without doubt, the surge in demand for portable telephones, particularly in China, has resulted in a massive increase in cobalt demand.

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Since 1913 Metal Bulletin has been a mine of information for the metals industry. Credit Suisse Commodities highly values its relationship with Metal Bulletin, including innovations such as the iron ore and alumina swap markets, and wishes the publication every success for the next 100 years.

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Non-ferrous metals

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Most read non-ferrous stories in the week to May 2.
See www.metalbulletin.com

Incentives Nickel is now starting to become tied up by sheds in financing deals

Nickel piles up in warehouses on weak demand, high supply

LONDON
BY JANIE DAVIES

Nickel stocks in London Metal Exchange-bonded warehouses have hit a series of fresh highs in 2013, rising by 72% year-on-year due to poor physical demand and a lingering surplus of material.

LME-listed inventories hit 178,476 tonnes on Wednesday May 1, following an inflow of 1,440 tonnes.

Warehouses in Rotterdam and Johor account for 41% and 26% of material, respectively.

Full plate nickel accounts for the majority of material at 125,430 tonnes, while bagged briquettes and briquettes account for a combined 50,274 tonnes.

When demand is weak, the LME provides a safety net for owners of material who want to convert their stock into cash.

Warehousing companies are keen to tie up metal in lucrative financing deals.

Keeping the material in sheds for long periods of time in this way can push up premiums by reducing readily available tonnage when demand is healthy.

Warehouse companies have been paying incentives of as much as $100 per tonne to store nickel, as the metal becomes increasingly popular for financing deals.

Nickel stocks are rising in LME-listed sheds as demand wanes

Nickel producers have delivered most of the material directly to the LME, after failing to place the units with customers due to a lack of demand.

But a significant portion has been put on warrant by stainless steel mills, who have received more nickel than they need and wish to return it for cash.

"I would have thought producers and merchant banks financing metal would have delivered about 80%. I'd say it was 80-20," a nickel trader told Metal Bulletin.

"The incentives are as low as $45 per tonne and as high as $100 per tonne, depending on grades and terms," the trader added.

The incentives are not prompting the deliveries, but they do determine which shed secures the material, a senior purchasing source at a steel mill told Metal Bulletin.

Stalemate between DRC officials over Co export ban

WINDHOEK

Democratic Republic of Congo (DRC) mines minister Martin Kabwelulu and governor of Katanga Moise Katumbi have failed to agree on the implementation of a ban on exports of unrefined copper and cobalt, which is expected to come into effect in July.

Cobalt prices have jumped to five-month highs, largely due to uncertainty over supplies of concentrates coming from the DRC.

Katumbi rejected a decree from Kinshasa to ban copper and cobalt concentrate exports from July.

A meeting held between Kabwelulu and Katumbi over the contentious exports ban ended in a stalemate, a source said.

Kabwelulu and Katumbi failed to agree on rescinding the ban, though they will seek to bridge their differences in planned future meetings, the source added.

"Last week's discussions reached a stalemate ... the minister of mines and Moise Katumbi will meet again and discuss [the matter]," the source said.

Katumbi has argued that the ban, if enforced after the decreed 90 days, will negatively affect revenue flows to the government, as the DRC's lack of adequate electricity generation capacity would prevent beneficiation.

Katumbi stuck to his guns in the meeting with Kabwelulu, "in a sign of a beginning of a power struggle [with the central government in Kinshasa]", the source said.

"It appears that Kinshasa wants to push through with the ban, but are being met with defiance by Katumbi and the local Katanga government," the source said.

"Katanga maintains that you cannot insist on beneficiation without electricity and by banning exports you deprive the province and the country of much-needed tax revenue normally obtained from exports," the source added.

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Hotter on metals Mick Davis and cfo Trevor Reid discuss their part in the biggest merger in mining history

Xstrata's relationship with Glencore had to change – Davis

Davis is 'not unhappy' with Xstrata's growth from $500m unlisted miner to $50bn giant in ten years

LONDON
BY ANDREA HOTTER

Xstrata's shareholding structure meant that some kind of change was inevitable to allow the firm to grow, its outgoing ceo has told Metal Bulletin.

"That's why we had a look at the merger," Mick Davis said in an interview.

"I think we could have taken the combined entity further … but we're not going to have that opportunity," he added.

"I'm not unhappy with where we got the company … I think it's one of the great mining companies in the world today," he said

Under Davis and his cfo, Trevor Reid, Xstrata grew from a $500 million, unlisted company with some zinc and coal assets, to a $50 billion FTSE-listed mining giant over a period of ten years.

There were bumps on the way, including a failed attempt to buy Western Mining, a rebuffed merger with Anglo American and the collapse of Xstrata's sale to Vale.

> 'Our shareholders have got a decent company, although there are risks they take on board in getting that price'
> *Mick Davis*

There were also highs: an IPO in 2002 that was seven-times oversubscribed, the acquisitions of MIM Holdings, Falconbridge and Cerrejon, and, arguably, the Glencore deal, even if the departures of Davis, Reid and chairman Sir John Bond were not anticipated when negotiations began.

Shareholders in Xstrata voted against incentives that the board structured to ensure core staff stayed on at the merged company.

Davis and Reid are philosophical about the way things turned out.

"Our shareholders have got a decent company, although there are risks they take on board in getting that price. But Glencore is clearly not without talent," Davis said.

Strong finances

The outgoing management leaves Xstrata in robust financial health, Reid said.

"We hand over a company with a strong balance sheet, in as good a position as anybody could want – showroom condition," he said.

"Other than the Lonmin situation [the deal in which Xstrata took a 24.9% stake in South African platinum miner Lonmin for $1.8 billion in October 2008], which clearly is an issue that has to be sorted out, all our projects remain on track and on budget," he added.

Lonmin has struggled with operational and labour issues, culminating last August in a strike at its Marikana mine, during which miners were shot at and killed by South African police.

The departure

Davis is to step down at some point this year, while Reid will stay on for six months in a consultancy role.

"The way it's happened I think has been not terribly nice and we wouldn't have wanted to write the script this way, but the fact that we are leaving is by the by," Davis said.

"It's a hell of a lot better than I envisaged ten years ago when we were scratching [the concept of Xstrata] on a piece of paper," Reid agreed.

"Whether it's better than we envisaged when we went into a friendly merger is a different question," he said.

This isn't the end of Davis and Reid in the mining industry, however. The supply side convictions they shared when they started at Xstrata remain today.

"I'd like to continue in resources," Davis said.

Davis said there is still great scope for creating value in the resource sector.

"I think there are a number of companies out there that are starved of capital and maybe don't have sufficient management expertise and experience, that a combination of the right amount of capital, the right amount of management, would help them actually move up the value curve significantly. So I think there are great opportunities there and I think there's a space to play," he said.

Davis and Reid believe Xstrata's management style, staff empowerment are 'important legacies'

Davis and Reid are firm believers in the way Xstrata was managed – with a light touch from the centre.

"There is a way Xstrata has done business that is really important. I strongly believe in a decentralised management structure for running asset-rich companies," Davis said.

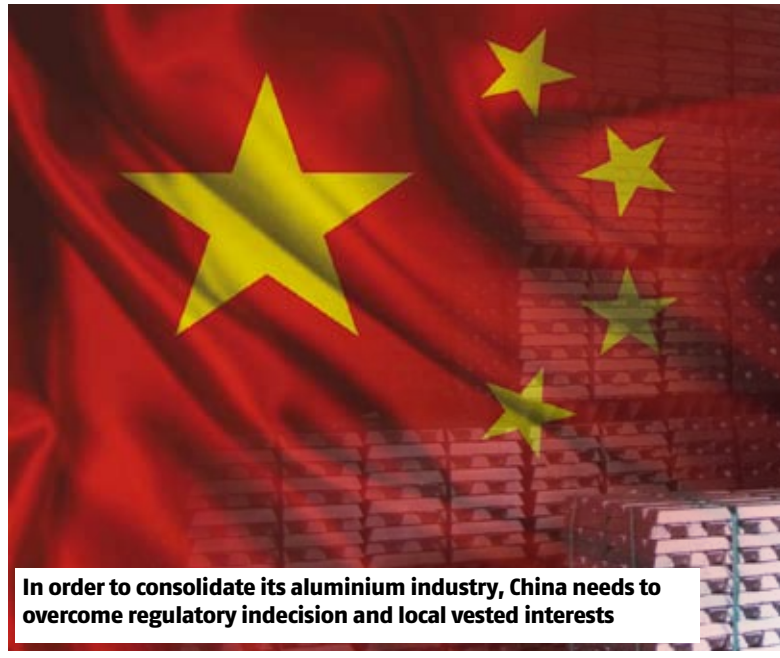
"I think it's appropriate to be very centralised when you're running trading companies, because you need to see the risks that are being created and you want the people with the risks to be sitting outside your door, so you know what they're doing. But for running a company that operates in so many different geographies and with so many different issues on the ground, a decentralised basis is advantageous."

Davis and Reid said empowering staff with responsibility and the authority to act, combined with effective internal communications, is central to Xstrata's way of working.

"The ethos of how we do business, the moral positions we've taken, how we interact with communities, the value-addition for shareholders, paying attention to sustainability issues and environment, safety and health, is an integral part of being competitive going forward. That is an important legacy we leave behind at Xstrata, which I hope will continue in the new entity. And if it doesn't, I think it will be a mistake," Davis added.

Industry restructuring The government of China faces a number of obstacles in its efforts to deal with overcapacity and inefficiency in its sprawling aluminium sector

The aluminium industry and China's growth paradox



In order to consolidate its aluminium industry, China needs to overcome regulatory indecision and local vested interests

BEIJING
BY PAUL ADKINS

China is operating in an increasingly paradoxical situation between growth imperatives, structural dilemmas and environmental concerns, *writes Beijing-based analyst Paul Adkins.*

Chinese leaders are fixing their attention on improving China's quality of growth, while still trying to maintain growth at an acceptable overall rate.

The excessive pollution in Chinese cities is a testament to the relentless industrial expansion of the past 30 years. It raises concerns among ordinary citizens and puts pressure on the government to act.

However, China's reforms will not be just about curing the damaged environment, but will try to hit all of the targets in an increasingly difficult situation. Some of these targets include growth goals, structural reform, technology upgrades and social reforms.

The government

The biggest uncertainty relates to how regulators will orchestrate a restructuring, and the industry's response.

This is perhaps the biggest paradox – namely the government's involvement in a market that is only partially free.

It is worth remembering that overcapacity is arguably the end-result of government action in the first place, through the release of capital, together with poor controls and ill-directed programmes.

Regulators play a huge role in China's restructuring, yet they seemingly lack the determination to implement the policies they decree.

One only has to look at the number of policy statements and other government publications in comparison to the almost total lack of change in the industry.

Although it was some years ago, this same lack of connection between words and action displayed itself with the outlawing of Soderberg technology.

Beijing first issued the decree in 1999, but it took until 2005 for the bulk of those smelters to close.

It is also true for other policies – although plants of 100,000 tpy output or less were supposed to have been closed for three years, we know of eleven smelters in this category that are still operating.

Regulatory tools are plentiful and some are already being implemented. However, this is perhaps the first time Chinese regulators have been faced with an immense and urgent responsibility for restructuring the economy.

Previous attempts at capacity elimination and consolidation have proved ineffective.

Reasons for failure have included local protectionism and provincial government interests, concerns over social costs and missing GNP targets, the use of local government financing through cheap money to prop up local industries, the removal of policies too soon resulting in a rebound in capacity building and a lack of transparency and inability to monitor the implementation of policies.

> 'Overcapacity is arguably the end-result of government action in the first place'
> *Paul Adkins*

Likely developments

One could be sceptical about the government's chances of achieving its targets. However, there are a number of likely outcomes.

Industrial growth will slow down, due to overcapacity across the secondary industry spectrum, with weak internal demand (domestic consumption) and weak external demand (net exports). This will effectively lead to a small reduction in energy consumption.

New smelting capacity in the far northwest of the country will add

Beijing's plans to consolidate, modernise and 'green' the industry

Reform in the Chinese aluminium industry will focus on the following areas, according to government edicts:

- Maintaining sustainable growth while tackling overcapacity; consolidating the industry into a smaller number of players (47% of China's aluminium companies are privately owned; 9% are public; 7% are joint ventures and 37% are state-owned); promoting the production of higher-end semis products; discouraging exports of primary metal.
- Improving energy efficiency, while reducing energy intensity; expanding recycling capacities.
- Implementing technology upgrades, pollution reduction and increasing recycling via technology improvements.
- Introducing regulation and policy reform, relating to a range of issues: electricity pricing, market entry, taxation, subsidies, etc.

From the above areas, one can sense China's need to continue to develop aluminium as a strategic industry. However, there is a pressing need to slow things down and reduce the energy intensity of the industry.

There are a few ways to achieve these goals. The first is an overall reduction in production, leading to lower overall energy consumption.

Methods include getting rid of overcapacity through consolidation and the closure of small-capacity plants with obsolete technology.

Another method is to improve energy efficiency by lowering energy consumption rates through the implementation of technology upgrades. Technology upgrades can also contribute to efforts in pollution reduction.

Increasing the amount of metal that is recycled also helps reduce energy consumption.

downward price pressure and force some smelters in the centre and east of the country to close.

At the current spot price of 14,600 yuan per tonne, 40% of the smelters are in a cash loss position. For as long as some local and provincial governments continue to provide subsidies, the potential for further downward price pressure remains, so we should see more smelters eventually close their doors, despite the subsidies.

A shift towards producing semis is likely to achieve limited effects. China is already adept at making semi-finished and finished aluminium products. Increasing the volume or extending the spectrum into higher-value products will increase demand, but it will not be a seismic change of the sort needed to correct the situation.

Investing R&D dollars into semis is also unlikely to make a difference. Thinner beer can walls and new alloys with esoteric additives do little to consume extra metal.

Capacity consolidation is something the government can directly intervene with, however. Whether the government will force consolidation remains uncertain. We expect large state-owned firms to play a large part in this area.

According to our research, 63% of smelter capacity is in the hands of non-government bodies.

In terms of soft targets, such as R&D as a percentage of sales, these are not purely questions of incentive versus punishment. Rather, it is about transforming organisations into R&D-based and knowledge-based companies. We do not have too much faith that China can make a quick transition in this area.

The closure of backward capacity has been a continuing theme in China's aluminium industry. The problem is the ability of small smelters using old technology to continue to operate profitably. The government may have to step in to keep the industry efficient, meaning market entry rules will need to be maintained.

With regards to pollution control, China lacks a clear, strict system to reinforce the incentive-versus-punishment structures. The government favours using energy pricing as a way to punish polluters.

Smelters that exceed limits may have to operate with higher prices, though this is not effective against those with captive power plants.

Targets on recycling require investment in terms of setting up recycling facilities. The Chinese are good at collecting waste, but the ability to sort material and reuse it in the domestic stream is lacking. We think there is potential for growth for the Chinese recycling industry.

Paul Adkins is the owner of the Beijing-based AZ-China consultancy.

China's slowdown leading prices to 'new equilibrium'

SHANGHAI

Lower-than-expected economic growth and a downward drift in commodity prices will become more evident this year as China's new leadership begins a rebalancing and remodelling of the economy.

The 7.7% GDP growth rate recorded for the first quarter, slightly below anticipated levels, was partly to blame for a recent fall in copper prices and another round of reductions in analyst price forecasts.

This is seen as just the beginning of a slowdown under which China's government will be reluctant to intervene to prop up the economy, unless absolutely necessary for social or political stability.

Slowing pace

"We're definitely seeing the end of the supercycle and we're moving to a less investment and production-intensive path," said Ian Roper, commodities strategist at brokerage and investment group CLSA. "Yes, China is still urbanising and developing in the west, but the pace is slowing down.

"I think there's a fair chance the government will miss its 7.5% growth target because [it seems] quite clear about the clampdown on government consumption. And they are not going to lean back from slowing down the property market," he added.

The incoming leadership of president Xi Jinping and premier Li Keqiang face multiple challenges, including environmental problems, rising inequality, corruption, the constant threat of a housing bubble, and the sniff of a financial crisis in local governments, among other things.

> 'China is still urbanising and developing in the west, but the pace is slowing down'
> *Ian Roper*

In a statement on April 17, the Politburo of China's seven top leaders released a statement affirming their commitment to "focus on the quality and profitability of growth", indicating that the senior leadership has reached a consensus to tolerate slower growth.

The current macro-economic context has combined with fairly weak seasonal demand for copper to generate a significantly more bearish mood on prices, perhaps most importantly inside China itself.

Different dynamic

"I believe a different dynamic has emerged in China in recent weeks, and you have to understand its background," said John Browning, head of metals and listed products at Jefferies Hong Kong. He noted that Shanghai Futures Exchange (SHFE) copper turnover on April 23, one of its most heavily sold days, was equivalent to 152,000 lots of copper.

"SHFE copper now has 28% of the entire renminbi (yuan) margin held by the Chinese commodity exchanges, which would imply that this is not just day trading, this is longer-term investment.

"If we add the fact that located in Shanghai is approximately 700,000 tonnes of copper in warehouses, then the SHFE dominates the Asia copper market. Let's agree that the rationale for investors to trade base metals is that they are a pure play on the state of the economy. Countries can manipulate FX rates, energy contains political risk, individual stocks can contain accounting surprises, but metals in the medium term have none of the above. Then the inescapable conclusion is that the Chinese investor is far more bearish of his own economy than his Western counterpart."

China's central bank governor said on April 20 that lower growth would be the new normal, because the government had to sacrifice ›

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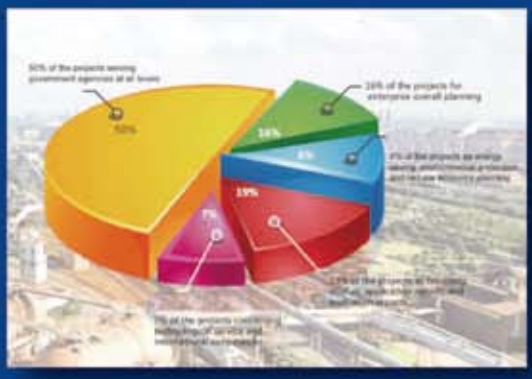

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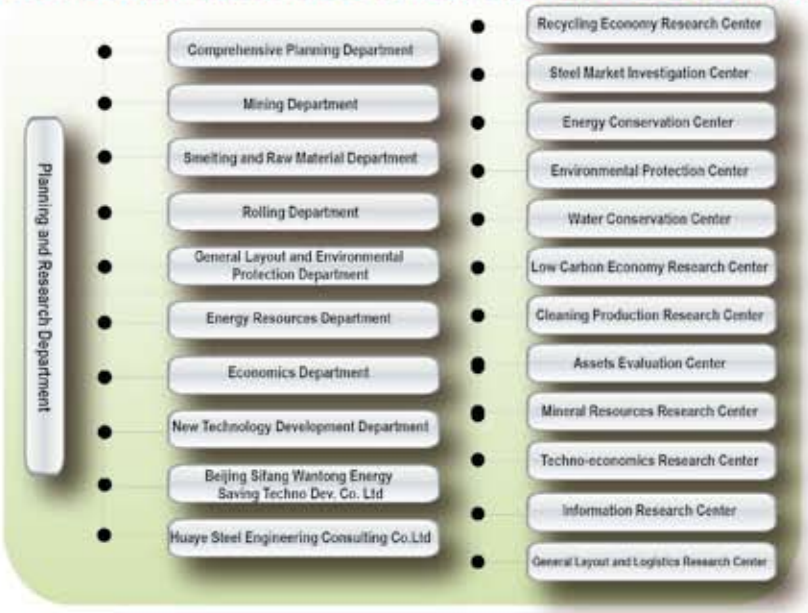

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For More Information
Contact: Ms Wang Yifan (Wendy Wang)
Office: 0086+10 65256519
E-mail: wangyifan@mpi1972.com
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›GDP units to ensure the economy did not become too unbalanced again.

Disappointing manufacturing demand in the first quarter of the year may have picked up only modestly in April, some said.

One Singapore-based analyst said he had come back from a recent tour of copper fabricators in eastern China with a fairly downbeat impression of their prospects for this year.

> 'It now seems clear that growth in China has moved to a structurally weaker pace'
> *Credit Suisse*

"The demand side is looking pretty ordinary. It's not astonishingly gloomy but there is no real optimism. That's why I became a little more pessimistic [after the trip]," he said.

Various analysts have now rejigged their metals price forecasts for the year. On April 25, Credit Suisse analysts said prices would "gravitate towards the bottom end" of the $6,000–$9,000 per tonne range.

"It now seems clear that growth in China has moved to a structurally weaker pace," the bank's analysts said in a research note. "We feel that this recognition, coupled with the likelihood that the European road to recovery will be long and bumpy, is likely to see many industrial commodity prices move to a new lower equilibrium, with any near-term bounce providing a new selling opportunity."

Restructing economy will affect metals

For metals and commodities, could the biggest threat to Chinese long-term demand be a failure to rebalance the economy?

Commodities prices and mining stocks have been hit by concerns over Chinese demand.

Beijing's 2008 stimulus plan helped sustain Chinese industry, but led to overcapacity, asset bubbles and an economy skewed towards infrastructure, fixed assets and state-owned industries.

The government says it wants to reshape the economy to create service industries and generate domestic demand, rather than keep China as the world's workshop.

"Demographics is the main driver," said a Shanghai-based analyst. "You'll have 25 million fewer 25-year-olds in five years, so you lose 25 million young workers who provided factory labour. Beijing has to create service, city and office jobs, which is why we see the shift."

The question is how to negotiate this. In the optimistic scenario, the leadership will overcome vested interests, liberalise markets, develop a consumer economy, temper environmental problems and ensure growth to provide jobs and growing incomes.

In a pessimistic scenario, China's economy will prove inflexible and vested interests will resist reform. The result will be an economy dependent on value-destructive infrastructure and fixed assets, leading to a financial crisis and economic collapse.

SHANGHAI

Fight between copper bulls and bears to continue

A battle of words between copper bears, represented by investment funds worldwide, and copper bulls, represented by the major copper producers, is likely to rage for weeks, according to a top executive at China Aluminum International Trading.

"The tenacity of copper bulls and the recklessness of bears are both attention-catching," said Yang Xiaowu, gm of futures at China Aluminum International Trading on Weibo, China's equivalent of Twitter, last month.

"Bulls' resources are limited, [compared with] the bears, the bloodthirsty, idle funds around the world," he added.

Why be a bear?

A Weibo user called fabiooo, who says he is a New York-based fund manager, said that copper producers' long positions based on China's urbanisation plans are "going to fail".

"The so-called urbanisation does not exist as a plan," the fund manager said.

"Urbanisation is only a direction for economic development, and is not going to be planned [by Beijing] as a pillar industry for economic development, like the property market was, stupidly, in 2003."

US hedge fund manager Jim Chanos said in a presentation at the Wine Country Conference in California, USA, in early April that China's urbanisation is the "last refuge of the bulls".

> 'The tenacity of copper bulls and the recklessness of bears are both attention-catching'
> *Yang Xiaowu*

He added that "property is the linchpin".

Chanos, known as the guru of short selling, described China's oversupply of urban real estate as "an overlooked issue".

Total real estate under construction in China in 2012 was about 10.6 billion sq metres, compared with 5.7 billion sq metres in 2009, while total real estate per capita was 14.9 sq metres in 2012.

Chanos added: "Lack of affordability remains an issue as no one can [envisage where all the buyers will come from]."

Why be a bull?

China's Jinrui Futures has been the top long-position holder in all copper contracts on the Shanghai Futures Exchange (SHFE) since the start of this year, according to SHFE data.

As Jinrui is majority-owned by China's biggest copper producer, Jiangxi Copper, the assumption in market circles has been that Jiangxi is the leader of China's copper bulls.

But Jinrui analyst Ye Yugang said on April 19 that Jiangxi Copper accounts for only 20% of the broker's overall business.

The analyst added that the copper producer must be hedging its SHFE long positions by selling on the London Metal Exchange.

A trader using the Weibo account name Cai Jinrong said in late April that copper bears have become "reckless" by selling far-forward contracts, because hoarding by major companies will make it hard to obtain material.

"It is almost an insult that the copper bears dared to sell further at the 49,000–50,000 yuan ($7,850–8,025) per tonne level," the trader said.

What will China do?

The release of the details of China's latest plans for urbanisation, which had been expected after parliamentary meetings in March, has been postponed to the second half of this year or even later, according to some reports.

However, an official from China's National Development and Reform Commission (NDRC) said last month that it was still hoped that details of the urbanisation plan could be released in the first half of this year.

Yuan Xilu, the deputy chief of NDRC's planning department, made the comment during the launch of an investment report by research institutions on further urbanisation.

Guest writer Martin Abbott, ceo of the London Metal Exchange and former editor of Metal Bulletin, on the LME's aspirations – and its new capabilities

Change is coming thick and fast

It is tempting to write that there has never been a time that presents such a combination of challenge and opportunity to the London Metal Exchange, but the reality is that there has never really been a time that was not challenging.

The big difference today is that the LME is looking forward with the added capacity and vigour of its new owner, the Hong Kong Exchanges & Clearing group.

Being part of one of the world's largest exchange groups, with a diversified product offering and an greater global reach than ever before, means that the LME is better equipped to tackle the changing exchange environment, which is a good thing, because change is coming thick and fast.

EMIR opportunities

The first source of change is the changing regulatory framework.

The indirect impact of US legislation combined with the direct effect of European regulatory change – specifically the measures dictated by the EMIR rules – means that exchanges in Europe have to adapt their systems to accommodate the different reporting requirements that will apply to banks and brokers.

> 'These developments will not threaten the existing and already hugely successful Chinese futures exchanges'
> *Martin Abbott*

Those reporting requirements will mean that regulators will have a much more detailed view of market participants, and should be able to assess more accurately the risk, and more importantly, the way risk is spread, across the on- and off-exchange trading world.

Enabling the trading community to be compliant with those regulations is a challenge; but for the LME there is an opportunity tucked away in the regulations.

> 'The rest of Asia, Central and South America, India and, of course, Africa, will be the focus of a great deal of work in coming years'
> *Martin Abbott*

The push by governments and regulators to drive more business into clearing, and to a degree onto exchanges, will be helpful to those exchanges that have the right infrastructure to accommodate the expanded world of cleared/exchange-traded products.

This is not simply a matter of the size and speed of systems. There are particular characteristics of OTC traded products, and often these relate to the bespoke nature of the product; the requirement for quote-driven rather than order-driven fulfilment, and the need to accommodate principal-to-principal trading (rather than agency relationships).

Those are all features of the LME's existing culture, rulebook and system set-up, and that bodes well for the future.

Indeed, the piece that was missing from the LME's infrastructure was its own clearing house, and the decision to build one, reinforced with the post-acquisition knowledge and financial backing of the HKEx Group, puts the LME in a very strong position.

The LME has been a global business for decades, having left its port-of-London roots behind a long time ago. But there has been one gap in the global portfolio: China. The Chinese metals industry drives many market developments, but the Chinese industry itself has largely been cut off from the LME.

Abbott: 'The LME aspires to have a major presence in China'

The combination of the LME with the HKEx Group means that we are able to communicate much more effectively with Chinese regulators, and we are hopeful that we will be able to satisfy them that we are a suitable partner for the Chinese domestic industry to hedge its risk.

Gateway to China

At the same time, HKEx will be able to position itself as the global gateway to China across the rest of the group's product portfolio, using its acquisition of the LME to round out its product offering in the mainland.

A key element of the combined approach to the Chinese market will be the position of Hong Kong as the leading offshore centre for renminbi-based trading. The fact that HKEx has already launched RMB denominated products in its Hong Kong systems and clearing facilities means the group is leading what will be a very large product group, with both execution and clearing enabled.

Eventually, the LME aspires to have a major presence in China. That will take time, but when it happens it will be of enormous benefit to the domestic industry and will cement the LME's position as the global benchmark provider in the metals markets.

These developments will not threaten the existing and already hugely successful Chinese futures exchanges. As we develop, it will be important to work co-operatively and to drive more liquidity into all venues, building arbitrage and fungibility wherever appropriate.

The future will not only be about China. HKEx already has a leading role in equity exchanges, and the combined group will leverage its existing reach into the next wave of growing economies. The rest of Asia, Central and South America, India and, of course, Africa, will be the focus of a great deal of work in coming years.

Load-out row LME stocks drop to 1m tonnes but Eurofer urges warehouse reform

Supply eases as zinc drips out of LME sheds; stocks fall by 13%

LONDON
BY MARK BURTON

Zinc stocks fell for a 13th consecutive day on May 1 as a drawdown continued in Antwerp, Johor and New Orleans, where there are large queues to take out metal.

The withdrawal of 6,300 tonnes of zinc from those locations took total LME stocks to 1.06 million tonnes, down 13.5% from year-to-date highs seen in January. Zinc stocks are now at their lowest level since October.

The withdrawals have taken zinc stocks down from the 19-year highs of late last year, when inventories rocketed in Antwerp and New Orleans and rose more modestly elsewhere.

The availability of metal in Europe has now eased moderately as material has started to leave Antwerp sheds, a zinc buyer at a European steel mill said.

"There is no shortage of material; producers and traders have stock and material is leaving LME sheds. It's being offered but still premiums are too high," he said.

But the rates at which material is loaded out from Antwerp, New Orleans, Detroit and Johor, where 90% of LME zinc is stored, are not sufficient to "satisfy demand from consumers and to guarantee timely delivery", European steel industry association Eurofer said in a position paper made public last week.

Load-out rules for zinc have been criticised by steel body Eurofer

Eurofer is also understood to have sent a letter to the LME urging the exchange to amend its load-out rules, which currently require warehouses to deliver out 1,500-3,000 tpd depending on the volume of material stored in any given location, as well as 500 tpd of any metal that is stuck behind a queue to withdraw 30,000 tonnes or more of another "dominant" metal in that location.

The steel body, which represents ArcelorMittal, ThyssenKrupp, Tata Steel and about 40 other mills in Europe, said existing LME load-out rules "create an artificial shortage for physical consumers, allowing metal producers to increase premiums for fulfilling actual consumption". The group is pressing the LME to implement new load-out rates that are defined on a per-warehouse basis, rather than a per-company basis.

"The warehouse system is under constant review and we will communicate our response when it is appropriate to do so," an LME spokeswoman told Metal Bulletin.

Metal Bulletin in-warehouse zinc premiums were $95-110 per tonne on May 1, up $5 from the start of April.

BHP to sell US copper assets to Capstone for $650m

SINGAPORE

BHP Billiton will sell its Pinto Valley copper mine and the associated San Manuel Arizona Railroad Co (SMARRCO) in USA to Canada's Capstone Mining Corp for $650 million in cash as part of its divestment initiative.

"The sale of Pinto Valley is an excellent outcome for BHP Billiton shareholders. It is consistent with our strategy and it takes the transaction value of divestments announced over the last 12 months to $5 billion," Peter Beaven, president of the company's copper division, said in a statement.

The deal is subject to regulatory approvals and is expected to be completed in the second half of this year, BHP said.

The workers at Pinto Valley and SMARRCO will become employees of Capstone as part of the transaction.

At present, BHP has a 100% stake in both Pinto Valley and SMARRCO.

Pinto Valley is an open-pit copper mining operation, east of Phoenix in the Globe-Miami district of Arizona, while SMARRCO owns and operates a 47km railway that runs from San Manuel to Hayden, Arizona.

Recently, BHP announced a top management reshuffle and incoming ceo Andrew Mackenzie reiterated the miner's focus on capital discipline. The miner posted a slump in 2012 half-yearly profits.

LONDON

Tin prices set to rise on new export rules in Indonesia

Tin prices and premiums could rise in the coming months on tighter availability, market sources said.

From July 1, for example, regulations on refined tin exports from Indonesia will tighten considerably, leading to lower availability.

This means prices could climb towards levels seen earlier in the year of about $25,000 per tonne by the start of the second half.

"Hopefully, prices have found a base. If you look at the fundamentals of tin on their own, they're not bad at all," a sales agent said.

The Indonesian government has said exported material must have a tin content of at least 99.9%, and that ingots may only be shipped by registered exporters approved by the trade ministry.

Indonesian exports

Ahead of the change in regulations, Indonesian exports have been high, according to figures published by the International Tin Research Institute (Itri). Its preliminary data show exports of refined tin were up 11.3% month-on-month in March, to 9,295.7 tonnes.

But this is expected to change once the regulations are put in place, and also because tin prices are low on the London Metal Exchange, meaning exporting metal is less economically viable.

"In the last few months, metal has been pouring out of Indonesia at a constant rate," the sales agent told Metal Bulletin.

"[When the regulations change], it's the lead content that will be the crucial issue. The question is, can the producers put out material with only 100 ppm [parts per million of lead] and I think almost certainly not."

This will further limit the amount of tin coming out of Indonesia, and the collapse in price has not helped either, he said. "I suspect Indonesian exports will plummet from now on," he added.

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Contact us

Imen Trari - *Commercial Manager*

T +44 (0) 151 548 7777

M +44 (0) 7827 242 987

E imen.trari@alsglobal.com

www.alsglobal.com

Challengers India and Middle East offer attractions to rival China's dominance

Aluminium acquires new hubs

SINGAPORE
BY SHIVANI SINGH

China is still the big story in primary aluminium production, but India and the Middle East are coming up as rival hubs.

Lower energy costs and easier access to raw materials are the biggest attractions in the latter areas, and they have room to grow as producers shut up shop in the developed countries as power costs make their plants unviable.

Energy costs for major producers per tonne of aluminium produced range from $255 to $368 in the Middle East, a market source told Metal Bulletin. In India, the energy costs range from $514 to $904 per tonne, the source added.

Production costs

"Energy is by far the largest portion of production costs [for aluminium smelters] and a growing portion, given the global rise in energy prices, so having access to lower-cost or more competitively priced power is a real advantage," Barclays analyst Gayle Berry said.

"The operating costs of the Middle Eastern smelters are in the lowest-cost quartile for the entire industry, while in India they are within the bottom-half quartile," she added.

Middle Eastern total operating costs are about $1,300-1,400 per tonne of aluminium produced, while those in India are nearer $1,700 per tonne, she said.

> 'The operating costs of the Middle Eastern smelters are in the bottom quartile'
> *Gayle Berry, Barclays*

Besides having affordable power, the Middle East has a huge edge in terms of location.

"Let's say you are producing in Iceland; you don't ship products out to Asia. But if you are in the Middle East, you can ship product to Asia, you can ship it to Europe and use it in the Middle East, which is booming itself," a Singapore market source said.

At the moment, the Middle East accounts for 8-9% of total global aluminium production and it will be expanding in 2013 with the ramp-up of the Ma'aden smelter.

The project is due for completion by 2014, and has a total estimated cost of $10.8 billion. Its Ras Al Khair facility is targeted to produce 740,000 tpy of aluminium.

"After that is the expansion of Emal, which will go from 800,000 tonnes in 2012 to 1.3 million tonnes in 2014," Ron Knapp, secretary general of the International Aluminium Institute, said.

India, meanwhile, offers competitive energy prices as well as bauxite supply and a good domestic market, a producer said.

"India should play a bigger role as it has bauxite and coal," a top producer said.

With a population of over 1 billion, India has a per capita consumption of 1-2kg per year of aluminium, compared with the USA's per capita consumption of more than 20kg, Brazil's 5kg, and China's more than 10kg.

"All you have to do is think about India doubling or quadrupling that consumption per capita and you see tremendous demand growth in India," Knapp said.

Environmental issues, however, are causing concern in the country.

"India will remain a balanced market and we can't expect large amounts of exports as it has primarily coal-based plants and there are disadvantages such as pollution," the producer added.

The result of the energy crunch in the developed countries is that aluminium production is undergoing a permanent structural change, with the bulk of global primary production shifting to the developing countries.

Government subsidies

Only government subsidies or policy will keep high-cost primary aluminium plants running in the developed countries, and many companies are turning to upstream opportunities, such as selling bauxite or alumina to cost-efficient plants in the Gulf.

Japan, which produced 9% of the world's aluminium four decades ago, now imports all its primary aluminium needs as it was forced to shut down plants due to huge cost increases, mainly in energy.

Rising energy prices and labour costs have hurt Australia, too.

"Australia in the past was an aluminium hub with cheap energy from coal and a low exchange rate," a top global producer said.

But only government support in Australia will keep the Point Henry

SINGAPORE

New aluminium capacity arriving in the Middle East and India

New capacities and ramp-ups are expected in India and the Middle East in the next few years.

Middle East

- Saudi Arabia's 740,000-tpy Ma'aden smelter starts production this year.
- Emirates Aluminium (Emal) will double its capacity to 1.3 million tonnes by end-2014.
- Middle Eastern capacity will rise to 5 million tonnes by end-2014, from 3.6 million tonnes in 2012.

India

- Aditya Birla Group-owned Hindalco Industries' Mahan plant in Madhya Pradesh will be ramped up to 359,000 tpy in two years; production should start this year.
- Vedanta Resources will this year raise capacity at its Jharsuguda plant to 1.75 million tpy from 500,000 tpy.
- Hindalco's Hirakud smelter in Odisha will expand to 213,000 tpy in 2013 from 161,400 tpy.
- Vedanta Resources' 325,000-tpy plant in Korba, Chattisgarh, starts production this year.
- National Aluminium Co's (Nalco) upgrade of the fourth stream at its alumina refinery in Damanjodi, Odisha, will raise capacity to 2.275 million tpy from 2.1 million tpy by the end of 2013.
- Hindalco's integrated aluminium project in Kansariguda will include a 4.2 million-tpy bauxite mine, a 1.5 million-tpy alumina refinery, and a 359,000-tpy smelter at Lapanga; production begins at the end of 2014.
- Hindalco's 359,000-tpy Sonahatu, Jharkhand aluminium plant is due to start in mid-2015.
- National Aluminium Co's (Nalco) 500,000-tpy smelter in Sundarnagar, Odisha, will start production by 2018.
- Anrak, a 70:30 jv between Penna group and the Ras Al Khaimah Investment Authority, will have a 1.5 million-tpy alumina refinery and plans a 250,000-tpy aluminium smelter in Visakapatnam in next few years.
- Hindalco is doing a feasibility study at Belgaum for conversion of standard alumina to special alumina with an estimated capacity of 316,000 tpy of special alumina.

smelter in Victoria running until at least mid-2014.

Demand for the light metal is also expected to rise within the Bric countries. Demand stemming from their infrastructure needs and such new developments as lightweight vehicles will boost appetite for the metal.

Chinese plants, meanwhile, benefit hugely from state power subsidies, and the upshot is the country's spectacular growth in aluminium production.

In 2012, the world's total aluminium output was 45.2 million tonnes with 19.75 million tonnes of that produced in China – or more than 40%. By comparison, the Gulf Co-operation Council (GCC) countries produced 3.7 million tonnes or about 8%.

Experts believe China's share of output will be over 50% by 2020.

New plants are likely to crop up in the low-cost regions of west and northwest China, away from the high-cost areas in the south and southeast of the country, which have seen some closures and cuts in production capacity.

China is also ramping up output in low-cost areas such as Xinjiang province. "We have seen production closures of about 650,000 tonnes in China. Some [...] high-cost smelters were receiving power subsidies that have now expired," Barclays' Berry said.

Financing deals make aluminium production an attractive option in oversupplied market

SINGAPORE

The financing deals which have trapped large aluminium stocks in warehouses are here to say, market participants have told Metal Bulletin.

These deals, along with low LME prices, have resulted in aluminium premiums hitting the roof.

Unless the interest rates rise, making these deals unviable, or huge curtailments are seen, these financing games are here to stay, participants believe.

> '[Most new production from the Middle East] will not be supplied to the physical market, so the physical premium is going to stay high'
> *Bonnie Liu, Macquarie*

"We think the market is going to stay in a big surplus that is going to pressure the front end prices, and they continue to drive the contango on the forward curve, so it continues the conditions that make financing deals profitable," Gayle Berry, an analyst at Barclays Bank, said.

The Middle East, which is being seen as a potential aluminium hub, may not add to the physical market.

"[Most of the new production from the Middle East] will not be supplied to the physical market which will mean the physical premium is going to stay high – at $200 plus easily for the next three to six months," Bonnie Liu, an analyst at Macquarie, said.

Premiums have been at record high levels, with buyers in Japan agreeing to pay $248-249 per tonne in the first quarter of the year.

European duty-paid premiums have been around $270-290 per tonne, after going over the $300 mark earlier in the year.

The US mid-west premiums are at $0.115-0.120 per lb.

Contango structure

The financing deals work when the interest rates are low but will disintegrate when they rise.

"We will continue seeing these backs coming and going with people trying to squeeze the market," a source said about the recent backwardations seen in the June-July and September-October spreads, which have now disappeared.

Market sources estimate that about 70% of the total global producers have production costs below $1,900 per tonne, with 30% above.

Oversupplied market

"I think about 1.5-2 million tonnes will have to go out [of production] in the next few years to make a difference," a major producer source said.

These high premiums have kept most producers over the red mark as they continue producing in an oversupplied market.

"I am deeply worried about the fundamentals of aluminium. These high $200-250 premiums are adding to the complacency of producers and there is no respite from this," an Indian producer source said.

