

Magnesia Market Summit: MagForum 2018 Review

M. O'Driscoll

IMFORMED's MagForum 2018 conference was held 17–20 June, at the Grande Elysée Hotel, Hamburg/DE. With 230 international attendees networking and discussing the key issues influencing the industry, it was the largest yet. The event was stimulated with a diverse programme presented by leading experts. Home to speciality magnesia supplier Lehmann & Voss & Co./DE, and as lead sponsor of MagForum 2018, it was fitting that Knut Breede, Managing Partner, formally opened proceedings with a Welcome Address providing not just an insight to Lehmann & Voss but also the long-standing pedigree of Hamburg as a mineral trading hub.

2017 a game-changing year

Mike O'Driscoll, (IMFORMED/GB), presented an overview of the magnesia industry and highlighted some key talking points: China – supply shortages, rising prices, reforms, what's next?; M&A activity – RHI Magnesita; TIMAB/Magna; Afarak/Magnohrom; Kümas for sale; potential new sources in Serbia, Greece, Turkey, Australia, Jordan, Pakistan; diversification into non-refractory markets.

M. O'Driscoll urged that the industry should consider 2017 be seen as a game-changing year, with 2018/2019 to have continued tight supply and high prices, prolonged with closures owing to dynamite provision uncertainty, MEE inspections (environment and safety), and business practice audits.



Fig. 1 Keynote Discussion Panel

Most recent developments now include China Customs trade audits, demanding importers' declaration of consignment details – i.e. comparing export and imports as part of controlling smuggling.

There is increased likelihood of state-control of the supply sector, although this needs finalisation and proving, and of annual enforced plant closures October–March as anti-pollution control, which will probably influence buying patterns, and perhaps a future new “cycle” of production and buying will evolve during the July–September period. There is also the potential of a trend in the “transfer” of some Chinese production capacity overseas and/or Chinese suppliers setting up facilities overseas to supply China and world markets. The upshot is that the situation has boosted prospects for and interest in magnesia projects and sources outside China, and given refractory recycling more impetus.

Keynote Discussion Panel

The now established and acclaimed MagForum Keynote Discussion Panel got straight to the heart of matters during the

first morning with the influence of ongoing issues in China very much to the fore.

Moderated by Mike O'Driscoll (Fig. 1, r.), IMFORMED, the panellists were (Fig. 1, f. l. t. r.): Rainer Gaebel, Managing Director, Refratechnik Holding GmbH/DE; Jürgen Mannshardt, Director Business Unit Magnesita, Lehmann & Voss & Co. KG; Michael Tsoukatos, Business Development Manager Grecian Magnesite SA/GR; Ted Dickson, Consultant, TAK Industrial Mineral Consultancy/GB; and Rajah Jayendran, Snr VP, Head of Operations Europe 2, RHI Magnesita/AT.

R. Gaebel noted that it was a key moment in the market, where customers must be kept happy despite perhaps not enough raw material available, while R&D efforts must continue for planning in the long term for

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added value products. Raw material distribution channels are changing he said. J. Mannshardt warned of a future loss of raw material production capacity in China that will not be returning, and while he expected a further 1–2 years of disruption in the market owing to changes, he was confident that sufficient volumes would be available after that period.

M. Tsoukatos acknowledged the tight supply of high purity dead burned and fused magnesia and said that the industry needed to react to the situation, underlining the importance of new product development. He also forecast further mergers and acquisitions in the industry.

T. Dickson pointed out that the primary magnesia consuming industries were actually performing well at present. He highlighted how many end users were over-reliant on Chinese magnesia supply and that a “new normal” would soon emerge whereby consumers would be wary of Chinese supply and will diversify their sources. He forecast a surge in innovation in refractory products that will indicate a step-change.

R. Jayendran remarked that in fact China has been building towards its present clampdown on pollution and illegal businesses for some time, and this should not have come as a surprise.

RHI Magnesita, China, and source options outside China

In “The Driving Force of the Refractory Industry: a World Market Leader Emerges”, Thomas Frömmer, Vice-President Mining, Head of Raw Material Support, RHI Magnesita, reviewed the portfolio and strategy of the group nine months on from the mighty merger.

