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Editorial Director Dr Robert McCaffrey rob@propubs.com (+44) (0) 1372 840 951

Editor Peter Edwards peter.edwards@propubs.com (+44) (0) 1372 840 967

Web Editor David Perilli david.perilli@propubs.com (+44) (0) 1372 840 952

Editorial Assistant Jacob Winskell jacob.winskell@propubs.com (+44) (0) 1372 840 953



Business Development Executive Sören Rothfahl soeren.rothfahl@propubs.com Mobile: (+44) (0) 7850 669 169

Account Executive - North America **Tina Rich** tina.rich@propubs.com Mobile: (+44) (0) 7809 679 695 Office: (+44) (0) 1372 840 955

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

Subscriptions Amanda Crow • amanda.crow@propubs.com

Office administration Jane Coley • jane.coley@propubs.com

Views expressed in articles are those of the named author(s). For details on submission, see: *www.GlobalCement.com*

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On the cover...

DALOG Diagnosesysteme GmbH provides online condition monitoring solutions for data-driven maintenance and process optimisation. Its solutions improve machine availability, lifetime and energy efficiency with the goal of increasing profitability while lowering the environmental footprint of industries worldwide.

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Email: info@dalog.net

www: www.dalog.net

Dear readers,

Welcome to the January 2020 issue of *Global Cement Magazine* - the world's most widely-read cement magazine - and Happy New Year! We hope that you've made the most of any seasonal opportunities that have come your way to pause, take stock and prepare for some of the challenges that the new decade will bring. Depending on where you are in the world, this might mean embarking on a new expansion project, exploring new markets or 'digitising' your business. Alongside these exciting opportunties, many will continue to face a number of threats in 2020, among them rising overcapacity, staffing issues, stricter-than-ever environmental legislation and the trawl for further savings. How can cement producers tackle these challenges (and others besides) during the year ahead? Angus Maclean from consulting firm Proudfoot offers his Top 5 Tips for 2020 on Page 13.

Elsewhere in this issue, we have an in-depth interview with Bert van Elten, Managing Director at wood wool cement board (WWCB) equipment manufacturer Eltomation ahead of the *Global CemBoards Conference* in Munich on 21-22 January 2020. Turn to Page 20 to read about the company's history, its technology and how the company sees the future of the sector. We also carry articles on cement branding (Page 14), cross belt analysis (Page 18), diagnostics (Page 20) and cement fans (Pages 26, 28 & 32).

The issue's country report heads to the Philippines, a rare example of a country that has insufficient domestic capacity *and* rising demand. The country's cement sector has seen major changes in ownership in the past five years, alongside rapid growth. Both of these trends look set to continue in the early 2020s, with 7.7Mt/yr of capacity slated to come online. Turn to Page 54.

Last, but by no means least, the winners of the *Global Cement Photography Competition 2020* have now been chosen. Now in its 10th year, the competition attracted around 750 entries from more than 150 individuals, more than twice the number of entries as in any previous year. Turn to Page 10

Peter Edwards Editor



Enjoy the issue!



to see if yours is among the winners!

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Ad Index

Features

10 Global Cement Photography Competition 2020 - Winners

This year's competition received a record number of entries. Is yours among the winners?

15 Proudfoot's top five tips for 2020

Consulting firm Proudfoot presents its suggested priorities for the global cement sector in 2020.

16 Preparing for tomorrow: Tackling the cement sector's image problem

The global cement sector's image is under fire on a number of fronts. What can be done?

Technical

18 New SABIA analyser for CalPortland's Mojave plant

A US cross belt analyser case-study.

20 In discussion: Bert van Elten, Eltomation

The Managing Director of wood wool cement board equipment manufacturer Eltomation talks about the company's history and products, plus how he sees the global cement board sector in 2020.

26 Visiting Venti Oelde

Global Cement gets the latest from the German fan manufacturer.

28 TLT-Turbo upgrades fan testing laboratory

Recent investments have upgraded TLT-Turbo's capabilities.

32 In discussion: Michael Stork, Hofmann Mess- und Auswuchttechnik

Global Cement catches up with the fan balancing equipment producer.

34 Maximising workflow, capacity utilisation and profitability with enhanced safety and less waste

A look at the Haver & BOECKER RADIMAT® bag applicator.

GLOBAL CEMENT: CONTENTS

36 Preview: CemFuels Conference 2020, Paphos, Cyprus

38 Preview: Global CemBoards Conference 2020, Munich, Germany

40 Concrete news

41 Products & Contracts

Europe

42 News

Americas

46 News

50 Review: 38th International Cement Seminar

Asia

51 News

54 'Build, Build, Build'-ing in the Philippines

Opportunities abound for cement producers in this south east Asian nation.

Middle East & Africa

60 News

62 Review: 24th Arab-International Cement Conference

66 Review: Wikov Gear Technology Conference

Regulars & Comment

67 Global Cement prices

Cement prices from around the world. Subscribers receive extra information.

68 Subscriptions

69 The Last Word

70 Advertiser Index & future issues





Contents Subscribe Ad Index

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The 2200t/hr Thyssenkrupp primary crusher in the La Pampita quarry supplies limestone to the L'Amali and Olavarria plants.











Above - Highly Commended: Kiln construction at the L'Amalí plant. Diego Hall, Loma Negra, Argentina.



Above - Highly Commended: Tabriz Cement factory, Iran. Majid Mohammadi, Canada.



Above - Highly Commended: Ożarów Cement plant, Poland. Marcin Gruszka, Poland.





Above - Highly Commended: Conveyor at the InterCement Brumado plant. Ana Moura, Brazil.



Above - Highly Commended: View of the former Rejowiec cement plant. Kosikowski Andrzej, Poland.



To see the *Global Cement Photography* 2020 Video, containing these and many more entrants, scan the QR code or enter the bit.ly link into your browser.



Angus Maclean, Proudfoot

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Proudfoot's Top 5 tips for 2020

Based on its most recent conversations with top building materials CEOs and its 70 year history of implementing industry best practice around the world, consulting firm Proudfoot here presents its five top tips for the global cement sector in 2020...

Implement next generation digital Target Operating Models (TOMs)

Identify the basic building blocks of efficient cement operations. However, digitisation should be selective. All-encompassing 'big bang' schemes are too costly. Everyone in the workforce, clients, suppliers and others, should be involved in proof of concept initiatives.

Within digitisation efforts, the scalability of Internet of Things (IoT) architecture is key. Global cement producers have to reliably manage many hurdles relating to security and GDPR. It is important to ensure that the hardware and software is up to the task. To do this, ensure that the company has the necessary bandwidth, both technically and in terms of staff. Digitisation should not only optimise but also *humanise* processes. New technologies add to existing human capabilities, not replace them.

2 Improve Customer Portals and Sales and Operations Planning

One of the most important areas to improve in 2020 will be forecasting sales and operations planning in order to anticipate changes in demand. Improvement using IoT technologies to improve customer experience will permit ordering, order tracking, quality and laboratory information to be instantly available to clients. Maintain customers' volumes by being easy to do business with!

At the same time, offer better technical support to customers. For example, changes in the raw mix or the clinker factor may well require an adjustment period for customers, as well as the cement producer's internal operations.

B Implement ahead of future environmental and pollution regulations

 CO_2 emission regulations are changing, so be ahead of the pack! Eliminate old plants and / or

upgrade them *now*. Don't wait until ETS payments stop!

At the same time, invest in CO_2 capture and storage (CCS) and renewable energy projects like solar and wind farms in order to compensate for unavoidable plant CO_2 emissions. Further optimise raw material chemistry mixes and the clinker factor towards the development of low- CO_2 cements.

Further optimise variable and fixed 'cash costs' per tonne to become the cost leader.

There is little new capacity being planned at present, so the focus needs to be on improving efficiency. To do this, focus on making money in local markets, reduce energy consumption and return to strict, frequent pilotage of energy consumption. Increase electrical energy efficiency, alternative and CO₂-neutral fuels, while exploring vertical integration, closer partnerships or joint-ventures with waste processors.

At the same time, implement lean-agile organisations with organised, flexible and effective supply chain planning, transportation and maintenance procedures. Optimise asset footprints in terms of their type, capacity and location to balance scale and efficiency with strategically-positioned grinding plants. Finally, improve working capital management and returns on investment.

The workforce

Attract, recruit and - crucially - retain new staff to replace your ageing workforce. Be aware that digitalisation is changing the requirements of established roles and creating new ones, for example data scientists to run artificial intelligence and machine learning initiatives. Workforce skills and availability are key in a tightening labour market.











Contents

Preparing for tomorrow: Tackling the cement sector's image problem

The global cement sector's image is under fire on a number of fronts. What can be done?



Above: James Pope, one of the co-founders of Beaumont Bailey, is an executive headhunter specialised in placing board level, senior functional, country and cluster leadership across the building materials industries, with a particular focus on cement.

Below: Cement producers should seek employees from diverse backgrounds. Not only will this remove the unhelpful perception that the sector is only for 50+ year old men, but actually increase the effectiveness of senior management. E nergy consumption, sustainability, globalisation, a lack of innovation and workplace diversity are just some of the factors that influence how the global cement sector is perceived as we start the 2020s - in the eyes of its customers, supply chain and potential future employees. At present, the narrative is being led by the world's media. The global cement sector, unlike many others, has only just begun to find a unified voice via the Global Cement & Concrete Association (GCCA) and World Cement Association (WCA). Given that current perceptions of the industry are often negative, how best can the sector influence the tide of public opinion, ensure its own future and attract an appropriate workforce for tomorrow?

How did we get here?

For much of the global cement industry over the past decade, 'beautiful' has been synonymous with 'big.' The industry has focused on acquisitions, mergers and consolidation, as well as organic expansion into emerging markets and increasingly large production facilities. This has meant the development of new names and brand identities. However, new colours and logos are only part of the branding story. As the cement sector has consolidated, it has too often neglected innovation, diversity, sustainability and the creation of added value, all of which are important contributors to how our sector is seen outside the factory gates.

> As a result of this consolidation, not to mention overcapacity in a number of markets, the global cement industry has found itself feeling rather sluggish. Increasingly large and somewhat disjointed organisations have lacked the dynamism and agility to change course rapidly. Ever-stretched leadership senior teams have often lacked the bandwidth to drive through the changes that they can

see have become important customer requirements.

To this we now have to add the major shift in the planet's geo-political tastes. Over the past five years the appetite for ever increasing globalisation that has facilitated much of the growth in the cement industry has been replaced by the rise of national protectionism across much of the western world. This has been translated to a shift in consumer appetite from global to local in many markets.

The only meaningful shift to the cement industries' brand image will come from collective action and industry-wide initatives that drive change on a number of fronts. So, what can be done?

Global, local or 'glocal?'

First and, I believe, most crucially the cement sector has to respond to the change in consumer appetite. The rise of 'regional champions' across Asia Pacific, Africa and Latin America is a key indicator that customers value local insight driven by local leadership. An ability to understand, empathise with and react to customer challenges is the easiest and most cost-effective way of adding value in a commoditydriven business. After all, many of the challenges of the cement industry's customers are highly localised.

There is, however, a balance to be struck. Developing local leadership that has credibility with its customer base while also leveraging an international footprint to drive product, service and sustainability innovations is the way forward for the wider cement community in the 2020s.

Sustainability

The best time to plant a tree was 20 years ago. The next best time is today – *Chinese Proverb.*

Most of the negative media publicity aimed at the cement industry is centred on sustainability and the environmental impact of cement and concrete. Nowhere was this clearer in 2019 than The Guardian's Concrete Week,¹ which took aim at what it called 'the most destructive material on earth.' Such coverage represents a major threat to the industry. In contrast, very little publicity is given to the leaps in innovation from across the industry in alternative fuels, fall-





ing clinker factor, waste heat recovery, burgeoning carbon capture solution and, at MIT in the latter half of 2019, the first tantalising glimmer of 'emission-free' cement.²

The industry must turn the tables so that it can lead the global conversation on sustainability in cement rather than react. To date, it has been too slow and not vocal enough when sharing its ambitions and the many ongoing efforts to develop a greener, more energy-efficient and more sustainable product. In recent months this has changed at some major players, which have 'brought sustainability to the board' by the creation of Chief Sustainability Officer (CSO) positions.

This is not to say that sufficient progress has been made - far from it. This should be an attractive opportuntity for the young, environmentally-minded workers looking to make a difference. Where better to tackle climate change than from within the cement industry? There are myriad opportunities waiting, but first the collective industry must focus on sharing its ambitions for change. It must effectively communicate to its future employees, supply chain partners and customers to join them on that journey.

Diversity

Diversity: The art of thinking independently together – *Malcolm Forbes*.

The cement industry has traditionally been slow to tackle a lack of diversity across the sector. This has now manifested itself into a separate public image crisis. A recent survey of senior leaders across the global cement industry undertaken by Beaumont Bailey found that over 90% of senior leaders are male. This implies to the outside world that unless you are a 50+ year-old man with over 30 years of cement industry experience, you will never make it into senior leadership. Clearly, this is unacceptable from an equal opportunities perspective. It's also incredibly bad for business because it drastically limits those that can contribute at a senior level. By extension, this lack of diversity limits the problems senior management can actually solve.

So how do we tackle diversity in the cement industry? Well, somewhat paradoxically, the best way to attract diverse talent is to create an inclusive workforce that promotes a diverse way of thinking. Getting the ball rolling means the realisation that diversity is about more than gender or race, it's about diversity of thought and creating an environment of contrasting and varied views. Our gender or race are not the only things that shape the way we work and think. Our industrial experiences, upbringing, education and socio-economic background have a massive impact, as do many others.

By thinking critically about the skills and characteristics you need for a particular role and searching

both in and outside of the industry for those skills (fast moving consumer goods supply for chain, automotive for operations, finance for cyber security etc) cement producers will be able to select candidates that have varied backgrounds, experiences and education... as well as gender and race. There are also some excellent practices around behavioural-based interviewing rather than experience-led interviewing, to ensure the criteria for assessment promote appointments from outside of the sector.

By doing this, a cement producer could show the outside world that it is an organisation that promotes diversity because it believes it is good for business, not because it is trying to hit an arbitrary quota. At the same time, it will tackle the dangerous 'group think' mentality that says 'we have always done it this way.'

Things do not change unless we change

You can't build a reputation on what you are going to do - *Henry Ford*.

All great reputations are built up over time, with years of providing great service to customers, looking after employees and giving back to the communities in which a company operates. However reputations can only be maintained if these things constantly improve. Driving continuous incremental improvement is the key for cement producers to improve its brand image over the long term. By constantly assessing the status quo, developing and executing a plan to improve and - crucially - effectively communicating its successes to the outside world, the industry can ensure that brands are built proactively, rather than reactively.

Most importantly the cement industry can only develop postive public perceptions of the 'global cement brand' by working together. Successes should be promoted widely across the sector and the public sphere. Companies and the sector as a whole should also seek a greater presence in industry-wide platforms where they can reach to suppliers, users, allies and even competitors from across the wider construction materials sector.

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1. https://www.theguardian.com/cities/series/guardian-concreteweek, 25 February - 2 March 2019.

2. Chandler, D.L.; 'New approach suggests path to emissions-free cement,' MIT News website, http://news.mit.edu/2019/carbon-dioxide-emissions-free-cement-0916, 16 September 2019.

Above: Producers and the wider cement sector should champion recent developments in renewable energy solutions, alternative fuels and the myriad other sustainability levers at their disposal. A public perception that the cement sector is driving forward with sustainability efforts will attract well qualified and enthusiastic new workers.

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Interview by Peter Edwards, Global Cement Magazine

New SABIA analyser for CalPortland's Mojave plant

The CalPortland Mojave plant recently installed a prompt gamma neutron activation analysis (PGNAA) cross belt analyser (CBA) with Raw Mix Control Automation Software from SABIA.. *Global Cement* spoke to representatives from both parties about the project...

Global Cement (GC): Can you introduce SABIA and its analysers?