"The 70% are waiting to see the 30% close shop but no one is really doing anything but wait as premiums remain high," another market source said.

"The bell will toll on these financing deals," a top producer source said – but how soon is anybody's guess.

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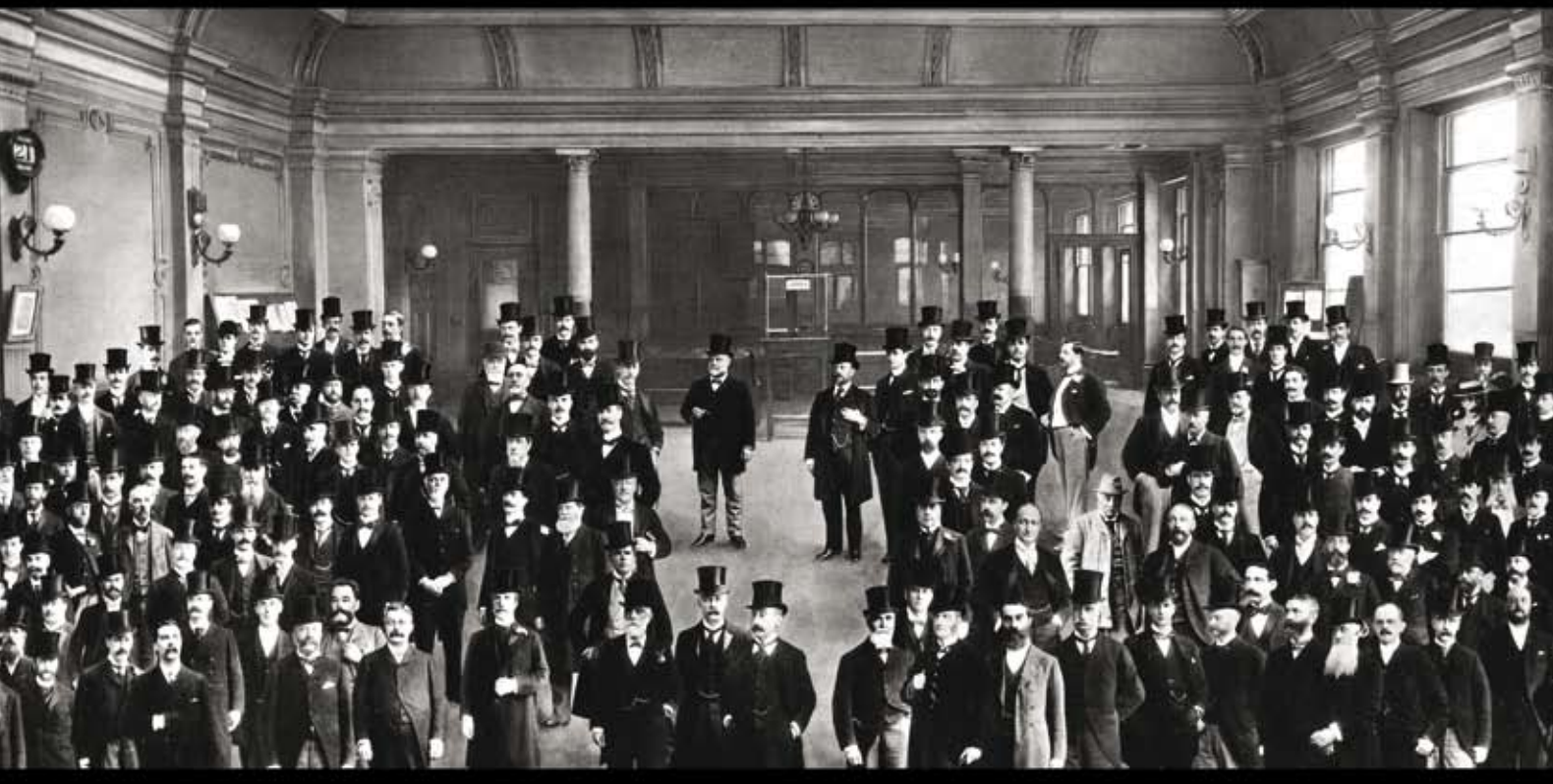

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New owner California-based producer will pay $61 million cash and assume $4 million liabilities for plant

Century to buy Alcan's Kentucky smelter

CHICAGO
BY MICHAEL COWDEN

Century Aluminum has agreed to acquire Rio Tinto Alcan's smelter in Sebree, Kentucky for $61 million in cash and the assumption of $4 million in liabilities, the companies said on April 29.

Under the terms of the deal, California-based Century will receive $71 million in working capital, while Montreal-based Rio Tinto Alcan will assume all past environmental liabilities and has agreed to fund the operation's pension plan.

The transaction remains subject to closing conditions, but is expected to be completed by the end of June, Rio Tinto Alcan said.

Sebree has been a "solid operation" and should remain so under new ownership, the Century said. Rio Tinto Alcan declined to comment beyond a news release.

Divest assets

Rio Tinto Alcan announced plans in 2011 to divest 13 assets, including the Sebree smelter.

The Sebree acquisition comes as Century also announced that it had reached a tentative power agreement for its smelter in Hawesville, Kentucky.

Metal Bulletin sister title AMM reported in February that Century was interested in acquiring the Sebree smelter.

Market participants suggested at the time that if both facilities were owned by one company, it could have more leverage in power rate negotiations.

Century's Hawesville smelter has a rated capacity of 244,000 tonnes of primary aluminium per year and employs about 650 people, Century said. The Sebree plant produced 205,000 tonnes of primary aluminium in 2012 and supports 1,800 direct and indirect jobs, Rio Tinto Alcan said.

> 'With these facilities under common ownership, we will derive real benefits' *Michael Bless, Century*

The Hawesville and Sebree smelters in western Kentucky are provided with power by Big Rivers Electric Corp. The two smelters are estimated to account for about 70% of Big Rivers' output, and Century and Rio Tinto Alcan had given the utility notice of their plans to end their power contracts.

© RIO TINTO

Sebree produced 205,000 tonnes of primary aluminium in 2012

"We believe that, with these facilities under common ownership, we will derive real benefits in better serving customers and through improving both operations," Century president and ceo Michael Bless said in a statement. "We believe Sebree, like Hawesville, is globally competitive in every area other than the cost of power."

Getting access to competitively priced energy is critical to the "continued viability" of both smelters as well as the thousands of jobs they support, Bless said. The tentative power agreement, also announced on April 29 by Century, is a first step towards locking in "market-priced power," he said.

Hawesville plant could survive loss of Southwire custom, says Bless

CHICAGO

Century Aluminum could continue to operate its Hawesville, Kentucky, smelter even if it lost the facility's biggest customer, Southwire, according to company president and ceo Michael Bless.

The Monterey, California-based aluminium producer has been in regular contact with the Carrollton-based wire and cable producer, Bless said, referring to the possibility of the Hawesville smelter closing and Century terminating its supply contract with Southwire.

Century announced plans to idle its Hawesville smelter on August 20 unless it could secure a better power deal with power supplier Big Rivers Electric Corp. Century, which gave Big Rivers a 12-month power termination notice for the Hawesville smelter last August, said on April 29 it had reached a tentative power agreement for the smelter. The agreement remains subject to third-party approvals, including from the Kentucky Public Service Commission and the Rural Utilities Service.

Southwire, which has a facility adjacent to Century's Hawesville smelter, indicated that it had contingency plans should Century close the facility.

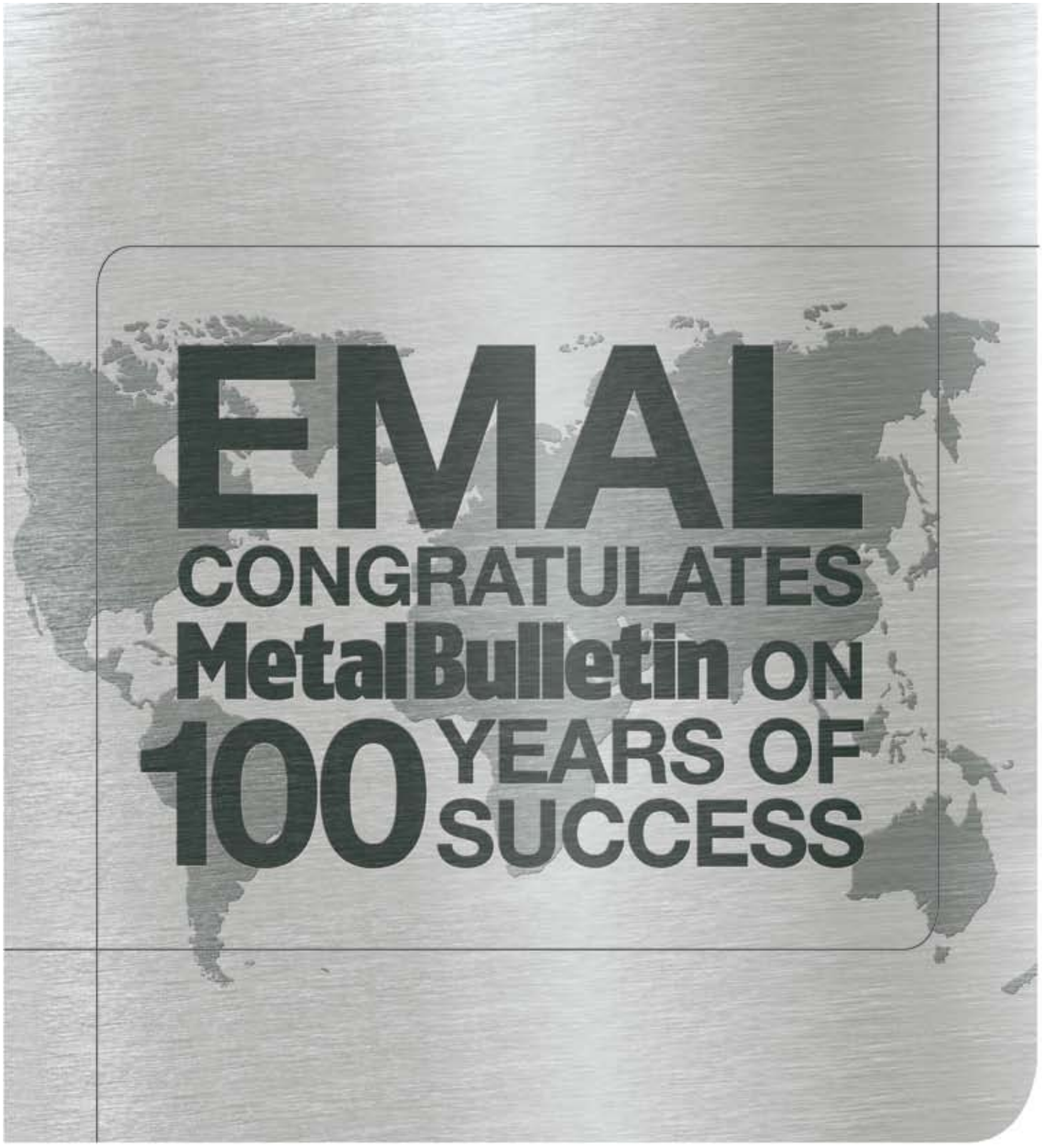
Century is confident that it could "sell every ton we produce at Hawesville" even without Southwire, Bless said.

Baar, Switzerland-based Glencore International could also be affected by Hawesville's closure, Bless said. Century has a "sweep contract" under which Glencore takes whatever free metal Hawesville produces. "If there were no metal, there is no obligation," he said.

Asked by Bank of America Merrill Lynch senior research analyst Timna Tanners whether Hawesville has been "loss-making", Bless conceded that it has been.

However, he stressed that Century did not see the facility primarily in those terms. "It would be devastating to us if we had to close that plant for a whole host of reasons," he said, pointing out that there was "broad and deep" talent at the plant.

Bless noted that there had been "a tick up in incidents" at Hawesville in January, with production volumes at the facility slipping during the first quarter because of "six to seven" pot failures—more than Century had anticipated. "We are through that now and we're back to a full pot complement," he said.



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Losing out Europe cannot compete on the cost curve with more cheaply run facilities in India and Mena

Dark clouds over light metal for high-cost European smelters

LONDON
BY JETHRO WOOKEY

The huge demand forecasts for aluminium over the next decade cannot mask the fact that European primary aluminium production is in its autumn years.

There seems little brightness ahead for producers struggling in an environment of high energy costs and low London Metal Exchange prices.

Alcoa ceo Klaus Kleinfeld said at Metal Bulletin's sister publication AMM's 2011 aluminium summit in New York that he expected demand to double to more than 80 million tpy by 2020 and, nearly two years later, that forecast does not look overcooked. But it is highly unlikely that European producers will be among the main beneficiaries of this demand growth.

Producing primary aluminium in Europe has not been very profitable in recent years, with power prices pushing production costs near and even above LME aluminium prices. Also, Europe cannot compete on the cost curve with smelters in regions such as the Middle East and India, which are expected to become the light metal's main production hubs due to lower energy costs and easier accessibility to raw materials.

Aluminium prices have risen by only about 10% since the beginning of the century, to about $1,900 per tonne. Copper prices have grown fourfold over the same period. Base metals prices have increased by an average of almost 170% since 2000, but take away aluminium and that figure rises to about 200%.

Nor does aluminium stack up well against other commodities. According to statistics website Index Mundi, the commodity food index has grown 118% since 2000, while the fuel index rose 319%. Even milk prices beat aluminium, having risen by a quarter in the past twelve years.

Many smelters in Europe are losing money on the material they produce as prices sit below the marginal cost of production, due to a huge oversupply of metal. Were it not for the outlet of warehouse financing deals and the high premiums that have resulted, some of those producers would not be in operation today.

Smelters losing money

"Smelting has no future in Europe, unless you are producing very high-purity or aerospace-grade material," an analyst said. "It is already underwater in terms of LME prices, and if there is a big regulatory change on the warehousing, everyone is screwed."

The aluminium industry is unique. Although one can see similarities between the way copper and zinc are being financed in warehouses and the growth of aluminium stocks in Detroit and Vlissingen, the physical processes by which the metal is acquired and the supply situation at the raw material stage makes aluminium a metal unlike any other.

> Even the rise in milk prices beats that of aluminium, having risen by a quarter in the past twelve years

"Aluminium is basically a conversion business," a second analyst said. "You take dirt, refine it into alumina and then smelt that into aluminium. You use a huge amount of power to free up the aluminium element.

"With copper, you produce concentrate, which is smelted with flotation and chemicals and then refined into cathode, similar to lead or zinc. They have all seen supply constraints at various stages of the cycle, but bauxite is never in short supply. Alumina is never in short supply. It's the key characteristic of the global aluminium industry."

> Even if the most bullish demand forecasts for the next decade prove true, they will be met by capacity increases

Nor will there be any supply tightness in the foreseeable future, with or without European production. Even if the most bullish demand forecasts for the next decade prove true, they will be met comfortably by capacity increases, which in many cases have already been announced.

Low utilisation rate

The first analyst added: "I agree with the positive demand outlook, but the global industry is operating at a low utilisation rate, and there is still capacity being built in China, the Middle East and Russia. Even if demand does go up by about 6% a year, it won't change anything."

If there is, and will be, no supply tightness, why should prices ever rise significantly from their current level?

"It very much depends on some substitute products," a producer said. "Technological advancement on different materials and applications is key, and if aluminium use can rise within current applications, there is a good chance that prices will rise."

Norsk Hydro's head of technology, Erik Vatne, said at a recent seminar: "Offshore use of aluminium is modest, despite the fact that the metal has a number of advantages over the more traditional construction materials, such as steel. The competence level regarding aluminium in marine applications is too low in many places, unfortunately."

Foiled again: Shift to VAP will be rivalled too

Manufacturing value-added products (VAP) is a way for European producers to maximise profitability, and many companies have moved in this direction.

Norsk Hydro is forming a joint venture with Orkla SA's Sapa Group to combine all their aluminium profiles, building systems and tubing businesses, while Rusal is boosting VAP production at its Division East and West smelters in Russia.

Also, aluminium is being pushed into new applications all the time. Latest construction applications include wiring and building cladding, as well as its use in the offshore industry. In many cases, the major obstacle is simply educating the industry about the benefits of aluminium.

But even here, Europe could soon face strong competition from producers further east.

"Middle Eastern smelters are beginning to move towards higher VAP production, and I'm sure that will continue to happen over time," the first analyst said. "It doesn't suggest a positive outlook for what is left in Europe."

Some market participants have said consolidation is the answer for Europe's aluminium industry, with more tie-ups like the Hydro/Orkla joint venture. But this could be a perilous route.

"Look at all the mergers and acquisitions in metals over the past ten years: which have made any money?" the second analyst said. "Very few."

Price indexes and trade logs created to meet the market's needs

LONDON
BY JETHRO WOOKEY

As Western companies have looked away from primary aluminium production and searched both upstream and downstream for value in the aluminium industry, pricing trends have adapted to them.

Metal Bulletin launched its fob Australia alumina index in August 2010, in response to industry calls for an alumina price that is not derived from London Metal Exchange aluminium prices.

> Soaring aluminium premiums have seen the move to index pricing ratchet up

Market participants suggested that the LME figures had become more a function of macroeconomic trends and less a reflection of the market's fundamentals, ever since the global financial crisis pushed money from risky financial markets into the perceived safety of commodities.

A year later, many big alumina sellers were pricing about half of their new sales on index prices, with the rest on the traditional LME percentage basis.

But soaring aluminium premiums in 2012 – which still followed market trends – saw the move to index pricing ratchet up, and many alumina sellers were pushing 100% of their new sales on to index pricing by the time contract discussions for 2013 began.

Now, the same calls for independent, market-based pricing are being heard farther up the value chain, with bauxite sellers now seeking pricing structures that will enable them to maximise value creation at the first stage of aluminium production.

Metal Bulletin announced at its Bauxite & Alumina Conference in Miami in March that it would produce a bauxite trade log, including business on a fob basis from various regions, as well as on a cif basis into China.

The trade log is the first step towards comprehensive pricing coverage of the alumina-making raw material.

However, downstream prices are still tied to LME aluminium ingot prices.

Metal Bulletin publishes an aluminium billet premium that is then added to the LME aluminium price to determine the overall billet price, but other semi products, such as rolling slabs and foundry alloys, do not even have those independently assessed premiums.

This could change as the likes of Norsk Hydro and United Co Rusal place greater focus on downstream markets.

© RUSAL

Producers are searching upstream and downstream to find value

Indonesia uncertainty keeps bauxite prices high

Bauxite prices remain elevated due to continuing uncertainty over the future of exports from Indonesia, sources said as Metal Bulletin launched its bauxite trade log.

Sales of dry MRN bauxite on a fob Brazil basis were reported at $42-45 per tonne over the past month, with one company reporting sales totalling about 250,000 tonnes in that period.

A 50,000-tonne deal priced at $45 per tonne was described by the seller as being "not totally reflective" of the market fundamentals as uncertainty over Indonesia is letting sellers secure higher prices than conditions would otherwise allow.

Chinese bauxite imports totalled 4.56 million tonnes in March, at an average price of $51.21 per tonne cif China, according to customs data.

Uncertainty over Indonesia's export policy was not helped at Metal Bulletin's Bauxite & Alumina Conference in Miami in March, where Indonesia's director of the export of industrial and mining products Thamarin Latuconsina told Metal Bulletin that exports will continue under the new law, but then told delegates that bans will apply to exporters.

> 'Chinese buyers are keen to try other sources, and Brazil is one of the best options' *Producer at Miami conf*

"We went to China and the trip confirmed that no one really understands what's happening with Indonesia," a producer said.

"Chinese buyers are keen to try other sources, and Brazil is one of the best options."

A second producer confirmed that the prices reported for Brazilian material being shipped to China were coming in above expectations.

"By the time it's sent to China, it's cost close to $80 per tonne. The caustic soda content is high, so processing costs in China are also higher for this bauxite versus the Indonesian and Weipa [Australian] bauxite," the second producer said.

The first producer said that China's refineries are more adaptable to other forms of bauxite than previously assumed, opening the possibility of large-scale export business from South America into China, should exports from Indonesia be restricted. "We made some sales into China and they were very well received," he said.

"We're getting China ready to receive MRN bauxite, and we're happy with the conclusions received from those customers."

Bauxite trade log – April 2013

Bauxite sales reported to Metal Bulletin in the month of April 2013.

- 250,000 tonnes of Mineração Rio do Norte (MRN) bauxite (moisture 5%) sold in several clips at $42-45 per tonne fob Brazil
- MRN bauxite (moisture 12%) sales into China indicated at $81-82 per tonne cif
- 400,000 tonnes of Compagnie des Bauxites de Guinée (CBG) bauxite (moisture 3%) sold at $70 per tonne cif
- 240,000 tonnes of CBG bauxite (moisture 3%) sold at $69.50 per tonne cif

China imports (March 2013):

- 782,199 tonnes of bauxite from Australia at an average price of $55.14 per tonne cif
- 400,437 tonnes of bauxite from India at an average price of $56.60 per tonne cif
- 3,377,968 tonnes of bauxite from Indonesia at an average price of $49.66 per tonne cif

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Margin call Nick Moore's belief that falling fuel costs will give miners a boost gets the bird from some quarters

Tweet on oil cost fall sees many chirp up

LONDON
BY CLAIRE HACK

It started with a tweet: a few weeks ago, one of Metal Bulletin's most-trusted contacts sent out a 140-character communiqué, suggesting lower oil prices could help to bring down costs for mining companies.

Nick Moore, a commodity strategist, first brought the positive side of lower energy prices to Metal Bulletin's attention, by taking to social networking site Twitter to share the following: "Remember that mining companies are heavy energy users and the plunging WTI and Brent oil price should provide some alleviation on cost front."

When asked to elaborate by Metal Bulletin, Moore said: "We should also remember the consumer and the benefits of lower raw material input prices. Rising costs are the number one company enemy, especially at a time of weak commodity prices.

"Mitigations will include forward selling, metal hedging – I'm sure lots of gold companies are kicking themselves for not doing it – and also currency hedging, as earnings are often more sensitive to currency moves than to the main commodity product."

> 'Energy costs have not dropped as much as some of the underlying metal prices have'
> *Ed Meir, INTL FCStone*

Labour, he added, is also a major cost issue, and tends to be difficult to navigate, especially as strike action continues to dominate the headlines, while macroeconomic headwinds buffet companies' cash positions.

"[Companies could] try linking wages or bonuses to metal prices, or binning 'sacred cow' projects and non-essential maintenance," Moore said.

The alternative, he suggested, would be to zero in on capital expenditure for sustaining the company, as well as wielding an axe over high dividend payments.

"[This is] always contentious when you try to run a progressive dividend policy. Capacity closure is a must, and at this time of excess supply, an obvious response," Moore said.

"[There should be] shared pain and shared gain where possible – otherwise, it's easy to give away advantage to competitors."

For example, he said, Chinese aluminium producers rapidly made up for the 12% capacity reduction in the first half of last year at Alcoa.

Great debate

From there, Metal Bulletin decided to start a debate on the subject, and on the other factors that could have an impact on mining costs in the coming months, with some of the mining industry's leading experts – summarised here.

At least one analyst dismissed the notion of falling oil prices helping to bring down mining costs out of hand.

"[Falling oil prices] are not much of an issue in my view, as energy costs have not dropped as much as some of the underlying metal prices have and are still relatively expensive inputs," Ed Meir, an analyst at INTL FCStone, said.

"Outside of copper, margins remain squeezed for aluminium, zinc and nickel producers in particular," he added.

Others, meanwhile, told Metal Bulletin that while falling oil costs may be important for aluminium producers, they may not have as much of an impact on other metals.

"Energy costs are important, but they're not huge in the same way that they are for aluminium producers," David Wilson, director of metals research and strategy at Citigroup, said.

Moore: 'Plunging oil price should provide alleviation on the cost front'

"It also depends on where oil prices go. We don't know whether they will actually move dramatically lower," he added.

There are, furthermore, other factors with a greater influence on mining costs, which are common across base metals.

"There are issues with sustaining capex – there are a lot of mine expansion projects going on out there, and mining equipment is starting to become more and more expensive," Wilson said.

"Tyres are getting more expensive [for example], and labour costs are continuing to rise. Capital costs are clearly increasing significantly."

Tyres, he added, have presented serious problems, as they are particularly costly to replace, and there have been numerous shortages within the mining sector over the past five years.

"A few years ago, there was such a shortage that companies were having to dig up old tyres to reuse them," he said.

Join in the debate on Twitter – tweet @clairehack_mb, #miningcostsdebate

Is the fall in costs cyclical or structural?

The main question to consider is whether any fall in costs is more cyclical or structural in nature.

"It could be that costs are only coming down because of cyclical weakness, or that there has, in fact, been a structural shift – it's probably too early to comment," Robin Bhar, head of metals research at Société Générale CIB, said.

"Compared with 12 months ago, oil prices are down and steel prices are down, and labour costs are definitely down in Europe. We're not talking about significant decreases, but maybe cost deflation," he added.

This has been supportive in a declining price environment for metals, helping producers to sustain their activities.

"Obviously, it would be a double whammy for prices to come down and costs to continue to rise. If prices are falling, there have to be cost savings – you've got no other way to make a margin," Bhar said.

Tight supply Analysts expect to see greenfield/brownfield project deferrals, diminished supply growth

Copper mine supply pipeline will tighten beyond 2015

The 2013 copper market will be defined by strong supply, diminishing demand and lower prices, analysts said after meeting at Cesco

LONDON
BY MARK BURTON

The copper industry should brace itself for a tighter mine supply pipeline beyond 2015, as the investment case for brownfield and greenfield projects disintegrates with copper prices below $7,000 per tonne, analysts are warning.

The weaker outlook for medium-term supply reinforces the long-term bullish case for copper prices, even as the red metal endures its weakest spell in years.

Returning from Cesco Week, which took place in Santiago last month, bank analysts signalled that the copper market is entering a new era that will be defined by stronger supply, stalling demand and lower prices.

Deutsche Bank has called time on the "halcyon days of the past decade"; former mega-bull Barclays advised clients to short any near-term rallies; even Goldman Sachs, which maintains a bullish short-term outlook, has put stop losses in place on its buy recommendations.

The analysts' commentary lends a strong fundamental justification for the lower prices seen since Cesco, even if some view the 11% drop seen that week as excessive.

Before the sell-off, Barclays warned that the copper price will need to fall towards industry cash costs of $5,000 per tonne before the market sees an immediate supply response.

Another warning

But the bank simultaneously warned that today's price environment is going to hurt future brownfield and greenfield supply that is not already fully financed.

"Producers will continue with projects that are beyond the point of no return, such as those that are slated to begin production in the next two years … but capital spending retrenchment means boards are re-evaluating projects beyond this point," Barclays analysts said in a note on April 15.

"When it comes to financing the next tranche of supply, today's famine in copper prices is tomorrow's feast, because it just won't be possible to get financing for all the projects miners have planned," Société Générale (SocGen) analyst Robin Bhar told Metal Bulletin on Monday April 22.

In its Cesco review, JP Morgan said five-year forward copper prices will need to hold above $7,500 per tonne for marginal operators to continue to develop future projects. At the close of trading on April 22, five-year contracts were trading at $7,296.50 per tonne.

In the midst of the recent rout, Deutsche Bank said the challenge to the copper supply pipeline caused by lower prices is now sufficiently high to alter its outlook for the market balance over the next several years.

"We suspect that deferrals in greenfield/brownfield projects will become more common and thus the prospect for lower-than-expected supply growth could be quite high," Deutsche Bank analysts said.

Prospects for a tighter supply pipeline beyond 2015 have also been strengthened by the closure of Glencore's takeover of Xstrata, which gives the UK-listed producer-trader control of several large-scale greenfield projects.

Analysts had expected Xstrata to deliver on those projects, given its strong greenfield track record, but it is likely that Glencore boss Ivan Glasenberg will be far less committed to bringing the mines online in a timely fashion.

'When it comes to financing the next tranche of supply, today's famine in copper prices is tomorrow's feast'
Robin Bhar, SocGen

"Glencore has made its opinion on greenfield projects fairly clear, so I think there's cause for analysts to pare back their assumptions for some of those Xstrata projects," Macquarie analyst Duncan Hobbs told Metal Bulletin.

Contango, premiums to incentivise today's production

Mining companies' failing enthusiasm for new projects and expansions in the face of lower metal prices have been seen in falling orders for Caterpillar mining equipment.

But as prices fell to three-year lows in Shanghai and 18-month lows in London, the general view was that the stronger mined and refined output since the second half of last year will not be curtailed significantly in response to weaker prices in the near term.

Lower prices could change the copper industry's attitudes towards hedging, as financiers look for a stable return on their investment and rethink their attitudes to price risk, analysts said.

But rising premiums in the physical market and demand for material among warehouses, traders and financiers will continue to offer a strong and attractive sales channel for producers.

"In terms of thinking about which of the projects that are in production today might be closed or cut back in response to lower prices, people need to realise that the rules of the game have changed somewhat," Société Générale analyst Robin Bhar told Metal Bulletin.

As in the aluminium market, producers will continue to turn out metal as long as financiers soak up surplus units for use in contango carry trades, Bhar said.

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Merseyside L30 1RD
United Kingdom
T: +44 (0) 151 525 1499
F: +44 (0) 151 530 3760
E: stephen.russell@alexstewartinternational.com

www.alexstewartinternational.com

Shutdown Planned maintenance closures at Boliden's Rönnskär smelter will negatively affect profits by $45m

European copper premiums climb to $120 after outages, strikes and price drop

LONDON
BY MARK BURTON

Copper premiums were quoted as high as $120 per tonne in Rotterdam last week, as the European market experienced tighter supply following port strikes in Chile and a maintenance shutdown at Boliden that began in early April.

The recent slump in copper prices on the London Metal Exchange has also tightened the supply of scrap and increased demand for cathodes as a replacement, market sources said.

Metal Bulletin's Rotterdam in-warehouse copper premiums stood at $90-120 per tonne on Tuesday April 30 – up from $65-100 at the start of April – as market sources reported a flurry of enquiries for cathodes to cover shortfalls arising from a three-week Chilean port strike that ended on April 6.

Codelco said shipments of about 60,000 tonnes of cathodes were delayed during the strike, while Anglo American said 10,000 tonnes of its material were affected.

The short-term strain in availability has been compounded by extensive maintenance shutdowns at Boliden's copper and zinc smelters from the start of April.

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Copper supply has tightened thanks to port strikes in Chile and a recent slump in prices on the LME

Maintenance

The most extensive work is being undertaken at the Rönnskär copper smelter in Sweden, which averaged nearly 18,000 tpm of cathode production last year.

The outages will negatively affect operating profit to the tune of about SKr300 million ($44.4 million), Boliden said in its annual report.

The group is expected to provide a further update on Friday, as it releases its first-quarter production figures.

"We definitely have a shortage in the market these days," a copper producer source told Metal Bulletin.

The recent flow of material into LME warehouses in Antwerp has also concentrated the availability of the surplus material that was entering the market prior to the port strikes and shutdowns, he added.

There were 122,575 tonnes of copper stored in Antwerp warehouses on Tuesday April 30, equating to 87% of the total available in European LME sheds.

Warehouses helped to boost premiums in the first quarter, as they offered incentives of up to $100 to bring copper into Antwerp sheds.

Asian Cu premiums 'may rise further'; India's largest plant stays shut

SINGAPORE

Copper premiums in Asia are likely to continue rising as India's largest copper smelter remains shut after a local court transferred a case over emissions to New Delhi.

Sterlite Industries had not responded to email and telephone queries by Metal Bulletin by the time of publication.

"So far today there has been no increase but premiums have been going up in Singapore," a trader in Singapore said. "I did 100-200 tonnes [of copper cathodes] last week at $90 premium. I expect them to rise further with this latest news," he said.

Copper premiums in Singapore rose to $60-75 per tonne recently, from $30-50 per tonne at end of March. Shanghai premiums have hit $130-140 per tonne, from $60-90 per tonne at the end of March.

The 400,000-tpy smelter, operated by Vedanta Group's subsidiary Sterlite Industries, was shut on March 29 after locals complained of emissions resulting in breathing problems.

The closure pushed up copper premiums in the region and the *force majeure* at the plant has also resulted in a hike in treatment and refining charges for concentrates.

"Unless the courts say the plant can temporarily operate, the premiums in India will go up," a market participant from India said.

> 'Unless the courts say the plant can temporarily operate, the premiums in India will go up'
> *Market participant*

Not only copper cathode premiums but wire rod premiums would go up too, another market participant said. "We buy copper wire rod at premiums of $225-250 over LME cash price," he said, adding that "in India these may rise [even further]".

"Circumstances did not permit" hearing of the case in the southern bench of the fast-track court as had been scheduled for Monday April 29, Justice M Chockalingam of the National Green Tribunal was quoted as saying by Reuters.

An expert panel that inspected the plant was to have presented its report to the court in the Indian state of Tamil Nadu on Monday but the judge said the sealed report will be sent to a court in New Delhi.

Standoffs Chinese ferro-chrome prices have been dropping since April when stainless mills slashed their steel prices, leading to tensions with producers

South African FeCr still tight amid Eskom deals – IFM

FeCr supply in South Africa is dwindling as a result of buyback deals

LONDON
BY JANIE DAVIES

South African ferro-chrome supply remains tight due to widespread power buyback deals in the first half of the year, International Ferro Metals (IFM) ceo Chris Jordaan told Metal Bulletin as the company announced a 30% fall in output.

Production fell to 34,172 tonnes for the first three months of 2013, compared with 48,762 tonnes for the same period in 2012, as the company kept one furnace offline under the buyback deal.

Output was also down 34% compared with the previous quarter.

All South African ferro-chrome producers have cut output for the first half of 2013 under the power buyback deals, leading to tighter spot availability.

"It's clear that the market remains very tight. I can safely say there's no spot alloy available unless you want to pay ludicrous prices," Jordaan told Metal Bulletin.

High carbon ferro-chrome prices have risen in Europe to $1.04-1.08 per lb compared with $0.97-1.01 per lb at the start of 2013.

Falls in China

But Chinese prices have been falling since stainless steel mills slashed April purchase prices, leading to a standoff between South African producers and Chinese buyers.

Metal Bulletin's charge chrome index price for imported material, cif Shanghai has been static at 92 cents since March 22, due to a lack of business.

The index started the year at 90 cents per lb and peaked at 97 cents per lb on February 22.

"The story is a bit different in China, as there seems to be a bit of an overhang of domestic ferro-chrome, which has led the Chinese stainless steel mills to drive the price down. Chinese mills are also looking to domestic stocks at the moment," Jordaan said.

"There's a recent development in that you can see a significant disconnect between prices in and outside China. This kind of gap usually doesn't last and is followed by a recovery in Chinese prices," Jordaan said.

The third quarter European benchmark price for ferro-chrome rose 14.5 cents to $1.27 per lb.

"IFM is enjoying a higher benchmark price and is selling all alloy on contract," Jordaan said.

IFM's ferro-chrome sales fell to 41,630 tonnes in the quarter, compared with 51,092 tonnes for the same period in 2012 and 52,930 tonnes in the previous quarter.

JOHANNESBURG

Xstrata-Merafe will sell Horizon chrome mine in South Africa

Xstrata-Merafe is in talks with interested parties to sell its Horizon chrome ore mine in Limpopo, South Africa.

The sale is expected to be completed by the end of this year, Kajal Bissessor, head of Merafe's investor relations, said.

The mine is a joint venture between Merafe Ferrochrome & Mining and Xstrata, with the parties holding 20.5% and 79.5% respectively.

The sale of the mine will not affect the supply of chrome ore to Xstrata and Merafe operations, as there will be enough reserves even after the sale, Bissessor said.

"Horizon produces chrome ore that is high cost," Bissessor told Metal Bulletin.

FeW prices climb; supply shortage predicted

LONDON

Ferro-tungsten prices climbed on Wednesday May 1, even with most of Europe out of action for national holidays.

Metal Bulletin's in-warehouse Rotterdam quotation moved up to $42.50-44.10 per kg, from $41.65-44.00 per kg previously, as demand remained high and rumours emerged of rapidly decreasing supply.

"[One supplier] has advised its long-term customers that it will skip May shipments and postpone everything until June," a trader said.

"Prices for spot started to be talked a little bit higher again on Monday. I've heard $43.50-42.25 per kg, and [on Tuesday] there were offers at $44.40-45.00."

Ferro-tungsten prices have staged a marked turnaround since the beginning of the year, when they dropped to their lowest level since November 2010.

Ferro-vanadium prices unlikely to fall further

LONDON

Ferro-vanadium prices may have bottomed out, market participants told Metal Bulletin on Wednesday May 1.

Metal Bulletin's in-warehouse Rotterdam quotation remained steady at $27.50-28 per kg after a series of falls in recent weeks.

"Indications out there are a little bit higher," a trader said. "I have not heard of anyone paying anything higher yet, but people were looking below $28 and I don't know if they were able to get it."

Offers have been reported at $27.80 per kg and above, and vanadium pentoxide has also remained steady at $5.60-6 per lb, suggesting potential support.

"The Chinese are getting nervous and are trying to increase their prices," a producer said. "They have been making losses."

Tricky trading The explosion in China's output has crushed prices; what next for the minor metals industry?

'Game mode' for minor metals in China

SHANGHAI

For years, China's industrial expansion was criticised as being reckless. Production capacity expanded exponentially while utilisation rates lingered at only 50–60%, or in some cases even as low as 30%.

The growth curve of the gallium industry is perhaps the most striking example.

In 2000, China's total gallium production was only 10 tonnes. By 2010, this figure had increased to 80 tonnes, and then output exploded, reaching 190 tonnes in 2011 and 300 tonnes in 2012, one Chinese gallium producer recalled.

It is worth noting that production barely increased in the rest of the world during the same period, he added. "The barrier for market entry with regard to capital is quite low. We hadn't filed intellectual patents regarding the refining and concentration techniques. These were among the factors that contributed to the huge expansion of the industry," he added.

Elsewhere in the minor metals industry, there have been similar stories.

China's selenium production has seen an annual growth rate of 40% in the past couple of years, reaching 800–1,000 tpy, one market participant estimated.

Hunan Bismuth claims that its production capacity will soon reach 5,200 tpy. Once its expansion plans are complete, it will overtake Jinwang Bismuth's 4,000-tpy capacity to become the largest bismuth producer in the world.

Competition has picked up and prices have collapsed as a result of these expansions. Gallium prices have now dropped to $280 per kg, down from a peak of $1,000 per kg recorded in mid-2011.

'You need to play this business in "game mode" so that you don't lose too much sleep at night' – *Selenium trader*

Selenium prices now stand at $86–91 per kg, the lowest level since August 2010.

The price of bismuth is hovering in the region of $8.50–$9 per lb, its lowest price since October 2010.

Crisis and opportunity

"Not discounting the generally dismal performance of commodities, I believe prices will stay at this level for an extended period of time. Producers should stop reminiscing about the good old days and accept the reality," a minor metals trader said.

"Already I have seen many traders quitting the market. Only the really strong ones will survive," he added.

"This is not simply about balance sheet strength; cash flow strength is even more important. A good firm also has good supply and sales channels," the trader said.

But some are treating the crisis as an opportunity, where hard times will give them a chance to prove themselves in the market.

"I have left my previous employer and opened my own business. It is a three-man team: another accountant, plus one in charge of purchasing and one in charge of sales. I have sold 9 tonnes of selenium this month, against an expectation of 5–6 tonnes," a selenium trader said.

He thinks large companies will be hard-pushed to accomplish the necessary wheeler-dealing in a tricky market.

"I could have stayed in my previous post and tried to teach an elephant to dance. Instead, I am testing my abilities by opening my own company," he said.

"With a competitive edge on supply and demand, very little seed capital is required. I asked my supplier to lend me the material and only made the payment after I collected money from my buyer," the new trader said.

"Nonetheless, you need to play this business in 'game mode', so that you don't lose too much sleep at night," he said.

Measures brought in by the Chinese government to consolidate the industry should give the market long-term support.

China's regulatory bodies are stepping in too. The Environmental Protection Department of Hunan has launched a series of detailed rules to regulate the industry, according to a red-headed document seen by Metal Bulletin.

The document contains a list of 82 smelters that are subject to closure, along with orders that the closures should be so thorough that no production equipment, raw materials, power supply equipment or management staff should be left.

Most of the 82 affected enterprises are lead, zinc or silver-processing smelters, but some minor metals producers are also included.

"This is the first time that regulators at a provincial level have released such rules. It used to be the responsibiity of local county governments," one market participant said. "This is a sign of the resolve and determination of regulators," he added.

This round of closures will be carried out in two stages: voluntary closures should be completed by June 15, while compulsory closures will follow by July 25.

"The impact could be profound," the source added. "The majority of companies listed are high polluters from the lead, zinc and silver industries. Their closure will disrupt supplies of crude bismuth, antimony and of other minor metals," he said.

Resistance to the closures should be manageable, market sources said. "Small smelters are very price-sensitive. There may not be that much willingness to continue production in any case, given current price levels. Plus they will receive compensation," another source told Metal Bulletin.

"Whether or not they resume production when prices recover, the closures will help to reduce stocks in China," he added.

