www.globalcement.com

Contents

Subscribe

Ad Index

OCTOBER 2019





CONSIDERING UPGRADE? CUSTOM MADE SOLUTIONS



For more information contact:

Christoph Muschaweck

E-mail: christoph.muschaweck@dalog.net

Phone: +49 821 74777 - 115



We are committed to reducing the environmental impact of our customers through innovative condition monitoring solutions.

DALOGPlant Protection Concept Online Condition Monitoring





GLOBAL CEMENT MAGAZINE: *DEAR READERS*





www.qlobalcement.com

Exclusive Official Magazine for

Global Cement Conferences: Global CemFuels, Global Slag, Global GypSupply, FutureCem, Global CemBoards, Global WellCem, Global CemProcess

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



Editor **Peter Edwards** peter.edwards@propubs.com (+44)(0)1372840967



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



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



Commercial Director Paul Brown paul.brown@propubs.com Mobile: (+44) (0) 7767 475 998



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



Company manager Sally Hope sally.hope@propubs.com

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

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

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

ISSN: 1753-6812

Published by Pro Global Media Ltd Ground Floor, Sollis House, 20 Hook Road, Epsom, Surrey, UK KT198TR Tel: +44 (0)1372 743837 (switchboard)



On the cover...

Wikov: A drop-in LGD gearbox manufactured in Pilsen, Czech Republic, featuring a Separate Lubrication System with all necessary seals to protect the drive from premature malfunction due to dust from the cement mill. This gearbox replacement was realised at the technologically-advanced Al-Takamol cement plant in Sudan as a response to oil contamination issues with a previous drive. The new delivery was performed with the ultimate cost-benefit ratio. Turn to Page 18 to read more.

+420 727 815 055 Tel: Email: lsteiner@wikov.com Web: www.wikov.com

Dear readers,

Welcome to the October 2019 issue of Global Cement Magazine - the world's most widely-read cement magazine! As usual, this issue contains a wealth of cement industry news and technical knowledge, trends and interviews.

First up, a look at the oft-neglected area of stakeholder relationship management (Page 10). Good relationships, built in many cases over decades, are an important differentiator when it comes to, among other things, handling complaints, recruiting and developing staff and obtaining permits for alternative fuels. Cement plants that educate the local population will find it a lot easier to do these things, and dozens of other things besides. How many local opposition groups could have been 'won over' to the use of alternative fuels simply by better communication between the plant and the local population? Some plants go above and beyond this, like the Cemex San Pedro de Macorís plant in the Dominican Republic, which was recently visited by around 50 delegates from the successful 36th FICEM Technical Congress in Punta Cana. Already a technical leader in the Caribbean, the plant is set to build the first nature trail / bike route in the region, (re)develop lakes for leisure and move the plant entrance to make way for a visitor centre. It clearly appreciates the benefits of a well-informed populace. You'll be able to read more about the FICEM event and the San Pedro de Macorís plant in future issues of Global Cement

Elsewhere in the issue, we have contributions on quality assurance from Dangote Cement (Page 14), a gear-box replacement in Sudan (Page 18), renewable energy contracts (Page 26), dust mitigation (Page 30), air compressors (Page 34) and clinker coolers (Page 36), as well as detailed interviews with TESTING Bluhm and Feuerherdt (Page 20), FUCHS Petrolub SE (Page 24) and Ecocem (Page 50).

Finally, this is the first issue of Global Cement Magazine with input from Jacob Winskell, our new Editorial Assistant. Jacob has a law degree from the University of Birmingham, UK. He enjoys getting out into nature, is a five-a-side goal keeper, keen reader and fluent German speaker. He looks forward to learning all about cement sector technology and geopolitics!

We hope that you enjoy the issue!







Printed on Programme for the Endorsement of Forest Certification (PEFC®) certified papers by Pensord, a company with ISO 14001:2004 environmental certification



Peter Edwards

Fditor





LEADING THE WAY,
DELIVERING VALUE-ADDED
ENVIRONMENTAL SOLUTIONS









Our global experience and extensive skillset have seen us evolve into one of the most comprehensive solution providers to the heavy manufacturing industries.

Every day, we partner with our customers to manage and mitigate their most complex environmental challenges. Our goal is Zero Waste. Our purpose is to reduce, reuse and recycle. Our mission is to deliver higher business performance while demonstrating stronger environmental stewardship.

Through our innovative process technologies, we are transforming by-products into value for our customers while our sustainable practices help protect the environment for future generations.

Working Together, Making a World of Difference

Harsco Environmental Harsco House, Regent Park, 299 Kingston Road Leatherhead, Surrey KT22 7SG United Kingdom t 44 (0) 1372 381400

į.

f ⊌ in

harsco-environmental.com #MakingAWorldOfDifference

Subscribe



Features

10 PR 101: Building local relationships

Mary-Beth Kramer looks at what cement plants can do to develop mutually-beneficial relationships with local stakeholders.

14 The eight core approach: Quality is never an accident

Dangote Cement's Nohman Mahmud explains the company's approach to cement quality.

Technical

18 Field experience with Wikov in Northern Africa

A gearbox replacement case-study from Sudan.

20 In discussion: Hans-Heinrich Reuter, TESTING Bluhm & Feuerherdt

TESTING's new Managing Director discusses a range of trends in the cement and concrete testing sector.

24 In discussion: Klaus Holz, Fuchs

We speak with the Head of Fuchs' new Business Segment Cement.

26 Renewable energy PPAs: A green approach to the CO₂ issue in the cement industry

Authors from ENEL Green Power outline the benefits of renewable power purchase agreements.

30 Reducing silica exposure at Holcim sites in Australia

A case-study from dust suppression expert Mideco.

34 Small lime works with big technology

German case-study highlighting the benefits of efficient air compressors in lime production.

36 Xuan Thanh doubles up on Cross-Bar® Coolers

A Vietnamese case study from FLSmidth.

40 Review: INFORM celebrates 50 years

43 Concrete news 44 Products and Contracts





Europe

45 News

50 Ecocem: Ahead of the low-CO₂ curve

Micheál McKittrick discusses Ecocem's development, current trends and future plans.



54 News

Asia

58 News

Middle East & Africa

61 News

64 Cement in West Africa

Global Cement turns its regional attention to 15 countries in West Africa.

Regulars & Comment

75 Global Cement prices

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

76 Subscriptions

77 The Last Word

78 Advertiser Index & forthcoming issues



CEOSCANI-C BLENDSCIAN

ON-BELT ELEMENTAL ANALYSER AND BLENDING SOFTWARE FOR CEMENT

On-line Real Time Analysis for the Cement Industry

Contact us for advice and assistance:

Tel: +61 7 3710 8400 Fax: +61 7 3710 8499

Web site: www.scantech.com.au Email: geoscan@scantech.com.au



GEOSCAN -C Advantages

- No Contact with the Belt
- High Performance Detectors
- Multi-Detectors Configuration
- Easy Calibration







BLENDSCAN Advantages

- Minimises variations in product quality
- Increased production
- Increased profits
- Configuration flexibility
- Reliable HMI based on Siemens WinCC

GLOBAL CEMENT MAGAZINE: DIARY DATES



TÇMB 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

19th Global Gypsum Conference

23-24 October 2019 Kuala Lumpur, Malaysia www.GlobalGypsum.com

16th NCB International Seminar 3-6 November 2019

New Delhi, India

www.ncbindia.com

38th International Cement Seminar

19-21 November 2019, Atlanta, US www.internationalcementseminar.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

14th Global CemFuels Conference

19-20 February 2020, Cyprus www.CemFuels.com

2nd Global GypSupply Conference

> 18-19 March 2020 Brussels, Belgium www.Gyp-Supply.com

62nd IEEE-IAS/PCA Cement Conference & Exhibition

19-23 April 2020 Las Vegas, US

www.cementconference.org

15th Global Slag Conference 6-7 May 2020, Vienna, Austria

www.GlobalSlag.com

3rd Global CemProcess **Conference**

> 26-27 May 2020, Munich, Germany www.CemProcess.com



CONFERENCE, EXHIBITION & AWARDS 2019

Wallboard and plaster markets and trends

Production advances

Board performance and applications

globalgypsum.com#globalgypsumconference

Global Gypsum Enquiries

Exhibition and sponsorship: paul.brown@propubs.com

Programme and speakers: robert.mccaffrey@propubs.com



Subscribe

Mary Beth Kramer, Kramer Consulting

GLOBAL CEMENT: PUBLIC RELATIONS

PR101: Building local relationships

Managers regularly audit many parameters of cement plants including safety, emissions and production, but rarely, if ever, are the plant's relationships analysed. Relationships can help or hinder a plant's ability to communicate its most important initiatives to target audiences. Plant communicators may be blocking their own way if the groups or individuals it associates with do not aid in their efforts.



Above: Mary Beth Kramer is the President and Owner of Kramer Consulting. For over 15 years, Kramer Consulting has represented clients from the building materials sector, including Roanoke Cement. Titan America LLC, Oldcastle Materials and the American Concrete Pipe Association.

Below: Many plants, like Breedon Cement's Hope plant in the UK, are in areas of natural beauty, where managing relationships is even more critical.

t least once a year, perhaps while planning Amarketing budgets for the following year, plant managers should also consider whether each relationship is a good investment of time and resources. Call it a 'public relations' audit. The full assessment includes the answers to these questions:

- 1. Does the plant currently have a favourable image? If not, why not?
- 2. Is the plant communicating to its target audiences regularly and consistently?
- 3. Do current partners or relationships help us communicate (our initiatives) successfully?

Public relations is 'the professional maintenance of a favourable public image by a company or other organisation or a famous person.' 'Maintenance' is the key word. Industry must 'maintain' goodwill through a favourable public image. If there is a lack of constituent goodwill, it must be built.

Goodwill, colloquially-stated, is 'a kindly feeling of approval and support: benevolent interest or concern.' Goodwill, as defined by Kramer Consulting, consists of the following:



- 1. The power of our stock in trade;
- 2. The way we brand ourselves;
- **3.** Point(s) of difference compared to competition;
- 4. The establishment of trust.

The building blocks of goodwill are trust and reliability. How do we establish goodwill in our community? Perhaps attributable to the famous American statesman, Benjamin Franklin, 'Doing well, by doing good' is the goal. Cement plant communities are the communities where we work

> and live, in many cases. How we act, what we say and do on behalf of the plant, resonates with all audiences.

Consider a universal example. No resident necessarily desires to have a cement plant or mining operation in their backyard. However, local residents (just one of many target audiences) can tolerate one as long as they perceive the benefit for the community.

The 'pros and cons' approach may seem basic but it's one everyone applies to their individual circumstances. One of my clients holds an annual clean-up event. The plant rests in a bucolic setting, adjacent to a renowned hiking trail. After sponsoring the event for over a decade and hauling tons of litter from a nearby creek bed, the local





FINISH-GRINDING WITH A ROLLER PRESS

When grinding, it's all about quality and efficiency. Roller press grinding circuits offer **the lowest specific energy demand** of any grinding solution currently available to the cement industry. On top of that, our circuits offer you advantages that only roller press-based systems can bring to the table. Considerably **reduced maintenance** demand and exceptional **usability** for waste heat recovery are just two of many arguments to make.

For highest product quality we offer you compact and energy-efficient circuits such as our **Comflex**® for materials with up to 20% moisture content, or our **GrindC**® for materials with lower moisture.

Contact us today to discuss tailor-made solutions for your grinding needs.

Moving Cement Production Forward Without Leaving The Environment Behind





community, including residents and a revered ecological partnership, has broadly endorsed the manufacturer.

The plant initiated the clean-up; the community, through an established county partnership, acknowledged it as genuine. Not only an example of goodwill, but 'maintenance', and how a strategic relationship can benefit the plant with messaging.

In the above example, the third-party endorsement (the ecological partnership) of the clean-up strengthens the future messages about the clean-up, resulting in more participation and leading to more partnerships. Good public relations is about planting seeds for possible relationship growth.

A listing of cement plant target audiences should contain the following:

- Employees/management;
- Customers, contractors, subcontractors and consultants;
- Neighbours and wider local community;
- Municipality and/or local public administrators;
- Local, state and federal regulators;
- County and state engineers;
- Other specifiers;
- Legislators, legislative staff and lobbyists;
- Environmentalists and affiliated groups;
- Engineering schools, colleges and universities, local school and STEM programs;
- Local, state, federal, international building materials groups and associations.

Audit your plants' existing relationships with each of these groups. If these don't exist, it is time to ask: 'Why not?' Of course, there may be a good reason why you have not partnered to deliver mutually-beneficial messages. For example, if you have created

a relationship with a local middle school, then when Earth Day comes around, it's much easier to reach out and pitch an idea for a plant tour or on-campus ecology class. Kramer Consulting's client, a concrete pipe plant, brought local students in for a tour that overlapped with a STEM-sponsored program that the plant had helped to sponsor for years from the state capital, capturing solid media coverage. Some of the more traditional communications tools to begin starting on the list above include:

- 1. Targeted phone calls;
- 2. Meetings, lunches and dinners;
- 3. Open houses;
- 4. Newsletters;
- 5. Press releases and media advisories;
- 6. Press conferences and media tours;
- 7. Tours of the plant and facilities;
- 8. Speaking engagements at local events and schools;
- 9. Signage in and around the plant campus;
- 10. Website updates;
- 11. Social media;
- 12. Sponsorship of local events.

Communication tools help to validate the plant's success through a third party endorsement. For example, a regional plant received national accolades for significant energy reduction for nearly a dozen years. It then did an excellent job in communicating its annual accomplishment through newsletters, press releases and tours. By doing so, it obtained fantastic media coverage. The PR program created the opportunity to meet and present to the governing region of the US Environmental Protection Agency, creating 'regulatory goodwill' in the process.

The opportunity would never have occurred but for the relentless dedication of the plant



Right: Meeting with legislators is paramount to a plant's communication plan. In the US, the PCA Fly-in is an annual offering to get in front of legislators along with the rest of the industry.



employees to meet the strict parameters of the national energy program for 12 years in a row, and the successful communication to the appropriate EPA staff. With environmental regulations being one of the most challenging relationships on the cement plant target audience list, the opportunity for a presentation by the cement industry on emissions to the EPA might be viewed as the fox guarding the henhouse.

Nothing proved further from the truth. EPA representatives welcomed the cement industry presenters with open arms and were delighted by the energy reduction and savings performances as well as overall environmental stewardship. Garnering the EPA third-party 'endorsement' was a significant milestone and helped the plant continue to communicate the prestigious, national energy program and provided additional credibility. The plant 'did well, by doing good.'

In the US, there are several well-respected programs that provide built-in public relations programs, with boilerplate steps for easy promotion, including ENERGY STAR (sponsored by USEPA and Department of Energy); Wildlife Habitat Council and the US Green Building Council. Each has requirements of the plant campus that will raise the bar on environmental stewardship and, in some cases, require audits and monitoring. The building and materials associations – including the Portland Cement Association (PCA), are very helpful with promotion and its annual safety and environmental awards provide opportunities to do just that.

On an international level, if your plant can meet International Organisation for Standardisation's requirements for certifications like ISO 9001, ISO 14001 or even ISO 50001, then you have an excellent opportunity to promote that news. Cembureau, AUCBM, AFCM, VDZ, the Global Cement & Concrete Association and the World Cement Association are all worth your plant and company's consideration.

Next time...

This article considered relationships. Another important relationship your plant should have is with the local media. In a subsequent article, addressing and establishing that relationship and, specifically, the following topics will be addressed:

- Building messages:
 - o What should be communicated publicly about plant initiatives?
 - o What the media wants to see from cement producers;
- How to convince media of the value of a story
 - o Pitching the story;
 - o Media relations.





SAFETY is on the top of your list?