April Montera, Director of Sales, SABIA (AM): SABIA was founded in May 2000 by some members of the team that first developed prompt gamma neutron activation analysis (PGNAA) in the 1980s. They saw that the technology had not advanced and wanted to improve it while lowering operating costs and affordability. This was achieved by reducing the amount of radio-isotope used, which meant less shielding was required, while also taking advantage of the improvements that had been made to detectors. Instead of weighing 5-6t, the new SABIA machines came in at just 1.5t, so installing a PGNAA system over a conveyor belt became a much simpler proposition. SABIA also made the analyser web-enabled for remote diagnostics, which was a big deal in 2001.

In 2014 SABIA released the X1-LiNX, in which the electronics are all consolidated inside the analyser. This avoids analogue wires and did away with the need for an air-conditioned room for electronics.

GC: How do PGNAA analysers function?

Below: Location of the new SABIA X1-LiNX cross belt analyser installed at the Mojave cement plant.



Abhi Sheshadri, Chief Technology Officer, SABIA (AS): The analyser is mounted on the belt and bombards the material continuously with neutrons, which produces in the order of 6-million gammaray counts per minute to the detectors. Each gamma ray has a characteristic wavelength that indicates the compounds present in the raw mix. Software converts the signals into data to show the composition of the material, with a report every minute.

GC: What's the background of the CalPortland Mojave plant?

Michael Stratford, Quality Control Superintendent, CalPortland Mojave plant: CalPortland bought the limestone reserves at Mojave in 1953 and first cement was made in 1956. There were two long dry kilns and three more were added over the years. In 1981 a new 1.5Mt/yr dry process Fuller kiln with preheater and precalciner was commissioned and the older kilns were closed.

GC: The Mojave plant installed a new SABIA PGNAA analyser for raw meal in mid 2019. Why did it embark on the project?

MS: The main aim was to reduce the standard deviation (SD) of the raw mix in order to reduce our coal and natural gas costs, while saving energy. This is because improved SD control reduces the risk of high lime-saturation factor (LSF) peaks. This had not been a major issue but it is something that should be kept under control. The plant prides itself on quality control and it made sense to take our clinker SD control to the next level.

GC: What led to the selection of SABIA?

MS: This was a fairly intense process as the betterknown names in the sector were very popular with senior management. However, I was really impressed by SABIA's technology, customer service and competitiveness and was able to successfully relay this to senior management. This led to an eventual decision in favour of SABIA's solution.

GLOBAL CEMENT: QUALITY CONTROL

GC: What solution was implemented and how was this decided upon?

AS: The plant opted for an X1-LiNX analyser. The positioning requirements are fairly basic: The analyser has to be after the additives have been added but before the raw mill. It's also preferable, but not essential, that it comes after a transfer point. There was no transfer point at Mojave, but such situations are easily dealt with.

MS: One factor that made this project unique was the limited physical window that was available to place the equipment on a bridge that heads to the mill. This would not be possible with other CBA technologies due to weight and size constraints.

GC: Can you provide the timeline of the project?

Gurjeet Sarao, Mojave Plant Engineer (GS): We began work on the project in October 2018 and installed platforms and access routes in November 2018. We mounted the analyser on the belt in December 2018 and began commissioning in January 2019. There was a delay with the scales in early 2019 due to the complexities of feeding six different raw materials. This was resolved in March 2019 and we could begin recording and using the data from the analyser by the start of April 2019.

GC: What information does the analyser provide? How does this differ from the prior situation?

MS: Before the installation by SABIA, we took a sample from our raw mill every 40 minutes and altered the feed accordingly. Now that we measure the raw meal every 200ms, it's like taking a microscope to the plant. The analyser generally operates autonomously using SABIA's RHEA 2.0 Raw Mix Control Automation Software, which corrects the raw meal feed every few minutes, if needed. There is occasional human oversight and the team can retake control of the raw meal feed system to accommodate unusual instances, for example high lime levels in the quarry.

GC: How else does the new information help?

MS: I mentioned fuel savings as an advantage, but we haven't resolved the numbers on that fully just yet. Other benefits include added redundancy in our suite of analysis tools. We still rely heavily on our X-ray Fluorescence (XRF) spectrometers. When these failed previously, we would have to shut down equipment, both for quality reasons and because we might have damaged equipment. Now, we have the PGNAA to cover ourselves with regards to the raw mix. This added redundancy has helped us maintain production several times, aiding in the justification of the investment.



We have also reduced the number of samples that are processed in our automated laboratory by 10%, which reduces ongoing costs and wear. The CBA also helps our FLSmidth OK vertical finish mill, which likes consistent, high-quality clinker. We can now provide this to it more reliably than ever before.

GC: Are there plans to upgrade or develop the system (or others) with SABIA in the future?

MS: We have another CBA installation at another position at the Mojave plant that we may upgrade in the future. Our two sister plants are also aware of the success story here. They both have CBA systems from other suppliers but one is looking at the possible benefits of using SABIA's equipment at its site.

AS: SABIA constantly develops its technology. At the moment we are refining an intelligent system for the back-end that draws in data from across the entire raw meal feed process, even including information from the quarry. It's like a car dashboard. You *could* run the car flat out with no information but not know if or why it is inefficient. The dashboard might tell you that a tyre is not at the optimum pressure.

In terms of the cement plant, such a system presents all relevant data, be it from the raw meal feed system itself, the raw mill or the quality of the limestone, to look at the underlying reasons behind the performance of the raw meal feed system. It alerts operators to any issues that need attention and may be able to shed light on unexplained variations when human operators don't know what happened.

GC: Thank you everyone for your time today.

AM/AS/MS/GS: You are very welcome indeed!

Above: The SABIA X1-LiNX was installed at the CalPortland Mojave plant in the spring of 2019.

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Ad Index

Interview by Peter Edwards, Global Cement Magazine

In discussion: Bert van Elten, Eltomation

Ahead of the *Global CemBoards Conference* in Munich, Germany, *Global Cement* spoke to Bert van Elten, Managing Director of the Dutch wood wool cement board (WWCB) equipment manufacturer Eltomation, about his company's history, products and how he sees the global cement board sector in 2020.



Above: Bert van Elten has been Managing Director of Eltomation since 1992. His father Gerry van Elten founded the family firm in 1956. It is based in Barneveld, in the centre of the Netherlands.

Below: A modern WWCB Plant for 60cm wide WWCB, with a plant capacity of up to 12,000m²/day.

Global Cement (GC): Can you introduce Eltomation to our readers?

Bert van Elten (BvE): The story of Eltomation began when my father, Gerry van Elten, was a mechanical engineering student in the late 1950s. He was asked to solve a problem at a wood wool cement board (WWCB) plant, which was a fully manual process at that time.

He went away and thought, 'How do I automate this process?' From there, he designed the first elements of a plant that could automate the process of manufacturing WWCB products. He founded the Elten Engineering Company, now called Eltomation, in 1956 to produce fully automated WWCB lines. These remain our main product line today. The company was able to grow well on the back of this development as European WWCB producers consolidated and moved towards larger, more modern plants in the 1960s and 1970s. Growth continued in the following decades and, more recently we have launched production lines for two further types of wood wool cement products: Eltoboard, which is a form of compressed WWCB and large wood wool cement elements for pre-fabricated insulated walls.

I became Managing Director of Eltomation in 1992 and I run the firm with my brother Paul, who is the Technical Director. More than 60 years after our father founded Eltomation, the company remains the leading, indeed only, producer of fully automated production lines for WWCB at the start of the 2020s.

GC: What exactly is WWCB?

BvE: WWCB is a medium-density board comprising long soft wood fibres that are bonded together with Portland cement. They are typically 0.6m x 2.4m with a density of 350-500kg/m³. They are B1 class fire-resistant and have excellent thermal and acoustic insulation properties. This combination makes WWCB very applicable for use as a ceiling panel, particularly in municipal and commercial buildings and schools, but increasingly in residential ones too.

GC: How does an Eltomation WWCB line work?

BvE: The first part of the production line is the automatic wood wool machine, which cuts pre-cut 50cm long blocks of small-diameter soft wood, typically pine, spruce or poplar, down to 25cm in length.



GLOBAL CEMENT: CEMENT BOARDS





These blocks are then shredded into 1.0-3.0mm-wide and approximately 0.25mm-thick fibres, depending on the client and application. Such a machine can typically produce 3t/hr of wood wool, around 60,000 fibres every second! Each fibre is up to 25cm in length and will be slightly curled.

Once the fibres are made, they flow into a submersion unit, where they absorb water at a mass ratio of around 1:1. The water contains a small percentage of sodium silicate to act as a set accelerator. Additives can be added for enhanced fire-resistance, which can take the WWCB from B1 class to A2 class.

Cement is then accurately dosed into the wet wool fibres at a ratio of around 1.5:1 in favour of cement compared to the dry wood wool. The semi-dry mixture is mixed in a continuous double shaft mixer.

The combination of 3t/hr of wood wool, 3t/hr of water and 4-5t/hr of cement gives us a total mass of 10-11t/hr that enters a double forming line. The fresh mixture is formed as a 625mm wide mat on continuously-moving marine-plywood moulds. A rim line determines the thickness of the board, which is typically 15-50mm in the current market. If requested, adjustments can be made to produce boards up to 150mm thick. Some clients also introduce mineral wool, polyurethane or polystyrene insulation at this point, sandwiching the insulation between two layers of WWCB.

The forming line operates at 20-21m/ min. As each panel is 2.4m long, there is a new panel every 7s, around 12,000m²/ day. A separating saw cuts between the forms, which head to a low-pressure stacking press to achieve a density of 350-500kg/m³. The stack is cured for 24 hours before de-moulding. The form is cleaned and oiled before heading back to the start of the forming line.

Most clients send the panel through a pre-cutting step to clean up the edges of the panel. These are stacked and sent to a second setting area, typically for 10 days. Panels will then be cut to size and may be painted or otherwise further processed at the plant, depending on the product.

GC: With a new panel every 7s, that's a lot of forms!

BvE: Yes - A plant produces around 2800 boards per eight hour shift, so that's 8400 over a 24 hour period. However, a plant never runs the same product day-in day-out, so that figure is split across a number of different form types.

GC: How does Eltomation make and install a WWCB plant?

BvE: First of all, the ordering process takes, in most cases, at least 1-3 years. The client has to get to know us, conduct market studies, obtain financing and permits, etc...before we can confirm an order. Once the contract is signed we can manufacture and supply the equipment within 10-12 months. We presently install about one WWCB plant every year.

There are clear responsibilities for each party. Eltomation designs the plant and software and is responsible for project engineering. We subcontract the construction of the main equipment to one of our trusted machine shop partners in Europe, which are supervised by our experts. We keep all the technical and IT know-how in house, to keep it as safe as possible. Eltomation also sources off-the-shelf Above left: A dosing and mixing Line at a WWCB plant, producing 11t/hr of fresh mixture.

Above: An EltoBoard press at a WWCB/EltoBoard plant for the production of medium density WWCB.

Below: Computer-generated impression of a fully-automated large wall element line.



GLOBAL CEMENT: CEMENT BOARDS



Right: Acoustic WWCB ceiling panels in an indoor swimming pool. Source: Troldtekt, Denmark.

components like motors, hydraulics, conveying systems, etc. The client constructs the building and cement silos, typically at the same time as Eltomation is sourcing and producing the plant equipment.

Once the equipment is assembled, the client is invited to the workshop to inspect the equipment in dry-run mode prior to shipping. Then Eltomation ships the equipment in a set order. To give an idea of scale, a recent plant we sent to Russia consisted of 50 truckloads!

In a typical project, the plant is constructed during months 12 and 15 after signing the contract, with start-up in month 16. At the start of the installation, Eltomation will typically have two technical supervisors on site. They are followed up by the electrical controls guys to supervise the electrical installation works, plant commissioning and start up. Furthermore, we train the operators.

GC: Where are most of Eltomation's projects coming from at present?

BvE: We are mainly active in Europe, where we predominantly take care of our existing clients' needs, be it in terms of consumables, modernisations or expansions. We estimate that these clients currently produce around 20Mm²/yr of WWCB. Regarding new plants, there is still an increasing demand in Europe, as well as in newer markets, Russia, North America and China in particular. We have installed six plants in China in recent years, followed by an ultra-modern line in Russia in 2018.

GC: What is driving demand for WWCB now?

BvE: Healthy (emission-free) indoor environments are becoming important to the public and thus are increasingly specified. It is, for example, increasingly common to find WWCBs as ceiling panels in residential buildings. These modern apartments have hard floors and no curtains so the acoustics are terrible! WWCBs can help massively in this regard. Our Scandinavian contacts tell us that there will be EU-wide standards for acoustic performance in the built environment, so this trend looks set to continue strongly.

GC: You just mentioned upgrades at existing clients' plants. How does Eltomation meet new ones?

BvE: We usually approach the industry from the wood side, promoting our plants for WWCB at wood industry conferences and trade shows. Until now, with our attendance at the *Global CemBoards Conference*, we had not actively approached prospects from the cement side. This opens up new opportunities for us, including potential clients that we are due to meet from South East Asia. I'm sure the event will provide us with new information and leads for future business development.

GC: How are your clients' requirements changing with time?

BvE: Unlike many concrete elements, gypsum wallboard or insulation, WWCBs are directly visible in use. This means that recent changes in the demands placed on WWCB products have centred on their physical appearance, as well as their other beneficial properties. The uniformity, structure and colour of the panel is ever more important and so the production tolerances are becoming smaller.

Part of this is a trend to thinner and thinner fibres, from 3mm wide 20-30 years ago to 1.0mm wide in the 2010s. There is also a trend from grey to white cement, the 'natural look' of which is favoured by architects and owners.

GC: What about automation and service needs?

BvE: As in every sector, our clients constantly request ever greater levels of automation. In the past 10 years this has extended into all elements of the plant, with features like frequency controlled motors for start-up / shut-down and improved control of hydraulics.

Automation is particularly strongly favoured in Western Europe, and Scandinavia especially, where staff costs are very high indeed. A recent plant we installed in Denmark operates its main line with just four shift workers. If we quoted the same project in Russia or China, we might specify 13-15 shift workers. Looking further back, a plant in 1980 might have needed two to three times the number of workers per shift as is the case with a modern plant, but it would be running at around 70% of the production rate.

Another trend that took hold in the 2010s, is a VPN connection from the plant to our HQ. This means that we can observe the plant in real time, advise plant operators and solve problems without the need to visit the plant. The data gained also helps us to improve our designs. Maintenance contracts are also important nowadays. We will send a mechanical and control engineer to each plant every six months to tune it up and maintain operating efficiency above 90% - usually we achieve considerably higher levels.



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We are always going back to clients' lines to see what we can do to expand their production. They always want higher speed, less waste, more automation and higher process stability. It's a lot of work to keep up with this ever-growing list - but we're not complaining!

GC: You mentioned some other products that can be produced with Eltomation's equipment. Could you introduce them briefly?

BvE: In the past we made equipment to produce cement-bonded particle board (CBPB), which is much denser than WWCB. It was used as a replacement for asbestos cement board but it has gone somewhat out of fashion in recent years. When we were selling both CBPB and WWCB lines, we asked ourselves, '*What about medium-density cement boards?*' This question led to the development of Eltoboard, essentially a WWCB product that is compressed after it goes into the mould. It is compressed to around a third of the volume of a WWCB. The advantage of Eltoboard is that it can be used as a structural element. You do however, lose the acoustic and thermal-resistance properties of WWCB, so it's 'swings and rounda-bouts.'

We have also helped a Swedish client to further develop large wall element production from the same material as they make WWCB at the same density. Essentially this is a full-size wall, 6m x 2.8m x 40cm. Such elements can incorporate recesses for windows, wiring and so forth.