Consolidation

Apart from concerns about pollution, the other main driver behind industry consolidation is raw material scarcity.

Yunnan Germanium – the largest germanium producer in China – will soon be reaching full production levels at its three new deep-processing projects, but the company lacks raw material.

"Our existing resources can satisfy 20–30 years of production," a source from the company said.

"The acquisition of further resources is both a practical need for us and an imperative for the Lincang local government," he added. "The three mines we bought last year, along with the one we recently acquired from Tianhao, added 800–1,000 tonnes to our reserves," he said.

"[Yunnan Germanium's] move puts a chokehold on Chinese output, which will help to maintain prices," one market participant said. "It is something the rest of the minor metals industry could learn a thing or two from," he added.

Feed concerns DRC export ban, Freeport's purchase of OM Group's Finnish refinery might limit supply

China's cobalt concentrate buyers can and will substitute metal for concentrate

LONDON & SHANGHAI
BY FLEUR RITZEMA & MB STAFF

Chinese cobalt buyers are likely to substitute concentrates for metal if prices remain under $13 per lb, according to Metal Bulletin sources.

The cobalt market has been split for several months over whether Chinese buyers would switch to purchasing metal should the metal price fall low enough.

Recent low concentrate supplies, combined with low metal prices, have reignited the debate.

Chinese chemical producers traditionally use concentrate or hydroxide to make chemicals.

This switch to metal has happened in the past, and could happen at the current price levels, according to Metal Bulletin sources.

Cobalt prices fell to their lowest level in nearly four years in December 2012, and while prices have risen slightly since, rallies have been short-lived.

A far cry from the April 2008 levels of close to $50 per lb, low-grade prices have struggled to breach $12 per lb so far in 2013.

Despite the low metal prices, Jinchuan's Simon Bao recently noted that Chinese producers are unlikely to buy up metal units to use instead of concentrates.

"It is not economical to produce cobalt metal then again to resolve it to produce cobalt oxide," Bao said.

"For Chinese metal producers like Jinchuan, it's unlikely," acknowledged one miner.

"With their feed, they can either do chemical or metal; to simplify, to do metal, you go through the chemical phase; hence producing metal for the Chinese is more expensive than producing chemical. Using metal produced in China to produce chemical is therefore nonsensical," he added.

> 'It is not economical to produce cobalt metal then again to resolve it to produce cobalt oxide'
> *Simon Bao, Jinchuan*

He went on to explain, however, that a lack of ore could make buying from other sources attractive for other Chinese players.

"Now, when you don't have ore and you need to produce chemical, what can you do? You either a) stop producing: this is absolute anathema for most Chinese refiners…or b) you buy metal from African origin," he added.

"If you cannot buy concentrates or hydroxide for any price, as there is none available, then you can convert metal to oxide… I believe it costs much less to convert metal to oxide as there is no need to remove impurities (in the concentrates there are high impurities), so if you can find metal at the MB low, and it costs you $1.50 to process, then you can still make a margin," a second miner said.

Concentrate supplies have been limited recently, and concerns about supplies have grown since the DRC government introduced a cobalt concentrate export ban.

News that Freeport McMoRan and its joint venture partners have bought OM Group's cobalt refinery in Finland also led to concerns about cobalt hydroxide supplies in China.

Traditionally, large volumes of cobalt hydroxide from the joint venture partners' Tenke operation in the DRC makes its way to Asia. Much of this supply could eventually be diverted to Finland.

Flexiblility

At a time of tight intermediate supply, Chinese concentrate buyers confirmed that there was a lot of flexibility in terms of feed use.

"It is not a problem to use metal to produce chemicals at all. When the cobalt metal price is above $15 per lb, it is fine to use cobalt concentrate to produce cobalt chemical. When it is $13 per lb, it is the same to use cobalt concentrate or cobalt metal. When [the] metal price is below $13, it is good to use metal," confirmed a Chinese buyer.

Some companies would need to invest in facilities to make this possible, while others already have access to the appropriate technology.

"It is not a problem at all either – cobalt concentrate is like coarse grains, while cobalt metal is like fine grain," the buyer added.

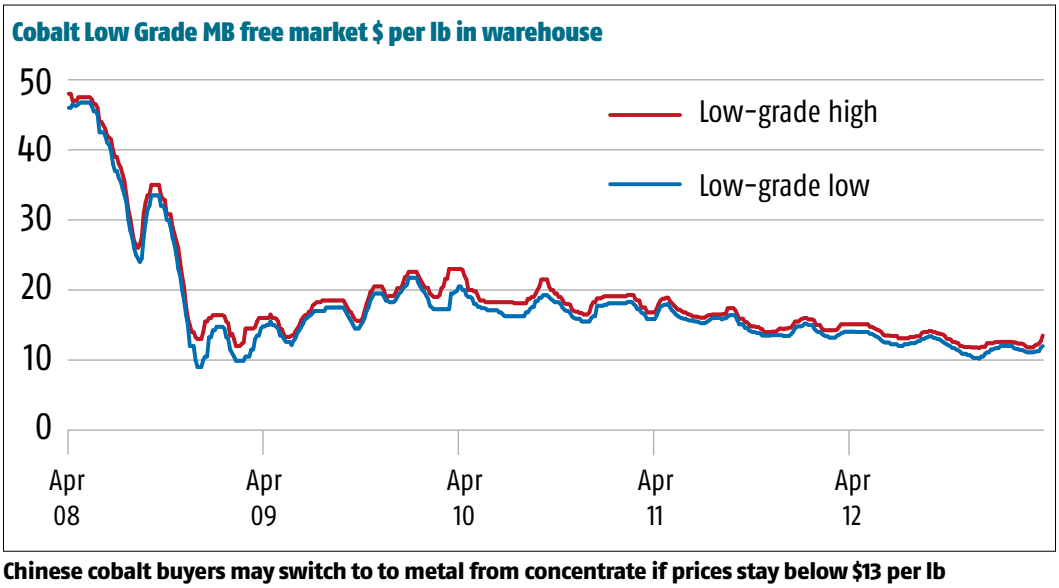
"There is no need for us to invest in new facilities. As we already have cobalt a metal line, we just need to feed metal into the chemical line. As a matter of fact, we used about 1,000 tonnes of cobalt metal for cobalt chemical production back in 2009," a second buyer said.

This buyer was flexible about which brands of cobalt he could use.

"If we can use cobalt concentrate as raw materials, cobalt metal is of course much better to use no matter the brand or impurity content. In one word, it is not a problem at all as long as the prices are ok."

Other buyers would need to invest in facilities, while some would favour buying African-sourced cobalt metal due to its import duty advantage in China, according to sources active in the concentrate market.

"They'll only switch to African material. African metal is already moving into China… These guys can start from metal. Ambatovy, for example, leaches very nicely," the source said.



Chinese cobalt buyers may switch to to metal from concentrate if prices stay below $13 per lb

Blue outlook 'If you don't sell [at low prices], you are waiting for death, and if you do, you are looking for it'

Chinese cobalt – 20 years of history but what is its future?

SHANGHAI

When Yin Hua borrowed 120 tonnes of cobalt metal from China's state reserve bureau in 1989, he could not have imagined that he would help start a new industry in China.

At the time, Yin was head of the Material Bureau of Yixing, a small city in Jiangsu province. He found that there was demand for cobalt metal from three state-owned hard carbide makers.

"They just didn't have the guts to import the minor metal directly from the international market, while Jinchuan Group hadn't started cobalt metal production at the time," Yin said.

Thanks to his position and industrial connections, Yin was able to borrow cobalt metal from the state reserve at an annual cost of 6%, meaning he had to give 7 tonnes of cobalt metal back to the bureau at the end of the year as interest.

'[After China joined the WTO] many [companies] started importing cobalt concentrate to produce chemicals, which resulted in surges in imports and output in the following years'
Xu Aidong, CNIA cobalt branch

Three years later, the 120 tonnes of cobalt metal had become 300 tonnes, as Yin was able to sell the metal at $20 per lb, and then buy more from the overseas market at around $11 per lb.

A golden age

The years before 2002 were a golden age for China's cobalt metal importers, as they just needed to import cobalt metal then sell it to hungry domestic users, mainly hard carbide and ceramics makers.

Yin aggressively stockpiled cobalt metal in 1999 after the Asian crisis, and in 2001 after the 9/11 terrorist attacks on the USA, which pushed cobalt prices as low as $5.80 per lb. His company, Shanghai Xiashang Trading, itself imported 1,500 tonnes of cobalt metal from Europe and the Democratic Republic of Congo (DRC) between 2001 and 2002.

Some regarded these low-priced cobalt stocks as a starter reserve for China's cobalt industry, as more than one market participant raised enough money to set up their own refineries, and later began trading the material.

People also started importing cobalt product and raw materials around that time, including Shao Baixuan, who in the mid 1990s was among the first to import cobalt concentrate and who set up Zhejiang Galico Cobalt & Nickel Material in 2004.

Boom

In October 1999, the China Nonferrous Metals Industry Assn (CNIA) held the first annual nickel and cobalt conference in Shanghai.

"About 200 delegates attended the conference, much more than the expected attendance of 80–100," Xu Aidong, general secretary of the cobalt branch of CNIA, said.

The conference unleashed the boom in China's cobalt sector over the next decade, as more people became aware of the minor metal, and some decided to become more involved through importing raw materials for local smelting.

The boom also came amid a decade of fast growth in China's local economy, and changes in the global cobalt market that resulted in sharp fluctuations in cobalt metal prices.

Threshold year

After China joined the World Trade Organization in late 2001, China's cobalt industry looked forward to 2002 as a "threshold" year.

"Many [companies] started importing cobalt concentrate to produce chemicals, which resulted in surges in imports and output in the following years," CNIA's Xu said.

Around the time, a number of cobalt refineries were established. The list includes major entities such as Ganzhou Yihao Umicore Industries, a joint venture with investment from Umicore, and Yantai CASH in 2001; Huayou Cobalt in 2002; Jiangsu Cobalt Nickel Metal (KLK) in 2003; Zhejiang Galico Cobalt & Nickel Material, Ningbo COBOT Cobalt & Nickel and Ganzhou Tengyuan Cobalt Industrial in 2004; and Nantong Xinwei Nickel & Cobalt Hightech Development in 2005.

They were just in time to hail the bull run in the cobalt market – cobalt metal prices kept rising to around 900,000 yuan ($144,000) per tonne in the Chinese market.

"The wildest joke or speculation at that time was that the metal would reach 10 million yuan [$1.6 million] per tonne some day," Jerry Shao, president of Galico, said.

Inherent defect

He followed his father, Shao Baixuan, and stepped into the cobalt industry in the 1990s, when the elder Shao was working in the state-owned Material Bureau of Ningbo, a city in Zhejiang province.

'It is meaningless to talk about an industrial chain or consolidation without raw material resources, no matter how big a refinery is'
Ning Yathoi, Hoi Mor Industrial

The Cuban connection

In southern China, Ning Yathoi, chairman of Hoi Mor Industrial, flew to Cuba nine times in 1998 and 1999 as he tried to source cobalt products from there for sale to the Jinchuan Group, China's biggest cobalt producer.

However, his first cobalt product deal resulted in him losing 20 million yuan ($3.2 million).

"Cobalt prices plunged to $7–8 per lb from $17–18 [during the period], and there was nothing we could do but sit and watch the falls, due to the lack of hedging tools," Ning said in his sea-view office in Hong Kong.

As a result, Ning changed his business to work as Jinchuan's import agent for the purchase of cobalt product.

More importantly, the experience prompted him to look upstream and set up the Hong Kong Mining Exchange later on, as "it is meaningless to talk about an industrial chain or consolidation without raw material resources, no matter how big a refinery is", Ning said.

Shao Baixuan was one of the first to import cobalt to China

But the Chinese cobalt industry was born with an inherent defect – a lack of cobalt resources. Refineries have been importing almost all the raw material for production, and many have made great efforts to secure their supplies.

When Jerry Shao visited Africa in 2005, he found it hard to settle down in a hotel room charging $300 per night. "There was no spring in the mattress, and you had to crouch down to get some water for a shower," he recalled.

But he soon found that that was not the hardest part of his visit, as mines there refused to trade concentrate with him, dealing only with European companies. "Some even shouted at us," Shao said.

It was not until 2006 that Huayou and Jiayuan Cobalt went to Africa for investment.

Chen Xuehua, chairman of China's biggest cobalt chemical producer, Huayou, found it needed more than money and time to make the investment successful. "The biggest challenges we met there were culture differences. It is about values," Chen said.

It took Huayou years of work before its African operations ran smoothly, as they put great effort into communicating with local staff, improving employee welfare and helping various local charity projects.

Going upstream

In Hong Kong, Ning Yathoi set up Hong Kong Mining Exchange in 2010.

"Almost all Chinese refineries are processors. It is hard for them to secure raw materials, let alone have any pricing power," Ning said. He advocated that Chinese companies purchase more upstream assets.

> 'Blind expansion in China's cobalt industry has been checked, and some have asked us for help' – *CNIA cobalt official*

One year later, China's biggest cobalt maker, Jinchuan Group, purchased Metorex among other efforts made to secure a stable raw material supply.

As previous crises aided Yin Hua, the 2008 global financial crisis provided good opportunities for new market participants such as Shanghai Greatpower Industry to enter the industry.

"We bought a shipment of cobalt concentrate at the end of 2008 at very low price, as the original buyer broke the deal," Greatpower president Aaron Cao said.

The company was then able to clinch import deals with major miners and imported about 20,000 tonnes of cobalt concentrate in 2009, as a number of Chinese refineries failed to honour purchase contracts in the bleak market.

In 2011, just one year after China became the world's biggest exporter and the second-largest importer of cobalt, its cobalt concentrate imports peaked at 348,926 tonnes, more than eight times the volume imported in 2002 of 41,000 tonnes.

During the same 2002–11 period, the cobalt content of China's cobalt product surged by more than ten times to 37,000 tonnes from 3,500 tonnes, while its consumption of cobalt metal grew to 29,000 tonnes from 5,800 tonnes, mainly thanks to growth in production of battery material, according to the CNIA.

Turning point

A turning point came in 2012, when China's cobalt concentrate imports plunged by 49% to 176,205 tonnes.

Behind the scenes, cobalt prices kept sliding, and many Chinese cobalt market participants had no choice but to be embroiled in a price war.

"If you don't sell [at low prices], you are waiting for death, and if you do sell, you are looking for death," a major cobalt chemical producer said, describing the situation at the time.

Moreover, failing to secure low-priced raw materials, many smelters recorded huge losses and they struggled for bailout.

In early 2011, state-owned China New Era Group bought into Zhejiang-based Qingfeng Cobalt Alloy to become the biggest shareholder. The acquisition kicked off a period of consolidation, which is still continuing.

The next year, KLK decided to sell 51% of its stake to Shenzhen-based GEM, while many others either reduced production or simply halted operations.

"Blind expansion in China's cobalt industry has been checked, and some have asked us for help, as they are looking for potential buyers for their cobalt businesses," a CNIA official said in April 2013.

The "gold rush" has passed for China's cobalt sector, and a few major survivors are expected increasingly to dominate the market in the next few years.

By 2012, output of the top ten producers accounted for 82% of China's total production, the figure having quickly risen from 61% in 2010, according to CNIA data.

The survivors, however, still face a bumpy road ahead in the face of a more consolidated global industry.

The outlook for cobalt

Discussion now concerns whether Chinese smelters should quit metal production and return to being net importers of cobalt metal, or end up as cobalt chemical makers.

"Chinese smelters must quit cobalt metal production. For those with upstream resources in Africa, their costs are much lower, and there are no freight charges at all. These strengths are unbeatable," Greatpower's Cao said.

Greatpower's cobalt metal imports have risen to 100 tonnes per month in 2013, from 20 tonnes per month in 2009. And Cao plans to further increase import volume next year.

Major Chinese cobalt metal smelters are indeed mulling production cuts for 2013, as "it is not viable to make metal here any more", one smelter said.

For cobalt product makers, the availability of stable and reasonably priced raw material will remain a top priority.

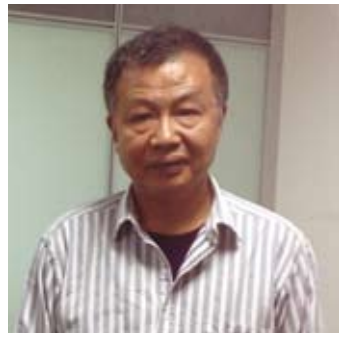
"It is meaningless for Chinese cobalt refineries to just merge with each other, unless they have low-priced and stable raw materials or secure upstream resources," Ning said.

While a few market participants still hope for a rebound or recovery in cobalt metal prices, more are cautious in their outlook.

"I would say, this round of bear market could be the longest ever for cobalt, as it takes time for the market to digest sharp increases in supply," Yin Hua of Shanghai Xiashang said.

"The price of cobalt price won't stabilise until it is too low for miners to keep processing," he added.

Until then, Yin said from his private museum full of ancient ceramics: "I will not buy one single ounce of cobalt [...] and many Chinese cobalt players, especially those without other metal operations, will have to struggle along an extremely rough road."



> 'The price of cobalt won't stabilise until it is too low for miners to keep processing'
> *Yin Hua, Shanghai Xiashang Trading*

Not a trader Walton says Steinweg's explanation of Raffemet's operations has been accepted

MMTA chairman defends Steinweg's right to privacy, invites views on warehouse rules

WASHINGTON
BY MARK BURTON

Minor Metals Trade Assn chairman Roy Walton has invited members to speak up if they feel it necessary for the organisation to review its policies regarding the independence of approved warehouses.

The invitation follows the MMTA's decision to allow warehousing company Steinweg to remain a member, despite its parent company's ownership of Raffemet, after the board unanimously agreed that Raffemet is a service provider.

If a "significant number" of concerns are raised by warehouse users, the board will open the issue for discussion at the MMTA's next board meeting in June, he advised members at the association's annual general meeting, held during its annual conference in Washington on April 25.

At the meeting, one member requested that the MMTA clarified the nature of Raffemet's business, while a second invited Steinweg to do so itself, which was an offer the warehouse company declined and a decision that Walton defended.

"The reason that minor metals traders are comfortable using Steinweg is because its integrity and discretion are assured," he told Metal Bulletin on the sidelines of the conference.

> 'I don't think it's right that we should rely on [Steinweg's] discretion on the one hand, when it comes to the handling of our business, and then not respect its right to privacy regarding its own [business]'
> *Roy Walton, MMTA*

"I don't think it's right that we should rely on [Steinweg's] discretion on the one hand, when it comes to the handling of our business, and then not respect its right to privacy regarding its own [business]," he said.

"I think it's a major development for the maturity of the MMTA that a company such as Steinweg would come to us willingly and openly to explain its business to us in such detail," Walton added.

Executives from Steinweg gave a confidential account of Raffemet's business to Walton and David Brown, chairman of the MMTA's warehouse committee, and in turn that information was provided to the association's board. All board members agreed that Raffemet is a service provider and is not engaged in trading activities.

"This isn't a definition, but a service provider could include the provision of warehouse services, materials handling, freight forwarding, financing and other services on behalf of a customer," Walton said.

Aside from the comments received during the meeting, Walton said he has not witnessed a strong reaction to the decision from other members, and as such he does not expect a further review of the MMTA's longstanding policy that warehouses must not be associated with trading companies.

"If this was the issue that some people are claiming it to be, then my telephone would be glowing," he said.

Members using MMTA warehouses voted overwhelmingly in favour of upholding the policy 18 months ago, after CWT's membership was revoked following its parent firm's acquisition of MRI Trading.

Walton said he welcomed the recent reapplications for membership made by CWT, NEMS and Pacorini, but reiterated that nothing has changed with regards to the MMTA's policy requiring neutrality.

Steinweg: gave a confidential account of Raffemet's business

Expansion of the MMTA

MMTA members also ratified the appointment of Robert Bolton of Aon Risk Solutions as chairman of the insurance taskforce and Volker Mertens of Womet as a committee member, as well as reappointing four existing committee members.

> 'If [Steinweg] was the issue that some people are claiming it to be, then my telephone would be glowing'
> *Roy Walton, MMTA*

About 250 delegates attended the Washington event, 10% more than the turnout in Philadelphia in 2011, which was the first MMTA conference held in the USA.

Walton said the MMTA's target of expanding membership further in the USA as well as in China is progressing well, although at a slower pace than the association would ideally like.

"If you look at the ambitions we had a few years ago, some of those things have to be [tempered] by the market environment. It's no surprise to me that it's been difficult to expand in China, but it's encouraging that we have had very good representation here from the [region]," he told Metal Bulletin.

"The turnout is up 10% from Philadelphia, and I expect there are considerably more North American delegates here than there were two years ago, and fewer Europeans, which is testament to the progress we're making in diversifying our membership," he said.

Problems loom Investors watch energy costs and water issues closely

Miners face barriers in Latin America

SÃO PAULO
BY CAROLINA GUERRA

Latin America is the world's most popular precious and non-ferrous metal exploration destination, attracting 25% of global investment in 2012, according to consultancy firm SNL Metals Economics Group.

The exact amount of mineral resources on the continent remains unknown, but the lack of infrastructure for the mining industry – especially water and energy supplies – when combined with the lack of integration in the region, results in barriers to the progress of local mining projects.

Most Latin American countries have recently suffered problems related to water and energy supplies for their mining industries.

Chile, the world's biggest copper producer, is currently discussing ways to enhance its energy supply structure and avoid future problems fulfilling mining company power demands.

Peru is aiming to increase its copper production, and could eventually surpass Chile as the biggest producer in the world. But there are many challenges to overcome and the industry has faced protests against new projects, such as Newmont's Conga and Southern Copper's Tía Maria, from local communities.

The Brazilian government has recently reduced energy tariffs, which were until recently among the highest in the world. The aluminium industry will largely fail to see any benefit, however, as many energy supply contracts were made in the free market.

Potential in Paraguay

Paraguay has one of the highest electricity capacities per capita in the world and has for years been discussing the development of a local metals industry, prompted by plans for a Rio Tinto aluminium smelter – although no agreement has yet been reached on energy prices over the next decades.

Some of these problems could be solved if integration was stronger between Latin American countries. This is not the case.

Mercosur – the treaty relating to the free circulation of goods and services between Latin America's major players – was signed in 1991 by Argentina, Brazil, Uruguay and Paraguay. Venezuela became a full member of the group in 2012, while Chile, Colombia, Ecuador, Peru and Bolivia act as associate members.

It did not manage to achieve its initial aim of economic union due to differences in members' policies.

Paraguay has been suspended from the group since it impeached its then-president Fernando Lugo in June 2012 – a move considered by other Mercosur members to effectively be a coup d'etat.

Paraguay's newly elected president, Horacio Cartes, has said he is willing to bring the country back into the Mercosur fold, according to local media.

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Chile: Latin American competitors have comparable challenges

Chilean government must focus on rising energy costs – producers

© RIO TINTO

Chile's copper industry will see $104bn invested in next ten years

SÃO PAULO

Chile is expected to receive about $104 billion in mining project investment over the next ten years, of which about $80 billion will go towards copper projects, according to information from the Chilean Copper Commission (Cochilco).

The new projects will increase annual copper production capacity by about 50%, to 8.4 million tpy.

As new projects are developed, the demand for energy will increase – Chilean experts estimate that energy requirements for the country's mining sector are set to rise by 68% over the next decade.

"The main problem is the cost that companies will have to bear for thermic electricity generation – a scenario in which Chile is affected by international prices for fuels, as they are mainly imported", Cochilco's director of studies María Cristina Betancour told Metal Bulletin.

"I don't believe Chile will be without energy for its projects, but the costs for obtaining it will certainly rise. This matter has to become a priority for the government," said René Muga, gm of the Chilean energy producers' association, Generadoras de Chile.

Other problems relate to the scarcity of water for mining in the north of the country, where large projects such as Codelco's Chuquicamata and BHP Billiton's Escondida are located.

"Besides sea water, which is already used in some projects, other methods of water supply are being evaluated," Betancour added.

Investment in Peru delayed by water issues, social conflicts

SÃO PAULO

Social conflicts over water reserves have led to the deferment of more than $7 billion worth of project investment in Peru since last year.

"The problems faced by the [Peruvian] mining sector this year caused a delay of $7.2 billion in investments. For 2013, the same will happen with projects worth $3.6 billion and for 2014, there are four deferred projects to [the value of] $7.1 billion," Pedro Martínez, president of Peru's mining, oil and energy society SNMPE, said in an interview on Peruvian radio at the end of last year.

The epicentre of last year's conflicts was Newmont Mining's Conga project, located in the Peru's Cajamarca region.

Locals fear that the arrival of the mining project will deplete water reserves in the region.

© FLICKR

Conflicts over water reserves, such as those in Cajamarca last year, have led to investment deferral

Construction work was suspended at the site after violent protests led to the deaths of five people.

Peru's president Ollanta Humala replaced six cabinet ministers amid the backlash that followed the fatalities.

Southern Copper's Tía Maria is another project which was halted due to protests by locals.

The company is soon to present a new environmental study and intends to resume work soon.

"This is more of a political problem than a problem of lack of water," the Peruvian commercial executive at Nexxtrade told Metal Bulletin.

"If large projects like Conga, Las Bambas and Tía Maria manage to start producing by 2015 in a peaceful manner, then Peru's copper output will increase considerably."

The sale of the Las Bambas project was a condition imposed by China before it would approve the Xstrata–Glencore merger.

The pace of work remains the same, although some local specialists believe that the idea of selling the project could lead to the companies slowing down the construction process.

Brazil's producers focus upstream – despite lower energy costs

SÃO PAULO

In January 2013, the Brazilian government announced reductions of up to 32% in electricity tariffs for industrial, agricultural and retail customers.

It also announced plans to double the country's installed capacity over the next 15 years from the current 121,000 MW, as well as investments in transmission lines.

At that time, Brazil's energy rate for the industry stood at about 329 Reais ($164) per MWh, compared with 142 Reais per MWh in China, according to a study released by the Industrial Federation of Rio de Janeiro (Firjan).

Despite being affected by high energy rates due to its demand for large quantities of energy in comparison to other fields, Brazil's aluminium industry will be largely untouched by the government's tariff reduction measure.

Many aluminium smelters acquire energy through contracts settled in the the free market, which are not directly affected by the new regulations.

"We believe that the aluminium industry will feel the impact of the electricity tariff reduction indirectly, mainly through reductions in transmission costs. Energy costs may fall about 12% for the industry," Brazilian aluminium association president Adjarma Azevedo told Metal Bulletin.

This scenario is still not enough to make it attractive for companies to increase their aluminium production capacity.

Companies in the country are instead concentrating on increasing exports of alumina – Brazil possesses the biggest alumina plant in the world, owned by Norsk Hydro – and bauxite, production of which is set to increase by 23% to 38 million tpy during the 2011–2016 period, according to figures from the Brazilian mining institute Ibram.

"One of Mercosur's original plans was to promote energy integration among its members ... but that is still a dream," Azevedo added.

SÃO PAULO

Paraguay: energy in excess but no metals industry to use it

© FLICKR

Paraguay has enough energy to support Rio aluminium smelter

Paraguay's new elected president, Horacio Cartes, is supportive of the $4 billion aluminium smelter project planned by Rio Tinto, which had been opposed by the previous president Fernando Lugo.

The country is attractive for aluminium production, due to its partnership with Brazil in the Itaipu hydro-electric dam project at – one of the biggest in the world – and with Argentina in the Yacyreta hydro-electric plant.

Itaipu alone provides 17.3% of all the energy consumed in Brazil and 75.2% of that used by Paraguay.

As the country does not use all of the energy it generates with its hydro-electric plants, it sells the energy surplus to its Latin American partners.

"An aluminium smelter in Paraguay could be interesting for Brazil. The metal trade between both countries would increase and Brazil could see it as an opportunity to increase its bauxite and alumina markets," Brazilian aluminium association president Adjarma Azevedo said.

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Import slowdown Solid waste containing harmful materials is being targeted, heightening inspections, increasing the time it takes for scrap to clear customs

Confusion, port delays as 'Operation Green Fence' hits scrap sales to China

LONDON & SHANGHAI
BY FLEUR RITZEMA & MARTIN RITCHIE

Causing dock delays, diversions, cautious selling and confusion, China's "Operation Green Fence" has been met with alarm by many of the world's scrap traders.

The move by Chinese customs officials to enforce previous regulation more stringently on solid-waste imports has already reduced the flow of scrap aluminium and copper into China and has led to delays at ports.

While many international sellers recognise the need for the operation, the move to implement it has caused confusion among exporters.

> 'If customs go through each cargo with a fine-toothed comb, there will be huge delays'
> *Robert Voss, Voss Intl*

Media reports late last year citing imports of hazardous substances in scrap metal containers are thought to have triggered the more stringent enforcement of previous legislation.

Chinese customs officials had loosely enforced the restrictions until a few weeks ago, according to market sources.

"The feeling is that they [customs officials] have only just started enforcing them because they are unsure of what the new government will tolerate," the source added.

"Although it's thought to be old legislation, some believe it's because of the new government in China. You've got new people in power. They've picked up on laws and heightened inspections," Robert Voss, of UK-based scrap trader Voss International, said.

Active measures

To comply with the rules, scrap shipped from April of this year is being closely scrutinised by officials.

Inspections have already slowed down port operations, and shippers are reporting rising demurrage costs as they pay ports to hold containers for inspection.

"If customs go through each cargo with a fine-toothed comb, there will be huge delays," Voss said.

Particular Chinese ports, including some at Ningbo, are also thought to be enforcing the crackdown more stringently than others, leading some sellers to divert their cargoes, according to Metal Bulletin sources.

The campaign could lead to scrap being turned away from China, raising costs for sellers.

Exporters to China are fine-tuning their systems as a result of the legislation.

"Most of our yards ship to China. We're making sure we have our documentation in place, and that our quality of goods is acceptable," Robert Stein, of USA-based scrap trading company Alter Trading, said.

Confusion reigns

Concerns were raised about the time the import process would take as a result of the crackdown, and about the lack of clarity since it began.

International scrap traders remain uncertain about whether material will be accepted, or turned away.

Operation Green Fence – a crackdown on waste imports by Chinese customs officials – is causing confusion and delays in the country by reducing flow of scrap aluminium and copper into China

What is Operation Green Fence?

'Green Fence' refers to an effort by Chinese customs officials to enforce previous regulations regarding the import of scrap.

China's customs inspections are overseen by the General Administration of Quality Supervision, Inspection and Quarantine, usually known as the AQSIQ.

Operation Green Fence relates to the enforcement of two pieces of regulation, both overseen by the AQSIQ: one from 2003 and one from 2010.

While those regulations created a stir in the scrap trade three years ago, it is thought that the rules were not strictly policed.

Both regulations were intended to strengthen inspection and management of imported waste.

The 2003 regulations introduced the requirement for all overseas companies to be registered and certified to ship to China. It also established the principle that companies would lose their registration if they were found to be shipping substandard material. And shipments were to be inspected by AQSIQ-approved monitors before being sent to China.

In March 2010, the AQSIQ issued new regulations focusing on the way in which scrap shipments were declared and classified, and to clamp down on what it called "price deceit" – ie, the practice of declaring a shipment as one thing, and disguising its actual higher-value content. Or shipping mixed scrap and declaring only the lower-value content. It also restates which materials are banned or restricted, and provides guidance on how materials should be packaged.

In addition to detecting the import of hazardous banned materials, and checking that different types of scrap are declared separately, requirements also include:

- Double-checking whether inbound shipments are in line with approved import quotas.
- Double-checking whether the actual amounts of all outbound processed shipments are in line with actual imported volumes.
- Conducting onsite checks at trading companies.
- Video-taping all onsite checks.

All departments must co-operate to "get support" from local governments for the campaign, and to make sure the operation is given a high profile in the industry.

Local customs administrations have been asked to report the results of their checks by December 15 this year.

"It's just a shame that it's so confusing. You do business in China, then bite your nails. Suddenly, you could have a container of material which you have been happily selling in China for many years that you may have to ship on elsewhere," Voss said.

'Dramatic enhancement of policy regulations on a sudden basis poses high risks for an industry with literally thousands of containers of scrap on the water,' *Robert Stein, Alter Trading*

"Dealers understand the need for countries to have oversight and concern over what is being imported into their countries, but dramatic enhancement of policy regulations on a sudden basis poses high risks for an industry with literally thousands of containers of scrap on the water," Stein said.

"Scrap dealers can prepare material that is suitable to the needs of its customers, but it does come at a price. Most responsible scrap dealers can do anything a consumer needs, with warning," he added.

Some exporters are receiving correspondence almost every day from importers discussing what is acceptable.

The list of allowable material changes frequently, however, sources claimed.

The issues are most evident in the trade of brass, copper and aluminium scrap, according to Metal Bulletin sources.

Effect on imports

China's imports of scrap aluminium and copper fell year-on-year in March as Operation Green Fence exacerbated already weak demand.

Inbound shipments of scrap aluminium stood at 197,355 tonnes in March, down by 10.4% from a year ago, according to customs data released on Monday April 22.

This compared with a monthly average of 154,323 tonnes in January-February.

Imports of scrap copper fell by 19.2% year-on-year to 347,598 tonnes in March, against a monthly average of 340,919 tonnes in the first two months, the data showed.

Chinese reaction

Operation Green Fence has also provoked strong reactions from China's secondary metal importers, fabricators and users, an analyst at information service provider Lingtong said from Foshan, Guangdong.

Solid waste containing harmful materials is being targeted, heightening inspections, and increasing the time it takes for scrap metal to clear customs, he added.

How Operation Green Fence is trending online

LinkedIn users discuss online

"China has had a masterplan for the packaging and recycling industry since November 2007. It sets out quite clearly what the strategy is and the administrative steps to be taken... But China is a big place and these measures can't be suddenly imposed overnight, so each year the various departments responsible have introduced some new tightening of the regulations."

"We received recently a request to delay shipment."

"I was lucky not [to be] entering a large purchase agreement right before Operation Green Fence was enacted, otherwise I'd be having all the material back in my yard."

Spotlight Will scrap be redirected westwards?

LONDON

As China industrialised in the 1990s and 2000s, it began to establish itself as a market economy, absorbing much of the world's copper, brass and aluminium scrap.

With its growing economy, low production costs, ability to offer good prices to exporters and limited legislative pressure compared with the Western world, China became the dominant player on which international scrap prices depended.

Over the years, as China soaked up scrap units, the US reduced its secondary metal focus.

Shift West?

But the dynamics of the scrap trade could be changing, with some arguing that China is now losing its competitive edge in the global market.

"The salary structure in China has increased dramatically, while labour costs in Europe have become relatively cheaper," said Robert Voss of UK-based scrap-trading firm Voss International.

"Factories aren't closing in China, but European consumers are maintaining a certain edge right now," he added.

China's dependence on imports is also likely to wane, due to it generating more scrap domestically in the long-term.

As a country with a developing infrastructure and growing economy, China is now producing huge amounts of its own waste.

Traditionally, the more developed a country becomes, the more it begins to realise – and try to capture – the value of its waste.

As a result, international scrap traders in regions like the USA and Europe have been looking for new export markets, in places like India, Southeast Asia and Brazil.

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Negotiations fail Market participants expecting oversupply and dip in prices for some scrap grades

US Steel's Lake Erie Works lockout could affect scrap market

Union workers have been locked out of US Steel's Lake Erie Works

PITTSBURGH
BY CATHERINE NGAI

The lockout of unionised workers at US Steel's Ontario-based Lake Erie Works will put further pressure on the ferrous scrap market in the region, market participants told Metal Bulletin sister title AMM.

It could also have a trickle-down effect on other major scrap regions, they said.

The Pittsburgh-based steelmaker initiated the lockout of union workers at 9.00EDT on April 28 after labour negotiations between the two sides failed.

Although it is still too early to estimate how long the lockout could last or to what extent the steel mill will be able to continue to operate, scrap market participants predicted the action could leave some material usually sold into the mill looking for new markets.

> 'Plate and structural is plentiful and this could create a glut in other markets' – *scrap supplier*

The company did not respond to requests for comment about its planned scrap purchase programme during the lockout and it has not announced plans to stop producing.

At the beginning of April, the union claimed that the company was teaching non-union workers how to operate the Nanticoke complex's hot-strip mill, indicating that it planned to continue to produce liquid steel to some degree.

Scrap market participants are expecting the raw materials market to feel the lockout's impact in the form of a possible oversupply situation for some grades and expected downward movement in prices.

"I have already been talking to a lot of people and you are going to see plate and structural scrap offered into Detroit or sent to Buffalo, where it can be transloaded and resold into the Pittsburgh market," one scrap supplier to mills in the Ontario region said.

"Plate and structural is plentiful and this could create a glut in other markets."

A New York scrap yard owner agreed that the lockout could result in an oversupply of some grades.

"This definitely has an impact. US Steel is the leading buyer of P&S in the region," he said.

"While it will have a greater effect on the guys in Ontario, western New York will be the second-largest area affected."

UK aluminium scrap prices fall at last

LONDON

UK aluminium scrap prices finally showed a significant downward move on Wednesday May 1, after stifling margins so far this year with high prices because of tight supply.

"This is the first week I have sensed that things are starting to move downwards," a scrap dealer said. "Demand for scrap is down, ingot prices have stopped moving up and should fall soon, and so scrap will go down with them. The [London Metal Exchange] is a further drag on that."

LME aluminium prices fell further last week, settling at $1,928/828.5 per tonne in Wednesday May 2 official session.

Group 1 99% & litho and clean HE9 extrusions both fell to £1,100-1,180 ($1,705-1,829) per tonne from £1,170-1,200 previously, and commercial pure cuttings reached £1,050-1,100 per tonne from £1,070-1,130.

In the commercial grades, commercial cast fell to £1,020-1,060 per tonne from £1,040-1,080; cast wheels slipped to £1,230-1,270 per tonne from £1,230-1,280; and commercial turnings were down to £750-800 per tonne from £770-820.

"This is the point of the year when scrap prices traditionally go down, with no weather issues or anything like that," the scrap dealer said. "Maybe we're just seeing that happen two months later than usual."

LONDON

European stainless scrap price falls on lack of demand, falling nickel values

Stainless scrap prices continued to fall last week, on the back of declining demand and falling nickel prices.

The price of UK domestic 18/8 solids was £950-960 ($1,473-1,489) per tonne on Friday April 26, down from £960-1,000 per tonne the previous week.

Trading was noticeably slower during the week, a market source told Metal Bulletin sister publication Steel First.

No major upstick is expected as the summer slowdown approaches, the source added.

At least one scrap merchant was buying stainless scrap and holding stock in the hope of higher prices to come.

European import 18/8 solids were €1,180-1,200 ($1,543-1,569) per tonne range from €1,180-1,220 per tonne the previous week.

Chrome solids prices remained unchanged week-on-week.

UK domestic 12-13% chrome solids remained at £280-300 per tonne, while 16-17% chrome solids remained at £290-300 per tonne.

NEW YORK

US bulk ferrous scrap export prices soften

US bulk ferrous scrap export prices have dropped significantly as exporters accepted lower bids to secure sales, market participants told Metal Bulletin sister title AMM.

At least four bulk cargoes were sold to Turkey and single cargoes were sold to China and South Korea. Prices dropped more off the West Coast than off the East Coast, according to several market participants.

Turkey, the largest buyer of US ferrous scrap, booked one cargo from a port in Florida, one from a Mid-Atlantic port and one from Puerto Rico, sources said.

The three sales followed a Gulf Coast sale last week which market participants had said would set $375 per tonne ex-East Coast as a price level for negotiations.

The mixed cargo was sold at an average price of $376.50 per tonne cif Turkey for 15,000 tonnes of a 90:10 mix of 1&2 heavy melt and 25,000 tonnes of shredded.

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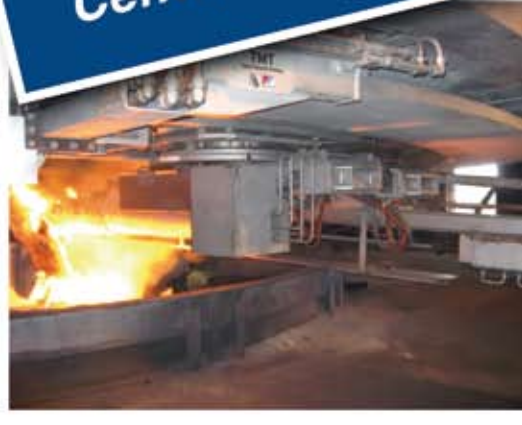

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Managing Directors: Dipl.-Ing. Arno Dienenthal • Dipl.-Ing. Claude Bodeving • Registration No. B 91897

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From the Raj to a technical revolution British-trained geologists found ores that are now valuable exports

How India's ferro-alloys started to flow

Tata's Jamshedpur steel mill today: the mill was founded close to Gorumahisani, Orissa, which is rich in iron ore, manganese and chromite…

KOLKATA
BY KUNAL BOSE

The foundations of India's emergence as one of the world's leading minerals producing nations were laid in the 1830s, when the East India Company first formed a coal committee.

This move was followed by the establishment of committees to discover other natural resources in different parts of the subcontinent.