INNOVATIVE MONITORING & CONTROL SYSTEMS for PREVENTIVE EXPLOSION PROTECTION



Nohman Mahmud, Manager QA, Dangote Cement Nigeria

The Eight Core Approach: Quality is never an accident

Cement plants demand a strict quality regime throughout production in order to maintain control of quality. This is of increasing importance today: New kilns are increasingly in the 10,000-12,000t/day range, meaning that loss of quality over even a short period can result in a large amount of unsaleable product. At the same time, cement plants are using an increased range of raw and supplementary cementitious materials, as well as increasingly complex fuel blends, making consistency more of a challenge than in the past.

Right: How can cement companies hit the centre of the quality 'bullseye' time after time?

onsistent high-quality cement leads to customer satisfaction, business growth, enhanced value for shareholders and efficiency savings. In an effort to enhance quality control in the sector, this article will focus on key areas of quality control in general terms. If given due priority and consideration, this will ensure high-quality products.

The Eight Core Approach

The Eight Core Approach (ECA) has been developed by the author and is based on many years of experience in quality assurance in the cement sector (See Figure 1). It is a generic approach that, if implemented correctly and with clear targets, will yield the best quality cement at an optimised production cost. It is presented below in as an accessible way as possible, to engage employees in every role within the cement plant. An educated workforce, including top management, is key to implementing many of the suggestions presented below. The eight elements of the ECA are:

- 1. Key Performance Indicators (KPIs);
- 2. Smart Targets;
- 3. Quality plan;
- 4. Process approach;
- **5.** Resource provision;
- **6.** Data analysis and statistical tools;
- 7. Root cause analysis (RCA) and corrective and preventive action (CAPA);
- 8. Top management commitment and support.

In the centre of the core is the target 'QUALITY,' which is protected by the concentric layers of each ECA element. Each layer is important and we should look at each in turn.



1. Key Performance Indicators (KPIs)

KPIs are at the centre of the ECA. The primary inputs that lead to the development of a given cement plant's KPIs will be derived from national or international product standards in combination with specific customer requirements in the local market. In the cement industry several KPIs are very familiar, for example compressive strength, water demand, setting times, expansion characteristics and fineness. They may also include lesser known or more specific requirements like slump characteristics, total alkali content, heat of hydration, colour, proportion of C3A, and many others.

However, sometimes meeting these 'official' KPIs is not enough, particularly for larger clients and in more developed markets. Hence, customers' requirements should be clearly understood, communicated and agreed upon. This is vital for large projects in order to avoid any issues during the fulfillment stage.

On a particular occasion in the author's experience, an important customer was particularly worked up about the 'fact' that darker cement was

GLOBAL CEMENT: QUALITY CONTROL



'higher quality.' It took a massive effort to dispel this myth. Another time, the distributor at a major cement plant had not been informed that a particular client needed a cement with a specific slump characteristic. This large hydroelectric dam developer was seriously inconvenienced due to a relatively minor communication breakdown at the cement plant.

This points clearly to the fact that KPIs should be based on the requirements of all affected parties: Customers, operations team, quality control, dispatchers and top managment. Define them!

2. Smart Targets

Once KPIs have been identified, the second step is to establish Smart Targets. These may cover objectives like maintaining SO₃ content at 2.5-2.6% or keeping the lime saturation factor at 95-96%. The inputs for Smart Targets will, like the main KPIs, come from (inter) national product standards and customer needs. They will vary on a plant-by-plant basis. Without Smart Targets, there will be no clear way to achieve the desired objectives of the KPIs.

The main limitations and bottlenecks that might impede the establishment of Smart Targets include: Technological limitations; Cost considerations; Raw material limitations; The play-off between high quality and high volumes, plus a host of other concerns.

In order to achieve the desired Smart Targets, a detailed study of the plant's entire production process is required to identify its current bottlenecks and inherent limitations. Only once these are clear can the quality control department and plant operators overcome them. Normally, Smart Targets are fixed once they have been developed. However, it is always advisable to review these in line with

changing customer expectations and performance from elsewhere in the group, as well as that of relevant competitors.

3. Quality plans

A quality plan is a roadmap on how the plant can achieve the Smart **KPIs** Targets and discussed above. It encompasses the production process, not just the final product. Quality plans usually include detailed analyses of



8 - Top Management Commitment & Support

7 - Root Cause Analysis / Corrective & Preventative Action

Left - Figure 1: The Eight Core Approach to quality control.

processes and sub-processes of the cement process, for example quarrying, crushing, raw meal preparation, pyroprocessing, finish grinding and dispatch. Each (sub-)process needs to be identified, with controls and sub-controls implemented in order to achieve the necessary quality of the material entering and leaving each step, ultimately leading to the end product. This requires clear communication of all requirements to all process departments within the entire line. Otherwise, success is not likely.

Smart Targets must be included in the quality plan at every step of the production process. For example, strength targets relevant to the grade of cement being made will affect all parts of the plant, not just finish grinding. The key message is that, as the targets for the end product change, the targets change for all other parts of the process too.



Left: The consistent production of high-quality cement can be achieved by any cement plant... ...with the right approach.



The allocation of responsibilities, authority structures and resources during the different phases of the production cycle with respect to quality control and assurance need to be clearly defined in the quality plan. This should answer questions as specific as: Who will do the sampling, analysis and reporting at each step? Which authority levels can alter the process to meet a SMART Target? What is the chain of command within a specific department in the event of an emergency?

A quality plan also requires specific documented standards, procedures and instructions, if these do not already exist. Wherever possible these should be based on relevant (inter)national sampling and analysis standards. Whenever an in-house method



Right: The whole cement plant team has to be informed of and invested in efforts to improve quality.

is used, attempts should be made to validate it relative to established norms to ensure that it is fit for purpose.

Of course, the standards defined by the quality plan can only be met if suitable testing, inspection, examination and audit programs are available at each stage. This includes classical sampling and analysis methods, along with modern analytical instruments like XRF/XRD machines. All quality control equipment should be regularly calibrated in order to ensure the accuracy, repeatability and reproducibility of the sampling / analysis procedures.

Finally, documentation and reporting mechanisms must be clearly stated in the quality plan. Whether they are in a book on a shelf or on a globally-accessible network, document control procedures must be clear. This will ensure that those who need to access records can do so. There is no point correctly monitoring quality across the cement making process if records are not made or they are inaccessible when needed.

4. Process Approach

When a cement plant is simplified into individual processes and sub-processes, it makes it far easier to manage, control and improve the production process. The use of this Process Approach enables timely correction in the event of untoward process fluctuations and reinforces the objectives of the Quality Plan. At each process stage, responsibilities and authorities need to be established and communicated and agreed upon by all concerned.

The easiest route to understand the Process Approach is by the construction of detailed 'flow charts' of the whole of the process. This helps all levels of plant staff understand the process, even without indepth knowledge of every stage.

5. Resource Provision

High-quality products can only be produced when the necessary resources can be obtained. Aside from natural raw materials, the most obvious include adequate sampling and testing equipment and a well-educated and motivated workforce. Maintaining resource provision is a continuous process in both domains. Training and staff development should be continuous and new technological advances should be investigated enthusiastically.

Another useful resource are industry publications that keep plant staff informed of the latest trends in the cement sector. These days the best content can

even be obtained for free. Staff should make use of such resources.

6. Data analysis and statistical tools

Many plants still attempt to rely on experience and intuition as the guiding force towards quality. However this approach will only get you so far due to its inherent shortcomings. High-quality, 21st Century cement cannot be made until data analysis and statistical tools are used to analyse issues arising, reach conclusions and recommend effective solutions. Common statistical tools that can be used include: Cause and effect/'fish-bone' diagrams; Check sheets; Control charts; Histograms; Pareto charts, and; Scatter diagrams. In addition do not underestimate simple statistical formulae like the mean, minimum, maximum, ranges, standard deviations, pie charts and bar charts.

7. Root Cause Analysis (RCA) and Corrective and Preventive Action (CAPA)

In order to remove quality defects and non-conformance issues, a proper root cause analysis (RCA)

GLOBAL CEMENT



and corrective and preventative action (CAPA) mechanism is required. A root cause is the core issue / reason that sets in motion the cause-and-effect chain that ultimately leads to a specific quality issue.

If the only focus of a remedial action is to remove the quality issue without considering the root cause (and potentially further causes behind that), a recurrence is bound to happen. RCA seeks to remove root causes. There is a variety of approaches that can be used, which were mentioned in section six.

It is also possible that new root causes can 'pop up' over time. Therefore corrective and preventative action (CAPA) is also needed. Corrective action, where a problem is only addressed once it happens, is only part of the solution. Preventative action, fault forecasting and a continual quest for improvement is needed. Otherwise, faults will continue to occur.

8. Commitment from top management

As the American management consultant Dr William Edwards Deming stated, "Quality begins with the intent, which is fixed by management." This is as true today as ever: Any effort to improve cement quality will fail unless it is supported by the top management of the organisation.

Quality always comes with an up-front cost. Unfortunately, the easiest route to reduce production costs in the short term is a compromise on quality. However, such actions may ultimately lead to a loss of customer base to competitors, lower revenues and losses to the company. When the cost of production and high volumes are the top management's main priority, quality failures are inevitable, whatever the quality control department does.

Management support has to come in the form of delegation of authority and provision of proper resources, along with involvement of the quality control department. This is critical to ensure that the right decisions are made with respect to product quality and hence, product *acceptance*.

Conclusion

By correctly developing and applying each segment of the Eight Core Approach, it is the author's belief that any cement plant will be able to produce the best quality cement it can, in a consistent manner with the minimum possible waste. This leads to strong profits, as well as employee and customer satisfaction.

All eight elements are inter-related. Any failure to address even a single element will jeapordise the ECA. A chain is only as strong as its weakest link. It is worth reiterating that it's not just the production process and ECA that have to be 'water-tight': Every single member of the workforce must also be committed to quality through application of the ECA, rather than the traditional 'hit and hope' method. After all, "Quality is never an accident; it is always the result of intelligent effort." (John Ruskin).



Lukas Steiner, Wikov Industry

Field experience with Wikov in Northern Africa

When Al-Takamol Cement required a replacement gearbox for one of its cement ball mills, it approached Wikov. The gearbox manufacturing company implemented a side-drive solution with Separate Lubrication System (SLS).

The Al-Takamol Cement plant produced its ▲ first cement in 2010. It has two horizontal ball mills for cement, both driven by a lateral gear drive (LGD), side drives positioned at 40° under the mill. Shortly after commissioning, the plant started to suffer from intermittent high levels of vibrations in cement mill II. While this was clearly problematic, the main concern was oil contamination. This had led to increasingly frequent maintenance and expensive oil changes. The oil volume per lateral gearbox is around 900L, replacement of which costs US\$7000.

A long-term relationship between plant manager Mr Alsayed Sultan and the owner of Elraise, a technology supplier to cement plants in the Middle East and North Africa, gave rise to a recommendation that Wikov's Separate Lubrication System (SLS) for side drive gearboxes could provide a solution to the continued vibration and contamination issues.

"We were a bit reluctant to replace the leading brand gearbox we were using with a unit from Wikov," says Aly Afifi, Senior Preventative Maintenance Manager at Al-Takamol Cement. "However, the technical solution seemed to be sophisticated and we felt guaranteed by support from both Elraise and Wikov. What made us place the order was a visit to a cement plant in Turkey that had used Wikov gearboxes with an SLS for many years. Its testimonial and seeing the side drives in real life assured us of a right choice." The new lateral gearbox was installed on cement mill II in the summer of 2018.

The essence of the gearbox is the SLS, which divides gearbox internals like gears and bearings from the outlet pinions that are in direct contact with a girth gear. The SLS blocks the transmission of cement dust from the girth gear to the gearbox internals. This is unlike conventional side drive gearboxes that are open in the direction of the rim. These are easily contaminated by cement dust, which leads to rapid wear of the gears and bearings. This is costly and time-consuming to rectify, with associated loss of production. Seals, which have been shown to deteriorate rapidly, do not provide suitable protection.

In contrast, the closed and sealed design of the replacement Wikov gearboxes reduces the risk of contamination. This doubles the lifetime of the gearbox internals. Regular inspection of the gearbox oil gauge shows the great clarity of the oil, unlike with the previous gearbox.

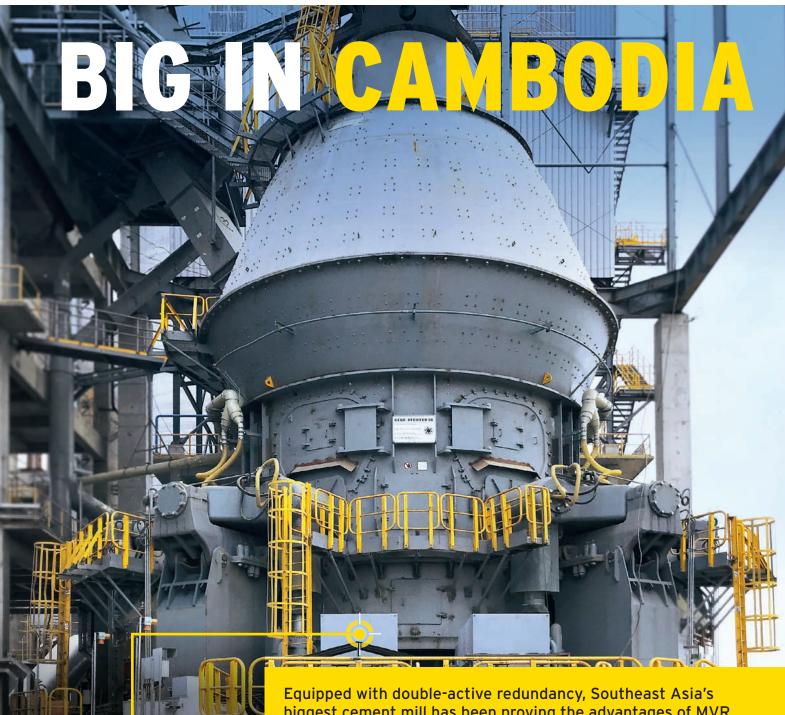
"With the Wikov gearbox we only cleaned filters once at the start," continues Afifi. "Now, having operated the lateral gearbox for over a year, we can

Profile: Al-Takamol Cement plant

Owned by: ASEC Cement (51%), Sudanese National Pension Fund (49%) Atbara, River Nile, Sudan - 320km North of Khartoum Location: Commissioned: Capacity (Clinker / Cement): 1.45Mt/yr / 1.6Mt/yr

As well as being technologically advanced, the Al-Takamol Cement plant is located in a remote area that was dictated by the location of high-quality limestone reserves. While the reserves give the company an advantage in the local market, the limited infrastructure was a challenge. Al-Takamol had to work with pontoons across the River Nile to construct the plant, before work on a bridge was completed. It also built 15km of roads to connect the plant to the national road network, as well as a 42MW captive power plant.





powered by



biggest cement mill has been proving the advantages of MVR technology for over a year.

Operating in Touk Meas, Cambodia, the Pfeiffer MVR cement mill featuring MultiDrive® with fixed speed is precisely tailored to its application. The system boasts the highest availability as well as the exceptional smoothness of operation that has come to be expected from Pfeiffer mills. Two further Pfeiffer vertical mills are used for lignite and raw material grinding in the same plant. A concept that works.

Pfeiffer. Passion for grinding.

End customer: CMIC (Chip Mong Insee Cement Corp.)

You'd like to know what Pfeiffer mills can do for you? sales@gebr-pfeiffer.com

WE MOVE INDUSTRIES











HEKO offers the whole range of chains and other wear parts for bucket elevators and chain conveyors. Proven in thousands of elevators and conveyors, worldwide.

Our components for the cement industry: central chains, link chains, sprockets, belts,

bucket elevators and clinker conveyors.













confirm that we have not had to perform an oil change or service the gearbox internals. This is indeed a maintenance-free solution that very clearly saves us money." Afifi further notes that the company does not have to pay extreme attention to the sealing of the rim guard either.

