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Dear readers,







Welcome to the June 2019 issue of Global Cement Magazine - the world's most widely-read cement magazine!

As well as the latest news and technical features, this issue has our traditional midsummer look at the UK cement sector (Page 38). In the words of issue contributor Edwin Trout, the industry has 'experienced a sense of limbo' in recent years following the country's decision to exit the EU. Nearly three years have elapsed since the vote and still little is known about the UK/EU relationship 'post-departure'. There have been two extensions to the process to date. The resultant uncertainty has delayed construction projects, disrupted supply chains and caused other issues for companies big and small. Indeed, as we go to press, British Steel has asked the government for a Euro85m loan to help with 'Brexit issues.' Another nail in the coffin for the steel sector? Prior to this, a series of car manufacturers took decisions to reduce or eliminate activities at their UK facilities, in part because they had received zero information on the future trading relationship. Small and mediumsize companies dealing with the EU have increased the amount of stock they hold in anticipation of delays to future supplies. This is costly and time-consuming... but warehouse owners might be pleased. The UK's successful alternative fuels exporters have been no exception to Brexit-related uncertainty. In our detailed interview, alternative fuel consultant Andy Hill outlines the various factors influencing supply and demand of solid recovered fuel (SRF) and refuse derived fuel (RDF) in the UK and EU (Page 46). One pertinent Brexit-related factor has been continental EU cement producers switching to local suppliers, specifically to ensure reliable supplies after Brexit. Whatever happens after the point that the UK actually leaves the EU (if it ever does) is currently anyone's guess. However, both contributors agree that the UK cement sector will continue to adapt to the future challenges and changing needs of the country.

Elsewhere in this issue, we carry an eye-opening interview with artificial intelligence

solution provider Petuum (Page 10), two contributions on dust management (Pages 14 & 18), photographic reviews of the recent bauma and POWTECH events (Pages 20 & 26) and a review of the IEEE-IAS/PCA (Page 58).

Peter Edwards Fditor

We hope you enjoy this issue of Global Cement Magazine!





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15th International Congress on the Chemistry of Cement 16-20 September 2019 Prague, Czechia www.iccc2019.org

TCMB Cement Conference 2019 8-11 October 2019 Antalya, Turkey www.tcmb.org.tr/eng

UNITECR 2019 13-16 October 2019 Yokohama, Japan www.unitecr2019.org

K 2019 16-23 October 2019 Düsseldorf, Germany www.k-online.com

16th NCB International Seminar 3-6 November 2019 New Delhi, India www.ncbindia.com

24th Arab-International Cement **Conference & Exhibition** 24-26 November 2019 Cairo, Egypt www.aucbm.net

4th Global CemBoards Conference 21-22 January 2020 Munich, Germany www.Cem-Boards.com

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Interview by David Perilli, Global Cement Magazine

In discussion: AI in the cement sector

In March 2019 US-based artificial intelligence (AI) company Petuum announced that it entered into a global agreement with Cemex to implement its Industrial AI Autopilot software products for autonomous cement plant operations at plants around the world. This follows process control milestones achieved by Cemex, including running selected plants by AI control in 2018. *Global Cement* spoke to Petuum to find out more about its work with the cement industry.

Working with Cemex

Global Cement (GC): How did the relationship between Petuum and Cemex start?

Roberto Linares, AI Solutions Principal (RL): Our founders, Dr Eric Xing and Dr Qirong Ho, met with Cemex in 2018 as part of our mission to make Petuum's AI advances accessible to real world industries. In this case, it was the case of a bee finding a flower: Cemex was looking for modern AI and Petuum had solutions.

GC: How are the two parties working together?

RL: Petuum is using its AI Industrial Autopilot product to aid the control of various cement produc-

Glossary

Deep learning: Deep learning is a machine learning technique that uses multiple or 'deep' layers of machine learning algorithms in an artificial neural network. Each layer provides a different interpretation to the data it uses. This allows a deep learning system to be trained better with unstructured data. tion processes at a number of Cemex plants. So far, we have achieved stable and predictable operation of the rotary kiln, clinker cooler, raw meal grinding and cement grinding. We are integrating the real time infrastructure to precisely forecast certain variables over 5-15 minute time-frames, and to act on those forecasts.

GC: When you use 'AI' in your product name, such as Industrial AI Autopilot, what exactly do you mean?

RL: AI in this context refers to a set of machine learning and deep learning techniques applied to the problem of controling complex processes and steering them to a higher level of optimum or 'better than possible' techniques. What I mean by that is to operate at a higher level than even the best human operator by expanding the possible range that the system can operate within. Figure 1 helps to show this. While a human operator might only be capable, or willing, to operate the plant in the 'comfort zone', an AI-led system might be able to operate over a much wider range. This opens up opportunities for increased process efficiencies.



Machine learning: Machine learning uses algorithms that can modify themselves without human intervention to produce a desired outcome by feeding them with structured data.







To do this, we are using deep learning neural networks. These are a large matrix of inputs and timestamps from the cement processes I mentioned. In the Cemex trials, we fed two years of plant information into the neural networks. What this does is to model the relationships of the variables with each other and over time. Then we know, at a certain stage, where the process will 'go' if we don't change the parameters. By looking at the previous operations, we can then work out where we want the process to go.

Our optimisation algorithms lie on top of that. These create an AI-based model that provides the optimal settings (prescriptions), which we will recommend for the plant to run at *that particular point* in time. So, we've taken the history of the plant and then looked at what could be learned from those relationships. Then we continued to follow the data to continue to optimise and predict what the process will do.

Applying AI to an industrial process

GC: Your data came from sensors at Cemex's test plants. Did you install any new sensors?

RL: The system doesn't require any additional sensors, only the existing ones. We also use the existing controls. We map to set points in the control system.

GC: How do you apply your data and models to an industrial production process?

RL: We have a range of data processing techniques to ensure that the models correspond to real signals and not to noise. The data processing process has limitations. For example, you might have a lack of calibration, or indeed just a noisy signal. We have various ways that

will not necessarily 'reject' that data but will learn from the pattern. This way it can understand the correct information to feed into the learning AI.

GC: Which parts of the production process does the software monitor and/or control?

RL: We are optimising ball mills and vertical roller mills for the cement grinding and raw mill side. We also work with preheaters, kilns and coolers.

GC: Do the algorithms look at each part of the production process individually or as a whole?

"We expect 2-7% of total savings in terms of increased yield and energy consumption..." Left - Figure 1: Petuum says its products can operate cement plants safely beyond the 'comfort zone.'

Below - Figure 2: Petuum's Industrial AI Autopilot product is supplied remotely as software as a service (SaaS). Data is streamed between the cement plant and Petuum's servers. If the connection is disrupted then the autopilot reverts to a pre-set disengaged mode.



GLOBAL CEMENT: OPTIMISATION

Right: A wealth of information on display to operators at a cement plant. Will cement plants need so many user interfaces in future if Al is running the show?



RL: We have the capability of taking either approach with the Asset Autopilot and Process Autopilot products. When we are working with Process Autopilot, we look at all of the equipment that works together: the ball mills, separators, elevator, power drive and cooler sensors.

Letting the algorithm advise the plant

GC: How does Petuum's Industrial AI Autopilot product interact with a cement plant?

RL: The AI Autopilot product is a software service that integrates with the process data history and the data infrastructure and ingests historical data and streaming data. From that point, we can make predictions. We integrate it with the control system to apply the prescriptions directly under supervised Autosteer mode.

GC: How does the Autosteer mode work?

RL: We post the prescriptions to the plant's real time infrastructure. From there we send the data to the control system. It acts on it, on a particular value, every five minutes. Every five minutes it says, 'allow the regulatory control to move to the prescribed setting.' Then we keep going and going incrementally. It's actually very simple. All the time, the operator is looking at the information and results.

GC: So the operator is doing less than before as they monitor the Autosteer?

RL: Yes, they are monitoring the Autosteer function. We have found that this gives them more time to do other things. In the cement industry, an operator can be managing many processes at once. It can be quite a difficult role.

GC: What's the longest that the Autosteer has run continuously?

RL: It has completed up to a day of operation in a single go, with some interuptions due to various

issues. At those points, we simply took the plant back into manual operation, with the human operator following the prescription instead of the system.

Working with an AI assistant

GC: With regards to fuels mix at the test cement plants, how much interaction did you have with fuels mix?

RL: The product prescribes the right mix of fuels, for example it may try to maximise the amount of

alternative fuels towards the company's targets. We can even go *beyond* the nominal target while keeping the process stable for clinker production, if the system forecasts that it will remain stable. This is the point made in Figure 1.

GC: Do you have to introduce new fuel types to the system manually or can it learn them on the job?

RL: When some new fuels are introduced, we sometimes need to retrain the model. It depends on whether the fuel is similar to another fuel or not. For example, it may share a density but differ in calorific value, or vice versa. An example where you'd need to retrain would be when introducing whole tyres. If you had never used them, you need to generate a new 'history' to include tyres in the mix.

GC: Does the algorithm need retraining, for example, if you test tyres at one cement plant but you then want to burn them at a different plant?

RL: Yes - In the cement industry every piece of equipment is unique. We need to train the system on each process individually using data from that plant. In the Cemex trials, there were different types of kilns and coolers. They were even controlled by different control systems.

GC: Where are your servers based?

RL: The Petuum Industrial AI product runs on cloud servers, including Azure, AWS and others. Petuum provides software as a service. The customer typically prefers to have these large computers handled by the software suppliers. We have the technical expertise on the computer engineering side.

GC: Is there any particular speed of network that the plant needs?

RL: Speed is not particularly important, but you need a dedicated line. As 20-100 prescriptions are

GLOBAL CEMENT: OPTIMISATION

received every five minutes, it's important that the connection is not disrupted. We use SSL to secure the communication.

GC: What happens when the connection fails?

RL: If the 'line goes dead' then there will be no new prescription. The system will detect this so that it automatically knows that it has 'missed' a prescription. It disengages the server and resumes normal operation.

GC: Has Petuum's algorithm methods surprised a human kiln operator?

RL: The Cemex teams worked closely to include a high level of technical and business knowledge in the model used by the system. The biggest surprise for them came when they saw how quickly the machine learned the process. It took weeks to refine processes that take human operators years or even decades.

The experts were surprised by the productivity of these operations, in terms of increased energy efficiency, maintaining the stability of the process and improving the conditions that lead to better mechanical operation of the plant. Petuum was surprised that *all* of the objectives were achieved.

GC: What data can you share with us about Petuum's results at a cement plant?

RL: We expect somewhere between 2-7% of total savings both in terms of increased yield, because the process is more stable, and in terms of energy consumption for two reasons. One is for increased heat recovery and the second is that the alternative fuels ratio can be increased.

GC: How many worker hours has installing Petuum Industrial AI Autopilot saved at the test cement plants?

RL: It was not a significant objective to reduce operator hours. Instead, it is better to use the time of experienced operators more effectively. We can't comment on the plants specifically, but this is our perspective in general regarding AI.

Future applications

GC: Can we expect to see Petuum systems installed at other cement plants?

RL: I certainly hope so! Petuum is positioning its AI products at other global cement producers.

GC: How much data does Petuum need to install its product at a new cement plant?

RL: Typically it takes around three months. For customers with greenfield plants we can also use generic data but we will require some new information about the plant.

GC: What is Petuum working on next with regards to the cement industry?

RL: We are planning to continue to expand to other applications within the cement and concrete sector, to aggregates, raw meal composition, despatch and logistics. We are industrialising AI in many aspects of production or management of the plant.

GC: Thank you for your time today.

RL: You are most welcome.

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Left: Savings would rapidly stack up with Al in control of a group's cement plants. Melton White, Director, Mideco

Reverse air cleaned dust collectors are coming back into focus

As the cost of producing cement increases, owners, operators and designers of plants are increasingly looking at 'whole of life' solutions. As occupational safety and health moves up the agenda, the requirement to deal with dust is also gaining importance. This has led to more and larger bag house dust collectors, but these are expensive to own and operate. There are many different types and cleaning system options for bag houses. Here, Mideco looks at one of the oldest methods, reverse air cleaning (RAC), which is enjoying something of a rennaissance...

O ne of the oldest methods of cleaning filter bags is reverse air cleaning (RAC). However, over the years this 'old' style of dust collector has fallen out of favour, with newer pulse cleaning systems being preferred. While both systems have their strengths and weaknesses, recently the RAC system has come back into vogue as a viable and often the preferred option. The advantages of RAC Dust Collectors compared to pulse systems include:

- 1. Lower energy consumption;
- 2. Longer bag life;
- Often offer higher collection efficiency over extended periods;
- 4. Fewer moisture-related issues;
- 5. Often have lower footprint / size.



1. Lower energy consumption

The reverse air system uses a fan to blow clean air back, against the main dirty air flow. A pulse system uses a compressor to blow clean air back against the main dirty air flow. An RAC fan typically operates at 2.5kPa, while most compressors operate at 620kPa. While the volume of cleaning air used by the RAC dust collector is slightly higher, the cost of making this pressure outweighs the cost of the air volume substantially. In short, the cost of running a small fan is very much lower than the cost of running a compressor. The fan also has significantly lower maintenance costs than a compressor. Typically, RAC dust collectors also run at a lower total differential pressure, which converts into a lower cost of running the main fan.

2. Longer bag life

Pulse-cleaned dust collectors clean the bags by means of a blast of compressed air being shot down the bag tube. To enble this, the bag is kept open by of being wrapped around a cage. When the bag is blasted it snaps open to its full and / or tight diameter. The remaining air permeates the cloth and dislodges the dust from the inside out.

This process wastes compressed air because the first air is used just to open the bag. However, it also introduces a process of mechanical fatigue, as the bag opens and then, at the end of the pulse, closes back onto the cage.

The RAC system is equipped with a traveller mechanism in its clean-air plenum. The traveller directs low pressure air into the filter bags from the clean-air side, blowing the collected product off the outside of the bags. To prevent migration of dust from one bag to another during the cleaning process, the bags on either side of the bag being cleaned are blocked off. This creates an area of static

Right: Mideco 9A RAC at Bostik, Victoria, Australia.

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air around the bag so the dirt can easily drop off and fall directly into the hopper. Low pressure air only is needed to gently clean the bags as a result of this static air.

A feature specific to the Mideco range of RAC filters is the bags are suspended under tension. This means the cloth is taught at all times. This results in no air being wasted opening the bag. As the bag cloth does not move, there is no risk of mechanical fatigue. Eliminating mechanical fatigue in cloth prolongs its life in almost all circumstances. It also reduces the chance of its indices opening and thus allowing the dust to blind it.

3. Higher collection efficiency over extended periods

As a result of the cleaning method and bag tension not being as arduous on the cloth or protecting it, the cloth in bags cleaned with RAC systems maintains its 'as new' characteristics for longer. This transfers into better performance over extended periods.

The RAC system provides a very high efficiency of dust collection. Its special features can guarantee a collection efficiency of 99.9% of all particulate matter down to 0.5µm in size. This generally equates to an emission lower than 10 mg/Nm³ for types of dust so small that it borders on being a fume.

4. Fewer moisture-related issues

Cement manufacture involves heat, making dew point an issue at different parts of the process. Under certain conditions cement acts hygroscopically. When released, compressed air can carry moisture or at least cool the materials in its path. These factors combine so that dust collector filter media can become plugged with material when the hygroscopic dust absorbs water. The dust-liquid mixture clogs the pores in the filter media, creating an im-

Below: A Mideco 45A RAC at Esperance Ports Sea and Land, Western Australia

Right: A Mideco 30A

Wales, Australia

RAC at Yates, New South





permeable coating that resists most types of filter cleaning systems.

This can lead to substantial issues, including wetting and setting of cement inside the bag house. RAC dust collectors use ambient air that can even be heated if required to clean the bags. Therefore, they can combat or even reduce the risks associated with moisture within the bag house.

5. Lower footprint / size

RAC dust collectors tend to use envelope bags rather than round ones. Envelope bags are a much more space-efficient method of arranging square metres of a quantity of cloth than round bags. The result is that they are the most compact dust collectors, important where there is limited space available.