Minerals exploration received a major boost when the British colonial government established the Geological Survey of India (GSI) in 1851, and brought many leading geologists over from the UK. Seminal work was carried out by geologists such as DH Williams and Thomas Oldham in the early years.

> The abolition of licences in 1991-92 created conditions for the rapid growth of ferro-alloys capacity in India

More importantly, some farsighted Britons started to train Indians in geological science by introducing courses in geology at the leading Indian universities of Calcutta, Madras and Bombay.

British and Indian geologists went on to find iron ore, manganese ore and chromite – and in large amounts.

The first graded Indian officer of the GSI was Pramatha Nath Bose (1855-1934), who trained in geology in the UK and went on to become a shining example of what a local could achieve under colonial rule.

Bose became an adviser to businessman Jamsetji Nusserwanji Tata, who was planning to build a mill at Bhilai (now in Chattisgarh state), based on the iron ore deposits that had been found in the Dalli Rajhara hills. Bose told Tata that it would make better economic sense to locate the mill closer to Gorumahisani in Orissa, where the geologist had discovered large deposits of high-quality iron ore.

Tata went along with Bose's advice and shifted the plant to Jamshedpur in Jharkhand state. The area was rich in iron ore, coal, manganese ore, chromite and dolomite, and this led to Tata's raw materials division owning enviable quantities of resources, including manganese ore and chromite, principally in Orissa.

As a pioneer in the development of India's steel industry, Tata Steel played a major role in discovering the large chromite deposits in the Sukinda region of Orissa in 1949.

But, decades before that, Bose had found manganese ore in the Jabalpur and Balaghat districts of Madhya Pradesh, while University of Edinburgh-educated Indian geologist PN Dutta had discovered the ore in Bhandara and the Chindwara valley.

According to recent reports from the Indian Bureau of Mines, India's manganese ore resources come to 430 million tonnes, including reserves of 142 million tonnes. Orissa alone contains 40% of the resources. Orissa also contains 93% of the country's 203 million tonnes of chromite, including reserves of 54 million tonnes.

For these reasons, the hub of India's ferro-alloys industry lies in Orissa. Leases for the area's chromite deposits are overwhelmingly held by the state government-owned Orissa Mining Corp (OMC). Ferro-alloys units without mine linkages depend largely on OMC for their supplies of chrome ore.

Tata Steel has the second-largest leasehold ownership of chromite deposits in Orissa, followed by other integrated ferro-alloys producers, such as IMFA and FACOR.

Ferro-alloys production

According to a research paper from the joint plant committee of India's steel ministry, "The genesis of production of ferro-alloys in India can be traced to 1917, when IISCO Steel Plant [the erstwhile Bengal Iron & Steel Co] followed by Tata Steel… in 1919 began production of ferro-manganese."

At that time, the use of high grades of ore, reductants and fluxes compensated for India's expensively inefficient ferro-alloys smelting technology. The mid-1960s marked a watershed for Indian ferro-alloys, when the government, wanting foreign exchange to finance its imports, decided to award licences to new units on the condition that besides meeting growing domestic requirements they used half their capacity for exports.

…as suggested by PN Bose

The 1980s saw product diversification in ferro-alloys, the assimilation of advanced technologies and the creation of some export-oriented units.

When licences were abolished in 1991-92 as part of the country's liberalisation programme, conditions for the rapid growth of ferro-alloys capacity in many parts of the country were created.

India's total potential output today is 3.16 million tpy of manganese alloys, 250,000 tpy of ferro-silicon, 1.69 million tpy of chrome alloys, and 5,000 tpy of noble ferro-alloys.

India's economic Planning Commission wants the country to gradually shift from exporting chrome ore and concentrate to the production of value-added finished ferro-alloys.

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Switched on Rohit Ferro-Tech sets up captive power plants and secures coal links to ease power pressure

Power supply, domestic demand key for Indian ferro-alloys producers – Patni

'Where grids have a high cost of power, we have set up our own captive power plants'
Ankit Patni, Rohit

LONDON
BY JANIE DAVIES

As Indian ferro-alloys producers struggle to remain profitable amid rising power costs, Rohit Ferro-Tech has avoided production cuts by setting up captive power plants and investing in the coal supply chain, joint md Ankit Patni told Metal Bulletin.

Ferro-alloys producers in India have been cutting production as power shortages push up power prices, particularly in Andhra Pradesh province.

The most recent price hike in the province was implemented on April 1, prompting warnings from some manganese alloy suppliers that further shutdowns were likely.

"We have not resorted to production or job cuts due to rising power costs. Instead, where grids have a high cost of power, we have set up our own captive power plants," Patni told Metal Bulletin.

"Our company will remain less affected, due to continuous investments in setting up our own captive power plants," he said.

Rohit has also secured coal linkages from the government and invested in coal mines in Indonesia, he added.

Patni estimates overall ferro-alloys capacity utilisation in India has fallen to just 60% due to power costs, but he sees relief in the near-term if demand from the steel industry strengthens and the government introduces more favourable energy policies.

"In general in India, there have been huge cuts in production due to high power costs and also due to scarcity of power, especially in Andhra Pradesh. I believe overall capacities in India are being utilised at only 60%," he said.

"We are all in active discussion with the government and expect the government to come up with more attractive industrial policies by announcing power subsidies, lower tariffs and a waiver of electricity duty, like in the past. Since this has happened previously, it has a realistic chance," he said.

India's steel consumption has been slower than expected in recent years and strong domestic demand for ferro-alloys is now essential for producer success, Patni said, adding that demand from the stainless steel sector is now improving, but demand from carbon steel will take longer to grow.

Rising Indian SiMn exports replace missing Chinese units

LONDON

Silico-manganese exports from India rose to almost 1 million tonnes in 2012, compared with less than 50,000 tonnes in 2002, while Chinese exports fell after 2007.

Producers in India positioned themselves to replace units lost by the fall in Chinese exports, Amy Bennett, principal consultant at Metal Bulletin Research, said.

"The main driver for the sharp increase in Indian silico-manganese exports over the past few years has been the concurrent drop off in Chinese exports of silico-manganese over the period," Bennett said.

"Indian producers have jumped on the opportunity to replace China as the world's largest exporter of silico-manganese," she explained.

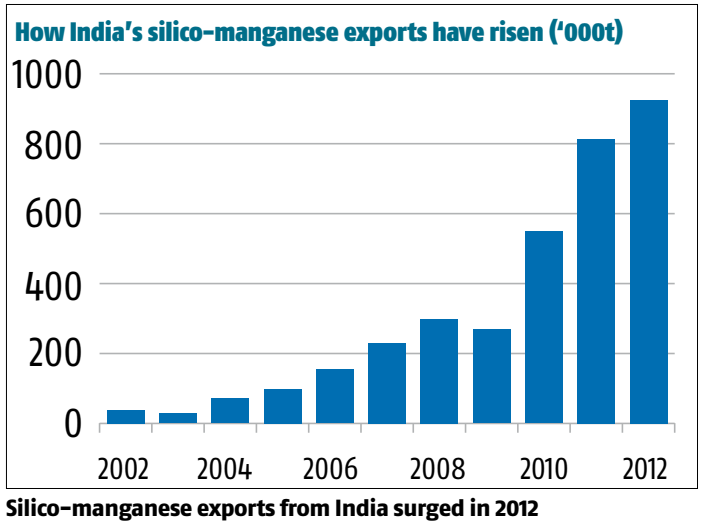
Chinese exports peaked at 844,187 tonnes in 2007 as Indian exports rose to 230,684 tonnes from 154,170 tonnes the previous year, according to Metal Bulletin Research.

Chinese exports had fallen to 3,635 tonnes and Indian exports had reached 925,256 tonnes in 2012.

Bennett believes that, by building captive power plants to mitigate high production costs, Indian producers will hold onto their position.

"Indian ferro-alloy producers have historically been swing suppliers to the market, increasing production and exports in periods of high ferro-alloy prices, and slashing output when prices decline, reflecting their elevated position on ferro-alloy production cost curves due to high electricity costs," Bennett said.

"The rapid ramp-up in silico-manganese exports in recent years, however, indicates that silico-manganese producers are determined to maintain their presence in the export market," she said.



Silico-manganese exports from India surged in 2012

"Indian ferro-alloy producers have been seeking to reduce their dependence on the national power grid, with numerous producers now possessing captive power plants which will help to insulate them from higher power costs in the wider market," she added.

South African manganese ore exports to India rose by 62% year-on-year in 2012. Australian manganese ore exports to India rose by 48% over the same period.

Quick mix Ferrolegeringar's new product is rousing interest as the market gets used to FeW QM

The shifting shape of the FeW industry

LONDON
BY CLAIRE HACK

There are certain accepted facts within the ferro-tungsten industry: the higher the tungsten content of the alloy, the higher its melting point and the more difficult it is to use; price is based on tungsten content; and material produced from scrap generates an inferior alloy.

It is perhaps to be expected, therefore, that the emergence of a new form of the alloy that contradicts this has caused some confusion and consternation among some market participants.

The new product, known as "quick mix" ferro-tungsten (FeW QM), is being produced by Minpro – a Swedish alloys company – and contains 80-90% tungsten, as well as 1% carbon, 1% silicon and 1% cobalt.

'It must have a different pricing structure on its production to [traditional] ferro-tungsten, which is made from concentrate'
Trader

These levels are considerably different from the specifications supplied by the Minor Metals Trade Assn, which stipulates 0.04% carbon, and 0.08% silicon. Typical cobalt content is usually 0.5%.

This has sparked disquiet and alarm in the market, as it has yet to get to grips with a new form of the alloy, which is produced in a very different way to traditional material.

"Everybody is inviting offers based on the standard specification of 78-82% [tungsten]," one trader said.

"I know some mills are technically in a position to digest the higher tungsten material, but even they don't consider it to be regular quality."

First impressions, explanations

"The melting point is so high that most people don't want it. You cannot compare it to ferro-tungsten. It's sold as a different product," a second trader said.

Another trader suggested the different structure and levels of impurities must mean only certain steel producers would be at all interested in it.

"It must have a different pricing structure on its production to [traditional] ferro-tungsten, which is made from concentrate. Presumably, it's a cheaper product," the third trader said.

Ferro-alloys company Ferrolegeringar and trader SMT (Specialty Metals Trading), majority shareholders in Minpro and responsible for the marketing of the product, have warned market participants not to be confused by the differing specifications however – and not to treat it as a completely different product.

'First of all, it is ferro-tungsten. It's not a different product – it's a better product. There are actually significantly lower impurities'
Dag Sjöberg , Ferrolegeringar and Minpro

"First of all, it is ferro-tungsten. It's not a different product – it's a better product. There are actually significantly lower impurities," Dag Sjöberg, md of both Ferrolegeringar and Minpro, told Metal Bulletin.

"Also, ferro-tungsten doesn't actually melt – it dissolves – and quick mix dissolves more quickly. We believe it's superior. That there is a higher melting point because there's more tungsten is an assumption people have [wrongly] made," he added.

While it is true to say the FeW QM material has been sold at a lower price than traditional ferro-tungsten, produced from concentrates, this was only an introductory offer, aimed at enticing steel producers to try it out.

Furthermore, those selling the material have not included the discounted price among their usual quotes for the alloy.

"It's not being reported, because [with the discount], it sells at $37.50 per kg," a fourth source said.

Price recovery

Metal Bulletin's in-warehouse Rotterdam quotation slipped as low as $38.90 per kg earlier in the year, but this was linked to poor consumer demand and a period of oversupply.

The quotation stood at $41.65-44 on April 26 per kg, after a number of German steel mills returned to the market for several truckloads in April and a fall in supply – and this is roughly where the price for the new form of ferro-tungsten should be, Sjöberg said.

Making quick-mix ferro-tungsten

LONDON

Quick mix ferro-tungsten, often abbreviated to FeW QM, is made using different grades of heavy melting steel scrap.

There is no tungsten ore in the process, meaning Minpro, the company that produces the material, is not dependent on China.

The tungsten content of the alloy can be adjusted to customers' needs, ranging from similar levels to traditional ferro-tungsten, to more than 90%.

It is possible to source 100% of scrap from Western markets, according to Ferrolegeringar and SMT, who have majority ownership of Minpro and are responsible for the marketing of FeW QM.

They have also issued a guarantee that the alloy is produced from 100% non-conflict products, from known user sources.

Produced in Sweden, the process abides by all the relevant regulations and environmental laws, the two companies added.

It was developed with co-operation from consumers in Europe, some of whom are now 100% users of FeW QM, the two companies said.

Ferrolegeringar and SMT conceded that the product is different to standard grade ferro-tungsten, which is produced by reduction of tungsten ore and concentrates, but have stressed it is possible to use it in exactly the same way as the traditional alloy.

The main point of confusion, the two companies said, is that the high melting point of tungsten is not a factor in the use of FeW QM, despite the higher content of the metal in the alloy.

Importantly, they said, ferro-tungsten does not technically melt when used in steel production, but rather it dissolves. ›

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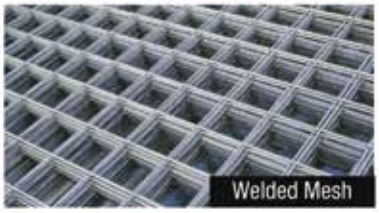
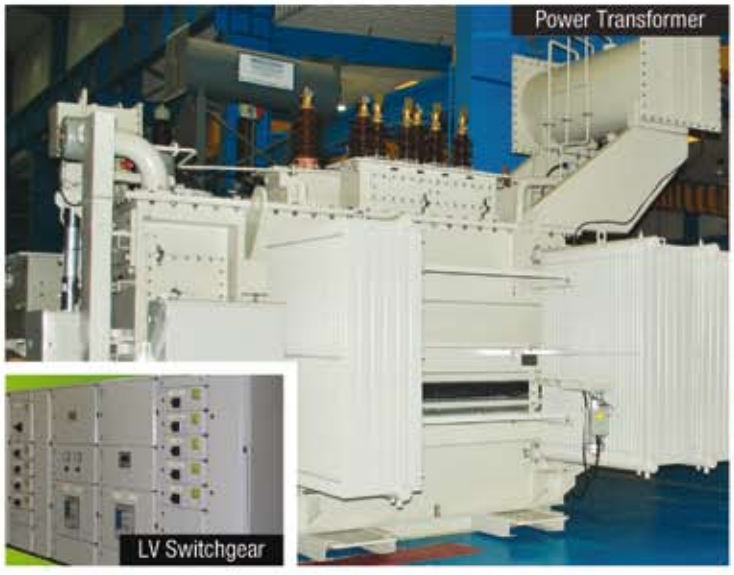
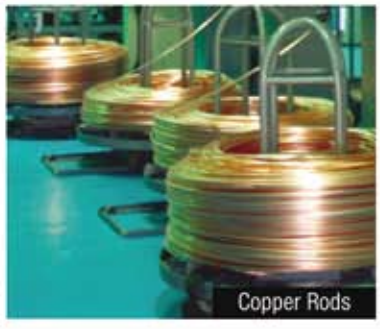
Steel Sector



Power Sector





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Head Office

11th Floor, Falcon Tower, Al Nasr Street
P.O.Box: 44903, Abu Dhabi, U.A.E.

Tel: +971 2 6318044
Fax: +971 2 6318007

Email: anie98@eim.ae
www.anieuae.com

› Standard ferro-tungsten lump takes longer to do so, according to SMT and Ferrolegeringar, as it is denser and reacts differently to FeW QM – so called because it "mixes quickly" during steel production.

The density of FeW QM pellets, on the other hand, is closer to that of steel, and the dissolution process is much faster; it is distributed evenly through the melt, with no risk of "undesired reactions and clogging", the two companies said.

FeW QM contains 80-90% tungsten, compared with the standard level of 78-82%. Impurities including aluminium, silicon, and titanium participate as oxide and not in solution, meaning they move directly to slag after addition to steel.

Importantly, the behaviour of impurities should also be compared with other forms of ferro-tungsten with 85-90% tungsten content, rather than directly with standard grade material, which has a lower tungsten content.

Levels of impurities in FeW QM are low compared with other products with similar tungsten levels, as these are made using ore, which contains more phosphorus, sulphur, manganese, copper, tin, arsenic, and bismuth.

The process for producing material from ore is also more energy intensive, and requires expensive reducing agents.

For large furnace users, this does not present a problem, but for smaller customers using small furnaces, it is much more difficult to remove these elements.

Ferrolegeringar and SMT have said the composition and properties of FeW QM have been approved by customers, and the high tungsten content gives them a "competitive edge".

They have also claimed that FeW QM has less of an environmental impact than traditional ferro-tungsten production, as there is no need for mining, and no use of reduction agents.

It is almost 100% free from phosphorus, sulphur, manganese, copper, arsenic and bismuth, but because of the nature of heavy melting scrap, some cobalt units are carried into the final product.

Instead of conventional melting and casting, a powder metallurgical route is used, leading to a porous structure, made up of very fine agglomerates, SMT and Ferrolegeringar said.

The lower density means a lower sinking speed in the melt, which reduces the risk of unwanted reactions between the tungsten alloy and the bottom lining of the furnace.

FeW QM specification

- W 80-90%
- Fe 5-15%
- C max 1.0% (typically 0.5%)
- Si max 1.0%
- S max 0.03% (typically 0.02%)
- Ti max 0.5% (typically 0.20%)
- P max 0.02% (typically 0.01%)
- Co max 1.0% (typically 0.50%)
- Al max 1.0% (typically 0.30%)
- Size: pellets, 3-10mm; briquette, 40mm
- Packing: drums or big bags

Used in the production of:

- High-speed steels
- Tool steels
- Heat resistant steels
- Stainless steels
- Spring steels
- Magnetic steels

Marketing quick-mix ferro-tungsten

LONDON

Ferrolegeringar's new "quick mix" ferro-tungsten (FeW QM) is selling well, according to Dag Sjöberg, md of both Ferrolegeringar and Minpro, which produces the alloy.

There is no confusion among Minpro's customers over whether they can use it in the same way as traditional ferro-tungsten, he said.

"We've not been out on the market, creating a mess – we're just carrying on, building up our market share. More or less everybody can use quick mix," Sjöberg told Metal Bulletin.

"We understand the confusion and the excitement from [the market], as there has been no development in ferro alloy processes and products during the last five decades."

The product comes in two forms – pellets and briquettes – which sell at marginally different prices, as briquettes are slightly more expensive to produce, Sjöberg said.

"Depending on your feeding system, you will either prefer pellets or briquettes, but it goes into the exact same applications," he said.

"Last year, when we only sold a couple of hundred tonnes, no one noticed. Customers are now getting used to it."

Confusion, hostility

If FeW QM takes off in the way the company hopes it will, this could mean an entirely new phase in the history of the alloy, which was originally developed by Ferrolegeringar in the 1930s.

It holds the patent in Europe, the USA, Japan, China and Vietnam, but if production is licensed to other companies, FeW QM could eventually replace traditional ferro-tungsten – although this is still some way off.

There has, however, been a certain amount of hesitation and even hostility towards the new product, and ferro-tungsten producer Vietnam Youngsun has been particularly vocal.

"It has recently become clear that there are two different types of ferro-tungsten products of differing quality on the European market, which have been produced by different manufacturing processes," Sun Yuan Long, gm of Vietnam Youngsun, said.

He maintains that the higher quality product is made using the "Take Tiefa" method, which uses tungsten concentrate, rather than tungsten scrap, to produce the alloy known as FeW 80-C.

> 'We've not been out on the market, creating a mess – we're just carrying on, building up our market share. More or less everybody can use quick mix'
> *Dag Sjöberg, Ferrolegeringar, Minpro*

"Some Chinese companies also use the [Take Tiefa] method, but because Chinese exports are currently restricted, Vietnam Youngsun is, in practice, the only current world producer who can make the FeW 80-C standard product," Sun said.

He is among those who have called for a separate price for FeW QM product lines from traditional ferro-tungsten, and has even encouraged traders to consider having their shipments assayed.

It is important to note, meanwhile, that there has never been any suggestion that FeW QM has been sold as traditionally produced ferro-tungsten, either intentionally or unintentionally.

Sun has said, however, that FeW QM is the inferior product as it is made from scrap, and that its presence on the European market is to blame for the recent lower prices for the alloy.

Sjöberg argued, on the other hand, that FeW QM is neither inferior in quality nor responsible for the fall in prices, and that material produced from scrap may only be deemed to be of lower quality if the production process is not properly controlled.

"There is some ferro-tungsten being produced in China where they mix scrap with ore. This sometimes leads to material with higher impurity levels if they do not control the production well," Sjöberg said.

Forecast High mill stocks, combined with 1.56m tpy of new capacity in China will squeeze FeCr prices

High-carbon ferro-chrome stares at new lows, Metal Bulletin poll reveals

SHANGHAI

High inventory levels, price cuts from steel mills and the onset of the monsoon season are likely to weigh on ferro-chrome prices in China this year.

In a straw poll of buyers and sellers in China conducted by Metal Bulletin, 45% of the respondents said prices will fall to 6,700-6,800 yuan per tonne (81-83 cents per lb).

The level is well below last year's high of 8,000 yuan per tonne and far below Metal Bulletin's charge chrome index cif Shanghai of 92 cents per lb on Friday April 19.

"Judging from the steel market in the past months, inventories are too high to support prices, so mills have no way but to push ferro-alloys prices down to control costs. The market is weaker than expected," an analyst in Beijing said.

Prices stood at 7,000-7,100 yuan per tonne on Friday April 19.

Chinese prices decoupled from the international market in March, when major stainless steel makers began to slash purchase prices for ferro-chrome.

"This year's bottom will arrive soon [...]. It may be after stainless steel mills announce May prices," a mill source from Shanghai said.

"Ferro-chrome stocks at major stainless steel mills are not low, so they will surely cut prices for May," a major trader from Beijing said, forecasting Taigang Stainless's May purchase price to be at least 100 yuan lower than April levels.

Taigang Stainless is China's biggest stainless steel producer.

On Friday April 26, Taigang postponed its May tender for the purchase of ferro-chrome, with some market participants saying the mill may not buy at all in the next month as it has enough inventory.

It may cut prices by 150-200 yuan to about 6,800 yuan per tonne, which is very close to production cost, smelters from Hunan and Sichuan said.

Low purchase prices have affected ferro-chrome this year and many downstream consumers are expecting more losses on poor orders for end products.

New ferro-chrome capacity scheduled to come on-line this year

Company	New capacity	Place	Scheduled time
Shanxi Taigang Wanbang	300,000 tpy	Shanxi	2013, October
Inner Mongolia Mintal	600,000 tpy	Inner Mongolia	2013, July
Shanxi Jiang County Minmetal	130,000 tpy	Shanxi	The end of 2013
Sichuan Kehan	165,000 tpy	Sichuan	2013, October
Leshan Xinhe electricity	165,000 tpy	Sichuan	2013
Inner Mongolia Yili Metallurgy	200,000 tpy	Inner Mongolia	The end of 2013
Baosteel Desheng Nickel	600,000 tpy	Fujian	Delayed, originally planned for the end of 2013

Sluggish steel market will keep Chinese Mn alloys prices low

SHANGHAI

Market participants believe that 2013 will be another difficult year for the Chinese manganese alloys sector, as a result of lacklustre demand from the steel industry and resistance to price cuts from upstream miners.

Chinese steel prices have fallen for three consecutive months, due to stricter property market regulations, slow economic growth, oversupply in the market and high inventories.

Hot rolled coil (HRC) prices have fallen by about 13% from their high point this year – according to pricing from Metal Bulletin sister publication Steel First – and they are expected to move further down due to slow end-user consumption.

Steel mills have been cutting manganese alloy prices from the beginning of the year, in an attempt to reduce their losses.

Silico-manganese prices from the country's largest steel mill, Hebei Iron & Steel, have dropped by more than 3% since January and are likely to continue to fall in May.

This left alloy smelters in an awkward position, as manganese ore prices rose in the same period.

So far this year, Metal Bulletin's index for 44% manganese ore cif Shanghai has gained 11.1%, reaching $5.81 per mtu on April 19, while the Metal Bulletin index of 38% manganese ore fob Port Elizabeth has climbed 6.5% to stand at $4.42 per mtu on April 19.

"Overseas manganese ore miners joined to lift offers from March 2012 onwards, due to cost pressures. I believe their profit situation should now have improved a lot," an analyst from Shanghai said.

SHANGHAI

Price rises will be difficult for Chinese FeSi in 2013

Chinese ferro-silicon prices started to rally in October 2012 thanks to improved demand and insufficient supply, with prices up almost 10% by February 2013.

Given the weaker-than-expected performance by the steel industry, market participants worry that it will be hard to increase ferro-silicon prices much this year.

"Ferro-silicon market prices softened after steel producers started to cut prices in March. Now it seems the market is not as strong as we expected," an official from Erdos Metallurgy Group (EMG) told Metal Bulletin.

"I guess this year will be similar to 2012, from the first-quarter performance of manufacturing, engineering equipment, real estate, etc. Steel consumption is very weak but inventories are high," the official added.

Most respondents to a Metal Bulletin survey said that 2013's lowest prices will be seen in May.

"Market sentiment is not optimistic, with the current overall fall in prices of ferro-alloys and other commodities. Steel mills will be sure to further cut their raw materials prices to control costs," a source at a Ningxia-based smelter said.

China's steel mills will start their May restocking soon, with most feeling that prices will fall by a further 100 yuan ($16) per tonne compared with April.

April prices from Hebei Iron & Steel, China's largest steel mill were 6,500-6,550 yuan ($1,042-1,050) per tonne, including delivery and payment in the form of an acceptance draft.

Prices in the spot market are expected to fall to 5,800-5,900 yuan per tonne after the steel mills' announcement.

Fighting back Russian producer seeks recovery strategy after net debt triples

Mechel needs higher coal prices, not asset sales, analysts say

MOSCOW
BY NADIA POPOVA

Igor Zyuzin, owner of Russian coking coal and steel producer Mechel, looked stressed and worn-out when talking at a forum organised by one of the company's largest lenders in mid-April.

"You know why I am here," Zyuzin, also the company's chairman, jokingly told a Sberbank-organised Russia Forum panel discussing the development of Siberia and the Russian Far East, where most of Mechel's mining business is located.

The New York-listed miner's net debt has almost tripled in the past few years, to $9.1 billion at the end of 2012 from $3.2 billion as of the 2007 close, as the company went on a shopping spree to acquire coal and steelmaking assets across the USA, Europe and the CIS and to set up a network of service and distribution centres.

Mechel enjoyed some of the highest profitability levels in the Russian metals and mining universe when prices for coking coal were flying high.

But the debt-laden company started to feel less confident when the markets soured, and analysts say its recovery now depends on the markets improving.

"The only thing that can help Mechel is higher coking coal prices," said Oleg Petropavlovskiy, an analyst with Russian investment bank BCS. "Otherwise, it will continue stagnating."

Steep dive

The global market saw a steep dive in prices in 2012 on high supply and shrinking demand. The benchmark hard coking coal price plunged to $170 per tonne fob Australia in the fourth quarter, compared with the $235 agreed for the first quarter of the year.

> 'The only thing that can help Mechel is higher coking prices. Otherwise, stagnation will continue'
> *Analyst, BCS bank*

Mechel's Ebitda (earnings before interest, taxes, depreciation and amortisation) margin , a key indicator of profitability, slipped to 11.8% last year, from 24.8% in 2007.

In September, the company announced it was to put a number of its assets up for sale, and was also open to selling as much as 25% of its mining division to a strategic investor.

Among the assets up for sale were Mechel's five mills in Romania, the Donetsk electro-metallurgical plant in Ukraine, its Nemunas facility in Lithuania, the Invicta merchant bar plant in the UK, the Voskhod mining plant in Kazakhstan, and the Tikhvin ferro-alloy plant and Southern Urals nickel plant in Russia.

However, with the market turning sour and the quality of some assets poor, Mechel has so far finalised the sale of just two assets from a lengthy list.

Its five loss-making Romanian steel mills were bought by a local company for a total of 230 new lei ($69) in February.

It also sold its power station in Bulgaria, Toplofikatsia Rousse EAD (TPP Rousse), to a local power company for €27.7 million ($36 million) late last year.

The company said earlier that it plans to dispose of all of the assets put up for sale before mid-2013 but, with about two months left, that target looks increasingly unlikely to achieve.

Domestic market

Another blow may come from the domestic market, where Mechel is a major producer of long products.

The CIS long steel universe is bracing itself for a huge shake-up that will reverberate beyond the region in the next two years, following the launch of several new mini-mills in Russia this year.

The increased capacity will unleash tough price competition in Russia and squeeze out some imports, but is also likely to push domestic prices lower, market participants have said.

Mechel has shown the market its eagerness to fight its problems as it slashed its 2013 capex to about $400 million from the $1.2 billion initially planned.

The only two projects it will continue to invest in this year are the construction of its universal rolling mill in Chelyabinsk and the development of the Elga coal deposit in eastern Siberia.

© MECHEL

Most of Mechel's mining is located in Russia's Far East and Siberia

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Rebar profits squeezed Scrap supplies from Russia, Ukraine dwindle, could disappear in few years – DCUD

Scrap costs force Turkish mills to cut output

BURSA
BY CEM TURKEN

The narrowing gap between the price of finished steel and feedstock scrap has led to production cuts at Turkish mills, Ugur Dalbeler, ceo of long steel producer Colakoglu, told Metal Bulletin sister title Steel First.

In turn, this has triggered a reduction in scrap imports, he said. And he expects the situation to continue for a while.

Over the past six months, the average spread between imported scrap to Turkey and the domestic rebar price was in a range of $215-228 per tonne, according to Steel First data.

This is lower than over the same October-April six-month period in 2011-2012 when the average spread was $225-236 per tonne.

Scrap imports to Turkey have slowed on the back of falling steel production in the country, Veysel Yayan, general secretary of Turkish Iron and Steel Producers' Assn (DCUD) said.

> 'Scrap prices are strong compared to iron ore. This [should] help scrap prices go down'
> *Veysel Yayan, DCUD*

However, Yayan expects mill margins to improve.

"Scrap prices are strong compared to iron ore. This [should] help scrap prices go down," Yayan said.

The difference between the price of scrap and finished steel has narrowed rapidly.

"We expect this to [widen] back to levels [that will] support the industrial operations."

The difference between scrap and rebar should be at minimum $200-210 per tonne for mills to make a profit on finished steel, Yayan added.

Turkish crude steel production fell by 5.9% year-on-year in the first three months of the year.

This started with 6.5% year-on-year fall in January and went to a 4.6% fall in March.

Turkish scrap-based steel production will increase when scrap prices ease, according to DCUD's Yayan

The main reason for the fall in crude steel production was the 10.7% year-on-year drop in electric arc furnace-based steel production in the first three months of the year.

Integrated mills increased their steel output by 7.8% year-on-year in the same period, Yayan said.

"Therefore, we expect Turkish scrap consumption and scrap-based production to increase when the price of scrap comes to reasonable levels," Yayan said.

Yayan expects steel production to increase through April and May, and to exceed 2012 production levels.

"Therefore, the scrap imports will recover," he said.

Yayan estimates that capacity utilisation rates in Turkey will increase to 75-76% in the second half of 2013 from the current 73%.

Drop in use of Russian scrap

Scrap supplies from Russia and Ukraine are falling and could disappear completely in the next three to four years, Yayan said.

Turkey's scrap imports from Russia fell to 77,639 tonnes in February 2013 down from 273,023 tonnes in December 2012 and 101,713 tonnes in January 2013, according to data from the Turkish Statistical Institute (TUIK).

But Yayan does not think that this will have a negative impact on the Turkish market. "We predominantly import [scrap] from the USA and Europe. This is [will] continue," he said.

Dalbeler believes any shortfall in Black Sea supplies of scrap will be made up by supplies from Southern Europe where scrap consumption has dropped as a result of the financial crisis. "Some of our former competitors have become our sources [for scrap], such as Italy and Spain," Dalbeler said.

Weakening demand

Weakening demand in Turkey's export markets has put downward pressure on finished steel prices, causing mill profits to fall, according to Dalbeler.

He said protectionist moves in the Middle East and North Africa (Mena), and China's strong competitiveness in East Asia were the cause of a slowdown in Turkish rebar exports, leading to mills reducing continuous production.

Instead, mills have focused on reducing costs, including cutting production at hours with higher energy costs.

Russian mills have begun to supply steel into the Turkish market, which has also put pressure on the price of finished steel in Turkey, Dalbeler said.

And Russian government incentives have allowed the country's steel producers to export to Turkey, he added.

However, Yayan still believes Turkish domestic steel demand will increase in the second half of the year, as a result of urban transformation projects.

The Turkish government has reduced the price of credit to encourage infrastructure projects, according to Yayan.

Weak demand in Europe is expected to continue in the rest of the year. But Yayan hopes steel import restrictions to Mena will be removed and sees potential in the Middle East's more troubled zones.

"We hope the protectionist movements from Egypt are removed," he said. "Our trade with Israel was good [in 2012] although our political relations were not. We expect our trade to be better as our political relations get better," Yayan added.

He also expects trade with Iraq to strengthen and is optimistic about Syria.

"If Syria recovers from its situation, it will become a rebuilt country with contributions from Turkey," Yayan said.

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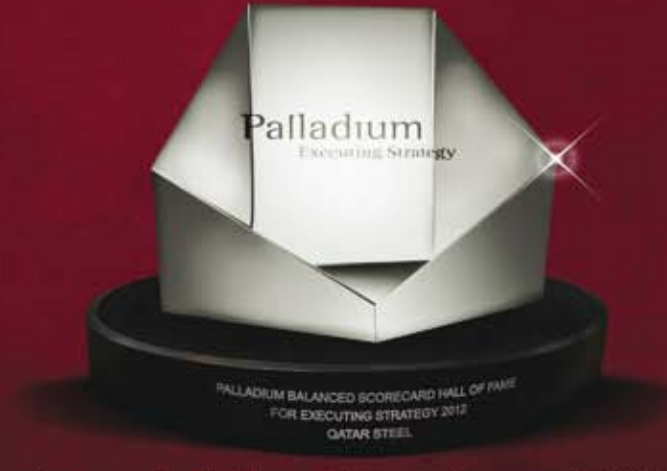

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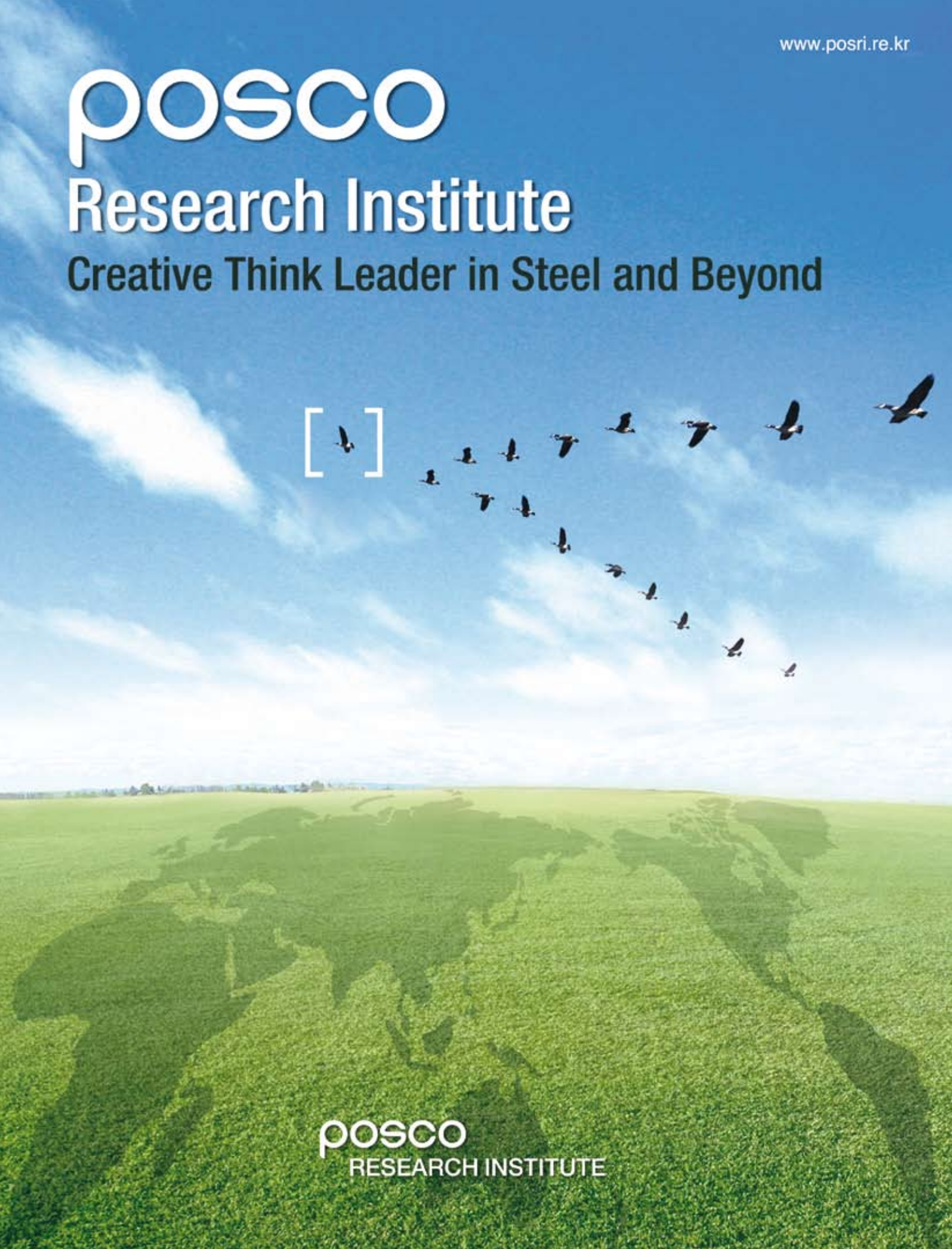

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Asia

Indonesia may review the anti-dumping duties recently imposed on imports of cold rolled coil (CRC) from Japan and other countries, an industry source told Metal Bulletin sister title Steel First on April 30. The Indonesian government is asking state-owned steel producer **Krakatau Steel** to show more proof that exports of CRC to the country, from Japan in particular, had caused material injury to domestic producers, the source said. Krakatau Steel had not responded at the time of publication. Indonesia imports about 30% of its CRC requirements from overseas, and Japan is the largest source of supply.

JFE Steel Corp is looking to slash costs by ¥100 billion ($1 billion) in the current fiscal year, with a focus on reducing raw material expenses. "About 70% of our planned savings for this year will come from reducing costs in our upstream operations, and will include a combination of modernising old equipment for higher productivity and use of lower-grade coal and iron ore," a company official told Steel First. The company has earmarked ¥200 billion in capital spending in the fiscal year 2013/14, much of it for upgrading its facilities and installing new equipment for pulverising, transporting and injecting low-grade coal at its eight Japanese blast furnaces.

Latin America

Brazilian iron ore miner **MMX** has delayed the commissioning of its expansion at Serra Azul, following a revision of its business plan. The start-up is now expected to take place in the second half of 2015 – a delay of a year over the company's previous estimate, ceo Carlos Gonzalez said during a call for analysts on April 30. Iron ore output capacity at Serra Azul, in the country's south-eastern Minas Gerais state, will be increased from 8.6 million tpy to 29 million tpy, after an investment of 4.8 billion Reais ($2.4 billion). Gonzalez said in March that MMX was reviewing its business plan to minimise its investment risks. This revision includes the expansion at Serra Azul, as well the 10 million-tpy greenfield Bom Sucesso mine and the 8 million-tpy Pau de Vinho mine. MMX expects to deliver its new business plan "by the end of June, at latest", Gonzalez said. "Our current priority is the company's cash flow, as the [EBX] group has been facing difficulties from the effects of reduced credit availability," he said. MMX is a wholly-owned subsidiary of Eike Batista's EBX holding.

IMAGE: © ANGLO AMERICAN

Anglo American seeks options to export Amapá ore

Anglo American is evaluating temporary alternatives to resume shipments from its Amapá iron ore operation in the north of Brazil "as soon as possible", the company said on April 30. "There is a possibility of using the Companhia Docas de Santana [CDSA] as a way of partially flowing off our production," the miner said in an emailed statement. Formerly known as the Amapá port, CDSA is a state-owned port controlled by the Santana city hall. Anglo American has suspended iron ore shipments from Amapá following an accident at its floating dock in the Amazon River on March 28. The floating dock is used for loading iron ore onto vessels.

North America

Canada's **Essar Steel Algoma** is suing US-based Galvstar for $2.4 million, which it says it is owed for more than 3,000 tons of cold rolled coil (CRC) supplied between October 2011 and July 2012. Essar Steel has filed a lawsuit against Galvstar, Galvstar Holdings and Bain Partners for alleged breach of contract and unjust enrichment, claiming it is owed the money for unpaid invoices. The Ontario-based steelmaker said it sold 3,116 tons of CRC to New York-based Galvstar's coating facility between October 2011 and July 2012, but has not been paid, despite repeated attempts to collect the monies, according to a complaint filed on April 23 in a New York District Court.

