



तकनीकी पत्रिका विषय-सूची

CURRENT CONTENT

(Technical Journals)

(A Monthly Current Awareness Service from Technical Journals)

Vol.2, No.10, October, 2018

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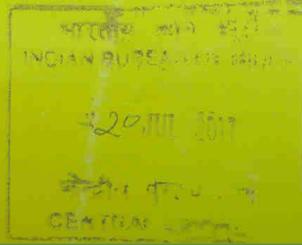
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A growing population means that the need for food – and therefore fertiliser – is rising. But which regions promise the steepest growth trajectory?

Top Stories

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| 8 | Chinese bidder snaps up only commercial rare earths mine in US | 13 | New process could unlock untapped US ilmenite supplies |
| 9 | China's spherical graphite exports lose ground in April | 14 | Andalusite facing supply tightness on production issues |
| 10 | Indian barytes exporters gear up for APMDC tender process | 15 | Market quest for innovative composites driving industry growth |
| 11 | Lithium 2017: Supply, demand and China's booming market take centre stage in Montreal | | |
| 12 | China slashes chromite imports by one-third in April | | |

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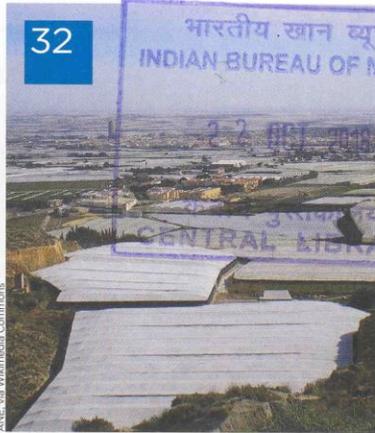
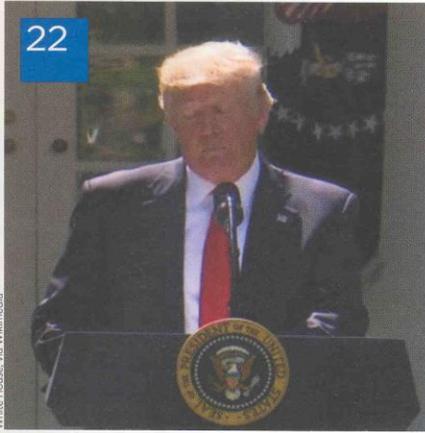
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Features

22 US exiting Paris Treaty not expected to impact minerals sector

In the wake of President Trump's announcement that the US will be pulling out of the 2015 Paris Climate Treaty, **IM** looks at the significance of this move and the possible impact this will have on the industrial minerals market.

24 Potash and phosphate: Demanding industries

The need for food is growing in step with a swelling global population and the mineral fertiliser industry is under pressure to ensure that nutrient supply keeps up with consumption, *Cameron Perks, IM Correspondent*, finds.

32 Growing gains: Perlite and vermiculite

As two niche mineral sectors that have largely lacked innovation, *Rose Pengelly, IM Correspondent*, considers whether there could be more in store for vermiculite and perlite than tall buildings and tomatoes.

38 Processing: Going green

Although the number of industrial minerals covered by **IM** is far reaching and the technology required for their production often varies by sector, the mining industry is seeing increasing calls for corporate social responsibility and greener technology, particularly in light of the growing role renewable energy has to play in the everyday lives of consumers.

46 What goes up...

As the dust settles following a price war that has quartered the price of iodine, *Myles McCormick, IM Correspondent*, reports from Chile on the causes of roller coaster ride in the market and looks to the future of demand for the mineral.

53 PROCESSING China's talc industry readies for processing upgrade

Chinese talc producers were largely overlooked during recent sweeping environmental reforms which affected other mineral industries in the country, but now officials are beginning to focus on the sector's technological weaknesses.

62 COMPANY PROFILE Essel ME Group to bring low-cost potash to market in 2018

The India-headquartered company plans to start potash production at its Bada project in Eritrea next year, promising to operate one of the least capital-intensive mines in the agrimineral market.