How it works

The lubricating system of the lateral gear drive uses two independent lubricating units. The oil from the girth gear space is drained to a tank of the girth gear's lubricating system and the oil from the separated inner space of the gearbox is drained to the second lubricating unit. Each circuit uses (or can use) a different oil grade. High quality synthetic oil for the gearbox itself makes sense in this case as it does not get degraded by external pollution. By maintaining its original properties, the oil helps to increase gearbox efficiency and reduces energy costs.

Al-Takamol Cement performs regular condition monitoring of the mills, which includes analysis of the drives. The acceleration values of around 0.1G/s and velocity of 1.0-2.5mm/s measured on cement mill II demonstrate smooth running of the new gearbox with vibration values well below limits. It has to be taken into account that the gearbox behaviour in terms of vibrations is still influenced by the original girth gear that has been used since 2010.

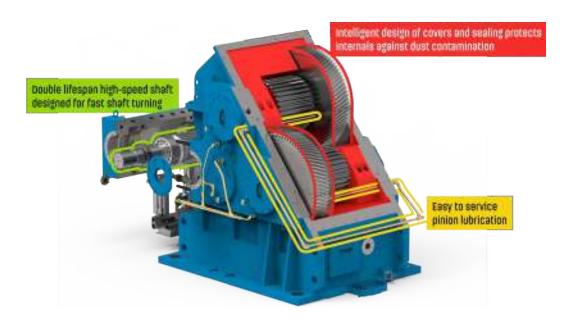
The new lateral gear drive at Al-Takamol's plant has adopted the technical solution of the high speed shaft from the side drive. What the maintenance team likes about the shaft is the possibility to turn it around to double its lifetime before it is completely worn-out. Afifi highlighted the ease of removing the shaft. This makes the service work much more straightforward. This feature was not part of the earlier competitor's design. Additionally, the total cost of ownership (TCO) is sometimes used to divert the attention of potential buyers from the high purchase price of a piece of equipment. However, in this case of a properly-designed gearbox, this is not the case. Not only the operational expenditure of the gearbox but also the initial investment makes Wikov's side drive with the SLS highly attractive for end-users and the lifetime cost motivates to select this solution.

Above left: Oil contamination is no longer an issue with the SLS from Wikov.

Above centre: Newlyinstalled Wikov side drive gearbox with SLS.

Above right: The original gearbox, installed in 2010.

Below: Schematic of a Wikov side drive with SLS showing key features of the gear unit.



Interview by Peter Edwards, Global Cement Magazine

In discussion: Hans-Heinrich Reuter, **TESTING Bluhm & Feuerherdt GmbH**

The ability of cement, concrete and mortars to reliably meet physical quality parameters is paramount to ensuring safe and strong buildings and infrastructure. Indeed, such tests are becoming more important as blends with supplementary materials and advanced additives take hold. Below, TESTING Bluhm & Feuerherdt's new Managing Director Hans-Heinrich Reuter, discusses a range of trends in the cement and concrete testing sector.



Above: Hans-Heinrich Reuter. Managing Director of TESTING Bluhm & Feuerherdt. Prior to joining the company, Reuter worked for a major civil contractor to deliver large concrete projects in Germany, Switzerland and Singapore. During this time, he developed an in-depth knowledge of cement and concrete testing. He joined TESTING Bluhm & Feuerherdt in 2013 as lunior Sales Manager. After being promoted to Sales Director National and International, he went on to become Managing Director in July 2019.

Right: Exterior of a TESTING Mobile Laboratory. The Mobile Laboratory is a relatively new development that allows incredible flexibility for clients.

Global Cement (GC): Please outline the history of **TESTING Bluhm & Feuerherdt.**

Hans-Heinrich Reuter (H-HR): TESTING Bluhm & Feuerherdt was founded in West Berlin in 1978 by Sylvia Feuerherdt and Benno Bluhm. Sylvia's husband Jochim Feuerherdt was in charge of developing products to market and the basement in Mr Bluhm's apartment block was converted into a makeshift workshop. The first product was air entrainment meters for fresh concrete. The company endured a number of moves as it found its feet throughout the 1980s. Its development was severely hampered in terms of exports by separation from the rest of West Germany and Europe by the Berlin Wall.

However, once the Wall fell in 1989, the company was able to enter the previously un-tapped market in the eastern part of the reunified Germany, as well as many other markets in the former Eastern bloc. Of course, access to the former West Germany and the rest of Europe was also greatly improved. In 1992 Benno Bluhm sold his shares to Jochim Feuerherdt. Jochim Feuerherdt remains the 'boss'

day-to-day. Even at the age of 85 he puts in a full 10 hours, every single day. Now he has taken a bit of a step back, however, and the timing was right for me to take up the role of Managing Director.

GC: What have been the company's biggest milestones to date?

H-HR: There have been two main 'step changes' in the company's development. The first was the fall of the Wall in 1989. Without that, we would still be stuck on the 'island' of West Berlin, or worse, no longer in business. Secondly, our new premises, which were finished in 2014, enabled the company to expand rapidly, enter new markets and gain an enhanced international presence. This has really come to the fore in the past couple of years, particularly in places like Indonesia, Malaysia, Singapore, Thailand and China.

GC: What is the company's footprint today?

H-HR: The company's main offices and fabrication facilities are in Berlin. There are two main fabrication facilities, with a total of around 65 staff. The main office and fabrication site, with around 50 staff, develops and makes the instruments. The second facility is responsible for stainless steel fabrication, casings and container laboratories, essentially the housings for the instruments. It has 15 staff. We have service partners in Malaysia, UAE and Russia and work closely with the Humbolt Instrument Company, based in California for the North American market. We also have a global network of sales and service partners





GC: What is the most important aspect of your new role as Managing Director?

H-HR: TESTING Bluhm & Feuerherdt operates with a fairly flat heirarchy, but that's not to say that I don't feel a big new responsibility in this role. The most important thing is to maintain continuous development of the company, both in-house and internationally. We have to be proactive with getting into new markets. If you don't grow, you immediately lose ground to competitors.

GC: What are TESTING's main products today?

H-HR: The company offers more than 4000 products that relate to the testing of building materials, predominantly for cement, concrete and mortars. Most are for physical testing, for example of fresh material properties and physical destruction / strength tests. A smaller range of products also looks at chemical properties of cement and concrete.

Aside from our best known products - Blaine testing machines, Vicat machines and air entrainment meters - we produce an incredible range of accessories and parts. For example, we produce all the equipment necessary for sample preparation, sample storage facilities that provide the right conditions for strength development tests, the testing machines themselves, automated testing systems and so on. We also produce a laboratory in a container, which can be moved between sites by the customer. I would summarise by saying that no job is too big, no job is too small.

GC: Which kinds of companies use your products?



H-HR: There are four broad categories: Precast and ready-mix concrete manufacturers that test for quality control; Cement manufacturers that check their mortar samples for physical strength; Chemical companies with products for the construction industry, and; Researchers, both academic groups and at the additive manufacturers.

GC: How important is the cement and concrete testing sector to TESTING Bluhm & Feuerherdt?

H-HR: At least 90-95% of our sales relate to cement, concrete and mortar testing. However, we also sell to the asphalt, soil and rock sectors. In recent years we have actually moved more towards cement and concrete, so it is even more important than in the past.

GC: What are the different demands of these different sectors?

H-HR: There are no particular differences in the demands that these sectors place on the testing equipment itself, only the materials themselves. What we have observed is a tendency for laboratory operators, particularly at chemical additive companies, to spend good money on tests to assess the efficacy of their additives. These companies, BASF, Wacker, Sika, Saint-Gobain, and many more, increasingly request customised solutions.

A particular trend we have seen of late is the development of regional laboratories by such companies. As several of these already had a close relationship with Testing in Europe, we have been asked to supply equipment for new laboratories

overseas in a lot of cases.

Another interesting thing we observe is that some particular piece of equipment might be bought by a concrete producer in a given market. Then, its competitors will come to us with the same request, followed by the universities and chemical additive producers. There appears to be no over-riding trend as to why a particular piece of equipment or metric comes under increased scrutiny. It seems to just be everyone following the fashion.

GC: Looking around the world, which regions are seeing the most enquiries at present?

Left: A semi-automatic, electronic Blaine apparatus, one of TESTING's best known testing devices for the cement sector.

Left: Interior of a TESTING Mobile Laboratory.

GLOBAL CEMENT: QUALITY CONTROL



Right: An automatic 12 needle point TESTING Vicat apparatus.



H-HR: We have been able to expand significantly into a large number of African countries in the past couple of years. This is a general trend from north to south, east to west, the breadth of which surprised us somewhat. Europe is also quite strong, as it has been for around three or four years now. Germany remains important but exports now represent around 50% of all sales. Previously exports were 70% between 2013 and 2015, but the strength of the German market in 2016-2019 was such that the proportion of exports has fallen. It's not because exports have fallen, quite the opposite in fact.

GC: There must be areas with falling orders...

H-HR: Of course, but they are few and far between. Unfortunately, when this does happen it tends to be down to political factors. For example, we built up a great relationship with a number of Iranian companies. Then the US-led sanctions were placed on Iran and orders slumped to zero overnight. A similar effect was seen earlier with the sanctions on Russia, previously a great market for our devices. That was the point at which we took the decision to expand into south east Asia, China and elsewhere.

GC: Do you see an increased emphasis on automation at the moment?

HH-R: We see two main trends. One is, indeed, a trend towards increased automation, particularly at universities and chemical companies, so that researchers' time may be spent more effectively away from these routine tasks. Many cement plants also want the flexibility that such systems provide.

On the other hand, we see a clear demand for cost-efficiency from some other users. These two trends head in opposite directions cost-wise, so we have to keep a balanced portfolio of products to suit a very wide range of users and budgets.

GC: How is the company performing at the moment from a financial perspective?

H-HR: As we are a private company, we do not publish full financial results. However, I can reveal that our revenue has doubled since 2013 as we have expanded into new capabilities and markets. This also has been achieved by developing closer relationships with our customers, going further to meet increasingly complex needs, paying more attention to our in-house processes and the development of higherend equipment. The larger manufacturing facility has facilitated these changes. The development of our container labs, which can be shipped around the world by the customer, has been very interesting too. We have now sold more than 20 of these to clients in South Africa, Thailand and South America.

GC: What about service contracts?

H-HR: Since 2014 we have developed our service department to provide complete servicing and calibration capabilities, not only for our own equipment but for third party equipment too. Prior to that we had no service department at all. This means that we are now able to retain a longer relationship with customers. The reassurance of the service contract has certainly helped with orders too.

GC: Can this high level of growth be maintained?

H-HR: We constantly strive to improve the company and hope that the momentum of the past five years can be maintained. There are always new projects, new market opportunities and we are looking at how existing devices can be applied into other applications and sectors. One interesting area, for example, is a collaboration with a university to develop a German standard for freeze-thaw resistance of concrete.

More generally, I would say that we have a rich company culture that is forward-thinking, optimistic and flexible. The company wouldn't be where it is today without such approaches. I am also confident that concrete is the construction material of our age. This will increasingly be the case as concrete continues to become an even better building material. It is already taking on roles that have more traditionally been performed by structural steel, particularly in high-rise buildings. Concrete will only become more important and what's true for the construction sector will be true for TESTING Bluhm & Feuerherdt. This positions the company very well for the future.

GC: Hans-Heinrich Reuter, thank you for your time today.

H-HR: You are very welcome indeed.



PlastRetard®

The Multifunctional Additive

Your Natural FUTURE

made in Italy



Interview by Peter Edwards, Global Cement Magazine

In discussion: Klaus Holz, Fuchs

Global Cement speaks with Klaus Holz, the Head of the newly-formed Business Segment Cement at the major global lubricant supplier Fuchs Petrolub SE.



Above: Klaus Holz joined Fuchs Lubritech in Germany in 1998 as product manager for open gear lubricants and lubricating fluids. He became Team Leader Service Engineering and Product Manager for open gear lubricants in 2004 and became Head of Technical Services leading Product Management, Application **Engineering and Service** Engineering in 2010. In 2019 he became Head of the newlyformed Business Segment Cement at Fuchs.

Below: The Fuchs Lubritech Headquarters building in Kaiserslautern, Germany.

Global Cement (GC): Please introduce Fuchs.

Klaus Holz (KH): Founded in 1931 as a family business in Mannheim, Germany, there are now 58 operating companies with over 5000 employees in 45+ countries under the umbrella of Fuchs Petrolub SE, the world's largest independent lubricant manufacturer and supplier. Fuchs Lubritech, the speciality division of Fuchs, has been focused on the cement industry since the early 1960s.

GC: What is the most important aspect of your new role, Head of the Business Segment Cement?

KH: The most important aspect is to strengthen the global market position of Fuchs within the cement industry with a highly competent team of experts.

GC: How did Fuchs enter the cement sector? What was its first product / service?

KH: Fuchs Lubritech first entered the cement sector in the early 1960s with the CEPLATTYN open gear lubricant, at the time the first sprayable open gear lubricant that was free of bitumen and dilutant. Alongside the supply of lubricants, Fuchs Lubritech offered a unique maintenance and repair service for open gears. Today this open gear service still includes free-of-charge inspections and extended services up to full re-profiling of open gear sets.

GC: What products does Fuchs supply to the cement sector today?

KH: Today, Fuchs offers a full range of lubricants for cement plants. For example, it supplies gear and



engine oils for mobile equipment in quarries, heavy duty greases and oils for crushers, ball mills, kilns, vertical mills and roller presses, inclusive of most modern gear and hydraulic oils. All these products are supplied with an application-based service that helps the customer to maintain its machines in the best way possible.

GC: How important is the cement sector to Fuchs?

KH: Over the decades the cement industry has become a significant pillar for Fuchs. Thus, it has now been decided to found the new Global Business Segment Cement in order to address the demands of our customers and the equipment manufacturers within the cement industry.

GC: How are the demands of cement customers different from the other sectors Fuchs deals with?

KH: Compared to other industries, the cement industry places very special demands on a lubricant supplier. There's the very challenging environment of course, but a lubricant supplier also needs to address the demands made by different climates, stock a large range of approved lubricants to address the requirements of different machine manufacturers and, last but not least, provide a wide range of on-site services. Large cement groups also demand on-time delivery in all parts of the world with products and services of identical standards and quality.

GC: How does the company meet those demands from an operational standpoint?

KH: Fuchs addresses these demands with production sites and very skilled technicians in all parts of the world. Production sites in Brazil, India, Europe, the US and China manufacture our core products for the cement industry and act as hubs for our application and service engineers. Today Fuchs has more than 25 engineers that are dedicated to serving the cement industry. In addition, the countries that I mentioned above are equipped with the latest lubricant analysis tools in order to back up the maintenance routines of our customers.

GC: Which region(s) are most important to the Cement Business Segment?

KH: Traditionally the focus for Fuchs has been in Europe, India, South-East Asia and the Middle East. Markets of increasing importance for Fuchs are China and Russia. Additionally, one of the last 'white spots' on our landscape was parts of Central and South America. However, this has been addressed over the past two years. We now have a very strong distributorship in Central America and our own entity in Chile with very experienced lubricant experts. In addition, we support this region with production facilities in US, Mexico and Brazil. In the long term we also expect north and west Africa to be of increasing importance to our business.

GC: What are the most common requests that cement manufacturers have at present?

KH: There are increasing requests for full supply of lubricants inclusive of related services. This means there is a request for a lubricant supplier to provide special products for the grinding equipment and kiln but also all products for the trucks, excavators and machinery in the quarry. The lubricant supplier is supposed to not only supply suitable products but provide lubricants that have the approval of the various equipment manufacturers in order to keep the warranty and guarantee the expected lifetimes.

The most recent requests are for the most modern lubricants that can help to reduce the CO₂ footprint of the cement plant. Fuchs has developed the most modern lubricant formulations that offer the lowest friction values in order to address this demand.

This is part of a clear trend for sustainability in the cement industry. This means that many cement customers do not only look for the 'cheapest' lubricant but are also concerned with environmental topics, total life cycle costs, energy saving, disposal and maintenance. Large cement groups are particularly active at addressing these topics across their organisations.

