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SEPTEMBER 2018

global gypsum MAGAZINE

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This issue's front cover...

Münstermann is one of the leading German manufacturers in the fields of industrial drying and thermal processing plants, demanding handling and automation systems and high-quality dedusting, exhaust air extraction and filter systems. The products and services offered are mostly individual customer-specific solutions, which are tailored to the customer's specifications and conditions of use.

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E-mail: info@muenstermann.com

Dear readers,

Welcome to the September 2018 issue of *Global Gypsum Magazine*, which will be distributed at the 13th *Global Insulation Conference & Exhibition* in Vienna, Austria, on 25-26 September 2018. To tie in with the location and themes of the event, this issue's *Global Insulation Section* has an expanded update of our previous review of the EU insulation sector, this time containing news of new plants, country and company analysis and more: Turn to Page 32. Also in the section, we have an interview with Andreas Gürtler, Foundation Director at the European Industrial Insulation Foundation (EiiF) (Page 37). The EiiF's aims are to help industrial plants collect proof, build awareness and consult asset owners with tailored and standardised Technical Insulation Performance Checks (TIPCHECKs). These help to identify 'low-hanging' savings in terms of energy, money and CO_2 emissions, sometimes with payback times of 12-24 months. In addition, the *Global Insulation* news section has been expanded to include all of the latest sector news (Page 26).

This issue's *Global Gypsum Magazine* contains a special round-up of current global gypsum plant projects and those planned for the future. As commented upon previously in these pages, gypsum wallboard plants are now coming 'thick and fast' in a wide range of countries not traditionally associated with this type of construction. As well as three projects in India, there are plants on the horizon in Belarus, Tanzania, Tunisia and Iran. The article on projects also covers plant plans, builds, inaugurations and re-openings in the US, New Zealand, Russia, Australia and Mexico, places where wallboard is better established: See Page 12. Also in the magazine is a look at the development of Derco Gypsum's thermoplastic forming belts for gypsum wallboard (Page 18), a plant report from New West Gypsum Recycling's new plant in Norway (Page 22) and all of the presentations from the forthcoming 18th *Global Gypsum Conference & Exhibition*, which takes place in Vancouver, Canada on 22-23 October 2018. See Page 24 for more and visit *wwww.GlobalGypsum.com* to register for the event.

We hope that you enjoy this issue of *Global Gypsum Magazine!*

PEdwards

Dr Peter Edwards
Editor

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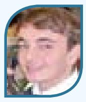
Editorial Director
Dr Robert McCaffrey
rob@propubs.com
(+44) (0) 1372 840951

Editor
Dr Peter Edwards
peter.edwards@propubs.com
(+44) (0) 1372 840967

Commercial Director
Paul Brown
paul.brown@propubs.com
Mobile: (+44) (0) 7767 475998

Business Development Executive
Sören Rothfahl
soeren.rothfahl@propubs.com
Mobile: (+44) (0) 7850 669169



Web Editor
David Perilli
david.perilli@propubs.com
(+44) (0) 1372 840952

Company manager **Sally Hope**
sally.hope@propubs.com

Subscriptions **Amanda Crow**
amanda.crow@propubs.com

Support **Jane Coley**
jane.coley@propubs.com

For full details on article submission, please see:
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Published by Pro Global Media Ltd
Ground Floor, Sollis House, 20 Hook Road,
Epsom, Surrey, UK KT19 8TR
Tel: +44 (0)1372 743837 (switchboard)
Fax: +44 (0)1372 743838

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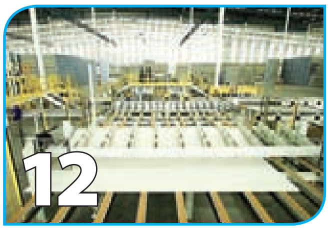
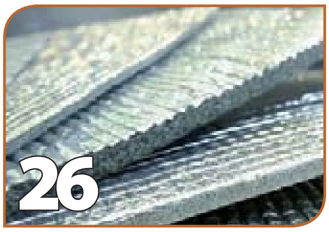


Global Insulation



DIARY DATES

For further information and links, see www.GlobalGypsum.com

13th Global Insulation Conference & Exhibition
25-26 September 2018, Vienna, Austria
www.GlobalInsulation.com

The 13th *Global Insulation Conference & Exhibition* will take place in September 2018 in Vienna, Austria. This must-attend event will cover manufacturing advances, mineral wool, polyurethane, cellulose, fibreglass, polyiso and polystyrene, VIPs, applications and additive technologies, among others.

2nd Global GypSupply Conference & Exhibition
March 2020, Location TBC
www.Gyp-Supply.com

The 2nd *Global GypSupply Conference & Exhibition* on global natural, synthetic and recycled gypsum supplies will take place in March 2020, in a yet-to-be determined location. The 1st *Global GypSupply Conference* took place successfully in Brussels in March 2018, with 110 delegates from 28 countries.

18th Global Gypsum Conference & Exhibition
22-23 October 2018, Vancouver, Canada
www.GlobalGypsum.com

The 18th *Global Gypsum Conference & Exhibition* will take place in Vancouver, Canada in October 2018. The event will cover market trends, the latest research, plaster technology, applications, energy-efficiency, non-commodity board, sustainability and more.

China/US: Gypsum involved in tariff war

China's Ministry of Commerce has proposed placing retaliatory tariffs on products from the US, including gypsum and gypsum products. The list covers 5207 items and proposes adding import taxes of up to 25% on them. It includes gypsum and gypsum wallboard. The ministry said that the new tariffs will take effect at a date to be announced later on.

US/China: Taishan reaches settlement

Taishan Gypsum and its owner China National Building Material Company (CNBM) have reached a US$1.98m settlement in one of its on-going legal cases related to alleged defective gypsum wallboard. The Chinese manufacturer says that it has reached settlement with the plantiffs. The case is a third-party claim initiated by original claimants Venture Supply and Porter-Blaine. Following receipt of the payment the plantiffs have agreed to waive all liabilities with respect to Taishan Gypsum.

China: CNBM's wallboard sales up in first half of 2018

China National Building Material's (CNBM) gypsum wallboard sales rose by 1.5% year-on-year to 866Mm^2 in the first half of 2018 from 853Mm^2 in the same period in 2017. Its wallboard production remained stable at 874Mm^2. Average wallboard prices at both of its New Materials division subsidiaries also increased.

The group's sales revenue from its New Materials division rose by 10.3% to US$1.66bn from US$1.5bn. Its adjusted earnings before interest, taxation, depreciation and amortisation (EBITDA) increased by 30% to US$452m from US$346m. Overall, group sales revenue rose by 22% to US$14bn from US$11.5bn.

The company said that its BNBM subsidiary set up a company, Tanzanian Company Limited, in Tanzania and that BNBM refocused Wanjia Building Materials for the global market

CNBM's subsidiaries that produce gypsum wallboard include BNBM and Taishan Gypsum.

Canada: Red Moon starts work on Ace

Red Moon Resources Inc. has said that it will commence development of the Ace gypsum mine in western Newfoundland after it received government approval for its plan for an open pit operation.

Operational work, consisting of scrubbing vegetation and overburden removal, has begun at the site. The Canada-listed explorer is working with Vinland Materials Inc. to undertake contract mining operations and secure sales agreements for gypsum and anhydrite. In addition, it is working towards initiating shipments in 2018, with sales contracts to be sourced by 2019.

Red Moon estimated potential resources of 3-5Mt within the mining lease, which was obtained in October 2017.

Pakistan: Story correction

Page 8 of the July 2018 issue of *Global Gypsum Magazine* contained a story under the headline *'Pakistan: Lodhia Gypsum to build US$10m plant.'* Since this was published, *Pro Global Media*, the publisher of *Global Gypsum Magazine*, has been contacted by Saint-Gobain Sub-Saharan Africa, which wishes to publish the following corrective statement:

There have been various reports in Pakistan and in online publications regarding Lodhia Gypsum investing in a plasterboard plant in Pakistan. In 2015, Saint-Gobain and the Lodhia Group entered into an agreement whereby Lodhia Gypsum Industries became a joint venture and was renamed Saint-Gobain Lodhia Gypsum Industries.

Saint-Gobain Lodhia Gypsum Industries manufactures plasterboard in Tanzania and sells its production in Tanzania, Kenya and other neighbouring countries. It provides employment to 90 employees at its plant located in Arusha. Saint-Gobain Lodhia Gypsum Industries' main priorities are to promote local production for the Tanzanian market and encourage exportation to neighbouring countries.

No investment has ever been considered in Pakistan by the company.

France: Saint-Gobain's sales rise by 1.9% to Euro20.8bn in first half of 2018

Saint-Gobain's sales rose by 1.9% year-on-year to Euro20.8bn in the first half of 2018 from Euro20.4bn in the same period in 2017. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) fell very slightly to Euro2.07bn.

"The second quarter marks a return to supportive trends in all our main markets. After a disappointing first quarter, affected by harsh winter weather in Europe, which weighed on results, the second quarter was far more encouraging in terms of volumes and prices. The group succeeded in further raising sales prices amid continued raw material and energy cost inflation. Despite a combination of temporary one-off factors, our first-half results progressed once again," said Pierre-André de Chalendar, chairman and chief executive officer (CEO) of Saint-Gobain.

The group's Interior Solutions division, including gypsum wallboard and insulation production, reported 7.1% organic growth, with rising sales prices in the period although raw material and energy costs inflated. The group noted that, although its operating margin was held back by weather conditions in Europe in the first quarter and by the on-going shift from synthetic to natural gypsum, it benefited over the half-year period from a positive price-cost spread in terms of raw materials and energy.

US: Rising costs eat into USG's profit

USG has blamed falling operating profits on costs relating to its 'Customer-First' strategy and rising general costs, including those from transportation. Its operating profit fell by 32% year-on-year to US$121m in the first half of 2018 from US$179m in the same period of 2017. Its net sales rose by 6% to US$1.67bn from US$1.58bn.

For its wallboard and surfaces business the company said that its wallboard price increased by 2% from the second quarter of 2017, due mostly to a price increase in January 2018. Wallboard sales volumes increased by 2% compared to the second quarter of 2017. However, wallboard costs were US$12m higher than the previous year, primarily due to rising input and transportation costs. The building materials producer confirmed that its takeover by Germany's Knauf is expected to complete in early 2019, subject to shareholder and regulatory approval.

Australia: USG Boral affected by increased competition

USG Boral's earnings have been hit by competition in Indonesia, Thailand and Vietnam, higher input costs including paper and a one-off cost. Earnings before interest, taxation, depreciation and amortisation (EBTIDA) were negatively affected by a one-off cost of US$8m associated with a three-month closure of the port of Thevenard in South Australia and an unfavourable operational reserve adjustment in India. Its EBITDA fell by 6% year-on-year to US$196m in the financial year to 30 June 2018 from US$207m in the same period in 2017.

However, despite this its sales revenue rose by 7% to US$1.15bn from US$1.08bn. This was attributed to continued adoption of its Sheetrock products and technical board in Australia, Korea, China and Thailand. Overall board volumes increased by 3% year-on-year and technical board, which represents 20% of volumes, grew by 20%. Gypsum wallboard volumes grew in Australia and China, and 'strong' price gains were achieved in South Korea and China.