Next issue

50th edition
Refractories
Brucite
Antimony Trioxide
Nordic minerals

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Driverless platoons set to cut cost of mineral haulage	
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India extends soda ash anti-dumping duty to 2018	
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Cover photo: kot63



Over 30 pages in this issue have been dedicated to the shifting world of refractory minerals, with an emphasis on China. The sudden change in Chinese environmental policy has severely disrupted production for many refractory minerals and caught many buyers off-guard after decades of low prices and ample supply. Over pages 23-53 IM staff take readers through the implications of the mining stoppages in China for the refractories market.

Top Stories

- | | | | |
|----|--|----|---|
| 8 | Chinese barytes producers may struggle to undercut India | 13 | Turkey's ramp up will not pressure soda ash prices – Eti Soda |
| 9 | China tax evasion clampdown leads to wave of arrests | 14 | Volvo sees electric future in city transport |
| 10 | Latin American governments pledge to boost private investment and mining regulations | 15 | Vulnerable lizards could hamper Texas frac sand boom |
| 12 | Environmental inspections hit Chinese TiO ₂ supply | | |

Chinese fused exports magnesium oxide decline in June

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INDUSTRIAL MINERALS

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Note: (IM 597: Oct-Nov,2017, IM 598 : Dec 2017 – Jan2018- not received) IM 599 : Feb 2018 issue covered in "Takaniki Patrika" Vol.2 No.7, July 2018

Features

Refractories Special

- 32 A rock and a hard place**
Demand for refractory products is evolving, forcing suppliers to upgrade their offers and processes to stay ahead of the game, while Chinese-origin raw materials are appreciating on the back of supply shortages, making productions costlier, *Davide Ghilotti, IM Chief Reporter*, finds.
- 36 Global Refractories: Facing the next production revolution**
One of the largest markets for industrial minerals, refractories are essential for producing steel, glass, ceramics, cement and lime and for many other processes requiring high temperatures. But as *Richard Flook* explains, despite their crucial role, manufacturers of these products are facing significant challenges from changing global trends.
- 46 Indian refractories sector hopes rising steel tide will lift all boats**
Booming steel production has helped prop up demand for Indian refractories amid lacklustre demand from cement and foundries, but as *Sunder Singh, IM Correspondent*, explains, the country's relatively healthy market is attracting increased foreign competition.
- 50 Dust and ashes: A picture of Liaoning's magnesia industry**
Environmental inspections and a ban on the sale of dynamite have led to supply shortages of magnesia in the world's biggest producing region and, as *Albert Li, IM Analyst*, found on a recent visit to the area, anger is rising among companies in the sector.
- 65 PROCESSING Liaoning looks to lift standards in magnesia processing**
Government incentives and academic cooperation have spawned a number of promising new environmentally sensitive projects in the capital of China's magnesia industry, *Albert Li, IM Analyst*, finds.



- 23 IM ANNIVERSARY SPECIAL Not a Cinderella story: Half a century of Industrial Minerals**
Long dismissed as the Cinderella of the commodities world, industrial minerals were regarded as high bulk, low value for most outside the network which makes up our world. But after 50 years *IM* is looking forward to a glittering future - and so are those at the top of the industrial minerals tree, interviewed in turn about the changing face of the industry.
- 54 Flame tamers: Brucite, huntite and hydromagnesite**
Magnesium minerals boast several unique properties which make them superlative flame retardants, but as *Ian Wilson, Consultant*, explains, despite their wide application many of these minerals are only recovered in a handful of places across the world.
- 62 Norway too much? The environmental risks of mining sector growth**
Scandinavia is a significant exporter of industrial minerals, but opportunities for growth in supplying raw materials for new technologies are forcing countries like Norway to take notice of their environmental obligations, *Sarah Gibbons, IM Correspondent*, finds.
- 74 COMPANY PROFILE Li-Cycle - Solving the Li-ion battery waste problem**
A Canadian start-up has recognised the risks posed by the lack of end-of-life management available for the rapidly growing number of lithium-ion batteries in the global economy and is seeking to provide a profitable solution.