Fuchs supports these demands with products that are manufactured in as a sustainable way as possible, products that help to save energy and that support holistic life cycle concepts. As an example, Fuchs provides gear oils that have a lifetime 3-5 times higher than standard oils. This reduces lubricant volumes by up to 80%, while reducing energy consumption by up to 5%. With our latest CEPLATTYN GT range, we can reduce the consumption for open gear lubricants by up to 30%. We can also reduce the wear rate and thus increase the lifetime of open gears at the same time. With the latest poly-urea and calcium sulphonate greases we can extend re-greasing intervals tremendously.



GC: Does Fuchs have any new products / projects in the pipeline?

KH: As mentioned above, Fuchs has launched the latest 'State of the Motion' open gear lubricants, the CEPLATTYN GT range. The CEPLATTYN GT range is fully-approved by all large equipment manufacturers and has already proven its excellent performance in many applications in the industry. New high performance products for heavily-loaded bearings are currently in field tests and will be launched soon.

GC: What is the single largest threat to Fuchs continued success over the next 1-5 years?

KH: The largest threat for our business is political instability. Some countries in north Africa and the Middle East are currently hard or even impossible to access. Also, the trade war between China and the US has become increasingly 'challenging' for us.

GC: What is the single largest opportunity for Fuchs over the next 1-5 years?

KH: With our new Business Segment Cement, Fuchs has a clear focus on the cement industry, highly dedicated and skilled staff and a full range of lubricants and services in all world regions. This will lead to the highest possible level of support for our cement customers.

Below: The Fuchs Technology Centre in Mannheim, Germany.

GC: Thank you for your time today.

KH: Thank you for the opportunity.



Javier Vaquerizo, Silvia Pasqualini & Anna Kowalczyk, Enel Green Power SpA

Renewable energy PPAs: A green approach to the CO₂ footprint issue in the cement industry

"If the cement industry were a country, it would be the third largest emitter in the world, behind China and the US. It contributes more CO_2 than aviation fuel (2.5%) and is not far behind the global agriculture business (12%)."1

ccording to the Chatam House Report,² quoted Aabove, cement production is responsible for 8% of global CO₂ emissions, a figure that is still growing. This reality is absolutely incompatible with the Paris Agreement, which proposes to contain the increase in global temperature to well below 2°C.

Most cement producers have already found ways to reduce their carbon footprint by increasing energy efficiency, investigating carbon capture and storage technologies, and lowering their clinker factor. These actions are essential to fight global warming. However, there is a part of the problem that is often overlooked by the cement industry: Indirect emissions related to the use of electricity and heat within the plant.

A response to this issue may be to switch to renewable energy. Technologies that enable electricity to be generated from the wind, sun, water, biomass and geothermal sources have become mature, reliable and now, most importantly, cheaper than fossil-fuels. Each is an inexhaustible supply of clean energy that does not produce polluting gases or CO2 emissions. Furthermore, renewable energy sourcing, which a few years ago was the whim of rich economies, is now available to industrial and commercial users around the world.

One way to 'go greener' is long-term renewable energy off-take contracts between industrial customers and a power producer, known as a Power Purchase Agreement (PPA). They are not a new phenomenon, with the first deals made about 10 years ago. However, they have increased in recent years in both size and frequency, with a record capacity of 13.4GW contracted globally in 2018.

"This trend was initiated by technological giants, like Google, Amazon and Facebook," says Javier Vaquerizo, head of the commercial office in Enel Green Power. "However, recently we have received more and more enquiries from different industrial sectors, including cement and building materials, driven by new targets established in the Paris Agreement."

Leading global corporations are looking for corporate PPAs not only to meet their sustainability goals but also to reduce an organisation's exposure to a highly variable and unpredictable energy market. The other benefit is that this solution does not require high upfront capital expenditure. In most PPAs, a power plant is built, owned and operated by the power producer. The customer (off-taker) pays an agreed tariff. There are three general types of PPA:

1. Physical on-site PPA: A renewable power plant is built on or in close proxmity to, the customer's property and connected directly to its electrical system. This solution is very tangible, but it requires space and a good natural resource close to the production facility, which is not always the case.



2. Sleeved off-site PPA: The renewable power plant is in a remote location and feeds power to a grid. The energy is delivered to the customer's production



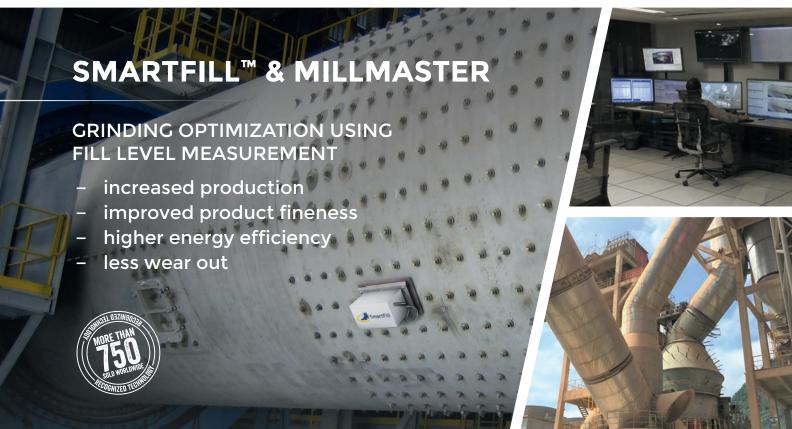
on-site solar PPA delivered to Estrella Group in Panama.

Right: An Enel Green Power

Right: A sleeved off-site wind PPA project from Enel Green Power in Spain.

ADVANCED PROCESS CONTROL INNOVATIVE MEASUREMENTS



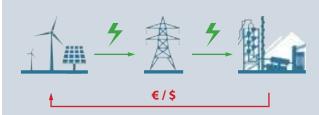






Sleeved off-site PPA

- · Physical supply
- Plant operator delivers power through national grid or direct transmission line
- · Agreement on price, quantity and timeframe



Virtual / Financial off-site PPA

- Financial compensation
- Power traded on the spot market with financial compensation from both sides
- Agreement on price, quantity and timeframe



Above: Simplified representations the two main types of off-site PPA.³ In a sleeved off-site PPA (left), the power plant operator supplies electricity directly to the off-taker at the reference price. In a virtual / financial off-site PPA (right), the two parties compensate each other financially relative to a reference price. The electrical supply is indirect.

Below: An Enel Green Power

virtual off-site PPA wind farm

in Valle de los Vientos, Chile.

facility, which may be located in a different area or region. The PPA is 'sleeved' because the power generated is delivered to the off-taker by an electricity retail company through the national grid.

3. Financial/Virtual PPA: The renewable power plant is, once again, placed in a remote location and feeds power into a grid. However, in a financial/virtual PPA, the power is fed to a local spot market and the contract is settled financially, usually as a Contract for Difference. In practical terms, it means that the power producer and the customer agree on a strike power price when they sign the PPA. If the market price rises above the strike price, the generator will pay the off-taker, and if the market price drops below the agreed strike price, the opposite. These contracts are typically settled monthly and the net positive or net negative difference in price determines in which direction the money will flow.

In addition to the electricity, PPAs usually consider delivery of Green Certificates, which are embedded in the price.

Both off-site options can be a perfect fit for the needs of the cement industry, as they offer a long-term energy supply independent of any landscape or environmental constraint, such as the availability of renewable sources on-site or of the space required to build a plant. Moreover, these types of contracts enable the construction of larger renewable plants where the energy is provided to different off-takers, which reduces the final energy cost.

Nevertheless, it is important to understand that PPAs are tailored-made contracts, customised according to the customer's consumption profile, sustainability targets and risk appetite. During negotiations, the energy provider and the customer should agree not only a price (reflected as a tariff) but also its structure (fixed or, for example, indexed to the spot electricity price or commodity), energy volume structure, contract duration (usually 10-15 years), risks allocations and many other variables.

One of the common mistakes is to think that sourcing electricity directly from renewable sources is very expensive. Due to technological advances and economics of scale, renewable power is becoming more and more competitive and sustainable, not just in environmental terms but also from an economic standpoint.

"We wouldn't have signed a single contract on the promise of sustainability alone," stresses Massimiliano Francone, head of global origination at Enel Green Power. "We need to offer competitive pricing, in many cases below the spot energy price, which is possible in long-term contracts. The additional benefit, very much appreciated by energy-intensive industries, is the possibility to hedge against future variations in electricity price."

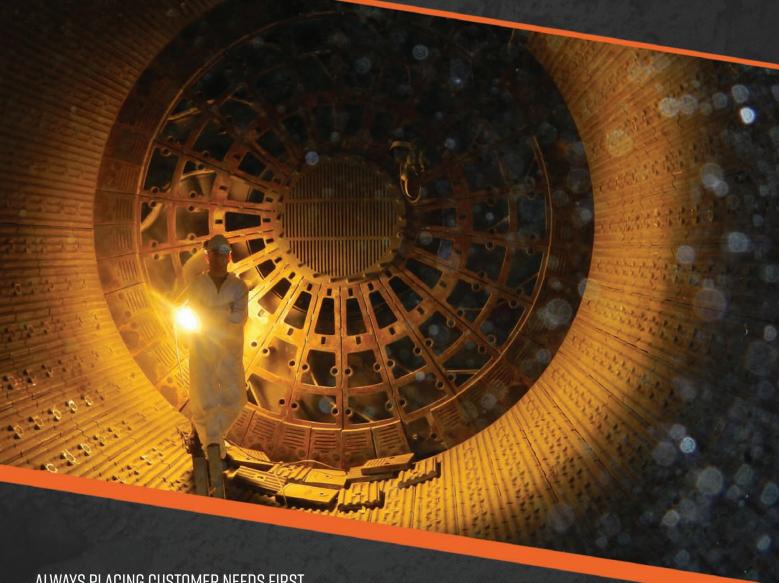
The trend towards renewable energy, started by some of the biggest technology companies, is now involving every industrial sector. The compelling need to lower CO₂ levels must now convince the cement industry to adopt new strategies for electrical power sourcing. The best way to improve the environmental performance of electrical supplies is renewable PPAs, which offer a wide range of options and tailor-made solutions.

References

- 1.https://www.bloomberg.com/news/articles/2019-06-23/greencement-struggles-to-expand-market-as-pollution-focus-grows.
- https://reader.chathamhouse.org/making-concrete-changeinnovation-low-carbon-cement-and-concrete.
- Adapted from diagram on Energy Brainpool website.
 Accessed on 14 December 2018.



BE OPEN FOR NEW SOLUTIONS AND UNDERSTAND CHANGE AS AN OPPORTUNITY.



ALWAYS PLACING CUSTOMER NEEDS FIRST,
KEEPS US FOCUSED ON OUR MISSION, TO CONTINUOUSLY
IMPROVE BALL MILLS WITH INDIVIDUAL DESIGNS, ADVANCED TECHNOLOGIES
AND FLEXIBLE ADAPTATIONS TO DIFFERENT OPERATING CONDITIONS AT ANY TIME.









Olha Lyeskakova, Mideco

Reducing silica exposure at Holcim sites in Australia

Unless you live in the jungle, every hour of every day you are surrounded by something that's made with cement. Roads, tunnels, offices, schools, hospitals, bridges – cement is everywhere. As the need for cement grows, so does the focus on health and safety issues associated with its production.

Exposure to cement dust, which is released during many stages of cement manufacturing, is one of the main occupational health and safety (OHS) concerns in the industry. Every day, millions of construction workers around the world inhale cement dust, which contains various chemicals that can cause health complications and respiratory disorders. The main culprit here is silica, which cement contains in variable quantities.

The respirable crystalline silica (RCS), released during cutting, sawing, crushing, drilling and grinding of silica-containing materials, permanently damages the lung tissue. Long-term exposure to RCS may cause a range of serious respiratory conditions. Even short-term exposure for staff working with materials with high levels of silica is known to lead to accelerated silicosis within less than 10 years, with people in their 20s and 30s being diagnosed. In the UK, according to Health and Safety Executive data, lung cancer associated with exposure to RCS causes

around 600 deaths per year with 450 of these occurring from exposures in the construction sector.

Around the world, major health and safety bodies are reviewing and changing OH&S silica exposure legislation, launching silica awareness campaigns and conducting free silica seminars. Additionally, the pressure on businesses to manage the occupational respiratory risks and minimise overall exposure to harmful dusts is increasing every year.

One aspect of dust control that is often overlooked is the staff's dusty clothes. Work uniforms are designed for staff health and protection but if they are not cleaned effectively, they can harm workers



instead. Research has shown that, once clothes become contaminated, they are a continual dust source until cleaned. They create a 10-fold increase in staff dust exposure. In addition, dust can be transferred to clean areas, such as offices, personnel vehicles and homes thus extending the risk of exposure to others.

The commonly used vacuum or compressed air hose cleaning methods are risky, slow, ineffective and often simply relocates dust rather than acually removing it.

An innovative solution for this problem has been developed in Australia by Mideco, an engineering company with over 60 years of experience in the

Right: Bat Booth®at Cooma, Australian Capital Territory.

What can pasta teach us about filtration?



P84° filter bags ensure the best filtration performance. The unique multi-lobed P84° fibre shape maximizes the filter surface and minimizes emissions and pressure drop.

The Profile makes the difference.











Evonik Fibres GmbH Gewerbepark 4 4861 Schörfling Austria Phone +43 7672 701-2891 Fax +43 7672 96862 www.P84.com







Above: Bat Booth®at Petrie, Queensland.

area of dust control. Mideco created a unique product using the concept developed by the Pittsburgh Research Lab in accordance with the dust control recommendations of the National Institute for Occupational Safety and Health (NIOSH).

Mideco's Bat Booth* is a personnel dust extraction device that can permanently remove up to 80% of dust in seconds using only compressed air. The dust is not just blown off but captured and contained with the help of powerful filters which are effec-



Right: Bat Booth®at Lynwood, New South Wales. tive against even the smallest dust particles, such as silica.

Bat Booth* comes fully assembled, requires minimum installation and could be used for multiple applications in a variety of industries, including cement batching plants and quarries producing aggregates for concrete batching facilities.

The launch of this innovative dust control system in 2014 was met with enthusiasm by many companies in construction and mining, which appreciate the importance of protecting staff respiratory health.

Holcim (Australia) Pty Ltd was one of the first clients to install Bat Booth* at its quarries. The LafargeHolcim subsidiary has been a leading supplier of aggregates, readymix concrete and concrete pipe products in Australia since 1901. The company is committed to occupational health and safety with one of its goals being 'zeroHarm' to staff health.

Shortly after the product's launch, Holcim requested and installed Bat Booth® units at the Lynwood (New South Wales), Petrie (Queensland) quarry and Cooma (Australian Capital Territories) quarries. The work at quarries is always associated with a high rate of dust emissions and staff health could be compromised without effective dust control measures. Bat Booth® units play a major role in minimising overall dust exposure. As they are easy to operate, staff can use them multiple times per day, not only at the end of a shift.

Since those early days, Bat Booth® has been improved and it's now even more effective. The original filters were upgraded to HEPA filters, the most powerful filters currently available on the market. In addition, the software was updated to include a tracking mechanism which shows how frequently the units are actually being used.

Bat Booth® has also won a number of awards: 'Highly Commended' in the 'Best Practice in Work Health & Safety' category at the Australian Bulk Handling Award in Sydney in 2016 and The Most Innovative Dust Removal Solution in the Australian Enterprise Awards 2019.

More importantly, it has been included in the Dust Control Handbook produced by the US National Institute for Occupational Safety and Health. Bat Booth* was presented as one of the best examples of removing dust from personnel uniforms, thus helping prevent dust-related diseases, in particular those caused by silica exposure.