A labour dispute said to have affected some steelmaking activities at **ArcelorMittal USA's Burns Harbor** facility in Indiana has been resolved, a spokewoman has told Metal Bulletin sister publication AMM. "The issue was resolved yesterday," she said in an email on April 26. "At ArcelorMittal, our number-one priority continues to be the health and safety of our employees, and we are pleased that this matter has been resolved with [Local branch] 6787 [of the United Steelworkers trade union]." The dispute was reported to have begun on April 21 when ten workers at the plant's continuous caster walked out, citing concerns related to new automation processes that had been installed by the company to improve operational efficiency and workplace safety.

Shale gas could transform the US steel industry, but a shortage of technical skills may slow down progress, according to the ceo of US miner **Cliffs Natural Resources**. "We do believe that shale gas is a game-changer," Joseph Carrabba told delegates at the Metal Bulletin DRI & Pellet Congress in Abu Dhabi on April 30. "I'm not here to declare the demise of the blast furnace industry, but it will decline," he added, as new gas-based production processes start to take root. However, the availability of skilled labour to drive the change is a challenge, he said. "The biggest hole in the conversation is [access to] technical skills," Carrabba said. "If something slows down [progress in steel manufacturing technology], it'll be this hole."

US raw steel output totalled an estimated 1.87 million net tons two weeks ago. This was up by 0.4% from 1.86 million tons the previous week, as mills operated at an average capacity utilisation rate of 77.9%. In the corresponding week last year, mills produced 2.01 million tons at an average capacity utilisation rate of 80.9%, according to the **American Iron & Steel Institute**. Mills have produced 31.04 million tons so far this year at an average capacity utilisation rate of 76.2%. This is a fall of 7.6% from the corresponding period in 2012 when mills produced 33,603,000 tons at an average capacity utilisation rate of 79.7%.

US Steel reported a net loss of $73 million in the first quarter of 2013 as a strong performance from its tubular and European segments was offset by weak results from the company's flat-rolled operations. "Lead times throughout the first quarter of 2013 remained short and afforded buyers the opportunity to limit their order book exposure, preventing upward movement in spot market prices," the company said on April 30. The first-quarter loss was a 66.7% reduction on the $219 million loss in the first three months last year. However, it was 46% more than the $50 million loss reported in the fourth quarter of 2012. First-quarter net sales totalled $4.6 billion, down by 11.2% from more than $5.17 billion a year earlier, but up by 2.4% from nearly $4.49 billion in the fourth quarter of 2012.

Markets

Looking ugly Expected uptick fails to materialise, leaving market 'slushy and muddy', working day-by-day

HRC market in USA still plagued by poor demand, oversupply, squeezed margins

NEW YORK

Squeezed margins, lacklustre demand and oversupply issues continue to plague the US hot rolled coil market, sources have told Metal Bulletin sister title AMM.

Either a significant demand boost or a major production outage will be necessary to trigger a turnaround, they said.

"People can't survive like this forever. Things will continue until capacity comes offline," a source with a Midwest service centre said.

"The industry is in need of a shot in the arm from demand," the source added. "Things have been so flat for the past five or six months that everyone is now begging for some fluctuation."

AMM's hot rolled coil prices started the quarter at around $32 per hundredweight ($640 per ton) fob US Midwest mill but are now holding at around $29 per cwt ($580 per ton) after multiple weeks of declines.

Most sources maintain that the uptick they expected at the start of the year has yet to materialise, although some said business levels do look slightly better now than last month.

"The market is really slushy and muddy because there are still too many players chasing too few orders," a second Midwest service centre source said.

"Business hasn't been terrible, but it's definitely softer than [the first] quarter of last year. April was tremendous for us, but the bottom line is the difference between production and consumption," the source added.

Even for those service centres that have reported a slight uptick in business, most say it is too early to determine whether the apparent boost has any staying power.

Flat steel, flat demand: 'Everyone is begging for [price] fluctuation'

"We're just getting by day to day. One day, it's kind of busy, and the next day, it's not. It's just crazy," a service centre source in the US Southeast said.

"The numbers are cheap, and when the numbers are that cheap, it's because there's no demand," the source said. "Unless some of these tons are taken off the market, it's going to stay this way unless the economy gets way better. But the way things are now, this year is looking ugly."

BURSA

Gulf longs product prices drift lower on scant demand

Demand for long steel products in the Gulf Co-operation Council nations (GCC) remains low, sources told Metal Bulletin sister title Steel First.

Turkish rebar offers to the region stood at $590-610 per tonne cfr on April 30, down from $600-610 per tonne cfr the week before.

Prices are unlikely to fall further because they are below $600 per tonne cfr already, some traders said. Others, however, expect decreases from Turkey as scrap prices have gone down recently.

Local producer Emirates Steel has carried over its April rebar price of 2,410 dirhams ($656) per tonne ex-works to May.

SINGAPORE

Malaysian mills raise offers for 10-12mm rebar despite quiet market

Malaysia's domestic offers for smaller-sized rebar rose last week despite lacklustre demand ahead of the country's general election on May 5.

The increment widened the price gap between the product's two principal size groups back to the usual 150 ringgit ($49) per tonne, compared with 100 ringgit per tonne over the past month.

Mills were last week offering rebar of 10-12mm diameter at 2,380 ringgit per tonne on a locally delivered basis, versus 2,330-2,350 ringgit per tonne the week before.

Rebar of 16-32mm diameter was being offered at 2,230 ringgit per tonne on a locally delivered basis, compared with 2,230-2,250 ringgit per tonne previously.

The price hike for smaller-sized rebar was due to its lower production volume compared with that of 16-32mm diameter rebar, a mill source said.

CIS May rebar, wire rod prices hold steady

MOSCOW

Prices for May-rolling rebar and wire rod from the CIS remained steady or dropped slightly last week amid generally weak demand, on what traders said was a lower supply of the product on the market.

Wire rod from Ukraine's Metinvest and ArcelorMittal Kryvyi Rih has been changing hands at around $595 per tonne fob Black Sea, slightly down from the $600 per tonne at which the May-rolled product was initially offered.

Kryvyi Rih's rebar has been traded at $590-595 per tonne fob, at the initial offers level.

"Demand is very low, but prices are steady due to a lower level of supply," a trader told Metal Bulletin.

"We expect prices to go down, though, after the African rainy season and Ramadan reduce demand," the trader added.

The Islamic holy month of Ramadan will begin on July 9.

CIS cheaper Mills in Turkey have found it cheaper to use Black Sea billet than to manufacture it themselves

Turkish demand helps CIS May billet sell out

MOSCOW
BY NADIA POPOVA

CIS steelmakers sold out their May-rolled billet two weeks ago at $510-520 per tonne fob Black Sea, with some deals made at the higher end, supported by demand from Turkish buyers.

Turkish mills have found it cheaper to cast long products using May-rolled Black Sea billet, than to make the semi-finished product themselves from US or European scrap feedstock.

"Pretty much everyone in the CIS was selling to Turkey," a trader said, citing as examples Belarus Metallurgical Plant (BMZ), Russia's Metalloinvest and Evraz, and Ukraine's Metinvest.

Metalloinvest was reported to have sold its billet at $512-513 per tonne fob Black Sea, from $520 per tonne fob initially offered. Evraz, however, was reported to have achieved $520 per tonne fob for some of its billet deals.

BMZ has had to lower its offer slightly to $508 per tonne fob Black Sea, full prepayment, from its earlier offer of $511 per tonne fob for some of its May-rolled billet in the first half of April.

The company sold the remaining part of its May-rolled material at $503 per tonne fob Black Sea, full prepayment. Taking into account the cost of financing, this translates to $510 per tonne fob, with partial prepayment, a term more widespread on the market, according to a trader.

Ukraine's Elektrostal is already offering June material at $520 per tonne fob Azov Sea, up from $512 per tonne at which it sold its May output.

The CIS steel market is expected to be slow over the next two weeks

CIS steeelmakers sold out of billet as Turkish demand increases

BURSA

Gulf flat steel prices unchanged on low demand, quiet market

Little activity was reported in the flat steel market in the Gulf Co-operation Council nations (GCC) last week because of low demand, market sources told Metal Bulletin sister publication Steel First on Tuesday April 30.

Some market participants believe that prices have bottomed out and will start to rise in a couple of months' time.

Others expect further declines as the summer holiday period approaches. In addition, the Muslim holy month of Ramadan will start in July and working hours in the Gulf region will be reduced, they said.

Hot rolled coil (HRC) is still being offered to the region at $580-620 per tonne cfr from CIS sources, unchanged from the previous week.

LONDON

S European coil prices continue to slide on low demand

Flat carbon steel product prices edged down last week in Southern Europe, as market sources reported persistently low demand for hot rolled coil (HRC), cold rolled coil (CRC) and hot dipped galvanized coil (HDG) in the region.

HRC prices in Southern Europe crept down to €455-475 ($596-623) per tonne ex-works from previous levels of €460-480 per tonne exw.

"Demand remains particularly low in Southern Europe, on the decline of the construction and automotive sectors," one trader in the region said.

CRC similarly shifted to a slightly lower level of €535-565 per tonne exw, down from last week's €535-570 per tonne exw.

HDG prices in Southern Europe dropped to €505-545 per tonne exw, from €510-560 per tonne exw a week earlier.

US wire rod prices fall as scrap prices decline

NEW YORK

US wire rod prices retreated in April on the back of lower scrap prices.

Several market sources have reported signs of weakness in the market since the beginning of the year. Some wire rod producers reported improved business in the first four months of 2013, but most said sales were flat compared with the same period a year ago. Mill sources said they have not seen the effects of an improving economy on their order books so far this year.

"People haven't seen the pick-up there would normally be this time of the year. The weather is holding everything back. We are waiting for spring," one wire rod mill source told Metal Bulletin sister publication AMM. "We're down everywhere about $1 [per hundredweight]."

Market sources confirmed that mills had dropped their prices for most transactions by about $20 per ton in the second half of April as scrap prices saw an unusual price softening early in the month.

> 'People haven't seen the pick-up there would normally be this time of the year' – *Mill source*

Sources reported that most mesh-quality low-carbon wire rod sales were conducted at $670 per ton fob mill this past week, industrial-quality low-carbon rod at $680 per ton, high-carbon wire rod at $715 per ton and cold-heading-quality material at $770 per ton.

Demand has been disappointing this year, sources said, with wire producers reporting business as either stable or lower compared with 2012.

World DRI & Pellet Congress Global DRI production expected to increase by 6.3% a year

Cheap gas drives growth in DRI output

© FLICKR

Metal Bulletin's World DRI & Pellet Congress took place in Abu Dhabi on April 29-30

ABU DHABI
BY NINA NASMAN

The availability of low-cost gas is driving the growth of direct reduced iron (DRI) production globally, but raw materials sourcing will remain a challenge as regions compete for pellet supply.

Global DRI production is expected to grow at a rate of 6.3% a year until 2020, Lieven Cooreman, Anglo American's commercial director for Brazil, told delegates at Metal Bulletin's World DRI & Pellet Congress in Abu Dhabi on Monday April 29.

Growth is driven by lower capital costs on smaller plant requirements, lower operating costs on the availability of cheap natural gas and the potential of shale gas, plus environmental benefits, he added.

"People say cash is king; we believe gas is king," said Stig Nordlund, vp of marketing at Swedish iron ore producer LKAB, referring to the significant reduction in carbon dioxide emissions that are possible with gas-based production, which make up one-third of traditional blast furnace operations.

Global DRI production stood at 70 million tpy in 2012.

North America and the Middle East and North Africa (Mena) are expected to drive growth, as will India, but all regions are expected to come under raw materials supply pressure.

Iron ore lump is becoming scarcer and the supply of blast furnace (BF) pellets, driven by Chinese demand, outweighs production of pellets suitable for direct reduction (DR) processes, Wood Mackenzie senior analyst Gavin Montgomery said.

Import demand for DR pellets in the USA is set to grow as steelmaker Nucor's new 2.5 million tpy DRI plant in Louisiana is expected to start production in the third quarter of 2013.

Pellet demand is also set to grow in India, where new DRI projects, such as in Chhattisgarh, are under way despite iron ore scarcity following receat mining bans.

Mena countries will see higher demand for DRI raw materials as "the region looks to curb reliance on steel imports and increase DRI capacity", Montgomery said.

ABU DHABI

Jindal Shadeed's 2m-tpy Oman billet plant ready for Q4 start-up

Oman-based Jindal Shadeed is on schedule to commission a 2 million-tpy billet plant in Oman in the final quarter of 2013, a company official told Metal Bulletin sister title Steel First.

The main markets for Jindal Shadeed's billet will be the Middle East and India, Anand Agarwal, assistant gm of sales and marketing, said on the sidelines of the DRI & Pellet Congress.

"We don't want to limit our availability to these regions," he said. "Demand is coming up in the Middle East, but there are pockets of demand elsewhere."

Shadeed Iron & Steel, part of Jindal Shadeed, began producing hot-briquetted iron in Oman in December 2010. It reached 1.5 million tonnes maximum output in the financial year ending March 2013.

DRI loses price advantage over steelmaking scrap

ABU DHABI

Using direct reduced iron (DRI) for steelmaking may not be more competitive than using scrap, a senior official at Emirates Steel told the DRI & Pellet Congress.

"Some people think DRI has a competitive edge [in steel production]," Hassan Shashaa, ceo adviser at Emirates Steel, said.

"Historically, DRI users have had an advantage over scrap, but over the past two years the advantage has disappeared," he said, adding that a rebar producer may be just as competitive using scrap – and may even be better off.

The labour and capital costs of direct reduction methods are among the disadvantages of DRI, as the cost of iron ore with shipping expenses and quality and pellet premiums, makes up 65% of steel production costs.

DRI also has a lower overall Fe content and higher slag than scrap, Hadi Hami, gm in the UAE for forestry and steel trader Norecom Group, said.

Long-term contracts are the main form used to procure DRI pellets in the Middle East and North Africa (Mena) region. While this is good for long-term security, their comparative advantage is less certain, Shashaa said.

> 'Over the past two years DRI's advantage over scrap has disappeared,' *Emirates Steel official Hassan Shashaa*

Some speakers at the congress were more upbeat about the use of DRI processes, however, particularly where the environmental benefits of cheap gas favour such production.

DRI also lacks the non-Fe impurities sometimes found in scrap, Hami noted.

Another advantage for DRI use has been the "development of EAF [electric arc furnace] technology, [which allows for the] optimisation of production by [tuning] the metallics mix," Yuri Mishin, adviser on industrial policy for Russian metallurgical company Metalloinvest, said.

The steel raw materials industry faces a number of challenges, however, Hami said.

These problems include volatility and seasonality in raw materials costs, unclear import duty policies, political instability in some areas of the Mena region, and the growth of steelmaking to a capacity that exceeds steel demand, particularly in developed countries, Hami added.

China ENFI celebrates 60 years

China ENFI, a respected global supplier of engineering, energy and development services, is celebrating its 60th anniversary this year

Formerly known as Beijing Nonferrous Engineering and Research Institute, China ENFI Engineering Corp. (China ENFI), is a leading Chinese non-ferrous metal engineering and technology company. Established in 1953, it is now a wholly-owned subsidiary of China Metallurgical Group Corp. (MCC), a Fortune Global 500 company.

Focused on finding solutions to the technological problems that large-scale metals smelting plant and mining projects face, China ENFI has successfully brought nearly 4,000 projects on line in more than 20 countries over the past 60 years.

Developing mining projects with nature in mind

Building on its engineering, procurement and construction (EPC) and resource development experience, China ENFI's focus is the design of various mining, metals processing and smelting projects worldwide. This includes comprehensive plans for the extraction of low-grade ore and refractory metals, as well as for inter-grown and associated minerals, with an eye on not only improving the productivity of their resource base, but also to provide greater environmental and economic benefits.

China ENFI has already designed and commercialised many ferrous and non-ferrous metal (including rare and precious metals), construction material and chemical production and mining projects worldwide.

Its technological expertise, including several patented technologies, give it an advantage in developing large-scale underground and open pit mining projects involving low grade ore and refractory metals deposits. The company also incorporates its new filling technology into its mining project designs.

China ENFI has also developed a number of processing options that can be used with various types of ore. This includes a series of flowcharts that incorporate such mineral processing operations as flotation, magnetic separation, gravity separation, electric separation, heavy-media separation, table flotation and manual separation.

Contact details:

ENFI
CHINA ENFI ENGINEERING CORPORATION
Tel: +86-10 63936668
Mobile: 008613701157458
Email: liupf@enfi.com.cn
Website: www.enfi.com.cn

Ramu Nico Project in Papua New Guinea

Low-carbon smelting helps to keep clear skies

SKS Oxygen Bottom Blowing Smelting Technology. One way that China ENFI is looking to address the potential environmental and energy consumption problems that arise from non-ferrous smelting is to develop its oxygen bottom blowing smelting technology, which is already being used commercially by many lead and copper producers.

Now a fairly mature technology for the lead smelting industry, China ENFI has further developed and commercialised a series of bottom blowing oxygen lead smelting technologies, including oxygen bottom blowing smelting – blast furnace reduction process, oxygen bottom blowing smelting – molten side blowing reduction process, as well as oxygen bottom blowing smelting – molten bottom blowing electrothermal reduction process.

Aided by this series of technologies, producers' single-circuit production capacities have reached about 180,000-200,000 tonnes per annum. Currently China ENFI is in the process of developing a facility with a capacity around 280,000-300,000 tonnes per annum.

This technology has been successfully used in Deriba's 100,000 tonne per annum lead smelter in India as well as in more than 40 large-scale lead smelters in China. It has greatly reduced energy and coke consumption, completely eliminated the environmental problem of sulphur dioxide off-gas and dust from lead smelting, which had plagued the industry for a long time, and has significantly improved recovery rates.

For copper, following top-blowing, side-blowing and flash smelting technologies, the oxygen bottom blowing copper smelting technology developed by China ENFI is favoured by many copper enterprises in China, Vietnam, Australia, Mexico and elsewhere.

Committed to low-carbon smelting, China ENFI is looking to further enhance its oxygen bottom blowing continuous copper smelting process. Its current technology already has many advantages. It is a simple process with a low rate of heat loss, a high recovery rate, low blister energy consumption and slag discharge that is the lowest in the world.

Pressure leaching hydrometallurgy technology. China ENFI's proprietary pressure leaching technology has replaced the roasting-leaching process for traditional hydrometallurgy.

Not only can the pressure leaching hydrometallurgical technology reduce the unit cost of metallurgy, maximise the rate of leaching valuable metals from the ore and enhance metal recovery and desulphurisation rates, it also allows for harmless treatment of leaching slag.

A new generation of metallurgical slag treatment technology, which has Chinese independent intellectual property protection, has been developed based on China ENFI's current technology. It will make it possible to eliminate contamination both during production and storage, therefore maximising the recycling and utilisation of the slag.

China ENFI has successfully had various oxygen-enriched leaching technologies, such as atmospheric leaching and pressure leaching, used in various copper, zinc, nickel and cobalt projects. With these technologies, sulphuric acid can be processed as a by-product and other valuable elements can also be recovered.

Some examples of metals projects using these technologies are Baiyin Group's Western Lead and Zinc refinery; the Zhuzhou refinery; the Yulong copper mine in Tibet; and the Zhongyuan gold refinery.

At the end of 2012, the Ramu Nico Project in Papua New Guinea contracted by China ENFI with EP model was formally put into production, in which the advanced laterite high pressure acid leaching process is adopted to leach nickel and cobalt elements with strong acid in high temperature and high pressure environment, and the largest autoclave in the world of more than 780t is used.

RKEF rotary kiln + EAF smelting technology. China ENFI also has independently designed, developed and commercialised a Rotary Kiln-Electric Furnace (RKEF) ferro-nickel production technology, along with related equipment. This is helping to phase out older, high energy consumption and environmentally unfriendly technologies being used by China's ferro-nickel industry.

This technology is being used by most of the laterite ore smelters in China, as well as by the Myanmar Taguang Taung nickel project, which is the first integrated ferro-nickel mining, separation and smelting joint venture to be built by a Chinese company.

A lead smelting project in India

Tagaung Taung Nickel Project in Myanmar

The Taguang Taung project, which started operation in October 2012, is also the largest Sino-Burmese joint venture project in the mining sector. China ENFI technology has helped to make this project a model for the laterite ore development and ferro-nickel smelting industry.

It includes a 72 MVA laterite ore electric furnace, which is the largest of its kind in China, as well as a hot calcining conveyor system that reduces the energy consumption of the smelting process by more than 20%. It also has a 5.5 metre by 115 metre laterite ore rotary kiln, the largest of its kind in China, which provides a better control of the ferro-nickel grade and improved EAF productivity. It also uses an all new ferro-nickel refining process combining, for the first time, accurate injection and the temperature programmed desorption (TPD) technology used from the steel industry.

Future technologies

Leading plantmaker chiefs give their vision for how metallurgical technologies might evolve and look in 2113

Many questions

How will steel plants look in 2113? Will they still be seen as "smoky, dusty and not sexy" places to work? Will they still consume huge amounts of energy or will they be places where everything – from smoke to dust and any kind of waste – is recovered and recycled?

What will the role of hydrogen be in the steel industry? Will it mark the end of the blast furnace? And how will we live in a world where raw materials are increasingly expensive and rare?

How will nanotechnology impact on the mechanical structure of the steel of the future? And where will the increasing power of automation and computer systems applied to engineering lead?

Will we be able to develop appropriate steel plants from renewable energy? And where will such facilities will be located? Will there still be huge plants like today or will every city have its own small steel mill handling orders?

Will they still be outside the big cities or fully included in the megacities of the future, where families spend their leisure time and play?

And who will be the designers of these innovative systems? Will there always be the usual handful of internationally-minded plant engineering companies just 500 km away from each other in Europe, or will plants be designed by visionary freelances, who in Mumbai and/or Tianjin invent innovative software for engineering 'do-it-yourself'?

Anyone who asks many questions, especially questions like these, is often considered to be a dreamer – or even slightly crazy!

Well, I believe that the future belongs to those who ask questions and listen to the answers. I think that anyone who wants to build the future should continually ask

TENOVA

Tenova ceo Alberto Iperti: "Will there still be huge steel plants like today or will every city have its own small steel mill?"

questions to improve and promote the change to the new, to the novel concepts, even if they may seem unacceptable and unworkable at first sight.

This is what we do in Tenova. We wonder if it is worth being a full-liner nowadays. We wonder if in response to the enormous complexity caused by globalisation we have to centralise our decision-making centres even more. We wonder about how and where to invest not only our finances, but also the enormous intellectual capital of our employees.

The real answer to these questions is that we have to foster innovation to channel a winning future for our clients. Technologies – for example direct reduction, Consteel, energy and heat recovery technologies in EAFs – to minimise the environmental impact and energy consumption of our clients are high in our priorities. Our thermal processes are evolving to support the increased demand for materials at the higher end of the quality range.

Tenova has increased its size sevenfold in the last ten years and it will continue innovatively to reinvent itself to develop the steel plants of the next 100 years, answering the questions above together with its customers.

Sustainability and system design

According to some futurologists we will be living in the 'sixth wave' of innovation for at least the next 50 years. It comprises fighting escalating environmental problems such as global warming, necessitating much more sustainable use of natural resources, and changes of business models due to intelligent and especially digitalization technologies.

Drastic resource efficiency improvements are needed to reduce the environmental impact of humans. As far as thermodynamics will allow, this means closing the materials loop with as close to zero-emission technologies as possible in primary production and secondary material processing and recycling. It also means enabling sustainability by using metals in clean energy technology, technology in general and particularly in solutions for water supplies.

Population growth will have to decrease and, while there is a need for welfare for everyone, the nature of economic growth needs to change because of sustainability. Growth based on unlimited exploitation of natural resources and throwaway consumption will not be sustainable.

Knowledge power

There is no clear answer as to what the next wave of innovation will bring. What is sure is that the importance of sustainability and digitalization will prevail, and will also continue to affect world trends beyond the next 50 years.

Economies that can embark on the wave of environmentally sustainable economic growth will lead the way in the future. This naturally needs to include a lifecycle approach to the metals ecosystem including their primary production, their use in applications and finally their recycling systems.

The power of knowledge will be a key driver of technologies, which are becoming increasingly interdependent – meaning that the need for system engineering and system design are increasing, enabled by digitalization technologies. For example, the share of recycled metals and other materials will become a significant part of metals production and will thus affect the resource extraction loop.

Primary metal sources will be balanced with recycled secondary materials, especially focusing on a 'Product Centric' approach to recycling, as outlined in the UNEP report on *Metal Recycling: Opportunities, Limits, Infrastructure* published in April (www.unep.org/resourcepanel/Publications/MetalRecycling).

While Outotec is working hard to optimise the recovery of all metals from minerals, the other challenge of resource efficiency is to maximise recovery from designer 'minerals', i.e. end-of-life consumer products. It is thus of extreme importance for resource efficiency not only to understand the link between mineral and metal to product, but also the end-of-life product design to metal content to enable effective recycling.

This highlights the importance of harmonisation of digitalization technologies of different sectors to maximise resource efficiency by linking Rock to Metal to Product on a rigorous design basis.This implies that the link between product

OUTOTEC

Pertti Korhonen, president and ceo, Outotec Oyj: "The link between product design and process metallurgy will become much closer"

design and process metallurgy will become much closer and will obtain its depth from companies such as Outotec. This will enable the realisation of resource efficiency that reaches the limits of what physics predicts is achievable.

Challenges to overcome

By 2050 there will be over 30% more people than today – around 9 billion people. Investments in the new infrastructure and renewable energy sources needed for such a large population implies a significant increase in metal consumption. High demand means many new mines, smelters and refineries will be needed. Globally, there are about 200 mines under construction and over 800 mines in the pre-feasibility or feasibility study phase. Various smaller-volume technical metals, linked among others to the base metals – as minor metals – are also crucial to enabling sustainability.

Outotec's most significant impact on sustainability occurs indirectly through its customers' operations, where sustainable technologies save on energy and water, and improve ore recoveries and process efficiency. In the company's opinion, sustainable environmental process solutions enhance plant reliability, availability and safety, all of which also improve the profitability of the processes.

A seventh wave?

Will there be a seventh wave in 100 years, as predicted by Nikolai Kondratiev?

It is always difficult to predict the future, but one bet is easy to make: it will be a must to apply systems thinking and its quantification through digitalization technologies to drive resource-efficient systemic solutions linking metal production from primary and secondary recycled resources with water, emissions and other resource-consuming flows.

Harmonising nature and technology on a global level with suitable policy will be the true economic driver to realise the sixth wave of innovation and realise sustainability in the next century.

Doing more with less

In the last 100 years, steel production has grown from less than 100 million to over 1.6 billion tpy. Half of that growth happened in the first 85 years while the balance occurred in just the last 15. Most of this latest expansion was in emerging economic areas like China, South America, the Middle East and India, while the growth rate in 'mature' markets like Europe, USA and Japan was significantly lower.

This increase in steel consumption in the last century stimulated innovative technologies that could support and boost the increase in production while trying to improve finished product transformation cost and quality. From DRI plants, meltshops, converters and casters to mills and processing lines, Danieli has been responsible for introducing many of those innovations, for both long and flat products. So what could we expect over the next 100 years?

It is hard to believe that growth in overall world production – both in percentage and absolute values – can increase along the same path as the past 100 years. We will not experience another 'China'.

India first and Africa later are set to grow, but both together probably won't contribute as much as China did in the past. For other areas in the world it is hard to believe that they will see a significant growth. Rather, some areas like Europe will face significant reduction in both consumption and production.

Further, in the past 100 years we experienced several global and regional wars which brought destruction followed by a need for reconstruction. Wars now are more commonly carried out on an economic and financial basis, which are fortunately much less bloody but call for rather less need for steel (in economic crisis) than more (for reconstruction).

Consequently, one possible scenario could be a total steel consumption (production) of perhaps 2.4–2.5 billion tpy.

DANIELI

Franco Alzetta, Danieli executive director: "One possible scenario could be a total steel consumption and production of perhaps 2.4–2.5 billion tpy"

Innovation, of course, will continue, thanks to those areas that will keep their creativity, motivation and financial strength.

Concepts where most of the efforts should be concentrated are:
– *To do more with less*. This means development of steel grades and treatments with the highest technological characteristics and performance through new chemistry and processes. This will allow us to use less steel to perform the same job done today – another reason for lower future consumption growth – and show how to produce the same steel with lower operational and capital expenditure.

For instance, in the past 100 years we have experienced bar mill production going from 5 m/s to 50 m/s, wire rod production going from 20 m/s to 120 m/s, and continuous casting speeds for long and flat products increasing threefold. Most probably, in the next 100 years we will see similar improvements, with bar production speed reaching 80–100 m/s, wire rod production speed reaching 150–170 m/s, and casting speed reaching 8–10 m/min for long semis, and 10–12 m/min for thin slabs.

Saving energy will continue to be a key issue: shortening and/or compacting production cycles, while getting a higher value finished product, will remain a challenge. The final aim will be to further reduce transformation costs. Greater care than in the past will be given to saving water consumption. In some areas water consumption might become an even a bigger constraint than oil, gas and/or coal for steel production.
– *Sustainability*. As today, the environmental impact of steel production will remain another significant challenge. Developments aimed at controlling and reducing any kind of gas emission or waste production will be another challenge where big efforts will be concentrated.
– *Flexibility in production*. The capability and possibility to suddenly follow changed market needs (both in terms of finished products and production rates), still keeping a competitive position which can assure a reasonable profitability.

All the above will reflect the need for more efficient ironmaking, steelmaking, casting and rolling, and in line-treatment processes, with the lowest environmental impact. Danieli is fully motivated to play an important role in all these aspects of progress in the production of steel.

Autonomous plants

"It is difficult to make predictions, especially about the future," said Niels Bohr, the Danish physicist and Nobel prize winner. Accordingly, making predictions about the iron- and steelmaking industry in 2113 is a difficult task indeed. Nevertheless, assuming that civilization and society will continue to advance, one hundred years from now the total quantity of steel produced from iron ore since the beginning of iron- and steelmaking will have surpassed a figure of 150 billion tonnes.

Imagine the industry then. With consideration of such a huge global steel availability, more than two-thirds of the steel manufactured each year is derived from the recycling and processing of scrap by electric melting technologies. The energy efficiency of best-available melting technologies is close to 90% of what is theoretically possible. Waste heat is almost negligible. Solid waste is no longer dumped in landfills, but ▶

is entirely recycled in production processes or used by other industries. All mass-produced materials are completely sorted, disassembled, traced and tracked. The composition of the charge materials for steelmaking is known precisely and specified in advance.

Iron- and steelmaking from virgin iron ores is predominantly based on direct reduction technologies, while blast furnaces are still in use and are continually optimised. However, the majority of plants are direct-reduction-based facilities that utilise various types of gases and energy sources. The total generation of carbon dioxide per tonne of steel is now less than a quarter of the figure in 2013. Steelworks are recycling enterprises and value-added producers with a minimised ecological footprint.

Steel is produced on a just-in-time basis. A continuous liquid-steel production process is employed that minimises the number of required process steps. Direct casting and rolling dominates hot-rolled coil production. Cold rolling, annealing, processing and finishing are fully linked within a continuous production line for the majority of steel products.

Steel workers in hazardous areas of the steel mill are a thing of the past. These jobs have been taken over by robots. Iron- and steelmaking plants are entirely remotely controlled from central operation centres. Production is monitored by videos linked to computers with augmented reality. Predictive maintenance is totally optimised and universally applied – hence unforeseen plant stops no longer occur.

The former inaccuracies of liquid and solid metallurgy have been decrypted to a considerable extent. Metallurgy, technology and plant operations are completely modelled by using advanced physico-mathematical tools integrated in sophisticated computer models. Holistic diagnostics, quality forecasts and recipe prescriptions are applied to assess the status of the production plant, energy-related parameters and the media supply to achieve the product properties targeted.

SIEMENS

Werner Auer, Siemens VAI Metals Technologies ceo: "Technological components will operate autonomously, similar to bees in a swarm"

More than 10,000 steel grades are now produced. Key steel properties have dramatically improved thanks to the widespread application of "nano-alloying" and "quantum technologies". The maximum yield strength, toughness and ductility have all doubled during the past 100 years, and near-perfect steel quality has become state of the art.

Technological components are not only mechatronic and equipped with embedded sensors, they operate autonomously, similar to bees in a swarm. The individual components monitor their own status, inform or alert the remote control centre, and trigger the supply chain for self-substitution, maintenance planning, and wear- and spare-parts ordering.

In 2113, Siemens VAI will still place a strong focus on: modernization solutions; implementing tailored solutions for specialised metallurgical and mechatronic core components to increase plant productivity and extend product mix; development of parameter models for specific mechatronic-metallurgical core components; updating know-how management systems and holistic monitoring and control systems for both single production plants and globally linked enterprises; zero environmental impact solutions.

Thanks to the close cooperation of industrial partners worldwide and the continuous development of value-added steel products, steel will continue to serve as a key index factor for progress and prosperity in the next 100 years as well.

Cost-effective production

In the year 2113 metals will still constitute the most important group of materials for building our civilization and the related R&D activities for their production will remain key technologies for us.

The three major burdens of the metals industry – its capital, energy, and emission and waste intensity – will be the drivers of future change. All three parameters will be lowered to sustain growing population and to reduce the industry's environmental impact.

In 100 years metallurgy will play a different role as material properties will be generated much more through downstream processes rather than through alloys. Simultaneously the recycling rate of the materials, and in particular of the emissions and wastes, will significantly be improved. To reach that point the structure of the industry and the technologies applied will be significantly different from those we know today.

Capital intensity

In 2113 the production of steel and other metals will be much less capital intensive than now. New technologies will enable much smaller entities to operate profitably and highly flexibly. Production will be widely supported by intelligent automation and support systems that allow operation in 'auto-pilot' mode and plan the maintenance activities required.

Several breakthrough technologies will pave this way. New ironmaking technologies will scale down the economic size of smelters and enable mini- and micro-mills from ore to bar and strip. A decentralized production footprint with highly flexible production facilities and reduced logistic costs will lower capital intensity further.

Energy intensity

Along with new ironmaking processes, the use of energy recovered from waste and emissions will increase further and the overall energy consumption per tonne produced will drop significantly.

High-speed and near-net-shape casting will increase efficiency in the melt shop. Hot coils will predominantly be produced through strip casting and continuous casting plants will regularly be linked to the hot rolling processes.

SMS

Dr. Joachim Schönbeck, member of the managing board, SMS Holding GmbH: "Material properties will be generated much more through downstream processes rather than through alloys"

Emission and waste intensity

The main processes in 2113 will generate much lower emissions and waste than today. The biggest potential by far lies with current ironmaking processes, which can represent 80% of today's carbon dioxide emissions in the steel plant. Increased recycling of emissions and waste will further diminish the problem. Through these activities steel plants will become environmentally friendly and stabilise social acceptance of this industry.

Another major impact to reduce emissions and waste will come from the increase of yield. While the overall yield from ore to a finished product is only 50% in the metals industry today, this value will exceed 75% in 100 years.

Needless to say we will work hard for SMS to still be an important supplier to the metals industry in 2113!

Surplus zinc

Zinc production is set to run ahead of demand for some time yet. Myra Pinkham outlines factors tilting the supply-demand balance

The global zinc market has been in surplus for the past seven years. It is very likely to continue to be oversupplied for the next few years as well, with slow but steady increases in demand being insufficient to soak up the increased metal produced over the past few years. Zinc premiums, however, are higher than might be expected from these fundamentals, owing to the amount of metal being held in LME and other warehouses, tied up in financing deals.

After falling by 3.3% in 2012, global demand for refined zinc is expected to increase by 5.2% to 12.98 million tonnes this year, the International Lead and Zinc Study Group (ILZSG) forecasts. Given that at the same time global zinc mine production is expected to increase 2.3% to 13.92 million tonnes and refined zinc metal production is expected to increase 5.2% to 13.25 million tonnes in 2013 – driven primarily by a 9.7% increase in Chinese zinc output – ILZSG predicts that the global refined zinc surplus will be 273,000 tonnes this year.

While still high, this is an improvement from the 402,000 tonne surplus in 2012, which Metal Bulletin Research (MBR) indicates in its recently published report *Strategic Outlook for the Global Zinc Market to 2022* was the largest refined zinc supply surplus in over a decade. Andrew Cole, a senior metals analyst at MBR, predicts that while the zinc market will continue to be in oversupply for the next few years, the supply-demand balance will tighten due to expectations that demand will continue to strengthen. He forecasts surpluses of 198,000 tonnes in 2014 and 130,000 tonnes in 2015.

The impact that the $90 billion Glencore-Xstrata merger will have on the zinc market, other than making the combined entity the world's largest zinc miner, is still awaited. Duncan Hobbs, commodities analyst for Macquarie Research, London, says that clearly it will make Glencore, hitherto primarily a trading house, more focused on its asset base than it had been previously, but it is uncertain what plans for mine development projects will emerge.

High stock levels

Warehouse stocks are complicating the situation, keeping zinc prices largely range bound between $1,700 and 2,200 per tonne, where it has been since 2009. The inventories have been prompted by low interest rates, making them a low-cost solution for companies that want to keep their production rates up even when it seems that end-use demand does not warrant it, explains K.C. Chang, senior economist with IHS Global Insight, Toronto.

While LME stocks were down slightly to 1.22 million tonnes as of the end of last year, they remained at 1.17 million tonnes as of the end of March – still very high historically. LME warehouse stocks at the start of 2011 stood at 820,000 tonnes.

According to Sucden Financial's latest quarterly metals report published on April 24, recent outflows from LME warehouses have been coming from Antwerp and New Orleans to off-warrant financing deals. Sucden observes that since there is little evidence of widespread withdrawals of small parcels of metal, that implies the off-takes are not consumer driven but rather being shifted to other warehouses to be used for off-warrant financing deals.

Last year the volumes of zinc locked into warehouse deals was higher than the amount of oversupply, making the zinc market appear to be tighter than it actually was and resulting in higher premiums than would be expected given the current supply-demand fundamentals, MBR's Cole observes. He adds that this is also encouraging producers to overproduce – something that could develop into a problem in the future.

The amount of zinc being tied up in financing deals could also set the scene for some 'fireworks' should demand pick up suddenly and if consumers need their zinc quickly but would not be able to access it without paying high premiums, Cole declares. This, however, is not likely to be a problem anytime soon – definitely not this year – he says.

Large zinc stocks are overhanging the market

Cautious optimism

Most market observers are at least cautiously optimistic about global zinc demand this year, largely supported by continued strength in China, which according to MBR is the largest zinc consumer by some margin, accounting for 44% of global demand and two-thirds of Asian demand.

It is also largely in correlation with the strength of galvanized steel demand, given that galvanized sheet alone (not counting galvanized wire) accounts for about 55% of zinc consumption, according to Hobbs. The other big zinc consumer, accounting for about 15-20% of all consumption, is zinc alloys, including die cast alloys.

Hobbs says that global production of galvanized sheet was reasonably robust last year at 135 million tonnes, up by 5% from the previous year, but is expected to be fairly flat for the year as a whole in 2013. That, however, varies region by region – strongest in China, fairly robust in North America and weakest in Europe.