"This long-term growth business has delivered impressive and uninterrupted year on year growth since the formation of the joint-venture in 2014, with FY2018 being a consolidation year. Australia, Korea and China delivered strong top line growth in FY2018, offsetting pressures in countries such as Indonesia, Thailand and Vietnam," said Boral's chief executive officer and managing director Mike Kane. He added that the company is currently considering an expanded joint-venture with Germany's Knauf in relation to its proposed acquisition of USG. However, Boral is also considering a return to 100% Boral ownership.

US: Continental Building Products sales volumes rise on demand

Continental Building Products' net sales in the second quarter of 2018 have risen due to higher gypsum wallboard sales volumes driven by 'strong' demand. The company reported an 11.6% increase year-on-year on wallboard volumes to $67Mm^2$ from $60Mm^2$. Its net sales rose by 6% to US$256m in the first half of 2018 from US$241m in the same period of 2017. Its net income rose by 44% to US$35.5m from US$24.6m.

Canada: Investigation into US imports

The Canada Border Services Agency has started an investigation into gypsum board products being imported from the US. The probe has been initiated by a complaint by CertainTeed Gypsum Canada about the products being imported into British Columbia, Alberta, Saskatchewan and Manitoba, as well as the Yukon and Northwest Territories, according to the Canadian Press newspaper. It is the second complaint that CertainTeed Gypsum Canada has made in recent years, following a similar allegation in 2016.

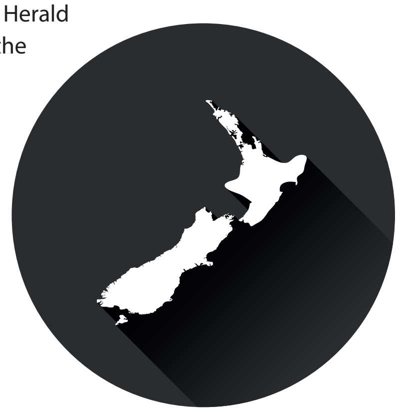
In 2016 preliminary tariffs were imposed on US imports and then reduced after being blamed for raising the price of wallboard. The increases were linked to higher costs for domestic customers in Fort McMurray, Alberta following destruction caused by wildfires. The Canadian International Trade Tribunal later ruled that US imports had caused injury to local producers but that maintaining duties would not be in the country's trade interests.

Turkmenistan: New wallboard plant

Hilligurlushikonumleri has announced that it is building a dry gypsum compound and plasterboard plant in the city of Magdanly, Lebap Province. The plant, designed to produce 12Mm^2/yr of gypsum wallboard and 100,000t/yr of dry gypsum mixtures, will be equipped with modern equipment and technology. Hilligurlushikonumleri says that this will make it possible to compete in the production of high-quality products, while creating new jobs. The construction of the facility is due to be completed by the end of 2019.

New Zealand: New wallboard plant for Auckland

Fletcher Building's subsidiary Winstone Wallboards plans to build a US$170m gypsum wallboard plant in Auckland. The new unit is expected to create around 200 new jobs, according to the New Zealand Herald newspaper. Negotiations at the Drury site have not yet been concluded. The company hopes that the new plant will be operational in 2021 or 2022. The new development is planned to meet local demands and upgrade the existing capacity at Winstone Wallboards' Penrose plant in Auckland.



US: University team develops bricks made from recycled gypsum wallboard

A team from Washington State University has developed bricks made from recycled gypsum wallboard. The blocks are made from 80% wallboard waste and a binder made from industrial by-products. They are waterproof and lighter than earth blocks, bricks or concrete blocks. The researchers are partnering with local contractors to get the waste, and architecture students are using a press to build the blocks, which look like masonry bricks.

The researchers, including Taiji Miyasaka, professor in the School of Design and Construction, David Drake, adjunct faculty in the School of Design and Construction, and Robert Richards, a professor in the School of Mechanical and Materials Engineering, began developing the wallboard blocks in 2017 with a grant from the American Institute of Architects. They have also received an Amazon Catalyst grant to move the project from laboratory scale to a demonstration structure. In the next year, the researchers will be testing the blocks to meet building, seismic and fire codes. They also aim to build a $15m^2$ demonstration structure. A prototype structure featuring the wallboard-based bricks will be displayed as part of the 'Make/Do: A History of Creative Reuse' exhibition that is running at the Washington State History Museum until December 2018.

Oman: Telestack to supply shiploading system to Port of Salalah

Northern Ireland's Telestack has won a Euro5.7m deal to supply a mobile shiploading system to the Port of Salalah. The system will be used to load gypsum, limestone, and cement clinker and will be operational later in 2018, according to the Irish News newspaper. The project is part of an on-going Euro17bn government infrastructure investment to support mining, quarrying and the cement industry. It is Telestack's largest single order to date.

Left: Telestack equipment on display at the Hillhead Quarrying and Recycling Show 2018 in Buxton, UK.

Bolivia: Government and gypsum producers meet following price rise

Representatives of the Vice Ministry of Mining, the National Service for the Registration and Control of the Marketing of Minerals and Metals, (SENARECOM), the Ministry of Mining of the Cochabamba Government, the Mining Cooperatives Federation of Cochabamba (FEDECOMIN) and gypsum producers have organised a meeting following a rise in the price of gypsum. The price of gypsum rose by 23% to US$23/t in late June 2018, following the setting of a new reference price by SENARECOM, according to the Los Tiempos newspaper. Since the price rise production at local plaster plants has been affected.

India: USG Boral starts plant build

USG Boral has held a ground breaking event for a new $30Mm^2$/yr gypsum wallboard plant that it is building at Sri City in Andhra Pradesh. The project has an investment of US$39m. The new plant will be operated by local subsidiary USG Boral Building Products India. The site is expected to become operational by the end of 2019. It will create over 100 new jobs. It joins USG Boral's $9Mm^2$/yr wallboard plant at Khushkhera, New Delhi.

"This facility offers us the ability to significantly increase our operations in India and provide our customers in the region with the best plasterboard products," said Frederic de Rougemont, the chief executive officer (CEO) of USG Boral.

Mauritania: 0.1Mt of gypsum exported in 2017

Mauritania exported 100,000t of gypsum in 2017 to markets in West and Central Africa. It was sent to Senegal, Mali, Guinea, Ghana, Cameroon and Democratic Republic of the Congo, according to the Pan African News Agency. The country produces 200,000t/yr of gypsum, of which 15% is turned into plaster. The remaining 85% is used by the local cement industry or exported by land to Mali or by sea via the Port of Nouakchott.

Read more about Mauritanian gypsum supplies in the July 2018 issue of Global Gypsum Magazine.

Above: Excavating gypsum in Mauritania. **Credit:** Dr Mohamed El Moustapha Ould Eleya, SAMIA.

Spain: Saint-Gobain to invest Euro120m

Saint-Gobain plans to invest Euro120m over the next three years in its local subsidiary. In an interview with the Cinco Dias newspaper, Gianni Scotti, the chief executive officer (CEO) for Spain, Italy, Portugal, Greece and North Africa warned against rising electricity costs in the country. The bulk of the investment will go towards upgrading the Fábrica de Quinto wallboard plant in Zaragoza.

Peter Edwards, Global Gypsum Magazine

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Round-up: Gypsum projects in 2017 and 2018

There has been a raft of new gypsum projects over the past 12 months, many of which are in markets where wallboard is an emerging concept. Here, we round up new gypsum sector projects from the past 12 months, plus related expansions and other news...

New wallboard plants

Groundbreaking in Andhra Pradesh

India: USG Boral held a ground breaking event for a new 30Mm^2/yr gypsum wallboard plant that it is building at Sri City, Andhra Pradesh in early July 2018. The project has an investment of US$39m. The new plant will be operated by local subsidiary USG Boral Building Products India. The site is expected to become operational by the end of 2019. It will create over 100 new jobs. It joins USG Boral's 9Mm^2/yr wallboard plant at Khushkhera, New Delhi.

"This facility offers us the ability to significantly increase our operations in India and provide our customers in the region with the best plasterboard products," said Frederic de Rougemont, the chief executive officer (CEO) of USG Boral.

New Winstone plant in New Zealand

New Zealand: In June 2018, Fletcher Building's subsidiary Winstone Wallboards announced plans to build a US$170m gypsum wallboard plant in Drury, Auckland. The new unit is expected to create around 200 new jobs. The company expects the new plant to be operational in 2021 or 2022.

Belgips plant to start in October 2018

Belarus: Construction of Belgips' new 30Mm^2/yr gypsum wallboard plant in Gatovo, Minsk District is expected to be completed in October 2018. The plant will then take another six months for start-up and commissioning before it starts commercial operation in mid-2019, The unit is a joint venture between Russia's Volma Corporation and Germany's Knauf, which has invested around Euro70m in the project after it acquired a 50% stake in the project from Volma in early 2017.

The Belgips plant has endured a difficult birth, with construction first starting in late 2015. Once completed the unit plans to produce 30Mm^2/yr of gypsum wallboard, 0.5m^2/yr of gypsum partition blocks and 0.1Mt/yr of dry building mixtures. Products made at the plant will be used domestically and for export.

Construction underway in Tataouine

Tunisia: Construction work started on Knauf's new gypsum plant at Ezzahra in Tataouine in May 2018. The Euro10m plant will produce 300t/day of gypsum plaster when it starts production in early 2020. Prime minister Youssef Chahed has met with Alexander Knauf, the chairman of Germany's Knauf. Knauf is investing Euro80m in the peoject, which will create over 300 jobs in gypsum projects based in the governates of Tataouine and Sidi Bouzid.

Panel Rey Ciudad Jerez plant inaugurated

Mexico: Panel Rey inaugurated its gypsum wallboard plant in Ciudad Juárez in April 2018. The company spent over US$55m on the plant that it says is the

Right: Inside the new Panel Rey plant in Cuidad Juárez, which was officially inaugurated in April 2018.


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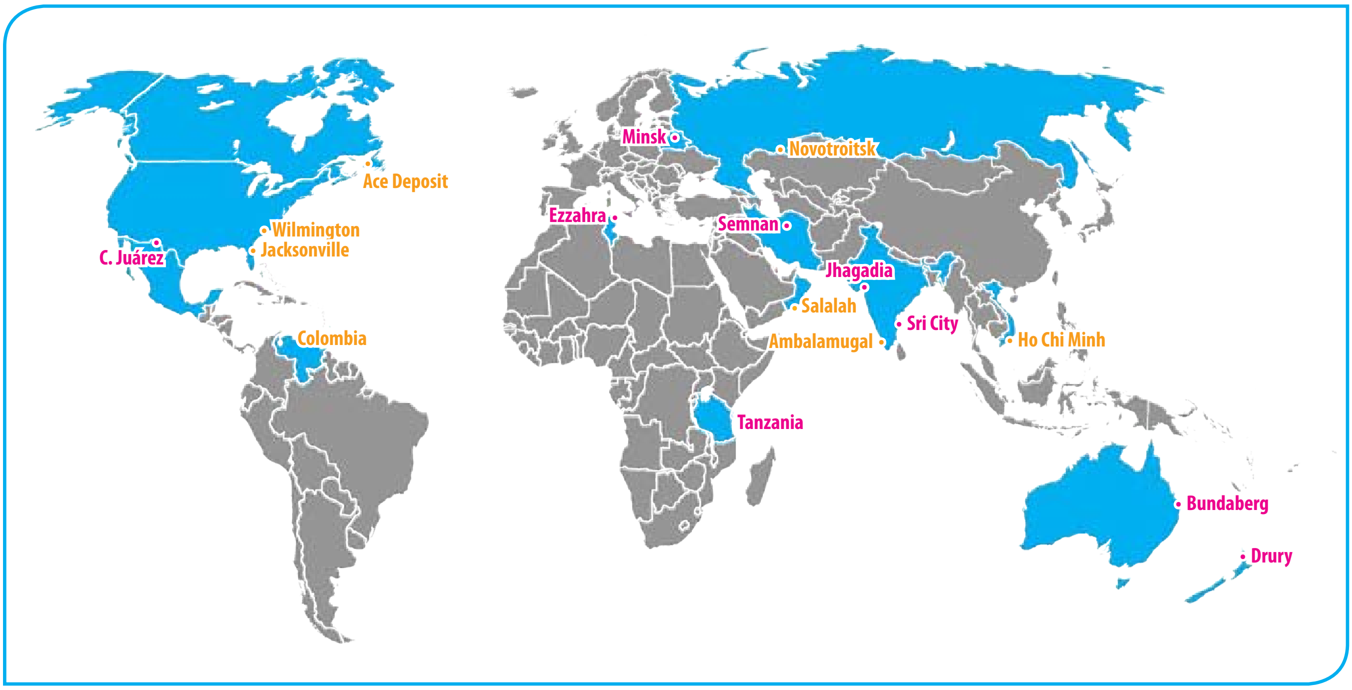


Above: Locations of gypsum (wallboard) projects mentioned in this review.