Occupational dust diseases continue to dominate the health and safety agenda around the world. Effective and innovative dust control solutions that help reduce staff overall exposure without high financial cost can make a major difference in reducing the sad statistics of work-related illnesses.

g bal centuels The state of the

CONFERENCE • EXHIBITION • AWARDS

Alternative fuels for cement and lime

Global, regional and national market trends

Technological developments and case studies

cemfuels.com

#cemfuels

Global CemFuels Enquiries

Exhibition and sponsorship: paul.brown@propubs.com

Programme and speakers: robert.mccaffrey@propubs.com



Thorsten Sienk, Specialised Journalist, Bodenwerder

Small lime works with big technology

The calcination of limestone to make burnt lime takes place at 900-1200°C, which requires a lot of thermal energy. For this reason, lime producers and kiln manufacturers constantly seek more efficient processes. Köhler Kalk in Northern Hesse, Germany, recently commissioned a new lime kiln from Italy's QualiCal. Thanks to the rotary lobe compressors made by AERZEN, the plant is one of the most efficient solutions in its field.

Köhler Kalk, located in Vockerode, Hesse, is a producer of calcined dolomite, a crystalline mineral mixture consisting of calcium carbonate and magnesium carbonate. This type of burnt lime is particularly suitable for the steel industry, as the magnesium oxide (MgO) that it contains has a positive effect in steel production and protects the converter walls when refining raw iron into steel. Steelworks are regular customers of Köhler Kalk.

Köhler Kalk is the smallest lime producer in Germany in an area with relatively few dolomite reserves. To ensure the future security of the location, the family-owned company decided to invest in a new kiln in 2017. Specialists from Italy's QualiCal received the order.

An order was placed for a parallel flow regenerative (GGR) kiln, one of the most energy-efficient lime kilns according to BAT.¹ While in the past the consumption of coal had been the biggest factor in

Right: With the investment in a GGR kiln from QualiCal, Köhler Kalk has sustainably secured the future of its production site. **Source:** www.sienk.de.

Köhler Kalk's operating costs, this has now shifted to pulverised lignite and electricity costs. "Hitherto, electricity was never an issue," reflects Köhler Kalk's Technical Manager Christian Köhler. "The old kiln was working almost mechanically."

When the new plant begins full operation, the fuel will no longer be brought into the kiln together with the dolomite rock in layers and ignited. Instead it will be blown directly into the calcination zones with distributed burner lances. For this, blowers are necessary for transport, combustion and cooling air.

Hybrid blower solution reduces energy use

The targeted injection of lignite via 24 burner lances, equally distributed between the two shafts, improves the thermal efficiency as the fuel releases its energy directly onto the dolomite. The calcination is fed by a sophisticated airflow system known as parallel flow regeneration.

At Köhler Kalk, rotary lobe compressors from AERZEN's Delta Hybrid series assume this function. Hybrid blowers combine two procedures for conveying air in one machine: 1. The roots method for low pressures and; 2. The screw compressor method for higher pressures. Conceptually, the Delta Hybrid is based on the well-known and successful AERZEN series Delta Blower and Delta Screw. AERZEN has calculated that the rotary lobe compressor requires 15% less current than existing blowers for absolutely oil-free conveying of air.

At Köhler Kalk, this electrical efficiency has a significant effect on the efficiency of the entire production process, with a short return on investment. The importance of the blower technology in modern GGR kilns becomes clear when you look into the machine room of the new kiln. For the combustion air, there are three Delta Hybrids D 75 L (max. 132kW, 4000m³/hr, 1000mbar). Another two units with the same capacity convey cold air from outside into the calcined lime to cool it before discharge. In future, Köhler Kalk will rely on the AERZEN Delta Blower series to cool the burner lances and pneumatically convey the pulverised lignite.

As the (in total) three GM 25 S type series units (55kW, 1450m³/hr maximum) provide a considerably lower capacity than the five Delta Hybrid blowers, Köhler Kalk decided not to have an upgrade here. "Our goal was to achieve maximum efficiency gains with any increase in the plant's costs kept as low as possible," says Köhler.

The future belongs to hybrid blowers

"In kilns, positive displacement blowers are traditionally used without exception. These are very reliable but consume quite a lot of energy," explains Francesco Cella, CTO at QualiCal. With the change to rotary lobe



compressors, the plant manufacturer has made the necessary air volumes available as energy efficiently as possible in conjunction with precise blower speed control. Due to its special rotor profiles, the Delta Hybrid is able to save energy by means of internal compression alone. For the first time in the low pressure market, it has been possible to achieve a significant saving without any reduction in quality or reliability.

"We have a longstanding partnership with AERZEN and pursue a vision that is characterised by quality, reliability and innovation," says Carlo Cella, CEO of QualiCal. In this project, the partnership resulted in very close co-operation between QualiCal and AERZEN at an early stage. The process data was analysed, simulated and, finally, the results were reflected in the blower technology. "The success is the result of a very trusting and extensive exchange of information," adds Carlo Cella. "We are very good at burning lime, AERZEN is very good at generating process air. We complement each other very well."



Left: A machine park consisting of AERZEN Delta Hybrid and Delta Blower provides the process air. Source: www.sienk.de.

Conclusion

The new assembly at Köhler Kalk clearly shows how process efficiency, sustainability and increased product quality can be reconciled. Even though the Delta Hybrid technology is initially more expensive than conventional blower technology in terms of capital expenditure, the noticeably lower operating costs justify the investment in Delta Hybrid rotary lobe compressors.

From the point of view of the operator, Christian Köhler is convinced that the future 'belongs' to hybrid blowers in lime kiln construction. "Our kiln is the first in Germany to calcine dolomite using the GGR procedure. We are among the pioneers and are eager to find out what the efficiency gain after commissioning will be," he concludes.

Reference

 ${\bf 1.}\ Best\ Available\ Technology, component\ of\ the\ installation}$ authorisation law according to EU Directive 2010/75/EU concerning industrial emissions.



Left: The pulverised lignite is blown through burner lances into the kiln by AERZEN Delta Blowers. Source: www.sienk.de.

Left: The GGR kiln, with access to the vibrating trays. **Source:** www.sienk.de.

Subscribe

Sujay Thangaraj, Product Line Manager, FLSmidth

Xuan Thanh doubles up on Cross-Bar® Coolers

Xuan Thanh Cement, which boasts one of the largest cement lines in the world, ordered a second high-capacity FLSmidth® Cross-Bar® Cooler for its newest cement production line (line three) earlier in 2019. The latest generation of the Cross-Bar Cooler operates successfully in more than 130 cement plants around the world, including on Xuan Thanh's second line.

perating since 2017, the 12,500t/day line (line two) at Vietnam's Xuan Thanh Cement plant in Ha Nam province contributes to the plant's title as the largest in South East Asia. The plant is committed to high standards and efficiency and, earlier in 2019, its management decided to install a second high-capacity Cross-Bar Cooler from FLSmidth. Now that management had seen what the Cross-Bar Cooler can do, it wanted to acquire another as part of its most recent order for this brownfield line.

Lowering total energy consumption

The Xuan Thanh Cement plant, 75km south of Hanoi, has successfully operated one Cross-Bar Cooler since 2017, when it produced its first clinker. The cooler has since helped the plant achieve its production and energy-efficiency goals, as well as keep maintenance to a minimum. Its operating parameters can be seen below.

As with any modern cement plant, reliability of equipment is a key performance parameter at the Xuan Thanh Cement plant. Here, the Cross-Bar Cooler has shown impressive performance, achieving a reliability factor greater than 99.5% between August 2018 and July 2019 (See Figure 2).

"High reliability and efficiency are the results of the meticulous design parameters of the Cross-Bar Cooler. The engineers at FLSmidth have developed the Cross-Bar Cooler by applying their years of cement production experience, their understanding of customers' needs and feedback," said René Jensen, Project Director at FLSmidth, who has been closely involved in the project at Xuan Thanh.

Similarly, minimising total energy consumption is another key objective, and the Cross-Bar Cooler at Xuan Thanh Cement has proven to be highly efficient with both fuel and electrical power.

Designed for high performance

After years of research, development and operational experience, the Cross-Bar Cooler was developed based on carefully considered design parameters:

- The Air Blast Control (ABC) Inlet, which comes standard with the Cross-Bar Cooler, helps prevent the formation of snowmen;
- The self-adjusting mechanical flow regulators offer high heat recuperation, optimum air-cooling capabilities and uniform cool air distribution throughout the entire cooler;
- The stationary, sealed-grate line has no clinker spillage, eliminating the need for grate-plate gap management or a conveying system underneath the grate;

Below right - Figure 1: The FLSmidth Cross-Bar Cooler has achieved impressive reliability at Xuan Thanh Cement.

Results of FLSmidth Cross-Bar Cooler at Xuan Thanh Cement

Cooler type: Cross-Bar Cooler 22 x 74
Clinker production (t/day): 13,173t/day
Grate area (m²): 272.8m²
Grate loading (t/day/m²): 48.3t/day/m²
Specific fuel consumption (clinker): 697kCal/kg
Specific power consumption

(Cooler fans, drive & HRB): 5.3kWh/t Clinker temperature: 61°C + ambient





As a partner to the cement industry, AERZEN knows the high demands when it comes to the pneumatic transport of demanding bulk materials. AERZEN is able to guarantee maximum reliability: with an extensive product portfolio of robust, durable compressors and blowers, AERZEN offers the decisive components for every individual application, ensuring completely process reliability in production.



www.aerzen.com

Relax... you're in good company.

At least 5500 print copies of Global Cement Magazine are now sent out each issue...

... and that doesn't even include the free digital distribution!



To advertise in Global Gement Magazine,
please contact Paul Brown, paul brown@propubs.com
To download the latest Media-Book, scan or dick on the QR codes

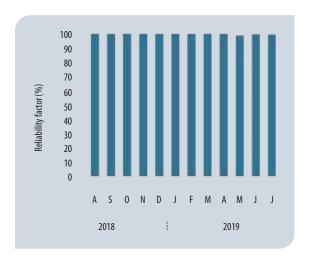


GLOBAL CEMENT: CLINKER COOLERS



Right - Figure 2: With a reliability factor greater than 99.5%, the Cross-Bar Cooler has proven its own worth. August 2018 - July 2019.

Far right - Figure 3: Inspection of the Cross-Bar Cooler at Xuan Thanh Cement, installed on the plant's line two since 2017.





Right - Table 1: Comparison of total energy consumption, of an FLSmidth Cross-Bar Cooler and grate cooler.

Conditions

Clinker production: 12,500t/day Fuel heat value: 5500kCal/kg Fuel cost: US\$80/t Electricity cost: US\$0.12/kWh Operating: 330days/yr

Parameter	FLSmidth Cross Bar Cooler	Grate cooler	Difference	Overall savings		
				US\$/t (clinker)	US\$/yr	US\$/yr
Cooler efficiency	78%	75%	-12kCal/kg (clinker)	- 0.17 (Fuel Saving)		
Specific power of cooler fans, drive and HRB mill	5.3kWh/t	4.8kWh/t	+0.5kWh/t	+ 0.06 (Debt on Power)	0.12	493,200
Preheater fan specific power	6kWh/t	6.1kWh/r	- 0.1kWh/t	- 0.01 (Power Saving)		

- The separate clinker conveying and cooling systems not only have high, consistent thermal efficiency, but require minimal maintenance;
- The horizontal design and drive mechanisms optimise clinker transport;
- It has a modular design for fast and easy installation.

The Cross-Bar Cooler vs a grate cooler

When comparing the Cross-Bar Cooler against grate cooler technology, energy consumption numbers can easily be misleading when only looking at electrical energy consumption. To understand the true,

overall energy consumption, it is important to take into account both fuel consumption and electrical power consumption.

Table 1 presents a closer comparison of the Cross-Bar Cooler and the latest grate cooler technology. The efficiency improvement over an existing grate cooler will almost certainly be higher.

Similarly, it is important to base the cooler efficiency calculations on realistic clinker temperature references. We normally reference the cooler efficiency to 1450°C for a true, real-world calculation as per the VDZ standard. Referencing cooler efficiency to lower temperatures, such as 1400°C, artificially increases the cooler efficiency.

Based on common operating parameters of production capacity, fuel heat value, and fuel and electricity costs, it is clear that integrating the Cross-Bar Cooler into the production line is more energy-efficient than any other cooler types.

"We're always happy to see how the design of our products helps cement plants meet their production, energy consumption and emission goals," says Jacob Becker Ryttergaard, Global Product Line Manager at FLSmidth. "This is why we're so pleased to see one of the world's largest cement plants has had so much success with our Cross-Bar Cooler that it ordered another."





cem-boards.com



#globalcemboards

CONFERENCE & EXHIBITION 2020

Cement-based board markets

Cement-based board production technologies

New applications for cement-based boards

Global CemBoards Enquiries

Exhibition and sponsorship: paul.brown@propubs.com

Programme and speakers: robert.mccaffrey@propubs.com



Global Cement staff

Review: INFORM celebrates 50 years

Around 300 guests from all over the globe converged on Aachen, Germany, on 5 July 2019 to celebrate the 50th Anniversary of INFORM GmbH, the major artificial intelligence (AI), optimisation and software solutions provider. The company provides 1000 clients from over 40 countries with AI expertise. *Global Cement* was in attendance...

1: A microphone is delivered to compere Rudy C Meidl via drone, setting the scene for this high-tech event. After a warm welcome from compere Rudy C Meidl, INFORM's CEO for the past 33 years, Adrian Weiler, took to the stage. Weiler explained that when he joined INFORM in 1986, the company had just five staff. Now there are 750 from more than 30 countries. The world of digitisation, he highlighted, has come a long way in the past 33 years, just like INFORM itself. It achieves annual revenues of US\$80-90m, demonstrating consistent double-digit growth since 1985.

"When people think about the subjects

of high-technology, digitalisation, artificial intelligence, they mostly think about drones, big data and contactless transactions in the convenience store. This is digitalisation and many companies make it possible," he said. "However, this is not what INFORM is about. INFORM focuses on decision-making, some call it computer-supported decision-making or digital decision-making. It helps management and industries to improve." Weiler stated that this area of digitalisation, in which INFORM has relatively few peers, is at a 'hockey stick' moment, where demand suddenly accelerates

after a long period of 'gestation.'

2: Adrian Weiler, CEO of INFORM since 1986, opened the presentations with a look at INFORM in the present day.

3: Company founder Prof Dr Dreshc Hans-Jürgen

Zimmermann presented the history of INFORM.

4: INFORM's impressive campus site in Aachen, Germany.









Weiler further explained that INFORM is a 'bottom up' company. It starts out in new areas of optimisation with a relatively 'modest' item or application. In arenas from cement plant logistics to the supply of spare automotive parts and software to minimise the impact of delays on airport operations, each solution is first tested on a smaller scale. Only once proven can it be expanded. An example was provided where a particular technology was scaled up from a single parcel handling centre to Germany's largest container terminal.

Weiler also explained INFORM's research into algorithms that facilitate flexible work patterns. INFORM developed the software without backing from a specific client. "Traditionally, many companies use rigid shifts, e.g. early, late and night shifts. These rotating patterns, however, are not flexible enough to cater for the shifting needs of a younger workforce generation," related Weiler. "Work-life balance has become a crucial factor, and there is now enormous demand."



INFORM's expansion has been achieved through a policy to focus at the same time as diversifying, an approach highlighted by its structure. There are not one, not two, but seven autonomous business units, enabling the company to weather the inevitable economic storms.

Returning to the 'hockey stick' moment, Weiler stated that he anticipated a massive increase in demand for INFORM's artificial intelligence (AI) and operations research (OR) products and solutions in the future. He concluded his presentation by highlighting that the most 'astounding' thing from his perspective was that, 50 years ago, Prof Dr Dres hc Hans-Jürgen Zimmermann had the, "foresight to grab the initiative and found INFORM." Weiler concluded, "I would like to thank him most heartily."

Zimmermann related that he realised the only way to demonstrate OR in real-life was to establish a company that dealt exclusively with OR. He did this in 1969 with the establishment of INFORM. "Come hell or high water, we optimised," said Zimmermann. "We optimised power station operations, sparkling wine production, the logistics for the food producer Dr Oetker, everything!"