Cole says that Chinese galvanized demand is up by approximately 14% year-on-year, but that the Chinese mills have been overproducing which, while good news for zinc consumption ▶

REFINED ZINC METAL PRODUCTION*

Region	2011	2012	Jan-Feb 2012	Jan-Feb 2013
Europe	2,437	2,407	403	413
Africa	244	169	26	30
Americas	1,865	1,847	307	315
Asia	8,068	7,686	1,261	1,283
Oceania	515	501	76	86
World total	**13,128**	**12,610**	**2,073**	**2,127**

* '000 tonnes

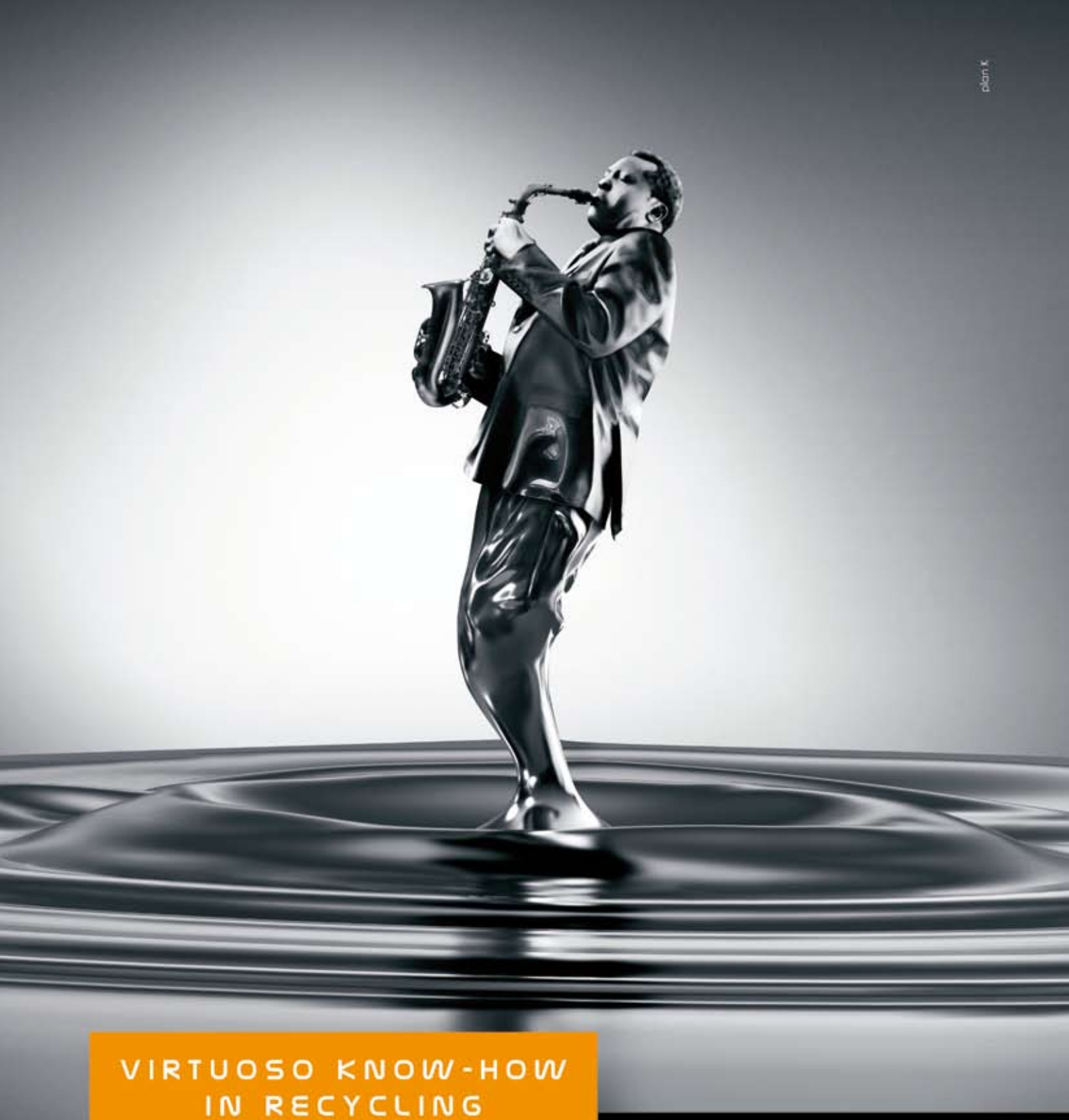
Source: ILZSG

TOTAL REFINED ZINC USAGE*

Region	2011	2012	Jan-Feb 2012	Jan-Feb 2013
Europe	2,525	2,342	359	400
Africa	175	156	30	34
Americas	1,742	1,663	263	283
Asia	8,112	7,970	1,269	1,323
Oceania	211	209	29	37
World total	**12,765**	**12,338**	**1,950**	**2,077**

* '000 tonnes

Source: ILZSG



VIRTUOSO KNOW-HOW IN RECYCLING

"You need a team. You need people to push you. You need opponents." Wynton Marsalis.

Zinc recycling saves valuable resources and energy. Our technology contributes to an economically sound and environmentally sustainable use of secondary raw materials. If you have zinc containing by-products or residues and you want to optimize your valuation, contact NFM now. See www.nfm.lu or contact us directly under bever@nfm.lu or frappier@nfm.lu, tel. +352 44 89 44 21, fax +352 44 75 47.

NFM

INSPIRED BY METAL

currently, might not be so going forward.

The MBR report states that the Chinese loose monetary policy and continued fiscal stimulus should guarantee a sharp recovery in the economy and that this should help growth to accelerate over the next two years. "At the same time, we think authorities will continue to keep the growth of the construction sector under control to avoid it from overheating." There has also been strong growth in demand for some galvanized-steel-containing durable goods, including automobiles, Chang observes.

However, reportedly there had been a build-up of zinc-coated steel product inventories in the second half of last year. MBR says that as that inventory overhang is worked down the forecast rate of growth in demand for Chinese galvanized steel for the year as a whole stands at about 7.5% in 2013, although that could pick up again to 10%, assuming exports accelerate again. That, however, is uncertain given certain structural shifts, Chang says, including the Chinese government's push to concentrate on domestic needs rather than exports.

Despite a slower than usual start for galvanized steel production, there has also been a pick-up, albeit a choppy one, in demand in the USA. This has largely been from the automotive sector, but there has also finally been an improvement in housing and non-residential construction. MBR predicts that US zinc demand will increase by 3% in 2013 and another 5% in 2014 before certain headwinds, including import competition and material substitution, result in a gradual slowing of the growth rate.

US auto sales pick up

Chang says that with US auto sales rising to 15.2 million units and North American auto output expected to be as high as 15.9 million vehicles in 2013, increases in both galvanized sheet and some zinc die cast components will result. This is aided by the fact that the US light vehicle fleet is 11-12 years old on average, which is the oldest that it has been for a while. "Vehicles eventually need to be replaced and people are willing to do so now that the US economy appears to be at least slowly improving," Chang says.

The trend towards lightweighting of vehicles to meet the new, very aggressive fuel efficiency standards has dampened some of the gains that zinc, especially zinc die castings, will reap from this, given zinc's weight by comparison with such alternative materials as aluminium, observes Daniel Twarog, president of the Wheeling, Illinois-based North American Diecasting Association. This, he says, is despite the fact that many OEMs like zinc die castings as they result in less tool wear than producing aluminium die castings.

Even certain newly developed die casting alloys such as thin-walled zinc alloys and high-temperature, creep-resistant zinc alloys have not seen much growth in the automotive sector as they still weigh more than aluminium, Twarog says, but they might hold some promise for certain new applications such as in the electronics and medical instruments sectors.

While the US non-residential construction sector, which is where most galvanized steel is used, remains relatively weak, just coming up slightly from its recent lows, it should continue to improve as the US economy recovers, Chang says, adding that the pick-up in the housing market, as well as replacement demand, has helped the demand for galvanized steel in home appliances to also improve. First-quarter US shipments of major appliances were up 5.5% year-on-year, according to the Association of Home Appliance Manufacturers.

The region with the weakest zinc demand is clearly Europe, whose sovereign debt crisis has caused everyone to write off any improvement this year, after approximately 5% decline in 2012, Cole says.

There is a bit of a north-south divide in the Eurozone, Hobbs says, with the rate of decline being less in Northern Europe than in Southern Europe, but it is still down year on year and will continue to be in negative territory for the year as a whole.

Sucden agrees, stating: "The region is mired by austerity, auto sales are dire and unemployment is so high that the housing industry is firmly in the doldrums. While earlier we had hopes that the region would stabilise this year, with the move from destocking to hand-to-mouth buying boosting apparent demand, we are not sure even that will be seen in 2013."

China holds sway

Meanwhile on the supply side, Cole says that not only is there more than enough smelting capacity around, especially in China, but there are no big zinc mines in the pipeline. This is despite the fact that there are several mine closures being planned, including Xstrata's Brunswick and Perseverance mines in Canada, which are expected to stop producing in 2013; Ireland's Lisheen Mine is due to reach the end of its life in 2016, as is MinMetal's big Century Mine in Australia.

Nevertheless, Cole says the idea that there would not be enough availability of zinc concentrates in light of those closures was eclipsed by China, which went "gung ho" increasing its zinc mine production. According to ILZSG, China's mine output went from 3.3 million tonnes in 2009 to 4.9 million tonnes in 2012. This year, however, with China having more than sufficient concentrates to meet its current needs, the country is only expected to increase its mine production by 4.7% this year, ILZSG says.

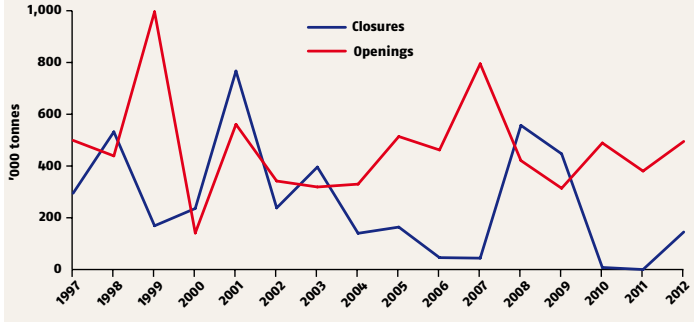
Cole says that, looking forward, all eyes are on China. "If the Chinese economy improves, including greater infrastructure spending, commodities, including zinc, can climb out of the bearish hold that they have found themselves in. But if China disappoints, there will be more oversupply, more financing deals and LME zinc prices will continue to drift sideways."

The author is a specialist writer based in New York.

ZINC 3 MONTHS LME DAILY OFFICIAL PRICE

Source: LME, MB

TOTAL WORLD ANNUAL MINE CAPACITY CHANGES



Source: ILZSG

Metal Bulletin
Leading for 100 years

By Trevor Tarring

The 1950s – a golden era

Although Britain's post-war difficulties were still evident in 1950, this was the start of a golden era for subscriptions to Metal Bulletin.

With most modern forms of communication like the fax machine and the internet still in the future, and even painless photocopying absent from most offices, the only practical way to get information fast from the latest issue was to have your own copy of it on your desk.

In trading houses, a personal MB subscription was a kind of badge of rank. The post-war rebound in circulation, as communications all over the world were normalised, continued apace throughout the 1950s, before peaking in the early 1970s at more than 10,000.

It all started when the Japanese trading houses in London would painstakingly re-key prices and even major articles onto telex for rapid transmission to Japan. Thereafter the copying facilities that had become common – notably photocopies and fax machines – militated against the "one man, one sub" regime. This was when advertisers were made aware of the difference between subscriptions and readership.

This was also the era of the final dismantling of wartime controls on metal markets in most non-totalitarian countries (copper in France was an exception).

The UK government's stubborn refusal to relinquish state control of copper trading until 1953 has already been mentioned (for lead it was 1952 and zinc, 1953). That same year in the UK, aluminium trading was freed from government control and steel rationing ended, while control over ferro-alloys did not end until the year after.

These moves re-enabled a lot of the MB price discovery activity that had been in abeyance since the outbreak of war; this, in turn, gave a fillip to the service of promptly advising subscribers of changes in metals prices by telephone, cable and, just in the next decade, telex.

1954 saw the biggest Metal Bulletin Special Issue to date come out. Devoted to aluminium, it was successful by virtue of hitting the market when it was rebounding from the post-war glut.

In the absence of modern technology, the only practical way to get MB information fast was to have your own copy of the latest issue on your desk

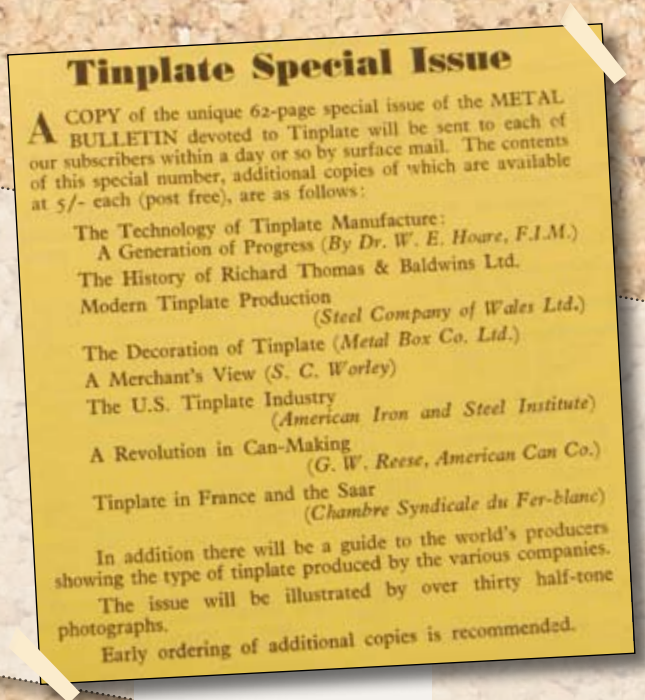
HIT SONG OF THE WEEK

The popular tune in the metal industry this week seems to be "Ta-Ra-Ra-BOOM-De-Ay."

Metal Bulletin seems to have forgotten the 1930s ditty:

After the rise, the fall
After the boom, the slump.
After the fizz and the fat cigar
The cigarette and the hump

Danish lead scrap processor Paul Bergsoe was so proud of its quirky MB front cover ads it compiled them all in a book



Tinplate Special Issue

A COPY of the unique 62-page special issue of the METAL BULLETIN devoted to Tinplate will be sent to each of our subscribers within a day or so by surface mail. The contents of this special number, additional copies of which are available at 5/- each (post free), are as follows:

The Technology of Tinplate Manufacture:
A Generation of Progress (*By Dr. W. E. Hoare, F.I.M.*)
The History of Richard Thomas & Baldwins Ltd.
Modern Tinplate Production (*Steel Company of Wales Ltd.*)
The Decoration of Tinplate (*Metal Box Co. Ltd.*)
A Merchant's View (*S. C. Worley*)
The U.S. Tinplate Industry (*American Iron and Steel Institute*)
A Revolution in Can-Making (*G. W. Reese, American Can Co.*)
Tinplate in France and the Saar (*Chambre Syndicale du Fer-blanc*)

In addition there will be a guide to the world's producers showing the type of tinplate produced by the various companies.

The issue will be illustrated by over thirty half-tone photographs.

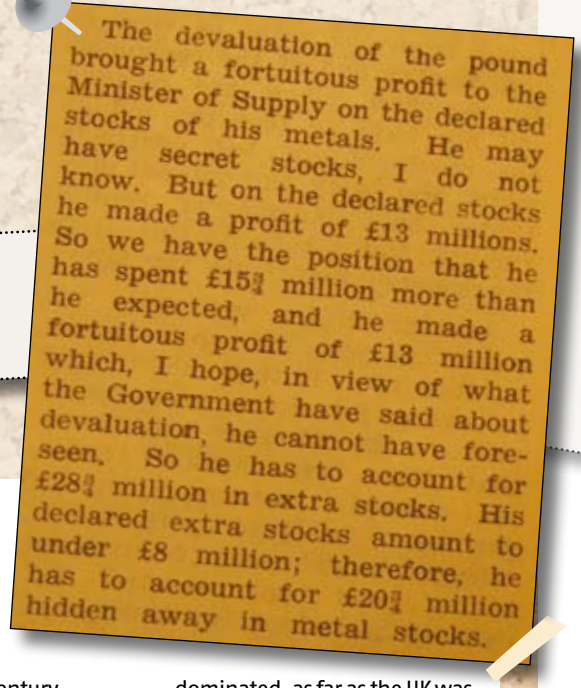
Early ordering of additional copies is recommended.

Our research suggests this was the first regular special issue – meaning an issue not tied to a particular event

Britain and the Schuman Plan

The world has awaited Britain's reaction to the French plan for the integration of the French and German coal and steel industries with breathless interest. Mr. Attlee has now informed Parliament that his Government will approach the proposals in a sympathetic spirit. There appears to be a likelihood that the subject may be debated in the House of Commons before Whitsun.

First came French and German co-operation in steel, then the Common Market, then the EU – leaving the UK with opt-out clauses



The devaluation of the pound brought a fortuitous profit to the Minister of Supply on the declared stocks of his metals. He may have secret stocks, I do not know. But on the declared stocks he made a profit of £13 millions. So we have the position that he has spent £15¾ million more than he expected, and he made a fortuitous profit of £13 million which, I hope, in view of what the Government have said about devaluation, he cannot have foreseen. So he has to account for £28¾ million in extra stocks. His declared extra stocks amount to under £8 million; therefore, he has to account for £20¾ million hidden away in metal stocks.

These almost incomprehensible mathematics, reported in Hansard, illustrate the complexity of the UK government's centralised trading

Birth of Iron & Steel Works of the World

In conversation with the American Iron & Steel Institute, Harry Cordero was asked if he knew of a directory of the world's steel industry. He replied, "No, but we'll write one." Thus was launched Iron and Steel Works of the World, Metal Bulletin's most successful directory, joined later by Metal Traders of the World and Steel Traders of the World; however, the first Non Ferrous Smelters and Refineries had appeared as early as 1940.

The 1950s was also the decade in which the Bureau Internationale de la Récupération accelerated to its present position of importance in the international scrap trade after its formation in 1948.

Metal Bulletin's healthy circulation figures also underpinned a strong growth in advertisements. Demand for the solus front cover position, which had been introduced in 1944, was so strong that not only was there a two-year waiting list for space, but sales staff could insist on complementary inside advertising by those who secured a front cover booking. Along with this, a distinctive silver half-border on the front cover made the journal stand out on desks. This livery was continued until the present century.

Another advertiser-led change came in 1957 with a switch to a deeper page size.

All this meant growth in staffing levels, and, later in the decade, a small satellite office was taken at 44 Albemarle Street, London, when No 27 was bursting at the seams.

Steel coverage began to be dominated, as far as the UK was concerned, by the on-off story of nationalisation of the bulk of the domestic industry (on in 1948, off in 1953 after the Conservatives returned to power in 1951, then on again, after many false starts, in 1967 in the form of what was nearly called the National Steel Corporation, but ended up as the British Steel Corporation). ›

Metal Bulletin
Leading for 100 years

By Trevor Tarring

Trouble at t'mill for UK and US steelmakers

This led to spats between the nationalised mills and the residue that remained private. The latter, later united in the British Independent Steel Producers' Assn (BISPA), were busy lobbying MPs for a fair crack of the whip.

In the USA, union militancy was a permanent feature, but by the mid-1950s, steel mills were running at more than 100% of capacity to keep up with demand.

In Europe, largely through the efforts of Robert Schuman, the European Coal and Steel Community (ECSC) formally came into existence in 1952, beginning a process that culminated, via the creation of the EEC in 1957, in the formation of the European Union. Matters such as price controls were managed by the modestly named High Authority.

The 1950s saw the biggest change in mainstream steelmaking technology for almost 100 years, led by the development of the LD oxygen-blowing process in Austria.

The decade also saw the introduction of the Imperial Smelting Process for zinc recovery. An ingenious pyrometallurgical process that was useful for handling mixed lead-zinc ores, it flourished in the 1960s, but because it produced only gob quality, its use faded away in the later years of the century.

Less than five years after the end of the Second World War, military conflict returned in the Korean peninsula. China's support for North Korea and that of the USA for South Korea followed the pattern of Cold War confrontation between communism and capitalism established in Europe. The Dutch were expelled from the Netherlands East Indies, which became Indonesia; the British later left Malaya.

Markets such as tin and tungsten were destabilised by these events. Between decolonisation and war, the map of the world was more radically and rapidly redrawn in the 1950s than in any earlier decade of the 20th century.

Almost every metal and ore, not to mention oil, was affected by the Suez crisis of 1956 when Colonel Nasser expropriated the canal from the Anglo-French Canal Co and the UK and France took widely condemned military action. The canal remained totally closed for more than six months until a UN peacekeeping force arrived.

In 1952, the release of the Paley Report in the USA caused alarm, as it forecast exhaustion of global resources of lead and other metals by the millennium.

In alloying metals, Climax's decision to build its own roaster in Rotterdam upset European convertors. With foreign exchange often hard to obtain as market forces ran up against the rigid Bretton Woods parities, bartering became a progressively more common form of commerce.

EUROPE

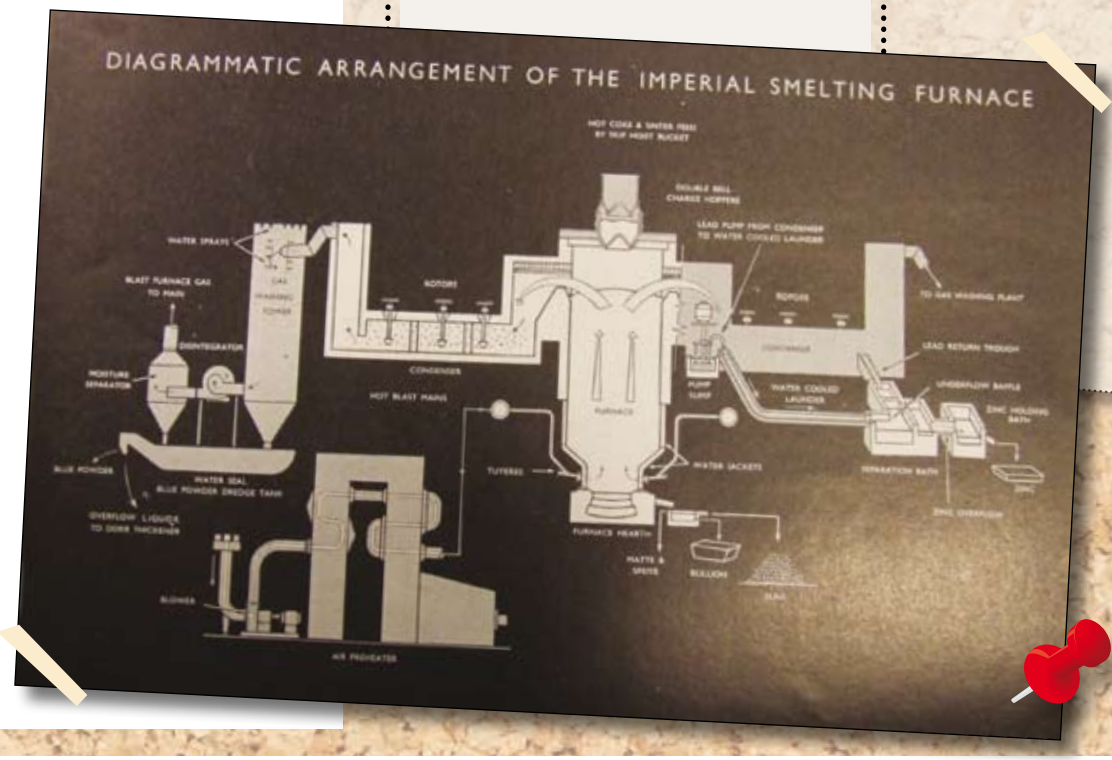
Black Market in Reverse

Europe's six-nation Coal-Steel Pool has a "black market in reverse" where steel prices are lower intead of higher than the official ones, according to a spokesman for the Community. He said that secret agreements between steel buyers and sellers were reported to have led to "cut-price" trading throughout the Community.

M. Monnet, President of the High Authority, the spokesman said, was planning to take stringent measures against secret and discriminatory price agreements. It was also planned to widen official price ranges to extend the benefit of lower prices to all buyers, the spokesman added.

The ECSC finds that free markets will keep resurfacing – and even the president of the High Authority can do nothing to stop it

The Imperial Smelting Process for zinc smelting. Its trick was the recovery of zinc vapour by means of a liquid lead spray



Enemies of free market prices

Fixed – or at any rate, less volatile – parities were also the object of moves in 1955 to create a new price series for copper.

Led by Rhodesian Selection Trust (RST), this involved the producer setting its own selling price on the model of US producer prices for domestic business. Its novel feature was a requirement for semifabricators to price their products on the basis of the new price, not the London Metal Exchange (LME).

Neither they nor their customers were happy with this ulcerating significant tonnage, unevenly spread among mills according to their purchase history, so the RST price was abandoned in 1957. But the seed it had sown bore fruit in the next decade.

Also linking into that decade was the Metal Bulletin cif Europe wirebar price, which producers asked MB to calculate and publish for them from data they provided on their sales – in other words a European "E&MJ". Unfortunately, nobody priced on it in the eight years of its existence.

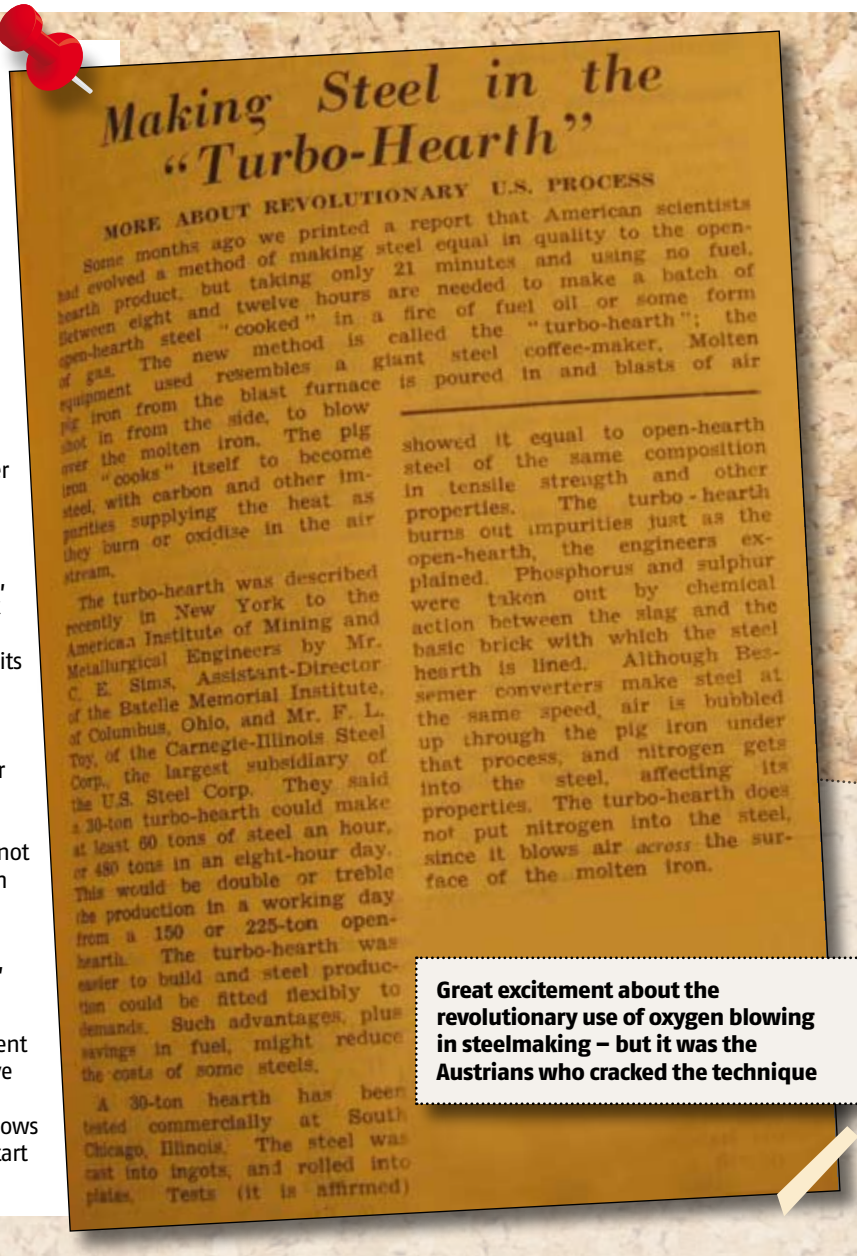
Meanwhile, in the UK, the various so-called trade associations for different types of semis – thinly disguised cartels – were being wound up, under pressure from the relatively new Monopolies Commission.

At the same time, the tin industry's longstanding love affair with commodity agreements had not gone away.

Endless meetings during and after the war kept the idea on the boil, until eventually a five-year International Tin Agreement was signed in 1956, under the auspices of the UN commodity arm, Unctad. Like the last of the prewar cartels, it used a buffer stock mechanism to set upper and lower limits on the range of price movements on the LME.

Unlike the pre-war tin agreements, this one was intergovernmental, not inter-company. Even within its life, the Agreement's Buffer Stock ran out of cash, despite introducing restrictions on production. But it went on to be renewed five times.

The table below shows metal prices at the start of the decade.



Making Steel in the "Turbo-Hearth"

MORE ABOUT REVOLUTIONARY U.S. PROCESS

Some months ago we printed a report that American scientists had evolved a method of making steel equal in quality to the open-hearth product, but taking only 21 minutes and using no fuel. Between eight and twelve hours are needed to make a batch of open-hearth steel "cooked" in a fire of fuel oil or some form of gas. The new method is called the "turbo-hearth"; the equipment used resembles a giant steel coffee-maker. Molten pig iron from the blast furnace is poured in and blasts of air shot in from the side, to blow over the molten iron. The pig iron "cooks" itself to become steel, with carbon and other impurities supplying the heat as they burn or oxidise in the air stream.

The turbo-hearth was described recently in New York to the American Institute of Mining and Metallurgical Engineers by Mr. C. E. Sims, Assistant-Director of the Batelle Memorial Institute, of Columbus, Ohio, and Mr. F. L. Toy, of the Carnegie-Illinois Steel Corp., the largest subsidiary of the U.S. Steel Corp. They said a 30-ton turbo-hearth could make at least 60 tons of steel an hour, or 480 tons in an eight-hour day. This would be double or treble the production in a working day from a 150 or 225-ton open-hearth. The turbo-hearth was easier to build and steel production could be fitted flexibly to demands. Such advantages, plus savings in fuel, might reduce the costs of some steels.

A 30-ton hearth has been tested commercially at South Chicago, Illinois. The steel was cast into ingots, and rolled into plates. Tests (it is affirmed) showed it equal to open-hearth steel of the same composition in tensile strength and other properties. The turbo-hearth burns out impurities just as the open-hearth, the engineers explained. Phosphorus and sulphur were taken out by chemical action between the slag and the basic brick with which the steel hearth is lined. Although Bessemer converters make steel at the same speed, air is bubbled up through the pig iron under that process, and nitrogen gets into the steel, affecting its properties. The turbo-hearth does not put nitrogen into the steel, since it blows air across the surface of the molten iron.

Great excitement about the revolutionary use of oxygen blowing in steelmaking – but it was the Austrians who cracked the technique

In the UK, the 1950s saw trade associations for semis – thinly disguised cartels – wound up, under pressure from the new Monopolies Commission

METAL PRICES IN JANUARY 1950

Metal *(conversion)*	Per long ton	Tonne (x 0.9842)	Inflation adjusted (x 28.11)	$ equivalent *(x 1.617)*
Copper controlled	£153.00	£150.60	£4,233.40	$6,845.40
Tin LME C	£601.00	£591.50	£16,627.00	$10,715.80
Lead controlled	£97.00	£95.50	£2,683.50	$4,339.00
Zinc controlled	£119.875	£118.00	£3,316.40	$5,362.70
Aluminium Producer	£112.00	£110.20	£3,097.70	$5,009.00
Nickel Producer	£321.50	£316.40	£8,894.00	$14,381.60
Billet controlled	£14.125	£13.90	£390.70	$631.80
Plate controlled	£18.51	£18.20	£511.60	$827.25

Ones to watch From Bahrain to Brazil, new projects to make aluminium, ferro-alloys and steel are being planned

The next hot spots for metal production: 50 plants being launched in the next 5 years

According to Metal Bulletin Company Database (www.mbdatabase.com), a service that tracks new plants and modernisation projects across 13,000 companies active in the metals and mining market, these are developments to watch in aluminium, ferro-alloys and steel.

Project	Investors	Country	Plant type	Current status	Output capacity (tpy)	Start-up date	Capex ($m)
Aluminium							
Ras Al Khair	Ma'aden (74.9%), Alcoa Inc (25.1%)	Saudi Arabia	Al smelter	Construction	740,000	2013	10,800
Boguchansky smelter	UC Rusal (50%), RusHydro (50%)	Russia	Al smelter	Construction	600,000	H2 2013	5,000
EMAL Phase II	Dubal (50%), Mubadala (50%)	United Arab Emirates	Al smelter	Construction	1.3m	Q4 2014	4,500
Sino Saudi Jazan smelter	Chalco (40%), Saudi Binladin Group of Saudi Arabia (40%), MMC Group (20%)	Saudi Arabia	Al smelter	Feasibility	1m	2015	4,500
Kalimantan smelter	Nalco (75%), local mining firm (25%)	Indonesia	Al smelter	Hold	500,000	2015	4,500
Alba Potline 6	Alba – Aluminium Bahrain (100%)	Bahrain	Al smelter	Feasibility	1.3m	Q1 2015	3,000
Sohar smelter expansion	Sohar Aluminium Co (100%)	Oman	Al smelter	Feasibility	720,000	2014–2015	3,000
Brajarajnagar smelter	Nalco – National Aluminium Co (100%)	India	Al smelter	Feasibility	500,000	2018	3,000
Kitimat modernisation	Rio Tinto Alcan Inc (100%)	Canada	Al smelter	Construction	420,000	Q3 2014	3,000
Jharsuguda II	Vedanta Resources plc (100%)	India	Al smelter	Construction	1.25m	Q2 2013	2,900
Alcoa Quebec modernisation	Alcoa Inc (100%)	Canada	Al smelter	Construction	1.12m	2015	2,100
Alouette smelter Phase 3	Rio Tinto Alcan (40%), Norsk Hydro ASA (20%), Austria Metall AG (20%), Marubeni Corp (13.33%), Investissement Quebec (6.67%)	Canada	Al smelter	Construction	930,000	2016–2017	2,000
Taishet smelter	UC Rusal (100%)	Russia	Al smelter	Construction	750,000	2016–2017	1,770
Hangzhou Jinjiang smelter	Hangzhou Jinjiang Group Co, Inner Mongolia Huolinhe Coal Group	China	Al smelter	Awaiting govt approval	1m	2014	1,460
Ferro-alloys							
Halmahera ferro-nickel smelter	Eramet (100%)	Indonesia	Ferro-nickel smelter	Construction	Phase 1 – 35,000 (FeNi), 1,300 (Co); Phase 2 – 65,000 (Fe-Ni), 3,000 (Co)	2018	5,500
Capreol Chrome	Cliffs Natural Resources Inc (100%)	Canada	Ferro-chrome smelter	Feasibility	547,500 (FeCr)	2016	1,800
Ganglu ferro-nickel plant	Tangshan Ganglu Iron & Steel Co (100%)	China	Ferro-nickel smelter	Construction	1m (FeNi)	2017	1,800
Sulawesi ferro-nickel plant	Bintangdelapan Group, mineral division (45%), Dingxin Group (55%)	Indonesia	Ferro-nickel smelter	Construction	30,000 (FeNi)	2014–2015	1,000
Aktobe ferro-chrome expansion	JSC KazChrome (100%)	Kazakhstan	4 DC Ferro-chrome furnaces	Construction	440,000 (FeCr)	H2 2013	750
Lion smelter Phase II	Merafe Resources (20.5%), Xstrata plc (79.5%)	South Africa	Ferro-chrome smelter	Construction	360,000 (FeCr)	Q4 2013	710
Tornio ferro-chrome expansion	Outokumpu Oyj (100%)	Finland	Ferro-chrome production to be doubled	Construction	530,000 (FeCr), 2m (stainless steel)	H1 2013	542
Sarawak ferro-alloys project	OM Holdings (80%), Cahya Mata Sarawak Bhd, JFE Shoji	Malaysia	Ferro-alloys smelter (600,000 tpy)	Construction	310,000 (FeSi), 290,000 (FeMn)	Q1 2014	510
Yusco ferro-nickel plant	Yieh United Steel Corp (100%)	China	Ferro-nickel smelter	Construction	300,000 (FeNi)	TBC	340
Pertama ferro-alloys plant	Asia Minerals (60%), Nippon Denko (20%), Carbon Capital Corp (8%), Chuo Denki Kogyo (7%), Shinsho Corp (5%)	Malaysia	Manganese alloys and ferro-silicon smelting plant	Construction	Phase I – 120,000 (SiMn), 54,000 (MC & LC FeMn), 60,000 (FeSi); Phase II – 40,000 (Si metal), 50,000 (Mn metal)	Q3 2013 (phase I), Q4 2014 (phase II)	300

or built. Giant projects include the Ras Al Khair al smelter in Saudi Arabia and the Formosa Vietnam steel plant

Project	Investors	Country	Plant type	Current status	Output capacity (tpy)	Start-up date	Capex ($m)
Remelt plants & mini-mills							
Kaluga mini-mill	Novolipetsk Steel (NLMK)	Russia	EAF, ladle furnace (twin stand) and continuous casting machine (8 strand)	Construction	1.55m (long steel)	Q3 2014	1,200
Big River steel mill	Big River Steel (100%)	USA	Flat rolled mini-mill	Construction to start in Q3 2013	1.7m (steel)	2016	1,100
Toussa Steel mini-mill	Midroc Group (100%)	Ethiopia	EAF (130-tonne), ladle furnaces, six-strand billet caster, section, bar and wire rod mill	Construction	1.3m (crude steel), 950,000 (bar & wire rod), 400,000 (sections)	Q4 2015	764
Balakovo mini-mill	Severstal (100%)	Russia	EAF and meltshop	Construction	1m (long steel)	Q2 2014	700
Volta Redonda long steel mill	CSN – Companhia Siderurgica Nacional (100%)	Brazil	EAF and steel rolling mill	Construction	500,000 (long steel)	Q3 2013	600
Novelis Korea rolling and recycling plant	Novelis Inc (100%)	South Korea	Secondary ingot plant and rolling mill	Construction	220,000 (Al sheet)	2013	400
Pindamonhangaba facility expansion	Novelis Inc (100%)	Brazil	Hot and cold rolling mill, ingot casting centre, pusher furnace and recycling line	Construction	390,000 (aluminium)	2013	300
Nachterstedt facility expansion	Novelis Inc (100%)	Germany	Al scrap remelt plant and sheet ingot casting facilities	Construction	400,000 (Al sheet)	Q2 2014	250
Bawal aluminium alloy plant	Century Metal Recycling (76%), Nikkei MC Aluminium (NMA) (24%)	India	Secondary alloy manufacturing plant	Construction	42,000 (Al alloys)	2013	9
CMR-Toyotsu India joint venture	Century Metal Recycling (70%),Toyota Tsusho Corp (30%)	India	Secondary aluminium alloy plant	Construction	48,000 (Al alloys)	Q4 2013	4.6
Carbon steel							
Formosa Vietnam integrated steel plant	Formosa Plastic Group (95%), China Steel Corp (5%)	Vietnam	Integrated steel plant – 6 blast furnaces, a port and power plants	Construction	7m (crude – phase 1), 2.7m (hot rolled coil), 2.4m (hot rolled bands), 600,000 (wire rod), 600,000 (bar coil), 22,000 (crude – phase 2)	2015 (phase 1), 2020 (phase 2)	15,000
Odisha integrated steel plant	Posco	India	Basic oxygen furnace, slab caster and rolling mill	Delay in land acquisition	8m (phase I), 12m (phase II)	2018 (phase 1)	12,000
Zhangjiang Iron & Steel Phase II	Baosteel Group Corp	China	Integrated steel plant, power plant and port facilities	Construction	10m (crude), 9.4m (hot rolled plate & cold rolled sheet)	2015	10,980
Hajigak steel plant	Sail – Steel Authority of India	Afghanistan	Integrated steel plant and 800MW power plant	Prefeasibility	3.06m (phase I), 6.12m (phase II)	TBC	10,800
Fangchenggang Iron & Steel Base	Wuhan Iron & Steel Group (100%)	China	2 BOFs, 4 converters, 1 ladle furnace, 2 refining units, 4 slab casters, 1 plate mill, 2 hot rolling mills and 3 cold rolling mills	Construction	10m (crude), 8m (hot rolled coil), 4.5m (cold rolled coil), 1.5m (hot rolled plate)	2015-2016	10,000
Rizhao	Shandong Steel Group (100%)	China	Integrated steel plant	Approval received from NDRC	8.5m (crude), 7.9 (finished)	2013	9,100
Jindal Salboni steel plant	JSW Steel (100%)	India	Integrated steel plant and 300MW power plant	Construction	3m (phase 1), 1m (phase 2)	2014 (phase 1)	6,500
Jindal Angul plant	Jindal Steel & Power (100%)	India	Integrated steel plant and 800MW power plant	Construction – 90% complete	6m (crude)	Q2 2013	5,500
Karnataka steel plant	NMDC (50%), OAO Severstal (50%)	India	Integrated steel plant	Hold	3m (crude)	2017	4,000
Bhushan West Bengal steel plant	Bhushan Steel (60%) Sumitomo Metal Industries (40%)	India	Basic oxygen furnace, slab caster and hot rolling mill	Delay in land acquisition	6m (hot rolled coil)	2015	4,000
Gladstone steel plant	Boulder Steel	Australia	Integrated steel plant	Environmental impact study complete	2.5m (phase 1), 5m (phase 2)	Q1 2016	4,000
Companhia Siderúrgica do Pecém (CSP)	Vale SA (50%), Dongkuk Steel Mill (30%), Posco (20%)	Brazil	Blast furnace and slab mill	Construction	3m (phase 1), 6m (phase 2)	H1 2015	2,648
Bellara steel complex	Sider, Fonds National D'Investissement, Qatar Steel Co (QSC), Qatar Mining	Algeria	Integrated steel plant	Construction	1.5m (rebar), 500,000 (wire rod)	2017	2,000
Fénix	Ahmsa (100%)	Mexico	Blast furnace (1.46m tpy), EAF (1.2m tpy), slab caster (1.2m tpy), plate mill (1m tpy)	Construction	550,000 (hot rolled coil), 1m (hot rolled plate)	Q2 2013	1,500
Monlevade long steel plant expansion	ArcelorMittal (100%)	Brazil	Blast furnace (1.12m tpy), sinter plant (2.3m tpy), wire rod rolling mill (1.15m tpy)	Hold	2.4m (billet), 2.3m (wire rod)	TBC	1,200
Açominas plant expansion	Gerdau SA (100%)	Brazil	Hot strip mill (770,000 tpy) and heavy plate mill (1.1 m tpy)	Construction	770,000 (hot rolled sheet), 1.1m (heavy plate)	2013 (hot strip mill), 2015 (heavy plate mill)	1,200

Metal Bulletin April Averages

		Low	High
Aluminium			
Primary aluminium ingot to meet LME Spec: P1020A			
Rotterdam premium		200.000	213.429
LME duty paid premium indicator H/G Cash $/tonne		272.500	290.000
Alumina			
Index fob Australia		325.525	
Antimony			
MB free market			
Regulus 99.65%, max Se 50ppm, $/tonne in warehouse		10,275.000	10,837.500
MMTA Standard grade II $/tonne		10,175.000	10,737.500
Bismuth			
MB free market			
min. 99.99%, $/lb, tonne lots in warehouse		8.831	9.475
Cadmium			
MB free market			
min 99.95%, cents/lb in warehouse		90.000	100.000
min 99.99%, cents/lb in warehouse		93.125	105.313
Cobalt			
MB free market			
High Grade, $/lb in warehouse		11.700	13.106
Low Grade, $/lb in warehouse		11.456	12.519
Copper			
US High-grade cathode premium indicator, $/tonne		99.000	121.000
Germanium Dioxide			
MB free market min 99.99%, $/kg		1,275.000	1,350.000
Rotterdam $/kg		1,665.000	1,715.000
Gold			
London per troy oz	Morning	$1,485.90476	
	Afternoon	$1,485.08333	
	Morning	£971.06143	
	Afternoon	£969.74452	
	Handy/Harman	$1,490.22	
Indium			
MB free market			
Ingots min 99.97%, $/kg in warehouse		528.125	563.125
Magnesium			
MB free market			
min 99.8%, $/tonne		2,900.000	3,000.000
China free market min 99.8%		2,760.000	2,893.750
Mercury			
MB free market			
min 99.99%, $/flask in warehouse		3,300.000	3,600.000
Molybdenum			
Free market in warehouse			
Europe drummed molybdic oxide $/lb Mo		11.081	11.194
US canned molybdic oxide $/lb Mo		10.844	11.238
Nickel			
Free market in warehouse premium			
Europe $/tonne	uncut cathodes	25.000	100.000
	4x4 cathodes	175.000	200.000
	briquettes	50.000	100.000
US	Melting $/lb	0.180	0.250
	Plating $/lb	0.500	0.600
Palladium			
Morning $/troy oz		$703.14286	
Afternoon $/troy oz		$703.04762	
Platinum: per troy oz			
European free market			
Morning $/troy oz		$1,489.00000	
Afternoon $/troy oz		$1,489.11905	
Rhodium			
European free market			
min 99.9% in warehouse, $/troy oz		1,153.125	1,203.125

	Low	High
Selenium		
MB free market		
min 99.5% in warehouse $/lb	34.875	40.750
Silicon		
MB free market €/tonne	1,950.000	2,050.000
Silver		
London		
spot pence/troy oz	1,646.49857	
spot cents/troy oz	2,519.85714	
Handy/Harman cents/troy oz	2,525.25	
Tin		
European free market		
Spot Premium 99.9% $/tonne	500.000	600.000
Spot premium 99.85% $/tonne	400.000	500.000
Kuala Lumpur (ex-smelter) $/tonne	21,848.64	
Titanium		
Ferro-Titanium		
70% (max 4.5% Al), $/kg d/d Europe	6.163	6.413
Tungsten		
European free market APT $/mtu	348.000	355.000
Foundry Ingots		
Aluminium		
LM24	1,520.000	1,560.000
LM6/LM25	1,720.000	1,780.000
Aluminium Europe €/tonne	1,702.500	1,765.000
Phosphor Bronze		
PB1 ex-works £/tonne	6,330.000	
Zinc Alloy		
10 tonne lots ZL3 £/tonne	1,754.000	
Ores		
Ferro-Molybdenum		
basis 65-70% Mo, $/kg	27.413	27.800
Vanadium		
min 98%, other sources, $/lb V205	6.163	6.488
Ferro-Vanadium		
basis 70-80%, $/kg V	28.763	29.525
US Free market 70-80%	14.675	15.006
Ferro-Tungsten		
basis 75% W min	40.994	43.038

Exchange Rates (Closing Rates)

$/£	1.5312
$/yen	97.7416
$/€	1.3026

London Metal Exchange

High, low and average April (21 days)
LME averages are mean of buyers and sellers except for settlement and 3 months sellers.