Case-study

An RAC cleaning system is extremely efficient while being gentle on the filter fabric. This preserves the filter bag and increases the system durability. An

> example is an RAC dust collector installed at Adelaide Brighton Cement's Birkenhead plant in Australia, way back in 1976. An inspection in early 2019 confirmed that after 43 years in use the RAC dust collector is performing well and providing adequate dust control.

Conclusion

Reverse air filter dust collectors are a unique high-efficiency solution for addressing dust emissions in the cement industry. They can help businesses protect their staff and provide a long-term dust control during various stages of cement manufacturing. Mideco is one of the few companies experienced in the design and manufacture of RAC systems.

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ScrapeTec Trading Ltd

AirScrape: Non-stop clean innovation

With the innovative AirScrape side seal, spills and dust at transfer points in conveyor systems and belt damage are a thing of the past...

In the cement industry, contamination of conveyor systems and dust generation during operation are a well-known problem. Conventional side seals at belt transfer points can help, but even friction forces quickly wear them out. This causes them to lose their effect and also damage the belt of the conveyor over the long-term. This, in turn, increases the costs of maintenance and/or replacement.

The AirScrape from ScrapeTec Trading Ltd. is different and represents a rare innovation in that it increases the service life of conveyor belts, permanently saves on cleaning costs and is virtually maintenance-free. Beyond the chute and conveyor belt, the AirScrape ensures high levels of cleanliness.

Wilfried Dünnwald, developer and managing partner of ScrapeTec Trading, developed the AirScrape in 2013 due to a specific inquiry from a client. The prototype fulfilled the client's requirements from the very start and is still in use today. In the meantime, customers from Germany, Belgium, Spain and elsewhere are using the innovation to save costs by avoiding spills and the resulting contamination.

The principle is in the name

If you see the AirScrape side seal in use, you can quickly see the minimum distance between the individually adjustable sealing lip and the belt. Critical observers immediately suspect a permeability for material and dust. However, this is exactly where the AirScrape's operating principle, and thus its uniqueness, lie. An intelligent lamella structure on the underside of the 2m-long sealing unit ensures that, thanks to the Venturi concept, a vacuum is created in the conveyor area on the belt. Nothing can escape through the millimeter-thick gap because the negative pressure allows air to flow *in*. This makes the AirScrape the first side seal that works without contact with the belt.

The AirScrape consists mainly of polyurethane, an anti-static and flame-retardant material. Due to its special resistance, the AirScrape is theoretically maintenance-free and can be used permanently, without maintenance. Exceptional mechanical influences caused by the conveyed material can, of course, also affect the AirScrape.

However, in principle the investment is secured by the design. As far as costs of the AirScrape are concerned, these are higher than for conventional side seals. However, considering the total cost of ownership, the system pays for itself very quickly. This is because the protection against soiling of the conveyor systems and wear of the belts will save considerable costs and will also save on resources, such as cleaning personnel. The AirScrape also effortlessly meets the requirements of health and



Below: The AirScrape is the first side seal that works without contacting the belt.

GLOBAL CEMENT: CONVEYING





safety guidelines at work by greatly reducing dust generation and contamination.

In the end, everything that is omitted by using the AirScrape saves costs. There is no contact friction during use, no wear on the AirScrape or belt, no need for maintenance and service, no dust and no spillage, no cleaning and savings in driving energy for the belt.

Introducing DustScrape

The AirScrape can be extended with the DustScrape in production areas that have particularly high dust generation. Support arches can easily be mounted to an existing AirScrape installation. A close-meshed, anti-static and resistant plastic fabric is then applied to it, retaining the dust in the belt area. This significantly reduces the risk of deflagration and damage to the respiratory tract. In future, DustScrape will also be available with an alternative stainless-steel mesh, which offers a further safety advantage due to its non-flammability.

Below: The DustScrape is modular, allowing adaptation to different environments and dust levels.

Above: The AirScrape in operation (left) and on a ScrapeTec exhibition stand (right).

Below: The DustScrape can be used in conjunction with the AirScrape.







Global Cement staff

BAUMA 2019: In pictures

BAUMA, the world's largest exhibition of any kind anywhere in the world, brought participants from the global construction industries to the Messe München in Munich, Germany on 8-14 April 2019. The massive 2019 event saw more than 620,000 visitors from 200 countries and territories visit ~3700 exhibitors across 614,000m² of space. Here, *Global Cement* rounds up the most relevant exhibitors to the global cement industry.

1: A 'scrum' to enter BAUMA, the largest exhibition of any type anywhere in the world.

2: The exhibition stand of Haver Niagara, screening and washing equipment.

3: Bernhard Kreiner of Slipform Austria, the silo and heavy lifting systems professional, poses for the camera.

4: Interkrąż is a Polish conveying technology manufacturer.

5: Uwe Bock from WUTRA Fördertechnik, a manufacturer of trough chain conveyors, process screws and valves.

6: A massive Komatsu PC 4000 mining shovel was on display.

7: Telestack displays its conveyors, loaders and unloaders.

















8: CINTASA's Jorge Polo, export area manager (left), presents the company's range of conveying equipment.

9: Felix Bartknecht (left) and Mark Harries (right) of cement process sensor and automation expert SICK AG.

10: AUMUND Group, with AUMUND, SCHADE and SAMSON. The group's focus was new products, retrofits, after-sales service and the PREMAS[®] 4.0 and SAMSON mobile solutions for ports and terminals.

11: Esteban Diaz of belt conveyor covering and guarding systems specialist Capotex.

12: Héctor Adalid of drago electrónica poses for the camera.

13: A cross section of a cone crusher on AKDAS's stand.

14: MEIN Fundición en Cáscara displayed several castings including cement sector products.

15: The Crush+Size team. Left to right: Alexander Erbach, Johanna Jeckel and Esko Ilmonen.









16: Crusher guru HAZEMAG & EPR had a well attended stand.











18: Left to right: Thomas Hebbecker, Endro Sassenberg, and Ingo Heiser of chain expert KettenWulf presenting the new SCS PO chain system.





19: Testing's team lines up prior to the start of bauma.



20: Misha Surkov (left), sales and marketing

manager, and Alexey Drelin (right), chief

product officer, of bulk material handling

systems specialist PTM.



21: Continental and its Phoenix mining conveyor belt expertise being introduced to a visitor.







22: Thorsten Koth of ScrapeTec (facing, centre) explaining the company's innovative conveying product range. *Read more about the company on Page 18.*

24: KAUMAN, the manufacturer of belts for a wide range of applications. Alberto Rey (right) and Juan Gomez (left).

25: Udo Sekin of Schmersal proudly explaining the company's online process analysers and protective belt monitoring expertise.

26: ERSEL Heavy Machinery Inc. in discussion with guests after a fifth long day at bauma.

23: Chain manufacturer Thiele was busy!





23-24 OCTOBER 2019





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Global Gypsum Enquiries

Exhibition and sponsorship: paul.brown@propubs.com

Programme and speakers: robert.mccaffrey@propubs.com





Organised

27: Martin Hermandinger from mx.flow presents the new machine to clean and reuse air filters.

28: Hans-Joachim Henze of Semperit's Moers, Germany office with a display of the company's flying belt in the background.







29: Left to right: Evgeniy Abrashevskiy (KORFEZ ENG Russia), Cagdas Alan (KÖRFEZ DÖKÜM) and Bjoern Heumann (KORFEZ ENG.)

30: TAKRAF's HPGR TRP 16-1.16 high-pressure grinding roll, heading to a cement producer very soon.

31: Margarita Sakelliou of wear specialist ERGOTEM SA in discussion with visitors.







32: Işık Çelik had several cement industry castings on display.

33: Industrial lubricant manufacturer Petro-Canada Lubricants Inc. displayed a testimonial from a satisfied cement plant manager.





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POWTECH 2019: In pictures

POWTECH 2019, the world-leading exhibition for powder processing technologies, took place on 9-11 April 2019. Some 14,200 visitors attended the event, visiting 824 exhibitors from 35 countries across six halls at the Nuremberg Messe. The event will take place once again on 29 September - 1 October 2020, in Nuremberg once again. Here, *Global Cement* takes a look at the most cement-relevant exhibitors from the event...

1: Ball mill and classifier manufacturer Christian Pfeiffer was represented by Michael Halbur (left) and Uwe Karsunke (right).

2: Discussions on the stand of BEUMER Group, the German cement bagging and palletising equipment expert.

3: IFE Material Handling's Wolfgang Halbmayr reported strong interest in the company's range of screening, conveying and magnetic separation technologies.

4: EagleBurgmann is a provider of industrial sealing technology and associated services. Its stand was busy!

5: Malvern Panalytical's Dr Mark Wingfield on the company stand.















6: Global Gypsum's Sören Rothfahl (left) in discussion with Haver Niagara's Oliver Pralle on the Haver & Boecker / Haver Niagara stand.

7: Atritor Ltd, a supplier of equipment for simultaneous milling and drying of powders and surface coating of powders.

8: Evaldo Martín from NETZSCH ecutec (right) and Eric Gozin from i.g process, NETZSCH ecutec's representative in France (left). The company is a manufacturer of thermal analysis instruments, grinding apparatus and pumps.





9: The team from major German cement sector fan manufacturer Ventilatorenfabrik Oelde smile for the camera. Left to right: Andreas Hampel, Sascha Vales, Thomas Gandt, Stephanie Böhmer and Herbert Michalski.

10: Discussions on the Advanced Cyclone Systems stand, a developer of high-efficiency cyclone systems for the cement sector.





11: Busy scenes on the ThermoFisher Scientific stand, a manufacturer of a wide-range of analytical equipment for the cement industry.









13: BWF Envirotec's stand attracted a large crowd.

14: Schenck Process' Laszlo Ivan standing next to one of the company's Mucon Slide Gate Valves.

15: UWT Level Control, a producer of level measurement sensors for solids and liquids.

16: CEMTEC, the Austrian specialist in dry and wet grinding technologies.

17: Neuman & Esser Process Technology, a manufacturer of cyclones, classifiers and grinding systems.

 The exhibition stand of KREISEL GmbH & Co. KG, a German manufacturer of conveyors, pneumatic conveying systems and dust abatement technologies.

















19: Vincenzo D'Elia (left) and Henk Hausoul (right) from HUP Vershleißschutz GmbH, a manufacturer of conveying systems, screw conveyors, valves and other equipment.

20: Maschinenfabrik Köppern is a producer of roller presses and other communition equipment for the cement sector.

21: Discussions on the exhibition stand of Concetti, an Italian producer of automatic lines for packing of dry bulk materials.

22: The stand of AVENTUS, the new joint-venture between Haver & Boecker and Windmöller & Hölscher.

23: DNM Westinghouse, a designer and manufacturer of rotary valves, diverter valves and other components for the bulk handling sector.

24: REMBE, a German manufacturer of rupture discs, explosion safety systems and accessories.

25: Kukla Waagenfabrik's Norbert Habring (left) and Johann Bachinger (right) are all smiles on the company's stand.

26: Hoffmeier Industrieanlagen is engaged in steel construction and mechanical engineering, dedusting technology, conveyor technology and services. Posing for the camera are Guido Prinz (left) Peter Sommerauer (right).







27: Tank Connection designs, manufactures and installs all four major steel storage tank types including bolted tanks, field welded tanks, shop welded tanks and hybrid storage tanks.

28: A busy scene at Aerzen, producer of compressed air, gas and vacuum solutions.







GLOBAL CEMENT DIRECTORY 2019



The unique listing of all cement plants

The *Global Cement Directory* is a unique annual publication - *in print and digital editions* - that lists all integrated cement plants and grinding plants in the world. The fully revised 2019 edition lists 2348 integrated and 640 ginding plants over 260 pages.



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Above: Sample pages from 2019 edition.

NEW FOR 2019: National cement production and forecasts to 2021 for 57 countries



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• Full analysis of integrated capacities by country and region.

Updated list of national and regional cement industry associations.

• Global Cement trends article.

The *Global Cement Directory 2019* is available to order in PRINT (£350) or PDF (£350) format, or as a PDF & PRINT BUNDLE (£430).

Order at : www.globalcement.com/directory

29: Optimisation expert Aixprocess was represented by Adian Omar (left) and Martin Weng (right).

30: SELENE SpA, the Italian manufacturer of stretch film.

31: Alan Moses (left) and Ideja Dinaj (right) from dy-pack, a German manufacturer of paper sacks for, among others, the gypsum sector.

32: Scheuch GmbH, a manufacturer of filtration, dedusting, conveying and purification technology.

33: Solimar Pneumatics is a leading designer and supplier of aeration systems and engineered components for the dry bulk material handling industry.

34: Alexey Safronov, technology and development director, Souzpack, Moscow, smiles for the camera.

37: Muhr BULK produces equipment for the loading, mixing and unloading of loose bulk materials.

38: VSR Industrietechnik's Andreas Kraus (left) and Julius Körling present the VSR Blaster range of air cannons.

39: The team from ED_VAN, a Turkish manufacturer of fans, dust collectors, cyclones and other equipment for the bulk handling sector.

40: Bernd Münstermann GmbH, a manufacturer of material handling, air pollution control, process automation, for, among many others, the cement, gypsum, insulation, refractory industries.







35: Danny Noordeloos, product manager of bulk handling equipment producer Muller Beltex.

36: France-based STIF presents its bulk handling, magnetic separation and explosion protection equipment.



















Germany: Frankfurt Airport terminal contract for Dyckerhoff

Dyckerhoff is supplying 12,000t of CEM III/A 32.5 N-LH cement to Frankfurt Airport for the production of underwater concrete. The airport is building a new terminal and the construction pit for the floor slab is deeper than the groundwater level, hence the floor slab must be concreted underwater.

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The construction pit has a size of almost 66,000m² with excavation carried out in dry conditions to a depth of 5.5m to the groundwater table. Then a further 8-11m was excavated in wet conditions using industrial divers. The excavation pit has been prepared in sections and then concreted by the divers, resulting in short sections. The quantities of cement to be delivered by Dyckerhoff also fluctuate considerably, with sometimes 20 silo trucks/day leaving the Dyckerhoff plant in Wiesbaden. Deliveries started in March 2019.

Around 40,000m³ of concrete has been produced by Sehring Beton, using a mobile mixing plant directly on site. The construction work is being carried out by the Arge Ingenieurbau Baugrube T3, which consists of Adam Hörnig Bau and Bickhardt Bau.

UK: Aggregate Industries achieves BSI PAS 2080 verification

Aggregate Industries, part of LafargeHolcim, has become the first concrete and building materials supplier to achieve PAS 2080 verification, the world's first specification for managing whole-life CO_2 emissions in infrastructure. Developed by the Construction Leadership Council's Green Construction Board with the British Standards Institute (BSI), it provides a consistent framework and guidance for measuring and managing CO_2 across the whole value chain.

Paul McCaffrey, Sustainable Products Manager at Aggregate Industries said, "We can help designers at Early Contractor Involvement stage to design lower CO₂ solutions. Our management systems ensure consistent and reliable data collection, allowing our Carbon Managers to report embodied CO₂ to other members of the value chain. Baseline data made available to the value chain allows CO₂ targets to be set at design phase and for performance to be monitored against these targets during project delivery. This will result in infrastructure with lower embodied CO₂."



Above: Frankfurt Airport is getting a new terminal building. Credit: Philip Lange / Shutterstock.com.

Germany: Cemex signs final agreement to sell ready-mix plants

Cemex has signed the final agreement to sell its aggregates and ready-mix assets in the North and North-West regions of Germany to GP Günter Papenburg AG for around Euro87m. The divestment is expected to close during the second quarter of 2019.

The assets in Germany being divested consist of four aggregates quarries and four ready-mix facilities in North Germany, and nine aggregates quarries and 14 ready-mix facilities in North-West Germany. The proceeds expected to be obtained from this divestment will be used mainly for debt reduction and for general corporate purposes.





US: Charah opens fly ash terminal

Charah Solutions has opened a terminal for fly ash in Hopedale, Massachusetts. The unit has railway access and is connected to local road networks. It will serve readymix concrete clients in New England with Class C and Class F fly ash through the company's MultiSource network.