Next issue

Fluorspar
TiO₂
Graphite
Antimony Trioxide

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Don't mine if I do: the demand for industrial minerals by the personal care sector	
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Cover: iStock/krblokhin

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- 8 Chinese, European companies compete to invest in Bolivian lithium carbonate plant
Neometals reports rising prices for spodumene offtake
- 9 Tata passes rising coking coal costs on to soda ash customers
US soda ash production sets 2017 low in November
- 10 AABC Europe special: Renault say shorter-range batteries will help manage raw material costs
Syrah say EV boom will spur China's shift to become net graphite importer
Umicore: battery recycling can provide sustainable cobalt, lithium
- 12 Imerys buys Indian calcium carbonate producer
SC Mining to boost Thai fluorspar output by 12,000 tpy or more "within six months"



Since the announcement that Tesla Motors were opening the (at the time) world's largest lithium-ion production facility in the US, all eyes have been on the company. But it is in China where the real leaps and bounds are being made with regards to battery technology - and electric vehicles

- 13 RBM force majeure sees buyers looking for alternative suppliers of titanium slag
Paint producers set for further TiO₂ price rises
- 14 Northern White sand demand to ease in Permian Basin, rail boss says
Time will tell on Permian frac sand
- 15 MTI records double-digit growth in 2017 on strong refractories market
Nabaltec to set up two new US plants

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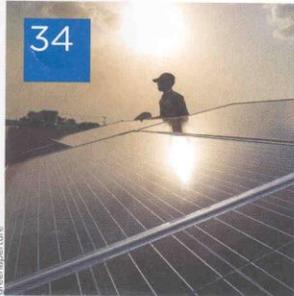
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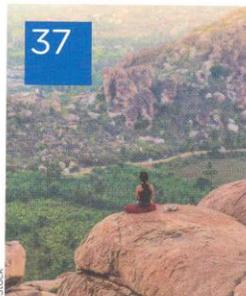
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Features

24 Li-ion batteries and the years ahead
Lithium-ion batteries are expected to lead the decarbonization of the world's economy after having experienced a significant technological change in recent years. *Martim Facada, lithium market reporter at Industrial Minerals*, looks at the evolution of the battery industry and the relationship with the most critical raw materials, lithium, cobalt, nickel and graphite.

30 Feeling the rub: Asian abrasives continue to challenge Western suppliers
Cheap Chinese alumina has been undercutting abrasives prices and output in North America and other importing countries for several years, but recent supply restrictions in China could reverse this trend. Meanwhile, other kinds of abrasives are finding new applications as some of their traditional markets shrink. *Rose Pengelly, IM Correspondent*, finds.

34 Where the sun shines
With the United States gearing up to create a domestic solar cell industry to rival that in China, *Industrial Minerals correspondent Cameron Perks* asks what effect this will have on domestic high-purity quartz suppliers.

37 On the way up: Industrial minerals in India
India is endowed with significant resources of some of the most widely used industrial minerals. But while the country has posted economic growth rates of around 7% per year in last three years, the industrial minerals sector has registered only modest growth, primarily as a result of a slowdown in the country's

construction sector due to demonetization and the government's drive to combat black money, *Industrial Minerals correspondent Sunder Singh*, discovers.

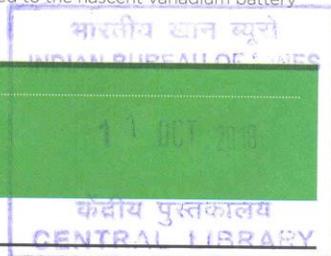
40 Whiter than white? Global talc developments
China is still the world's largest producer of talc but its influence after 50 years of dominating high-quality white talc is starting to wane, *UK consultant Ian Wilson* discovers.

PROCESSING
47 Taking off: Drones in mining
In a short space of time, drone technology has begun to have a significant impact on the mining industry. Its potential to cut costs, increase efficiency and boost safety in the sector will lead to widespread adoption, writes *Myles McCormick, Industrial Minerals Correspondent*.

COMPANY PROFILE
58 Vanadium to the fore
Bushveld Minerals is ramping up vanadium output at its flagship site and looking to acquire additional capacity nearby, as part of its plans to generate new supply dedicated to the nascent vanadium battery sector

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Kaolin
Refractories
Paper
Filler minerals
Magnesia



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'Best market conditions in five years' prompt Iluka to raise zircon, rutile prices	
Base Resources reports rising revenues from Kenyan mineral sand project	
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There's a lot of focus on technical ceramics as areas of growth, but as Sunder Singh discovers, there are plenty of opportunities in traditional tile markets also.