The Swedish client has now made over 300 structures, homes, schools, sports halls and many other buildings with these large wall elements. The insulation properties of wood wool cement products come to the fore in the Swedish market. There is no need for any other insulation material, so construction is very simple. The elements are easy to transport and have a six hour fire rating. They are rot-proof,

termite-resistant and don't expand or contract with temperature changes. They're a great product, for which we have developed a modern automated production line.

GC: What's the next region with big potential for WWCB and, by extension, Eltomation?

BvE: The Russian market is becoming increasingly important to us, both for WWCB and large wall elements. Elsewhere, we see great potential in sustainable, low-cost housing using our large wall element technology in developing regions, particularly in Africa.

However, selling a turn-key plant to a new client in, let's say Ivory Coast, is quite an undertaking. Will the market accept a new building material like this? Also, where will the wood come from? Will the source be sustainable? It's hard to know the answers to many of these questions at this stage. We have a lot of interested parties however, so I hope we'll enter this market soon.

GC: What threats are there to WWCB / Eltomation over the next decade?

BvE: We are the only producer with this technology. If a client decides that it wants to make WWCB, we're in a good position. While that's a nice captive market, it does mean that we have to do a lot of the marketing for this type of material all by ourselves. Of course our clients do this, but only in their local areas. This is a disadvantage compared with other building materials, for example cement or gypsum wallboard.

On that topic, there are, of course, other building materials that can do some or all of the same jobs as WWCB. Wood fibre cement boards are one big sector we're not involved with, for example. This only partly overlaps with our insulating wood cement products, so it's only a limited threat.

GC: Does Eltomation have any new products or services in the offing?

BvE: We constantly update our range, mostly due to individual client requests. However, we remain focused on WWCB as our core strength. We are frequently approached by clients who know we are engineers and want us to make different machines. We have to turn them down.

However, within wood wool we are keen to develop new technologies, for example as we have done with the large wall element products. We may also re-enter the CBPB market, should the right opportunity arise.

GC: Bert van Elten, Thank you for your time today.

BvE: You are very welcome!

Below: Affordable and sustainable housing for Africa, based on the prefabricated large wall element wood wool cement system.



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Global Cement staff

Visiting Venti Oelde

Global Cement recently visited the German fan manufacturer Ventilatorenfabrik Oelde to meet its new cement sector contact Reinhold Mertens and catch up on its latest projects.

Reinhold Mertens started working for Venti Oelde main contact for the cement industry on 1 November 2019. Since obtaining his mechanical engineering degree, he has gained experience over a period of almost 10 years, working for a well-known German cement plant manufacturer.

Reinhold Mertens and his team at Venti headquarters will handle not only local sales personnel but will also be responsible for customer liaison and support for all Venti Oelde cement industry customers, from plant manufacturers to cement plants.



Above: Clinker cooler fans for a cement plant in Thailand.

Right: Rotor for a baghouse fan, ready for dispatch to France.



Above: Reinhold Mertens has been the new cement sector contact at Ventilatorenfabrik Oelde since 1 November 2019.



GLOBAL CEMENT: FANS





Above: Inge Teich (Marketing Manager - left), Reinhold Mertens (Sales Manager Fan Division - centre) and Peter Herrmann (General Manager Fan Division - right) stand in front of a rotor for a kiln ID fan for a cement production line in Nigeria.

Left: Clinker cooler fans for a Thai cement plant, before the test run.

Below: Installation of a new waterjet/plasma cutter to cut carbon or stainless steel with a thickness of 2-200mm.



Contents

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TLT-Turbo GmbH

TLT-Turbo upgrades fan testing laboratory

Global ventilation fans and systems manufacturer TLT-Turbo GmbH has spent the past five years investing in and equipping its on-site fan testing laboratory. The facility now provides streamlined processes for research, the advancement of product quality and expanded capabilities for material testing. With a focus on particle impact wear testing, the laboratory is driving innovation forward at TLT-Turbo as the results help improve product reliability, quality and performance in the operating environment.

Patrick Baumgärtner, a Research and Development Engineer and expert in wear and corrosion protection at TLT-Turbo, has played an instrumental role in building up the test laboratory, which is located at the TLT-Turbo Development Centre in Zweibrücken, Germany, to its current capabilities. He has spearheaded the current research together with Sabine Groh, Industrial Fans Product Manager at TLT-Turbo.

Currently, the core field of research at the test laboratory is testing of new wear-resistant materials and coatings for fan components. Baumgärtner says that testing takes place using the laboratory's solid particle impact wear test bench. Various types of dust or abrasive particles can be blasted onto the test material, varying the angle and speed of the blast to observe the resulting wear patterns.

"We also carry out caking tests in which we select, for example, anti-adhesive layers for our fans, in order to find suitable solutions for customer applications," explains Baumgärtner. "A further main focus is the analysis of process residues that can have an abrasive or corrosive effect. Here the composition, size distributions, pH value and conductivity in the eluate are determined." TLT-Turbo's approach is to continuously test materials, coatings and components in order to produce fan components that are designed for performance excellence in any operating environment, no matter how abrasive. This testing is applied to current and new products in development but also to samples that are brought in from client sites in order to establish the wear patterns caused by their specific environment. By doing this, TLT-Turbo is able to provide each client with a customised solution that will last longer and require less maintenance.

The test laboratory now offers facilities for metallography, a stereomicroscope, a pycnometer to determine the density of materials and coatings and an automated solid particle impact wear test bench. "The capabilities of the test laboratory open a lot of doors for advanced research that will make a positive contribution to the engineering community at large as well," continues Baumgärtner. "Under my supervision, studies and thesis research take place in the laboratory in cooperation with local colleges and universities. For me, this is the basis for successfully researching and developing new solutions in our field."

According to Sabine Groh, the facility has 'almost endless' possibilities for the improvement of product delivery to TLT-Turbo's clients. "Our customers often operate TLT-Turbo fans in abrasive and/or corrosive environments, like the cement sector," she explains. "To develop suitable solutions that match the wear resistance against particle impact, we use our automated solid particle impact test bench. Compressed air accelerates a defined mass flow of abrasive particles to velocities of up to 300m/s and propels them onto a piece of sample material. This leads to material loss and wear that we can examine. It is even possible to use original dust from a customer's plant to evaluate the most suitable solution for that client. By varying the impact angle we can observe system characteristic wear curves. With this knowledge we can provide customised solutions for many processes."

Below: Part of the materials testing laboratory at TLT-Turbo's Development Centre in Zweibrücken.



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Above: A blasting nozzle and sample holder on the test bench.

These solutions can be best illustrated in the selection of coatings. This, says Groh, has an immensely positive impact for clients. "If we were to propose a new coating for a customer, the wear rate of the coating would be determined first. That is the main scientific-based decision criteria for wear-resistant coatings. If the coating has a superior wear rate compared to other coatings or at least a wear rate that is on par with other coatings and another beneficial quality such as an anti-stick effect, corrosive resistance or a cost advantage it will be implemented into our coating portfolio."

Groh says that they have also conducted tests that have led to the development of completely new proprietary coatings. "During the manufacturing process, coatings were tested to see the influence of welding heat on coating qualities, such as the development of cracks, to ascertain how to avoid damage caused by heat or weld splashes. We conducted research and testing on combining welded coatings and thin layer coating into a hybrid coating, which can dramatically increase the operational lifespan of TLT-Turbo fans at clients' plants."

Below: An exchangeable impeller blade that has been exposed to massive wear.



This is one of numerous examples of how TLT-Turbo's testing capability can positively impact ventilation systems across all applications. "Due to the broad database of wear tests on various materials and coatings, we are able to offer tailor-made wear protection solutions for various processes of our customers," says Baumgärtner.

Groh adds that the wide variety of chemical compositions and coating conditions such as acceleration of coating powder and heat development make it extremely difficult to objectively find the best coating by carrying out testing at a customer's plant.

"The process of reaching even the *initial* findings in these conditions is very time consuming," she says. "In addition to this, there is a broad variety of conditions to contend with at different customer plants that hinder an accurate comparison of different coatings at different plants. If you test different coatings on one machine, you might get a rough estimation of what coating is superior but different wear rates of coating cause imbalances in the impeller and vibrations at the fan."

Groh elaborates by explaining that finding a precise comparative measurement on different coatings is impossible without being able to analyse how the wear rate changes at different angles. "At the upgraded test laboratory we can control the conditions to find precisely what we are looking for in a shorter timeframe. Additionally we are able to replicate the fan's operating environment. We can run tests using dust collected from the client site while simulating particle speeds that match the client's environment to precisely simulate wear rates."

In the laboratory environment, the TLT-Turbo team is also able to determine additional coating properties as they have the capability to run additional experiments, for example corrosive resistance, anti-stick effect, robustness, heat resistance, suitable application methods and combination possibilities like hybrid coatings.

The test laboratory has afforded TLT-Turbo engineers a deeper understanding of the mechanisms behind wear and the effects of specialised solutions. This has led to new approaches in product advancement and development that are grounded in providing solutions that meet market requirements.

"The analysis of residues from plants has a great influence on product development as we are making more informed decisions when choosing materials for corrosive and abrasive environments," says Baumgärtner.

The laboratory has also had an impact on what TLT-Turbo can offer in terms of after-sales services. "The development of new solutions for specific customer problems is now much faster and more accurate. Also the suitability of low cost approaches or solutions that allow for wear-induced damages to be repaired on-site integrate effortlessly into TLT-Turbo's existing solutions," concludes Groh.

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Interview by Peter Edwards, Global Cement Magazine

In discussion: Michael Stork, Hofmann Mess- und Auswuchttechnik GmbH & Co KG

Global Cement recently caught up with Michael Stork from fan balancing equipment producer Hofmann Mess- und Auswuchttechnik...



Above: Dipl. Ing. Michael Stork is Manager Business Unit Active Balancing Systems and Vibration Measuring Instruments at Hofmann Mess- und Auswuchttechnik. He has 25 years' experience in the fields of measurement and balancing.

Global Cement (GC): Please could you introduce Hofmann Mess- und Auswuchttechnik?

Michael Stork (MS): Hofmann was founded in 1996 and is based in Pfungstadt near Frankfurt, Germany, where it has its main office, production facilities and sales functions. The company has around 160 employees divided into several business units in order to cover the entire market for balancing machines and systems, including handheld devices.

The company also has a sales and production subsidiary in Lynchburg, Virginia, US, plus sales and service partners in Brazil, Spain, France, Mexico, China and the UK.

GC: How does Hofmann help the cement sector?

MS: Cement production is a very important area for Hofmann, indeed several of our process fan balancing systems have been specifically adapted for use in the industry. We can balance almost any rotating component using our know-how. One of the most common requests is to equip process fans with our AB9000 balancing system, which is tailored to this task and easy to integrate.

Many customers have struggled with so-called build-ups and can't really get a handle on the changing imbalances. They can usually monitor the vibrations caused by the imbalance but to correct it they have to stop the fan and clean it, with associated downtime and loss of production.

However, with Hofmann's fully automatic balancing system, we can ensure that the fan runs more smoothly. The AB9000 system compensates for imbalances at operating speed. Thus the maintenance intervals are extended. The load on the bearings, foundation, frame structure, everything... is reduced. This ensures higher process stability and reliability.

GC: Where is the AB9000 most often used?

MS: The most common area to use an AB9000 in the cement sector is for preheater fans. They draw out humid, dusty and hot air from the kiln, the dust



Right: Hofmann Messund Auswuchttechnik's headquarters in Pfungstadt, close to Frankfurt, Germany. sticks to the fan rotors and bakes on due to the high internal temperature. Then, larger parts fly off and an imbalance occurs. If the imbalance vibration is too high, the entire system has to be stopped to clean the fan. Almost every cement plant struggles with this problem. Our balancing system can correct this resulting imbalance fully automatically.

GC: Can you provide a recent example?

MS: We recently implemented the AB9000 system for a client on an ID fan at a Nigerian clinker plant where there had been really big problems with vibrations. The fan had to be stopped once a month to be cleaned. Since the implementation of the AB9000, the plant has been able to reduce the maintenance intervals to every 12 months. The plant makes around 347t/hr of clinker. With every cleaning stop, the plant loses a lot. The AB9000 reduces losses significantly.

GC: How are cement client demands changing?

MS: Through our in-house development department, we are constantly developing our products to react to the requirements of the market. Digitisation is an increasing factor and we are keeping ourselves up with the times. An important point for us and the customer with a view into the future is preventive online monitoring, which will also be supported by Hofmann.

GC: Where are the most enquiries coming from in the world at present?

MS: Hofmann operates all over the global cement sector and, to be honest, we haven't really noticed significant changes in the number of enquiries from specific regions. Of course we have a very large presence in Europe, but we have also distributed a lot of applications around the globe.

GC: What is the next 'big thing' for Hofmann?

MS: We are looking at further potential sectors for the AB9000, for example the pulp and paper industry, steel industry and chemical industry. So far we have sold very few systems in these industries and don't have many references. Over time we have learned that the problem with build ups is very widespread. From Hofmann's perspective, the problems do not differ in the different process

fields. However, we do not have many references other than in the cement industry, so this is a strong potential area for growth. We don't need to come up with a new product to serve these other sectors.

GC: What major opportunities and threats are out there for Hofmann in the next few years?

MS: We feel that our products are very convincing in every respect and the know-how we have built up will serve us very well going forward. We don't expect any competition in this field, so expanding our presence into other sectors is a huge opportunity for the company. The biggest threat is the possibility of a future economic slowdown around the world, the chances of which we cannot influence. Generally though, the company is very well positioned for the future.

GC: Thank you for your time today.

MS: You are very welcome indeed.

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Left: The diagram shows the long-term behaviour of bearing vibrations of a ~12t fan impeller before and after the installation of an AB9000 system. The vibration amplitude of the floating bearing side (blue) and the fixed bearing side (orange) is shown over a period of nine months without AB9000 and with AB9000 respectively.









Maximising workflow, capacity utilisation and profitability with enhanced safety and less waste

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The cement industry is undergoing a major change. The volume of cement produced is no longer the sole focus. Among increasingly-important needs are improved efficiency, consistent quality and lower manufacturing costs, all while respecting increasing requirements in the spheres of the environment and health and safety.

HAVER & BOECKER has observed and driven this trend for years. "The question is no longer how much cement our customers can produce, but how efficiently their plants work," says Frank Ormeloh, Business Unit Manager at HAVER Cement. "Every day our customers ask us how they can further automate their processes in order to ensure a perfect flow."

The HAVER & BOECKER RADIMAT[®] bag applicator is an important element in optimising packing plant workflow. It automates the packing of cement into valve bags that use rotating packing from bundles or rolls. Bags are mechanically shot onto the filling spout of the packing machines adapted to the right speed. The RADIMAT[®] has a shot accuracy rate of up to 99.7%, which allows the packaging machine's maximum performance to be exploited.

Below: A RADIMAT[®] close up.



Components

The RADIMAT^{*} consists of a bag applicator unit and an empty bag feeder with a magazine for 225-2000 empty bags, depending on the required capacity and length. It can also be equipped with a rotary table that is placed between the empty bag magazine and the bag applicator unit. This ensures greater flexibility in system planning because the machine installation can be easily adapted to the building situation. This advantage often comes to the fore in retrofit projects.

Alternatively an empty bag roll system with up to 4000 bags per roll can be used. Here the RADIMAT[®] works continuously and the operator only has to change rolls. A double roll magazine almost completely eliminates possible dead times because there are no production stops for roll changes.

A flexible system

When developing the RADIMAT[®], HAVER & BOECKER deliberately focused on developing countries markets where bag types of poor quality are commonly used. Due to this approach, the RADIMAT[®] can handle different bag types with different dimensions, including: glued and box-shaped bags, single- or multi-ply paper or woven WPP bags, film bags, sewn bags, composite bags and highly-flexible low quality single ply woven bags, commonly used in India and China. In more developed cement markets it can be used for SEAL bags or valve bags with pulled-out valves.