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Turkey: AUMUND secures significant order from OYAK plant

A UMUND Fördertechnik has won a significant order from Turkey. The order from Aslan Cement, part of the OYAK Cement Group, comprises nine machines. OYAK has been an important customer to AUMUND Fördertechnik for many years.

The order is part of the complete modernisation

project at the Aslan plant, which is in Darıca, Kocaeli Province. The production capacity is to be increased to up to 6600t/day of clinker. The extensive AUMUND contract includes a bucket elevator with central BWZ-L type chain with a capacity of 225t/hr and a centre distance of 27m to feed the raw meal mill, as well as three different models of BWG belt bucket elevators with



capacities up to 500t/hr and centre distances up to 132m. The belt bucket elevators will also be used for raw meal silo feed, as well as to transport raw meal to the dosing hopper and the heat exchanger.

The order is completed with three KZB type pan conveyors, each with capacities of 350t/hr and centre

distances of up to 77.2m, to convey clinker from the cooler to the silo, as well as two LOUISE BEW Rotary Discharge Machines, each with a diameter of 3m and a capacity of 400t/hr. The machines are due to be dispatched in September 2019 and commissioning is planned for the start of 2020.

Left: An AUMUND LOUISE BEW type Rotary Discharge Machine.

Germany: Flender beefs up N-Arpex range

F lender has increased the torque of its N-Arpex coupling product range with two new designs featuring eight and 10 bolting points. N-Arpex now covers a diameter up to 988mm and a torque up to 2MNm. The compact design and enhanced bore capacities also enable a leap in size. A smaller coupling transmits a higher torque compared to the predecessor model. The steel disc coupling is suitable for use in drive applications including pumps, fans, compressors, generators, turbines, and paper and printing machines.

Denmark: FLSmidth launches ECS/UptimeGo

FLSmidth has launched ECS/UptimeGo, a downtime analysis product designed to increase plant uptime by identifying the causes of plant and equipment failures. Real-time dashboards and key performance indicators (KPIs) enable the measurement of the real impact of machine failures interrupting the production. In addition, ECS/UptimeGo provides Pareto charts and the ability to monitor maintenance and reliability KPIs to give operators a picture of a downtime event and its causes.

Peru: UNACEM orders Fons cooler

UNACEM has ordered a clinker cooler for its Condorcorcha cement plant from Turkey's Fons Technology International, part of Dal Engineering Group. The cement producer will replace its existing cooler with a new FTI clinker cooler. The FTI cooler is designed so that it can reuse the existing cooler casing and refractory. It has also ordered a three-roller crusher for its 1500t/day clinker production line. Installation is scheduled for September 2019. No value for the order has been disclosed.

Vietnam: SCG Super Cement launched

S^{CG} Vietnam has launched its SCG Super Cement product. The product is intended as a 'premium' multi-purpose cement for home owners, developers, contractors and architects. It can be used in a variety of applications, including brick-laying, plastering and concrete work for structure and foundations.



Russia: Mobil switch saves quarry cash

ExconMobil says it has saved a Russian limestone quarry Euro7900/yr by switching Hitachi excavators to its Mobil DTE 10 Excel46 hydraulic oil. The product extended oil drain intervals by 25% to 5000hr and reduced filter replacements.

NEWS: EUROPE

Belgium: LEILAC project ribbon cutting ceremony

The Low Emissions Intensity Lime And Cement (LEILAC) consortium partners and its external advisory board have held a ribboncutting ceremony at its pilot Direct Separation Calciner unit at the HeidelbergCement cement plant in Lixhe (pictured). The project started commissioning the unit in March 2019. Testing will now start to validate the performance of the pilot plant.



Romania: Possible collusion

he Competition Council says it has found irregularities in the Romanian cement market. Following an investigation started in the autumn of 2018 it has revealed that the country's three major producers - Holcim, CRH and HeidelbergCement - were operating with high profit margins and similar market share, according to Business News Europe. It noted that geographic distribution of customers around the three companies' production facilities might support a hypothesis of market collusion. It also reported similar production capacity utilisation rates between the main producers despite different production capacities. The Competition Council has not drawn any conclusions from the report. Previously, it said that if it does find any evidence of cartellike behaviour it could apply a fine of up to 10% of company turnover.

Data from CIROM, the Romanian cement association, shows that cement sales grew by 5.5% year-on-year to 8.9Mt in 2018.



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Germany: HeidelbergCement boosted by Europe and North America

Better weather in Europe and North America has benefited HeidelbergCement's first quarter results. Its sales revenue rose by 16.9% year-on-year to Euro4.24bn in the first quarter of 2019 from Euro3.63bn in the same period in 2018. Its operating earnings before interest, taxation, depreciation and amortisation (EBITDA) grew by 58.6% to Euro396m from Euro250m. Cement sales volumes increased by 1.6% to 28.6Mt from 28.1Mt. Ready-mixed concrete sales volumes increased by 10.8% to 11.3Mm³ from 10.2Mm³.

"We have achieved a considerable increase in revenue and result from current operations in com-

parison with the same quarter of the previous year. In addition to improved weather conditions, sustained strong demand and successful price increases contributed towards this positive development," said Bernd Scheifele, chairman of the managing board of HeidelbergCement.

The group's Asia-Pacific region reported 'sluggish' sales in India and Thailand. Its cement and clinker sales fell by 1.7% to 9Mt, although it managed to increase its revenue through price rises. Cement and clinker sales volumes also fell in its Africa-Eastern Mediterranean Basin region due to increased competition in Egypt.



Ireland: CRH sales rise 7%

CRH's sales rose by 7% year-onyear for the first quarter of 2019. It said that sales volumes benefited from mild weather conditions, good momentum across most of its major markets and price rises.

Sales from its Americas Materials business grew by 4%, although it noted falling cement and concrete volumes in its West US and Canada regions. It also said that its acquisition of Ash Grove Cement that was completed in mid-2018 had met its synergy delivery programme targets. Sales from its Europe Materials business increased by 12% due in part to better weather than the first quarter in 2017. By key markets the group reported strong sales volumes in Germany, Poland, Romania and the Philippines.



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Italy: Buzzi Unicem sales rise by a fifth

Buzzi Unicem's sales rose by 21.7% year-on-year to Euro656m in the first quarter of 2019 from Euro539m in the same period in 2018. Its cement sales volumes grew by 16.9% to 6Mt and its ready-mixed concrete sales rose by 7.3% to 2.6Mm³. It attributed the gain in sales to improved weather in the reporting period. The group reported particular sales growth in Italy, the US and Germany.

UK: Good progress for Breedon

Breedon Group says that it has made 'good progress' across the business in the first quarter of 2019. Its revenue grew by 10% yearon-year to around Euro276m on a like-for-like basis. It attributed this to milder weather than in the same period in 2018. It said that it expects construction output in the UK to rise by 3% and by more in Ireland.





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GLOBAL CEMENT NEWS: EUROPE

France: Vicat results rise after Ciplan acquisition

Vicat's sales have risen due to its acquisition of Ciplan in Brazil. Its sales rose by 4.7% year-on-year to Euro600m in the first quarter of 2019 from Euro573m in the same period in 2018. However, adjusted for the acquisition, its sales remained stable. The group's cement sales revenue fell by 1.4% to Euro302m when similarly adjusted. Its concrete and aggregate sales rose by 6.6% to Euro225m.

By region sales were strong in France, stable in the rest of Europe and Africa and poor in the Americas, Asia and Turkey. Poor weather in California dragged down sales in the US, competition was reported in India and an economic slowdown was reported in Turkey.



Ukraine: Cement production grows by 23%

Data from the State Statistics Service shows that cement production grew by 23% year-on-year to 1.53Mt in the first quarter of 2019. Production accelerated in March 2019, according to the Ukrainian News Agency. Annual cement production fell by 1% to 8.93Mt in 2018.

Italy: Spoleto plant idled by Colacem

Colacem's Spoleto cement plant has been idled. The kiln has been shut down and quarrying work suspended, according to La Nazione newspaper. The integrated plant was acquired by Colacem from Cemitaly in early April 2019. Union representatives from the plant have asked Colacem what its business plans and staffing levels will be. The plant employs 80 people.



France: Cemex to contribute to Notre Dame reconstruction

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Above: A crowd gathers below the Notre Dame Cathedral after the fire. **Credit:** Alexandre Caron / Shutterstock.com.

Cemex says that it will match the donations made by its employees to help restore the Notre-Dame Cathedral in Paris. The donations will be handled by the Fondation du Patrimoine (French Heritage Foundation), a private organisation dedicated to saving French cultural and natural heritage. The 800-year old cathedral was devastated by fire on 15 April 2019.

In addition, Cemex will help the reconstruction efforts through its range of technical and specialised products and services, the availability of its research and development centres based in Biel and Paris and assistance with material specifications and mix designs through its laboratory services.

Ukraine: Moderate rise for CRH's Podilsky Cement

Podilsky Cement's revenue rose by 2.5% year-on-year to Euro92.3m in 2018. It reduced its loss by 25% to Euro16.2m, according to the Ukrainian News Agency. It produced 1.35Mt of cement. The company is a subsidiary of Ireland's CRH.

Bulgaria: OneStone moves

OneStone Consulting has moved its headquarters to Varna. The business-to-business consultancy was previously based in Barcelona, Spain.

Antarctica/UK: Special cement delivery from Hanson

Hanson has transported 125t of bagged cement from its Ketton plant in the UK to the British Antarctic Survey's Rothera Research Station in Antarctica. Construction company BAM Nuttall is upgrading a wharf at the site to improve ship and boating operations and to allow it to accommodate the RRS Sir David Attenborough as well as to reduce manual handling cargo loading/unloading time.

The subsidiary of Germany's HeidelbergCement worked with BAM Nuttall and civil engineering company Keyline to set the technical specification of the cement. Each of the 25kg bags were vacuum sealed and double shrink wrapped onto heat-treated pallets to reduce the risk of contaminating Antarctica's environment with foreign organisms.

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UK: Roy Dobson: 1954 - 2019

Repaired by the many sectors of the many sectors of the many sectors in the UK.

Roy obtained a BSc (Hons) in Minerals Engineering from the University of Birmingham and went on to work for Matthew Hall Ortech, Kennedy and Donkin. He joined Fairport Engineering in 1995 but had recently reduced his involvement to a part time role.



Above: Roy Dobson, 1954 - 2019.

Roy is survived by Tracy, his wife since 2016.
Relax... you're in good company.

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Edwin Trout, Cement Industry Suppliers' Forum

The UK cement sector in 2018 - 2019

Edwin Trout, Secretary of the Cement Industry Suppliers' Forum, reports on events within the UK cement sector over the past 12 months...



Above: Edwin Trout, Secretary of the Cement Industry Suppliers' Forum.

A waiting the outcome of the Brexit negotiations for much of the past 12 months, the UK economy as a whole has experienced a sense of limbo. The UK has now 'failed to leave' the EU on two occasions: 29 March 2019 and 12 April 2019. The general uncertainty this has led to has meant that the country's construction market has been flat, varying from modest growth in the earlier months of 2018 to moderate decline over the turn of the year. Many investment decisions have been put off where possible. However, the cement industry has continued to adjust, with significant developments undertaken in grinding, packing and distribution, though the recent boom in input terminals has slowed.

The cost of CO_2 emissions has become an issue again, with the EU Emissions Trading System (ETS) 'squeezed' by anticipation of a potentially chaotic UK departure from the bloc, alongside structural changes to the ETS itself. The UK government has decided to renew its interest in CO_2 capture as a result.

International associations have become a major factor within the UK, first with the launch of the World Cement Association in 2017, and now the Global Cement & Concrete Association in 2018. Both have made London their base. In this article, I will expand upon each of these factors in turn, along with a number of others.



Construction market indicators

The UK market for cement and related materials such as aggregates, mortar and ready-mixed concrete, has been relatively slow, with modest growth throughout most of 2018 that tipped into contraction over winter of 2018-2019. Housebuilding has been the most buoyant market segment, followed by government-promoted infrastructure projects. However, commercial investment has been weak due to Brexit uncertainty. The headline figures of the newly re-named Construction Total Activity Index, (previously known as the Construction Purchasing Managers' Index), are shown in Table 1.

The Construction Products Association (CPA) points to a similar pattern, although it notes that manufacturers, as opposed to contractors, enjoyed a rise in sales at the end of 2018. The CPA's state of trade survey revealed an increase in business during the spring of 2019, after falling sales in the previous two quarters. Product sales increased in the third quarter of the year, when it became apparent that rising input costs had been eating into profit margins since the start of 2017. Workloads declined in the fourth quarter of 2018 and profit margins fell for a net balance of contractors, though product manufacturers reported rises in sales. However, the forecast is not propitious. In October 2018 the CPA downgraded forecasts of

growth in 2019 to just 0.6%, with the year expected to be flat amid Brexit uncertainty and on-going delays in the delivery of major infrastructure projects. Since then, the CPA has downgraded its 2019 construction output growth prediction to just 0.3%! Private housing is predicted to increase by 2.0% in 2019 and office and retail to fall by 20% and 4.0%, respectively.

Official construction output figures for the preceding three months are issued each month by the Government's Office of National Statistics. Like the other indicators, the general pattern has been of modest growth throughout 2018 until October, after which output declined. Indeed it fell by 2.8% monthon-month in December 2018 compared

Right: The street artist known as Banksy provides his take on the ongoing Brexit process of the UK leaving the EU on the side of a building in Dover, Kent. Dover is the most important sea port connecting the UK to the rest of the EU.

to November 2018, the largest month-on-month fall in output since a 4.3% fall back in June 2012.

Data from the Mineral Products Association (MPA), the organisation that most closely reflects production and sales trends for the cement sector, show that demand for mineral products began slowly in 2018, affected by bad weather and the collapse of the large government-backed contractor Carillion. However sales rebounded in the second quarter of 2018. Sales volumes for aggregates and ready-mixed concrete increased by 9.2% and 9.8% respectively, while mortar sales rose 20.9%. However, sales volumes for all materials were lower in the first half of 2018 compared to 2017, with the exception of mortar.

However, seasonally adjusted figures for Great Britain (not including Northern Ireland), indicated slowing construction activity in the third quarter of 2018. Sales of mortar were down by 4.0% compared to the seond quarter, aggregates by 2.0% and ready-mixed concrete by 1.5%.

At the time, the MPA expected modest growth in 2019. However, figures published in February 2019 showed a more complex pattern. Sales volumes of mortar were at their highest level since records began in 2004, with year-on-year volumes increasing by 14.3%. This reflects the widely reported vigour of the housebuilding market. Conversely, sales of ready-mixed concrete fell 1.6% by volume in 2018, partly due to reduced demand in London, where sales dropped by 4.8%.

Mergers and acquisitions

One of the most conspicuous themes of the past three years, in terms of the structure of the UK cement industry, has been the rapid expansion of the Breedon Group through a series of acquisitions and mergers. It previously acquired C & G Concrete, Hope Construction Materials and Sherburn Stone. The past 12 months saw the takeover and integration of Ireland-based Lagan Group. In November 2018, following the company's formal incorporation early in 2018, the former Lagan's product lines of bricks, tiles and bagged cement products were rebranded 'Breedon.' Separate deals saw Breedon relinquish other plants it considered to be peripheral. The group now operates more than 70 quarries,

40 asphalt plants, ~180 ready-mixed concrete plants and two integrated cement plants across the UK and Ireland.

Similar, but on smaller scale, is the takeover and integration of Francis Flower by Swedish firm LKAB. Francis Flower, a family firm that shot to prominence

in 2015 when it bought Hanson's ground granulated blast furnace slag (GGBS) operation at Scunthorpe, and its subsequent investment in terminal facilities at Runcorn, was purchased by LKAB in December 2018. The Swedish firm is a supplier of magnetite, which, like GGBS, is a by-product of iron processing. The Francis Flower name was withdrawn in April 2019 upon completion of the integration process.

