

Q MAG's plant at Parkhurst, Queensland. Pic courtesy: Q MAG



Vertical integration in the steel refractory sector

Refratechnik buys QMAG to boost captive magnesite supply

The long awaited outcome of Sibelco's sale of Queensland Magnesite (QMAG) finally came to a conclusion with the January announcement from Refratechnik, Germany, that it had entered into a share purchase agreement to acquire 100% of the Australian magnesite producer.

Refratechnik now joins the ranks of world leading refractory producers possessing a captive refractory magnesite supply source (see table and pie chart).

QMAG is one of the world's leading magnesite producers with fully integrated magnesite mining and magnesite processing facilities at Rockhampton, Queensland, and until now was among the fast shrinking group of independent natural magnesite producers.

The company has a combined production capacity of >300,000tpa of high grade fused (FM), dead burned (DBM), and caustic calcined (CCM) magnesite.

Refratechnik Group, headquartered in Munich, is the largest family-owned refractory company in the world employing more than 1700 people at 27 locations worldwide, with 70 years of operating success.

According to Refratechnik's statement, QMAG "will add vertical supply-chain integration in addition to existing partnerships and strengthen Refratechnik's position as a global industrial mineral producer... With the addition of QMAG's magnesite ore reserves to the Industrial Minerals division of Refratechnik, sustainable supply to all customers is secured for decades, and the foundation for further growth of the group is laid."

The move now means that there are very few independent non-integrated refractory magnesite players worldwide, namely: Nedmag, in the Netherlands; Martin Marietta Magnesite Specialties, USA; Industrias Peñoles, Mexico; Ube Materials Industries, Japan; and Manaseer Magnesite, Jordan (note: all synthetic magnesite producers), plus Ternamag, Greece; and Ma'aden, Saudi Arabia (the last three are relative newcomers to the market). But should the move really be a surprise? And is Refratechnik just in time?

Vertical integration of refractory raw material supply

Refratechnik is clearly pursuing increased self-sufficiency in refractory raw material supply, a path taken by certain other refractory companies, particularly with regard to magnesite, and notably by giant refractory conglomerate RHI Magnesita (RHIM). Before this merger initiated in 2016, in their separate entities RHI and Magnesita had actually embarked on this strategy some years earlier, and had also operated well-established captive magnesite sources for many years.

As primary producers of basic refractories sourcing of magnesite was of chief concern, although it should be noted that Magnesita also owned dolomite, chromite, refractory clay and graphite sources.

RHI had to divest its dolomite assets in 2017 (to Intocast) for the merger to go ahead. However, just last December the group announced a huge €40m investment in the construction of Dolomite Resource Center Europe – the biggest investment RHIM has made in Austria in 30 years. Refractory dolomite for the European market will be mined and processed with a new rotary kiln at Hochfilzen (100,000tpa by 2021) before being transported by rail to sister plants in France.

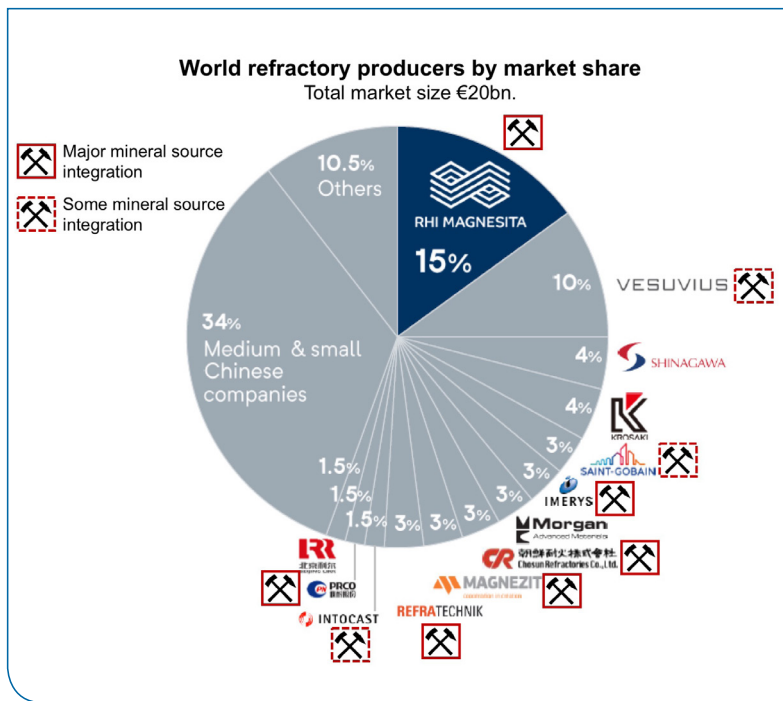
There was much talk of this trend of vertical integration with raw material supply taking off among other refractory companies. The main driver being security of supply for in-house consumption in manufacturing refractories, but also frustration with China's ongoing issues with supply, quality availability and consistency, not to mention price fluctuations (China still remaining the world's dominant refractory raw material source).