Greater capacity utilisation

Today the decisive question that plant operators have with regards to almost every investment is: *'What's the payback time?'* If we assume that the automatic machine continuously feeds 120 bags/hr more than is possible by manual application, i.e. two bags more each minute. This amounts to 240,000 additional filled cement bags annually for a plant that operates eight hour shifts with five work days per week and 50 work weeks per year. 240,000 50kg bags equate to additional filling of 12,000t/yr of cement into bags. With an assumed margin of 10% per tonne, the investment will pay for itself within a year.

A study by HAVER & BOECKER even shows far more positive figures. Three eight-spout ROTOPACKER*

GLOBAL CEMENT: BAGGING

lines in operation at one particular customer were equipped with software for a study that calculated the ratio of actual to maximum bag application. For manual bag application, the ratio was only 69%. With the RADIMAT[®] automatic bag application, it was >99%. Once the three lines were retooled, they produced more than 300,000t of bagged cement per year because the fully automatic bag applicator can operate three shifts per day. Its use paid off in hard cash within a very short time.

Improved work conditions

In addition to improved capacity utilisation, the RADIMAT[®] makes a significant contributionto healt and safety, especially in plants with poor working conditions, where low-quality bags are likely to be used. Work conditions for machine operators improve because workstations can be moved to a low-dust area.

When loading bags manually, this is not possible. "If an empty bag bursts at the filling spout the employee is right smack in the middle of it," says Andreas Halfar, Sales Manager at HAVER Cement. This is a considerable dust exposure risk and increasingly unjustifiable. By contrast, with a RADIMAT[®], the operator stands in a position away from the product. Dangers from the mechanical system are also mitigated.

In addition to this, the operator can also work under less stress. With manual bag loading, there is constant pressure to keep up with the preset filling rate. However, studies have shown that workers slow down by up to 35% over the course of a shift. This is because concentration is hard to maintain. A moment's inattention can have a direct and profound negative impact on the system's performance.

"The work is monotonous, yet the operator must be fully concentrated," explains Halfar. Using a RADI-MAT[®] a single operator can suddenly operate several lines simultaneously and / or take on other tasks.

Operating high-performance machines profitably

An upper bag loading rate of 2400bags/hr can rarely be realised with manual bag loading. However, capacities of 4000-4500bags/hr are now the order of the day, with up to 5000bags/hr in some cases. These values are unthinkable using manual bag application, even with two machine operators. In highly developed markets this enables producers to operate economically with one machine operator in a single shift and with maximum savings in staffing costs.

For example, Germany currently has a bag share of approximately 8-10% of the total cement market. To avoid overcapacities, packing plants are already merging. When using a RADIMAT[®], a correspondingly high performance system pays off in that the operating and personnel costs incurred can be kept to an absolute minimum.



Retrofitting

The RADIMAT[®] is not only used in conjunction with the ROTO-PACKER[®], it can be retrofitted to all rotary packing machines. It can be installed on existing lines or can be used to make new lines more compact. Rotary tables, elevating systems and different magazine arrangements can be used, leading to considerable savings in personnel and space. This is especially the case in large systems where the empty bag magazines are located in the bag storage area.

Beyond bag application

Retrofitting with a RADIMAT[®] is not only about speeding up bag application, but also about optimising the overall system. Dosing time controllers or fine flow controllers regulate core processes during filling and packing. They require a certain ramp-up time to find the optimum setting. When applying bags manually, there are frequent process interruptions and so these controllers always need to be reset. This is not the case with the RADIMAT[®].

"We make a variety of adjustments to reach optimum performance," explains Klaus Sieweke of HAVER Service. "For example we may recommend a different bag quality to the customer, a different process sequence, or training of plant operators and maintenance personnel." The aim is to reduce downtime, eliminate rejects and increase performance. The HAVER QUATTRO monitoring system is often used to achieve these aims. It records the difference between manual bag application and automatic application using a RADIMAT[®]. It documents the performance improvement 'in black and white.'

Conclusion

There are several proven advantages of the RADIMAT^{*} system, which was launched more than 40 years ago and has now been sold over 2500 times. HAVER Technology's Head of Technology Bernhard Stövesand likens it to a Duracell bunny that 'runs and runs and runs...'

Above: A Roto-Packer® RVT SEAL Edition with a Radimat®.

Contents

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Preview: Global CemFuels Conference, Paphos, Cyprus

The 14th *Global CemFuels Conference & Exhibition* will take place at the Aphrodite Hills Resort in Paphos, Cyprus on 19-20 February 2020, with a confirmed field trip to Vassiliko Cement on 21 February 2020. *Global Cement* looks at the confirmed presentation programme as at 13 December 2019...

The Global CemFuels Conference will once again feature a large exhibition of related equipment, fuel and service suppliers. To secure YOUR exhibition stand, contact:

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Below: Frank Brannvoll will outline energy price trends.

Below right: Karel Jennissen of alternative fuel manufacturer N+P (facing right) outlines aspects of the company's fuel range to an interested delegate at the 13th *Global CemFuels Conference* in Amsterdam in 2019.



The future of cement production technologies and of alternative fuels – attempting an outlook on the years 2025, 2030 and 2050 Sussan Pasuki, HeidelbergCement

Current overview of energy prices and trends *Frank Brannvoll, Consultant*

An overview of European waste trade trends Andy Hill, Industry Expert

Market shifts and diversification of alternative fuel consumer base - Olivier Thomas, Suez Trading

The practicalities of exporting alternative fuels to new markets in new countries Mark Terrell, Andusia

Calciner optimisation for reducing NO_x and increasing AF substitution rate Savvas Petrou, Vassiliko Cement & Michalis Akritopoulos, Tahir Abbas, Cinar Ltd

The Retention Time Myth: Requirements for the design of calciners from the pneumatic and burn-out behaviour of lumpy secondary fuels Matthias Mersmann, aixergee process optimisation

Hazardous waste as a potential alternative fuel Ted Reese, Cadence Recycling



Alternative fuel combustion in low to medium velocity calciners with case studies and simulations, plus latest achievements on NO_x reduction *Mads Nielsen, FLSmidth*

Financial aspects of using different types of AF impacts on process versus cost benefits Stéphane Poellaer, Alterline sprl

Profit versus environment: Ending the tug-of-war in AF preparation for the cement industry *Josef Imp, Tana Oy*

World-class alternative fuels projects at City Cement Company, Saudi Arabia Majed Al Osailan, City Cement Company

Closing the loop - Best practices in efficient alternative fuels utilisation Luigi Di Matteo, Di Matteo Group

Advanced MBT facility in West Virginia proves viability of SRF production for North American cement producers *Pietro Paolo Cella, Entsorga Italia SpA*

Complete installation for burning alternative fuels in cement manufacturing: Best practices case study in Germany and Mexico Basri Ogut, ATS Group

Best practice for RDF preparation and handling -A case study *Tim Hamer, Vecoplan*

Overall explosion protection concept for safe handling of alternative and biogenic fuels, *Speakers from robecco, Thorwesten & Yara*

New trends in alternative fuels handling *Michal Hrala, Beumer Maschinenfabrik*
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Preview: 4th Global CemBoards Conference

The 4th *Global CemBoards Conference & Exhibition* on cement-containing boards - cement-bonded particle board, cement-gypsum board, fibre-cement board, woodstrand cement board, wood-wool cement board and other 'non-wallboard' board and panel systems - will take place at the Marriott Hotel in Freising, close to Munich, Germany on 21-22 January 2020.

Right: Peter Leewis of Eltomation spoke about wood wool cement boards at the 1st *Global CemBoards Conference* in London in 2014. Read more from Eltomation on Page 20.

Right: Jean-Paul Lecomte of Dow Construction Chemicals will present at the event once again. He is seen here in 2016.

Below: Delegates are encouraged to meet new contacts in the popular 'speed dating' sessions. The 4th Global CemBoards Conference & Exhibition will take place on 21-22 January 2020. The event will look at global market trends in cement-based boards and panel systems, at the latest advances in production technology and at how producers can add value to their products worldwide. In addition to equipping delegates with the latest information, news and developments, the networking opportunities will once again be excellent.

After the success of the first three *Global CemBoards Conferences* in London in January 2014, 2016 and 2018, the event in Germany is expected to attract even more participants from the global cement-based boards industries. Up to 100 delegates from over 25 countries are expected to attend.

Confirmed presentations

Presentations confirmed at the time of publication include...





Hydrophobisation of fibre cement boards with silicones: Solutions for integral and surface treatment Dominik Jantke, Wacker Chemie

Tiny particles with huge effect – C-S-H seeding technology for improved strength Christoph Hesse, BASF Construction Additives

Horizontal stretch hooding for cement-based boards: Fast cycle times, high uptime, low film consumption and minimal footprint Allan Detlefsen, Tentoma A/S

Presentation opportunities are still available. Please contact Robert McCaffrey - *rob@propubs.com* - to discuss your proposal.

Exhibition

There will once again be an exhibition accompanying the *Global CemBoards Conference*. Contact Paul Brown - *paul.brown@propubs.com* - to find out more! (3)



Enhancing durability and aesthetics of fibre-cement products with acrylic dispersion and silicone water repellents Jean-Paul Lecomte, Dow Construction Chemicals

> Innovative technologies in the field of wood cement products Bert van Elten, Eltomation

The identity crisis within the magnesia cement board industry $C_{1} = \frac{1}{2} \left(\frac{1}{2} - \frac{1}{2} \right) \left(\frac{1}{2} - \frac{1}{2} \right)$

Steve Marskell, Magnesium Oxide Board Corporation



Left: Stefan Jerrelid smiles for the camera on the Limab stand at the 2nd *Global CemBoards Conference* in 2016.



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US: New Hagerstown RMX plant from TBH

Thomas, Bennett & Hunter (TBH) has had a site plan to build a new ready-mixed concrete (RMX) plant in Hagerstown, Maryland approved by the Washington County Planning Commission. The concrete producer is moving its operations in the town to a new site, according to the Herald-Mail newspaper. It is hoped that the new RMX plant will be commissioned by the end of 2020.



Bosnia & Herzegovina: New concrete plant

HeidelbergCement's Bosnian concrete subsidiary TBG BH has entered into production at its new concrete plant in the southern city of Mostar, bringing its number of plants in active production to seven.

Ehlimana Šehmehmedović, TBG BH director, said, "The opening of a concrete production facility in Mostar is part of our strategy to strengthen the supply of quality products to Mostar and Herzegovina."

UK: Elite logistics deal

Elite Precast Concrete, a leading UK supplier or pre-cast concrete parts, has agreed a new national logistics deal with Shropshire Express Deliveries, a flatbed haulage specialist. The company says that the exclusive relationship will create a transport solution tailor-made for the precast concrete industry and underline Elite's ethos of providing the highest levels of customer service.

Owen Batham, Sales and Marketing Director of Elite Precast, said, "Our logistics operation is very important to us, so it was vital to find the right partners. We wanted

Costa Rica: Waste plastic as a building aggregate

The Costa Rica-based Center for Regenerative Design and Collaboration (CRDC) has announced its plastic-to-concrete invention, which can turn unmanaged and dirty plastic waste into a building material. Its process involves upcycling plastic material into a lightweight construction aggregate that is more durable than conventional materials.

The CRDC product is a Pre-Conditioned Resin Aggregate (PRA), which incorporates regenerated waste plastic particles combined with a standard sand-cement mixture to produce a highly resistant, durable cement or cement block.

Just one CRDC facility and plant could eliminate 11,760t/yr of plastic, produce 13,400t/yr of PRA and produce 268,800t/yr of concrete containing 5% PRA. PRA-containing materials could be used in any building application. The technology and the concrete aggregate products have been tested rigorously, are backed by two years of extensive case studies, and meet all stringent building application standards in the US, Africa and Latin America.



Germany: Air pockets reduce concrete CO₂

A German construction project has prevented an estimated 136t of CO_2 from entering the atmosphere by incorporating air pockets made of recycled plastic within its concrete slabs. The two SparkassenVersicherung (SV) buildings in Mannheim's Glückstein district are being built with concrete slabs developed by Cobiax, which include voids so that less concrete is used. The slabs have up to 35% less material than solid reinforced concrete, thanks to the presence of the hollow spheres of plastic. These spherical void formers fill parts of the slab not required for load bearing.



to build a long-term relationship with a company we can fully rely on and, in Shropshire Express Deliveries, I'm confident we've found just that." Ad Index

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UK: Entec secures major contract with Lafarge Africa

Use K-based Entec International has secured a contract to optimise maintenance, repair and operations (MRO) supply chains for Lafarge Africa. The project will involve the consolidation of 125 separate suppliers into a single supply chain, which will be managed by Entec, operating in a single currency with standardised terms. No value for the deal has been disclosed.

"This is a great step for Entec," said its sales director Charlie Patterson. "This contract opens up a new market with huge potential for us. We are delighted to be working with LafargeHolcim, whose commitment to innovation and environmental sustainability reflects our ethos at Entec."

Patterson expects Entec to achieve a 12% reduction in freight, clearance and handling costs for Lafarge Africa in year one of the three to five-year contract. Supply chain consolidation is predicted to cut the number of shipments by more than half and will deliver a reduction in the volume of purchase orders and invoices currencies into a single currency, replacing multiple payment terms from different suppliers into a single payment term and converting multiple air freight shipments from Europe and China into consolidated ocean freight.



Uganda: Hima launches Supaset

afargeHolcim subsidiary Hima Cement has revealed its new dark-coloured Supaset, which it says provides a higher early strength (32.5R) with lower shrinkage than previous Supaset products, 'promoting faster working, enhanced productivity and cost optimisation,' according to Hima Cement marketing director Allan Ssemakula. "We shall see our customers enjoying the fast, more consistent, cost effective results synonymous with using Supaset," he added.

India: Wikov agrees Premium deal

Czech Republic-based Wikov has announced the conclusion of an agreement with Premium Transmission with the aim of bringing its gearboxes to the Indian market. The agreement entails Premium Transmission assembling Wikov gearboxes to install in projects across the country.



Bangladesh: New power plant for Confidence Cement

Confidence Cement's power supply subsidiary Confidence Power Bogra has entered operation at its new 113MW heavy fuel oil (HFO)-fired power plant at Birgram. The Financial Express has reported that it utilises Germany-based MAN's generators and a substation manufactured by China's XD. The Indian boilermaker ME provided the boiler. The power station will supply Confidence Cement's operations via repurchase from the Bangladesh Power Development Board.

France: Cement company supports Brest enlargement

afargeHolcim has fulfilled its contract with the Port of Brest for the delivery of 10,000t of cement and almost 0.17Mt of draining sand by sea to the port in the Département of Brittany. A Euro220m project has been underway since 2016 for expansion and diversification of the port's handling capacity, with completion scheduled for 2020. LafargeHolcim says that it proposed specific construction solutions for use of its materials in improving the accessibility of Brest's existing wharves and building a new 'heavy' wharf.

Left: Part of the Port of Brest, Brittany, France.

Ireland: Solid like-for-like picture at CRH

CRH's sales revenue grew by 4% on a like-for-like basis to Euro21.8bn in the first nine months of 2019. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) rose by 7% to Euro3.2bn. Sales grew fastest in its European and American heavy materials divisions with earnings growth more pronounced in North America than in Europe. The group reported growth in ready-mixed concrete and cement sales in North America as it continued to consolidate Ash Grove Cement into the business. Sales in Europe were generally good, although declining construction activity in the UK was noted due to market uncertainty related to the country's attempt to leave the European Union. CRH also reported falling sales volumes in the Philippines due to a slowdown in infrastructure spending.



Ireland: New non-executive director at CRH

CRH has appointed Shaun Kelly as a non-executive director and chairman of the Audit Committee. Kelly, aged 60 years, a dual Irish and US citizen, was the Global CEO of KPMG International until September 2019, where he was responsible for the execution of the firm's global strategy and for the delivery of various global initiatives.

Kelly is a fellow of Chartered Accountants Ireland, a US Certified Public Accountant and graduated from University College Dublin with a Bachelor of Commerce and Diploma in Professional Accounting.