Internal reorganisation

9

6

LONDON •

10

While some firms have been busy with mergers and acquisitions, others have undergone internal restructuring. Most notably, Cemex has subsumed its specifically UK focus into a broader entity, 'Europe', or rather 'West Europe' in the case of its readymixed concrete business. Senior level or-

ganisational changes came into effect on 1 February 2019, including the creation of a new position, President of Cemex Europe. This post is oc-

cupied by Sergio Mauricio Menendez Medina, formerly distribution channel vice-president for Cemex Mexico. Within the UK, Cemex's base in Thorpe, Surrey, has been moved to the offices in Rugby. From 1 July 2018 the senior leadership team and all back-office functions such as taxation, communications and human resources have been based

at Rugby, working alongside business areas such as

customer service, marketing and logistics.

Left: The UK's integrated cement plants. TOTAL = 10.3Mt/yr.

GLOBAL CEMENT: UK

Tarmac (CRH)

Dunbar, 1.0Mt/yr.
 Aberthaw, 0.6Mt/yr.
 Tunstead, 0.8Mt/yr.

Aggregate Industries (LafargeHolcim)

4. Cauldon, 1.0Mt/yr. 5. Cookstown, 0.5Mt/yr.

Cemex UK 6. Rugby, 1.3Mt/yr. 7. South Ferriby, 0.8Mt/yr.

> Breedon Cement 8. Hope, 1.3Mt/yr.

Hanson (HeidelbergCement) 9. Ribblesdale, 0.9Mt/yr. 10. Padeswood, 0.8Mt/yr. 11. Ketton, 1.3Mt/yr.

Below - Table 1: Construction Total Activity (CTA) Index, May 2018 - February 2019. Values over 50 indicate growth; values under 50 indicate contraction.

Year	Mon	CTA	Comments	
2018	May	52.5	Same level as April 2018.	
	Jun	53.1	Above 50 for the third month running. Housebuilding was best performing sector.	
	Jul	55.8	Fastest rise in overall output since May 2017, led by housebuilding.	
	Aug	52.9	Weaker, but still a modest overall rise. Commercial was best performing sector.	
	Sep	52.1	Civil engineering fell. Commercial and housebuilding rose.	
	0ct	53.2	Second-highest level in 16 months, with civil engineering driving growth.	
	Nov	53.4	Remaining above 50.0 for the eighth month running. Residential was fastest.	
2019	Dec	52.8	Down from November 2018. Commercial the weakest performing sector.	
	Jan	50.6	Weakest for 10 months, but still above the 50.0 growth threshold.	
	Feb	49.5	End of 10-month period of sustained expansion. Residential best performing.	

Company results

In an industry dominated by multinationals, announcements of individual companies' financial results tend not to relate specifically to the UK market. Breedon, being a UK-based company, is an exception, and its results reflect performance in the UK and Irish markets. In the 10 months to 31 October 2018, group sales volumes of aggregates rose by 21%, while its concrete volumes fell by 5%. Group revenues grew by 32% to approximately Euro856m.

Some isolated figures, for example from Cemex, provide further context. It reported that, while consolidated net sales for 2018 increased by 6% compared to 2017 to Euro12.9bn, levels were not so buoyant in the UK. Deliveries here were down by 4% with prices 1% lower. Ready-mixed concrete volumes fell by 5%, though aggregates declined by just 1% and prices in that particular segment rose.

Investment

The subdued market and fragile earnings of the domestic cement industry have both reflected the Brexit uncertainty that has pervaded life in the UK since June 2016. These are not conditions conducive to investments in capacity, though there has been a need for ongoing maintenance to adjust to the changing conditions. As integrated materials producers, many companies have also focussed on related materials, most notably sand and gravel in the past year.

As a case in point, two of the major materials firms have recently invested in marine aggregate dredgers. The first was Cemex, which commissioned its new Euro35m vessel, the Cemex Go Innovation, in 2018. Hanson (HeidelbergCement's UK subsidiary) has since ordered two new dredgers, the first for 25 years and, at Euro70m, the company's largest investment in its UK activities since 2006. The vessels are expected to enter service in 2019. In a related development, Hanson also finished the first phase of a major upgrade at its Dagenham aggregates depot and wharf on the River Thames in London. The plant is capable of processing 500t/

hr of marine-dredged sand and gravel.

Quinn Industrial Holdings has invested in a new health and safety and environmental management system for its multi-product operations. The digital Safety Hub gives the company cloud-based, centralised management facilities across all nine of its divisions. It includes the functionality to monitor and track accidents and near misses, conduct audits and raise actions relating to all health and safety

matters. Its development has taken over 12 months and involved a large number of external contractors.

Cement production

The central function of cement production hasn't been ignored, however, and after its major investment at its Padeswood plant, Hanson has turned its attention to Ribblesdale. Here, an upgrade to the automatic feed system is part of a three-phase programme to use more solid recovered fuel (SRF), cutting its coal consumption by 50,000t/yr and reducing waste by 74,000t. Operations Manager Simon Moorhouse added that waste-paper residues from motor-oil filters have also been trialled successfully and will be added to the fuel mix in 2020.

After the disastrous flooding of the Cemex South Ferriby plant in December 2013, its second kiln is now finally making cement once more. The 1000t/ day kiln has undergone a modernisation programme with the renewal of electrical equipment, control system and instrumentation. The plant is gradually returning to a production capacity of 0.7Mt/yr.

Modular grinding

Modular grinding has been a recent trend throughout the world, with systems such as Plug & Grind from Cemengal enjoying a high profile. In the UK, Cemengal has been contracted to install a Plug & Grind Vertical at Tarmac's Dunbar plant in Scotland in April 2018. Completion is expected in July 2019.

In the past few months a new entrant, Thamesport Cement, has confirmed its plans to bring '21st Century cement manufacturing' to the UK. Backed by France's Cem'In'Eu, Thamesport submitted a full planning application in March 2019 for its development on the Isle of Grain, Kent. It will commence grinding by 2020.

Import terminals

After the recent spate of terminal openings Ecocem and Francis Flower at Runcorn (2016), Ecocem also at Sheerness, Quinn Cement at Rochester and Warrenpoint and Hanson at Teesport (2017) - there have been no terminals coming on stream during the past 12 months. In June 2018, however, Ecocem France opened a new GGBS production plant in Dunkirk, France, with plans to supply the UK. The plant is adjacent to ArcelorMittal's steel plant in the town. It has an initial production capacity of 0.75Mt/yr, with the potential to expand to 1.4Mt/yr. It plans to import 0.25Mt/yr into the UK via Sheerness and Runcorn.

MODULAR GRINDING SYSTEMS



- FROM 90.000T/Y TO 500.000T/Y
- LARGEST EXPERIENCE IN THE MARKET OF MODULAR GRINDING SYSTEM
- THE ORIGINAL MODULAR GRINDING SYSTEM

Right - Table 2: Selected contracts signed by UK cement producers in 2018 and 2019.

Client	Location	Equipment / Service	Supplier	Date
Aggregate Industries (LH)	Nationwide	Technology and training services	Siemens	Aug 2018
Comey	Nationwide	57 DAF 8-wheel tipper lorries	DAF	Jan 2019
Centex		Renewable energy and load management	ENGIE	Dec 2018
	Ribblesdale	Feed system	In house	Feb 2019
Hanson (HC)	Bellshill	Pipework and silo monitoring system	Cape Contractors	Jan 2019
	UK Marine	Two new dredgers	Barkmeijer	Oct 2018
		53t Hitachi Zx530LCH-6 excavator	TBF Thompson	Dec 2018
Quinn Comont	Quarry	52tCAT 352LF excavator	Finning	
Quinn Cement		14 mountain lorries / bodywork for 10	Mercedes / C-Tec	Jul 2018
	Terminal	Gottwald Model 3 mobile harbour crane	Konecranes	Jun 2018
	Nationwide	ePOD electronic delivery system for entire fleet	PODFather	Apr 2019
	Tunstead	Box wagons for railways	Freightliner	Feb 2019
	Dunbar	Plug & Grind Vertical	Cemengal	Apr 2019
IdrilldC (CKT)	Battersea	Liebherr HLH80C Supergrab gantry handler	Rail Freight Services	Feb 2019
		GPS tracker systems on freight wagons	Ermewa	
		Trials of VTG Connect units used for training	VTG	

Transport and distribution

A sharp reduction in the number of production sites in 2008 accentuated the need for efficient distribution and accelerated a return to the railways. Then the requirements of the 2012 Olympics turned attention back to the waterways. Thus, over the past 10 years, these two modes of transport have seen considerable development. Hanson, for instance, invested Euro289,000 in restoring the railway siding at its



plant in Ashton-in-Makerfield, allowing rail freight to be run into the depot from October 2018, for the first time in a decade. Working in partnership with GB Railfreight, Hanson now runs three trains a week from its quarry at Shap, Cumbria, down to Ashton, taking over 0.2Mt/yr along this new route.

A further investment has also been completed at Hanson's Bellshill depot in Glasgow, transforming it

into a dual product storage and distribution site. Pipework was replaced and a new silo monitoring system installed as part of the Euro1.3m upgrade by the contractor Cape. The site has three silos: two for cement, transported by railway from the Ribblesdale cement plant, and one for GGBS, supplied from the Teesport works in Middlesbrough.

Tarmac, something of a leader in the development of rail in recent times, has continued to invest. In February 2019 it became the first in the UK to install a Liebherr HLH80C 'Supergrab' gantry materials handler. Unveiled at the company's Battersea plant in London, the new equipment offered faster offloading and increased delivery capacity. Also, in a European-first partnership with Ermewa, Tarmac installed GPS tracker systems on its freight wagons, to allow logistics monitoring in real time. Other innovations by the company included trials of VTG Connect units as an aid to maintenance crews, and investing in box wagons (supplied by Freightliner), which are now operating from Tarmac's Tunstead site.

Right: The preheater building at Breedon's Hope cement plant.



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Road vehicles

Interest relating to road vehicles over the past 12 months has predominantly been directed at improved safety, especially that of pedestrians and cyclists, as well as better environmental performance. In both respects, London's lead has been key. Indeed, research was commissioned by Transport for London (TfL) in mid 2018, which showed that the use of articulated lorries for delivering construction materials to site, rather than the rigid lorries currently used, would cut CO_2 emissions and vehicle numbers by 32% and 37% respectively.

In an example of health and safety efforts, the long-term champion of road safety, Cemex UK, plastered yellow safety warnings on the side of its road vehicles and trucks as part of October 2018's 'Don't Chance it' campaign.

Individual companies have also continued to invest in their fleets, or have turned to outsourcing logistics to hauliers. Following a comprehensive strategic review in mid 2018, Tarmac moved to a regional transport model for its Cement and Lime division, rather than its previous national arrangements. Tarmac's own fleet would handle 50% of its bulk cement distribution and 20% of its packed cement, supported by six regional transport companies on five-year contracts. Starting in December 2018, these were Abbey Logistics, Lomas Distribution, Pollacks, Proctors, Stobarts and Wincanton. Wincanton was the choice of Lafarge Cement UK's parent company, Aggregate Industries, which recently announced a group-wide extension of arrangements with its established logistics partner.

Wincanton may be an established partner, but others are new to the sector. Tarmac's contract with Essex Bulk Services prompted the haulier to purchase 16 new silo tankers, ordered through Tankquip. Each semi-trailer was of 31m³ capacity and featured liftup axles to the front and rear, designed to maximise manoeuvrability.

As for the cement makers' own fleets, there have been several large purchases. At the start of 2019, 57 new DAF 8-wheel aggregate tipper trucks entered service with Cemex, but the company making most noise about its fleet renewal in recent months is



GLOBAL CEMENT: UK





Quinn Building Products. Quinn is part way through a multi-million Euro investment, spread over a fouryear programme. In the autumn Quinn Cement took delivery of 14 new mountain lorries, supplied by Mercedes Benz Truck and Van NI. Bodywork for 10 of the lorries was manufactured by C-Tec Engineering of Magherafelt and the remaining four had bodies made in Italy by Drago and fitted by Gleeson Steel & Engineering in Tipperary. All 14 vehicles are now in use in the company's Doon and Swanlinbar quarries, transporting rock to the Quinn Cement plant.

Marketing

There has been a greater emphasis on marketing cement in the 12-24 months, partly through packaging of branded cements, in some cases by companies new to the market. Others have made investments in their 'consumer experience' via digital means.

In this respect, Cemex has taken a lead. In June 2018 it introduced its Construrama online store for construction materials, so that clients can have 'easy access to a wider catalogue of products and be able to select, purchase and follow up on their online order.' The store was part of Cemex's ongoing digital strategy, alongside the Cemex Go online ordering initiative that was announced in November 2017.

Packed cement

Lafarge Cement UK introduced Rapid Cement to its range of packed cements in January 2019. The product contains calcium aluminate, which gives it fast-setting and low shrinkage properties. At the time, national sales manager Jamie Stratford commented that the launch followed significant investment over the previous 18 months to expand the Lafarge packed cements portfolio in the UK.

More noticeable was Quinn Cement's introduction of a new range of three bagged cements in weatherproof plastic packaging. The company has invested more than Euro3m in its cement plant to bring the range to market, which includes three new products: General Purpose Cement, Master Grade Cement and Premium Grade Cement.

Energy and Emissions

At the turn of the new year, Cemex UK announced that in 2019 it would use only renewable electricity at all 150 of its sites supplied by ENGIE, the energy group, the 10 year contract of which was to be extended for a further 12 months. Cemex is also taking advantage of demand-side services such as load management (to avoid peak tariffs), and rapid frequency response.

Soon afterwards Lafarge Cement UK achieved certification to BS EN ISO 50001:2018 in Energy Management Sys-

tems after demonstrating continuous improvement in reducing the energy intensity of its operations.

EU Emissions Trading System (ETS)

The price of CO_2 permits in the EU ETS rose early in the period under review to reach Euro18/t in August 2018, spiking at a seven-year high of Euro20.84/t on 24 August 2018. It had previosuly risen threefold over the previous 12 months and fivefold since the spring of 2017. The rises continued into 2019, reaching Euro27/t in April 2019.

The dramatic increase in price has been driven partly by European Commission reforms to cut the supply of permits from 1 January 2019, but also by the possibility of the UK abruptly crashing out of the ETS in the wake of a no-deal departure from the EU. In this scenario CO_2 allowances held by UK companies would no longer be needed and the possibility of perhaps 50-100Mt tonnes worth of permits being dumped would significantly skew the market. A managed exit would avert such a sale, so prices have rallied in that expectation.

CO₂ capture

Amid this uncertainty, there has been a revival of official interest in CO_2 capture technology. The UK government is now in talks with industry over a funding plan for projects that could start removing greenhouse gases from power stations and industrial plants by the mid 2020s. Ministers have promised Euro197m to develop CO_2 capture ,usage and storage technology, with the aspiration of creating the world's first net-zero CO_2 industrial cluster by 2040.

Secondary cementitious materials

A growing interest in maximising material efficiency and long-term sustainability has manifested itself in many ways over the years. Lately it has been characterised by the exploration of the possibilities of

Right: The UK government is once again investing in CO₂ capture technology, as the EU ETS begins to bite.

GLOBAL CEMENT: UK

calcined clays and other pozzolanas, and their specification in composite cements or as permitted secondary cementitious materials.

Recent revisions to British Standards has enabled just that, with the publication a new Standard, BS 8615: 2019, entitled 'Specification for pozzolanic materials for use with Portland cement,' enabling the introduction of new mixer combinations that include natural and natural calcined pozzolana as a parallel to manufactured cements, in much the same way as for GGBS and fly ash. Coinciding with its release were amendments to the existing BS 8500 to allow these, and some other 'new' cement and combination types, to be used in concrete complying with that standard. The new range of pozzolanas has been added, along with various composite cements and combinations, including ternary mixtures comprsing Portland cement, limestone fines and a third component.

Human resources

In the year of *#MeToo* and the centenary of female suffrage in the UK, there has been a particular emphasis in 2018 on the role of women in industry over the past 12 months. Tarmac's Women in Cement group held its first networking event in May 2018, with colleagues from across the company's Cement and Lime business meeting to discuss industry challenges and opportunities, from PPE and welfare facilities to profiling role models and opportunities to attract more women to careers with Tarmac and in the industry at large.

Hanson recently expanded its Fairness, Inclusion and Respect policy to encourage a more diverse workforce, in line with recommendations from the industry best practice group WISE. Hanson has chosen to highlight training and diversity in its recruitment practices.