New plant •
Existing plant •

largest in Latin America. It is its fifth wallboard plant in the country following plants at El Carmen NL, San Luis Potosi, Mexico City and Mexicali. Construction at the site started in 2010 and first production started in early April 2018. Nicolás Alverde Villareal, the general director of Panel Rey, and Javier Corral Jurado, the governor of the state of Chihuahua, attended the inauguration. The new plant is expected to create 170 direct jobs.

CNBM starts plant build in Tanzania

Tanzania: China National Building Material (CNBM) started work on the construction of a gypsum wallboard plant in Tanzania in March 2018. The project is part of its participation in the Chinese government's 'One belt, one road' industrial strategy.

De Chalendar inaugurates Gujarat plant

India: Pierre-Andre de Chalendar, chairman and chief executive officer of Saint-Gobain, inaugurated the company's 30Mm^2/yr Jhagadia gypsum wallboard plant in Gujarat in February 2018. The plant is the largest wallboard plant in India. Saint-Gobain's local subsidiary, Gyproc, also operates three other plants in Haryana, Maharashtra and Karnataka.

Update from Iranian plant build

Iran: Azerbaijan-based Matanat-A is building a US$10m gypsum plant in Semnan Province, northern Iran. The head of mining and industrial organisation of Semnan Province, Behrouz Asfadi, said that production at the plant was expected to start in the 'near future.' Jafar Sarghini, the deputy minister of industries, mining and trade, added that Matanat-A is already using a gypsum mine in northern Iran and the plant is located nearby.

Bundaberg celebrates 1 year of operation

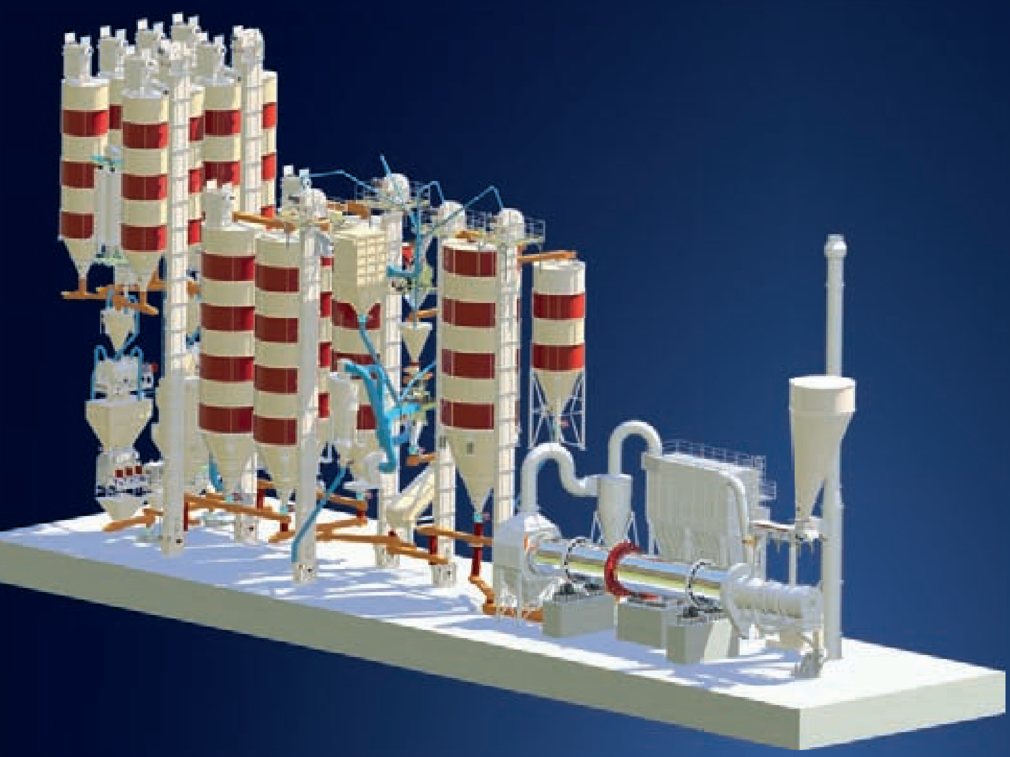
Australia: After a construction period of just 11 months, the US$55m Knauf gypsum wallboard factory at Bundaberg, Queensland has produced its first wallboard in August 2017. The plant received its first delivery of gypsum in late July 2017.

Expansions and other projects

Vietnam plant to triple capacity

Vietnam: USG Boral announced a US$20m investment towards upgrading its gypsum wallboard plant at the Hiep Phuoc Industrial Zone in Ho Chi Minh City in December 2018. The project will increase the plant's production capacity by 17Mm^2/yr to 47Mm^2/yr when it restarts in September 2019.

Right: Gypsum mining in Salalah, Oman. The Port of Salalah will gain a Euro5.7m mobile shiploader from Northern Ireland's Telestack. Oman became the largest exporter of crude gypsum in 2017. **Source:** USG Zawawi Drywall LLC.



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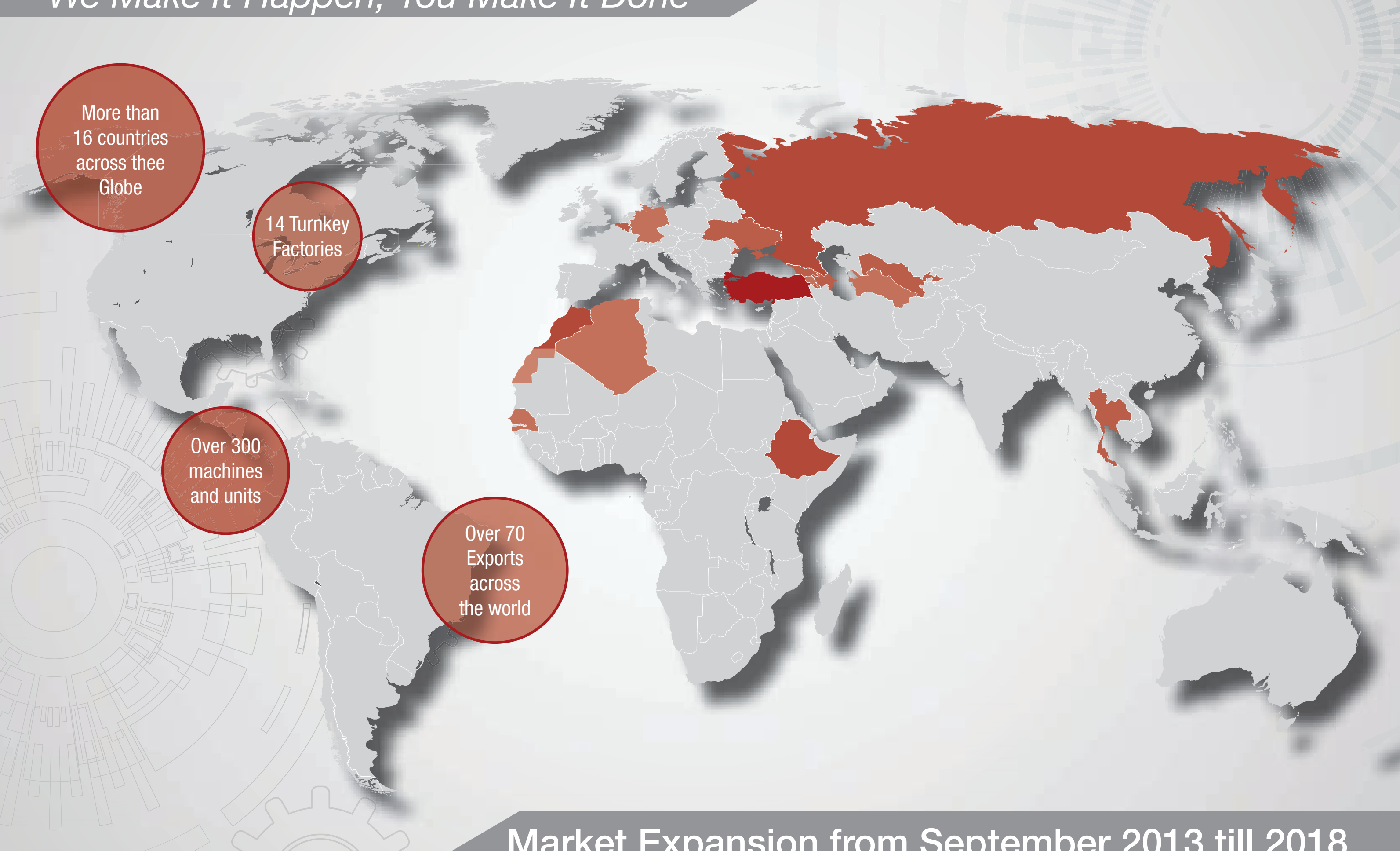

Market Expansion from September 2013 till 2018

- Engineering project and consulting
- Manufacturing and supply
- Industrial automation
- Installation, commissioning and training services
- After-sales services
- Delivery

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"We have witnessed strong growth from this region so our decision to invest in the plant is a strategic one," said Frederic de Rougemont, CEO of USG Boral. "We remain committed to building USG Boral's presence in Southeast Asia. This expansion will see USG Boral utilising our latest Sheetrock technology to provide superior building solutions for the Vietnamese market."

Right: National Gypsum's Wilmington plant in North Carolina will shortly reopen, following nearly a decade shuttered. **Source:** Port City Daily.

US plants to reopen

US: National Gypsum is set to reopen its Wilmington, North Carollina wallboard plant, which was idled in 2009. The company plans to spend US$25m on upgrading the site. The company also plans to build a rail spur into the plant to support despatch by rail. The site will use raw gypsum from the company's quarry in Halifax, Nova Scotia in Canada.

Meanwhile, USG plans to upgrade its Jacksonville gypsum wallboard plant in Florida. As part of the investment, a new production line will be added to manufacture USG's Securock ExoAir 430 panels. Investments will be made at the site to improve overall plant efficiency, including upgrades to modernise the plant's mill equipment.

Gypwall production to double

India: FACT - RCF Building Products (FRBL) plans to double production of its Gypwall product. The decision follows the Kerala Mission Livelihood Inclusion and Financial Empowerment housing scheme's approval of Gypwall. The state government aims to build 430,000 houses over the next five years.