UK: Breedon sales grow 8%

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Breedon Group's revenue grew by 8% year-on-year to Euro933m in the 10 months to the end of October 2019. Its cement sales volumes increased by 6% but its ready-mixed concrete sales fell by 5%. Aggregate and asphalt sales volumes also rose. The group said that its results were achieved against the backdrop of a flat construction market in the UK ,where lower industry sales volumes were recorded for all major heavyside construction materials in the nine months to 30 September 2019.

Ireland: Quinn board tells Sean Quinn to steer clear

The board of Quinn Industrial Holdings (QIH) has voted to send official correspondence to Sean Quinn, expected to contain a request that he keep his distance from operations. Quinn visited the company's 0.5Mt/yr Ballyconnell plant on 21 November 2019 and quarries earlier in the month.

The Sunday Independent reported that Quinn, who left his position as a consultant to his former enterprise in 2016, may be asked to return his company cars. Quinn has condemned attacks on staff, including the kidnap and torture of executive director Kevin Lunney on 17 September 2019, for which four men appeared in court charged with assault and false imprisonment on 26 November 2019.

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Spain: LafargeHolcim to reduce CO₂ emissions

afargeHolcim Spain plans to spend around Euro20m to reduce its CO₂ emissions. The funding will be used to upgrade its plants from 2019 to 2022 with the aim to reduce its emissions by 90,000t/yr. It plans to increase its usage of alternative fuels and reduce its clinker factor in its products. It follows European funding of Euro145m by LafargeHolcim across 80 projects in 19 European countries to reduce its annual CO₂ emissions by 15%. Overall the group hopes to reach by 2030 an average content of 520kg of CO₂ per ton of cement.

CEMENT NEWS

UK: Capital and Breedon combine forces in London

Breedon Southern, part of Breedon Group, plans to form a joint venture in London, trading as 'Capital Concrete' with Robert Brett and Capital Concrete's senior management. Three of Breedon's existing ready-mixed concrete assets will be combined with those of Capital Concrete, Brett's established readymixed concrete operation in London.

Capital Concrete currently operates seven ready-mixed concrete plants in Bow, Croydon, Romford, Rainham, Wembley, Silvertown and Staines. Breedon will contribute its plants in Cricklewood, Feltham and Enfield, together with Euro3.6m in cash, in return for a 43% interest in the joint venture. The remainder will be owned by Brett (43%) and management (14%).

Belarus: Cement exporters switch to EU destinations

Cement producers plan to switch imports from Ukraine to the European Union (EU). Architecture and Construction Minister Dmitry Mikulenok said that the decision was made due to tariffs in Ukraine, according to the Belarusian Telegraph Agency (BELTA). He said that the industry had moved away from exporting to Russia and that exports from Ukraine stopped in July 2019. He added that exports grew through the Belarusian Universal Commodity Exchange (BUCE) in 2018.



Russia: European certification for Maltovsky plant

Eurocement's Maltovsky integrated plant in Bryansk Region has gained European certification for its CEMI 52.5N, CEMI 42.5R and CEMII / A-S 42.5N products. Local testing and independent certification confirmed the new designation. Following an earlier certification for CEMI 42.5N the plant now hopes to grow its exports to the European Union (EU).

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Denmark: FLSmidth CFO leaves

LSmidth's chief financial officer (CFO) Lars Vestergaard has agreed with the board of directors to resign from the company, effective immediately. FLSmidth has stated as the reason for the change a need for 'a different set of competences to strengthen our organisation and execute long-term financial targets.' It thanked Vestergaard for his commitment and dedication in helping FLSmidth achieve milestones in 'creating a stronger and more focused organisation.' FLSmidth Head of Group Reporting and Compliance Naja Barrisøe supersedes Vestergaard as interim CFO until the newly appointed CFO joins the company on or before 1 July 2020.

Sweden: Slite conveyor halts plant

A failure on a conveyor belt between the kiln and a mill at the end of October 2019 caused a 'significant' loss of production at Cementa's Slite plant. The subsidiary of Germany's HeidelbergCement said that a temporary solution had been in place while repair work was carried out. It had been expected that this would be completed during December 2019.



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Belgium: 'Optimum' solvent for CCS

Δ team of researchers from the University of Mons in Hainaut province has concluded a study in the use of amine-based solvents for carbon capture on between 20% and 60% CO2 flue gas with funding from HeidelbergCement and the European Cement Research Academy. Lab tests and industrial-scale simulations showed that the solvents lowered regeneration energy, equivalent work and operating costs of carbon capture across the CO₂ concentration range of flue gases tested.

Spain: Cementos Molins secures loans

Cementos Molins has obtained loans from CaixaBank, Sabadell, BBVA, Santander and HSBC to a total value of Euro180m. EuropaPress has reported that the funds, consisting of a loan of



Euro40m and a Euro140m revolving credit facility, of which Euro50m will be immediately available, will be used to clear the company's debt and for future projects.



Spain: Cosmos can burn tyres

Votorantim Cimentos' Spanish subsidiary Cemento Cosmos has received authorisation for the combustion of tyres to fuel the kilns at its 1.6Mt/yr Toral de los Vados plant in León. At the time of publication, it was reported by Diario del León that the government of Castile and León would complete the necessary bureaucratic procedures finalising the permit before 25 December 2019.

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Paraguay: 6000t of cement imported in first month of derestriction

Cement has been entering Paraguay at a rate of 6000t per month, up by 500% from 1000t per month upon the removal of restrictions on 19 November 2019, as importers move to fill the supply gap created by falling domestic production. ABC has reported that the construction sector requires 100,000 bags/day of cement, of which the stateowned Industria Nacional del Cemento (INC) is currently providing 20,000 and Intercement 30,000. ABC has named neighbouring Argentina as a source of Paraguay's incoming cement.

Chile: 2.3% projected production rise year-on-year to 4.08Mt/yr in 2019

Data from the Chilean Construction Chamber show projected cement despatches of 4.08Mt in 2019, up by 2.3% year-on-year from 3.99Mt in 2018, a similar figure to 2017.

Panama: Cementos Progreso buys Cemento Interoceanico in Panama

Guatemala's Cementos Progreso has acquired a 100% Stake in Cemento Interoceanico. The latter company informed its staff that working conditions would remain unchanged, according to the Panamá América newspaper. Panama consumed 1.67Mt of cement in 2018. Imports increased by 2% year-on-year to 32,900t.

US: Fatal fall at Holly Hill plant

A LafargeHolcim employee who died at the company's Holly Hill plant in South Carolina fell from the fourth to the third floor before 9:00AM on 4 December 2019 and died at the scene. The State newspaper has reported that the Orangeburg County Coroner's Office and Sheriff's Office are investigating the fatal incident. Neither body has ruled out the possibility of criminal sanctions against the deceased's former employer.

Panama: Cement regulations tightened

New technical regulations for cement composition and behavioural characteristics entered force on 3 December 2019. All packaging must now display the contents' net weight, country of origin, cement type and production date. La Estrella newspaper has reported that the legislation gives enforcing power to the Ministry of Commerce and Industry's Directorate General of Industrial Technology Standards (DGNTI), the Consumer Protection and Competition Defence Authority (ACODECO) and customs authorities.

US: Eagle Materials swoops on Kosmos

Company to Eagle Materials for around US\$665m. The Mexican company owns a 75% stake in the company and Italy's Buzzi Unicem manages the remainder. It expects to receive US\$499m from the transaction. This will be spent on debt reduction and for general corporate purposes. The sale includes the 1.7Mt/yr Kosmos integrated cement plant in Louisville, Kentucky as well as seven distribution terminals and raw material reserves.

"This is another key milestone in achieving our 'A Stronger Cemex' objectives. Now, closed or announced asset sales are in excess of US\$1.3bn under this program. We are pleased with the continued favourable assetdivestment dynamics in our industry," said Fernando A Gonzalez, chief executive officer (CEO) of Cemex.

Completion of the deal, expected in the first quarter of 2020, is subject to regulatory approval.

Brazil: Votorantim's nine-month results benefit from strong domestic and North American sales

Markets in Brazil and North America have supported Votorantim Cimentos' sales in the first nine months of 2019, despite setbacks in Turkey and Latin America. Its sales revenue rose by 2% year-on-year to US\$907m in the nine months to September 2019 from US\$891m in the same period in 2018. Overall sales volumes of cement fell slightly to 8.4Mt. The cement producer's adjusted earnings before interest, taxation, depreciation and amortisation (EBITDA) decreased by 5% to US\$188m from US\$199m, with declines reported in all operation regions except North America.



Cuba: Siguaney plant fully operational

Following 18 months of reduced operations in which time maintenance and repairs on its grey cement kilns were carried out, Corporacion Cementos Cubanos' 0.7Mt/yr Siguaney plant is once more fully operational across its four wet lines. Esmerk Latin American News has reported that the company hopes to re-open its white cement kiln at the earliest possible date.



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Venezuela: Capacity utilisation projected at 12.5% in 2019

Venezuelan Chamber of Construction (CVC) president Mauricio Brin has estimated a capacity utilisation of 12.5% - corresponding to a production of 1.5Mt of cement from an installed capacity of 12Mt/yr. Noticias Financieras has reported that, according to Brin, production, which was hampered by power shortages, was sufficient to meet the construction sector's demand. "Public construction has stalled and private investment is restricted to limited office developments in state capitals," said Brin. He estimated a contraction of 95% year-on-year in construction compared to 2018.

US: Fire at Lehigh Cement Plant

A fire was successfully fought at Lehigh Cement's 0.8Mt/ yr integrated Tehachapi plant near Bakersfield, California, on 8 December 2019. The Bakersfield Californian newspaper has reported that there were no injuries and no cause of the fire has been identified. Access difficulties exacerbated by extreme weather conditions caused fire crews to make two additional assistance calls.

US: 13 Cemex aggregates operations win social and environmental awards

The National Stone, Sand and Gravel Association (NSSGA) has honoured Cemex USA's 'exemplary use of environmental controls and systems' at two quarries with its Environmental Excellence Gold Award. Its Center Hill quarry in Florida won a Community Relations Gold Award. Ten further aggregates operations won Silver or Bronze Awards in the Environmental Excellence or Community Relations categories. "We take pride in stewardship and serving as good neighbours in communities in which we operate and as examples others can emulate," said Jaime Muguiro, Cemex USA president.

US: Cement success inspires construction sector CCS efforts

The construction company Cross River has partnered with Canada-based proprietary technology manufacturer Svante to deliver industrial carbon capture and storage (CCS) projects. BusinessWire has reported that Svante has already supplied its CCS pipelines to the 1Mt/ yr CO₂ment concrete plant in British Columbia, a joint operation between Swiss LafargeHolcim and French Total which uses captured CO₂ to aerate its concrete.



US: Union takes legal action over Keystone sale

Union workers at the Keystone Cement plant in Bath, Pennsylvania, have started legal action against Giant Cement over its sale of Kosmos Cement to Lehigh Hanson. The American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) union says that the company must honour its contracts, according to the Morning Call newspaper. It is representing around 132 workers at Keystone's cement and aggregate operations.

According to the lawsuit, HeidelbergCement's subsidiary Lehigh Hanson announced in October 2019 that it would not accept or assume the terms of any existing contracts. The union claims that this contravenes a requirement that any new owners or operators of the plant assume the contracts in place at the time of sale. The sale of the plant to the US-based subsidiary of Germany's HeidelbergCement for US\$151m was announced in late September 2019. It is subject to regulatory approval.

US: Argos sells 28 ready-mix plants

Colombia's Cementos Argos has sold 28 ready-mix concrete plants. ValorFuturo has reported that Smyrna Ready Mix Concrete (SRM) has acquired the company's Arkansas, Georgia, South Carolina and Virginia assets. Cementos Argos stated that the reason for the divestments was the failure of the plants to generate operational efficiencies due to their small and isolated nature.

In 2018 Cementos Argos produced 5.3Mm³ of concrete at its 236 ready-mix plants in the US region, making it the second biggest domestic producer after Cemex. It ranked fourth for cement production over the period, supplying the US market with 4.7Mt of cement from its four integrated and three grinding plants.

US: Ash Grove backs higher education

reland's CRH's subsidiary Ash Grove Cement has engaged the education technology services provider Zovio Employer Services for the development of its higher education opportunities programme in partnership with Ashford University. "This provides employees with access to education to gain the right skill-set to advance into management positions. We also see the programme as a tool to attract new talent," said Darcy Pugh, Ash Grove Cement Employment and Compensation Manager. Ash Grove plans to offer a tuition assistance benefit to 3000 employees for bachelor's or master's degrees at Ashford University. The university will also provide some full tuition grants.

CEMENT NEWS

US: Lehigh Cement and Lehigh White Cement announce US\$12m clean air investment

ehigh Cement and Lehigh White Cement have agreed to an investment of US\$12m for the installation of pollution control technology across their 11 active cement plants. US Fed News has reported that the upgrades can be expected to reduce net emissions of nitrous oxides (NO_x) by 4550t/yr and sulphur dioxide (SO₂) by 989t/yr. Lehigh Cement will additionally pay a US\$1.3m civil penalty for past Clean Air Act violations.

Canada: Lehigh Cement enters CCS partnership

HeidelbergCement's Canadian subsidiary Lehigh Cement is trialling the cement industry's first full carbon capture and storage (CCS) installation at its 1.4Mt/yr integrated Edmonton plant in Alberta in partnership with Canada's International CCS Knowledge Centre. The installation will have a CO₂ capture rate of between 90% and 95% and receive an investment of US\$1.4m from the state government body Emissions Reduction Alberta (ERA). "We are part of HeidelbergCement's vision of CO₂neutral concrete by 2050 and are committed to leading global change for CCS in our industry," said Joerg Nixdorf, Lehigh Hanson Canada regional president.

US: Heliogen heats pre-calciners to 900°C straight from the Sun

alifornia-based Heliogen has developed concentrated solar-thermal plants (CSPs) with the ability to generate temperatures over 1000°C using computer-controlled mirrors. It has engaged Parsons Corporation to build arrays of its CSPs to heat cement pre-calciners. Requiring 900°C heat, these contribute the largest part of the industry's fuel-derived CO₂ emissions. The technology will firstly reduce this by replacing fossil fuels with a clean heat source and moreover make carbon capture and storage (CCS) of the remaining CO2 emissions from the conversion of limestone to lime easier by removing other pollutants, according to CEO Bill Gross. Heliogen is now targeting 1500°C from its CSPs, which would enable them to displace other fuels in kilns.



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Jacob Winskell, Global Cement Magazine

Review: International Cement Seminar 2019

Decade-long growth in the US economy was the topic of animated conversation among the 300 delegates and 86 exhibitors at the 38th International Cement Seminar & Exhibition in Atlanta, US on 19 - 20 November 2019. Here *Global Cement Magazine* presents a flavour of proceedings at the event.

Nothing blows away the cobwebs of trans-Atlantic travel quite like a keynote speech delivered to a packed-out conference hall by Portland Cement Association Chief Economist and Vice President Ed Sullivan. Addressing a mix of domestic and international delegates, including cement producers from Europe and the Far East, Sullivan launched proceedings at the 38th International Cement Seminar & Exhibition with a lucid and vigorous review of business in the US cement industry.

Construction, said Sullivan, has sustained cement consumption growth of between 1.6% and 2.3% annually, slightly behind GDP growth, since the global financial crisis. Rising house prices and mild inflation signify the continuation of the US economy's longest expansion post-World War Two. GDP growth has slowed and, according to Sullivan, will continue to do so, to 2.4% in 2019, 2.1% in 2020 and 1.7% 2021. Sullivan estimated that demand for cement will follow it, ending 2019 at 2.4% and falling to 1.7% in 2020 and 1.4% in 2021. A presidentially promised infrastructure investment totalling US\$2tn by 2029 seems set to protect cement from the cooling-off of private investment with 'the pentup demand zip that invigorates the initial stages of economic recovery now long past.' Uncertainty, however, is growing.