UK-based international associations

Following the founding of the London-based World Cement Association in 2017, the past year has seen the establishment of a second organisation, the Global Cement & Concrete Association (GCCA) led by Benjamin Sporton, also based in London. The GCCA's official launch and symposium was held in November 2018. The MPA, celebrating its 10th Anniversary in 2019, duly applied to affiliate to the new association, and is now one of 15 affiliates and 36 member companies.

Since its founding, the WCA, now with representation in over 40 countries, has issued a series of pronouncements on climate change, the electrification of energy-intensive industry and the transition to low CO_2 production, holding its Global Climate Change Forum in June 2018 and releasing its own Climate



Change Action Plan. Its President Song Zhiping recently addressed the World Bank's Energy and New Climate Economy Plenary in a keynote speech on this topic. In December 2018 the WCA held its annual conference in London, entitled 'The Future for the Cement Industry.'

The many possible Brexit futures...

I confidently stated that my June 2018 report on the UK cement sector would be my last from 'inside' the EU. It was the expectation of many that the UK would, indeed, leave the EU on 29 March 2019. This did not transpire, nor did it on 12 April 2019. The result is that the UK economy remains in a very uncertain place. The country may now leave the EU in an orderly manner on 31 October 2019 or without a deal on 1 June 2019. Perhaps, given past performance, there could be another outcome altogether? What remains true, regardless of the outcome, is that the UK cement, concrete and construction industries will continue to adapt and evolve to serve the changing needs of the UK.

Above: Over 30 chief executives from global cement and concrete groups attended the GCCA's Inaugural GCCA AGM and Symposium in London on 23 November 2019.

Below: Three years since the EU Referendum, major questions regarding the future UK-EU relationship remain.



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Interview by Peter Edwards, Global Cement Magazine

In discussion: Andy Hill, Cynosure Partners

The UK has long been a major player in the supply of waste-derived fuels for the cement industry, waste-to-energy sector and others applications within Europe. Here, *Global Cement* speaks with Andy Hill, Managing Director of Cynosure, about alternative fuels in the UK, the EU and further afield, as well as the future trends that will impact the market.



Above: Andy Hill, Managing Director of Cynosure Partners and Chair of the UK Wood Recyclers Association since 2013. *Global Cement (GC):* Let's start with a bit of background. Please could you outline your history in the waste-management / alternative fuels sector?

Andy Hill (AH): I started my career in the waste industry in the early 2000s with a company called Eco in the UK. It operated primarily in the realm of organic wastes and was very progressive in that it focussed on making quality products from the material it received. Eco was also one of the first to target biomass at the waste-to-energy sector, selling to combined heat and power generators in Sweden. From there I went to Suez, where I led the organics and alternative fuels business, which included wood, refuse-derived fuel (RDF) and solid recovered fuel (SRF), supplying to Europe, Scandinavia, Africa and India.

GC: What was your first contact with the cement sector?

AH: One of Suez's Swedish wood clients came over to view one of Suez's waste-processing facilities in the UK and there was a pile of what we considered to be 'residual waste' in the corner. He said he would like to take it in addition to the other fuels he was using. After some discussion, became clear to the Suez team that the material was in fact RDF. That was the genesis of RDF being marketed by Suez. At first we targeted the customers we already had, namely power plants in northern Europe. After a year, Suez was the largest UK exporter of RDF.

Shortly afterwards, we were approached by Neville Roberts from Cemex. He'd seen an opportunity to work with Suez to supply solid recovered fuel to Cemex's Broceni plant in Latvia. A mobile line for SRF was built at one of Suez's existing plants, which enabled a trial of 3000t. Cemex liked the quality and a longer contract then led to the development of Suez's first full SRF production line in the UK.

As Suez developed the SRF side of its business, I was appointed chair of the steering committee for the



Defining... RDF Refuse-derived fuel Lower-grade fuel Predominantly municipal in origin Relatively high in organics, with plastic and paper fractions Moisture 30-35% (High organic fraction) Calorific value = 10-12MJ/kg Predominantly used for waste-to-energy

Defining... SRF

Solid recovered fuel

Higher-grade / Engineered fuel (Typically <30mm, Low Chlorine Predominantly industrial and commerical in origin High in plastics and paper with some textiles, wood and others Moisture 30-35% (High organic fraction) Calorific value = 16-20MJ/kg A replacement for fossil fuels



GLOBAL CEMENT: ALTERNATIVE FUELS



Left: The CIMAT plant in Beni Mellal, Morocco. Suez UK exported SRF to the plant in 2017, its first SRF delivery to outside of the EU. Source: CIMAT website.

group's SRF activities. This gave me the opportunity to interact with colleagues from across Suez on the development of SRF globally. We shipped the first SRF from the UK to outside of the EU, to Morocco, Senegal and India. This developed a real passion of mine, namely developing opportunities for SRF in emerging markets.

GC: Is that the reason you established Cynosure?

AH: I founded Cynosure in April 2018. It brings stakeholders together to develop opportunities in markets in which waste-processing and alternative fuels are not common, using my expertise in supply chain development around the world.

What we find is that, in lots of places, there are significant challenges relating to stakeholder perception about alternative fuels and 'burning wastes,' so local 'buyin' is crucial. What Cynosure does is put together the right expertise, contacts and local stakeholders to come up with optimum supply chain solutions for all involved. When you get it right, it's very rewarding.

We have to view SRF as an engineered fuel product and have to work with local interests to put that position forward in some emerging markets. We have to make the link away from 'waste' towards a replacement for fossil fuels. If a firm does want to import SRF to an emerging market, it should contribute to the local situation and help develop local waste management infrastructure, be it relating to reception, transit, feeding or, indeed, production of SRF. A lot of countries could benefit from the knowledge developed by SRF producers.

GC: What are you working on right now?

AH: Right now I'm 'flat out' on a range of projects, including in the Bahamas, South America and the Middle East. Around 60-70% of my 'run-time' is dedicated to SRF and the cement sector, with biomass taking around 25-35% and the balance my non-executive roles. On the cement side, I am a Senior Advisor for N+P, a well-known Dutch producer of RDF, SRF and pelletised fuels.

There are some longer-term projects too. For example, I have a venture with some partners in Wales, UK, to set up our own SRF production facility. I've also set up some partnerships regarding biomass supply in Portugal and the Caribbean. Biomass is rising up in importance at the moment.

Is SRF a commodity...?

AH: SRF isn't a commodity... yet. Firstly, commodities are consistent in terms of quality against a specification. Cement plants are generally looking for the same requirements, for example 16-18MJ/kg, <15% moisture, <0.8% chloride and so on. At present, some SRF producers face challenges to consistently meet some of these requirements. This is, in part, due to the downward price pressure put on SRF producers by cement manufacturers. The price pressure makes it difficult for SRF producers to invest in their facilities to actually make more consistent SRF. There needs to be a rebalancing of the sector towards long-term stability in supply and away from short-term price-based thinking.

A second point is that commodities have a fairly even balance between supply and demand. This is not the case at the moment for SRF. Eventually, I think this will be the case. If the rest of the world catches up with Europe on thermal substitution rate, that would be a game-changer and SRF would be in much greater demand, enough to call it a proper commodity. Think back to petcoke. In the early 1990s it was given away or refineries even paid to get rid of it. Now it is a valuable commodity.

UK focus

Right: 'Brexit means Brexit,' but what does 'Brexit' mean? UK-based SRF and biomass producers would really like to know.

 does 'Brexit' mean?

 SRF and biomass

 would really like

 AH: While it is quite small in global terms, the UK cement sector is well developed in terms of its alternative

That said, the easiest gains have now been made by UK cement players, and the thermal substitution rate has been fairly

and other alternative fuels.

GC: Let's focus on the UK market. Can you outline the current dynamic in SRF supply and demand?

fuel use. All plants are at an alternative fuel thermal substitution rate of at least 40-50%, with some exceptions up to 70-80%. They use SRF, tyre-derived fuel (TDF), hazardous liquids

static for a number of years. Further gains require significant investment. On the waste management side, the UK generates far more waste than it has landfill, recycling and alternative fuel capacity combined. Quite simply, that's why the UK exports and has become a leading force in Europe in terms of RDF and SRF exports.

GC: Can UK cement producers get hold of the right types of SRF and other materials?

AH: At present, the UK's cement players are able to secure enough of the right kind of material. There's plenty of SRF feedstock, although some further processing facilities would certainly be useful. The trend right now is actually towards more material staying in the UK, as China has introduced new restrictions on the kinds of recyclable materials that it will import. Other Asian countries are now following suit and that's causing a lot of material, particularly plastics and paper, to 'back up' into Europe as a whole. In the short-term, it's good for the cement sector, as it is

Below: The Cemex South Ferriby plant in North Lincolnshire ran with 100% alternative fuels for a period during 2011.





driving up fuel quality and raising energy values. At the same time they are also putting price pressure on SRF producers.

GC: The UK is clearly swamped with waste. What would be the best way to use or eliminate it?

AH: There needs to be contributions from across the waste heirarchy. This includes, in descending order of preference: **Reducing** the amount of waste generated; **Re-using** materials as they have been produced/used; **Recycling** waste that cannot be reused; **Recovery** of energy (waste-to-energy, alternative fuels) from non-recyclables, and; **Disposal.** The latest addition to the waste-heirarchy above re-use is for the public to **Refuse** packaging to drive producers to eliminate the waste that their products generate. There is currently a lot going on in the EU as a whole regarding extended producer responsibility for packaging and wider cultural awareness of disposable plastics. This is, in part, driven by reducing landfill capacity in the UK, which will run out over the next 5-10 years.

GC: What kind of reduction could refusing, reducing and re-using waste have to the amount of waste generated and, by extension, SRF stocks?

AH: That's a hard question and I would not like to put a figure on it. There are so many dynamics at play. It will be interesting to see the effects of new legislation.

Talking exports

GC: How important is the UK to Europewide alternative fuel supplies?

AH: The UK 'stole a march' on other EU Member States in the early 2000s. It currently exports around 3Mt/yr of alternative fuels, including RDF. Of that amount, around 12-15% is SRF, so the amount exported in 2018 was around 350,000t.

In recent years there has been a gradual increase in the amount of SRF leaving the UK for Europe and elsewhere. However, a lot of material also stays at home. This is especially true at the moment with the uncertainty surrounding Brexit (the UK's departure from the EU). SRF suppliers, particularly from France and Italy, are approaching the clients traditionally served by the UK-based exports. A lot of SRF users in the EU are rightly asking questions about whether or not UK companies will reliably be able to supply them after Brexit. French and Italian suppliers are not subject to those questions and are increasingly attractive, especially as Brexit drags on, which just creates uncertainty for both importers and exporters.

GC: How else has the prospect of Brexit, and in particular delays to Brexit, affected SRF producers and users in the UK?

AH: At present the UK has now 'failed to leave' the EU on two occasions, 29 March 2019 and 12 April 2019. This has affected a number of industries. A common example is when companies have ordered larger quantities of raw materials, parts, or whatever they need from Europe, in anticipation of disruption to their supply chain. However, all that's happening at the moment is that they now have too much stock, costing them space in a warehouse, and cashflow issues.

For waste handlers, processors and exporters this is the case too, but in reverse. They want to get material *out of* the UK. However, the unusual thing about the waste processing sector is that they are generally contracted to receive waste over long periods. The waste keeps coming. They can't phone up the municipality and say 'not today thank you!' Pressure builds up in the supply chain.

GC: What's your take on the likely post-Brexit situation for the UK / EU SRF supplies?

AH: As I understand it, from my position as Chairman of the Wood Recyclers Association (WRA), the government and Civil Service have actually done a very good job to ensure that Trans-Frontier Shipment (TFS) permits will continue as at present after Brexit, whatever form that may take. They have engaged with the receiving country's authorities and have agreed that there will be business-as-usual.

That said, there are practical considerations around the ports that nobody can really say much about until after Brexit actually happens. Will there be enough trucks coming and going? Will they be waiting at the dockside for 24-48



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robecco GmbH Industriepark 17 • D - 56593 Horhausen • Phone: +49 2687 92626-0 www.robecco.de • info@robecco.de Far right: Infomal landfilling persists in southern EU Member States such as Greece, despite the practise being outlawed. Credit: blackboard1965 / Shutterstock.com. hours to cross the Channel rather than 1-3 hours at present? Will there be delays to ships?

I'd certainly like to think that the government, or indeed any future government, would dynamically seek to minimise disruption at the point of Brexit. To not do so would be to jeapordise the UK economy and would be very damaging to whichever political party that presided over the transition.

What about the ETS?

GC: How does the EU Emisions Trading Scheme (ETS) and recently increasing CO_2 price affect alternative fuel trends in Europe?

AH: The EU ETS is now, after nearly 15 years, taking effect in the way it was designed to: Reducing CO₂ emissions from industry. Anecdotally, I'm hearing that the EU cement sector becomes vulnerable to imports from outside Europe at a CO₂ emission price of around Euro20/t. At present it is routinely Euro20-25/t. Indeed, it hit Euro27.24/t on 11 April 2019. The European Commission (EC) stated that it would implement import taxes to counteract the possibility of 'carbon leakage' but that has not yet transpired.

Historically, EU cement plants could rely on the over-allocation of permits. During the economic downturn some even made windfall profits by selling them. However, the reduction in the number of available permits is directly behind the CO_2 price rise. The price is going to remain volatile, but it will most likely remain in the Euro15-20/t zone. To mitigate, producers must head towards alternative fuels and waste heat recovery. Biomass in particular has an important role to play, as it is effectively CO_2 -neutral. The CO_2

emitted upon combustion is that which was absorbed as the biomass grew.

There's another facet of the EU ETS that not so many people are aware of. EU-based cement companies can register their plants that don't come under the jurisdiction of the EU ETS. This means that, if they reduce CO_2 emissions in the registered plant, they can claim the CO_2 credits for use in the ETS, as if the registered plant was in the EU. It effectively means 'expanding the border' of the EU ETS and encourages CO_2 mitigation outside of the EU as well as inside it. This is an interesting dynamic for the future.

GC: How will supply and demand for alternative fuels in the EU change in the next 1-2 years?

AH: That's an expansive question, so I suggest we break Europe down into 'North' and 'South.' In general Northern Europe has high use of alternative fuels (65-80% TSR or more) and there is relatively little that can be done to increase that without significant investment. Going forward, the benefit to Northern European plants will come from increased supply of better quality fuels due to China and the Far East import bans. They will be able to be more selective with the alternative fuels they use.

There are some complicating factors however. In Germany for example, all recyclable household waste is collected under the Yellow Bag scheme. That waste cannot be incinerated by law, be it in an energy-to-waste plant, cement kiln or anywhere else. Schemes like that, if adopted widely across Europe, might shift the boundaries on what is available to produce SRF.



Right: The EU ETS CO₂ emission price has approximately quadrupled since the start of 2016. It peaked at Euro27.24/t on 11 April 2019. Source: Sandbag website.





Southern Europe generally has thermal substitution rates that are quite a bit lower than in the North, around 10-20%. There are big gains to be made. However, there is considerably less construction going on now, for example in Spain or Italy, compared to 2005-2007. Cement plants in this region have lots of extra capacity and CO_2 credits. There's relatively little money or incentive for increased use of alternative fuels. The main response, which we're starting to see now, is to close capacity in some of these countries. They are re-adjusting to a new reality.

More broadly, over all of Europe the European Commission is working to set substantially higher targets for paper and plastic recycling. This will have an effect on the amount of SRF feedstock. So too will the amount of landfill, which is set to fall massively in the future. In addition, supply to non-EU destinations will dramatically increase. These factors, plus a myriad of other considerations, will determine the future use of alternative fuels in Europe and beyond. It is not possible to forecast from this point how things will pan out. What I can say is that Cynosure is in a good position to make sense of situations as they unfold and to advise cement producers, municipalities and other parties on the best ways to maximise value for all stakeholders.

GC: It was great to speak with you today Andy. Thank you for your time.

AH: The pleasure is all mine!