	January - April 2013 Low $	High $	April Average $
Copper Grade A ($)			
Cash	6,810.50	8,242.25	7,202.96
3 months	6,841.00	8,285.50	7,236.79
Settlement	6,811.00	8,242.50	7,203.36
3 months seller	6,842.00	8,286.00	7,237.26
Copper Grade A (£)			
Settlement	4,464.18	5,293.45	4,705.80
3 months seller	4,486.85	5,320.09	4,730.39
Tin ($)			
Cash	20,302.50	25,175.00	21,685.00
3 months	20,325.00	25,125.00	21,693.10
Settlement	20,305.00	25,200.00	21,694.05
3 months seller	20,350.00	25,150.00	21,701.43
Lead ($)			
Cash	1,982.25	2,447.50	2,029.80
3 months	2,001.75	2,454.50	2,051.36
Settlement	1,982.50	2,448.00	2,030.26
3 months seller	2,002.00	2,455.00	2,051.83
Lead (£)			
Settlement	1,292.46	1,555.80	1,326.28
3 months seller	1,309.76	1,564.31	1,341.07
Zinc ($)			
Cash	1,813.25	2,187.25	1,852.63
3 months	1,848.75	2,213.50	1,887.96
Settlement	1,813.50	2,187.50	1,852.90
3 months seller	1,849.00	2,214.00	1,888.36
Aluminium ($)			
Cash	1,803.75	2,122.75	1,856.24
3 months	1,841.75	2,165.25	1,889.07
Settlement	1,804.00	2,123.00	1,856.52
3 months seller	1,842.00	2,165.50	1,889.40
Aluminium Alloy ($)			
Cash	1,750.00	1,975.00	1,784.69
3 months	1,765.00	2,005.00	1,797.74
Settlement	1,755.00	1,980.00	1,789.05
3 months seller	1,770.00	2,010.00	1,802.86
Nickel ($)			
Cash	15,082.50	18,590.00	15,631.55
3 months	15,152.50	18,662.50	15,698.93
Settlement	15,085.00	18,600.00	15,635.00
3 months seller	15,155.00	18,665.00	15,701.90
Nassa ($)			
Cash	1,730.25	1,955.00	1,768.96
3 months	1,755.00	1,977.50	1,788.43
Settlement	1,730.50	1,960.00	1,771.50
3 months seller	1,760.00	1,980.00	1,792.62
Cobalt ($)			
Cash	24,750.00	27,250.00	26,024.17
3 months	24,750.00	27,500.00	26,242.86
Settlement	25,000.00	27,500.00	26,165.00
3 months seller	25,000.00	28,000.00	26,628.57
Molybdenum ($)			
Cash	23,950.00	26,000.00	24,023.81
3 months	23,950.00	26,000.00	24,023.81
Settlement	24,200.00	26,500.00	24,523.81
3 months seller	24,200.00	26,500.00	24,523.81
Steel Billet ($)			
Cash	112.50	295.00	154.69
3 months	135.00	341.50	178.33
Settlement	115.00	300.00	157.55
3 months seller	140.00	342.00	183.57

LME Settlement Conversion Rates

$/£	1.5309
$/yen	97.933
$/€	1.3024

Metal Bulletin monthly average prices are calculated on those price quotations formulated during the month. This may be different from the MB issues published during the month.

Daily metal and steel

London forward

"**LME settlement prices**. All prices per tonne, unless otherwise stated, in LME warehouse, EU duty, if any paid, for buyers account."

Year ago May 2			*Apr 26*	*Apr 29*	*Apr 30*	*May 1*	*May 2*
Aluminium High Grade $							
2064.00-**2064.50**	LME Cash	official	1889.50-**1890.00**	1846.00-**1846.50**	1846.00-**1846.50**	1788.00-**1788.50**	1802.00-**1803.00**
		"unofficial"	1884.50-1886.50	1853.00-1854.00	1837.00-1838.00	1788.00-1789.00	1791.00-1793.00
2107.50-2108.00	LME 3 months	official	1922.00-1922.50	1881.00-1881.50	1886.00-1886.50	1828.00-1828.50	1836.50-1837.00
		"unofficial"	1916.00-1918.00	1891.00-1892.00	1874.00-1875.00	1826.00-1827.00	1828.00-1830.00
	LME Tapo Notional Average Price(NAP) for May 2013		1857.58	1857.03	n/a	1788.50	1795.75
	LME stocks (tonnes)		5,167,725	5,157,625	5,152,825	5,163,650	5,167,775
Aluminium Alloy (A380.1/DIN226/D12S) $							
1970.00-**1975.00**	LME Cash	official	1810.00-**1820.00**	1790.00-**1800.00**	1780.00-**1790.00**	1760.00-**1770.00**	1720.00-**1740.00**
		"unofficial"	1790.00-1800.00	1783.50-1793.50	1780.00-1790.00	1759.00-1769.00	1730.00-1740.00
1985.00-1995.00	LME 3 months	official	1810.00-1820.00	1810.00-1820.00	1800.00-1810.00	1780.00-1790.00	1740.00-1760.00
		"unofficial"	1810.00-1820.00	1805.00-1815.00	1800.00-1810.00	1780.00-1790.00	1750.00-1760.00
	LME stocks (tonnes)		71,060	70,680	70,360	70,200	69,540
N. American Special Aluminium Alloy							
2061.00-**2061.50**	LME Cash	official	1760.00-**1761.00**	1730.00-**1730.50**	1750.00-**1755.00**	1735.00-**1740.00**	1725.00-**1730.00**
		"unofficial"	1779.50-1789.50	1734.50-1744.50	1745.00-1755.00	1724.50-1734.50	1728.50-1738.50
2102.00-2103.00	LME 3 months	official	1804.00-1805.00	1750.00-1760.00	1765.00-1770.00	1740.00-1745.00	1740.00-1745.00
		"unofficial"	1795.00-1805.00	1750.00-1760.00	1760.00-1770.00	1740.00-1750.00	1740.00-1750.00
	LME Stocks (tonnes)		128,060	127,620	126,600	126,100	125,580
Copper Grade A$							
8400.00-**8401.00**	LME Cash	official	7054.00-**7054.50**	7078.00-**7079.00**	7073.00-**7073.50**	6870.00-**6875.00**	6870.00-**6870.50**
		"unofficial"	7088.00-7091.00	7097.00-7104.00	7007.00-7009.00	6788.50-6791.50	6850.00-6855.00
8328.00-8329.00	LME 3 months	official	7099.50-7100.00	7116.50-7117.00	7105.00-7105.50	6906.00-6906.50	6899.00-6900.00
		"unofficial"	7120.00-7123.00	7130.00-7137.00	7041.00-7043.00	6820.00-6823.00	6880.00-6885.00
	LME Tapo Notional Average Price(NAP) for May 2013		7216.74	7209.85	n/a	6875.00	6872.75
	LME stocks (tonnes)		617,650	618,600	618,175	616,125	608,700
Lead $							
2143.00-**2143.50**	LME Cash	official	2036.00-**2037.00**	2020.00-**2021.00**	2018.50-**2019.00**	1969.00-**1970.00**	1978.00-**1979.00**
		"unofficial"	2039.00-2042.00	2015.00-2018.00	2008.00-2009.00	1963.50-1964.50	1943.00-1945.00
2149.00-2150.00	LME 3 months	official	2055.50-2056.00	2037.00-2037.50	2037.50-2038.00	1989.00-1989.50	1995.00-1996.00
		"unofficial"	2059.00-2062.00	2036.00-2039.00	2028.00-2029.00	1983.00-1984.00	1960.00-1962.00
	LME stocks (tonnes)		256,700	255,175	254,325	253,925	252,200
Nickel$							
17425-**17430**	LME Cash	official	15275-**15280**	15280-**15285**	15195-**15200**	14970-**14975**	14765-**14770**
		"unofficial"	15290-15310	15390-15420	15130-15180	14820-14840	14630-14635
17470-17475	LME 3 months	official	15340-15350	15370-15380	15250-15255	15050-15055	14845-14850
		"unofficial"	15360-15380	15460-15490	15200-15250	14890-14910	14705-14710
	LME stocks (tonnes)		175,836	177,036	178,476	178,476	178,338
Tin $							
22225.00-**22250.00**	LME Cash	official	20770.00-**20775.00**	20770.00-**20775.00**	20750.00-**20800.00**	19770.00-**19775.00**	19945.00-**19950.00**
		"unofficial"	20855.00-20905.00	20750.00-20800.00	20455.00-20555.00	19880.00-19930.00	19830.00-19880.00
22300.00-22325.00	LME 3 months	official	20800.00-20850.00	20795.00-20800.00	20820.00-20825.00	19770.00-19775.00	19950.00-20000.00
		"unofficial"	20900.00-20950.00	20800.00-20850.00	20500.00-20600.00	19925.00-19975.00	19875.00-19925.00
	LME stocks (tonnes)		13,935	14,055	14,030	14,030	13,830
Zinc Special High Grade $							
2028.00-**2028.50**	LME Cash	official	1886.50-**1887.00**	1861.50-**1862.00**	1853.50-**1854.00**	1803.00-**1803.50**	1823.50-**1824.00**
		"unofficial"	1889.50-1891.50	1866.00-1867.00	1837.50-1838.50	1796.00-1801.00	1802.50-1804.50
2037.00-2037.50	LME 3 months	official	1918.50-1919.00	1896.50-1897.00	1887.00-1888.00	1837.00-1838.00	1854.50-1855.00
		"unofficial"	1923.00-1925.00	1901.00-1902.00	1873.00-1874.00	1830.00-1835.00	1835.00-1837.00
	LME stocks (tonnes)		1,074,875	1,068,475	1,062,175	1,060,000	1,056,400
Cobalt min 99.3%							
30450.00-**30550.00**	LME Cash	official	26500.00-**27500.00**	26500.00-**27000.00**	27100.00-**27200.00**	27500.00-**27600.00**	27200.00-**27300.00**
	LME 3 months	official	27000.00-28000.00	26750.00-27750.00	27000.00-28000.00	27000.00-28000.00	27000.00-28000.00
	LME stocks (tonnes)		426	429	438	438	438
Molybdenum $							
30000.00-**31500.00**	LME Cash	official	23500.00-**24500.00**	23500.00-**24500.00**	24000.00-**25000.00**	24000.00-**25000.00**	24000.00-**25000.00**
30000.00-31500.00	LME 3 months	official	23500.00-24500.00	23500.00-24500.00	24000.00-25000.00	24000.00-25000.00	24000.00-25000.00
	LME stocks (tonnes)		120	120	120	120	120
Steel Billet							
486.00-**488.00**	LME Cash	Official	130.00-**140.00**	120.00-**140.00**	110.00-**115.00**	105.00-**110.00**	113.00-**115.00**
		"unofficial"	138.00-148.00	128.00-138.00	128.00-138.00	103.00-113.00	129.00-139.00
500.00-505.00	LME 3 months	official	160.00-170.00	140.00-160.00	130.00-140.00	125.00-135.00	150.00-155.00
		"unofficial"	160.00-170.00	150.00-160.00	150.00-160.00	125.00-135.00	150.00-160.00
	LME stocks (tonnes)		77,480	77,480	77,480	77,480	77,350
Gold $/troy oz							
1652.50	London	morning	1462.25	1472.50	1472.75	1469.50	1456.00
1648.00	London	afternoon	1471.50	1467.50	1469.00	1454.75	1469.25
1648.00	Handy/Harman		1471.50	1467.50	1469.00	1454.75	1469.25
Silver per troy oz							
1886.51/3052.00	London Spot	pence/cents	1554.19/2402.00	1563.59/2427.00	1576.50/2442.00	1539.80/2397.00	1521.03/2369.00
3046.50	Handy/Harman	cents	2367.50	2429.00	2415.00	2326.50	2382.50
Palladium $/troy oz							
675.00	London	morning	678.00	684.00	699.00	697.00	685.00
673.00	London	afternoon	681.00	694.00	699.00	688.00	688.00
Platinum $/troy oz							
1565.00	London	morning	1477.00	1493.00	1513.00	1500.00	1477.00
1562.00	London	afternoon	1483.00	1505.00	1507.00	1480.00	1487.00

Kuala Lumpur tin market

Year ago May 2	*Apr 26*	*Apr 29*	*Apr 30*	*May 1*	*May 2*
Tin $/tonne					
22,300	20,900	20,900	20,900	closed	20,200

Dubai

Please note this price is no longer quoted

Rebar $

LME & SHFE stocks (tonnes effective 30 April)

Note: deliveries in and out for the week Apr 24 – 30

Aluminium

	Delivered in			Delivered out			Total		
	Ingots	T Bars	Sows	Ingots	T Bars	Sows	Ingots	T Bars	Sows
Antwerp	nil	nil	nil	250	nil	nil	26,925	20,850	nil
Hamburg	nil	nil	nil	nil	nil	nil	23,425	20,075	nil
Genoa	nil	nil	nil	nil	nil	nil	12,000	nil	nil
Leghorn	nil	nil	nil	nil	nil	nil	375	nil	400
Trieste	nil	nil	nil	775	625	nil	59,250	54,600	5,325
Busan	nil	nil	nil	200	nil	nil	17,200	5,300	nil
Gwangyang	nil	nil	nil	nil	nil	nil	24,050	22,650	nil
Incheon	nil	nil	nil	nil	nil	nil	8,550	2,250	100
Johor	nil	nil	nil	nil	nil	nil	27,100	nil	16,250
Port Klang	nil	nil	nil	nil	nil	nil	15,300	nil	1,000
Rotterdam	nil	nil	nil	250	2,050	300	275,650	354,250	47,175
Vlissingen	14,975	10,725	nil	2,075	9,925	nil	617,100	1,087,875	45,075
Singapore	nil	nil	nil	400	nil	nil	311,100	95,850	119,325
Bilbao	nil	nil	nil	nil	nil	nil	16,225	14,050	nil
Gothenburg	nil	nil	nil	nil	nil	nil	nil	nil	nil
Helsingborg	nil	nil	nil	nil	nil	nil	nil	12,400	25
Hull	nil	nil	nil	nil	nil	nil	3,025	875	nil
Tyne & Wear	nil	nil	nil	100	nil	nil	8,750	2,125	1,050
Liverpool	nil	nil	nil	nil	nil	nil	nil	nil	17,350
Baltimore	nil	nil	nil	50	4,625	575	29,350	96,500	168,175
Chicago	nil	nil	nil	nil	nil	nil	50	10,975	4,000
Detroit	nil	nil	nil	550	9,575	4,800	37,800	735,325	561,950
Long Beach	nil	nil	nil	nil	nil	nil	nil	nil	nil
Los Angeles	nil	nil	nil	nil	nil	nil	75	4,375	2,300
Mobile	nil	nil	nil	2,825	nil	nil	99,150	nil	nil
New Orleans	nil	nil	nil	nil	nil	nil	300	nil	200
St Louis	nil	nil	nil	nil	nil	nil	nil	nil	nil
Toledo	nil	nil	nil	nil	nil	nil	475	3,275	6,300
Total	14,975	10,725	nil	7,475	26,800	5,675	1,613,225	2,543,600	996,000

Al.Alloy (large sows)

	Delivered in			Delivered out			Total		
	A380.1	226/DIN	D12S/J1S	A380.1	226/DIN	D12S/J1S	A380.1	226/DIN	D12S/JS
Antwerp	nil	nil	nil	nil	nil	nil	200	1,500	nil
Rotterdam	nil	nil	nil	nil	nil	nil	nil	1,000	nil
Vlissingen	nil	nil	nil	nil	nil	nil	nil	160	nil
Singapore	nil	nil	nil	nil	nil	nil	400	nil	nil
Total	nil	nil	nil	nil	nil	nil	600	2,660	nil

Alum.alloy

	Delivered in			Delivered out			Total		
	A380.1	226/DIN	AD12.1	A380.1	226/DIN	AD12.1	A380.1	226/DIN	AD12.1
Antwerp	nil	nil	nil	nil	nil	nil	1,420	11,360	1,900
Hamburg	nil	nil	nil	nil	nil	nil	60	nil	nil
Genoa	nil	nil	nil	nil	nil	nil	5,600	nil	nil
Trieste	nil	nil	nil	nil	nil	nil	7,060	nil	nil
Busan	nil	nil	nil	nil	nil	260	nil	nil	120
Gwangyang	nil	nil	nil	nil	nil	nil	nil	nil	40
Incheon	nil	nil	nil	nil	nil	nil	nil	nil	nil
Rotterdam	nil	nil	nil	nil	nil	nil	380	8,060	nil
Vlissingen	nil	nil	nil	nil	1,680	320	320	9,480	1,120
Johor	nil	nil	nil	nil	100	nil	nil	1,200	nil
Port Klang	nil	nil	nil	nil	nil	nil	nil	60	nil
Singapore	nil	nil	nil	nil	nil	nil	680	15,740	nil
Bilbao	nil	nil	nil	nil	nil	nil	2,180	nil	nil
Liverpool	nil	nil	nil	nil	nil	nil	320	nil	nil
Total	nil	nil	nil	nil	1,780	580	18,020	45,900	3,180

Nickel

	Delivered in			Delivered out			Total		
	Cats	Pellets	Briqs	Cats	Pellets	Briqs	Cats	Pellets	Briqs
Busan	nil	nil	nil	nil	nil	nil	138	nil	nil
Incheon	nil	nil	nil	nil	nil	nil	90	nil	nil
Rotterdam	nil	nil	nil	nil	nil	nil	nil	nil	288
Vlissingen	nil	nil	nil	nil	nil	nil	nil	nil	300
Singapore	nil	nil	nil	nil	nil	nil	6	nil	nil
Chicago	nil	nil	nil	nil	nil	nil	nil	1,008	nil
Total	nil	nil	nil	nil	nil	nil	234	1,008	588

Nickel full plate cats

	Delivered In	Delivered Out	Total
Antwerp	nil	300	11,664
Hamburg	nil	nil	348
Genoa	nil	nil	24
Busan	nil	24	9,792
Gwangyang	nil	nil	516
Johor	nil	nil	498
Rotterdam	2,700	660	73,758
Vlissingen	nil	30	8,796
Singapore	nil	18	6,000
Helsingborg	nil	nil	2,802
Dubai	396	396	4,350
Hull	nil	nil	3,384
Tyne & Wear	nil	48	48
Liverpool	nil	nil	3,492
Detroit	nil	nil	402
Total	3,096	1,476	125,874

Nickel Bagged Briquettes

	Delivered In	Delivered Out	Total
Busan	nil	nil	450
Johor	996	nil	46,974
Vlissingen	nil	nil	300
Singapore	nil	nil	1,458
Dubai	nil	nil	1,500
Total	996	nil	50,682

Copper

	Delivered In	Delivered Out	Total
	cats	cats	cats
Antwerp	175	100	122,575
Leghorn	nil	nil	nil
Trieste	nil	nil	25
Busan	nil	4,675	46,250
Gwangyang	nil	1,950	16,450
Incheon	nil	2,100	6,500
Johor	8,625	nil	181,550
Port Klang	nil	575	nil
Rotterdam	700	825	7,850
Vlissingen	nil	nil	9,500
Singapore	nil	1,700	21,750
Barcelona	nil	nil	nil
Bilbao	nil	nil	25
Hull	100	50	500
Liverpool	nil	nil	625
Chicago	nil	125	5,850
Mobile	nil	nil	50
New Orleans	2,900	2,500	176,225
St Louis	nil	100	22,450
Total	12,500	14,700	618,175

Lead

	Delivered In	Delivered Out	Total
Antwerp	200	2,275	71,050
Hamburg	nil	nil	400
Genoa	nil	nil	2,400
Leghorn	nil	nil	200
Trieste	nil	nil	50
Johor	nil	nil	32,875
Port Klang	nil	1,225	42,025
Rotterdam	nil	nil	150
Vlissingen	nil	nil	49,950
Singapore	nil	nil	325
Barcelona	nil	nil	5,450
Bilbao	600	nil	5,250
Detroit	nil	1,625	42,500
Long Beach	nil	50	1,025
Los Angeles	nil	100	675
Mobile	nil	nil	nil
New Orleans	nil	nil	nil
Total	800	5,275	254,325

Zinc

	Delivered In	Delivered Out	Total
Antwerp	nil	9,725	116,725
Trieste	nil	nil	nil
Johor	nil	7,500	33,975
Port Klang	nil	nil	22,000
Rotterdam	nil	nil	8,575
Vlissingen	nil	nil	53,950
Singapore	nil	nil	4,425
Bilbao	nil	nil	600
Hull	nil	nil	3,925
Liverpool	nil	nil	75
Baltimore	nil	125	9,475
Chicago	nil	nil	nil
Detroit	nil	nil	116,225
New Orleans	nil	13,025	692,225
Total	nil	30,375	1,062,175

Cobalt

	Delivered In	Delivered Out	Total
Antwerp	nil	nil	41
Rotterdam	nil	nil	284
Singapore	9	nil	67
Baltimore	nil	nil	46
Total	9	nil	438

Roasted Molybdenum Concentrate RMC Powder

	Delivered In	Delivered Out	Total
Rotterdam	nil	nil	120
Total	nil	nil	120

Tin

	Delivered In	Delivered Out	Total
Busan	nil	nil	45
Gwangyang	nil	nil	50
Rotterdam	nil	nil	40
Johor	100	195	7,360
Port Klang	nil	65	4,705
Singapore	45	100	1,720
Baltimore	nil	nil	110
Total	145	360	14,030

NASAAC ingots

	Delivered In	Delivered Out	Total
Baltimore	nil	140	5,820
Chicago	nil	100	1,620
Detroit	nil	480	16,360
Long Beach	nil	nil	640
Mobile	nil	nil	40
New Orleans	nil	nil	1,460
Total	nil	720	25,940

NASAAC T-Bars

	Delivered In	Delivered Out	Total
Baltimore	nil	200	3,060
Detroit	nil	20	3,420
Total	nil	220	6,480

NASAA large sows

	Delivered	Delivered	Total
Baltimore	nil	60	2,360
Chicago	nil	nil	80
Total	nil	60	2,440

NASAA small sows

	Delivered In	Delivered Out	Total
Chicago	nil	3,440	50,080
Detroit	nil	300	30,080
Mobile	nil	nil	940
New Orleans	nil	20	3,940
St Louis	nil	nil	6,700
Total	nil	3,760	91,740

Steel Billet

	Delivered in	Delivered out	Total
Antwerp	nil	nil	55,705
Incheon	nil	nil	65
Johor	nil	nil	325
Chicago	nil	nil	1,495
Detroit	nil	nil	16,250
New Orleans	nil	nil	3,640
Total	nil	nil	77,480

Shanghai Futures Exchange

	Deliverable
Aluminium	467,671
Copper	213,782
Zinc	301,740

Exchange Rates & New York Futures

Exchange Rates

	Apr 26	Apr 29	Apr 30	May 1	May 2
LME Settlement Conversion Rates					
$/£	1.5468	1.5519	1.5483	1.5570	1.5581
$/Yen	98.72	97.87	97.51	97.47	97.37
$/€	1.2999	1.3090	1.3076	1.3221	1.3194
Closing Rates, Midpoint					
$/£	1.5492	1.5494	1.5564	1.5552	1.5512
$/Yen	97.68	98.15	97.41	97.35	98.02
$/€	1.3027	1.3100	1.3184	1.3193	1.3073
£/€	1.1892	1.1827	1.1806	1.1788	1.1866

Standard Bank prices

Standard Bank's rand fixing prices per tonne for London Metal Exchange trade

	Apr 26	Apr 29	Apr 30	May 1	May 2
Copper	R64,301.77	R63,463.24	R63,413.93	R61,582.81	R61,714.27
Aluminium	R17,227.35	R16,553.87	R16,553.87	R16,020.49	R16,195.45
Lead	R18,567.26	R18,118.27	R18,100.34	R17,646.28	R17,776.37
Zinc	R17,200.01	R16,692.83	R16,621.11	R16,154.85	R16,384.08
Nickel	R139,277.20	R137,030.03	R136,268.00	R134,138.56	R132,671.53
Tin	R189,364.13	R186,247.88	R186,472.00	R177,134.56	R179,200.88

New York futures

Year ago	May 1	Apr 25	Apr 26	Apr 29	Apr 30	May 1
(Comex) Copper high grade cents/lb						
378.55	May `13	323.80	318.50	322.55	318.75	308.25
143,961	Open Interest	166,883	162,206	162,766	166,042	168,123
74,177	Stocks (short tons)	85,444	85,512	85,662	85,562	85,196
(Comex) Gold $/troy oz						
1653.40	May `13	1461.80	1453.60	1467.40	1472.20	1446.30
415,844	Open Interest	419,829	416,777	422,733	421,087	423,887
10,998,149	Stocks (troy oz)	7,990,798	8,143,247	8,049,242	8,129,154	8,000,991
(Nymex) Palladium $/troy oz						
668.85	Nymex Sett May	680.20	680.86	699.20	696.70	683.65
5,906	Stocks (troy oz)	546,011	546,011	546,011	546,011	545,608
(Nymex) Platinum $/troy oz						
1560.20	Nymex Sett May	1462.80	1475.20	1506.40	1505.40	1468.70
3,950	Stocks (troy oz)	233,856	233,856	233,856	233,856	233,056
(Comex) Silver cents/troy oz						
3059.20	May `13	2414.00	2375.80	2414.50	2414.40	2330.50
111,443	Open Interest	154,988	148,156	146,310	143,477	145,736

Shanghai futures

Year ago	May 2	Apr 26	Apr 29	Apr 30	May 1	May 2
Aluminium yuan/tonne (May delivery)						
16,110		14,590	closed	closed	closed	14,430
Copper yuan/tonne (May delivery)						
58,580		52,330	closed	closed	closed	50,260
Zinc yuan/tonne (May delivery)						
15,500		14,655	closed	closed	closed	14,290

Non-Ferrous Primary Metals

Base Metals

	May 1	May 3
Aluminium		
LME prices: see Daily Metal		
LME duty-paid Premium Indicator/HG Cash	270-290*	270-290*
HG duty-paid three months	270-290*	270-290*
Cif Japan: 99.7% duty unpaid premium indicator quarterly	248-249*	248-249*
CIS-origin: indicators in warehouse Europe: A7e premium	200-210*	200-210*
Extrusion billet premium 6063, EC duty paid,		
in warehouse Rotterdam ($/tonne)	480-495*	480-495*
US free market: P1020 US midwest		
premium indicator ($/lb)	0.115-0.120*	0.115-0.120*
MB Chinese free market,		
Metallurgical grade, delivered duty paid RMB/tonne	2,450-2,600*	2,450-2,600*
Alumina		
Index fob Australia		326.25
Copper & Brass		
LME: see Daily Metal		
Producer premium		
(Codelco): contract2013 Grade A cathode (average)	*85-85*	*85-85*
MB free market US: High-grade cathode		
premium indicator, $/tonne	99.00-121.00*	132.00-176.00*
Chinese Grade 1:	130-140*	130-140*
Germany: (VDM) Electro, €/tonne wirebar (DEL):	5,488.90-5,514.50	5,488.90-5,514.50
cathodes:	5,370.00-5,447.00	5,370.00-5,447.00
South Africa: Palabora copper rod 7.90mm, Rand/tonne	84,719.46	79,179.01
Tin		
Kuala Lumpur and LME prices: see Daily Metal		
MB European free market		
Spot premium 99.9% $ per tonne	450-600*	450-600*
Spot premium 99.85% $/tonne	400-450*	400-450*
MB US free market: Grade A tin premium $/lb	0.27-0.34*	0.27-0.34*

	May 1	May 3
Nickel		
LME prices: see Daily Metal		
Europe: $/tonne in warehouse Rotterdam		
uncut cathodes premium indicator	25.00-100.00*	25.00-100.00*
4x4 cathodes premium indicator	175.00-200.00*	175.00-200.00*
briquettes premium indicator	50.00-100.00*	50.00-100.00*
US: melting premium indicator $/lb	0.18-0.25*	0.18-0.25*
plating premium indicator $/lb	0.50-0.60*	0.50-0.60*
Lead		
LME prices: see Daily Metal		
Germany: (VDM) virgin soft, €/tonne	1,710.00-1,750.00	1,710.00-1,750.00
MB US: High Grade ingot premium indicator, $/lb	0.1300-0.1500*	0.1300-0.1500*
MB European free market:		
in warehouse Rotterdam €/tonne	50-100*	50-100*
European Automotive battery premium free market (Eurobat)		
in warehouse Rotterdam €/tonne		
Soft lead (average)	159.71*	159.71*
Ca/Ca grid lead (average)	414.35*	414.35*
Connector lead (average)	416.12*	416.12*
European Industrial battery		
premium free market (Eurobat)		
in warehouse Rotterdam €/tonne		
Stand-by refined or soft lead (average)	182.41*	182.41*
Traction refined or soft lead (average)	144.68*	144.68*
For an explanation of these premia see http://www.eurobat.org/statistics		
Lead concentrates: 70/80% Pb $/tonne T/C, cif.	200-250*	200-250*
Zinc		
LME prices: see Daily Metal		
Germany: (VDM) virgin, €/tonne	1,550-1,560	1,550-1,560
UK:		
Special high grade, delivered monthly average price £/tonne	1,353.00-1,353.00*	1,353.00-1,353.00*
MB US: Special high grade, $/lb	0.0750-0.0850*	0.0750-0.0850*
MB EU: Special high grade, fot Rotterdam, $/tonne	130.00-140.00*	130.00-140.00*
Zinc Concentrates: cif main port $/tonne	250-270*	250-270*

Precious Metals

	May 1	May 3
Iridium		
MB free market: min. 99.9%, $/troy oz in warehouse	1,000-1,050*	1,000-1,050*
Johnson Matthey base price: (unfab) $/troy oz (08.00 hrs)	1,000	1,000
Engelhard base price: $/troy oz	1,000	1,000
Palladium		
World prices: see Daily Metal		
European free market: min. 99.9%,$/troy oz		
in warehouse	693-698*	695-700*
Engelhard base price: $/troy oz	704	693
Johnson Matthey base price: (unfab) $/troy oz (08.00 hrs)	698	703

	May 1	May 3
Platinum		
World prices: see Daily Metal		
European free market: min. 99.9%, $/troy oz		
in warehouse	1,503-1,508*	1,505-1,510*
Engelhard base price: $/troy oz	1,510	1,490
Johnson Matthey base price: (unfab)		
$/troy oz (08.00 hrs)	1,508	1,509
Rhodium		
European free market: min. 99.9%, $/troy oz		
in warehouse	1,125-1,175*	1,100-1,150*
Engelhard base price: $/troy oz	1,160	1,150
Johnson Matthey base price: (unfab)		
$/troy oz (08.00 hrs)	1,160	1,150
Ruthenium		
European free market: min. 99.9%, $/troy oz		
in warehouse	70-100*	70-100*
Engelhard base price: $/troy oz	85	85
Johnson Matthey base price: (unfab) $/troy oz (08.00 hrs)	85	85

MB Daily Base Metal Premiums

All prices $/tonne unless otherwise stated, in warehouse price, duty unpaid, spot business, immediate delivery
*MB copyright

	Apr 26		Apr 29		Apr 30		May 1		May 2	
	Low - High	Premium	Low - High	Premium	Low - High	Premium	Low - High	Premium	Low - High	Premium
Copper - Grade A copper cathode to meet LME specifications: BS EN 1978:1998 (Cu-CATH-1)										
MB Copper Premium Rotterdam	90-105*	98.75*	90-105*	100.00*	90-120*	105.00*	90-120*	106.00*	90-120*	106.25*
MB Copper Premium Hamburg	90-105*	101.25*	100-105*	102.50*	100-120*	106.25*	100-120*	107.00*	100-120*	107.00*
MB Copper Premium Leghorn	80-100*	90.00*	80-100*	92.50*	80-100*	92.50*	80-100*	96.00*	80-100*	96.00*
MB Copper Premium New Orleans	10-50*	40.00*	10-50*	40.00*	10-50*	40.00*	10-50*	40.00*	10-50*	40.00*
MB Copper Premium Chicago	10-50*	43.33*	10-50*	43.33*	10-50*	43.33*	10-50*	43.33*	10-50*	43.33*
MB Copper Premium St Louis	10-60*	45.00*	10-60*	45.00*	10-60*	45.00*	10-60*	45.00*	10-60*	45.00*
MB Copper Premium Gwangyang	20-30*	25.00*	20-30*	25.00*	20-30*	25.00*	20-30*	25.00*	20-30*	25.00*
MB Copper Premium Busan	20-30*	25.00*	20-30*	25.00*	20-30*	25.00*	20-30*	25.00*	20-30*	25.00*
MB Copper Premium Singapore	60-75*	67.50*	60-75*	67.50*	60-75*	67.50*	60-75*	67.50*	60-70*	65.00*
MB Copper Premium Shanghai	130-140*	136.67*	130-140*	136.67*	130-140*	136.67*	130-140*	136.67*	130-140*	132.50*
MB Copper Premium Johor	10-20*	15.00*	10-20*	15.00*	10-20*	15.00*	10-20*	15.00*	10-20*	15.00*
Aluminium - Primary aluminium ingot to meet LME specifications: P1020A										
MB Aluminium Premium Rotterdam	200-215*	206.53*	200-215*	206.45*	200-215*	206.45*	200-215*	206.45*	200-215*	206.45*
MB Aluminium Premium New Orleans	170-210*	190.00*	170-210*	190.00*	170-210*	190.00*	170-210*	190.00*	170-210*	190.00*
MB Aluminium Premium Baltimore	190-210*	195.00*	190-210*	195.00*	190-210*	195.00*	190-210*	195.00*	190-210*	195.00*
MB Aluminium Premium Chicago	170-210*	190.00*	170-210*	190.00*	170-210*	190.00*	170-210*	190.00*	170-210*	190.00*
MB Aluminium Premium Detroit	190-210*	201.67*	190-210*	201.67*	190-210*	201.67*	190-210*	201.67*	190-210*	201.67*
MB Aluminium Premium Gwangyang	220-255*	237.18*	220-255*	237.18*	220-255*	237.18*	220-255*	237.18*	220-255*	237.18*
MB Aluminium Premium Singapore	175-185*	180.00*	175-185*	180.00*	175-185*	180.00*	175-185*	180.00*	175-185*	180.00*
MB Aluminium Premium Johor	175-185*	180.00*	175-185*	180.00*	175-185*	180.00*	175-185*	180.00*	175-185*	180.00*
MB Aluminium Premium Shanghai	230-230*	230.00*	230-230*	230.00*	230-230*	230.00*	230-230*	230.00*	230-230*	230.00*
MB Aluminium Premium Japan	240-255*	246.67*	240-255*	246.67*	240-255*	246.67*	240-255*	246.67*	240-255*	246.67*
Lead - Primary lead of 99.97% purity (minimum) to meet LME specifications: BS EN 12659:1999										
MB Lead Premium Rotterdam	50-75*	65.00*	50-80*	70.00*	50-80*	70.00*	50-80*	72.50*	50-80*	74.00*
MB Lead Premium Singapore	90-100*	95.00*	90-100*	95.00*	90-100*	95.00*	90-100*	95.00*	90-100*	95.00*
MB Lead Premium Shanghai	20-60*	40.00*	20-60*	40.00*	20-60*	40.00*	20-60*	40.00*	20-60*	40.00*
Nickel Primary nickel of 99.80% purity to meet LME specifications: B39-79 (2008)										
MB Nickel Premium Rotterdam	25-300*	139.48*	25-300*	139.48*	25-300*	139.48*	25-300*	139.48*	25-300*	139.48*
MB Nickel Premium Singapore	60-80*	70.00*	60-80*	70.00*	60-80*	70.00*	60-80*	70.00*	60-80*	70.00*
MB Nickel Premium Shanghai	70-150*	110.26*	70-150*	110.26*	70-150*	110.26*	70-150*	110.26*	70-150*	117.00*
Zinc Primary zinc of 99.995% purity (minimum) to meet LME specifications: BS EN 1179:2003										
MB Zinc Premium Rotterdam	95-110*	105.00*	95-110*	106.25*	95-110*	103.93*	95-110*	102.61*	95-110*	105.87*
MB Zinc Premium Chicago	10-25*	17.50*	10-25*	17.50*	10-25*	17.50*	10-25*	17.50*	10-25*	17.50*
MB Zinc Premium New Orleans	0-35*	20.00*	0-35*	20.00*	0-35*	20.00*	0-35*	20.00*	0-35*	20.00*
MB Zinc Premium Gwangyang	130-130*	130.00*	130-130*	130.00*	130-130*	130.00*	130-130*	130.00*	130-130*	130.00*
MB Zinc Premium Johor	100-180*	142.00*	100-180*	142.00*	100-180*	142.00*	100-180*	142.00*	100-180*	142.00*
MB Zinc Premium Singapore	100-180*	140.00*	100-180*	140.00*	100-180*	140.00*	100-180*	140.00*	100-180*	140.00*
MB Zinc Premium Shanghai	140-160*	148.33*	140-160*	148.33*	140-160*	148.33*	140-160*	148.33*	140-160*	148.33*

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Minor metals

The specification for all minor metals will be as laid down by the Minor Metals Trade Assn and published on their website (www.mmta.co.uk), unless otherwise indicated.
Prices will be basis in warehouse Rotterdam, unless otherwise stated, and will reflect a trading range of business done at the time of the assessment.