Below: Tina Rich (left) and Jacob Winskell (right) on the *Global Cement* stand.

Below right: The Cementos Argos Atlanta plant was visited by delegates the day after the conference.





Further presentations

17 presentations complemented Sullivan's overview with cement industry stories such as that of Lafarge-Holcim's modernisation of its Weirton Terminal, which distributes gas and oil well cements from West Virginia to the entire Appalachian region. LafargeHolcim Director of US Terminal Operations Jared Stull spoke about the guiding principles of the project: safety and sustainabilty. LafargeHolcim opted against using explosives for demolitions in line with its 'Zero Harm' principle. It also completed a freshwater mussel survey on the terminal's river, resulting in the successful relocation of all affected freshwater mussels to safe habitats.

Between presentations there were ample connections to be made with a range of suppliers who were happy to talk about their current research and development goals and challenges. Of particular interest were historical insights from longer-standing US cement technology suppliers about domestic production in light of recent events such as HeidelbergCement's takeover of Keystone Cement.

Plant visit: Argos Atlanta

Cementos Argos' 0.6Mt/yr Atlanta grinding plant receives clinker by rail, primarily from the company's Roberta, Alabama plant. It grinds white and grey cement for use in 600 differently-coloured mortars. The speed of the bagging process brought home the operation's scale. The plant uses North America's first Metral bagging machine in conjunction with Beumer conveyors to assemble a nine-layer stack of 43.1kg bags in minutes. It sources 100% of its gypsum from waste toilet bowl moulds.

The lasting impression from Argos Atlanta was of a self-assured domestic industry with a firm commitment to communities and sustainable practices.

Consider a question Ed Sullivan put to delegates in light of this: 'With a 60m population increase predicted by 2040, where will the US get its cement?' The answer lies at home in the US - from terminals like Weirton, West Virginia and plants like Argos Atlanta. Different players may arise and, like Keystone, fall, but the US cement industry is here to stay. **Subscribe**

Pakistan: Strong production continues

Cement producers in Pakistan have increased volumes in the five months to 30 November 2019 by 5.8% year-on-year to 20.5Mt from 19.9Mt. This represents 82% utilisation of its 55.9Mt/yr capacity. Exports over the period were 3.61Mt, up by 22% year-on-year from 2.97Mt in the same period of 2018. The All Pakistan Cement Manufacturer Association (APCMA) released a statement lobbying the government to intervene in replacing bricks, the production of which it says causes smog in central Punjab, with concrete blocks. "Government should start work on announced housing projects that would have a positive impact on the uptake of cement," it said.



Above: Sunset at Karachi Port. Exports from Pakistan have risen 22%.

Taiwan: Profit up for Taiwan Cement

Taiwan Cement's profit rose during the first nine months of 2019 due to stable cement prices and falling coal prices. Its net profit increased by 11.1% year-on-year to US\$214m in the nine month period, according to the Taipei Times newspaper. However, its sales revenue fell by 3.5% to US\$2.87bn. The cement producer says it has a production capacity of 102Mt/yr following the formation of a joint venture in Turkey and an acquisition in Portugal in 2018.

The company reported higher labour, transportation and raw material costs in China in the third quarter of 2019. Its expenses were also inflated by environmental upgrades. Company president John Li said that, despite falling prices in Guizhou province, demand in regional markets including Guangdong, Guangxi and Jiangsu provinces was expected to remain beneficial.

Azerbaijan: Cement production falls

Cement producers in Azerbaijan produced 2.8Mt in the 10-month period ending 31 October 2019, down by 3.4% from 2.9Mt in the corresponding period of 2018. Ready-mix concrete production swelled by 25% to 1.5Mt from 1.2Mt in 2018's first 10 months.

Pakistan: New plant to go-ahead despite protests

The Peshawar High Court has rejected a petition by local residents to prevent the construction of a US\$245m cement plant in Haripur by the military Frontier Works Organisation. The Balochistan Times has reported that the project will entail the relocation of people from an area of 0.66km² and the felling of 'thousands of trees.' The Supreme Court gave a preliminary hearing to the case on 2 December 2019.

Pakistan: DG Khan looking to upgrade

D^G Khan Cement has asked the government of Punjab province if it can expand the production capacity at one of its cement plants by 12,000t/day. Bloomberg said that it had seen a letter sent to the local government and that Javed lqbal Malik, a senior economic adviser at Punjab province's industries department, had confirmed receiving it. The approval process could take up to 12 months. If accepted the upgrade could see DG Khan Cement surpass Bestway Cement to become the country's largest cement producer with a production capacity of 10.7Mt/yr.

Vietnam: Production growth continues

The General Statistics Office has reported an estimated 9.6% year-on-year rise in cement production in November 2019 to 8.7Mt from 7.9Mt in November 2018. Vietnam News Brief Service reported in late 2019 that, if December 2019 delivered on the previous month's volumes, this would yield a production total for 2019 of 96.6Mt, up by 7.1% from 87.9Mt in 2018.

India: WHR expansion for UltraTech

UltraTech Cement has announced a planned expansion of its Bhogasamundram waste heat recovery (WHR) power plant to 36MW from 20MW. The plant serves its 5.6Mt/yr integrated Andhra Pradesh cement plant. The upgrade is part of an investment of US\$14.0m which will also serve to expand the area of the cement plant by 326 hectares.



India: JSW increases expansion plans

JSW Cement has revised a planned expansion of its 14Mt/yr total installed capacity to 39Mt/yr before 1 January 2023. This is an increase of 5Mt/yr compared to an earlier target of 34Mt/yr by 2020. The figure includes JSW's 54% subsidiary Shiva Cement's new 1Mt/yr integrated and 1Mt/yr grinding plant, valued at a total of US\$112m. Parth Jindal, JSW Cement managing director, said that the figure had been revised upward because Shiva Cement had become self-sufficient in clinker production, freeing the group's east Indian cement production from 'volatile import costs.'



Uzbekistan: Akhangarancement to grow

Russia's Eurocement has revealed that construction work cement plant in Tashkent region includes the installation of a second plant on the site, bringing its total capacity to 5.0Mt/yr. Trend News Agency has reported that suppliers have delivered 4500t of machinery to Akhangarancement, including a clinker cooler, clinker conveyor and heat exchanger as well as electrical equipment and building materials for a raw materials warehouse. Eurocement's total investment in the project has amounted to US\$200m.



Uzbekistan: Cement players will have to clean up their act

The State Committee for Ecology and Environmental Protection plans to ask cement plants to establish sampling and analysis stations for sources of air pollution by the start of 2022. If they don't the government will take measures up to and including suspension of production, according to the Trend News Agency. Uzbekistan was ranked in 16th place by AirVisual in a listing of the countries with the most air pollution in 2018.

India: HeidelbergCement to expand

eidelbergCement India is targeting expansion options to increase its production capacity to 20Mt/yr from 12.5Mt/yr. Managing director Jamshed Cooper said that the company is looking at companies in the range of 5 – 10Mt/yr in order to avoid the National Company Law Tribunal (NCLT) process, according to the Indo-Asian News Service. The cement producer is also planning to build a 22MW waste heat recovery unit at its Zuari plant in Yerraguntla, Andhra Pradesh at a cost of US\$28m. Debottlenecking initiatives are also being conducted at a cost of US\$7m to increase overall production capacity by 0.5Mt/yr when completed in 2021.

HeidelbergCement operates two subsidiaries locally: HeidelbergCement India and Zuari Cement. HeidelbergCement India serves the central markets and Zuari Cement, a former Italcementi subsidiary, focuses on the south of the country.

China: Cemex Ventures enters

Cemex's corporate venture capital subsidiary Cemex Ventures is preparing to enter the Chinese market to offer 'innovations for the construction industry.' It wants to build relationships with startups and has started by signing deals with local companies Glodon - a Beijing-based construction sector digital platform service provider - and Interdream Ventures - a venture capital firm that focuses on the digitalisation of the construction and decoration industry.

"This type of alliance between two segments that fit together, is key to finding new successful business models and operating in the Chinese market," said Juan Nieto, a representative of Cemex Ventures Asia. "Glodon and Interdream Ventures also have a complete vision of the entire value chain and are good partners to drive the construction revolution."

Nepal: Udayapur to upgrade

Ugrade to its 0.3Mt/yr integrated plant aimed at bringing its capacity to 0.4Mt/yr with an investment of US\$92,000 from the Ministry of Industry, Commerce and Supplies. Republica has reported that the company's Sindhali mine has resources to supply 200 years of production. "The company is self-sufficient in all raw materials except coal," said Nawal Kishor Shah, Udayapur Cement general manager.

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GLOBAL CEMENT NEWS: ASIA

Bangladesh: New plants for Premier Cement

Mohammed Amirul Haque, the managing director of Premier Cement, says that the company has built two more units at Narayanganj and Chattogram for around US\$150m. He said that the upgrade has increased the company's production capacity to 5.2Mt/yr from 2.4Mt/yr, according to the Daily Star newspaper. The new units are currently at the trial stage. Vertical roller mills (VRM) supplied by Denmark's FLSmidth will be used to attain production rates of 460t/hr and 270t/ hr at the new plants in Narayanganj and Chattogram respectively.

The expansion plans were initiated in 2017. At present the country has a cement production utilisation rate of 57%. Bangladesh's *per capita* cement consumption is around 181kg. It is expected to increase to 220kg by 2020.

China: KHD reports Pyroredox success at Weihui

KHD has reported NO_x emissions consistently below 50mg/Nm³ at Tianrui's 2.0Mt/yr Weihui integrated cement plant in Henan province, where its PyroREDOX gasifying reactor has been installed between the kiln inlet chamber and preheater calciner. NO_x levels fell by 66%, while reagent usage fell by 78% compared to use of the plant's selective non-catalytic reactor without a PyroREDOX fitted. No extra power or fuel was used and production was unaffected.



GLOBAL CEMENT: PHILIPPINES

'Build, Build, Build'-ing in the Philippines

Global Cement turns its attention to the Republic of the Philippines, an archipelagic nation that's seen a lot of cement sector changes in recent years...

The Republic of the Philippines is a large archipelagic nation in South East Asia. Unusually for the region, the country is predominantly Christian, a characteristic it traces back to its 377 years as a Spanish colony and 44 years as a US protectorate. Fully independent since 1946, the country is today classified as 'newly industrialised,' with the sixth-largest economy in Asia, with a GDP of US\$877bn in 2017. Its economy was relatively resilient to the economic shocks of the 2010s, with strong domestic consumption and low unemployment.

However, the country's wealth has been spread unevenly, both within major cities and between cities and poorer rural communities. This was one of a number of contributing factors to the election of the current nationalist President Rodrigo Duterte in June 2016, ostensibly on a poverty alleviation ticket. As well as running a notorious campaign against criminal gangs, which Duterte claims represent a major barrier to wealth generation and distribution, the nation's poor infrastructure was also identified as an obstruction to growth. In 2017 the administration pledged that US\$165bn would be spent on infrastructure by the end of Duterte's term in 2022. The government's 'Build Build Build' programme is driving construction across the country. Major projects include a proposed new US\$14bn airport for the capital Manila and a plethora of highways, railways, water projects and public buildings.



Cement demand, production and prices

The strong emphasis on construction has been fantastic news for the country's cement producers. Cement sales rose from 24.4Mt in 2015 to 26.0Mt in 2016, according to the Cement Manufacturers Association of the Philippines (CMAP). While CMAP no longer publishes cement sales figures for the sector, other sources indicated at the start of 2019 that demand had reached 32Mt/yr, with domestic suppliers only able to provide 27Mt/yr. The Department for Trade and Industry reports that the balance has been made up by imports, which increased from just 3558t in 2013 to 3Mt in 2017 and then 5Mt in 2018.

Following a period during which it was free to import cement into the Philippines, a US\$4/t import duty was implemented in January 2019. This did not appear to have a significant impact on cement imports during the first quarter of 2019. Indeed, imports rose by 64% during that period to 1.74Mt, according to the Philippine News Agency.

On September 2019 the DTI introduced a permanent customs duty on imported cement of US\$4.81/t. The Manila Times reports that the measure is subject to annual review and will be in place for three years, decreasing by US\$0.48/t/yr. Philippine law allows for the imposition of such measures where an appointed advisory body has determined that increased imports 'threaten to substantially cause injury to the domestic industry.' The advisory body in question is the Tariff

Commission, which had previously suggested a levy as high as US\$5.68/t.

Trade Secretary Ramon M Lopez said that the government needed to take care to manage imports while allowing the construction sector to continue to grow. The impact on cement prices has been moderate. From US\$98.6/t in early January 2019, they reached US\$108.25/t by September 2019. Vietnamese producers have been the largest beneficiaries of the price hike, with 75% of the Philippines' imported cement originating in Vietnam.

When the levy was announced, the Philippine Competition Commission (PCC) said that it would impact upon its investigations into an alleged 'cartel' of cement producers dating from 2017. PCC Chair Arsenio Bal-

Below: Downtown Manila and Manila Bay, in the National Capital Region of the Philippines. In May 2017 President Duterte committed to the construction of New Manila Bay - City of Pearl, a Dubai-style land-reclamation project that will see 407 hectares of new commercial, residential and open space developed in Manila Bay. However, as of March 2019 the project was reported as being in the application stage. **GLOBAL CEMENT:** PHILIPPINE

isacan noted that it was a clear danger to have 'an ongoing investigation and introducing a policy that could influence the outcome of that investigation.'

Elsewhere, there have been rumours since at least February 2019 that the DTI would introduce a maximum price on cement in order to protect local construction firms from high prices. However, this has not been deemed necessary so far.

Cement plants on the ground

There are 16 active integrated cement plants in the Philippines that share a combined capacity of 33.6Mt/ yr, according to research undertaken towards the publication of the Global Cement Directory 2020. The country is also home to three active grinding plants with a total of 2.2Mt/yr. Taken together, these 19 plants have a headline capacity of 35.8Mt/yr of cement. There are also two closed / mothballed integrated plants and two under construction, as well as three mooted grinding plants.

Figures 1 & 2 show that the majority of cement production capacity in the Philippines is located in the most populous areas. This is clearest in the region surrounding the capital Manila. The three most populous regions, Calabarzon, the National Capital Region (NCR) and Central Luzon, are home to 38.6 million of the Philippines' 105 million inhabitants, 37% of the population. However, their combined cement capacities are 20.4Mt/yr, 57% of capacity.

Cement producers background

The past five years have been a time of significant change for the cement sector in the Philippines. Prior to the announcement of the LafargeHolcim merger, the two dominant players were Holcim Philippines (85.5% Holcim) with 7.6Mt/yr of capacity, and Lafarge



Republic (100% Lafarge), which operated 5.6Mt/yr of capacity. In July 2014 it was proposed that Lafarge Republic and Holcim Philippines would explore the combination of their businesses other than Lafarge's Bulacan, Norzagaray and Iligan plants, which would have to be divested.

These were sold to Ireland's CRH, which took on the assets of Lafarge Republic Inc., Luzon Continental Land Corporation and Lafarge Cement Services Philippines, Inc., including assets related to the Bulacan quarry. LafargeHolcim kept Lafarge Iligan, Inc., Lafarge Republic Aggregates, Inc., Lafarge Mindanao, Inc., and certain assets related to the STAR Terminal and the Pinagtulayan islands. On 18 May 2015 it was announced that Aboitiz Equity Ventures Inc had signed a deal to join CRH as a joint-venture partner.

Above: Cemex has been active in the Filipino cement sector since 1997. Source: Cemex Philippines website.

Below left- Figure 1: **Regions of the Philippines** colour-coded according to population.

Below - Figure 2: Active cement plants in the Philippines. Regions are colour-coded according to cement production capacity. Source: Research towards Global Cement Directory 2020.

INTEGRATED - 33.6Mt/yr



Top 5 players in 2020

LafargeHolcim: The largest cement producer in the Philippines at the start of 2020 is the Swiss-French giant Lafarge-Holcim, which operates 9.9Mt/yr of capacity across four integrated plants (9.1Mt/yr) and one grinding plant (0.8Mt/yr).