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Fan erosion update at Tarmac's Dunbar plant

Cement plants are challenging environments for rotating equipment due to high dust levels. Raw mill fans are no exception and are subject to high levels of erosion. At Tarmac Cement's Dunbar plant in Scotland, UK, the raw mill fan was replaced by an enhanced Howden design during 2007. The replacement fan was specifically designed to handle high silica dust burdens. 12 years later, the fan is still running with only minor, routine outage repairs...

Right: Selected parameters for previous fan and Howden's solution.

Tarmac Cement's Dunbar plant's original raw mill fan was installed in the plant's raw mill in 2006. However, it started to show signs of heavy erosion on the fan blades due to the high silica dust burden. The wear on the fan blades adversely affected the fan performance and, as a direct consequence, the plant output was significantly reduced. The plant incurred high running and maintenance costs as the rotor had to be replaced every six months by the plant's maintenance team. This approach provided the plant with a 'quick fix' but a permanent long term solution was required. Tarmac decided on a new fan with enhanced erosion resistance.

Howden was invited by Tarmac Dunbar to develop a solution. With an extensive installed base within the cement market Howden has gained extensive process experience in plants throughout the world, offering expert and unbiased advice that is about finding the right solution for each application.

Parameter	Previous fan	New Howden fan
Diameter (mm)	2970	2909
Volume (m³/s)	175.3	183.8
Pressure (kPa)	10.5	12.1
Temp (°C)	95	150
Power (kW)	2146	2539
Speed (rpm)	895	990

Solution

Technical experts from Howden and Tarmac Dunbar's operations team worked closely together to determine the best solution for the plant's operating conditions and process requirements. After an indepth study of the customer's environment, technical specifications and a measurement campaign on site, Howden and Tarmac were able to select a new fan



Right: The Tarmac Dunbar plant in Scotland, UK.

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GLOBAL CEMENT: FANS

with a hard surfacing material and scalloped centre plate, which would limit the wear and significantly improve the lifespan of the fan. This solution would mitigate the high erosion rate caused by the silica dust.

Installation

The new fan was installed and commissioned into the plant in late 2007 within seven days. Seamless collaboration between the on-site Howden Service and Tarmac Dunbar teams made this short installation time possible.



Outcome

The new rotor has solved the erosion issues. The fan, which has been running for over 12 years, performs very smoothly with only minor repairs done locally by the UK service team during the plant's annual shutdowns. The new fan not only enabled a reduction in maintenance costs but also increased efficiency due to reduced power consumption. This solution proved to be the best match to the plant's current operating conditions and process requirements. ۲

Left: Howden continues to support and partner Tarmac by providing local support from its UK service teams. Technical expert support is provided from its cement centre of excellence in Chalon-sur-Saône, France.



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US/Mexico: Cemex volumes fall during first quarter

Cemex's cement sales volumes fell by 6% year-on-year to 14.9Mt in the first quarter of 2019 from 15.9Mt in the same period in 2018. It has blamed this on falling volumes in its key markets in Mexico and the US. Its net sales dropped by 3% to US\$3.24bn from US\$3.34bn. Its operating earnings before interest, taxation, depreciation and amortisation (EBITDA) decreased by 6% to US\$562m from US\$598m. Its concrete sales volumes fell slightly to 12.1Mm³ from 12.2Mm³.

"We are pleased with the 1% topline growth we achieved during the first quarter, despite volume declines in our two most important markets: Mexico and the US. During the quarter, we enjoyed improved pricing



performance in all our regions with favourable volume dynamics in Europe. In the US, ready-mix and aggregates volumes also grew despite adverse weather in part of our footprint," said Fernando A Gonzalez, chief executive officer (CEO) of Cemex.

By region, the group also reported falling sales in its South, Central America and the Caribbean and Asia, Middle East and Africa regions. However, sales volumes of both cement and concrete increased by over 10% in Europe. Here, net sales rose by 3% to US\$805m from US\$781m. This was attributed to 'strong' domestic demand in most countries and a mild winter.

Mexico: GCC's sales drop marginally

Grupo Cementos de Chihuahua's (GCC) sales fell in the first quarter of 2019 due to lower cement and concrete volumes in the US. Sales volumes rose in Mexico and the group described a 'favourable pricing environment' in both markets. Its net sales dropped by 1.9% year-on-year to US\$163m from US\$167m. Cement sales volumes fell by 7.3% in the US but they rose by 3.8% in Mexico. Earnings before interest, taxation, depreciation and amortisation (EBITDA) fell by 16% to US\$38.3m from US\$45.6m.

Bolivia: Imports wane in 2018

mports of cement fell by 30% year-on-year to 0.19Mt in 2018 from 0.27Mt in 2017. Data from the Bolivian Foreign Trade Institute and the National Institute of Statistics of Bolivia shows that cement imports were 0.51Mt in 2016, according to Hoy Bolivia. In 2018 Peru was the largest exporting country to Bolivia followed by Brazil, Argentina and Mexico. An increase in local production through the opening on new plants has contributed to the declining imports.

Argentina: Loma Negra in water partnership with Bridgestone

oma Negra and tyre manufacturer Bridgestone have started a partnership to re-use water in the Llavallol suburb of Buenos Aires. Bridgestone will provide Loma Negra with 200,000L/day of filtered water for use at its operations. In return Loma Negra will use less water from the local aquifer.

US: Eagle Materials to review business portfolio

Eagle Materials has started a strategic review of its portfolio of businesses including heavy materials, light materials, and oil and gas proppants. It says it commissioned the review, "...following consultation and input from the company's largest shareholders." During the process it will consider options, including divesting businesses.

Brazil: Grinding plant upgrade

Votorantim Cimentos plans to spend around US\$50m on upgrading its 0.2Mt/ yr grinding plant at Pecém in Ceará. It will increase the unit's production capacity by 0.8Mt/yr. The official announcement was made during a meeting between Camilo Santana, the governor of Ceará, and the board of Votorantim.



CEMENT NEWS

Colombia: Higher production in first quarter

Ordinary Portland Cement production in Colombia grew by 4% year-onyear to 3.05Mt in the first quarter of 2019 from 2.93Mt in the same period in 2018. Data from DANE, the national statistics authority, shows that deliveries to the local market increased slightly, by 3%, to 2.94Mt.



Argentina: 100 jobs cut at Barker plant

oma Negra is planning to make 100 staff redundant at its Barker cement plant in Buenos Aires. It employs 230 direct employees and 90 others at the site. The cement producer says it is reducing staffing levels in order to adjust the plant's production capacity to the local market. It has also threatened to close the plant entirely if it is unable to reach an agreement over the redundancies with unions.

US: CalPortland launches rapid fill bulk station

CalPortland has held the official opening of a rapid fill bulk cement loading station at the Oro Grande, California cement plant. The loading station is the final part of an upgrade project that originally started in 2008 when Riverside Cement owned the plant. This included two new cement loadout facilities, two distribution silos and a cement grinding mill. The upgrade cost US\$58.5m.

"Our engineering staff and the Oro Grande operations team have developed a truck loadout system that is one of the fastest in the industry. The added rapid fill bulk loading stations will prevent long wait times for our customers by reducing the total number of trucks on each loading station, thereby further contributing to reduction of greenhouse gas emissions," said Allen Hamblen, president and chief executive officer (CEO) of CalPortland.



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Peru: Major producers broadly flat during first quarter

Cementos Pacasmayo's sales revenues dropped Slightly to US\$94.6m in the first three months of 2019. Its consolidated earnings before interest, taxation, depreciation and amortisation (EBITDA) also fell

a little to US\$28.3m. However, its sales volumes of cement, concrete and precast rose by 5.4%. It blamed the declines in revenue and earnings on a slowdown in public investment connected to a change in regional governments.

The cement producer also said that it has started selling cement in lquitos. The capital of the country's Amazonian Loreto region has been hard to reach



due to its lack of road links. Cementos Pacasmayo said that it has been 'aggressively' taking advantage of a new tax law that supports its Rioja plant giving it a competitive advantage.

> Meanwhile, UNACEM's income rose by 1% year-on-year to US\$145m in the first quarter of 2019 from US\$143m in the same period in 2018. Its profit grew by 21% to US\$57.5m from US\$47.4m. Its cement despatches increased by 6.3% to 1.27Mt from 1.20Mt. The cement producer said that, although its sale volumes had increased, its prices had lowered. Fuel costs also rose.

US: Martin Marietta revenue up 17%

Marietta has benefited from aggregate sales volume growth in the first quarter of 2019. Its revenue grew by 17% year-on-year to US\$939m from US\$802m. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) rose by 28% to US\$159m from US\$124m. However, the gross profit on its cement business was down and both sales and profit were down for ready-mixed concrete. Despite this the company said that its cement shipments and pricing increased 7.3% due to demand in Texas, a new Houston-area sales yard and an enhanced product line.

Colombia: Cemex strikes deal over delayed Maceo plant

Cemex Colombia has reached a deal with the Attorney General allowing it to operate its Maceo cement plant in Antioquia. Under the terms of the government-brokered agreement Cemex will lease the land from CI Calizas y Minerales for around US\$15,000/yr, according to the El Espectador newspaper. The lease has a duration of 21 years and can be extended by another 10 years.

In 2016 Cemex fired several senior staff members in relation to the Maceo project and its subsidiary's chief executive resigned. This followed an internal audit and investigation into payments worth around US\$20.5m made to a non-governmental third party in connection with the acquisition of the land, mining rights and benefits of the tax free zone for the project. The US Department of Justice is also investigating the project.



US: Tenders out for new Ragland line

National Cement is tendering for a new 5000t/ day production line at its Ragland plant in Alabama. The subsidiary of France's Vicat has reportedly had a permit for the upgrade since 2006. The plant currently operates one dry process kiln with a production capacity of 1.9Mt/yr.

Dominican Republic: Cementos Argos plant breaks production record

Cementos Argos says it had broken its production record at its 0.54Mt/yr Najayo grinding plant. The plant produced 50,194t in one month, its highest rate in 20 years. The Colombian company operates two ready-mix concrete plants and a cement grinding plant in the country.

Brazil: New lime grinding plant

Votorantim Cimentos plans to open a limestone grinding plant at Nobres, Mato Grosso state, as part of a diversification drive. Once the new plant is opened in the second quarter of 2019 the company will have a total agricultural lime production capacity of 4.5Mt/yr.



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Robert McCaffrey, Global Cement Magazine

Review: IEEE-IAS/PCA Cement Industry Conference

The 61st IEEE-IAS/PCA Cement Conference has taken place in St Louis, Missouri, with over 1000 registered delegates and over 150 exhibitors. The next IEEE-IAS/PCA conference will take place in Las Vegas on 19-23 April 2020.

hris Macey of Resco Refractory Products, as ✓IEEE-IAS CIC chair, welcomed all delegates to the 61st IEEE-IAS/PCA, especially the 300 first-time attendees. Chris gave a clear warning to all delegates to avoid any behaviour that could be interpreted as 'anti-competitive.' Corinne Fields of Refratechnik, conference organising committee chair, introduced the conference and pointed out that the event is organised by a large team of dedicated volunteers, backed-up by the professionals at World Class Events. Corinne introduced Nate Murphy of FLSmidth, CIC vice chair, who introduced the nearly-50 papers that were to be given at the event, and who, in turn, introduced LeRoy Stromberg, keynote speaker, chief construction officer of the Alberici Construction Group.

LeRoy Stromberg firstly introduced the Alberici group, a diversified engineering group which was involved in the construction of the LafargeHolcim Ste Genevieve cement plant. He commended the cement industry for taking the lead on safe working, saying that it is easier working with a supplier that insists on safe working practices. LeRoy pointed out that safe working is good business and stated that his company has run for 20 million hours without a lost time injury. Advances in construction that he mentioned include 3D models of new construction and laser-scans of either existing or newly-built concrete construction. Preconstruction offsite of as many components as possible has been a major shift in working practices, leading to increased safety, higher quality and cost reductions.

> **Robert McCaffrey**, editorial director of Global Cement Magazine, gave the next presentation, on his vision of the cement industry in 2050. Full details were included in the May 2019 issue of Global Cement Magazine.

> John Goetz, former plant manager of Ste Genevieve plant, next introduced the plant, which was the destination of the conference field trip. He reminded delegates that when it was built it was the world's largest cement plant and is capable of shipping 20,000t of cement per day. The plant has achieved over 1100 days since the last lost time accident. It has achieved

a world record of 14,500t/day of clinker, and achieved a feed rate of 1000t/ hr of feed into the kiln, sustained over 40 hours. The plant was the number one rated plant in LafargeHolcim in 2018, based on efficiency, cost and sustainability.

The conference operates parallel sessions, so our review includes only a selection of papers. John Kline started off the technical presentations at the conference and explained how to get the most out of the plant's expert control system. John's essential message was that the clinker production process is exceptionally complicated. A knowledge-base is required, but an 'inference engine,' must be used to interpret incoming data and to act upon it. Kiln feed consistency makes an expert control system's job a lot easier and allows continuous efficiency improvement.

Greg Davis of Profi-Vision, Inc. next presented on control system evolution. He suggested that new hires from engineering schools are not going to be prepared to deal with antiquated technology, but instead will insist on adding value using more modern and sophisticated control systems (otherwise they will, sooner rather than later, walk out the door). Greg reiterated that cyber-security will become ever-more-important as cement plants become progressively dependent on software and control systems.

Steve Coppinger of CalPortland explained how his company is tracking down potential energy efficiency improvements, using 'treasure hunts,' and



1: KettenWulf, Inc. Left to right: Scott Martin, Chris Pfahl and Brian Ludvigsen.

2: Dalog Diagnosesysteme. Left to right: Franz Muschaweck, Birgit Muschaweck, Christoph Muschaweck and Sebastian Muschaweck.











4: Unicast: Dan Kowarski (left) and Steve Kirschner (right).

a company-wide 'Energy Cup'. Steve suggested that the least energy-efficient piece of equipment in any cement plant will probably be the compressors for production of compressed air, making them a focus for improvements. The Mojave plant has 3MW of 'behind the meter' (private) dedicated wind power, helping CalPortland win the EPA Energy Star Partner of the Year award for 14 years in a row. The Energy Star programme has helped the company save US\$113m since 2004.

Mary Beth Kramer of Kramer Consulting, in answer to a question in the environmental session, made the point that cement companies do not need to 'over-post' on social media: she suggested that posting news 'once a fortnight or month' is enough.

An interesting session on how to create a sustainable workforce in the cement industry gave rise to a number of useful points, including, from Frank LaRosa of BWF Envirotec, that employees can expect some basics from a job, including personal growth (including training and engagement), stability and, crucially, safety. Dennis Johnson of US Minerals said that any safety programme is only as good as the weakest employee. Shane Wilson of ZAP Engineering pointed out that employees most highly value training and development, flexible hours, cash bonuses, healthcare, pension contributions and vacation allocations - in that order of importance. Patrick Hoffman of Cemex tells his colleagues to look for the aspect of any situation that could hurt them, but also pointed out that, after eliminating the rest of the risk from an operation, "PPE is the last resort." Dennis Johnson, after exhorting delegates to learn something new every day, reminded his listeners that "If it can't be grown, it must be mined."

John Kline next asked, 'What's up with vertical mill drives?' New mill drives are now approaching 12MW and many larger mills are now capable of grinding over 500t/hr, partly because mill production increases with the square of the table radius. Planetary gear boxes have become more popular in the last 20 years, since they help to balance the bed load of a vertical roller mill. Modern mills may have multiple drive arrangements, with perhaps four or six motors and drives powering the table. Gears integrating a motor are now coming into operation, although John Kline was somewhat sceptical of their design advantages. Spare gear boxes are sometimes made available in a group, or between companies cooperating together, in case of a gear failure. Failures occur most often if the drive has been operated beyond its design limits, or, often, if there has been a failure in the lubrication system. "Filter everything, trust no-one!" said John, with regards to lubricant fluid quality. Efforts should also be made to ensure that the table has an even load, that the pressure applied by the rollers is equal and that the feed chute is exactly in the middle of the table. Crucially, the longer the installed gearbox runs, the more important is the maintenance of any spare gearbox.

