



तकनीकी पत्रिका विषय-सूची

CURRENT CONTENT

(Technical Journals)

(A Monthly Current Awareness Service from technical journals)

Vol.1, No.2-August 2017

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It will be highly appreciated if the valuable feedback is reciprocated.

Mrs.D.H.Vairagare

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ADDRESS OF EDITOR

All papers intended for publication and also related correspondence should be addressed to: B. Mahabaleswar,
Editor, Geological Society of India, No.63, 12th Cross, Basappa Layout, Gavipuram, Bengaluru - 560 019.
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Editor & Publisher:

Santosh Mahanti

Director:

Sabita Mahanti

Director & Content Strategist:

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Editorial:

Deepshikha Banerjee

Anindita Banerjee

Marketing:

Shyamalendu Banerjee

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Dipak Adhikari

Amiya Kumar Das

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Merin Links, Block 5E/5F, 5th Floor

166B, S. R. Mukherjee Road

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Phone: 91-033-2465-8581/9406

Fax: 91-033-2465-3790

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contact@isinfomedia.in

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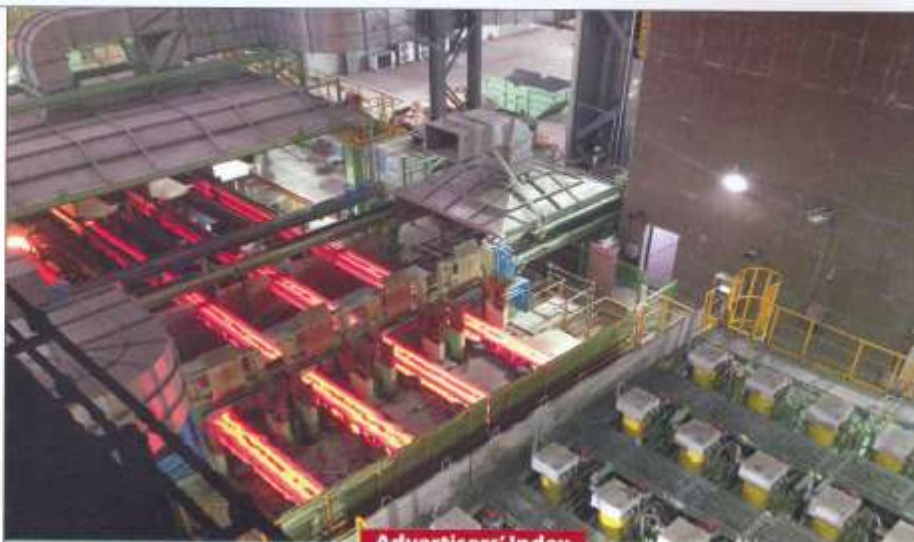
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Editorial & Business Offices:

6/2 MADAN STREET

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Telephone :

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E-mail:

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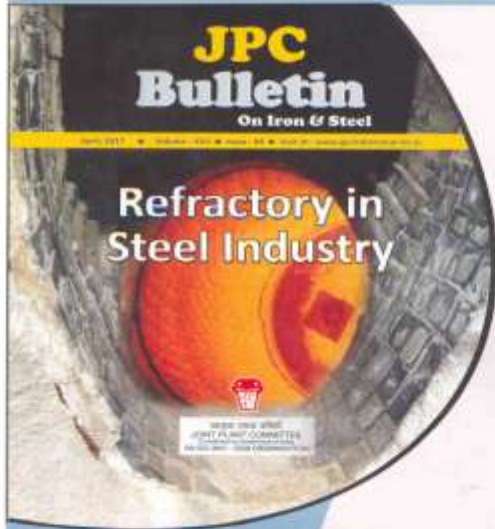
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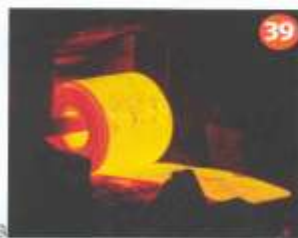
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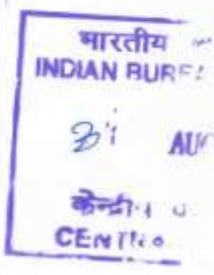
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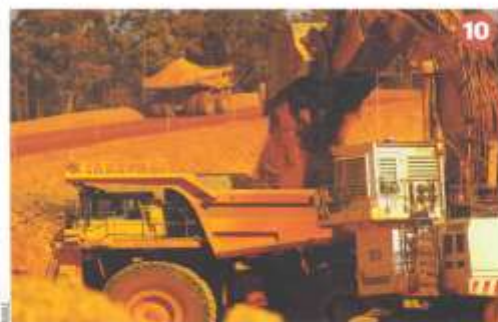
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Udachnaya Diamond Mine, Russia – It is one of the largest diamond mines in Russia and in the world.