FRBL, a joint venture between FACT and Rashtriya Chemicals, produces Gypwall, a load-bearing prefabricated walling system. It consists of gypsum plaster reinforced with glass fibre. The company produces 86,000m^2/yr of panels at its plant in Ambalmugal in Kochi.

Right: Installation of a Gypwall structure in India. Production of the load-bearing gypsum panels is set to double.

New product for soda plant

Russia: Novotroitsk Soda Plant intends to start production of gypsum at its unit in the Orenburg region of the Volga district. The project has an investment of Euro32m. When adaptations are complete in 2021, the plant will produce 143,000t/yr of gypsum. The new capability at the plant will also create 165 jobs.

Telestack order facilitates gypsum exports

Oman: Northern Ireland's Telestack has won a Euro5.7m deal to supply a mobile shiploading system to the Port of Salalah. The system will be used to load gypsum, limestone, and cement clinker and will be operational later in 2018. The project is part of an ongoing Euro17bn Omani government infrastructure investment to support mining, quarrying and the cement industry. It is Telestack's largest single order to date.

New open-cast mine in Newfoundland

Canada: Red Moon Resources has submitted a development plan for an open cast gypsum mine at the Ace deposit in western Newfoundland to the government of Newfoundland and Labrador. The project has already received environmental clearance. It is currently attempting to find customers for gypsum and anhydrite from the mine. Previously the site was used by the Flat Bay mine, which extracted at least 15Mt of gypsum prior to 1990.

Grupo Etex to invest in Colombia

Colombia: Grupo Etex is projected to invest US$77m in its production activities. 50% of the funds will be used to increase productivity, with 25% allocated to innovation and a further 25% invested in safety and maintenance. According to the manager of Grupo Etex, Mauricio Lopez, the company will focus on rural housing in Colombia, the demand for which continues to grow thanks to a recent peace agreement and development of the agricultural industry.

Furthermore, Lopez anticipates a growth in exports to Venezuela and Ecuador, as well as the Caribbean and Central American regions. This has been boosted so far in 2018 due to rebuilding efforts after devastating hurricanes in the region in late 2017.

Neil Wooliscroft, Derco Gypsum

Derco Gypsum: Dedicated to development

In 2005 one of the world's largest gypsum wallboard manufacturers handed Derco a challenge: To develop an alternative to the rubber forming line belt. A year later, the Dutch-based belting company manufactured the first of over 300 belts that have since been supplied to all corners of the global gypsum sectory. While that first installed belt is still running and performing excellently in an Italian factory, Derco has continued its developments...

The first generation of the thermoplastic forming belts from Derco Gypsum marked the start of a revolution in the plasterboard industry. These new belts allow for a more even board surface, the wish of consumers, who want easily finished, flawless walls.

A long life belt

Belts consist of a fabric layer, covered by layers of PVC. The inner layer of these belts is a specially developed monofilament fabric, which keeps the belt stable, even at high speeds. Further development has resulted in an even stronger fabric, with very low elongation. This reduces stretch and improves running quality, whilst minimising the need for maintenance and adjustments.

The properties of the PVC cover material enable the flattest possible surface: the coating process, adding only 0.2mm per revolution, ensures uniform flatness along and across the total length of the belt, while maximising adhesion to avoid delamination, even in combination with the wet gypsum slurry. With a cover thickness variance of 0.1mm, the belt leaves no marks on the setting wallboard, even in the joint area. Premature wear in belts is avoided in order to ensure a long lifespan of the belt. With an abrasion resistance of $\leq 150mm^3$, these belts can withstand the abrasive slurry much better than the original rubber belts, which typically have an abrasion resistance of $\leq 265mm^3$.

Permanent repairs

The belt surface can be easily and permanently repaired in-house in case of damage, restoring it to its original quality. This is an easy process and Derco Gypsum makes sure the belt users are instructed on how to carry it out. A workshop handbook gives detailed instructions so staff can look up what to do, if required.

Challenges in the industry

Derco Gypsum continues to develop its range to meet the performance criteria of modern plants. Challenges, including the closure of power plants, changing the chemical composition of the gypsum, the use of recycled paper, the palm oil in it affecting the belt surface and high-speed production, have all influenced the further development of the forming line belts. The fifth generation of forming line belts has resulted from customer-feedback and research in Derco's own research and development department and is now the most-used type of forming belt.

Right: A Derco Gypsum belt installed in a gypsum wallboard plant.

Glass fibre development

Plasterboard with glass fiber reinforced matting (GRG) is a product that needs extra care during the manufacturing process. The fibres in the matting are highly abrasive and can easily and quickly wear down the forming line belt. Over 30 years' experience

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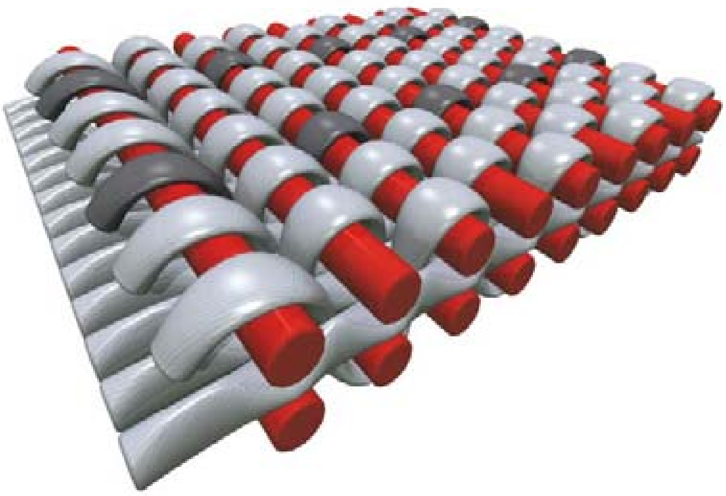

Top: Repairs can be carried out by plant staff in-house.

Above: Schematic of belt structure.

Below: Installation of forming belts can be tricky. Here Derco finds a creative solution, lifting the belt through the roof.

in the thermoplastics industry and a close working relationship with their suppliers and end users have led to the development of a belt that is currently being tested and adjusted. It will be introduced in the near future.

Installation standards

Developments at Derco don't stop at the conveyor belts alone. Forming line belts typically weigh over 5t. They are thus notoriously difficult and time-consuming to install. The company has developed its own installation equipment and methodology to save as much time as possible and reduce downtime to the absolute minimum, while at the same time ensuring safety for all involved in the process. Even with the right equipment and the most efficient working methods, the company sometimes has to find creative solutions. On one sunny day, the company had to make a hole in the roof of a plant in order to reach the forming line, which can be seen below.

Narrowest joint

Minimal movement of both the belt and the joint in the production process is required, in order to produce the highest quality boards. The jointing process has been perfected throughout the years. Seeing the benefits of a narrow, flat joint, Derco developed a jointing process using laser alignment for joint straightness and a special technique to create the strongest joint possible. The laser alignment, combined with the quickest and safest equipment for squaring the joint make sure the belt and joint are always perfectly straight. The joint is now at its narrowest ever, at only 170mm for 14.7mm belt thickness, with an unprecedented 93% breaking strength. For high-speed lines a special narrow, biased joint has been developed to eliminate any bumping over the rollers.

Weigh belts and more

Derco has a long history in lightweight belting and continues to develop peripheral belts for gypsum wallboard plants. When it was pointed out that the PVC belts commonly used in bundle conveyors stretched, had joint issues and aged prematurely, Derco took to developing a better-suited belt alternative, which is now being used. Furthermore, the first lightweight weigh belt was developed by Derco, complete with its built-in metal strip. The belts are being applied by major OEMs and end users in the wallboard industry around the globe. From drive belts, transfer belts and waste belts to elevator belts and belts with special or custom-made perforations: the company supplies the full range and offers high-speed, eight-minute jointing, to replace mechanical fasteners.

Pioneers with dedication

Being pioneers and developers in the thermoplastic belting industry, Derco Gypsum keeps looking to further improve efficiency in plasterboard production. What started with a challenge to create something better than the rubber belts has now become a dedication to keep improving and to keep supporting the industry so it can supply the best wallboard ever.

New West Gypsum Recycling commissions Norwegian plant

New West Gypsum Recycling is pleased to announce that it has expanded its footprint yet again, this time into Norway...

Right: The facility at Holmestrand prior to installation of the gypsum wallboard recycling equipment.

In an ongoing effort to expand its footprint, Canada-based New West Gypsum Recycling (NWGR) has identified several geographic markets that it believes would support a gypsum recycling facility. Many factors are taken into consideration in identifying a potential market. The Norwegian market was one such market, which became a high priority market for NWGR due to the encouragement of a customer and the support of a local partner. NWGR's local joint venture partner is Norsk Gjenvinning, the leading waste management company in Norway. NWGR is now pleased to announce that the facility is open and producing recycled gypsum powder.

Right: Equipment being installed.

The facility is located in Holmestrand, approximately 70km south of the capital Oslo. The addition expands upon NWGR's established facilities located in Bristol, UK; Köln, Germany; Kallo, Belgium; Vaujours, France; Vancouver, Calgary and Toronto in Canada and Seattle, Washington, USA.

Construction of the building and installation of the processing equipment was completed during July 2018 and the commissioning of the new equipment was carried out in August 2018. The new recycling facility has sufficient capacity to process up to 100,000t/yr, providing sufficient capacity to service the local gypsum wallboard plants.

Right: Part of the wallboard recycling line after installation.

"Working closely with our partners and utilising the best technology available, we have built a recycling process that will produce two products, one that is designed for use in synthetic gypsum mills and one that is designed for use in natural gypsum mills," states Maarten Hendriks, Global Marketing and Development Manager for NWGR. "NWGR is committed to working with our partners to give them the consistent blend of product they require in order to produce wallboard with high recycled content.

Right: The first final product.

To date, NWGR has recycled in excess of 6Mt of gypsum wallboard material. Combining all nine recycling facilities, NWGR now has the capacity to recycle in excess of 1.0Mt/yr of gypsum wallboard. The company will continue to challenge itself to increase the capacity even further in the future.

The Global Gypsum Directory 2018

The Global Gypsum Directory 2018 is now available

- Up-to-date listing of all global gypsum wallboard plants*
- Up-to-to-date listing of all global insulation material plants*
- NEW FOR 2018 - Listing of global cement board plants*
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Preview: 18th Global Gypsum Conference & Exhibition, Vancouver, Canada

The 18th *Global Gypsum Conference & Exhibition* will take place at the Sheraton Wall Centre in Vancouver, Canada on 25-26 October 2018. Here we provide a run-down of the event's latest confirmed presentations...