However, other than RHI and Magnesita, there has been little movement elsewhere along these lines. Outside China (where such vertical integration is very common in the refractories sector) the only notable example comparable in scale is Magnezit, Russia, and Imerys, the latter focusing on various aluminosilicate sources worldwide.

Sure, Kerneos, as was, acquired a majority stake in its Greek bauxite supplier Elmin in 2012, and then proceeded to acquire S&B's bauxite assets, but not long after was itself acquired by Imerys in 2016.

There are other examples, but not that many, and with the exception of Ashapura, India, most are smaller scale, focused on just one, maybe two minerals, and commonly magnesite, and most have been well established integrated producers since their founding.

Few have made relatively recent forays into strengthening their resource base, these include Magnesitas Navarras (acquiring 50% Magnesium do Brasil in 2013) and Grecian Magnesite (acquiring Akdeniz, Turkey also in 2013).



So why Refratechnik and why now?

It is significant to note that Refratechnik is no stranger to magnesite and magnesite processing. In 1979 Refratechnik founded Baymag, which secured a large magnesite deposit at Radium Hot Springs, British Columbia. Since 1982, Baymag has been producing high purity, caustic calcined magnesite at its Exshaw plant, Alberta with an annual capacity of more than 100,000tpa and is a well established supplier of non-refractory magnesite grades.

Although fused magnesite production was initiated in 1984, and a 14,000tpa fused magnesite plant installed at Exshaw in 1989, this was mothballed soon after. Despite constant market chatter ever since about a possible reopening of the fusion plant, Baymag has not done so, mainly owing to negative cost and market factors.

Refratechnik is a major player in the world magnesite refractories market, with an estimated 3% market share of the world total refractory market (see pie chart) bringing it into the top 10 accounting for a combined 51% market share.

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After the multinational heavyweights of RHIM and Vesuvius (taking a combined 25% share), Refratechnik vies for position with Magnezit as next in line as a main Western magnesite refractory producer – since the others in front are either more focused in the Far East, or on aluminosilicates and other refractory materials.

Since the founding of Refratechnik Holding in 1995, the group has also been steadily growing through acquisitions and new plants, especially since 2000. However, unlike its competitors, and despite owning a Canadian magnesite source, the group did not have a captive source of refractory grade magnesite, and had to rely on external supply from sources such as Nedmag, in the Netherlands.

In a magnesite supply world where consolidation and Chinese inconsistency has been the name of the game in recent years, and if the group is intent on securing healthy growth prospects, Refratechnik has decided not to be left behind in the vertical integration stakes and snap up one of the few key independent refractory magnesite producers available (the others are listed earlier).

Dr Franz Spachtholz, president & CEO, Baymag, told IMFORMED: "The Baymag and QMAG mines offer high quality and high grade raw material and long term availability to support our customers worldwide in- and outside the refractory business. This makes us independent in terms of fluctuations in quality from others."