Top Stories

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Afarak to expand chrome mining at Vlakpoort site
- 9 Permian Basin frac sand supply boom threatens fine mesh
US drilling activity hits three-year high
- 10 China's NEV output doubles year on year in February
Strong lithium prices boost Albemarle's FY earnings
SQM reports earnings up 54% in strong 2017 performance
- 12 PDAC 2018
Energy technology optimism buoys mood at convention
Concerns raised about supply of battery raw materials
Minerals sector needs to 'burnish community reputation'
Shift to renewable energy and EVs "will alter minerals markets for decades"
- 14 Mining rights seen as 'formality' for world's largest fluorspar deposit at Doornhoek
- 15 AkzoNobel sees further pressure from high TiO₂ prices

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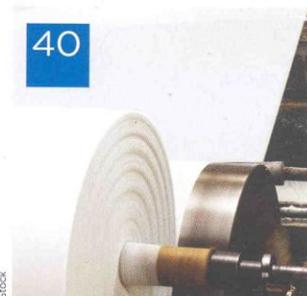
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Industrial Minerals, No.601, April, 2018



Features

21 Refractories remain cool under pressure

The world's refractories manufacturers are proving resilient, despite mounting pressures on the sector. *Rose Pengelly, Industrial Minerals correspondent*, examines how this most traditional of industries is adapting to unpredictable circumstances.

29 Magnesia: market tightness continues to bite

Magnesia markets have been severely disrupted by the environmental measures undertaken by the Chinese government in 2017 and into 2018. Production at many sites remains shut in and there is a great deal of uncertainty as to when - and indeed whether - all sites will restart. *Davide Ghilotti, deputy editor*, discovers.

33 A growth trajectory: ceramics markets look to Asia

The ceramics industry registered a dip in trade and production following the global economic downturn in 2008. But, as *Industrial Minerals correspondent Sunder Singh* finds, trade in Asia is now picking up, which is putting renewed pressure on kaolin, zircon, bentonite and other ceramics markets.

37 Filling the void: calcium carbonate markets look to grow

Consumption of mineral filler is growing rapidly, with the market forecast to grow to a worldwide total value of \$62.54 billion by 2024, according to some estimates, with global economic growth supporting expansion of the paper, plastics, rubber, paints and construction industries. *Industrial Minerals* explores the key drivers of this growth, and asks what makes calcium carbonate so attractive?

40 Prospects in packaging

Digitalization is continuing to drive change across many sectors worldwide, fuelling a steady decline in writing and printing paper with the rise of e-readers, smart phones and calls for paperless offices. Although this has caused consolidation in the paper industry among some of the largest producing regions, there are still growth opportunities for papermakers and their raw material suppliers in less mature markets and packaging products

PROCESSING

46 Logistics and processing trends in kaolin markets

Kaolin is primarily composed of the clay mineral kaolinite, and is valued primarily for its whiteness and particle size. *Cameron Perks* explores how it is being processed and transported today, and how this may change.

COMPANY PROFILE

58 BASF invests \$200m in kaolin business for industrial end-market share

A positive outlook in end markets has fuelled a significant investment in BASF's kaolin business, while the company seeks new uses for the mineral within the industrial sectors.

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Lithium
Borates
Soda ash

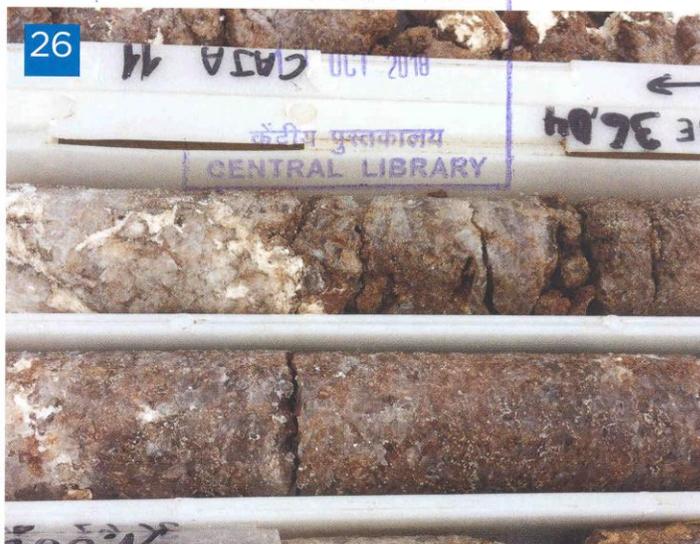
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These core samples, taken from a lithium project in Argentina, will eventually be made into lithium carbonate and are earmarked for use in the lithium-ion battery market. On pages 22-28 Martim Facada explores the lithium battery supply demand matrix.