KEYNOTE: 'How AI will change your world'
José R Favilla Jr., IBM Industry Academy (TBC)

'Global market trends in gypsum supply and demand to 2028'
Robert Grupe, Associate Consultant, Smithers Apex

'The Merger of Titans: A perspective on the takeover of USG by Knauf'
Robert Morrow, Innogyps

'Where has all the gypsum gone?'
Maarten Hendriks, New West Gypsum Recycling

'From commodity gypsum to consumer product and onwards to outer space'
Mark Flumiani, Gyptech

'Considerations on the calcination, stabilisation and cooling of stucco'
Alfred Brosig, Consultant

'Alpha-gypsum produced using waste $CaCl_2$ in China'
Zhibao Li, Institute of Process Engineering, Chinese Academy of Sciences

'Understanding soluble anhydrite'
Jeff Warren, Gyptech

'A tiny change for maximum gain: How knives could be the key to exceeding your Continuous Improvement targets, increasing output, reducing bottlenecks and improving your bottom line'
Nick Wright, Fernite of Sheffield Ltd

'Gebr. Pfeiffer R4C – compact gypsum calcining solutions, integrated plants for wall stucco and/or wallboard production'
Viktor Zerr, Gebr. Pfeiffer

'The planning of brownfield plants by use of 3D laser-scanning technology'
Ryan Hogan, Claudius Peters Americas

'The three root causes of poor material discharge and bin hang-ups with natural, synthetic and recycled gypsum: Case studies from Syncrude and USG'
Jamil Bundalli, Kamengo

'Understanding centrifugal fans for maximum performance in gypsum plant dedusting systems'
Luis J Castano, IAC

'Clean dosing and filling to save resources'
Michael Mestekemper, Haver & Boecker

'Development of robust evaluation methodology for improved fibreglass processing: How to mimic and evaluate glass fibres for wallboard applications'
Reggie Buckley, Owens Corning

'Efficient paper machine for light weight and high strength plasterboard liner'
Wijai Homsakmongkol, SCG-Paper Packaging

'Evaluation of gypsum casts by Digital Image Correlation (DIC) when exposed to temperatures >500°C'
Dick Engbrecht, PhD

Australia: Retrospective cladding ban in NSW

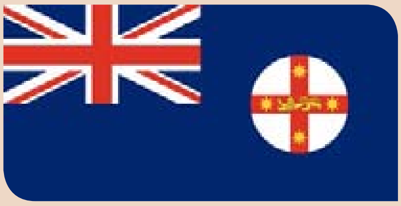
The owners of potentially thousands of buildings in the Australian state of New South Wales (NSW) will have to replace their cladding after the government retrospectively banned aluminium panels with a core of more than 30% polyethylene. It is seeking to prevent fires such as those seen in Melbourne's Lacrosse building and Grenfell Tower in London, UK.

The ban, announced by Fair Trading Commissioner Rose Webb, goes further than previous announcements by state governments in Queensland and Victoria that banned the use of high-content polyethylene cladding, as it also affects existing buildings, rather than just those in planning or under construction.

"The building product is unsafe for use in any external cladding, external wall, external insulation, façade or rendered finish in buildings (as low as two storeys, depending on purpose), subject to specified exceptions," said Ms Webb in a communique. "I therefore decided to prohibit the use of the building product."

The number of buildings affected by the ban is unclear. In June 2018, the state government said Fire & Rescue NSW had assessed 2280 buildings and found 417 in need of closer scrutiny. A register of buildings with combustible cladding, drawn up in the wake of an audit conducted by the NSW Cladding Taskforce, is due to come into effect in 2018, but may not be made public.

Under the ban permitted under NSW cladding legislation passed in late 2017, local councils and other relevant authorities will be able to issue rectification orders for affected buildings.



Denmark: Rockwool sees positive first half

Rockwool has announced its first half results for 2018. Sales for the half reached Euro1.27bn, 16.9% more in local currency terms. In the second quarter, sales were up by 17.3% to Euro667m. Earnings before interest and tax (EBIT) for the first half reached Euro161m, an increase of 47% year-on-year. EBIT in the second quarter was Euro91m, an increase of 43% year-on-year.

Investments in the first half of 2018 reached Euro89m, an increase of Euro26m compared to the first half of 2017, primarily due to ongoing capacity expansions in Poland and the United States.

The outlook for 2018 from the company is positive. It expects net sales to grow by 13-15% during 2018 in local currency terms, including around 2-3% from its acquisition of Flumroc.

Commenting on the Group's performance, CEO Jens Birgersson said, "Our half-year results show solid improvement on both sales and profitability, underlining strengthened performance towards customers and growing market demand for our non-combustible insulation and other stone wool products. With sales up in all regions, Rockwool's 11,000 highly dedicated and committed employees are the driving force behind these positive results."

ROCKWOOL®

US: Ranson plant construction begins, amid complaints

Rockwool has officially broken ground at a new stone wool plant in Ranson, Jefferson County in West Virginia. Once completed it will be the company's second mineral wool plant in the country. The project has had an investment of over US$150m and it will employ around 150 people when it opens. The unit is expected to open in the first quarter of 2020. It will manufacture a full range of Rockwool stone wool insulation products.

"Solid customer demand and strong market growth in the US and elsewhere reflects the reality that people are increasingly discovering the quality and advantages of our stone wool solutions. This is our second factory in the United States, which positions us well for future growth," said Jens Birgersson, president and chief executive officer (CEO) of Rockwool Group.

However, 60 protestors have met with the Charles Town City Council in West Virginia to complain about the new plant in early August 2018. They asked for more research into the effects the plant will have on the local environment.

Romania: Rockwool plant build underway

Denmark's Rockwool has started construction work on a new stone wool plant at Ploiesti in Prahova county. Production at the Euro50m unit is scheduled to start in 2019, according to the Ziarul Financiar newspaper. Local construction company CON-A has been placed in charge of the project.

GLOBAL INSULATION NEWS

UK: Knauf and Siemens partnership

Knauf Insulation has strengthened its strategic partnership with Siemens Energy. The next phase of the collaboration will focus on enhancing efficiency at Knauf Insulation's glass mineral wool plant in Cwmbran, South Wales. This follows previous work started in 2015 at the insulation company's St Helens plant. Across the two plants, the partnership is expected to reduce CO_2 emissions by more than 5000t/yr.

"We look forward to partnering with Knauf Insulation to deliver a comprehensive energy management programme that will use intelligent technologies not only to monitor where consumption is taking place and to what extent, but also implement a significant reduction in energy use across the company's UK manufacturing plant asset base," said Steve Martin, Head of Strategic Transformation at Siemens UK.

US/New Zealand: Wooly deal for Havelock

US company Havelock Wool has secured sheep's wool supplies from Pāmu Farms of New Zealand and the New Zealand Merino Company for its insulation products. The suppliers will provide strong (coarse) wool farmed on Pāmu properties throughout the country to the insulation producer. Havelock Wool targets its products at high-end residential installations with a focus on sustainability and the health benefits of its products.

China: Wide use of CFC-11 uncovered

An investigation by non-government agency the Environmental Investigation Agency (EIA) has found that trichlorofluoromethane (CFC-11) is being widely used as a blowing agent in the rigid polyurethane (PU) foam insulation sector in China. The EIA contacted 25 precursor or foam producers and found that 18 of these plants were using CFC-11 in 10 different provinces.

In May 2018 the journal Nature revealed that CFC-11 emissions had increased by around 25% since 2012 despite reported production being close to zero in 2006. CFC-11, other chlorofluorocarbons (CFCs) and substances that damage the Ozone Layer were banned under the Montreal Protocol from 2010.

The EIA speculates that widespread use of CFC-11 by Chinese PU foam producers may be the source of the reported rise of emissions. It estimates that up to 3500 small and medium sized companies could have switched to using CFC-11 following a reduction in the supply of HCFC-141b, an alternative blowing agent, and lax enforcement of the ban on CFC-11. One company representative the EIA spoke to said that CFC-11 was US$150/t less expensive than HCFC-141b.

"This is an environmental crime on a massive scale. How the Montreal Protocol addresses this issue will determine whether it continues to merit its reputation as the world's most effective environmental treaty," said Climate Campaign Leader Clare Perry.

Malaysia: Glass wool plant for Knauf

Knauf Insulation plans to build a Euro120m glass mineral wool plant at Johor Bahru. The new unit will have a production capacity of 75,000t/yr. It is scheduled to be completed in early 2020 and will create 180 jobs in Malaysia as well as a further 60 new positions across the region.

"We have seen record sales due to increasing energy costs across Asia and more stringent energy-saving building regulations in countries such as Australia, Japan and Korea," said Stuart Dunbar, Regional General Manager for the Asia Pacific Region at Knauf Insulation.

The new plant will use up to 80% post-consumer recycled glass in the manufacturing process and feature Knauf patented high compression packaging. All products will be made using Knauf Insulation's Ecose binder.

The company also intends to use Malaysia's shipping links to develop new distribution partnerships in South-East Asian countries and strengthen its presence in the markets of Japan, Australia, Korea, New Zealand and Singapore.

New Zealand: Warmer Kiwi Homes scheme launched by Minister

Energy and Resources Minister Megan Woods has officially launched the Warmer Kiwi Homes insulation programme in Christchurch. The US$96m programme is intended to give low income homeowners grants covering two thirds of the cost of ceiling and underfloor insulation. The first year of the programme will focus on insulation grants, with grants for heating available from July 2019.

US: Owens Corning's insulation sales up 53%

Owens Corning's insulation business sales rose by 53% year-on-year to US$1.28bn in the first half of 2018 from US$838m in the same period in 2017. Overall, the company's net sales rose by 14% to US$3.52bn from US$3.08bn. However, its earnings before interest and taxation (EBIT) fell by 6.4% to US$337m from US$360m.

"Owens Corning grew revenue by 14% on the contribution of Insulation acquisitions and successful pricing actions in both Roofing and Insulation. The company made significant commercial progress in the first-half of the year, partially offset by operational headwinds," said chairman and chief executive officer (CEO) Mike Thaman. He added that the company expects continued commercial execution and improved operational performance with 'strong' financial results in 2018 and into 2019.

Germany: Saint-Gobain acquires HKO

Saint-Gobain has acquired HKO, a manufacturer of very high temperature thermal insulation and fire protection solutions made from various types of glass fibres to cover temperature ranges of 600-1000°C. The French building materials company said that the purchase was in line with its strategy of developing technological niches. It will join the ADFORS business within the High-Performance Materials Activity.

Founded in the 1970s, HKO employs 225 people and has two plants in Germany with sales affiliates in France, USA and China. It reported sales of Euro39m in 2017. It serves the construction, industrial and automotive markets, predominantly with customised solutions.

GLOBAL INSULATION NEWS

US: RIMA celebrates 40 years

The Reflective Insulation Manufacturers Association International (RIMA) is celebrating its 40th anniversary. Don Roy of Roy & Son's, Pat Mascari of Infra and Robert Dittemore of Superior first met in Los Angeles in 1978 to discuss forming a trade association for their industry. An invitation to attend the DOE/FTC hearings on insulation products to represent reflective insulation in Washington DC followed in 1979 with RIMA member Raymond Urias of AIM also joining.

Later, RIMA became an international association in 2007 with a meeting held in Paris, France. This led to the formation of the International Reflective Insulation Manufacturers Conference (I-RIM Conference).

RIMA-I members represent the association and the industry ASTM Standards, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), ICC and IBC participating in code development and changes and participating in meetings and code hearings throughout the year.

Egypt: GlassRock invests US$63m in 2017

Amir Naguib, the head of GlassRock Insulation, said that the company's total investments reached US$63m by the end of 2017. The company supports the government's plans to install thermal insulation in commercial, industrial, and residential facilities, according to Daily News Egypt. The mineral wool insulation producer has a production capacity of 50,000t/yr.

INSULATION NEWS

France: BASF Performance Products sales fall by 5%

BASF's Performance Products division's sales fell by 5% year-on-year to Euro7.94bn in the first half of 2018 from Euro8.4bn in the same period in 2017. Its earnings before interest and taxation (EBIT) fell by 41% to Euro879m from Euro920m. The company blamed the falling sales and earnings on negative currency effects, as well as reduced sales volumes from its Nutrition & Health division. The chemical producer manufactures polyurethane-based insulation foams as part of its Performance Products division. Overall, BASF's sales and its EBIT grew in the reporting period.