There are some significant factors for Refratechnik with the QMAG purchase:

- the Australian grades are well known for their consistent high quality
- the location provides extended geographical spread of supply
- and perhaps most interestingly, it extends Refratechnik's market portfolio outside of refractories.

"QMAG and Baymag have a diverse product and customer portfolio in comparison to other producers of magnesite, and one of the few remaining fusing plants in the western hemisphere is definitely an asset," said Spachtholz.

Refratechnik is thinking perhaps of further targets in non-refractory minerals and markets with many references to the group's 'Industrial Minerals Division' and 'expansion of our range of products and services in the industrial minerals sector', in the company's official communications on the QMAG addition.

It is notable that the move also coincides with Refratechnik's recent joint venture magnesite initiative in China, adding to its existing Chinese and Asian operations. In October 2018, Refratechnik announced a major joint venture to develop a 100,000tpa DBM and CCM flotation plant at Pailou, Haicheng, partnering with Haicheng Guozheng Mining and Yingkou Jinlong Refractories. This represents the first such move in recent years of a major western refractory producer to invest in raw material sources in China. In January IMFORMED was told that the first calcination test run was very successful.

"Baymag, QMAG, and the joint venture in China gives us long term security in a time of uncertainty, consolidations and further polarisation," said Spachtholz.

Thus, Refratechnik has considered, and perhaps just in time, that it requires a major in-house refractory magnesite producer, and is now even thinking outside the refractory market space.

And as Western refractory manufacturers struggle yet again with stalled or cancelled deliveries from China (this time owing to the impact of the COVID-19 virus) of magnesite (and other refractory minerals) for the first half of 2020 and perhaps beyond, another strategy rethink on captive raw material sources outside China may well see others follow Refratechnik.

Refractory producers with captive mineral sources*		
Company	Captive Mineral Source(s)	Country (location of raw material source)
Leading refractory producing companies**		
RHI Magnesita	chromite, refractory clays, dolomite, graphite, magnesite, pyrophyllite	Austria, Belgium, Brazil, Ireland, Norway, Turkey, USA
Vesuvius	fused silica	France
Saint-Gobain	silicon carbide	Bhutan (remaining asset after 2019 sale of SiC division to OpenGate, now renamed Fiven A/S)
Imerys (Calderys, Kerneos)	andalusite, aluminas, bauxite, fused alumina, graphite, mullite, refractory clays, silicon carbide, spinel, fused zirconia	Austria, Canada, France, Germany, Greece, South Africa, UK, USA
Chosun	pyrophyllite, sintered aluminas, spinels, fused alumina	South Korea
Magnezit	magnesite	Russia
Refratechnik	magnesite	Canada, Australia
Intocast	dolomite	Italy (acquired from merger control RHI Magnesita divestment 2017)
Other refractory producing companies		
Ashapura	bauxite, mullite, kaolin, fused alumina, fused mullite	India
Borovichi Refractories Plant	refractory kaolin	Russia
Christy Refractories	refractory clays	USA
CUMI	fused alumina, silicon carbide, fused mullite	India, Russia
Dalmia-OCIL	magnesite, limestone	India
Grecian Magnesite	magnesite	Greece, Turkey
IBAR	magnesite	Brazil
Konya Krom Magnezit	magnesite	Turkey
Kumas	dolomite, magnesite	Turkey
Magnesitas Navarras	magnesite	Spain
Mintec	magnesite	Turkey
POSREF	seawater magnesite	South Korea
Resco Products	refractory clays	USA
SMZ AS	magnesite	Slovakia
Togni S/A – Refractory Materials	refractory clays, kyanite	Brazil
TRL Krosaki	quartzite, refractory clay	India

* ie. Outside China ** ie. within top 11 companies holding 52.5% are of world refractories market (see pie chart).

Authors

Mike O'Driscoll is director and co-founder of IMFORMED with over 30 years experience in the industrial minerals business.

The key trends and developments in refractory magnesite supply and demand are examined and discussed at IMFORMED's MagForum event every year.

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