LafargeHolcim added 0.7Mt/yr of capacity to its Davao plant in 2019. The expansion involved the commissioning of a finish mill and installation of a new pipe for loading cement to the plant's silos from its pier, eco-hoppers to improve dust emissions and an overhead crane. Cold commissioning started in April 2019, while full production began in late June 2019. The company is also upgrading its 3.3Mt/yr Bulacan plant to 5.3Mt/yr, to give a future capacity of 11.9Mt/yr.

Holcim Philippines improved its profit in the third quarter of 2019 by 158% year-on year to US\$9.00m from US\$3.48m. Its sales in the quarter fell by 2.7% year-on-year to US\$163m from US\$167m in 2018. The company sustained price increases in spite of lower demand causing a fall in volumes. Holcim Philippines' sales in the first nine months of 2019 fell by 13% to US\$465m from US\$536m in the corresponding period to 30 September 2018. Upgrades to its La Union and Davao cement plants in previous quarters dragged on nine-month profit, which rose by 7.9% year-on-year to US\$36.9m from US\$34.2m in the corresponding period of 2018, but paid dividends in the third quarter, boosted by the resumption of state infrastructure spending.

Below: Eagle Cement's integrated plant, photographed prior to the addition of its third line. Source: Eagle Cement website





Eagle Cement: Eagle Cement (7.7Mt/yr) is the second-largest cement producer in the Philippines. It

is locally-owned and has been making cement since 2010. In 2020 it operates a three line 7.1Mt/yr integrated plant and 0.6Mt/yr grinding plant.

At the start of 2019 Eagle Cement's T integrated plant was already the country's largest, with two kiln lines and 5.1Mt/yr of capacity. In 2019 a third line was added, providing an additional 2.0Mt/yr of capacity. The producer will shortly add a further 1.5Mt/yr of clinker grinding capacity to the plant to fully unleash its integrated plant's capabilities and take its overall capacity to 8.4Mt/yr. It is also building a 2.0Mt/yr plant in Cebu.



Eagle Cement continued its positive earnings momentum in the first nine months of 2019, with a 35% year-on-year increase in net income to US\$91.9m. Its sales for the period were US\$299m, a year-on-year rise of 19%.

> CRH-Aboitiz: The third largest producer and second multinational by installed capacity in the Philippines is CRH-Aboitiz, via the subsidiary Repub-

lic Cement (6.9Mt/yr). Republic Cement is the third largest operator overall. It runs five integrated cement plants (6.1Mt/yr) and one grinding plant (0.8Mt/yr).

> CRH's global sales revenue grew by 4% on a like-for-like basis to Euro21.8bn in the first nine months of 2019. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) rose by 7% to Euro3.2bn. The group reported lower sales in the Philippines, which it attributed to a general slowdown in infrastructure spending over the nine month period as a whole.



Cemex: The Filipino subsidiary of Mexican cement major Cemex is

the fourth-largest cement producer in the country and third-largest multinational via two subsidiaries: APO Cement and Solid Cement. It entered the market in 1997 and today operates two integrated plants (6.2Mt/yr).

Cemex Philippines ordered an MVR type mill for cement raw material grinding from Germany's Gebr. Pfeiffer for its Solid Cement plant in Antipolo in October 2019. The order also

GLOBAL CEMENT: PHILIPPINES



included an MPS mill to grind coal. The order was received through a Chinese general contractor but no value or timescale was disclosed.



Cemex Philippines recorded a profit of US\$17.1m in the nine months to 30 September 2019, compared to a loss of US\$13.0m in

the corresponding period of 2018. The company attributed the turn-around to steadily growing sales, up by 1.7% year-on-year to US\$360m from US\$350m, foreign exchange gains and lower income tax expenses, in spite of falling domestic volumes.



Taiheiyo Cement: The Japanese cement producer Taiheiyo Cement operates a 2.3Mt/yr integrated cement plant in Cebu, which is currently undergoing expansion to 5.2Mt/yr.

Smaller players

The top five cement producers in the Philippines share 33.0Mt/yr (92%) of the country's capacity. A further three share the remaining 2.8Mt/yr (8%) of capacity across three integrated plants.

Northern Cement Corporation (NCC) was established in 1967. NCC's integrated plant in Pangasinan was upgraded extensively in the 1990s to a capacity of 1.2Mt/yr. NCC is reported to be in the process of building a second plant, a 2.0Mt/yr facility in Bulacan. The company is 35% owned by First Stronghold Cement.

Elsewhere, **Goodfound Cement** operates a 1.0Mt/yr integrated cement plant in Camalig, Albay, while **Mabuhay Filcement** operates a 0.6Mt/yr integrated plant in South Pobacion, Cebu.

Deals to watch in 2020

Those who followed the cement news in 2019 will know that the LafargeHolcim merger was only the start of major restructuring of the Philippines' cement sector. This is because LafargeHolcim decided to exit the market in May 2019, when it agreed to sell its entire holding in the Philippines to San Miguel Corporation's subsidiary First Stronghold Cement. The multinational left the entire South East Asian market in a major readjustment of its global footprint in 2019. The company sold a total of 34Mt/yr of cement capacity as it left the region, cutting its capacity by around 12% to 278Mt/yr.

However, the deal with San Miguel has attracted the attention of the Philippine Competition Commission (PCC), which reported in November 2019 that it was considering voluntary commitments submitted by First Stronghold Cement and related parties. This is due to First Stronghold Cement already having a 35% stake in Eagle Cement, the country's secondlargest cement producer.

Initial findings by the PCC on the proposed purchase found it could affect the market concentration of relevant products in parts of Luzon, and Northern and Southern Mindanao. This would normally prompt a stage two review of the proposed acquisition. It is possible that divestments prior to completion of the deal could help avoid this step.

The transfer of Holcim Philippines to San Miguel Group, which is likely to be completed in 2020, will drastically alter the Philippines' cement sector landscape (See Figure 3). This is before one even considers the potential sale of CRH-Aboitiz's assets. CRH engaged JP Morgan to investigate the sale of its entire operation in the Philippines in November 2019. At the time, The Irish Times reported the estimated value of the divestment as Euro1.82-2.73bn. No buyer has come forward to date.

Below: The Republic Cement plant at Batangas has been owned by CRH and Aboitiz since 2016. Source: CRH-Aboitiz website.



New plants on the horizon

With such significant imports heading into the Philippines in 2019, there is strong impetus to build new cement capacity in the country itself. Indeed, there are three major projects currently in the pipe-line from a mixture of established producers and newcomers.

In June 2019 **Eagle Cement** announced that the opening of its new Malabuyoc integrated 2.0Mt/ yr plant in Cebu has been delayed by six months to mid-2021. The new unit had been scheduled to start operation in late 2020 but has been delayed due to issues obtaining permits. The project will bring Eagle's capacity to 10.4Mt/yr, perhaps enough to make it the market leader, depending on divestments elsewhere.

Big Boss Cement and **Petra Cement** are spending US\$193m on cement grinding plant projects in Pampanga and Zamboanga. Big Boss Cement is building four cement lines at its Pampanga plant, while Petra Cement is building two lines at Zamboanga del Norte. Both companies have the same shareholders, led by prominent businessman Henry Sy Jr.

Company President Gilbert S Cruz said that the companies will spend US\$135m at Pampanga plant and US\$58m at the Zamboanga plant. Each line

Republic Cement and Nestlé launch co-processing scheme

Republic Cement and Nestlé Philippines signed an agreement to co-process Nestlés post-consumer plastic waste in Republic Cement's cement kilns in May 2019. The deal was signed by Nestlé Philippines' Chairman and CEO Kais Marzouki, its Corporate Affairs Head Attorney Ernesto Mascenon and Republic Cement's Renato Sunico and Nabil Francis, CEO of Republic Cement Services. In April 2018, Nestlé globally announced a commitment that 100% of its packaging will be recyclable or reusable by 2025. The company's vision is that none of its waste ends up in landfill or as litter.

"Nestlé is aiming for plastic neutrality, essentially recovering plastics equal to what we produce," said Marzouki. "Aside from our current collection and recycling initiatives, we believe this effort will help us gather and co-process bigger volumes of post-consumer waste. We target to divert more post-consumer waste from landfills and the ocean. This partnership will contribute positively in helping clean up the Philippines."



will have a cement production capacity of around 0.5Mt/yr. The company reports that construction of two production lines was completed at the Pampanga plant at the end of 2019 and that the remaining two are scheduled for completion in the first quarter of 2020. Big Boss Cement and its related companies also plan to build new plants at General Santos, Negros and Iloilo. It aims to reach a production capacity of over 5Mt/yr by the mid-2020s.

The company says it is using a ground activated sand by heating (G-ASH) process to produce a binding material for concrete that does not use imported clinker. It has claimed that it is the first cement company in the world to do so.

In October 2019 **Phinma Corporation** announced that it would spend US\$50m on a new grinding plant at Bataan with a production capacity of 2Mt/yr. Philcement, a subsidiary of Phinma Corp. and Seasia Nectar Port Services (SNPS), have signed a deal to take over certain construction-in-progress assets, including the usage rights to pier facilities and land currently under lease by Philcement, for a terminal for US\$15.5m, according to the Philippine Daily Inquirer newspaper. President and CEO Eduardo Sahagun said that the company would need up to

US\$35m to complete the project. Once competed it will be possible to expand the unit to 4.0Mt/yr, depending on market demand.

In addition to the above, the major Filipino construction conglomerate **DCMI Hold-ings** has hinted at a number of cement plant projects over the years, most recently in 2017, when it stirred rumours of a new integrated plant on Semirara Island in Western Visayas. It previously announced three grinding plants in 2016. However, none of these projects appears to have made it to completion at the time of publication.

Future

Figure 3 shows that, should all of the planned capacity additions be realised, the next two years to the end of 2021 could see the addition of a further 7.7Mt/yr of cement production capacity to 43.5Mt/yr. This is around 21% more than 35.8Mt/yr at present. While some projects may fall by the wayside, it seems very likely that the Philippines' cement capacity will exceed 40Mt/yr in the near future.

There are still two and a half years of President Duterte's six year Presidential term left. If the emphasis on '*Build Build Build'*ing remains strong, the cement sector of the Philippines will be well supported by growing local demand as it expands its capacity.



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Algeria: Cement exports boom

A lgeria's estimated value of exported cement in 2019 was US\$60m, up by 200% from US\$20m in 2018. Algerian Trade Minister Saïd Djellab noted increases to grinding capacity in Guinea Bissau, Senegal, Gabon and Mali as a potential source of revenue from clinker exports, according to L'Expression. "Algeria can meet the needs of these markets and become their leading supplier of clinker in 2020." The minister estimated that "cement and clinker exports will reach US\$400m by 2021."

Saudi Arabia: Najran Cement establishes transport division

Najran Cement's board of directors voted on 27 November 2019 in favour of the establishment of a limited liability transport company. Due to market conditions, the new subsidiary will not be incorporated until 30 June 2020. Najran Cement did not confirm the size of the investment in its statement.

Nigeria: Dangote director quits

Dangote Cement's non-executive director Fideli Madavo has resigned from his position on the company's board. Madavo represented the stakeholder Public Investment Corporation (PIC), South Africa's state pension fund, where he is head of resources and portfolio manager for strategic and African listed investments. The company has not stated a reason for the change.



Zimbabwe: Lafarge Cement invests in mortar production

afargeHolcim subsidiary Lafarge Cement Zimbabwe has announced a planned investment of US\$15.0m in a dry mortar production line to diversify its product base. All Africa has reported that construction will begin in January 2020.

The company stated that it would conclude registration of a US\$28.5m loan from the reserve bank of Zimbabwe before the end of 2019.

Kenya: Mombasa Cement completes wind farm for upgraded Vipingo plant

Mombasa Cement has completed construction of a 36MW wind farm consisting of 12 3MW turbines in Vipingo. Bahrain News Agency has reported that the plant will power Mombasa Cement's 1.6Mt/yr integrated Vipingo cement plant, with surplus to be sold to the state-owned power provider Kenya Power. A US\$73m modernisation to clinker production is currently underway at the Vipingo plant.

Iraq: Iraqi-Iranian government US\$35m joint effort nears grinding plant completion

ran's Khuzestan province plans to invest in a US\$35m cement plant project in Al-Emareh. Deputy Governor General for Coordinating Economic Affairs Nourollah Hassanzadeh said it was a joint initiative with Iraq, according to the Islamic Republic News Agency (IRNA). The project was launched in the mid-2010s and is reported to be in its 'final' stages. The Iranian province borders Iraq and it hopes to increase its international investment profile.

Oman: Oman Cement appoints Fatick Hussain Al Balushi its CFO

Oman Cement Company has appointed Fatick Hussain Al Balushi as its chief financial officer (CFO). Fatick holds over 15 years of experience in the oil and gas and petrochemical industries. He worked for the Oman Oil Company and its subsidiary, the Salalah Methanol Company, in a variety of roles including financing manager for the ammonia project, head of finance and information technology (IT) and finance director. He is an alumni of the Sultan Qaboos University in Oman and the University of Leicester in the UK.

Zimbabwe: Lafarge Cement blames high costs and low demand on economy

afargeHolcim subsidiary Lafarge Cement Zimbabwe has complained of implied year-on-year inflation of 350% in September 2019 having had possible knockon effects on its business. Company secretary Flora Chinhaire blamed a 19% year-on-year drop in domestic consumption on 'declining demand from homeowners due to escalating mortgage financing costs' and the effects of foreign currency constraints on payments to suppliers for capital expenditure projects. All Africa has reported that power supply issues and unplanned stoppages caused a 1% decline in productivity at Lafarge Cement Zimbabwe's 0.5Mt/yr integrated cement plant, where it operates a single wet production line.

The International Monetary Fund (IMF) has estimated a 5.3% contraction in Zimbabwe's gross domestic product (GDP) in 2019.

CEMENT NEWS

Morocco: HeidelbergCement reduces Ciments du Maroc stake

HeidelbergCement has reduced its 56.4% stake in Ciments du Maroc's share capital by 3.4% to 51%. HeidelbergCement chairman Bernd Scheifele expressed the company's commitment to retaining its majority stake in the total 5.6Mt/yr-capacity cement producer. Scheifele explained that the decision was 'aimed at generating cash to speed up deleveraging,' and that it was 'well on track' to reach its Euro1.5bn disposal target by the end of 2020.

Nigeria: CCN-Obu Cement merger moves ahead for legal ratification

1 57 of Cement Company of Northern Nigeria (CCNN)'s 170 accredited shareholders have voted in favour of the company's planned merger with Obu Cement. The Nation newspaper has reported that the company will submit the result to the Securities and Exchange Commission, which will duly ratify it with the federal High Court, formalising the merger in law.

UAE: 48,000t of cement imported from Iran in six months

Figures from Iran's Qeshm Free Trade Zone suggest that cement supply is struggling to fulfil demand in the UAE, as 48,000t of Iranian cement entered the country in the six months ending 21 September 2019. Cement from across the Gulf helps serve the consistently growing needs of the country's construction industry.

Egypt: Titan becomes Alexandria Portland Cement majority owner

Greek-owned Titan Cement has made a major acquisition in buying the International Finance Corporation (IFC)'s 17.3% stake in Alexandria Development Ltd. Alexandria Development Ltd was 82.7% indirectly held by Titan Cement. It is the 88.9% owner of Alexandria Portland Cement, according to Mubasher News. Alexandria Portland Cement made losses of US\$4.56m in the nine months to 30 September 2019.

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Nigeria: Government calls for Ajaokuta -Otukpo railway completion

The Senate of Nigeria has urged the Federal Ministry of Transportation to complete the construction of the Ajaokuta - Otukpo railway line. The legislative chamber also advised the ministry to include a siding at Okaba to Ankpa as part of the project to make coal transportation easier, according to the Vanguard newspaper. Cement companies, including Dangote Cement's Obajana plant and the Kogi State Super Cement Company at Allo-Itobe, would benefit from reduced coal prices.