	May 1	May 3
Antimony		
MB free market		
Regulus, min 99.65%, max Se 50 ppm, max 100 ppm Bi, $/tonne in warehouse Rotterdam	10,200–10,700*	10,200–10,700*
MMTA Standard Grade II, $/tonne in warehouse Rotterdam	10,100–10,600	10,100–10,600
MB Chinese free market		
MMTA Standard Grade II, delivered duty paid RMB/tonne	66,000–67,000*	66,500–67,000*
Arsenic		
MB free market$/lb	0.70–0.80*	0.70–0.80*
Bismuth		
MB free market$/lb	8.60–9.30*	8.60–9.30*
MB China domestic, min 99.99%, RMB/tonne	115,000–117,000*	115,000–117,000*
Cadmium		
MB free market min 99.95%, cents/lb	95.00–105.00*	97.50–107.50*
MB free market min. 99.99%, cents/lb	100.00–110.00*	102.50–112.50*
Chromium		
MB free market		
alumino-thermic, min. 99%, $/tonne	8,800–9,200*	8,800–9,200*
Cobalt		
MB free market High Grade, $/lb	12.70–14.10*	12.90–14.10*
MB free market Low Grade, $/lb	12.50–14.00*	12.50–14.00*
MB China domestic, min 99.8% RMB/tonne	192,000–209,000*	192,000–210,000*
MB Chinese free market		
Concentrate min 8% cif main Chinese ports $/lb	9.50–9.80*	9.50–9.80*
Gallium		
MB free market $/kg	280–310*	280–310*
MB China domestic, min 99.99%, RMB/kg	1,675–1,725*	1,675–1,725*
Germanium		
Germanium dioxide MB free market $/kg	1,275–1,350*	1,275–1,350*
Germanium metal $/kg Rotterdam	1,665–1,715*	1,700–1,750*
Germanium metal MB China domestic, min 99.999%, RMB/kg	11,100–11,600*	11,100–11,600*
Germanium dioxide, China domestic min 99.999%, RMB/kg	8,100–8,300*	8,100–8,300*
Indium		
MB free market $/kg	520–555*	520–555*

	May 1	May 3
Indium cont.		
MB Chinese free market		
Crude min 98% duty paid in w/house China RMB/kg	3,430–3,480*	3,430–3,500*
MB China domestic, min 99.99% RMB/kg	3,650–3,730*	3,650–3,730*
Indium Corp ingots min. 99.97%, $/kg fob	580–580	580–580
Magnesium		
European free market $ per tonne	2,900–3,000*	2,900–3,000*
China free market		
min 99.8% Mg, fob China main ports, $ per tonne	2,750–2,850*	2,750–2,850*
MB Chinese free market min 99% Mg, ex-works RMB/tonne	16,500–17,700*	16,500–17,650*
Manganese Flake		
MB free market $/tonne	2,325–2,375*	2,325–2,375*
Mercury		
MB free market $ per flask	3,300–3,600*	3,300–3,600*
Rhenium in warehouse Rotterdam duty paid		
Metal Pellets, min 99.9% $/lb	1,500–1,600*	1,500–1,600*
APR catalytic grade $/kg Re	3,500–3,900*	3,500–3,900*
Selenium		
MB free market $/lb	32.00–38.00*	31.00–37.00*
MB China domestic, min 99.9%, RMB/kg	530.00–560.00*	510.00–540.00*
Selenium dioxide, MB China domestic, min 98%, RMB/kg	360.00–380.00*	355.00–365.00*
Silicon		
MB free market €/tonne	1,950–2,050*	1,950–2,050*
US free market cents/lb	123–127*	123–127*
Hong Kong		
min. 98.5%, $/tonne fob main Chinese ports	1,840–1,890*	1,850–1,890*
Tellurium		
MB free market $/kg	105–145*	110–150*
MB China domestic, min 99.99%, RMB/kg	1,030–1,060*	1,050–1,080*
Titanium		
MB free market ferro-titanium		
70% (max 4.5% Al), $/kg Ti d/d Europe	6.00–6.15*	6.00–6.15*
Titanium Ores $/tonne		
Rutile conc min. 95% TiO^2 bagged, fob/Aus	1,500–1,700	1,500–1,700
Rutile bulk conc min. 95% TiO^2 fob/Aus	1,400–1,700	1,400–1,700
Ilmenite bulk conc min. 54% TiO^2 fob/Aus	250–350	250–350

Noble Alloys & Ores

	May 1	May 3
Lithium Ores		
Petalite, 4.2% Li^20 bagged fob Durban, $/tonne	165–260	165–260
Spodumene > 7.25% Li^20 cif Europe, $/tonne	720–770	720–770
Molybdenum		
Molybdic oxide		
Europe		
Drummed molybdic oxide, $/lb Mo	11.20–11.30*	11.15–11.20*
US		
Canned molybdic oxide, $/lb Mo	10.90–11.30*	10.90–11.30*
Ferro-Molybdenum		
basis 65–70% Mo, $/kg Mo	27.95–28.45*	27.75–28.25*
US free market, 65–70% Mo, $/lb in warehouse Pittsburgh	11.75–12.35*	11.75–12.35*
MB Chinese free market		
Concentrate 45% Mo, in warehouse China RMB/mtu	1,560–1,580*	1,530–1,550*
Uranium		
Nuexco spot price indicator $/lb U^3O^8	40.50–40.50	40.50–40.50
Zircon		
Foundry grade bulk, $/tonne fob Australia	1,250–1,550	1,250–1,550
Premium bulk, $/tonne fob Australia	1,350–1,550	1,350–1,550

	May 1	May 3
Tungsten		
European free market		
APT, $/mtu	348–355*	348–355*
Hong Kong		
APT Chinese No1, $/mtu fob main Chinese ports	355.00–360.00*	355.00–360.00*
MB Chinese free market		
Concentrate 65% WO3, in warehouse China RMB/tonne	129,000–131,000*	130,000–133,000*
Ferro Tungsten		
basis 75% W min, $/kg W, in warehouse Rotterdam, duty unpaid	42.50–44.10*	42.50–44.10*
Hong Kong, min. 75% W, $/kg W, fob main Chinese ports	53.00–55.00*	53.00–55.00*
Vanadium		
Ferro vanadium basis 70–80%, $/kg V	27.50–28.00*	27.50–28.00*
US free market ferro-vanadium, $/lb, in warehouse Pittsburgh	13.00–14.00*	13.00–14.00*
Vanadium pentoxide cif Europe min 98% $ per lb V^2O^5	5.60–6.00*	5.60–6.00*

Bulk Alloys

	May 3
Ferro-Chrome $/lb Cr	
China import charge chrome 50% Cr index, CIF Shanghai, duty unpaid	0.90*
Lumpy Cr charge, basis 52% Cr, (and high carbon) quarterly	1.270–1.270*
6–8% C basis 60% Cr, max 1.5% Si	1.04–1.06*
European low carbon 0.10% C average 60–70% Cr quarterly	2.02–2.08*
0.10% C average 60–70% Cr	1.96–2.05*
European low carbon, in warehouse, 0.06% C max – 65%Cr	2.05–2.10*
Low phosphorous Cr min 65%, C max 7%, Si max 1%, P max 0.015%, Ti max 0.05%	1.12–1.18*
US free market, in warehouse Pittsburgh, 6–8% C basis 60–65% Cr, max 2% Si	0.990–1.020*
US free market, low carbon, duty paid, fob Pittsburgh,	
0.05%C – 65% min Cr	2.21–2.24*
0.10%C – 62% min Cr	1.96–2.02*
0.15%C – 60% min Cr	1.95–2.01*
Spot 6–8% C, basis 50% Cr, delivered duty paid China RMB/tonne	6,900–7,000*
Contract 6–8% C, basis 50% Cr, delivered duty paid China RMB/tonne	6,900–7,050*
Chrome Ore $/tonne	
Chrome ore, cif main Chinese ports	
SA LG6 Met grade basis 42%	180–190*
SA UG2 Met grade basis 40%	160–165*
Turkish lumpy 40–42% cfr main Chinese ports	255–265*

	May 3
Ferro-Manganese	
basis 78% Mn (Scale pro rata), standard 7.5% C, Euro/tonne	800–840*
US free market, 78% Mn, standard 7.5% C, $/long ton in warehouse Pittsburgh	1,050–1,100*
US free market, medium carbon, duty paid, fob Pittsburgh,	
80% min Mn, 1.5% max C, $/lb	0.88–0.90*
Hong Kong, min. 75% Mn, 7.5% C, fob main Chinese ports	1,480–1,530*
MB Chinese free market	
min 65% Mn, max 7.0% C, in warehouse China RMB/tonne	6,150–6,250*
Manganese Ore	
44% Mn, Cif Tianjin $/dmtu of metal contained	5.76*
38% Mn, Fob Port Elizabeth $/dmtu of metal contained	4.38*
Ferro-Silicon	
Lumpy, basis 75% Si (Scale pro rata), Euro/tonne	1,150–1,180*
US free market, $/lb in warehouse Pittsburgh:lumpy basis 75% Si imported	0.91–0.93*
Hong Kong, min. 75%, fob main Chinese ports	1,380–1,400*
MB Chinese free market	
min 75% in warehouse China RMB/tonne	6,000–6,100*
Silico-Manganese	
Lumpy, 65–75% Mn basis, 14–25% Si (Scale pro rata) Euro/tonne	855–905*
US free market, $/lb in warehouse Pittsburgh:	0.53–0.57*
Hong Kong, min. 65% Mn, max 17% Si,fob main Chinese ports	1,500–1,520*
MB Chinese free market	
min 65% Mn max 17% Si,in warehouse China RMB/tonne	6,550–6,850*

● All prices $/tonne, duty paid, delivered consumers' works, unless otherwise shown. Other currency prices are given where the local markets are dominant or active.
Date indicates last price change. These markets last assessed on May 03 (UK), May 02 (US).
● Reminder: prices marked * are MB copyright. These markets were last assessed on May 03 (Europe and Asia) and May 02 (USA).
● All Chinese domestic prices include VAT of 17%

World Steel

EU Imports
Metal Bulletin's appraisal of cfr prices for imported, non-EU origin, commercial-quality carbon steel, € per tonne cfr main EU port (€/$=0.76).

	Northern Europe	Southern Europe	
Rebar	480-490	450-460	01/05
Wire rod (mesh quality)	480-490	460-470	01/05
Plate (8-40mm)	485-490	460-480	01/05
Hot rolled coil	460-470	460-475	01/05
Cold rolled coil	520-540	520-540	01/05
Hot-dip galvanized coil	590-615	560-570	01/05

Southern Europe exports
Metal Bulletin's appraisal of Southern Europe mills' prices for export outside Southern Europe of commercial-quality carbon steel, € per tonne fob main Southern European port

Rebar	460-465	01/05	Jun
Wire rod (mesh quality)	470-475	01/05	Jun

EU domestic
Metal Bulletin's appraisal of prices within the EU (excluding the UK) for commercial-quality carbon steel of EU origin, € per tonne delivered basis point (€/$=0.76)

	Northern Europe	Southern Europe	
Rebar	495-510	455-490	01/05
Wire rod (mesh quality)	490-500	465-490	01/05
Sections (medium)	570-590	560-580	01/05
€ per tonne ex-works			
Plate(8-40mm)	520-535	480-490	01/05
Hot rolled coil	470-490	455-475	01/05
Cold rolled coil	570-585	535-565	01/05
Hot-dip galvanized coil	565-570	505-545	01/05

CIS

Product	*Price*	*Date*	*Month*
CIS Exports (Black Sea)			
Metal Bulletin's appraisal of CIS mills' prices for export outside the CIS of commericial-quality carbon steel, $ per tonne fob stowed main Black Sea port.			
Billet	510-520	29/04	May
Slab	470-475	29/04	May
Rebar	590-595	29/04	May
Wire rod (mesh)	595-600	29/04	May
Heavy plate (10-50mm)	570-600	29/04	Apr
Hot rolled coil	525-555	29/04	May
Cold rolled coil	610-635	29/04	May
CIS Domestic			
Metal Bulletin's appraisal of prices within Russia and Ukraine for commercial-quaility carbon steel of CIS origin, excl VAT ex-works.			
	Russian Domestic Russian Ruble/tonne	Ukrainian Domestic Hryvnias/tonne	
Rebar	16,410-17,960	5,445-5,490	29/04
Hot rolled coil	16,400-16,800	4,640-4,670	29/04
Cold rolled coil	18,200-18,500	5,200-5,260	29/04

Middle East

Product	*Price*	*Date*	*Month*
Turkish Exports			
Metal Bulletin's appraisal of Turkish mills' prices for export of commercial-quality carbon steel, $ per tonne fob main Turkish port.			
Billet	530-545	02/05	Jun
Rebar	590-600	02/05	Jun
Wire rod (mesh quality)	600-610	02/05	Jun
Merchant bars	620-665	02/05	Jun
Turkish Domestic			
Metal Bulletin's appraisal of prices within Turkey for commercial-quailty carbon steel of Turkish origin, $ per tonne ex-works.			
Billet	540-550	02/05	May
Rebar	600-615	02/05	May
Wire rod (mesh quality)	610-620	02/05	May
Hot rolled coil	580-600	02/05	Jun
Cold rolled coil	710-730	02/05	Jun
Turkish imports			
Metal Bulletin's appraisal of prices for imported commercial-quality carbon steel, $ per tonne cfr main Turkish port.			
Billet	520-530	02/05	Jun
Hot rolled coil	545-590	02/05	Jun
Cold rolled coil	640-660	02/05	Jun
GCC country imports			
Metal Bulletin's appraisal of prices for imported commercial-quality carbon steel, $ per tonne cfr main Gulf port.			
Billet	550-560	30/04	May
Rebar	590-610	30/04	May
Hot rolled coil	580-620	30/04	May
Cold rolled coil	640-670	30/04	May

Product	*Price*	*Date*	*Month*
Iran Domestic			
Metal Bulletin's appraisal of prices within Iran for commercial-quality carbon steel of Iranian origin, million rials per tonne delivered warehouse Tehran (m rials/$=35,500).			
Rebar (12-25)mm)	19.40-19.60	03/05	May
Equal Angles	19.20-19.60	03/05	May
I-beams	19.70-21.15	03/05	May
Plate	19.50-20.60	03/05	May
Hot rolled coil	18.20-22.80	03/05	May
Cold rolled coil	22.30-25.50	03/05	May
Hot-dip galvanized coil	25.50-28.80	03/05	May
Hollow sections	24.20-24.40	03/05	May
Iran Imports			
Metal Bulletin's appraisal of prices quoted by overseas suppliers for commercial-quality carbon steel to Irainian buyers, $ per tonne cfr Iranian northern ports			
Billet	550-560	03/05	Jul
Rebar	630-640	03/05	Jul
Egyptian Domestic			
Metal Bulletin's appraisal of prices within Egypt for commercial-quality carbon steel of Egyptian origin, E£ per tonne ex-works			
Rebar	5,050-5,120	02/05	May

Latin America

Product	*Price*	*Date*	*Month*
Latin American exports			
Metal Bulletin's appraisal of Latin American mills' prices for export outside Latin America of commercial-quality carbon steel, $ per tonne fob stowed main Latin American port.			
Billet	500-530	03/05	Jun
Slab	460-490	03/05	Jun
Rebar	590-610	03/05	Jun
Wire rod mesh quality	590-610	03/05	Jun
Heavy plate: over 10mm	590-630	03/05	Jun
Hot rolled coil (dry)	570-600	03/05	Jun
Cold rolled coil	650-680	03/05	Jun
Galvanized coil	720-750	03/05	Jun

Nafta

Product	*Price*	*May 3*
US Imports		
Metal Bulletin's appraisal of prices for imported, non-Nafta origin, commercial-quality carbon steel, $ per short ton cfr Gulf.		
Rebar	580-600	
Merchant bars	680-720	
Wire rod (low carbon)	575-590	
Medium sections	720-760	
Medium plate	700-730	
Heavy plate	850-900	
Hot rolled coil (commodity)	600-620	
Cold rolled coil	680-720	
Galvanized coil (base US)	890-940	
US domestic		
AMM's appraisal of prices within the USA for commercial-quality carbon steel of US or Canadian origin, $ per short ton, delivery terms as indicated.		
Rebar (fob mill)	670	
Wire rod (mesh quality; delivered)	670	
Plate (fob mill)	740	
Hot rolled coil (fob mill)	580	
Cold rolled coil (fob mill)	690	
Hot-dip galv coil (fob mill)	780	

Asia

Product	*Price*	*Date*	*Month*
China Exports			
Metal Bulletin's appraisal of Chinese mills'' prices for export of commercial-quality carbon steel, $ per tonne fob main China port.			
Rebar	520-530	03/05	Jun
Wire rod (mesh quality)	520-525	03/05	Jun
Heavy plate	535-545	03/05	Jun
Hot rolled coil	535-540	03/05	Jun
Cold rolled coil	620-625	03/05	Jun
Galvanized coil 1mm	650-655	03/05	Jun
China Imports			
Metal Bulletin's appraisal of prices for imported, non-EU origin, commercial-quality carbon steel, $ per tonne cfr main China port.			
Cold rolled coil, 1mm & below	670-680	03/05	Jun
Hot dip galvanized coil	710-720	03/05	Jun

Product	*Price*	*Date*	*Month*
Eastern China Domestic			
Metal Bulletin's appraisal of prices in Eastern China for commercial-quality carbon steel of Chinese origin, yuan per tonne delivered warehouse (yuan/$=6.16)			
Rebar	3,460-3,580	03/05	May
Wire rod (mesh)	3,480-3,500	03/05	May
Sections	3,690-3,790	03/05	May
Plate	3,670-3,700	03/05	May
Hot rolled coil (min 2mm)	3,660-3,700	03/05	May
Cold rolled coil (0.5 - 2mm)	4,600-4,650	03/05	May
Hot-dip galvanized coil	4,630-4,820	03/05	May
Southern China Domestic			
Metal Bulletin's appraisal of prices in Southern China for commercial-quality carbon steel of Chinese origin, yuan per tonne delivered warehouse (yuan/$=6.16)			
Rebar	3,620-3,900	03/05	May
Wire rod (mesh)	3,590-3,700	03/05	May
Sections	3,890-3,950	03/05	May
Plate	3,870-3,930	03/05	May
Hot rolled coil (min 2mm)	3,740-3,750	03/05	May
Cold rolled coil (0.5 - 2mm)	4,560-4,680	03/05	May
Hot-dip galvanized coil	4,680-4,850	03/05	May
Indian exports			
Metal Bulletin's appraisal of Indian mills' prices for export of commercial-quality carbon steel, $ per tonne fob main India port.			
Billet	560-565	03/05	May
Plate (12-40mm)	520-525	03/05	May
Hot rolled coil (commodity)	560-565	03/05	Jun
Hot-dip galvanized coil	790-800	03/05	May
Indian imports			
Metal Bulletin's appraisal of prices for imported, non-EU origin, commercial-quality carbon steel, $ per tonne cfr main India port.			
Billet	590-595	03/05	May
Plate (20-60mm)	550-555	03/05	Jun
Hot rolled coil (commodity)	560-565	03/05	Jun
Hot rolled coil (CR grade)	665-670	03/05	May
Cold rolled	665-670	03/05	May
Hot dip-galvanized coil	650-655	03/05	May
Indian domestic			
Metal Bulletin's appraisal of prices within India for commercial-quality carbon steel, rupees per tonne ex-works.			
Billet	28500-28600	03/05	May
Heavy plate	33000-33500	03/05	May
Hot rolled coil	33500-34000	03/05	May
Cold rolled coil	38000-38500	03/05	May
HBI	19000-19100	03/05	May
Hot-dip galvanized coil	45000-45500	03/05	May

SteelBenchmarker™ Prices

Product	*Price*	*Apr 22*
Prices in $/metric tonne, except (short ton) and {€ per tonne}		
Region: USA, East of the Mississippi		
Standard plate	822(745)	
Hot rolled coil	660(598)	
Cold rolled coil	772(700)	
Region: Mainland China		
Rebar	485	
Standard plate	516	
Hot rolled coil	511	
Cold rolled coil	640	
Region: Western Europe		
Hot rolled coil	620{477}	
Region: World Export Market		
Hot rolled coil	573	
Cold rolled coil	654	

Stainless Steel

Product	*Price*	*Date*	*Month*
Stainless Steel - Asia import			
$/tonne cif East Asian port			
Grade 304 2mm CR coil, 2B	2,470-2,620	03/05	Jun
Grade 304 HR sheet	2,300-2,500	03/05	Jun
Stainless Steel - China Domestic			
yuan/tonne, in warehouse			
Grade 304 2mm CR coil	16,400-16,600	03/05	May
Grade 430 2mm CR coil	9,500-9,600	03/05	May
Stainless Steel - EU export			
€/tonne fob N. European port.			
Min 100 tonne lot			
Grade 304 2mm CR sheet	2,348-2,400	03/05	Jul
Stainless Steel - EU domestic			
2mm 304 cold rolled stainless sheet €/tonne			
Base price	1,090-1,120	03/05	Jun
Alloy Surcharge	1,258-1,280	03/05	May
304 Stainless steel bright bar €/tonne			
Base price	960-1,000	03/05	Jun
Alloy Surcharge	1,720-1,891	03/05	May

Key:
Date: Date of last assessment
Month: Month of production in the case of export or domestic tables; month of delivery in the case of import tables

Scrap, Secondary Metals, Scrap Substitutes & Iron Ore

Ferrous scrap

UK ferrous scrap domestic

The following is Metal Bulletin's evaluation of UK prices for processed scrap delivered to consumers within the stated month. Prices may vary according to region and destination, and should therefore be read in conjunction with editorial comment on the Scrap & Secondary Metals pages.

£/tonne	*April*
Cut Grades	
0A plate and structural	217–235
1&2 Old steel	203–223
12A/C/D New Production heavy and shovellable steel	206–217
Bales and Cuttings	
4A New steel bales	234–240
4C New steel bales	224–230
8A New loose light cuttings	204–210
8B New loose light cuttings	194–200
Turnings	
7B Heavy steel turnings	148–158
Cast Iron	
9A/10 Heavy and light cast iron	200–213
9B/C Cylinder block scrap	238–253
11A Cast iron borings	203–215

Prices relate to new UK scrap specifications.
‡‡Please see MB.com for full explanation of price changes

UK Intermerchant weekly price

£/tonne	*May 3*
5C Loose old light	140–150

UK ferrous scrap export MB assessment, $/tonne fob main UK port

	Apr 26	*May 3*
HMS 1&2 (80:20 mix)	348–362	350–352
Shredded	358–368	361–364

Indian Imports MB assessment, $/tonne cfr Nhava Sheva

	Apr 26	*May 3*
MB index CFR India Shredded		407.44
HMS 1&2 (80:20 mix)	385–390	380–385

Alloy steel scrap domestic

UK wholesale merchants' stainless (£/tonne)	*May 3*
18/8 solids	930–940
18/8 turnings	744–752
12–13% Cr solids	270–290
16–17% Cr solids	280–290
Cif Europe import stainless (€/tonne)	
18/8 solids	1,120–1,130
18/8 turnings	952–961
UK home high speed (pence/kg)	
6-5-2 solids	220–240
6-5-2 turnings	110–120

Rotterdam export MB assessment, $/tonne fob Rotterdam

	Apr 26	*May 3*
MB index FOB Rotterdam HMS 1&2 (80:20)		348.31
HMS 1&2 (70:30 mix)	342–344	338–343
Shredded	360–370	362–365

Turkish import MB assessment, $/tonne cfr main Turkish ports

	Apr 26	*May 3*
MB index CFR Turkey HMS 1&2 (80:20)		364.23
HMS 1&2 (70:30mix)	358–360	355–360
Shredded	376–386	379–382

USA export MB assessment, $/tonne fob East Coast

	Apr 26	*May 3*
HMS 1&2 (80:20 mix)	355–357	351–355
Shredded	362–366	356–359

USA domestic

Iron Age scrap price bulletin composite – $/long ton delivered Pittsburgh/Chicago.

Week ending	*Apr 26*	*May 3*
No 1 heavy melting	354.17	354.17
No 2 bundles	297.00	297.00
MB assessment of Broker Buying Price, $/tonne delivered Detroit		
No 1 busheling	290.00	270.00
No 1 bundles	265.00	245.00

China domestic

yuan/tonne delivered mill	May 3
Heavy Scrap	2,550–2,700

Germany domestic

Euro/tonne, delivered at scrapyard. Source: BDSV

	Mar	**Apr**
No E2/8 (new steel scrap)	277.60	276.10
No E1 (old steel scrap)	250.80	248.70
No E3 (old thick steel scrap)	274.70	272.00
No E40 (shredded steel scrap)	283.40	278.30
No E5 (steel turnings)	232.50	227.40

Non-Ferrous scrap Europe

Aluminium

European free market (MB assessment. €/tonne eff May 3)	
Floated Frag	1,350–1,420
Cast	1,250–1,320
Mixed turnings 6%	1,200–1,280
LME Cash primary (lowest midday bid)	$1,802.00
LME Cash alloy (lowest midday bid)	$1,720.00
Germany (per 1000kg eff **May 1)**	€
Pure Cuttings	1,200–1,280
Commercial Cast	1,110–1,230
H9 Extrusions	1,330–1,430
Alloy Turnings	950–1,030
Source:VDM	
France (per 1000kg eff **Apr 30)**	€
Pure Cuttings	1,280–1,320
Old Rolled	850–880
Commercial Cast	950–980
Source: Lettre d'Information Metaux	
Italy (per 1000kg eff **Apr 26)**	€
Pure Cuttings	1,285–1,385
Old Mixed Scrap	1,210–1,260
Commercial Cast	1,200–1,250
Source: Assomet	

Copper

Germany (per 1000kg eff **May 1)**	€
Copper Wire (Berry)	5,160–5,340
Heavy Copper	4,840–5,090
Heavy Brass	3,190–3,340
Brass Turnings (MS 58)	3,310–3,550
Brass Sheet (MS 63)	3,490–3,730
Source:Verein Deutscher Metallhandler	
France (per 1000kg eff **Apr 30)**	€
Electro Cuttings	5,000–5,020
No 1 Bright Wire	4,830–4,860
Mixed (96%)	4,750–4,770
Brass Plate Cuttings 70/30	3,550–3,600
Brass Turnings	3,000–3,050
Mixed Brass	3,050–3,070
Source: Lettre d'Information Metaux	
Italy (per 1000kg eff **Apr 26)**	€
Electrolytic dd EN 12861-S-Cu-2	5,180–5,232
Enamelled wire EN 12861-S-Cu-3	5,018–5,070
New from tubes, strips etc EN 12861-S-Cu-4	5,139–5,191
Old from tubes, strips etc 12861-S-Cu-7	4,865–4,917
EN 12861-S-Cu-Zn-1-A-Cu 63.5%	3,694–3,771
Mixed from valves/taps EN 12861-S-Cu-Zn-6	3,143–3,221
Several 95% m/m 12861-S-Cu-Zn-7	2,943–3,021
Source: Assomet	

SteelBenchmarker™ scrap prices

Prices in $/metric tonne, except [gross ton]

Region: USA, East of the Mississippi Apr 22	
†Shredded Scrap	366 [371]
No 1 Heavy melting scrap	334 [340]
No 1 Busheling scrap	377 [383]

†For shredded scrap the region is for all but the West Coast
Register as a price provider at www.steelbenchmarker.com

Scrap Substitutes

Product	Price	Date	Month
EU Imports €/tonne cfr Western Europe			
Pig Iron	316–354	02/05	Jun
Latin American exports $/tonne, delivery terms as stated			
Hot briquetted iron Venezuela	290–310	03/05	Jun
Pig Iron fob Vitorio/Rio	395–405	03/05	Jun
Pig Iron fob Ponta da Madeira	405–415	03/05	Jun
US Imports $/tonne cfr Gulf of Mexico			
Pig Iron	420–430	03/05	Jun
CIS Exports $/tonne fob main port			
Pig Iron Baltic Sea	425–440	02/05	Jun
Pig Iron Black Sea	390–395	02/05	Jun
China Domestic yuan/tonne, delivered warehouse			
Pig Iron	2700–2800	03/05	May

China Iron ore

cfr main China port $ per dry metric tonne

Product	Price	Date	Month
Iron ore index (62%)	131.83		
Iron ore fines (63.5% fe)	131–132	03/05	May
Iron ore pellets (65–66% fe)	157–160	03/05	May

UK non-ferrous scrap

The following UK prices were assessed on May 1)

Aluminium £/tonne

	Actual Price	MB LME Discounts
Group 1 Pure 99% & Litho	1100–1180	14–94
Commercial pure cuttings	1050–1100	94–144
Clean HE9 extrusions	1100–1180	14–94
Loose Old Rolled cuttings	850–900	255–305
Baled Old Rolled	960–1000	155–195
Commercial cast	1020–1060	95–135
Cast wheels	1230–1270	–115–-75
Commercial turnings	750–800	355–405
Group 7 turnings	550–600	555–605
LME primary avge:		1194.40
LME alloy avge		1155.83

Titanium $/lb cif

Turnings, unprocessed type 90/6/4 (0.5% Sn max)	1.45–1.55
Turnings, unprocessed 90/6/4 (over 0.5%, max 2% Sn)	1.40–1.45

Non-ferrous foundry ingots

Aluminium UK effective May 1) £/tonne

MB free market

LM24 Pressure diecasting ingot	1,520–1,560
LM6/LM25 Gravity diecasting ingot	1,720–1,780

NB: prices expressed delivered consumer works, LM series as specified in BS1490

Aluminium Europe effective May 3) $/tonne

MB free market

Duty unpaid in warehouse alloy premium	70–80
Duty paid delivered works pressure diecasting ingot price (DIN226/A380)	€/tonne 1,700–1,760

Aluminium US effective May 2 $/lb delivered Midwest

A380.1 alloy	1.04–1.05

AFFIMET prices effective May 1 €/tonne

AS 12	2,960
AS 12 UN	3,000
AS 9 U3	2,350
AS 5 U3	2,700

Reflects generally larger traded lots

VDM effective May 1) €/1000 kg delivered

DIN 226	2,110–2,210
DIN 231	2,190–2,290
DIN 311	2,170–2,270

Aluminium Bronze UK effective April 30) £/tonne

AB1 ex-works	4,710
AB2 ex-works	4,850

Source: C.F. Booth Ltd

Brass UK effective April 30) £/tonne

SCB3 ex-works	3,580
High Tensile HTB1 ex-works	3,890

Source: C.F. Booth Ltd

Gunmetal UK effective April 30) £/tonne

LG2 85/5/5/5 ex-works	4,520
LG4 87/7/3/3 ex-works	5,020
G1.11.5 Pb ex-works	5,920

Source: C.F. Booth Ltd

Phosphor Bronze UK effective April 30) £/tonne

PB1 ex-works	6,280

Source: C.F. Booth Ltd

Phosphor Copper UK effective April 30) £/tonne

10% P ex-works	7,100
15% P ex-works	7,200

Source: C.F. Booth Ltd

Zinc Alloys UK £/tonne

Brock Metal Co April Contract Alloy Price (delivered UK, min 25 tonne lots)

Brock Metal ZL3	1,754
Brock Metal ZL5	1,785

Key:
Month: Month of production in the case of export or domestic tables; month of delivery in the case of import tables

Hotline

Moves at your company? Let Hotline know by emailing *editorial@metalbulletin.com*

Trader Franco leaves Glencore; new structure of GlencoreXstrata emerges

Cobalt trader Robert Franco left trading company and producer Glencore to pursue his own interests some time before it concluded its takeover of Xstrata on May 2, sources told Hotline.

Franco, who was in charge of Glencore's cobalt book when prices raced to $50 per lb in 2008, was until recently working for the company out of its offices in Stamford, Connecticut, after leaving its Zug head office last year.

News of Franco's departure, who held shares in Glencore when it listed in 2011, came around the same time as the new structure of GlencoreXstrata emerged.

Stuart Cutler will be in charge of all ferro-alloys trading, including cobalt, while Gary Nagle will run production, Hotline understands.

Nagle was previously the head of Glencore coal business Prodecco.

Kenny Ives will run nickel trading, as previously indicated, while former Minara Resources ceo and md Peter Johnston will run the nickel production assets.

Both copper and aluminium will be run by individuals: Glencore trader Gary Fegel will run the aluminium business, while Telis Mistakidis will take charge of copper production and trading.

Daniel Mate will run zinc trading, and Glencore executive Chris Eskdale will run zinc production.

Glencore's Christian Wolfensberger will be in charge of iron ore trading, while former Xstrata executive Mark Eames will run iron ore mining.

The only other former Xstrata executive to head a division will be Peter Freyberg, who runs coal.

Mick's tough breakfast with Sir Mark

Xstrata made numerous approaches to Anglo American over the years, but each of them was rebuffed, Xstrata's outgoing ceo told Hotline.

Mick Davis said that Xstrata had initially suggested to Anglo that it buy the firm.

"We'd been interacting with Anglo for years – I've been into Anglo's offices on I don't know how many occasions to present them with options and alternatives," he said.

"We approached them before Falconbridge and suggested that they come in and tie up Inco, Falconbridge and Xstrata," he added.

But Anglo was not interested and Xstrata went on to acquire Falconbridge in 2006, while Brazil's Vale bought Inco.

"[Anglo] just wouldn't buy it [Xstrata's proposals], and they continuously had this mantra that we were overpriced and they were underpriced. They didn't like our assets," he said.

But by 2009, Anglo and Xstrata were the same size.

Davis approached Anglo's then-chairman Mark Moody-Stuart over breakfast and suggested a combination of the two companies, but was again rebuffed.

"I said, 'Would you not even like to see the analysis that I've done?' and he said, 'No'. So that was a bit of a tough breakfast," Davis said.

Hotline assumes that mining magnates have their eggs hard-boiled.

Mick Davis looks back in detail at the Xstrata years in a series of interviews on www.metalbulletin.com

LME retains Singapore office but builds team in Hong Kong

The London Metal Exchange will retain an office in Singapore to focus on markets in India, Southeast Asia, and Australia, and build a commodities team in Hong Kong to focus on northern Asia and Greater China, the new owner has said.

There had been market speculation that the LME might move its Asian office to Hong Kong.

"HKEx is building an Asian commodity team with a trading hub in Hong Kong," the Hong Kong exchange said in an email to Hotline.

The team in Hong Kong will focus on the northern Asia and Greater China markets, HKEx said.

"The LME team in Singapore will focus on Southeast Asia, Australia and India as well as the needs of locally based member firms," HKEx said.

Lesley Campbell, LME's vp Asia marketing and education, is moving to Hong Kong from Singapore in July, a market source told Hotline.

Campbell, who has been with the LME's Singapore office since January 2012, will continue to report to Liz Milan, md LME Asia and head of Asia commodities HKEx, the source familiar with the move said.

Milan will be responsible for building the commodities franchise of the HKEx Group in Asia and will remain md of LME Asia, the LME said in February. She reports to HKEx's co-heads of global markets, Martin Abbott and Romnesh Lamba.

Hotline also understands that an LME representative will be based in HKEx's Shanghai office.

HKEx said its policy is that it does not comment on individuals.

"They are under huge pressure to move to Hong Kong but whether or not they will I don't know but they are certainly under a lot of pressure to move," a broker said recently.

"It would make sense to move to Hong Kong with HKEx there," another market source said, adding that the focus for the exchange is mainland China.

The LME's second Asia seminar – but the first after the London exchange's buyout by HKEx – will be held in Hong Kong on June 25 this year. Last year, the first Asia seminar was held in Singapore.

Palmer for PM

Hotline's favourite source for Australian mining drama, Clive Palmer, has raised the bar once again, by declaring his intent to become prime minister.

"I'm running to be the prime minister of Australia," the billionaire – whose interests span iron ore, coal and nickel – said last month. "I am standing because I think I can offer better service to the community than anyone else."

The man behind projects to rebuild the *Titanic* and create his very own Jurassic Park using mechanical dinosaurs may have his work cut out, however.

Speaking at a press conference in Brisbane, Palmer declared that his new United Australia Party would contest every seat in the country – although he is currently the only candidate.

This is not the first time the miner has become embroiled in politics. Last May, he attempted to run for the LNP against deputy prime minister Wayne Swan, before quitting the party in November last year.

It is tempting to write that, if nothing else, Palmer's latest run for office raises his profile as a businessman in both Australia and abroad, which is no bad thing when you have commodities to market. But it is risky to dismiss the political ambitions of men of metal.

Just ask UK prime minister David Cameron: ex-Refco broker Nigel Farage's UK Independence Party took seats from the Conservative party in local elections on May 2.

MILLING ABOUT

Diversified producer ENRC has promoted **Mark Midgley** and **Abdumalik Mirakhmedov** following the departure of chief commercial officer Jim Cochrane last month. The responsibilities of Cochrane, who left the company on April 11, will be split between them. Midgley will also advise on sales and markets, while Mirakhmedov will be responsible for logistics strategy. Both will sit on the executive committee and report directly to ceo Felix Vulis.

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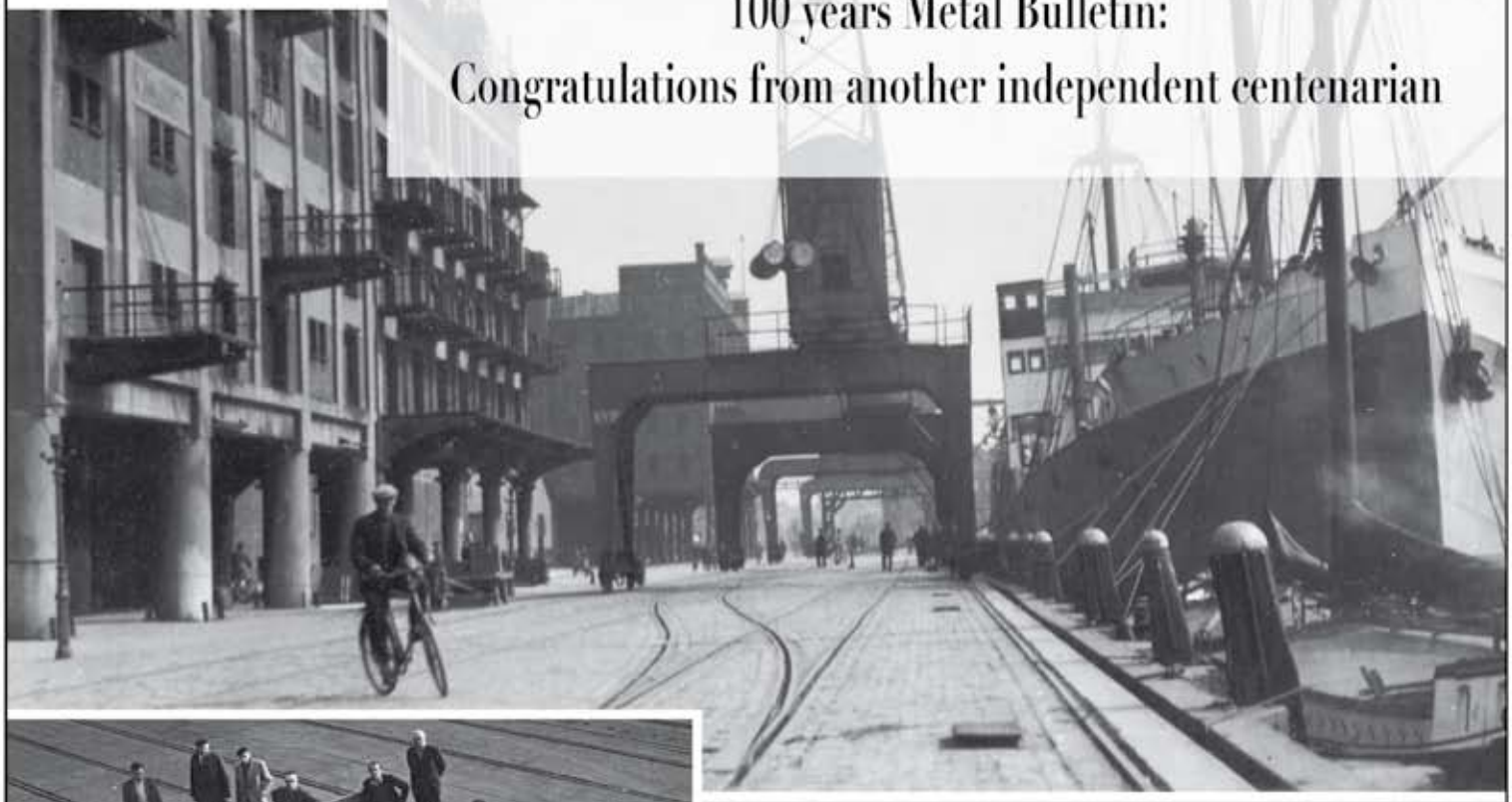

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