US: Polyurethane continues to drive Huntsman's results

Huntsman's polyurethane business has contributed to its growing revenue and earnings so far in 2018. Its revenue grew by 18% year-on-year to US$4.7bn in the first half of 2018 from US$3.99bn in the same period of 2017. Its adjusted earnings before interest, taxation, depreciation and amortisation (EBITDA) increased by 47% to US$820m from US$559m.

"Our polyurethanes business continues its growth in variants and systems and enjoys the back drop of good supply and demand fundamentals, foreseeable for the long term," said Peter R Huntsman, chairman, president and chief executive officer (CEO). Prices and sales volumes rose year-on-year in the second quarter of 2018.

In late July 2018 the chemicals producer announced that its Polyurethane division was setting up a new subsidiary in Chile based in Santiago. The new company, Huntsman (Chile), will operate from a local warehouse and a customer service centre. It joins existing operations in Cartagena and Bogotá in Colombia, São Paulo and Taboão da Serra in Brazil and Buenos Aires in Argentina.

Belgium: Recticel's sales pick up following end to MDI shortage

Recticel's sales from its insulation division have rallied following the resumption on methylene diphenyl diisocyanate (MDI) supplies after a shortage in 2017 and poor weather in the first quarter of 2018. Its sales rose by 2.7% year-on-year to Euro129m in the first half of 2018 from Euro133m in the same period in 2017. Earnings before interest, taxation, depreciation and amortisation (EBITDA) increased by 60.6% to Euro14.2m for Euro22.8m. It attributed the growth in profitability to price rises and efficiency gains. The company also said that the construction of a new plant in Finland, dedicated to the supply of the Scandinavian and Baltics markets, is on schedule to start up in late 2018.

Above: A worker spraying polyurethane foam insulation in a loft space.

Peter Edwards, Global Insulation Section

Insulation in the European Union

To coincide with the 13th *Global Insulation Conference & Exhibition*, which will take place in Vienna, Austria, on 25-26 September 2018, we turn our attention to the insulation sector of the EU, drawing on data from the *Global Insulation Directory 2018*...

Summary

This article builds on *Global Insulation*'s previous review of the large and varied insulation sector of the European Union (EU). This is analysed country-by-country and producer-by-producer based on the number of plants, as the capacities and actual production figures for individual plants are generally unobtainable.

By member state

The *Global Insulation Directory 2018* lists 273 production sites in the EU. Germany has the most insulation production plants in the EU (58), followed by the UK (36), Italy (25), France (19) and Spain (16). Figure 1 shows a map of EU member states, colour-coded by the most common type of insulation plant in each.

By producer

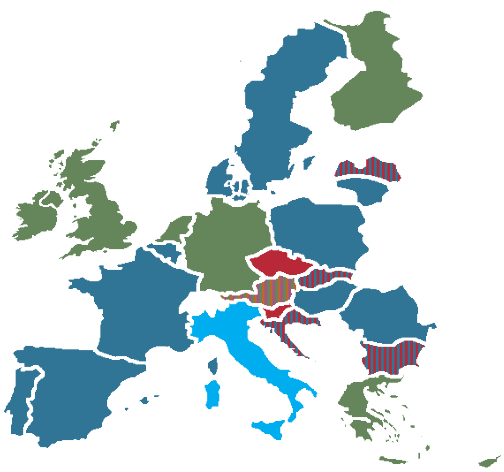
The *Global Insulation Directory 2018* lists 101 different producers of insulation products in the EU. All of the largest producers and the vast majority of the others are based in the EU. Of the 101 firms, 72 have a single plant. There are a further 20 that have five or fewer. The top 10 producers, in order of the number of plants, are Saint-Gobain (36), Rockwool (28), Knauf (20), Dow (15), Armacell (12), URSA (11), Paroc (9), TEXSA (5), Rath (5) and ISOBOUW (5). They share 146 sites between them. The dominant producer in each EU Member State is shown in Figure 2.

By insulation type

125 of the EU's 273 insulation facilities produce inorganic insulation (mineral wool, glasswool and silicate-based insulation) and 120 produce organic insulation (expanded polystyrene (EPS), extruded polystyrene (XPS), polyurethane and cellulose). The EU insulation market is thus roughly split between inorganic and organic insulation types. Around 51% of plants make inorganic insulation and 49% make organic insulation, when 'other' and hybrid types of insulation are excluded.

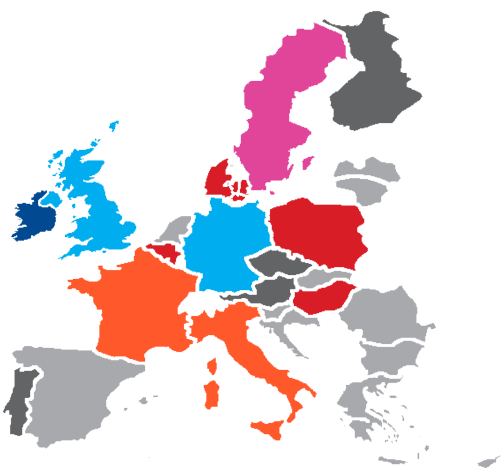
The most popular form of insulation in the EU, by the number of plants that produce it, is EPS, which is made at 75 locations. Mineral wool (including 'Rockwool' and slag wool), is second, with 65 facilities. Third is glasswool (including fibreglass), with 52 plants. These three most common types of insulation are made at more than 70% of insulation plants in the EU.

The remainder of plants produce extruded polystyrene (XPS) (26), polyurethane (PU) (14), silicate-based insulation (8) and cellulose-based insulation (5). 45 plants make insulation that does not fit into any of the above categories. 46 (17%) of the 273 facilities make more than one type of insulation. Table 1 and Figure 3 provide a full breakdown of each Member State's insulation sector by type of insulation plant.



Left - Figure 2: Most dominant insulation producer (by number of plants) in each EU Member State. **Source:** *Global Insulation Directory 2018.*

- Kingspan
- Knauf
- Paroc
- Rockwool
- Saint-Gobain
- Other
- Split (Two or more equal)



Right - Figure 1: Most dominant type of insulation (by number of plants) in each EU Member State. See also notes for Table 1. **Source:** *Global Insulation Directory 2018.*

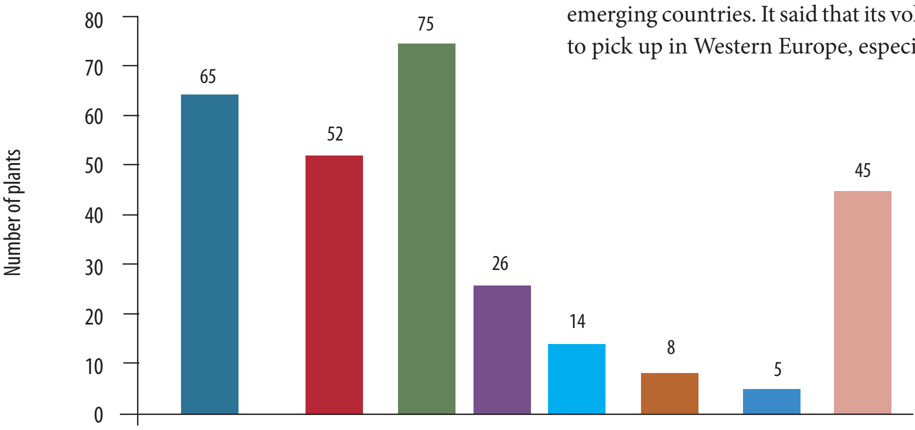
- Mineral (rock)wool
- Glass wool
- EPS
- XPS
- PU
- Silicates
- Cellulose
- Other

Producers' financial highlights

In 2017

Saint-Gobain's Interior Solutions division, which primarily concerns insulation and gypsum wallboard activities, saw a 4.6% year-on-year increase in its sales to Euro6.88bn in 2017 from Euro6.58bn in 2016. However, its earnings before interest, taxation, depreciation and amortisation (EBITDA) fell by 3% to Euro953m from Euro982m.

The group said that its division sales grew faster in the second half of 2017 driven by growth in Asia and emerging countries. It said that its volumes continued to pick up in Western Europe, especially in France.



Left - Figure 1: Number of insulation plants in the EU by type of insulation produced. **Source:** *Global Insulation Directory 2018.*

Country	Mineral Wool	Glasswool	EPS	XPS	PU	Silicates	Cellulose	Other	Various	TOTAL
Germany	9	11	27	7	3	4	1	6	9	58
UK	5	7	9	6	2	1	4	9	8	36
Italy	2	4	3	2	5			4	4	25
France	6	5	4	4	1			4	5	19
Spain	6	5	4	1	1			6	6	16
Poland	7	3	2					3	2	14
Netherlands	1	2	6		1			4	3	12
Czechia	3	4	3	1				1		12
Belgium	3	2			1			4	3	10
Hungary	3	2	1	1		1			1	9
Finland	1	2	4							8
Sweden	4	2	1							8
Ireland	1		3	1				2	2	7
Austria			2	2		2		2	3	5
Greece		1	3	1						5
Croatia	2	2								4
Denmark	2	1	1							4
Slovakia	2	2								4
Slovenia		3	1							4
Lithuania	2	1								3
Romania	2	1								3
Portugal	2									2
Bulgaria	1	1								2
Latvia	1	1								2
Cyprus			1							1
TOTAL	65	52	75	26	14	8	5	45	46	273

Left - Table 1: Number of insulation plants in 25 EU Member States in 2018, categorised by type of product and ranked by total number of plants. Malta, Estonia and Luxembourg do not have any insulation production facilities. **Notes:** TOTAL column does not necessarily equal sum of other columns due to some plants producing more than one type of insulation product. These are counted in the 'various' column, as well as in every category of insulation that they produce.

Glasswool includes fibreglass.

Mineral wool includes 'Rockwool' and slag wool.

PU = Polyurethane.

Other includes vapour retarders, duct-wrap, polyolefins, elastomeric foams, cellular glass, vermiculite, mineral fibreboard, woodwool, polyethylene, polypropylene and polymeric MDI.

Danish mineral wool producer Rockwool reported a 7.1% increase in sales in 2017 to Euro2.38bn from Euro2.223bn in 2016. Its EBITDA was Euro417m, also an increase of 7.1%. Its net profit for the year was Euro214m, a rise of 29% year-on-year.

"Overall market and macroeconomic conditions in 2017 were positive for Rockwool, particularly in the United States and key European markets," reported Henrik Brandt (Chairman) and Jens Bigersson (CEO) in the group's 2017 Annual Report.

In Ireland, Kingspan Group reported that its revenue grew in 2017 due to strong European sales despite a weakening UK market. Its revenue rose by 18% year-on-year to Euro3.67bn in 2017 from Euro3.12bn in 2016. Its EBITDA rose by 9.3% to Euro442m from Euro404m. Sales of both insulation boards and panels grew.

Owens Corning, which acquired smaller rivals Paroc and Foamglas in 2018, saw its net sales rise by 12.5% year-on-year to US$6.38bn in 2017 from US$5.68bn in 2016. Its earnings before interest and taxation (EBIT) rose by 5.4% to US$737m from US$699m. The building materials producer's sales from its insulation division rose by 14.5% to US$2.00bn from US$1.75bn and its EBIT rose by 40.5% to US$177m from US$126m.

"Owens Corning had another great year," said Chairman and CEO Mike Thaman. "We were pleased by the continued momentum in our three businesses and the addition of Paroc and Foamglas to our portfolio."