In the General Practices session, **Dominik Aufderheide** of Di Matteo described an holistic approach to using alternative fuels for cement manufacture. Dominik pointed out that the German alternative fuel thermal substitution rate (TSR) is now 66%, a level that should be attainable in every country worldwide. Combustion must be understood before it can be optimised. The process



5: Karsten Horn of INFORM GmbH (left) and Justin Newell of INFORM Software Corporation (right) visit *Global Cement*.

6: The REDECAM stand. Marcello Contarini (left) and Salvatore Gallo (right).

7: FCT Combustion. Left to right: Blaz Jurko, Alex Jurko, Ricardo Costa, Con Manias, Adriano Greco and Paulo Mazzei.

8. Haver & Boecker USA: Davor Marusa (left) and Luis Varel (right).







9. The Di Matteo Group. Left to right: Svetoslav Chopov, Ronnie Acevedo (KIMA Process Control), Dominik Aufderheide and Rafael Castan.

10. Horsburgh & Scott: Left to right, Matt Clarke, Robert Black and Daryl K Boe.







11: Thermoteknix Systems Ltd: Bob Blocksidge (left) and Jason Titmas (right).

12: Total Lubricants: left to right, Pierre-Marie Maurice, Wayne Hughes and Olivier Lerasle.

13: Loesche USA: left to right, Manuel Moreno, Eduardo Garcia, Juergen Triep and Guillermo Beniumea.









geometry of the calciner

was optimised, to reduce

stratification, to improve

fuel mixing and to ensure

near 100% fuel burnout. Carbon volatiles can be

14: Harbison Walker International. Left to right: Larry Morley, Jeff Branisel, Lawrence Fitch, Francois Laplante and Mark Flynn.

15: HMC Precision Gears' Nathan DeVictor.

16: Scheuch: Brian Mann (left) and Camilo Buitrago (right).

17: DCL, Inc,. Tim English (left) and Nathan Browe (right).





starts with dehydration of the fuel particle, proceeds through pyrolysis, then to particle ignition and burnout and then finally to an ash or char stage, when the ash is incorporated into the clinker. The complete characterisation of alternative fuels particles is vital, to be able to ensure that all particles will be able to go through all stages of combustion without causing problems to pyroprocessing. Disagglomeration of alternative fuel particles may be important to ensure proper burn out. Dominik mentioned a modular and mobile AF receiving station that can be used as a 'starter kit' for companies wishing to start to use alternative fuels.

Tahir Abbas of Cinar Ltd next spoke about 'A calciner at its best,' specifically the design of the calciner at the Ste Genevieve plant. A mineral-interaction CFD model was used to optimise the design of the calciner, leading to a patent for the preheater, creating ultra-low NOx and low CO. High fuel burnout, fuel flexibility and zero hotspots were the other requisites for the calciner. Through modeling, the

used to reduce the CO and NOx, and the production of the volatiles was a crucial design parameter to achieve low design emissions. Gerard Lynskey of SSI Consulting spoke on optimisation of homogenising silos. Generally the older

flat-bottom and more squat homogenising silos use very high pressure air to aerate the material and to effect mixing, to produce a more homogeneous feed for clinker production. Newer blending silos tend to be more slender and to use lower-pressure air, which tends to be less expensive, and to use an inverted cone for material extraction. The homogenising process with high pressure air tends to push the silo walls outwards, while in a blending silo the creation of a flow channel tends to pull the walls inwards. The design engineers must take these differences into account when designing the silos.

John Kline of Kline Consulting next asked "Can safety be the master measure?" The top 10 leading causes of workplace injuries are, in order of prevalence, overexertion, falls on the same level, falls to lower levels, being struck by an object or equipment, other exertions or bodily reactions, roadway accidents involving motorised land vehicles, being caught or compressed by equipment or objects, being hit by an object, and repetitive motions causing







injury. John went on to give his listeners many nuggets of safety advice, mined from his time managing safety at 125 cement plants across the Lafarge group. Safety must be designed into your plant, and hazards must be designed out, while 'near-misses' must be closely examined. Employees should take responsibility for their own safety, but at the same time, they must have the authority and ability to stop unsafe work whenever and wherever it takes place. Encourage and reward safe behaviours, and promote procedural justice. A dirty plant is an unsafe plant, with many costs being incurred. Not least, a dirty plant has a negative effect on staff morale.

Second day

On the second day of the conference, **Tom Beck**, chairman of the US Portland Cement Association and CEO of Continental Cement, shared the current concerns of the association. "Now that the spotlight of public opinion is on us, it's even more important for us to tell the good news story about cement." Tom affirmed that the sector would prefer a cap and trade carbon permitting scheme, similar to the EU ETS, rather than a straight carbon tax. Tom suggested that a perhaps \$2tn infrastructure bill may be coming down the legislative pipeline in the US, which would be great news for all participants in the industry.

Franz Ulm, professor at MIT's Concrete Sustainability Hub, said that US roads have a significant and increasing need for rehabilitation, with one mile in five being considered in poor condition. Franz suggested that the inbuilt accelerometer in smart phones can be used to determine surface roughness of highways. An app, 'Carbin,' can automatically log this 'roughness' information and then sends it in anonymised form through to a central server, which it is then analysed. Widespread use of the app could quickly map the entire US road network. As is widely known, concrete roads, due to their stiffness, promote fuel efficiency of vehicles driving upon them, compared to asphalt roads and this can be seen in the collected data. The app can be downloaded from fixmyroad.us.

John Kline was next up (again), speaking about how the cement industry is addressing questions about its production of CO_2 . He pointed out that the cement industry has three main levers to address the issue, including increased use of supplementary cementitious materials, alternative fuels and novel cements. John gave examples of many different ways to sequester carbon dioxide, among them the production of new building materials. His presentation is available for download from www.cement2050.com.

The PCA's chief economist, **Ed Sullivan**, next gave his traditional cement market outlook. He gave vent to his frustration at the still-outstanding infrastructure bill and stated that the economy will likely see a period of lower growth in the next couple of years. However, he suggested that the potential for a near-term recession is low - about a 20% chance of a recession

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18: The RAI team at your service! Left to right, Adrian Ross, Scott Carter, Jed Dunn and Randy Buchman.

19: MZP Kiln Services Inc.: Jakub Kolar, CEO (left) and Jiri Bednar, Head of Projects Department (right).

20: South Industries: Samuel Strong (left) discuss domes on the company's stand.

21: Bosch Rexroth's Ashok Amin (right) and Jeff Harlow (left) in discussion with a visitor.

22: IAC smiles for the camera. Left to right: Morgan Maloney, Russ Maloney, Eric Pritchett, Kae Huff and Juan Larrea.

23: Webster Industries. Left to right: Kevin Schroeder, Kurt Robinson and Erik Matheson.

24: KOBO USA's Dominik Stracke (left) and Carlos Soteldo (right).

25: NGC Transmission Equipment (America), Inc. Left to right: Glen Cahala, Benjamin Laudin and Michael Thiel.

26: CMD Gears' Dominique Perrier, recently promoted to general manager FCMD North America.

27: AirStream System's Mark Glover (left) and Ronald Wroblewski (right).



















30: Hazemag. Left to right: Dave Walters, Buck Hayes (Hayes Equipment Company) and Jeffrey Sikora.

> 31: Gebr.Pfeiffer's team. Left to right: Chris Oesch, Linda Jurko and Blaz Jurko.

32: ITECA: Anis Haider (centre) and Oleg Sanochkin (second from left) in discussion with visitors.



28: Krosaki AMR Refractarios/Refractaria, KilnTec, Inferno.

Left to right: John Berry, Andrea Beale, Dan Beale, Cori

Berry, Anita Porterfield and Andrew Porterfield.

28





29: Keith Manufacturing. Kevin Desjardins (left) and Dale Nixon (right).













within 12 months. This is despite the now-'elderly' 118-month-long current economic growth trend in the US, which is ongoing albeit at a modest rate of growth. Ed forecast continued low interest rates, and only very modest increases for the next three years. However, states are now seeing the growth of deficits in budgets, due to continued growth in entitlements. This may mean that spending may have to switch

33: Fives Group. Left to right: Lars Hansen, Chris Singleton, Jean-David Salla, Yan Huerre, Hugo Arroyo and Max Vaccaro.

34: Cement Alliance. Left to right: Rodolfo Santelli (Refractarios Alfran), Tom Turano (Bedeschi), Reinhard Ringdorfer and Alexander Lederer (Unitherm), Thomas Hacker (Cement Alliance/ CemTeCon), Feliciano Spina (Bedeschi), Eugenio Altuna (Estanda Fundiciones) and Javier Torres (Vidmar).

35: Vezér Industrial Professionals. Left to right: Edward Albornoz, Luis Sucre and Derek Nicholls.

36: Xavier d'Hubert gives his presentation on micro-grids for the cement industry.

37: Williams Patent Crusher & Pulverizer. Mike Laskowsky (left) and Dan Davis (right).

38: W.L. Gore & Associates. Left to right: Mark O'Truk, Pablo Soria, Chris Polizzi, Rick Lalli and Carlos Lopez Cuevas.

39: Magotteaux. Left to right: Ronnie Snyder, Matthew Hughes and Greg Gillespie.

40: Dome Technology. Bradley Bateman, CEO (left) and Lane Roberts, sales manager (right).

41: Claudius Peters. Left to right: Ryan Hogan, Andre Vos, Henrik Wetegrove and Rob Hetrick.

42: TORXX[®] Kinematic Pulverizer Ltd. Jeff Bowers (right) in discussion with a visitor.

43: MDG Handling Solutions. Left to right: Luca Mastrorocco. Davide Gambarotta and John Mulholland.

44: SICK. Dan Bruski (centre) and Felix Bartknecht (second from right), in discussion with interested visitors.

45: Wahl Refractories. Gilles Mercier, Director-International & MPI Sales (left) Stephen D Cherico, President & CEO (right).















44







48: Wear Concepts' Cory Booz (left) and Michael Hipskind.

49: Sabia's April Montera (left) and Justin Calabro.





46: Plattco Corporation. Left to right: Bob Bourgeois,

47: Hofmann's Erwan Godard (left) and Don Lowrey (right).

Rafael Bettger and Kevin Guay.

50: Pneumat Systems, Inc. Sam Cebula (left) and Dustin Williams (right).





52: Temperform. Left to right: Emilio Cortez, Gloria Webber, Blake Albritton and Mark Hesse.

53: Vortex. Left to right: Shane Barber, Rick Leggett and Kevin Peterson.

54: Fons Technology International. Left to right: Ugras Akay, Gerry Labelle (visitor) and Mogens Fons.

55: Dynamis. Luiz Pinho (left) and Xavier d'Hubert (right).

> 56: FB Material Handling. Juan Giraldo (left) and Miguel Muñoz (right).

57: The Petuum stand. Left to right: Julian Muriel (Argos USA), Roberto Linares (Petuum), Elkin Rodriguez (Argos USA) and Colleen Harig (Petuum). *Read our interview with Petuum on Page 10.*



58: The team from Process Solutions Canada Limited (PSCL). Left to right: Matthew Furry, Fred Hauf, Greg Scribner, Craig Leavitt, Ian Harrison, Mir Ali and Lisa Furry.

60: The exhibition stand of well-known refractory specialist Refratechnik. Stefan Puntke, managing director (right), in discussion with customers.

> 61: Wikov's Sergei Jolkin (left) and Tomas Zrostlik (right) facing camera in discussion with a visitor.

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59: Stefano Dalla Casa (right) and Robert Bobeck (left) from Boldrocchi.









away from infrastructure spending. He reminded delegates that the US took the time from George Washington to the end of the presidency of Ronald Reagan to build its first trillion dollars of debt. Now the country increases its borrowings by one trillion dollars every year, totalling US\$25tn in 2019. Servicing the national debt is not currently an issue, but an economic downturn could bring problems. Ed suggested that the southeast and west of the country will continue to see the strongest growth in cement demand.

Kirk McDonald of CalPortland Cement next spoke on the merits of Portland-Limestone cements (PLC), which in the... and access the full event photo gallery....

South East Asia: LafargeHolcim completes withdrawal from South East Asia

 $S_{\rm sell}$ witzerland's LafargeHolcim has signed a deal to Sell its 51% stake in Lafarge Malaysia to YTL Cement for US\$396m. Lafarge Malaysia operates three

integrated cement and two grinding plants. With the divestment, LafargeHolcim will fully exit the Malaysian market. LafargeHolcim has also signed an agreement with YTL Cement Singapore for the divestment of its entire 91% share in Holcim Singapore.

YTL Cement is part of YTL Corporation, a Malaysian infrastructure conglomerate, which is active in cement

production, construction, property development and utilities. The deal is expected to be completed within the second quarter of 2019. It is subject to approval by regulatory bodies.

LafargeHolcim subsequently agreed to sell its 85.7% share in Holcim Philippines to San Miguel Corporation

for US\$2.15bn. Holcim Philippines operates four integrated cement plants and one grinding plant. The deal is expected to close in the fourth quarter of 2019 and

> will be subject to regulatory approval. "With the divestment of

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"With the divestment of our activities in the Philippines, we are completing our exit from the increasingly hyper-competitive arena in South East Asia. While this decision is based on our strategic portfolio review, we have reached very attractive valuations allowing us to achieve a new level of finan-

cial strength," said Jan Jenisch, chief executive officer of LafargeHolcim.

In February 2019 LafargeHolcim completed the sale of Holcim Indonesia, which operates four cement plants, 33 ready-mix plants and two aggregate quarries, to Semen Indonesia for US\$1.75bn.

India: Cement production up 10% in first quarter

Cement production grew by 10% year-on-year to 91.5Mt in the first quarter of 2019 from 81.9Mt in the same period of 2018. Data from the Department for Promotion of Industry and Internal Trade (DPIIT) at the Ministry of Commerce & Industry shows that production sped up in March 2019.

North Korea: Upgrade announced

The state-owned Sangwon Cement plant plans to increase its production output by upgrading a speed reducer in a raw material crusher. The plant launched a seawater-resistant cement product in 2018, according to the Pyongyang Times newspaper. It has been supplying this product to projects in the Wonsan-Kalma coastal tourist area.

Thailand: SCG's cement results improve

S iam Cement Group's (SCG) cement division's sales grew by 4% year-on-year to US\$1.51bn in the first quarter of 2019. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) rose by 10% to US\$222m. It attributed the growth in earnings to increased cement prices and cost savings.



China: Selected first quarter results

Anhui Conch's revenue grew by 63% year-onyear to US\$4.53bn in the first quarter of 2019 from US\$2.79bn in the same period in 2018. Its net profit rose by 27% to US\$903m from US\$710m.

China Resources Cement's turnover fell by 6.7% year-on-year to US\$957m in the first quarter of 2019 from US\$1.03bn in the same quarter of 2018. Its profit fell by 16% to US\$189m from US\$226m. Its cement sales volumes dropped by 7.7% to 15.2Mt from 16.5Mt, clinker sales fell by 2% to 1.16Mt from 1.18Mt and concrete volumes declined by 15% to 2.58Mm³ from 3.03Mm³. Sales volumes fell in the company's main markets in Guangdong and Guangxi.

Huaxin Cement's sales revenue rose by 33% year-on-year to US\$887m in the first quarter of 2019 from US\$669m in the same period in 2018. Its net profit nearly doubled to US\$150m from US\$78.7m.





The Ministry of Investment and Foreign Trade of Uzbekistan has proposed abolishing cement import benefits. It wants to prioritise local production, according to Esmerk CIS News.

India/China/UAE: UltraTech touting Binani's overseas assets

UltraTech Cement is looking for buyers for the cement production assets of Binani Cement in China and the UAE. It purchased Binani Cement's share in joint-ventures in these countries, according to the Hindu newspaper. In China it runs a 3Mt/yr integrated plant and in the UAE it operates a 2.5Mt/yr grinding plant. However, before it was acquired by UltraTech Cement, Binani Cement was unable to sell its stake in its Chinese unit. Attempts to sell the plant in UAE are also expected to be difficult due to market overcapacity.