Zimmermann went on to relate that, despite success for its clients, there was initially little margin left over for the fledgling company. This was due to the fact that programs were broadly not transferable between clients. "The customer saw the benefit but then we had to go back to square one."









INFORM's history

Guests were then treated to a fascinating insight into the founding of the company half a century ago by **Prof Dr Dres hc Hans-Jürgen Zimmermann**. With experience at Siemens and Standard Elektrik Lorenz in Germany and four years in Operations Research in the US, Zimmermann returned

to Germany to the Chair of Corporate Research at the RWTH. He built a team, which partly focused on Operations Research, at that time an emerging interdisciplinary area that originated from the need to solve logistics problems during the Second World War.

"In 1967 OR was barely known," stated Zimmermann. "I built an interdisciplinary team that included psychologists, mathematicians, physicians and others. However, nobody believed that OR would, in practice, actually achieve anything at all. Some thought, 'he's just a mathematical nut,' while the mathematicians said that I should join the mathematics faculty."

Refining the requirements

The firm decided to reconsider its approach at the turn of the 1980s. Four criteria were to be applied to new projects: 1. Problems must be sufficiently complex that they truly need digital optimisation, 'rather than just a pencil' and; 2. Projects must offer significant return on investment; 3. There has to be widespread need to aid transfer to other users; 4. There must be at least one pilot customer that pays for the project. Zimmermann stated that these criteria had stood INFORM in good stead over the years, providing the basis upon which it still operates today.

5: INFORM's 16th employee, from 1986, Thomas Schmidt, senior vice president, Aviation, thanked Prof Zimmermann for his foresight, patience and support. A tree will be planted and a bench installed on the INFORM campus to commemorate its 50th Anniversary

6: Dr Boris Michel, Teamlead Sales & Presales at INFORM giving his presentation on Machine Learning.

7: Prof Dr rer nat habil Marco Lübbecke, RWTH Aachen, presenting his paper 'What is mathematical optimisation and what can it do?'

8: Dr Arndt Pechstein presented on the topic of 'Hybrid Thinking: Strategies for success in the digital age.'

9: Dr-Ing Michael Riesener, Head of Research at e.GO Mobile AG, the Aachen based electric vehicle start-up, presented on the topic of 'Aqile product development.'

GLOBAL CEMENT: EVENT REVIEW

10: Management development and motivational speaker Dr Reinhard K Sprenger presented 'Humboldt is not dead!'

11: 'Back to work - How business theatres can become real companies again,' was presented by Hon -Prof Dr-Ing Lars Vollmer, who injected plenty of humour into the day's proceedings.

12: Horst Robertz, CEO of Dr Babor GmbH, a client of INFORM, speaking during the moderated panel discussion.

13: INFORM's Nathalie von Bomhard asks a question during a panel discussion.

14: INFORM's Dirk Schlemper (left) in discussion with Federico dos Reis, CEO of Workforce Solutions, Chile (centre) and Paul Brown, Global Cement (right).

15: Lively discussions during the outdoor coffee break.

16: Hiltrud Kliesch, Event Manager of INFORM's 50th Anniversary, was delighted to see her hard work come to fruition on the day.

17: Live music entertained INFORM's delighted guests.













The company was also fortunate on two counts: 1. A new Federal German law relating to inventories was enacted in 1978 that permitted the use of statistical procedures to annual inventory procedures. This permitted cost savings of >95%, a massive opportunity for firms to use INFORM's solutions; 2. Work on transport optimisation. "What both interested and irritated me was that many forklift trucks in manufacturing plants only carried halfloads," explains Zimmermann. Fortunately, the engine manufacturer KHD (now Deutz AG) shared Zimmermann's frustration and agreed to work with INFORM on a new knowledge-based expert system that eventually became one of INFORM's four foundation pillars. Thanks to these opportunities, INFORM was able to grow.

Zimmermann went on to highlight that, while cost-saving remains an important motivator for INFORM and the client, sustainability issues have risen in importance over the past 50 years. In the early days, improved transport logistics saved money. Now they additionally form the basis of a lower- CO_2 supply chain, for example in the cement, ready-mix, aggregates and asphalt industries.

Zimmermann concluded his remarks by stating that he entirely agreed with CEO Weiler that, despite its many successes, INFORM was 'on an ascending branch of industry.' He finished by stating, "I very much hope that the company, even though it is now 50 years old, maintains its youthful attitude in the years that lie ahead."

A total of six further presentations were given to

the assembled delegates, covering a range of topics associated with AI, OR, machine learning and business optimisation. After the presentations the event closed with dinner and entertainment from comedian / presenter Vince Ebert and live music. Here's to the next 50 years!





1. Bergmans, T. & Schlemper D. 'Shifting the dynamics of workforce management,' in Global Cement Magazine - September 2019, pp. 20-22, Pro Global Media Ltd., Epsom, UK, August 2019.





Mexico: Cemex launches concrete sales website

Cemex Mexico has launched a new website to sell concrete. It is intended to serve builders, contractors, small business owners, architects, construction entrepreneurs and the general public for any size of project from 1m³ upwards.

The website includes an online calculator to help customers work out the amount of concrete required for a project and technical support to aid the transaction. It also supports scheduling delivery at a specific time and date, as well as having visibility and tracking of the order in real time. The company says it is the first concrete sales channel in the country with 'express' service and full coverage.



UK: Cemex moves concrete plant

emex will invest around Euro1m on relocating and upgrading its Eversley readymixed concrete plant. The new plant will be located at the Bramshill Quarry in Hampshire reducing the need for truck journeys to the former site nearby. The unit is being replaced with a Liebherr 2.25 mobile mix plant. The plant will have a storage capacity of 300t of cement, and 240t of aggregates. It will increase production from 80m³/hr to 240m³/hr.

Colombia: Argos helps build largest road tunnel in South America

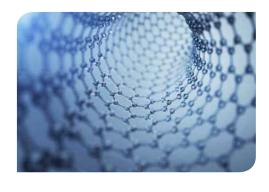
Cementos Argos Colombia supplied around 220,000m³ of concrete and over 8000t of cement for the construction of the Oriente Tunnel. The road infrastructure project near Medellín in Antioquia was scheduled to be commissioned in mid-August 2019. Work on the project started in 2015. The 8.2km tunnel cost US\$300m and it will be the longest road tunnel in South America when it opens.



UK: Watertight™ concrete launch

A ggregate Industries has released a range of admixture-driven waterproofing solutions, blended with a custom mix of BASF's MasterLife WP 799, called Watertight concrete.

Aggregate Industries has described the high performance integrated waterproofing systems as 'insensitive to weather, groundwater and sprinkler systems.'



UK: New Ready Mix head for Aggregate Industries

A ggregate Industries has appointed Max Colligan as the managing director of its Ready Mix Concrete business and as a member of its executive committee. He holds over 30 years of experience in the construction industry. He holds a degree in civil engineering and has post-graduate qualifications in quarrying.

US: Nano-scale admixture launch

Nano Graphene has launched a concrete admixture. OG Concrete Admix improves concrete's water resistance by a factor of four and more than doubles the strength, while significantly reducing cracking.

In GrapheneCA's promotional material, it mentions a lowered carbon footprint amongst the benefits of its admixture for concrete producers, with less cement being required in the production of concrete using OG Concrete Admix.

GLOBAL CEMENT NEWS: PRODUCTS & CONTRACTS



Contents

Subscribe

Ad Index

Mexico: Installation of Loesche mills to begin at Cruz Azul plants

nstallation of two Loesche petcoke grinding plants will begin at La Cruz Azul's Lagunas and Hidalgo cement plants later in 2019.

Both mills are LM 41.4 D type coal mills, the largest of their kind. They will form part of new production lines at each of the two plants. In addition to the mills, which both have a capacity of 50-65t/hr, Loesche will also supply process gas filters, mill fans, inerting units,

explosion vents, cyclone separators, conveyor augers and drag chain conveyors, as well as the complete electrotechnical equipment. The scope of supply also includes the complete detail engineering for the steel and concrete construction.

The equipment has already been fully dispatched. Installation is planned to start in December 2019 in Hidalgo. Installation of the grinding plant in Lagunas has already begun.



Above: A Loesche LM 43.4 D mill in Kotputli, India.

Mexico: MAS DT burner for unnamed plant

Initherm Cemcon has been awarded the supply of an MAS DT burner to an unnamed cement plant in Mexico. The burner is designed for coal, natural gas and liquid secondary fuel operation. To optimise the maintenance work, the burner is equipped with a divisible jacket tube. A satellite burner, with the supplier's adjustment system, will be mounted on top of the main burner to improve solid secondary fuel utilisation.



Germany: Lindner installation for Deuna Ovekerhoff has installed a solid recovered fuel process

Dyckerhoff has installed a solid recovered fuel processing line at Germany's largest capacity cement plant in Deuna, Thuringia. Lindner has stated that it installed the production line, consisting of four Lindner shredders and developed by B+T Group, during the overhaul phase without disruption to Deuna's 2.4Mt/yr capacity output.

B+T will provide a constant supply of mostly pre-sorted non-recyclable post-consumer packaging, rubber and textile waste. The fuel will feed Deuna's rotary kilns with sustainably-sourced energy at a rate of 720t/day.

Morocco: Algae plant for Safi plant

The HeidelbergCement plant at Safi is to receive an adjacent algae pond. Environmental innovator Omega Green has estimated the pond's rate of carbon dioxide removal at 80-100t/yr. The algae can be sold on to food, cosmetics and animal feed producers.

India: Shree order for Gebr. Pfeiffer

Shree Cement has ordered an MVR 6000 C-6 mill from Germany's Gebr. Pfeiffer. The mill will be used to grind cement at a grinding unit near Pune in the state of Maharashtra. No value has been disclosed.

The new mill will be used to alternately produce 300t/hr of Ordinary Portland Cement (OPC) at a product fineness of 3100cm²/g according to Blaine or 300t/hr of Portland Pozzolana Cement (PPC) containing as much as 35% fly ash at a product fineness of 3500cm²/g according to Blaine or 180t/hr of ground granulated blast-furnace slag (GGBFS) at a product fineness of 4500cm²/g according to Blaine. The mill will come equipped with a 6700kW drive.

Gebr. Pfeiffer SE will supply the core components of the mill and the gear unit from Europe and its Indian subsidiary, Gebr. Pfeiffer (India), will provide the components such as the housing of the mill and classifier, the steel foundation parts as well as the internal parts of the classifier. The Indian subsidiary will also design the plant layout and advise the customer on the equipment that it will procure on its own.

Russia: New Gebr. Pfeiffer subsidiary

Germany's Gebr. Pfeiffer has opened a new subsidiary called 'Gebr. Pfeiffer GUS' based in Moscow. The company is led by General Director Alex Nickel and it offers new machinery as well as after sales for customers based in the Commonwealth of Independent States (CIS) region. Nickel is joined by Sales Director Svetlana Tarasova and Service Manager Alexander Zolotarev.



Ireland: Strong first half for CRH

RH's revenue for the six months to 30 June 2019 was Euro13.2bn, up by 11% from Euro11.9bn over the same period in 2018, with a 36% increase in EBITDA to Euro1.54bn from Euro1.13bn in the first half of 2018.

In its interim results, CRH attributed increased cement volumes in the US to synergy delivery and strong price realisation in spite of adverse weather conditions in its key markets. CRH noted 'a strong contribution from our Ash Grove acquisition,' obtained at the end of June 2018.

A general improvement in cement pricing in the EU28 saw operating profits ahead of the first half of 2018, with increased demand in the French market from non-residential and civil engineering sectors offsetting the effects of reduced residential demand. The UK market reversed this trend, with operating profit behind 2018 due to higher input costs and volume pressure.

In addition to operating profit improvements reported by subsidiary businesses in the Philippines, CRH group benefited from its share in profit after tax of China's Yantai Building Materials and India's My Home Industries Limited, both of which enjoyed improved operating profits compared to 2018.



Turkey: Sabancı sales fall by 5%

Sales from Sabanci Holding's cement businesses fell by 5% year-on-year to Euro132m in the first half of 2019 from Euro139m in the same period in 2018. Its cost of goods sold grew by 7% during the same period. It made a net loss of Euro1.35m compared to a net profit of Euro23.3m previously. Overall, the group's sales rose by 24% to Euro1.48bn but its profit fell by 17% to Euro577m.





World: New WCA members from Europe

The major European cement equipment manufacturers Fives FCB and KHD Humboldt Wedag International have joined the World Cement Association (WCA).

"We are delighted to welcome Fives, which has distinctive experience and brings new capabilities to WCA," said Vincent Lefebvre, WCA Chairman. "As we work to address the key global challenges facing the cement industry, we need diverse insights and well-informed opinion from our members to guide our efforts and ensure that we remain relevant and effective."

Speaking about KHD, Lefebvre said, "In a globalised world, we can only tackle the big challenges facing the cement industry, like climate change, together, so it's great to be working alongside an organisation as respected as KHD."





Romania: LafargeHolcim deal to be investigated

Romania's national competition authority has announced that it will investigate LafargeHolcim's deal with Oresa, regarding the latter's takeover of the precast concrete producer Somaco. The value of the deal, completed in July 2019, was not disclosed.

Czechia: Production up 10% in 2018

ement output in Czechia increased by 9.8% year-on-year to 4.4Mt in 2018, according to the country's national cement association. The increase was the largest since 2008 and has been attributed to rising demand from the country's construction industry and higher exports. Cement consumption rose by 7.7% year-on-year to 4.3Mt, compared with 4.0Mt in 2017.

Exports rose by 36.4% to 0.75Mt during 2018, with Slovakia accounting for around 60% and Germany 28%, plus smaller amounts to Austria and Poland. Cement imports rose by 3.7% to 0.57Mt. Again, Slovakia was the most significant partner. It contributed nearly 50%, Poland contributed 30% and significant volumes also came from Germany and Austria.

EN, ATEX, ISO, NFPA etc... Are they making your coal mill operation safe?

Without deep knowledge of fire and explosion protection, combined with common sense, they are not!

For deep knowledge and common sense:

Coal Mill Safety Pte Ltd www.coalmillsafety.com info@coalmillsafety.com

Austria: RHI Magnesita improves in tricky conditions

RHI Magnesita, a global supplier of refractory products, systems and services, achieved a revenue of Euro1.54bn in the first half of 2019, an increase of 2.2% year-on-year, despite challenges in some of its major markets. Its adjusted earnings before interest, tax and amortisation (EBITA) increased by 12.3% to Euro234m from Euro209m, driven by the realisation of a further Euro10m of synergies and the strength of its Industrial Division. RHI Magnesita's operating free cash flow of Euro129m was driven by EBITA growth.

"I am pleased to announce a robust financial performance in the first half of 2019," said Stefan Borgas, CEO of RHI Magnesita. "Despite difficult end markets, we have seen a very strong performance from our Industrial Division, offsetting a slightly softer performance from the Steel Division in more challenging market conditions."

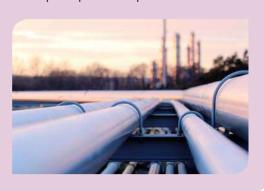


Norway: HeidelbergCement lends weight to CCS project

eidelbergCement has joined a list of leaders from various industries in endorsing Norway's state-owned energy group Equinor's carbon dioxide (CO₂) capture and storage (CCS) plans. Bernd Scheifele, chairman of the managing board of HeidelbergCement, was among representatives of seven companies who signed memoranda of understanding with Equinor.

HeidelbergCement's Norwegian subsidiary Norcem has been involved in CCS research at its 1.2Mt/yr integrated cement plant in Brevik since 2011. In early 2018, the government shortlisted the plant for its multiple-industry 'Northern Lights' CCS project. Beginning in 2023, Equinor will remove 0.4Mt/yr of CO₂, half of the plant's total CO₂ output, from Brevik for storage in empty oil and gas fields beneath the North Sea.

In a statement, HeidelbergCement expressed its intention to work together with Equinor to optimise CO₂ transportation and develop Europe-wide disposal solutions.