The Group produces 1,6 Mt per annum of refractory raw materials and is 70 % vertically integrated in basic raw materials and 50 % for all other raw materials. Th. Frömmer revealed that the Norwegian fused magnesia plant, Normag, would be ramped up to full capacity by the end of 2018. He also indicated that the Group was investing further in China (this bore fruit just after MagForum 2018 on 26 June when RHI Magnesita announced a >EUR 20 million investment in its refractory grade dolomite plant in Chizhou, Anhui province).

“China: Its Role and Influence on the Magnesia Market” by Alison Saxby, Dir-

ector, Roskill Information Services Ltd/GB, and Ted Dickson, TAK Industrial Minerals Consultancy, examined the historical global perspective, Chinese influence on production, Chinese influence on trade, growth of domestic markets in China, and Chinese government policy shaping the future.

T. Dickson noted that among the ramifications of China’s changing magnesia sector, the enforced switch to gas fuel for some producers will be difficult owing to infrastructure, and there was potential for “synthetic magnesia production” in China from brine sources or development of new processing technology. It is expected that there will be more focus by Chinese producers to satisfy domestic demand rather than export markets.

T. Dickson concluded that “China will continue to lead the magnesia industry in terms of production, demand, and trade. It will take at least two years for a new landscape to emerge, when the medium to longer term picture will become clearer.”

“Magnesite Beyond China: Potential Alternative Sources” by Ian Wilson, Consultant/GB, was an excellent review of the status and developments for various magnesia sources outside China, namely in Russia, Brazil, Turkey, Pakistan, Australia, and North Korea.

Regarding Magnezit’s plans, its Magnezitovaya mine at Satka is looking to expand magnesite mining capacity to 1,6 Mt per year by 2029; other planned milestones include a 15 000 t/a increase in Fused Magnesia (FM) capacity in Satka in 2018, followed by a further 50 000 t/a in 2019, and at its Lower Angara site, an additional 50 000 t/a in 2023. A 100 000 t/a two-step high purity Dead Burned Magnesia (DBM) plant is planned at Satka in 2020.

In Brazil, IBAR Nordeste’s plans for 2019 include a new rotary kiln (the 4th), a new MHF for calcining in combination with a shaft kiln for sintering, and a flotation project for high purity MgO (min. 96,5 %) targeting both CCM and DBM markets. In Turkey, Akdeniz Mineral Kaynaklari is to increase its CCM capacity (currently 36 000 t/a) by 30 000 t/a. Turkmag’s 2018 production is estimated at 90 000 t DBM and 240 000 t magnesite, and the company has an investment plan for a 2nd new rotary kiln in 2019–2020.

J. Wilson also profiled some interesting new developments with sources in Afghanistan and Pakistan, including two new companies entering the market: Master Minerals and Galaxy Enterprises.

Iran, Saudi Arabia, Morocco, Russia and Japan

“New Magnesite Resources in Iran” by Ali Reza Ganji, Industrial Minerals Specialist/IR, examined Iran’s geology, magnesite ore geology, mining, and new resources. The geological setting of Iran’s magnesite deposits is along or adjacent to active faults. Iran hosts 4,7 Mt proven reserves and 7,1 Mt probable reserves of magnesite and there are 47 active, 15 inactive, 3 planned magnesite mines. Total production capacity is 280 000 t/a magnesite, although 2016 production was 145 223 t.

“Recently, more than 3,3 and 2,5 Mt of stockwork type magnesite proven reserves have been discovered in the Sistan va Balouchestan and South Khorasan provinces, respectively”, said A. Ganji. The total amount of estimated reserves of these new resources could be more than 15 Mt.

“MENA Magnesite and Dolomite Developments” by Nicholas Gangutia, Ganmag Magnesite Solutions/ES, updated delegates with Maaden’s DBM project, as well as introducing a new dead burned dolomite operation in Spain and potential sources of magnesite and dolomite in Morocco.

N. Gangutia reported on the successful start-up last year of the 32 000 t/a DBM plant using the direct sintering shaft kiln, with production sold out on spot prices. Reserve estimates have also increased to 4 Mt.