Another major insulation (and gypsum wallboard) producer, Germany's Knauf, is privately held and so is not obliged to present financial reports. However, it is likely to be in good financial health, judging from its US$7bn acquisition of US-based gypsum wallboard rival USG Corporation. It is expected that the deal will be completed during the first quarter of 2019. It is also investing in new insulation capacity in the UK and France.

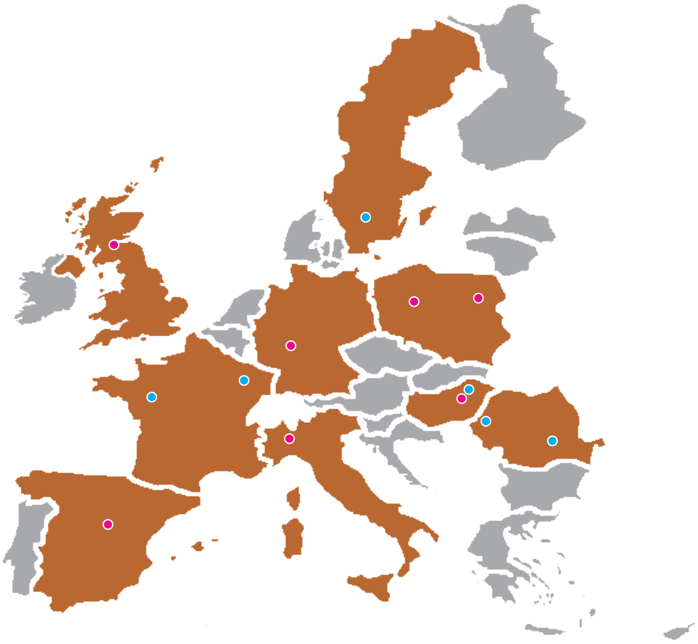
The first quarter of 2018

Saint-Gobain reported that its Interior Solutions division saw its sales grow in Asia and emerging countries in the first quarter of 2018. This was in contrast to a poorer than expected performance in Western Europe due to poor weather conditions. The group reported that trading in Western Europe was partly affected by weather conditions, although the underlying growth trends were good, except in the UK. Overall, Saint-Gobain's sales rose by 2.4% year-on-year to Euro1.75bn in the first quarter of 2018 from Euro1.71bn in the same period of 2017. Its sales fell slightly to Euro9.76bn due to the poor weather and reduced working days.

Rockwool's sales in the first quarter of 2018 were driven by its insulation markets in Europe and North America. Its sales revenue grew by 17.3% year-on-year to Euro468m in the first quarter of 2018 from Euro399m in the same period in 2017. Earnings before interest and taxation (EBIT) for its insulation business rose by 98% to Euro55m from Euro28m. Overall sales and earnings for the company across all business lines rose at a slower rate.

Kingspan reported a strong start to 2018, with group sales of Euro895m for the three months to 31 March 2018, 8% higher than the same period of 2016. Insulated panel sales were up by 4% in the first quarter, with insulation boards seeing a 7% rise. Mainland Europe was reported to be generally positive, while a reduction was seen in sales in the UK.

Right: Pink Owens Corning spray foam insulation being installed in an attic.



Left - Figure 4: Insulation plants mentioned in this review.

• = New plant
• = Expansion

Upgrade for Masterplast

Building materials producer Masterplast has been awarded a Euro800,000 grant from the Hungarian government for its foam insulation plant at Kal. The grant will be used as part of a Euro1.6m upgrade to the site.

New Knauf plant for France

Knauf Insulation plans to invest Euro110m towards building a new mineral wool plant at Illange in Moselle, France. The plant will have a production capacity of 0.11Mt/yr and it is scheduled to start operation at the end of 2019. Insulation produced at the site will be targeted at markets in France and Germany. The new plant is expected to create 120 jobs.

Owens Corning's insulation sales for the first quarter of 2018 rose significantly following its acquisition of Paroc. Net sales from its insulation business rose by 49% year-on-year to US$596m in 2018 from US$399m in the same period in 2017. Earnings before interest and taxation (EBIT) rose to US$32m from US$5m. It completed its acquisition of Paroc Group, and its range of European mineral wool insulation production plants, on 5 February 2018.

New plants and upgrades

There have been various announcements of new plants and expansions to existing plants over the past 12 months. This appears to indicate a consensus that the insulation sector in the EU will enjoy continued growth in the near to medium term. Particularly notable is the high number of mineral wool facilities that have opened or are set to open in the next 12-24 months. It is not possible to say at this stage whether or not this is indicative of a growing preference for inorganic insulation over organic insulation. However, inoganic insulation may be perceived to be a safe option by contractors and the general public following the high-profile Grenfell Tower fire in London, UK in June 2017.

Superwall plant gets upgrade

Russia's TechnoNicol is currently spending Euro42m towards upgrading its mineral wool plant in Stirling, Scotland, UK, which is operated by Superglass. The investment will double the plant's production capacity to 60,000t/yr. The upgrade work will include installing a new 187t furnace and curing ovens. Cooling, cutting and milling equipment will be replaced and an automatic packing system will be installed. Construction began in early 2018.

New capacity for Saint-Gobain

Saint-Gobain plans to build a new glass wool production line at its Isover plant at Chemillé near Angers, France. The line is scheduled to start production in mid-2019. It is being built to meet rising demand in the French market for roof insulation products.

In addition, Saint-Gobain is planning to open new production lines at its plants in Azuqueca near Madrid in Spain and Vidalengo near Milan in Italy. These lines will both open in 2018. Altogether Saint-Gobain has invested Euro45m in the upgrades, with the majority being spent at Chemillé.

Kingspan to build phenolic plant in Sweden

In March 2018 Kingspan announced plans to build a new plant near Jönköping to produce products in its Kooltherm phenolic insulation range. Work on the project started immediately and the plant is expected to be operational by the middle of 2019.

The plant will initially employ around 20 people and this will grow to up to 80 people once the site is fully operational. The new plant is intended to take advantage of demand for Kooltherm products in Sweden, Denmark and other countries in Scandinavia and the Baltics.

Rockwool to grow in Poland, Germany and Romania

In March 2018 Rockwool announced plans to build new production lines at its stone wool insulation plants at Malkinia in Poland and Neuburg in Germany. The expansions are intended to target demand for non-combustible stone wool insulation, particularly in the external wall system and flat roof insulation segments in the new-build residential sector. The upgrade work at Malkinia also includes improved environmental measures.

The new production capacity is scheduled to come on line in the second quarter of 2019 in Poland and the second quarter of 2020 in Germany. The cost of the investment is approximately Euro175m. The insulation producer is also planning to increase production capacity at other plants through modifications to equipment and workflow to eliminate bottlenecks.

In November 2017 Rockwool announced that it would build a basalt mineral wool facility in Ploiesti, Romania, at an estimated cost of Euro50m. Production is anticipated to start in 2019.

Right: Veolia has built a Euro11m glass-recycling unit next to Knauf Insulation's St Helens mineral wool plant.

Paroc spending Euro60m at Trzemeszno

Finland's Paroc is spending around Euro60m on an expansion project at its Trzemeszno mineral wool plant in Poland. A new 70,000t/yr stone wool production line will be built at the site. The upgrade is expected to be completed in 2019.

Third EPS plant for Austrotherm in Romania

Austrotherm opened its third expanded polystyrene (EPS) plant in Romania in early November 2017. The unit near Arad is intended to serve Transylvania and other western regions.

New plant for Hungary

Belgium's Ravago and Turkey's Beşler Tekstil plan to build a Euro20.5m insulation plant at Alsózsolca, Hungary. The plant will have a production capacity of 36,000t/yr, according to the Budapest Business Journal, although its products are currently unclear.

The government is aiding the project with a contribution of just under Euro4m. Once operational the plant is expected to export two-thirds of its output internationally. The unit will create 90 jobs.

Other insulation news highlights

Isover Recycling launched

Isover France launched Isover Recycling, a closed-loop recycling service for construction and demolition glass wool waste, in April 2018. The new service has been developed in partnership with recycling specialists. It aims to reduce glass wool dumping in landfill and increase the proportion of recycled content in Isover's glass wool insulation products. The Isover Recycling service is currently being deployed in two pilot areas: South-East France and Île-de-France. It will then be rolled-out across the rest of the country. Other countries like Switzerland, Denmark and Sweden already have construction site waste recycling services.

New glass recycling facility in the UK

In March 2018 Knauf Insulation and Veolia officially opened a Euro11m glass-recycling unit at Knauf's St Helens mineral wool plant in Merseyside, UK. The unit will be able to recycle over 60,000t/yr of used glass that will then be used as a glass cullet source for glass wool production.

Veolia's unit sorts and separates glass to produce pure glass cullet. Machinery at the unit includes vibrating screens for size sorting, magnets to extract ferrous materials and eddy current separators for non-ferrous materials.

The new facility enables Knauf Insulation to secure its glass supply and maximise the use of recycled materials instead of using virgin minerals. The proximity of the new unit to the St Helens plant is also expected to save around 600,000km of road journeys. Glass wool products from the plant contain up to 80% recycled materials, the vast majority of which now comes from the glass cullet supplied by Veolia. The new recycling unit has also created 18 jobs.

Poland to focus on insulation

The Polish Prime Minister Mateusz Morawiecki says that his government will spend Euro7.2bn on measures to reduce air emissions, including financing home insulation. Other measures in the programme include support for 'green' heating systems.

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In discussion: Andreas Gürtler, European Industrial Insulation Foundation

The European Industrial Insulation Foundation (EiiF) was founded to provide insulation producers and installers with advice on how to help industrial plants reduce their energy use, save money and cut CO_2 emissions. Here we speak to Foundation Director (EiiF) Andreas Gürtler about the Foundation's activities, in particular its effective TIPCHECK tests...

***Global Insulation (GI):* Please introduce the European Industrial Insulation Foundation (EiiF) and its main activities.**

Andreas Gürtler, Foundation Director, EiiF (AG): The EiiF was founded in February 2009 when I was asked by the Founding Partners to start up, register and establish the Foundation as a non-profit organisation. Its purpose is to improve the state of industrial insulation within Europe across all sectors, with the aims of saving energy, money and CO_2 emissions.

Since its founding, EiiF has followed an effective 'spiral strategy' of three main interacting pillars: We collect proof, we build awareness and we consult asset owners with tailored and standardised Technical Insulation Performance Checks (TIPCHECKs).

TIPCHECKs show how production processes can save money and energy by improving their insulation systems and why and how this can lead to reduced greenhouse gas emissions. With every one of our 300+ TIPCHECKs so far, we collect proof and best practice cases that we can use to build awareness. This leads to an increased demand and facilitates the further sales of TIPCHECK services.

***GI:* What are your day-to-day tasks as Foundation Director?**

AG: Today my main tasks are general management, carrying out TIPCHECK training sessions, further development of the TIPCHECK calculator software and conducting general studies to demonstrate the potential of industrial insulation. Currently we are developing a digital App that will make it easy for users to quickly estimate the energy loss of technical equipment that has missing or incomplete insulation.

Above: Andreas Gürtler, Foundation Director of the European Industrial Insulation Foundation (EiiF). Prior to joining the EiiF, Gürtler established other non-profit initiatives of various kinds and also worked in international news agencies, corporate communications and as a teacher.