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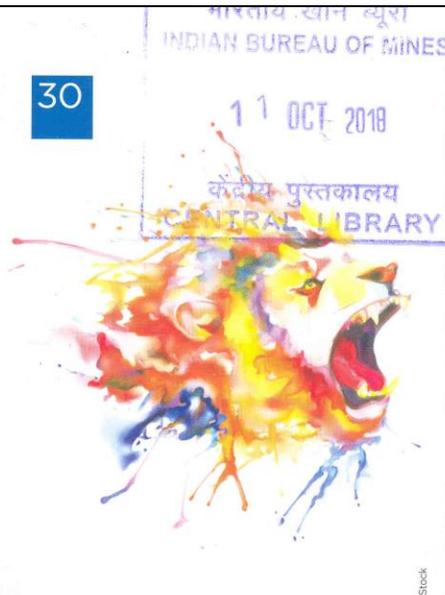
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22 Lithium: a Chinese affair

Demand for lithium compounds has accelerated in recent years while China moves to decarbonise its economy. The pipeline for new lithium supply to meet demand largely in Asia remains slow but fears of oversupply are emerging, *Martim Facada* reports.

30 'Two lions': The modern borate duopoly

Two behemoths supply the bulk of the world borates market, making for a highly concentrated industry. *Myles McCormick*, *IM* correspondent, reports on the tussle between the major players, the current dearth of exploration and innovative efforts to increase demand.

38 UNDERSUPPLIED: soda ash demand outstripping output

It's a finite balance between supply just meeting demand and moving to an undersupplied market. Demand in the primary end-use market for soda ash - glass - is strong and with no new soda ash capacity scheduled to come online to meet growing demand the market could be faced with higher prices for the raw material, *Michael Greenfield*, *Industrial Minerals* reporter, has found.

42 On the slate

Rising construction activity and increasing usage in coatings and fillers have helped drive a turnaround in the global slate industry, *Rose Pengelly*, *Industrial Minerals* correspondent, discovers.

45 PROCESSING Iron oxide pigment producers seek to cut environmental burden of production

54 COMPANY PROFILE Gemina gets boost from steel and green sectors

The recovery in global steelmaking over the last two years has benefited business for many of the world's industrial mineral companies, not least for Turkish industrial mineral supplier, Gemina.

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Potash
Phosphate
Climate change

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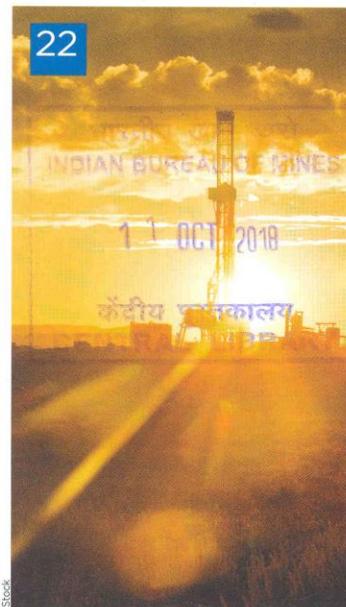
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China launches "blue sky" campaign
- 13 MDL, Eramet clash over titanium slag pricing prospects
PPG's new paint distribution center points to robust TiO₂ demand
- 14 Zimbabwe passes new mining act as mineral production ramps up



The rising oil price means that frac sand is once again back in demand - however now it is quantity, not quality, that frackers are looking for. So, asks William Clarke, what does this mean in terms of logistics? Can the frac sand get to its end market?