“Due to its high chemistry and density, Maaden is selling high grade DBM for refractory bricks market. Hard burned CCM is being used as raw material for FM. All MgO <94 % or low density DBM is used for refractory masses production”, said N. Gangutia.

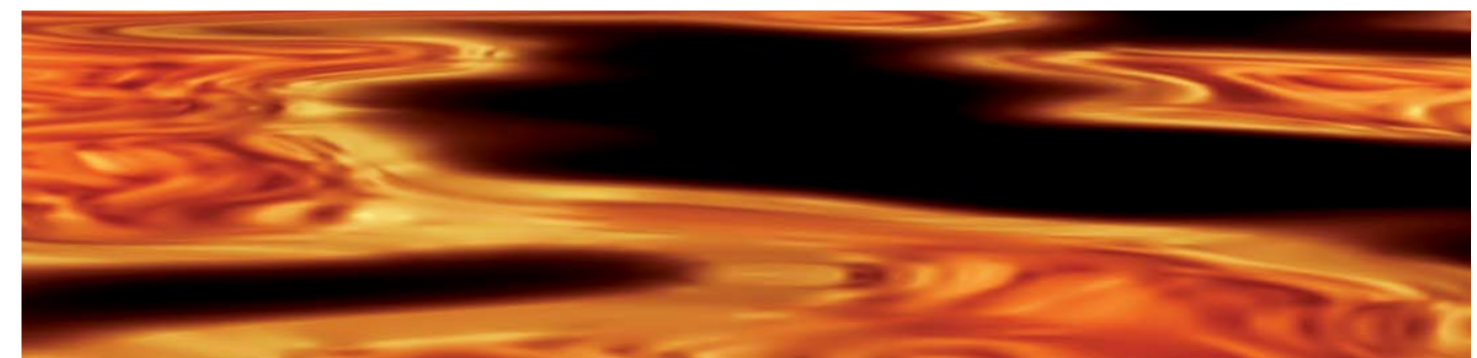
N. Gangutia also notified delegates about the successful start up of a new vertical shaft kiln in Spain for the production of dead burned dolomite and introduced Magnésie du Rif, developing magnesite and dolomite deposits in northern Morocco.

Henk Don, Managing Director, Europiren BV/NL, presented “Russian Brucite Mining, Processing, and Market Applications” high-

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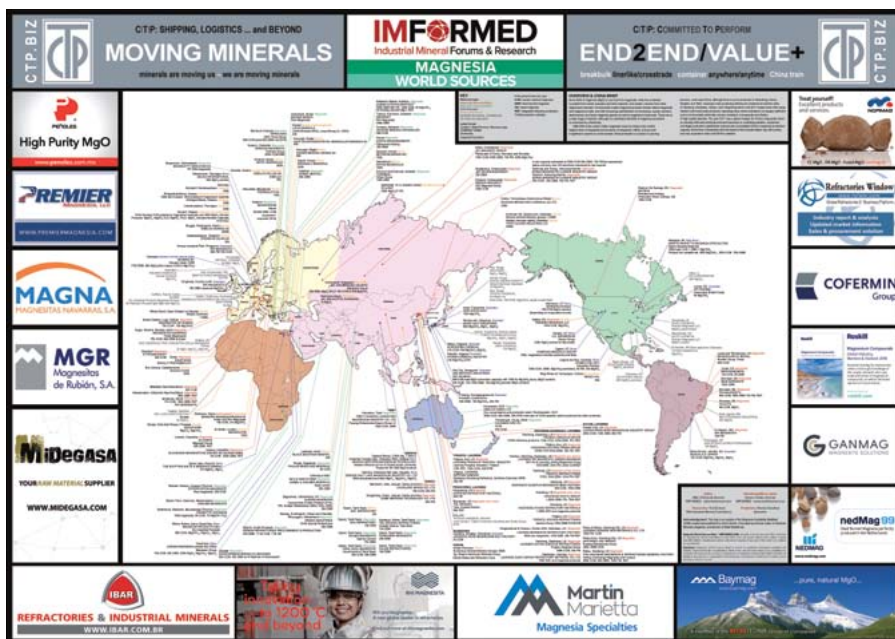


Fig. 2 Magnesia world sources map

lighting the history of the Kuldur brucite deposit, which is one of the world's largest brucite deposits with confirmed reserves of more than 10 Mt and current output of around 300 000 t/a of all grades.