Russia: Pikalevsky upgrade

Lurocement has invested US\$2.26m in upgrades to its Pikalevsky cement plant in the Leningrad region of Russia.

Eurocement has reported that tests have proven a 27% decrease in the water separation rate and an increase in the rate of curing of Pikalevsky's cement following the upgrade. Strength indicators showed a 20% improvement in performance to 25MPa after three days, and over 60MPa after 28 days. Setting start time also increased to 175 minutes. Eurocement's solution for particle size distribution in clinker after grinding has caused a notable boost in durability indicators.

Representatives of KHD, Aumund and Siemens aided in the installation and instruction of plant employees in the use of the new grinding technologies.

THORWESTEN

We provide for your safety



Explosion protection

for industries typically using coal, lignite, pet coke and secondary fuels

Thorwesten Vent are your experts in explosion venting and pressure shock resistant design and construction. Thorwesten Vent offers explosion protection-related consultancy for the planning of new as well as the correction of existing grinding facilities for solid fuels.

We provide for your safety!

- Highly efficient self-reclosing explosion vents
- Customized safety solutions comprising engineering and hardware supply
- Professional consulting and assistance



THORWESTEN VENT GmbH
Daimlerring 39 • 59269 Beckum / Germany
Phone: +49(0)2521/9391-0
thorwesten.vent@thorwesten.com
www.thorwesten.com



Spain: Cemex divestments continue

ollowing its 2018 appeal against a Euro445m fine for misreporting losses, granted on condition of the company paying the court Euro300m in line with its obtaining specified mortgages and land sales, Cemex has continued to release its holdings on the Iberian peninsula.

Cinco Días has reported that Cemex's Spain operations closed its sale to Turkey's Çimsa of its White Cement division in the first quarter of 2019 for Euro180m. In 2018, the Spanish subsidiary of Cemex divested itself of five pieces of property at a profit of Euro17,000. Its Azuara production line in Saragossa Province generated capital gains of Euro462,000.

In the first half of 2019, Cemex reported earnings before interest, taxes, depreciation and amortisation (EBITDA) in Europe of Euro185m, up by 21% from US\$168m in the same period of 2018.

Spain: Cemex to build import terminal

Cemex España plans to build a cement import terminal at the port of El Musel in Asturias in northern Spain. Cemex has requested 2491.2m² of space within the second tranche of the Olano Engineer Dock. It is expected that the installation will be built by June 2020.

The Euro5m facility will have 6000t of cement storage capacity from two 41.1m-high silos with bulk truck loading capacity of 200t/hr and a cement bagging plant with a capacity of 1950bags/hr (25kg).



UK: New health and safety head at Breedon Group

Breedon Group has appointed Nigel Clamp as Group Head of Health, Safety and Environment. He will assume overall responsibility for the health and safety of Breedon's 3000-strong workforce, as well as overseeing the group's environmental and sustainability activities.

Clamp joins Breedon from HeidelbergCement, where he was Health & Safety Director for the company's Africa & Eastern Mediterranean Basin Region. He was previously Senior Safety, Health & Environment (SHE) Manager at Hanson, prior to which he served as Head of Safety at National Express. He spent the earlier part of his career in a number of quarry management and SHE roles with Lafarge.



Russia: New Maltsovsky CEO

urocement has appointed Stefan Noev as the chief executive officer (CEO) of its Maltsovsky Portland Cement subsidiary. The company operates a 4.2Mt/yr integrated plant in the Bryansk Region. Noah is a graduate of the Technical University of Sofia in Bulgaria and he has worked for Italcementi and Suez Cement. He joined Eurocement in 2016 and managed its Sengileevsky integrated plant in Ulyanovsk region.

Austria: New HR Head at Alpacem

A lpacem has appointed Birgit Lautner as its head of human resources and Jerneja Potocnik as the head of its financial control. Lautner, aged 47 years, worked in various international finance and industrial companies in human resource roles before joining Alpacem. Potocnik, aged 41 years, will also act as finance director for Salonit Anhovo, the group's Slovenian subsidiary. She has held various positions in the Wietersdorfer Group since 2016.

Spain: Base jumper dies at former plant

A 29-year old man died in a failed attempt to base jump at Cemex España's former integrated plant at San Vicente del Raspeig near Alicante on 7 August 2019. The deceased wanted to film a nocturnal descent from a 50m tower at the site for his social media channel, according to the El País newspaper. However, his parachute failed to open during the incident. Cemex was denied permission to demolish the San Vicente del Raspeig plant in June 2018.



CEMENT TECHNOLOGY & TRANSFORMATION 2019

NOVEMBER 19-21, 2019 | COBB GALLERIA CENTRE | ATLANTA, GA USA

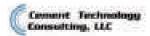
The Return of the Premier Conference and Exhibition for Cement Equipment and Technology

It's back! Relaunched by SEMCO Publishing, the publishers of Rock Products, Concrete Products, Cement Americas and the North American Cement Directory, the International Cement Seminar—which previously ran for more than 35 years—returns to bring focus to the equipment and technology that is driving pro-

ductivity and profitability. As the market for cement production continues to grow and evolve, the long-requested return of the International Cement Seminar will help industry professionals strategically plan for the future.

SPONSORED BY











MEDIA SPONSORS



PRESENTED BY







WWW.INTERNATIONALCEMENTSEMINAR.COM

Interview by Peter Edwards, Global Cement Magazine

Ecocem: Ahead of the low-CO₂ curve

Global Cement caught up with Micheál McKittrick, Ecocem's recently-appointed Managing Director for Northern Europe, to talk about the company's development, current trends and future plans.



Above: Micheál McKittrick has been Ecocem's Managing Director for Northern Europe with responsibility for the Irish, UK and Benelux markets, since May 2019. He joined the company as Managing Director of Ecocem Ireland in October 2016, having previously worked for the Irish arm of UK-based engineering consultant Atkins.

Global Cement (GC): Please could you introduce Ecocem and its activities?

Micheál McKittrick (MM): Ecocem is an Irish-owned and headquartered company. It was established in 2000 by Donal O'Riain who remains as Managing Director of Ecocem Group. He identified the opportunities to use ground granulated blast furnace slag (GGBS) as a low-CO₂ alternative to traditional cement. Ecocem's GGBS has an embodied CO₂ output as low as 12kg/t. That compares to CEM I, at around 850kg/t or CEM II at 750kg/t.

Over the first decade of the 21st Century, Ecocem opened GGBS grinding plants in Moerdijk (Netherlands, 2002), Dublin (Ireland, 2003) and Fos sur Mer (France 2009). Following growth in Ireland in the early 2000s, Ecocem weathered the subsequent economic rollercoaster in 2008 - 2010 by diversifying into other products such as CEM III-A and CEM III C cement. We also formally started on a path of innovation and a range of solutions have been developed over the past few years. These are now coming to fruition with their launch into the marketplace.

Since 2016 Ecocem has been able to use its consolidated position to expand once more, in a kind of 'second wave.' We have opened import terminals at Runcorn and Sheerness in England in 2016 and 2017

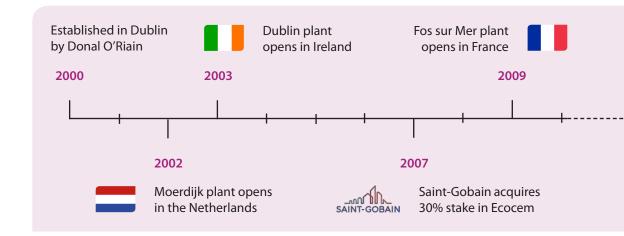
respectively, a terminal in Gälve, Sweden in 2016 and a second grinding plant at Dunkirk in France in April 2018, a facility that serves both France and the UK. 2018 was also the year that we completed a series of significant investment in our Moerdijk plant. That facility has now doubled in terms of raw material storage, production capacity and product storage. This involved the installation of a new KHD roller press for grinding. We've also built export terminal facilities at the Moerdijk plant.

The company is at a point now where the distribution network is becoming fairly well developed. Each of the plants and terminals, while focused on its individual territory, is increasingly in a position to help other facilities out, for example, if there is a spike in demand or technical difficulty in one of the other markets.

GC: You were recently promoted within the group. What does your new role entail?

MM: In my new role as Managing Director for Northern Europe I manage the businesses in Ireland, the UK, the Netherlands (for Benelux) and Sweden. This adds Benelux and Sweden to my previous responsibilities prior to May 2019, when I was head of Ecocem Ireland & UK.







From by-product to eco-products

Ecocem sources granulated blast furnace slag (GBFS) from a range of different providers, including ArcelorMittal and TATA. The company reports that its long-term contracts will ensure stability of supply for many years to come, even in the face of reduced slag supplies in Europe.





The company converts GBFS into GGBS and also makes CEM III-A and CEM III C, plus two admixtures for early strength development in pre-cast concrete products. Products are sold in bulk and in bags.

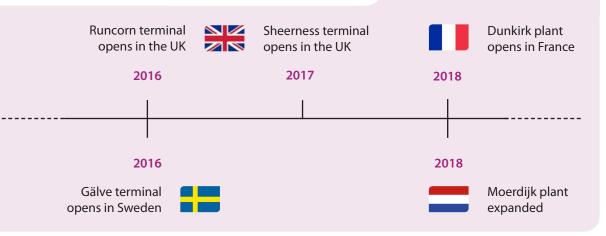
In addition, Ecocem has recently launched Ecoshot, a GGBS shotcrete solution, and Eco_2Floor , which is a self-leveling floor screed.

Left: Ecocem has recently launched its Ecoshot shotcrete solution.
"We're focusing on market demands for low-CO₂ alternatives to existing building material solutions," explains McKittrick.
"Ecoshot and Eco₂Floor are two of the higher profile products to have come out of our development process."

Left: Screed pour of Ecocem's Eco₂Floor self-levelling screed product.

Day-to-day, my new role is to ensure that we are strong from a development standpoint, are strong operationally and strong from a production, logistics and sales perspective, both in relation to the product we're selling and the team itself. In a more pan-optic sense, my role is to continue to grow and develop the business from the perspective of production / sales and the products we offer. This involves developing quality long-term relationships with various stakeholders and experts in the industries we're involved in. For example, as we roll out our shotcrete solution (above), we will work with the companies that are specialised in that rather than try to do everything ourselves. We want to facilitate low-CO2 alternatives not only for cement and concrete, but for a wide range of products. It's about implementing low-CO₂ solutions across the sector and doing what we can to encourage the transition to a lower-CO2 construction sector and the economy as a whole.





Above: Ecocem's grinding plants and terminals in Europe.



Right: The Ecocem Dunkirk plant was inaugurated in April 2018.



GC: What can you tell us about production in 2018?

MM: Our GGBS production capacity across the four sites reached 2.4Mt/yr in 2018. I expect we will see little change from that figure in 2019 in terms of production. Demand is high for our product, although some of our markets differ in terms of growth rate. We've seen a great response from the UK market, northern France and Sweden on the back of the opening of the Dunkirk facility.

GC: Do conditions in the steel sector cause you concern regarding slag supplies going forward?

MM: Our supply contracts are long-term agreements with some of the largest steel producers in Europe. We do not have significant concerns regarding the supply of slag due to the strength of these relationships and contracts. Of course, some steel plants may close due to competition from outside the EU, environmental pressures, historical lack of investment or a host of other reasons. For example, there's a lot of pressure in the UK at the moment, where British Steel

was placed in compulsory liquidation in May 2019. Brexit uncertainty is not helping in that market.

To reiterate, we are confident of our supply chain going forward. Ecocem is on a strong footing because its supply chain is strong, the product offering is strong and demand for such products is increasing.

GC: You just brought up Brexit. How has Ecocem been affected so far?

MM: Brexit is something that's been hanging over the UK and Ireland for more than three years now. There's been one major effect of this to date for Ecocem, the fluctuation in the Euro/Pound exchange rate. Prior to

the UK decision to leave the EU on 23 June 2016, £1.00 would buy you Euro1.29. Now you might get Euro1.10 for the same £1.00. That's had a negative, albeit managable, impact on our business importing into the UK. All our material comes from the Eurozone and we sell an appreciable portion, more than 10%, into the UK.

The second impact, which I hope we don't have to deal with, is the potential to be trading under World Trade Organisation (WTO) tariffs. If there is a disorderly exit, which looks

increasingly likely, there will be WTO rules. The rate is actually 0% on GGBS, so that won't actually affect us. There might, however, be disruption at ports and extra bureaucratic hoops to manage.

It would be great to have a clearer picture on how the future will pan out with respect to Brexit but it seems that we're even further away from knowing what's going on at the moment than we were at the start of 2019.

GC: The EU Emissions Trading Scheme Allowance (EUA) price has increased dramatically over the past 24 months. Do you think this has driven demand for low $\rm CO_2$ cements such as Ecocem's?

MM: I think the EU ETS is having an effect, but it's hard to put a finger on how significant it is at the moment. Remember that Ecocem is opening up the taps on a lot of new capacity at the moment, making it hard to compare different time periods.

Going forward, EUA prices will become increasingly important to traditional cement producers in the EU over the next 12-24 months. I cannot see a



Right: The Ecocem grinding plant in Dublin was the first facility to supply GGBS to the Irish market in appreciable quantities. It can produce 0.35Mt/yr of GGBS.



situation in which EUA prices don't continue to rise! A lot of national EU governments, including Ireland's, are not leaving it to the market to decide how expensive CO2 is to emit. Ireland has introduced its own CO2 pricing target that will see the price increase in a linear fashion to Euro80/t by 2030. That will translate to higher cement prices and higher GGBS prices. This will force the sector to lower its CO₂ by a whole number of methods, including more alternative fuels, lower clinker factors, including GGBS, carbon capture and storage (CCS) and leaner construction. We have to be more intelligent with the materials that we already use. The traditional cement industry is changing and the pace will pick up. Some older EU plants will probably close. There's going to be a huge change over the 2020 to 2030 period.

GC: Looking outside of the EU, Ecocem was recently forced to abandon plans to build a GGBS plan in Vallejo, California, US. Can you comment on that decision?

MM: Our subsidiary Orcem Americas had majority support from the city council to construct a GGBS grinding plant at that location. However, the main site owner withdrew its own permit application, so we were left with nowhere to go. It's bad news for Vallejo, as it really needs development. There would have been ~25 quality jobs directly from Orcem, with many more in transportation and the wider construction sector. California is primed for low-CO₂ cement alternatives and I feel it's a real missed opportunity.

GC: Is Ecocem a member of the Global Cement & Concrete Association / World Cement Association or does it have plans to join either?

MM: Ecocem is not a member of either association at present, although we recognise the efforts being made towards sustainability. We are a fairly lean organisation that has been through a rapid expansion process, so projects like these may not have received sufficient attention in the past. It's something we could look at in the future.

GC: Does Ecocem use renewable electricity?

MM: Ecocem uses 100% renewable energy tariffs at all of its plants. We have a green product and we make efforts, like I said above, to extend our ethos across the industries we deal with. For example, in some instances we re-use blast furnace gas (>100°C) to dry the material before it is ground.

GC: What are Ecocem's expansion plans?

MM: We have a set of plans but I'm not able to be specific at this time. They are fairly ambitious and I would say that the right conditions for our business



Left: The new silo at the Moerdijk terminal, to the right of the image, in the Netherlands.

model and products could be applied in several markets, both within Europe and further afield. We have to tread carefully, of course. The investment in a new plant is not trivial. We have to be sure that the market is ready and that long-term supplies can be secured.

GC: What is the largest threat to Ecocem in the next 1-5 years?

MM: I would say that the biggest potential threat is the economic stability of the markets that we work in. Take the UK, for example, where construction is actually fairly weak due to Brexit uncertainty. Ecocem is slightly shielded from that at the moment, because we are still a relatively new entrant in that market. The continued tariff situation between China and the US is upsetting stability across the EU and elsewhere in the world.

GC: What about the largest opportunity over the same time-frame?