Egypt: Alexandria Development Ltd places Alexandria Portland Cement takeover offer

Alexandria Development Ltd, which owns an 88.93% stake in Alexandria Portland Cement, has submitted an offer for the remaining 11.07% of the company. In a statement to the Egyptian Exchange it stated its intention to delist Alexandria Portland Cement after completing its acquisition of the latter. Alexandria Development Ltd's indirect owner is Greece-based Titan Cement.

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Robert McCaffrey, Global Cement Magazine

Review: 24th Arab-International Cement Conference & Exhibition

The AUCBM's 24th *Arab International Cement Conference & Exhibition* (AICCE24) has successfully taken place in Cairo, Egypt, with 700 delegates and 115 exhibitors in attendance. The next edition is expected to take place in November 2020.

Right: Some of the 700 delegates that assembled in Cairo for the AICCE24 event in November 2019. Scan the QR Code to view *Global Cement's* video of the event, on YouTube.



Below: The Nile flows placidly through the centre of Cairo.

Below left (inset): Garkoitz Elvira, area sales manager for Spanish foundry company Estanda, was busy on his stand.

Below right (inset): Staff and visitors to the RHI Magnesita stand pose for the camera during a quiet moment. The well-organised AICCE24 event took place at the luxurious Intercontinental Citystars in Cairo. The atmosphere was generally moderately upbeat amongst exhibitors, with projects and upgrades underway around the region, albeit that 'business could always be better.' It was notable that around 25% of exhibiting companies were Chinese, a larger proportion than ever before. Overcapacity and low cement prices were a common topic of conversation for cement producers, with alternative fuels being an increasingly popular option to try to decrease

costs. The event featured over 50 presentations and only a flavour of the programme can be given here.

Mahmoud Nast of FLSmidth presented its new overarching programme, entitled 'Mission Zero.' This involves zero emissions, zero waste and 100% fuel flexibility (using the FLSmidth portfolio of alternative fuel equipment) and a patented clay calcination process to promoted a lower clinker factor.



Nast suggested that CO_2 taxes are likely to come to Egypt and to the wider Middle East before too long. The company is targeting the ability to construct zero- CO_2 cement production equipment by 2024.

Marcus Sauer from thyssenkrupp Industrial Solutions also gave details of how his company is seeking to reduce CO_2 emissions from the cement industry to zero, using a variety of approaches and



GLOBAL CEMENT: EVENT REVIEW



is not only about driving profitability, but also is about health and safety, about reducing environmental impacts and is attracting the new generation of workers to the cement industry. Digitalisation encompasses automation, robotics and operational hardware (autonomous operations, sensors); the digitally-enhanced worker (mobility, virtual reality, augmented reality, wearable technologies and

Left: Eng. Ahmad Al-Rousan, Secretary General of the AUCBM, welcomes delegates to the event.

tools. The message from these two companies seems to be that a great change is coming down the road towards the cement industry (of net-zero- CO_2 cement) and that they will be ready to act for their future customers - particularly when their customers are prepared to partner with them in research and development.

Later in the programme, **Ebrahim Honar** of FLSmidth said that digitalisation





Far left: Fady Johnny, business development manager at Bosch Rexroth, on the Hägglunds stand.

Left: Delegates from CNBM Kivay International Engineering Co, Ltd. were among many coming from China to exhibit at the event.

CICSA CICSA



remote operating systems); integrated platforms and ecosystems (IT, operational technology (OT), operations planning, digital monitoring, cyber security); and next generation analytics and decision support (algorithms for real-time decisions, production optimisation, artificial intelligence (expert systems, fuzzy logic, inference Far left: CICSA, Italian manufacturer of chains, had a well-position exhibition stand at the event.

Left: Eng. Mai Kanaan (left) and Suha Canaan - exhibition and conference organisers respectively - stayed calm, despite the huge pressure of organising the event.



GLOBAL CEMENT: EVENT REVIEW



Above: Anteo Carrara, area sales manager for Bedeschi, promoting his company's handling, storage and reclaim equipment.

Above right: Roland Martini, area manager for the Middle East for Gebr. Pfeiffer, promoting his company's unique grinding mill solutions.



Below: The Pyramids of Giza.



rules, machine learning, deep learning, smart objects, decision trees), advanced analytics, modelling, digital-twin simulation, asset performance monitoring and predictive asset management). There are a lot of 'buzz-words' in there, but together, they add up to 'Industry 4.0' and the potential transformation of the industry.

On the second day of the conference, **Jan Tuma** of Beumer Maschinenfabrik spoke on new trends in alternative fuels handling, and mentioned a new



conveyor type, similar to a pipe conveyor, but in a 'U' shape, allowing the conveying of very coarse alternative fuels, even 3D shapes of 30 x 30 x 30cm.

Nijat Orujov of the VDZ pointed out to delegates that alternative fuels can have negative effects on the cement production process, including a higher specific waste gas volume and pressure drop, an increase in electrical power demand and reduced production, an increase in specific heat demand and generally an increase in chlorine and sulphur input into the system. In addition, as part of alternative fuel management, silos, storage, dosage and transport systems are required for AF, alongside a high-momentum burner, adaptation of the calciner to allow adequate residence time for the burnout of fuels and additional requirements for quality control. He concluded that the VDZ can help cement producers to burn more alternative fuels.

Mads Nielsen of FLSmidth unveiled a new design for a new lower- NO_x ILC calciner, which features a lower compact reduction zone, and an upper extended higher-temperature oxidation zone. The new design offers the possibility of lower NO_x production without the need for SNCR.

Çaglan Becan spoke about the establishment of the World Cement Association and its activities so

> far. 55 cement companies are now members of the WCA, with a number of engineering companies signed up as associate members. Along with sustainability and innovation, Çaglan identified the internationalisation of the global cement industry as a major trend. The association's latest policy is for all members to engage with new technology in order to fully decarbonise the industry by 2050.

> The event concluded with a well-attended gala dinner and promises from delegates to meet up again in November 2020, at a location yet to be announced.



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Lukas Steiner, Wikov Industry

Review: Wikov Gear Technology Conference

The inaugural Wikov Gear Technology Conference took place at the Royal Maxim Palace Kempinski in Cairo, Egypt, on 30 October 2019. The event, organised by Wikov Gear in association with its Egyptian representative ELRaise Trading & Engineering Company (ETEC), hosted around 70 cement sector delegates from Egypt and neighbouring countries...

Right: Tomas Zrostlik, General Manager of Wikov Gear presents the history of the Wikov brand.

Right: Delegates were brimming with questions for the presenters.

Wikov's inaugural Wikov Gear Technology Conference began with a presentation on the history of the brand, which is rooted in the Škoda group from Pilsen, Czech Republic. It explained the historical presence of Czech gearboxes in the local, and subsequently international, markets. A second presentation provided a summary on the diverse types of cement sector gearbox available on the market in the present day, bringing in user experiences from around the world.

The third presentation introduced the assembled delegates to the Orbi-

fleX^{*} planetary gearboxes with flexible pins, a technology developed by Wikov in collaboration with UK inventors. This kind of gearbox can be used reliably in sectors where shocks are likely, such as roller presses, cement raw mills and others. The presentation also introduced Wikov's online condition monitoring system WiGuard for diagnostics and preventative maintenance.

Each presentation was well attended and was followed by detailed question and answer sessions, as well as interactive quiz sessions with small prizes. After a sumptuous lunch, Wikov demonstrated its new online gearbox configurator platform. It allows



potential users to select a planetary gearbox setup, generate technical PDFs and 3D models and send requests for information to Wikov, all online.

Delegates were pleased with the technical information provided by Wikov and the very friendly atmosphere at the event.





Right: Delegates pose for a group photo after the event.

GLOBAL CEMENT MAGAZINE: PRICE

Here Global Cement Magazine presents its monthly review of global cement prices, in US\$ for easy comparison. Additional price information is only available to subscribers to Global Cement Magazine. Subscribe on Page 68. In this issue subscribers receive extra price information from Egypt as well as from the Philippines, Uzbekistan, the DRC, Paraguay, Malaysia and the EU ETS.

Prices are for metric tonnes, unless stated otherwise. US\$ conversions from local currencies are correct at the time of original publication.

China: All-Chinese average cement prices according to data from sunsirs.com: 1-2 December 2019 = US\$76.27/t; 3 December 2019 = US\$77.35/t; 4 December 2019 = US\$77.44/t; 5 December 2019 = US\$77.49/t; 6 December 2019 = US\$77.55/t.

Huaan Securities reported that cement prices surged in Henan Province in November 2019, as some producers increased their prices for nine consecutive days. The price of 42.5 bulk cement to the factory exceeded US\$100/t, constantly refreshing historical highs, becoming the focus of market attention. It then fell to US\$83.83-88.08/t after 24 November 2019 when cement producers were able to resume production in the Province after temporary closures due to heavy air pollution.

On 3 December 2019 it was reported that the relevant departments of the National Development and Reform Commission would hold a symposium to analyse the reasons for the rise in the prices of raw materials and determine the later trends. It is reported that this meeting required Shanghai Futures Exchange, Zhengzhou Commodity Exchange, Dalian Commodity Exchange, China Iron and Steel Industry Association, China Cement Association, China Building Glass and Industrial Glass Association and other units to participate and required relevant units to



submit relevant materials. Several cement companies in Shaanxi Province have also increased their prices, including Shengwei Building Materials, Jidong Cement, and Yao-

bai Cement. T o n g c h u a n Shengwei Building Materials issued a price adjustment notice on 2 December 2019, saying that due to a combination of factors such as winter peak shift production, shortage of major cement materials, and significant increases in production costs, the company's actual inventory remained at a low level. It increased its prices by US\$4.26/t on 2 December 2019.

In terms of regions, cement prices in most regions have increased year-on-year. The regions with the highest increase this year were mainly distributed in Central and South China, such as Guangxi (a 17.5% rise), Guangdong (12.9%), and Henan (12.7%). In addition to Henan Province, there are 11 provinces with cement prices that exceed US\$70/t, including Zhejiang, Jiangxi, Shandong and Hubei. The region with the lowest price is Inner Mongolia, with prices now above US\$42/t.

Egypt: Ordinary Portland Cement prices as at 6 December 2019: Arabian Cement Co (Al Mosalah) = US\$49.88/t; Arabian Cement Co (Al Nasr) = US\$49.56/t; Minya Portland Cement (Minya) = US\$48.94/t; El Nahda Cement (Al Sakhrah) = US\$48.32/t; Lafarge (Al Makhsous) = US\$49.12/t; Medcom Aswan Cement (Aswan) = US\$48.50/t; Arish Cement (Alaskary) = US\$48.31/t; Sinai Cement (Sinai) = US\$48.31/t; Suez Cement (Al Suez) = US\$49.24/t; Helwan Cement (Helwan) = US\$49.74/t; Misr Beni Suef = US\$50.05/t; El Sewedy Cement = US\$50.05/t; Misr Cement Qena (Al Masalah) = US\$48.31/t; Al Watania Company for Cement (Beni Suef) = US\$48.31/t.

White cement prices as at 6 December 2019: Sinai White Cement (Alabid Elnada) = US\$151.79/t; Sinai White Cement (Super Sinai) = US\$149.96/t; El Menya Cement (Super Royal) = US\$141.17/t; El Menya Cement (Royal Elada) = US\$148.65/t; Menya Helwan Cement (Alwaha Alabiad) = US\$148.65/t.

Do you have your finger on the cement price pulse where you are? If so, *Global Cement Magazine* needs you!

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GLOBAL CEMENT: THE LAST WORD

Humilty comes before success

Robert McCaffrey Editorial Director, Global Cement Magazine (rob@propubs.com)



y parents told me many times while I was grow-Ling up that 'pride comes before a fall.' I am very often reminded of the truth of this aphorism in my later life. Whenever I think that I am getting the hang of iceskating backwards, for example, I will almost inevitably promptly fall over. Exploring some tombs near the pyramids at Giza after the latest AUCBM conference in Cairo, I fancied myself as a modern-day Indiana Jones, striding over the dunes and uncovering lost treasures. Until, that is, I forgot to duck low enough going through an ancient doorway and struck my head on a 5000-year-old door lintel - which was inscribed with hieroglyphs which I now imagine spelled out 'Mind Your Head.' Being momentarily poleaxed, I fell down and badly twisted my knee. Pride, once again, came before a literal fall.

Even Luke Skywalker can be prone to the sin of pride. In the original Star Wars film, he begins to enjoy shooting down Tie-fighters above the surface of the Death Star from the Millennium Falcon's gun turret: Han Solo tells him, "great kid, but don't get cocky." That's great advice to anyone (even someone who lived a long time ago, in a galaxy far, far away) who thinks that things are going well: don't get cocky kid.

In our galaxy, this, of course, is not a new concept. In ancient Greek tragedy, hubris is the personality trait of extreme pride, overconfidence or arrogance, which invariably leads to the downfall or nemesis of that person. The Bible's Book of Proverbs states 'pride goeth before destruction, a haughty spirit before a fall.' It seems that to act hubristically, with overconfidence, arrogance and a lack of humility has been a common facet of human personality for thousands of years.

In the British General Election that has seemingly confirmed that Brexit will happen at the end of January 2020, one of the minor party leaders, Jo Swinson, started the campaign by declaring that she could be the next Prime Minister. Not only did her party lose a number of seats, but she personally was defeated - and so is obliged to stand down as her party's leader. It is possible that her initial boast - or possible delusion - actually led to her downfall and to the downfall of her party.

Perhaps we feel a sense of schadenfreude - pleasure in another's misfortune - when nemesis comes about. When a Ferrari, Porsche or McLaren passes you on the motorway or autobahn at 200km/hr, sometimes it can be hard to suppress a smile to see them pulled over by the cops further down the road. The Curse of Sports Illustrated is perhaps another example of hubris: Many teams and sportsmen that are featured on the cover of that magazine for having excelled at their sport then find that they become injured or rapidly lose form. Perhaps it's just reversion to the mean (in performance) - but there are many examples of it happening.¹ It's possible to see this reversion to the mean in the performance of 'star' fund managers who have a few stellar years of performance, rake in lots of funds and then crash and burn, losing everyone's money in the process (but usually getting paid themselves all the same).

In the cement industry, it is possible to see examples of hubris with alarming regularity. The current global clinker overcapacity crisis is classic hubris: everyone aims for self-aggrandisement through adding and adding new capacity, but in the end they suffer, as does everyone else. Perhaps humility is the way forward. When Jeans Jenisch, CEO of LafargeHolcim, sold the company's assets in Southeast Asia, it could have been seen as a loss of face, since these were previously thought of as almost the family jewels. However, seeing the assets instead as a loss-making, CO₂-producing liability makes it easier to bite the bullet and to redirect the cash elsewhere.

What might the industry look like if everyone acted with humility? Perhaps competitors might recognise the ultimate futility of fighting against each other, and make a much earlier tie-up (at more realistic valuations), in order to enjoy more synergies and savings (and profits). Perhaps today's competing cement companies might combine their capacities, closing the most expensive, most polluting and/or least profitable plants, and concentrate on making cement with lower environmental impact and higher profitability. We are starting to see some hints that this could be a new trend, reflected in our monthly news. It requires some humility on the parts of the participants in any deal, but everyone would win in the end.

If you don't believe me, look at China. From a situation of overcapacity from small, inefficient and low quality plants, the government obliged the industry to rationalise and this has now resulted in technologically-advanced production from large and now very profitable cement plants.

If pride comes before a fall, then perhaps humility comes before success.

1 https://en.wikipedia.org/wiki/Sports_Illustrated_cover_jinx

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Paul Brown:	+44 (0) 7767 475 998 / paul.brown@propubs.com
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Xavier d'Hubert	37	xavier.dhubert@earthlink.net

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