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Correspondence Address

National Head Quarters & Secretariat

Contact: Secretary General,

Mining Engineers' Association of India

F-608 & 609, Raghavaratna Towers, 'A' Block, VI Floor,

Chirag Ali Lane, Abids, Hyderabad - 500 001,

Ph.: 040-66339625, 29801069

E-mail : meai1957@gmail.com Website : www.meai.org

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Load & haul: the future is electric

Where the commercial sector goes, industrial ones will follow; if the past is anything to go by anyway. Tablets, mobile telephones, Wi-Fi, proximity detection – hell, even the Internet – are all examples of technologies developed in consumer markets that have (eventually) influenced the way we mine. Even apps, a concept made available to consumers on mobile phones nearly 10 years ago (fun fact for the day: Apple launched the App Store with the release of iPhone OS 2.0 in 2008), have only become widely used in mining in the past 2-3 years.

I bring this up because on July 5, Swedish car manufacturer Volvo (owned by Chinese firm Geely since 2010) announced that as of 2019, every car it produces will have an electric motor. Although electric passenger cars have been available for some time in various guises – pure electric, hybrid etc – through companies such as Toyota, BMW and Tesla, the announcement is significant because Volvo is the first mainstream manufacturer to call time on pure combustion engines. A recent article by the FT stated that although globally the market for pure electric cars accounts for less than 1% of sales, if the growth rate since 2013 were to continue, then eight out of 10 cars sold in 2030 would be plug-ins.

We are seeing a similar trend in the mining industry. I wrote an extensive article for the June Energy Efficiency edition of *Mining Magazine* on battery-electric vehicles for underground mining, the technology behind them and test results so far. Next-generation battery technology and electric drivetrains are something that every major OEM of diesel-powered load-and-haul equipment is working on along with automated machine functions. The types of technologies required – ultra capacitors, sensors, proximity detection and collision avoidance – have all seen their inception on passenger or commercial vehicles, and companies that play in both spaces will be at a natural advantage going forward.

For example, at the end of June, power specialist Cummins (which produces engines for both on-highway and off-highway applications) released details on plans to electrify its product offering, starting with commercial models in 2019 before filtering the technology to its heavy-duty product lines at a later date.

I expect that Volvo Group, a separate entity from Volvo Cars since 1999 when it sold the division, but nevertheless a company that provides products for both the on- and off-highway segments, will be working on electric powertrains and storage technologies for the off-highway segment too. The company announced last September that it was testing fully autonomous trucks at Boliden's Kristineberg mine in Sweden, and provided evidence in the form of a dramatic video where Torbjörn Holmström, the group's chief technology officer, played chicken with a driverless Volvo FMX truck.

The technologies used on this truck will have no doubt been honed on highway vehicles (Volvo Trucks is part of Volvo Group), and once autonomous capabilities are in place on a machine, we're only a short hop, skip and an unmanned Budweiser truck away from electric drive options. The technologies, after all, go hand in hand; electrification, like automation, is an important enabler of future, safer and more efficient mines.

In summary: technological developments in the commercial sector are a bellwether for change in industry. The mining sector should sit up and take note of the Volvo Cars development, because it not only validates the nascent movement we are seeing towards battery-electric vehicles in mining, it will likely provide the building blocks for the electrification of larger, more challenging vehicles for surface operations.

The future of load and haul is electric, whether we like it or not.

CARLY LEONIDA, EDITOR

carly.leonida@miningmagazine.com Twitter: @MM_Ed_Carly

"Once autonomous capabilities are in place on a machine, we're only a short hop, skip and an unmanned Budweiser truck away from electric drive options"



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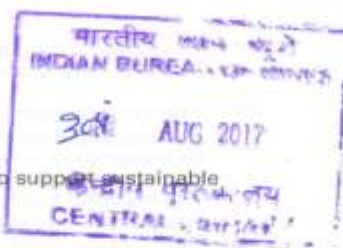
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Correspondance Address

The IM & E Journal 1457, Fishery Tank Road, Chintamaniwar, Laxmisagarpatna, Bhubaneswar - 751006, Odisha Mobile: +919861008387

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