India: Dalmia Bharat's income rises

Dalmia Bharat's income rose by 7% year-on-year to US\$1.36bn in the year to 31 March 2019 from US\$1.26bn in the same period in 2018. Its cement sales volumes grew by 10% to 18.7Mt from 17Mt. However, its earnings before interest, taxation, depreciation and amortisation (EBITDA) fell by 5% to US\$278m from US\$292m. The cement producer blamed mounting slag and petcoke costs for the growing production costs although it noted that the prices had started to 'soften' in the most recent quarter.

Afghanistan/Iran: Trade patterns shift after resumption of US-led sanctions

Exports of cement from Iran to Afghanistan have increased following the resumption of US-led sanctions on Iran. Speaking on Afghanistan's Tolo News TV, Janagha Navid, the spokesman of Afghanistan's Chamber of Commerce and Industries, said that cement imports from Pakistan had decreased, while imports from Iran had risen, due to depreciation of the Iranian Rial against foreign



Australia: Adelaide Brighton issues profit warning

Adelaide Brighton expects that its net profit in 2019 will fall by up to 15% year-on-year from the US\$133m it reported in 2018. It forecasts that the decline will be driven by weakening demand from the residential market, increased competition from cement imports, higher competition in Queensland and rising raw material costs.



Australia: Wagners expects US\$7m loss in earnings over Boral suspension

Wagners expects that its on-going suspension of cement products to Boral will cost it around US\$7m in 2019. The company decided to stop the supply following Boral's notification that it had found a cheaper source in March 2019. Since neither Wagners nor Boral have been able to resolve the disagreement it has now been referred to the Supreme Court of Queensland.

Bangladesh: Premier's profit falls

Premier Cement's profits in 2018 have been reduced due to rising raw material costs. Its net profit fell by 21% year-on-year to US\$5.24m in 2018 from US\$6.37m in 2017. Its revenue rose by 8% to US\$119m from US\$110m. Kazi Md. Shafiqur Rahman, the company secretary of Premier Cement, also blamed market competition for the fall in profit.

currencies. Navid highlighted that Afghan customers prefer Iranian cement over Pakistani cement, citing quality considerations.

In 2018, Iran exported US\$127m-worth of cement to Afghanistan, broadly similar to imports from Pakistan, which came to US\$132m. Navid added that Afghanistan imports 80,000t/yr of cement, while stressing that the country's domestic cement production capacity could increase to 420,000t/yr.



Contents

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Nigeria: Results from Dangote and CCNN

Dangote Cement has reported that its earnings for the first quarter of 2019 fell due to national elections and price cuts in Nigeria, as well as rising competition elsewhere in Sub-Saharan Africa. Its earnings before interest, taxation, depreciation and amortisation (EBITDA) dropped by 11.2% year-on-year to US\$312m in the first quarter of 2019 from US\$351m in the same period of 2018.

Sales revenue fell slightly to US\$670m, due to declines in Nigeria. Cement sales volumes grew slightly to 3.99Mt in Nigeria and by 4.8% to 2.35Mt in the rest of Africa. Despite this, Dangote Cement noted that its sales volumes in Nigeria were its third-highest quarterly volume ever.

"It was a challenging quarter with delays to the Nigerian elections that impacted sales, increased discounting in Nigeria and tougher market conditions in South Africa and other Pan-African markets. In addition, our variable costs were hit by foreign exchange effects, as well as higher fuel and distribution costs," said Joe Makoju, CEO of Dangote Cement. Meanwhile, the Cement Company of Northern Nigeria (CCNN) saw its profit rise in 2018 following its merger with Kalambaina Cement. Its profit after tax grew by 77% year-on-year to US\$15.9m in 2018 from US\$8.9m in 2017. It produced 0.76Mt of cement in 2018 and sold 0.74Mt. The company is planning to expand its production distribution in north-east and north-central regions as it does not expect the north-west to absorb its enlarged production capacity of 2Mt/yr.



Qatar: QNCC preparing to export 3Mt/yr

Qatar National Cement Company (QNCC) is preparing to export up to 3Mt/yr of clinker to markets in Asia and Africa. QNCC chairman and managing director Salem Butti al Naimi said that the company was actively talking to Indian companies and that an agreement would be signed shortly, according to the Qatar Tribune newspaper. He also mentioned potential targets in Iraq, Yemen and other Gulf Cooperation Council states.

Mozambique: Matola plant shut

Cimentos de Mocambique has closed its Matola plant due to low demand. It made the decision following large losses. The subsidiary of Brazil's Intercement said that the unit cost US\$25m. It operates one integrated plant and four grinding plants in Mozambique with a total production capacity of 2.9Mt/yr.

Guinea: CIMAF plant to triple capacity

Mamady Touré, the adminstrative and finance director of Ciments de l'Afrique (CIMAF) Guinea, says that the company plans to triple the production of its Dubréka grinding plant to 1.5Mt/yr. The announcement was made as part of a customer event.



Gabon: Cement production rises

Cement production rose by 42% year-onyear to 0.49Mt in 2018 from 0.34Mt in 2017. Sales rose at a similar rate to 0.49Mt, according to Infos Gabon. The Ministry of Economy attributed the growth in production and sales to the government's decision to suspend imports of cement in mid-2017.

Subsequently, CIMAF Gabon assured the government that it can increase national production to over 1Mt/yr from 0.65Mt/yr at present. Carmen Ndaot, the Minister of Industry, and other government representatives visited the CIMAF's grinding plant as part of an assessment of a memorandum of understanding signed with the subsidiary of Morocco's CIMAF, according to the L'Union newspaper. The company plans to spend Euro100m towards building a new plant. It is scheduled to be completed by mid-2021.







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Algeria: Cement exports in full swing

he Algerian cement industry has now exported over 0.5Mt of clinker to Europe as part of a shift to international markets. Additionally, African markets are increasingly being targeted by Algerian cement producers. Samir Setiti, the president of Groupe des Ciments d'Algérie's (GICA) Sodismac subsidiary, said that the company was currently transporting 15,000t of clinker from its Beni Safi plant to the Ivory Coast from the Port of Ghazaouet, according to the L'Expression newspaper. This is part of 15 export operations the cement producer has conducted since May 2018.

Meanwhile, Ciment Lafarge Souakri (CILAS) has started exporting a consignment of 30,000t of cement to Cameroon. The operation was handled via the port of Annaba. It is the cement producer's sixth large-scale export operation to another African country. The subsidiary of LafargeHolcim is using Lafarge Trading for logistical support.

Liberia: President gives grinding plant update

he Liberian President George Manneh Weah (right) has written to the Liberian Senate to agree investment and incentive agreements between the government and Starr Cement. The cement producer intends to build a 0.6Mt/yr grinding plant, according to the New Dawn newspaper. The project will cost US\$41m. The proposed plant will supply cement locally and to other countries in the Mano River Union, including Ivory Coast, Guinea and Sierra Leone.



Credit: Alexandros Michailidis/Shutterstock.com.

Oman: Raysut to buy Sohar

aysut Cement has confirmed plans to Kuy Sohar Cement's 1.7Mt/yr Sohar grinding plant. The deal also includes the company's distribution network. Sohar Cement holds a 70% stake in the business. UAE-based Fujairah Cement owns 30%.

Nigeria: New pozzolana cement plant

gbonnaya Onu, the Nigerian Minister of Science and Technology, has inaugurated a pozzolana cement plant at Bokkos in Plateau State. The plant is currently being commissioned, according to the News Agency of Nigeria. The 5000t/yr grinding unit is intended to produce low cost cement. It is being run in conjunction with the Nigerian Building and Road Research Institute (NBBRI).

Zimbabwe: LafargeHolcim backs local unit

igcap witzerland's LafargeHolcim has lent US\$30m in the form of a $oldsymbol{\Im}$ long-term loan to its subsidiary Lafarge Zimbabwe. The company has also taken out a short-term loan of US\$4.4m from a local bank, according to the Zimbabwe Independent newspaper. In its financial results for 2018 Lafarge Zimbabwe reported that its revenue grew by 24% year-on-year to US\$72m in 2018 and that its profit before tax grew strongly to US\$4.4m.

Nigeria: First cement board plant in West Africa

 ${f C}$ inoria FABCOM, a Chinese building materials and structural en $oldsymbol{O}$ gineering firm and part of global giant Sinoma, has announced plans to open a fibre cement board manufacturing factory in Abuja. Liuxing Wang, Managing Director of Sinoria FABCOM, said that the new line of products would be the first of their kind to be manufactured in West Africa. He added that his company had decided to diversify into fibre cement board due to Nigeria's raw materials and the success that it has already had with its stone-coated roofing sheets in the country.

Namibia: IDC wants bigger slice of Ohorongo

he Industrial Development Corporation (IDC), a South African development finance institution, says it would like to increase its share in Ohorongo Cement. It has made the statement in response to the acquisition of a majority stake in the cement producer by Singapore's International Cement Group in March 2019.

The IDC owns a 14% stake in Ohorongo Cement. It says it is committed to the cement producer and that it wants to support Namibia's indigenisation programme through local ownership. It is talking to other shareholders, including the Development Bank of Namibia (DBN), which owns an 11% stake in Ohorongo. The DBN has also expressed concerns on the takeover by International Cement Group.

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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 72. In this issue subscribers receive information from eight more countries: China, Armenia, Dominican Republic. Philippines, Senegal, Nigeria, Malawi and Pakistan.

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

Egypt: Ordinary Portland Cement prices as of 16 May 2019: Arabian Cement (Al Mosalah) = US\$48.94/t; Arabian Cement (Al Nasr) = US\$47.48/t; Arabian Cement (Askary Beni Suef) = US\$47.48/t); Elnahda Cement (Al Sakhrah) = US\$47.17/t; Lafarge (Al Makhsous) = US\$47.93/t; Medcom Aswan Cement (Aswan) = US\$47.64/t; Arish Cement (Alaskary) = US\$48.05/t; Sinai Cement = US\$46.88/t; Suez Cement = US\$47.17/t; Tourah Portland Cement = US\$47.76/t; Helwan Cement = US\$47.76/t; Misr Beni Suef = US\$48.23/t; El Sewedy Cement = US\$48.932/t; Misr Cement Qena = US\$47.17/t.

White cement prices as of 16 May 2019: Sinai White Cement (Alabid Elada) = US\$138.29/t; Sinai White Cement (Super Sinai) = US\$132.43/t; El Menya Cement (Super Royal) = US\$132.43/t; El Menya Cement (Royal Elada) = US\$133.90/t; Menya Helwan Cement = US\$132.43/t.

Blended cement prices as of 16 May 2019: Helwan Cement (Al Nakheel) = US42.78/t; Helwan Cement (Al Waha) = US43.36/t.

Sulphate-resistant cement prices as of 16 May 2019: Lafarge (Kahger Albehar) = US\$50.68/t; Suez Cement (Al Suez Sea Water) = US\$50.39/t; El Sewedy Cement = US\$43.36/t.



Dibo, Director of Diamond Cement Mali (DCM) has reiterated to the public and construction firms that it continues to produce cement as rapidly as

Mali: Ibrahima

possible amid soaring cement prices in the country. He insisted that ex-factory prices had been unchanged for seven years.

"Our prices have not changed since they were set in 2012 in agreement with the Government of the Republic of Mali," said Dibo. It says that its prices are US\$149.17/t in Dio and Bamako and US\$127.01/t in the region of Kayes.



All-India average trade cement prices hovered at US\$4.71-4.99/bag at the end of April 2019, a 10% year-on-year and 7% month-on-month increase, mainly led by significant price rises in northern region (a 12.4% rise month-on-month), followed by the west (an 8% month-on-month rise) and the east (a 7% rise month-on-month). However, prices in central and southern regions rose by 5% and 3%, respectively, on a month-on-month basis.

Reliance Securities further reported that there were further increases of US\$0.14-0.28/bag in several areas in the first two weeks of May 2019 and that cement companies had been 'hinting' at further price hikes to follow. This is now close to taking All-India cement prices to as much as US\$5.71 (>400 Rupees) /bag).

Prices for sales to the public have also increased, but such sales are not as common as sales to businesses.

Prices in Chhattisgarh reached US\$3.85/bag in early May 2019.

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

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Fossil fuels and cement have existential risks in common...

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A t the recent IEEE-IAS/PCA Cement Conference in St Louis (see review on page 58) I gave a presentation on my best guess for what the cement industry will look like in 2050 (see also www.Cement2050.com). In the presentation, I quoted Mark Carney, Governor of the Bank of England and Francois Villeroy de Galhau, Governor of the Banque de France, who in mid-April 2019 jointly said the following: "A massive reallocation of capital is necessary to prevent global warming above the 2°C maximum target... If some companies and industries fail to adjust to this new world, they will fail to exist." When they said that, I felt that they could have been speaking directly to the global cement industry.

What would a 'massive reallocation of capital' look like? How would it actually affect the cement industry, and could an entire industry 'fail to exist'? Let's look at these in turn.

A reallocation of capital¹ is nothing new, and happens all the time. I've previously mentioned that one Malaysian cement producer sold all of its cement plants, and put the money into telecommunications instead (figuring that it could make more money for its shareholders, which it did). LafargeHolcim is in the process of reallocating its capital, away from a particular area (the 'hyper-competitive' southeast Asia region, see page 66, where it likely saw no potential profits coming along for a decade). If the company can make more money by selling its cement production assets at a good price and instead investing in concrete assets in America or Europe (for example), then it makes sense to do so. In fact, Jens Jenich, CEO of LafargeHolcim, says that the money will be used to pay down corporate debt (which has its own cost). As the Scots say, 'A penny saved [on servicing corporate debt] is a penny earned.

However, perhaps LafargeHolcim's move out of southeast Asia is not just a geographical move, but is also a strategic sectoral move as well, in that it might be the first move by a major multinational cement producer to reallocate its own capital away from clinker production as an industrial sector. After all, cement is just an ingredient in the final product made by the cement-concrete industrial complex. Does LafargeHolcim even have to own the means of cement production, or should it, like Australia, divest (or close) clinker factories and just buy clinker on the [over-supplied and therefore relatively cheap] international markets?

Arguably, LafargeHolcim is becoming the leader in 'optionality'² in the 'cement' industry. Optionality is es-

sentially being in the position to take up options as they come along. A company very heavily invested in clinker production, for example, will not have that many options to take up alternative non-OPC-based 'building solutions,' after all.

LH is doing this for itself, but such change can be forced upon a company from outside. Activist investors, special interest groups and politically-motivated research groups are now commonly lobbying company boards to change their capital allocation strategies. Fund managers that are obliged to take environmental, social and governance (ESG)³ risks into their investment strategies may also decide to shift their money away from cement, due to the 'stranded asset'4 argument, as they have started to do in the oil industry.⁵ The risk being that the reserves (of oil, or of limestone) that have been laboriously and expensively built-up over years will be stranded in the ground by future environmental legislation - or prohibitive carbon permit prices. If the reserves cannot be economically accessed, then their value must be reassessed. There have been suggestions that on this basis some oil companies are already technically bankrupt. Some have gone bust for a variety of reasons, and the US fracking companies are well-known to be extremely indebted. If bankruptcies could and can happen to the oil industry, then they could happen to the cement industry, in what is known as a 'gale' of 'creative destruction.'

What would this look like in the cement industry? Potentially we could see re-purposed factories (burning 'bio'-fuels, and using alternative zero-CO₂ raw materials to make zero-carbon cement). If the final product is non-competitive on cost grounds, or - like CFCs in refrigeration systems - simply banned, we could see closed and abandoned factories. Reallocation of capital from the cement and/or fossil fuel industries (and a reappraisal of the value of reserves) could indeed lead entire industries to cease to exist.

Time to think and plan ahead?

1 https://www.investopedia.com/articles/basics/07/capitalallocation.asp

 $\label{eq:linear} 2\ https://www.ey.com/Publication/wuLUAssets/ey-portfolio-management-in-oil-and-gas/SFILE/ey-portfolio-management-in-oil-and-gas.pdf$

5 https://www.bloomberg.com/news/articles/2019-03-08/norway-gives-1-trillion-fundgo-ahead-to-divest-its-oil-stocks

³ https://www.investorschronicle.co.uk/comment/2019/04/17/fossil-fuel-divestmentspurs-consolidation/

⁴ https://www.camecon.com/blog/end-energy-know-stranded-assets-creative-destruction/

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