- 15 IM24: Graphite to stay dominant in lithium battery anodes
IM24: Magnesia demand expected to increase steadily

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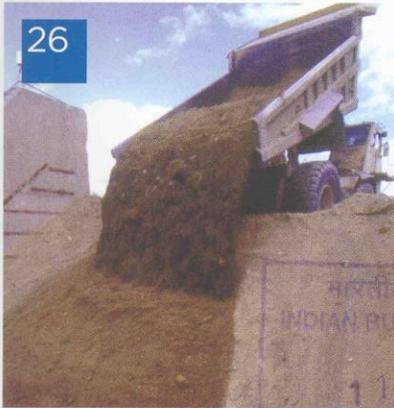
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22 Shifting sands
Soaring frac sand demand is being met by a wave of new supply, but how will traditional sellers fare in a world where quantity, rather than quality, is king. *William Clarke, Industrial Minerals reporter, asks.*

26 Vermiculite rising
Vermiculite production increased in 2018 as new supply from Uganda and Turkey ramped up. Meanwhile, prices have increased out of the US as higher grades are being demanded by customers. *Siobhan Lismore-Scott, consultant editor finds out what this means for the industry.*

28 Fertiliser outlook: Oversupplied and under-priced
Oversupply has long dogged the potash and phosphate markets despite a sizeable increase in demand that reflects changing food habits. *Industrial Minerals correspondent Kasia Patel* explains why this market dynamic could soon change.

36 Stuck in the mud
Frac sand demand may be booming but barite and bentonite markets remain stagnant. *William Clarke, Industrial Minerals reporter, finds.*

37 How climate change policies affect the mineral industries
Climate change policies have long been part of the conversation in the EU, which set strong 20% reduction targets for 2020, but as *Vassili Nicoletopoulos* discusses, the push to go green has had an impact on the mining industry worldwide.

40 AI faces slow grind in mineral processing
Artificial intelligence and machine learning are at the forefront of digital solutions that could dramatically improve efficiency in the mineral processing sector. But as *Rose Pengelly* discovers, mining companies have been reluctant to invest in the technology needed to revolutionise their operations.

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54 Iluka's zircon: The importance of the Eucla Basin, Kazakhstan's potential
As zircon prices continue to rise, what is Iluka, the world's most significant zircon producer, doing to alleviate tight global zircon supply, and how significant is the Eucla Basin in terms of supply security? *Industrial Minerals' Australia correspondent, Cameron Perks, investigates.*

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Magnesia
Abrasives
Batteries
Fluorspar

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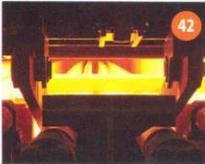


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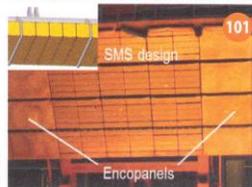
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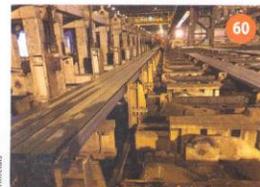
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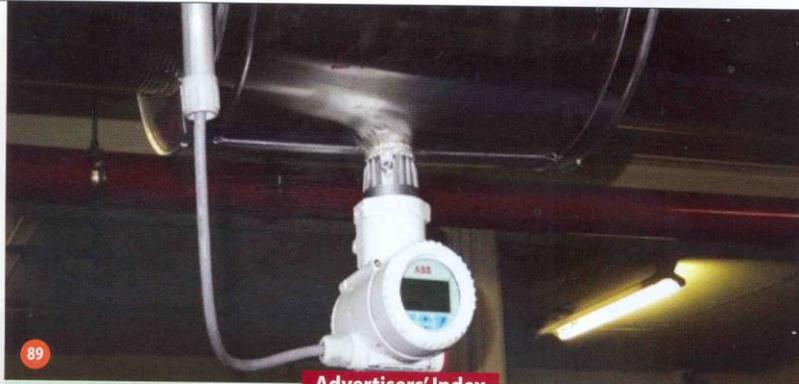
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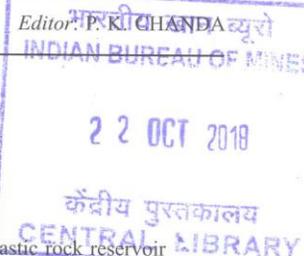
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