Members and activities

***GI:* What kinds of companies join the EiiF?**

AG: From the 12 Founding Partners in 2009 the EiiF has grown to encompass more than 60 leading industrial insulation companies, from global players to small and medium-sized companies. They are contractors, manufacturers and distributors of insulation material and equipment. Membership is quite stable and there aren't any major changes we can see at present.

***GC:* How does the EiiF work with its members?**

AG: We have fruitful and interactive cooperation. For example, they send their best engineers to our TIPCHECK training sessions so that they can qualify as TIPCHECK engineers. Besides this qualification and the associated TIPCHECK calculator software, we provide convincing studies like the Ecofys study *'Climate protection with rapid payback'* or the TIPCHECK Report *'Harnessing the potential of industrial insulation,'* which evaluated Energy Audits in 180 industrial facilities.

In Brussels we are in a continuous exchange with the EU Commission regarding the potential of energy efficiency. At the national government level, we join forces with national insulation organisations to support, for example, the development of subsidies for energy-efficient insulation - as in Germany - or voluntary agreements

Left: Worker installing industrial insulation.

Above: An Above: An oil refinery storagetank roof had seen corrosion under the insulation due to water ingress (top image). The owner wanted to install a new roof without insulation to avoid this problem in the future. However, a TIPCHECK highlighted energy losses without insulation of 9500MWh/yr / Euro430,000/yr. With just 30mm of a modern insulation solution avoiding CUI (bottom image) this energy loss was reduced by 80% and paid back the insulation cost in less than two years.

with industry to improve their energy efficiency, as in the Netherlands.

GC: Please outline the TIPCHECK concept in detail.

AG: The aim of the TIPCHECK Programme is to provide industry with a standardised, high quality thermal energy audit tool focusing on the thermal performance of technical insulation systems. It has been developed in line with the European energy auditing standard EN 16247.

TIPCHECKs evaluate the insulation systems of existing facilities, planned projects or retrofits and demonstrate how more efficient insulation could: Save energy; Save money, and; Reduce CO_2 emissions.

TIPCHECKs contribute to energy management systems like ISO 50001 and, in addition to energy efficiency potentials, can help to identify: Process efficiency improvements, and; Safety risks to personnel.

A TIPCHECK is not intended to be a full system analysis. However, it always tends to identify the spots that have the highest energy-saving potential and offer a rapid payback time, in most cases in two years or even less. The scope of a typical TIPCHECK usually includes lines that are not insulated, lines with damaged insulation and incorrectly insulated lines.

To become a TIPCHECK engineer, insulation specialists have to fulfil requirements. They must have at least 2-4 years of experience in industrial insulation projects, attend the one week TIPCHECK training course at the FIW München laboratories and pass the test at the end of the training. To keep the license they have to continuously refresh and update their knowledge via TIPCHECK Refresher Training sessions.

GI: Which sorts of industrial sectors stand to benefit the most from TIPCHECKS?

AG: Any energy-intensive industry that uses for example steam lines, heat exchangers, storage tanks and similar equipment, for example chemical plants, refineries and power plants, stands to gain. Smaller sectors like for example the food and beverage sector can also benefit. Any process that needs insulation due to high or low temperatures will benefit. Our experience is that in 95% of the plants that undergo a TIPCHECK, there is cost-effective potential waiting to be tapped.

GI: Which sectors are the most enthusiastic at improving their insulation performance?

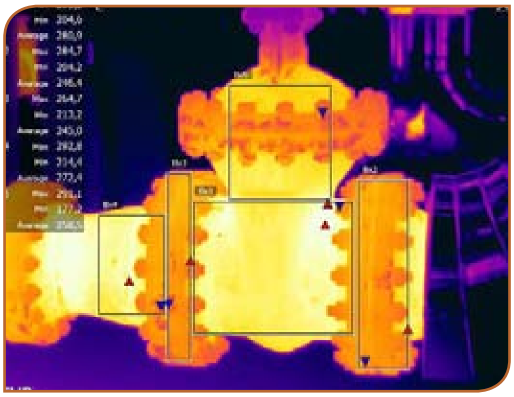
AG: Insulation is still often seen as a 'necessary evil' and the word 'enthusiastic' therefore doesn't really fit. However, the reactions we get after most TIPCHECKs underline how well appreciated the findings are: Three out of four asset owners, regardless of sector, react and invest to remediate their insulation failures.

GI: Which sectors could benefit more but are falling behind? Why is this?

AG: It's hard to say, as we are still at the very start of TIPCHECK and it is too early to analyse if one sector or another is falling behind. At the moment it is more a question of who is contacted by our TIPCHECK engineers and if the company has installed an energy management system like ISO 50001 or not. However, those that are still not running a professional energy management system are definitely wasting money and energy.

GI: What type(s) of insulation are most commonly used and what affects the choice of material?

AG: In volume mineral wool is still the most used insulation material in heavy industry and on hot temperature services. In general the process and its temperature defines the material. Does it have to be an open cell or closed cell material, with or without a vapour barrier, up to an extreme high or cold temperature? In our TIPCHECK training sessions we explain the standard use of all relevant insulation materials and our participants get a chance to touch and experience the different materials. This is one reason why we hold training at the FIW München.



Left: A TIPCHECK at a chemical plant found 650m of piping with missing or damaged insulation, 300 un-insulated pairs of flanges, 160 un-insulated valves and three un-insulated tanks. Properly insulating the identified problem areas would save 11,110MWh/yr / Euro200,000/yr / 2240t/yr of CO_2 emissions and pay back the investment in less than 12 months.

In the future we think that with (most probably) higher energy prices and fees for CO_2 emissions the huge saving potential of high quality insulation systems will become more important to asset owners. We are convinced that they will invest more in sustainable insulation systems to benefit from the significant savings delivered over their lifecycle. This may mean that the type of insulation material becomes more sophisticated.

***GI:* How is overall uptake of industrial insulation changing with time?**

AG: Good question. The more that people are made aware of the multiple benefits of high-quality and sustainable insulation, the more attention they will pay to it. We are optimistic that insulation will soon play a more important role as one of the most effective 'low-hanging-fruits' and energy efficiency techniques.

***GI:* How do attitudes to industrial insulation differ within Europe?**

AG: Ecofys identified in its report *'Climate protection with rapid payback'* that savings potential 'was found to exist across all regions, sectors and equipment and operating temperatures. Potentials vary between regions and sectors, due to differences in energy use, temperature profiles and fuel mix.'

Again our experience shows, that it is more dependent on the company's attitude and if it is running an active energy management programme. And please don't forget, even the good ones are included in the 95% that still have cost-attractive savings potentials.

***GI:* In general are your members predominantly motivated by saving money, environmental concerns or a bit of both?**

AG: We are delivering a clear triple win situation with EiiF and TIPCHECK: Our members win as they grow their business, asset owners win because they reduce their production cost and the environment and climate wins as increased energy efficiency delivers urgently needed emission reductions.

Until today our TIPCHECK activities realised annual energy savings of 550,000MWh in industry - the equivalent to the annual energy consumption of 44,000 households. This has reduced CO_2 emissions by 450,000t, the amount emitted by about 90,000 cars in one year.

Left: When insulation for low temperature processes is absent.

***GI:* What would you like to see from other players to encourage greater uptake of industrial insulation?**

AG: We would be very happy if industry recognises industrial insulation as one of the most attractive 'Low hanging fruits' and a first step to an improved production efficiency and sustainable economy.

***GI:* Andreas Gürtler, Thank you for your time today.**

AG: You are very welcome!

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What will the world and industries look like in 50 years' time?

Robert McCaffrey Editorial director, ***Global Gypsum Magazine* (rob@propubs.com)**

What will the global gypsum and insulation industries look like in 50 years' time (in 2068)? Let's take a look at some current trends and extend them into the future to see what our world will look like then.

The global population is set to increase to 10.5bn in 2068[1], with the majority of the increase in Africa and Asia. At the same time, the rate of increase will reduce from 1% per year today to less than 0.3% per year and global urbanisation will increase from 55% today to more like 75% in 50 years' time. Populations in 'developed' nations will rapidly age (and progressively reduce), although developing countries with high proportions of young people today will see this 'bulge' ageing as well, and with fertility rates decreasing, will not see younger people coming up to replace them. This unavoidable demographic wave may be the defining global trend in the 21st century.

Large numbers of older people, and fewer 'working age' citizens will bring many challenges, some of which may be addressed through increased roboticisation, and through the use of artificial intelligence (and its many manifestations). An interesting study[2] shows that properly trained and incentivised operatives can be used to identify cancers in pathology slides. The surprise comes when you find out that the operatives were in fact pigeons. When the results of several pigeons were combined, they achieved accuracies close to trained pathologists - and the pigeons were paid in 'chicken feed.' In the same way, what is being gradually realised is that many of the most challenging jobs in today's world are made up of simpler 'sub-routines' that can be carried out by algorithms: think medical diagnostics, much of the legal system and accountancy.[3] So, in the future, the number of jobs may fall and the mix of jobs will certainly change. Whether the proportion of 'bullshit jobs'[4] increases or decreases with time remains to be seen. There have been increasingly wide calls for the introduction of a Universal Basic Income[5], possibly financed through a tax on robots[6], or on turnover. In 50 years' time, the chances are that you may have more leisure time than you want or know what to do with.

With all those people on the planet, human impacts on the environment will have to be reduced. It's likely that we will all be eating less meat, possibly due to meat taxes[7], while decarbonation of whole economies (including air travel, power generation, personal transport, manufacturing and the wider agricultural industry) will bring both challenges and opportunities.

At the same time, people will still want to live in homes that are comfortable and cheap to run, go out with friends, enjoy their hobbies, watch great TV or play amazing games, eat good food and preferably do something useful and enjoyable with their lives - some things will not change.

Our industries can help with the 'comfortable and cheap to run' part of the future. Gypsum-based and insulation products are already at a huge advantage over various other building materials, since they bring air-cleaning, heat- and cold-moderating, sound-deadening properties - and pleasing aesthetics - to buildings at very reasonable cost. In the future, through the application of new technologies (for example the nano-scale optimisation of the chemistry and physics of insulation properties, or the use of new materials such as graphene, aerogels and sophisticated VIPs, as well as new materials yet-to-be invented), the properties of these products will continue to improve.

As we see in this month's issue, plasterboard and insulation factories are being built around the world at a seemingly ever-increasing rate. 'Supply brings its own demand,' as they say, and on this basis alone, the prospects for the market penetration of these products is bright. On current trends, the largest players in the industry will get even bigger, not just through opening their own factories, but by buying their competitors. We also foresee a continuing coming together in individual companies of gypsum and insulation (and of the capability to produce multiple types of insulation materials), along with other specialised building materials (such as cement-based boards, mortars and wood-based or wood-product-containing building materials).

In 50 years there may be fewer people working on the manufacture of the products, but I think humans will still be wielding the screwdrivers on the job-site!

1 http://www.worldometers.info/world-population/world-population-projections/

2 https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0141357

3 https://www.telegraph.co.uk/news/2017/09/27/jobs-risk-automation-according-oxford-university-one/

4 https://en.wikipedia.org/wiki/Bullshit_Jobs

5 https://en.wikipedia.org/wiki/Basic_income

6 https://en.wikipedia.org/wiki/Robot_tax

7 https://en.wikipedia.org/wiki/Meat_tax

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To advertise: Paul Brown - paul.brown@propubs.com +44 (0) 1372 840 950
Sören Rothfahl - soeren.rothfahl@propubs.com +44 (0) 1372 840 857

Editorial contributions: editorial@propubs.com +44 (0) 1372 743 837

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