H. Don announced that development of the recently acquired Savkinsky brucite deposit, 80 km from Kuldur, would commence in Q3 2018, increasing total production by 200 000 t/a and will be operational in 2023. A 3rd processing plant was opened on 12 July 2018 at RMCC's Vyazma brucite processing facility 240 km west of Moscow, increasing the total capacity for milled brucite by 50 % to 150 000 t/a.

"A Sea Change and New Challenges in Magnesia" introduced by Kenji Fujimoto, General Manager, Magnesia Division, Ube Material Industries Ltd/JIP, outlined two very interesting new applications for magnesium hydroxide in Japan: the suppression of H₂S gas generation creating road collapse (presented by Atsushi Kondo), and the effect of Mg(OH)₂ in assisting swimming pool algae clean-up (presented by Koki Takahashi).

Magnesia for refractories

"High Quality Sintered Magnesia and Doloma for Refractories" by Asim Bilge, Sales

Specialist, Kümaş Refractories/TR, detailed the magnesia market, magnesia products, the sinter process, sintered magnesia, and sintered doloma. Kümaş' magnesite sources have a well-known reputation internationally with high purity and cryptocrystalline structure and the company consumes some 1,2 Mt/a magnesite. A. Bilge explained that doloma is used if the deoxidation agent is silicon in the steelmaking process, since it creates a protective layer on the refractory brick surface.

Processing developments

"Serpentine: Today's By-Product, Tomorrow's Raw Material Source" by Beyhan Ozdemir, Managing Director, Mavi Prizma/TR, assessed the potential of utilising serpentine waste from magnesite mining.

Potential market applications include as a flux material for blast furnace instead of olivine (to adjust alkalinity); hydrometallurgy; refractories; cordierite ceramics; and cement and concrete.

Jens-Michael Bergmann, Sales Manager Europe/MENA/India, Tomra Sorting Solutions/BE, presented "Can Dry Sensor Sorting Substitute DMS in Raw Magnesite Beneficiation? Technical Approach and Field Expe-

riences." J.-M. Bergmann explained the sensor approach in mineral ore processing, including belt and chute systems, before going on to highlight the different modes of sensors: electromagnetic, Near Infra-red (NIR) spectrometry; X-Ray Transmission (XRT); colour; and laser reflection.

In sorting magnesite ore, J.-M. Bergmann concluded that removal of calcite, dolomite, or quartz, when similarly coloured, can be a problem for a colour-only device, but combination with NIR is a field-proven solution. Since silicon is a challenge for NIR, especially if the Si is finely disseminated inside the particles, the XRT-Sorter is the best solution for SiO₂ removal.

"Mineral Processing Technology for Magnesia and Dolomite" by Jan Lampke, Senior Process Engineer – Mineral Processing, Haver Engineering GmbH/DE, reviewed the elements of efficient mineral processing based on industrial case studies using screening, washing, pelletizing, and process development and optimisation with NIA-flow – a simulation software used in mineral processing.

The attributes of employing a good pelletizing system include: improved storage and transport properties; defined grain size and grain shape; generation of narrow grain size distribution; avoidance of product segregation; defined porosity and density; improved permeability; increased market value and market potential.

The conference concluded with two excellent site visits: to the Hamburg Container Port, and to K+S's Kalikai.

Kalikai has been a storage and transloading site since October 1927 with more than 95 000 m² of warehouses and silos for dry loose goods and an overall capacity of 405 000 t. Raw material from the K+S mines is railed directly into Kalikai, and each year some 3,5–4,5 Mt of salt and magnesium sulphate is transloaded.

Venue and dates for MagForum 2019 will be announced shortly.

Please watch out for announcements in refractories WORLDFORUM, and on www.imformed.com