 $\it MM$: Ecocem has been ahead of the sustainability / low-CO $_2$ curve for more than 15 years in some respects. The market is now catching up with the need to be green. The demand is not from the construction sector itself but from the public at large, with relation to many products: Solar and wind power, electric cars, steps to tackle single-use plastic, a rapidly growing list. Construction, as a large $\rm CO_2$ emitter, must be a big part of that. Ecocem is well positioned to continue to grow on the strength of this trend.

GC: Micheál McKittrick, thank you for your time.

MM: You are most welcome!





Dominican Republic: Production grows by 2.7% to 2.8Mt in first half of 2019

The national total yield of cement rose to 2.81Mt in the six months to 30 June 2019 from 2.73Mt in the same period of 2018, an increase of 2.7% year-on-year. Data from the Dominican Association of Portland Cement Producers (ADOCEM) shows that 17.8%, 0.50Mt, was exported over the period. The remaining cement boosted domestic sales by 5.2% to 2.31Mt from 2.19Mt in the first half of 2018, corresponding to a revenue of US\$223m. This rose by 14.6% from US\$195m in the half year to 30 June 2018, on the back of rising demand from construction projects.



Argentina: Loma Negra reports a 'solid' second quarter

oma Negra, Argentina's largest cement producer, saw its net revenue decline by 2% to US\$165m in the quarter to 30 June 2019, while its earnings before interest, tax, depreciation and amortisation (EBITDA) rose by 7.1% to US\$44m. This was driven by the domestic cement, lime and masonry sector.

Sergio Faifman, CEO of Loma Negra, said, "We are pleased to announce another set of solid results, our business continues to deliver adjusted EBITDA margin expansion based on our constant focus on profitability and cost enhancement initiatives. In this sense, during this quarter we adjusted our production-footprint by reconverting the Barker facility to a grinding and distribution centre. This will let us be a more efficient and agile company. Considering the Argentine context, our business continues to deliver both adjusted EBITDA margin expansion and net income growth."

Argentina: National cement sales rise

Argentina's Association of Portland Cement Manufacturers (AFCP) has reported a 5.0% month-on-month growth in cement volumes sold, to 1.05Mt in August 2019 from 1.00Mt in July of the same year. Domestic production continues to meet the entirety of demand, which grew by 5.1% year-on-year to 1.00Mt in July 2019 from 0.95Mt in July 2018.

Dominican Republic: Production set for 8% increase year-on-year to 4.8Mt

Adriano Brunetti, the president of the Dominican Association of Portland Cement Producers (ADOCEM), says that local production is forecast to grow by 8% year-on-year to 4.8Mt in 2019. His prediction was based on 12.5% growth in the construction sector in the first four months of the year, according to the Acento newspaper. He added that local cement producers have a production capacity of around 8Mt/yr. The country exports around 1Mt/yr to other countries in the Caribbean.

Brazil: Votorantim grows first-half revenue in spite of falling volumes

Votorantim Cimentos' revenue rose by 3.8% year-on-year to US\$1.44bn in the first half of 2019 from US\$1.39bn in the same period in 2018. Sales growth was driven by ready-mixed concrete and the company's other businesses as cement sales fell slightly. It reported a profit of US\$29.4m compared to a loss of US\$72m previously. Its cement sales volumes fell by 6% to 13.8Mt from 14.7Mt.

"In the first half of the year, we achieved net revenue growth and stability in our leverage, even though the Brazilian economy has not yet achieved the anticipated recovery and despite the impact of an atypical seasonality in North America," said Osvaldo Ayres Filho, Global chief financial officer (CFO) of Votorantim Cimentos. "In this second quarter, we followed our investment plan and inaugurated a new mortar production line in Cuiabá, and an agricultural solutions plant in Nobres, both in the Brazilian state of Mato Grosso." The company added that higher prices in Brazil, growing sales in North America and positive currency effects successfully offset poor results in Turkey.

Brazil: Year-on-year sales swell

Prazil's National Syndicate of the Cement Industry (SNIC) has released August 2019 sales figures of 5.10Mt, up by 3.0% year-on-year from 4.95% in August 2019. This corresponds to an apparent consumption of cement in the country of 5.10Mt, up by 2.9% year-on-year from 4.96Mt in August 2018. Besides rising demand, SNIC points to non-repeating depressing factors which acted on the domestic cement capacity a year ago, including a truck drivers' strike.



GLOBAL CEMENT NEWS: THE AMERICAS



Trinidad and Tobago: Rock Hard cement subject to 10% less tax than competitors

The Caribbean Court of Justice (CCJ) has ruled that cement sold by Rock Hard Cement can be classified as 'Other hydraulic cement.' As such it is subject to a tariff of up to 5% under Common External Tariff (CET). Rock Hard Cement's competitor Trinidad Cement and its subsidiaries had been arguing that the company's products be classified as 'Building cement (grey)' and be charged a Caribbean Community (CARICOM) tax of 15% when imported into the region, according to the Barbados Today newspaper. The decision by the court is the latest in a series of legal cases between Rock Hard Cement and Trinidad Cement in Barbados.

However, the CCJ also said that recent developments in the cement industry made it appropriate for a study to be performed by the CARICOM Council for Trade and Economic Development (COTED) to assess whether the tariff rate for imported 'Other hydraulic

US: Pell City plant is operational

A llied Minerals has completed a US\$11m upgrade to its Pell City plant in Alabama. The refractories manufacturer has been working on the project since mid-2018. The company originally operated two sites in Alabama at Anniston and Pell City. Since purchasing Riverside Refractories in 2017, it has focused on the Pell City unit.

cement' ought to be increased to give additional protection to regional cement manufacturers so that these manufacturers might obtain an appropriate level of protection. It also recommended greater collaboration

between regional cement producers in undertaking global trade commitments.



Subscribe

Mexico: Cemex appoints new heads of operations in two Americas regions

emex has made a series of changes to its senior level organisation with changes to the heads of its operations in the US and its South, Central America and the Caribbean region. These personnel changes came into effect on 1 September 2019.

Jaime Muguiro Dominguez, the current president of Cemex South, Central America and the Caribbean, and managing director and chief executive officer (CEO) of Cemex Latam Holdings (CLH), has been appointed president of Cemex USA. He succeeds Ignacio Madridejos who had held the role since late 2015. Madridejos will leave Cemex to become the CEO of Ferrovial, a Spanish infrastructure development company.

Jesus V Gonzalez Herrera, current Cemex Executive Vice President of Sustainability and Operations Development, has been appointed president of Cemex South, Central America and the Caribbean. In addition, on 6 August 2019, Gonzalez was appointed CEO of CLH by the board of directors of CLH.

Juan Romero Torres, currently the Executive Vice President of Global Commercial Development, has been appointed Executive Vice President of Sustainability, Commercial and Operations Development. This new role combines Romero's current responsibilities with those of the Executive Vice Presidency of Sustainability and Operations Development, which include the Health and Safety, Operations and Technology, Energy, Procurement, Sustainability and Research and Development areas.

US: LafargeHolcim's solar power plans stall

afargeHolcim has suspended plans for a solar power station at its Hagerstown cement plant, after Washington County denied its contractor Greenbacker Renewable Energy Corp the expected tax break for the project.

A break from personal property tax levied on equipment of the sort granted to other solar energy projects would have resulted in taxes of approximately US\$1.6m instead of US\$2.9m over its 25 years in effect, CommsMEA has reported. The County's decision hinged on debates over long-term jobs created by the project. Greenbacker previously argued that the long-term job security of LafargeHolcim's 108 Hagerstown employees was embellished by the move towards improved sustainability and the stabilisation of energy costs.

The motion, proposed by Commissioner Randy Wagner, failed for lack of support. This followed after a commissioner recused himself from proceedings because, as a financial advisor, he stood to benefit from the project through the investments of his clients.

Mexico: Cemex secures environmental approval for Macao cement plant

he Regional Autonomous Corporation of Antioquia has reissued Cemex's environmental clearance for its 1Mt/yr integrated cement plant in Macao. The certification marks the conclusion of a dispute over mining rights in the course of which Cemex fired multiple executives for payment of US\$25m to a private third party. La Republica reports that Cemex is now in a position to advance several licensing processes and to begin construction of connecting roads for the plant's service and full coverage.



US: ISO 14001 for Cemex plants

ine of Cemex USA's ready-mixed concrete $oldsymbol{N}$ (RMX) plants in the San Francisco Bay Area of Northern California have earned ISO 14001:2015 certification for their environmental management systems (EMS). The company says these are the first RMX operations in the country to achieve the designation.

The plants, located in Berkeley, Concord, Oakland, Pleasanton, San Carlos, San Francisco, San Jose, Union City and Santa Clara, California, each received certification after Lloyd's Register, an accredited third-party organisation, audited Cemex USA's West Region management system at corporate and site level. In addition to the plants, Cemex USA's Livermore office also earned the certification.

"Effective environmental management systems are critical in helping our operations meet and exceed our environmental and sustainability goals. By following ISO 14001:2015 standards, our operations can continue to build on their successes while serving as inspiring examples for others to follow across the US," said Cemex USA president Ignacio Madridejos.

Earlier in 2010 Cemex's Clinchfield cement plant in Georgia became the first Cemex operation in the US to achieve ISO 14001:2015 certification. The company is currently in the process of achieving the certification at several other of its operations in cement, ready-mix and aggregates.



Colombia: Argos' net income grows by a third year-on-year

ementos Argos reported a 10.6% rise in revenue during the first half of 2019, mainly due to higher cement volumes in the US. Its consolidated earnings before interest, tax, depreciation and amortisation (EBITDA) increased by 4%.

The company earned US\$1.42m in revenue, with a net profit of US\$22m, 33.5% higher than in the first half of 2018. Its EBITDA in the US was US\$262.4m. Cement shipments were close to 8Mt, 1.2% higher than in the first half of 2018.

In the US, Argos earned revenues of US\$781m, 3.5% higher than in the first half of 2018. Cement dispatches in the US increased by 6.9% to over 3Mt.

"We continued to strengthen our operations and our presence in the United States," said Juan Esteban Calle, CEO of Argos. "This allowed us to compensate energy cost pressures."

Panama: Argos Panama integrates clinker production at grinding plant

Argos Panama plans to install a line for the production and storage of clinker at its plant in Buena Vista, Colón Province. In an environmental impact study submitted to the Ministry of Environment, Argos estimated the project's total cost at US\$168m.

Canada: Cement faces 2.7% rise in carbon costs by 2022

ement and concrete product manufacturing are amongst the 13 industries likely to be most heavily affected by the forecast increase in the federal carbon tax to US\$37.64/t in 2022 from US\$15.06/t, with a forecast rise in production costs of 2.7%. A report by The Fraser Institute, an independent, non-partisan public policy think-tank has warned of adverse effects on the competitiveness of cement producers, likely to be reflected in higher costs to buyers.

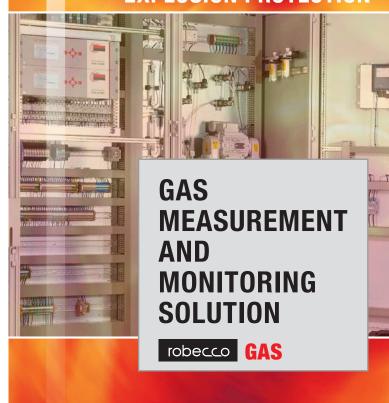


robecco

GAS ANALYSER SYSTEM

Flexible solution of monitoring and control, measurement and analysing of different gases in variable processes.

EXPLOSION PROTECTION



VISIT US AT booth 60-61 ANTALYA / 8.-11. 10. 2019 TURKEY



Subscribe



Philippines: Competition Commission fears new cement tariff may disrupt investigation

The September 2019 customs duty of US\$4.81/t on imported cement is in danger of disrupting a Philippine Competition Commission (PCC) probe. Local press has reported that the PCC is conducting an investigation into domestic cement producers' alleged anti-competetiviness following an accusation by a Department of Trade and Industry (DTI) official in 2017 that a 'cartel' of producers was maintaining artificially high pricing and spreading of misinformation about the quality of imported products. PCC chair Arsenio Balisacan has noted the danger of 'having an ongoing investigation and introducing a policy that can influence the outcome of that investigation.'

Napoleon Co, chairman of the Philippine Cement Importers Association (PCIA), has stated that cement traders will keep on importing unless the local cement sector produces more. He said that foreign producers' Philippine sales were driven not by their lower prices but by the domestic industry's inability to fulfil the country's 28Mt/yr cement demand.



Philippines: Competition Commission moves to phase two of Holcim probe

The 30-day inquiry by the Mergers and Acquisitions Office (MAO) of the Philippine Competition Commission (PCC) into First Stronghold Cement's takeover of Holcim Philippines has concluded that the deal may affect market concentration in the cement sector. The Philippine Star reports that this finding clears the way for a phase-two review. The MAO will seek to ascertain whether the deal might result in lessened competition or increase the likelihood of cartel-like activities. This ties in with the Commission's general investigation into anti-competitiveness in the cement industry.

First Stronghold Cement, a subsidiary of San Miguel, has a stake in Northern Cement and its president and chief operating officer, Ramón Ang, is also the majority owner and chairman of Eagle Cement. In May 2019 it acquired 85.7% of Holcim Philippines for US\$2.15bn.



Philippines: Cemex deliveries halted over congestion

Cemex's subsidiary APO stopped shipments leaving its Barangay Tina-An cement plant in Naga during morning and afternoon/evening rush-hour to ease the city's traffic congestion problem. Local press reported that trucks dispatching cement from the 4.0Mt/yr integrated plant were a cause of traffic build-up on the Pan-Philippine Highway. Ignacio Mijares, President of Cemex Holdings Philippines, agreed to the restriction following a meeting with Gwendolen Garcia, Governor of Cebu Province.

Pakistan: Fauji completes largest cement solar plant

auji Cement has installed a 12.5MW solar power plant at its Jhang Bahtar plant, near Islamabad. Business Recorder reports that Fauji's is the world's largest solar power station devoted to a cement plant, with 37,905 panels delivering an estimated annual total of 19,750MWh of energy.

Fauji has additionally installed two waste heat recovery plants of 12MW and 9MW, plus two large reservoirs for water recycling and rainwater harvesting. Fauji is leading Pakistan's Clean and Green initiative, having planted 25,000 trees and donated a further 40,000 plants to local government and nearby villages.





Malaysia: YTL up, CMS down, amid tricky market

TL's net profit in the quarter ended 30 June 2019 was US\$0.58m, compared to a net loss of US\$15.1m in the same quarter of 2018, as its cement section's profits before tax grew to US\$3.02m, up by 20% compared to the same period of 2018, as it benefited from the higher profit share of its associates.



The cement division of Cahya Mata Sarawak (CMS)has reported a net profit of US\$19.5m in the six months to 30 June 2019, down by 37.1% from US\$31.0m in the first half of 2018. The company's total first half revenue rose by 8.9% to US\$194m from US\$178m in 2018.

In its financial statement, CMS blamed the cement profit slump on rising clinker import prices and the cost of fuel for its coal-fired cement plants. CEO Datuk Isaac Lugun expressed hope for the group's longer-term prospects due to its competitive power pricing and strong global presence.

China: Anhui Conch profit up 17.9%

The net profit of Anhui Conch Cement in the first half of 2019 was US\$2.15bn, up 17.9% from US\$2.11bn at the close of the first half of 2018. Anhui Conch's interim report stated that the gross profit margin increased in the eastern and central regions by 2.67% and 0.51% respectively in response to steadily increasing market demand, and remained flat year-on-year in the southern region in spite of adverse weather precipitating a decline in the local market.

India: Ramco heading forward

Ramco Cement is set to complete its expansion works that aim to raise its total production capacity to 20Mt/yr from 12.5Mt/yr by the end of 2020. Ramco's capacity utilisation in the three months to 30 June 2019 was 90%, 23% above the national average of 67%. The company will invest US\$467m in developments nationwide, including a US\$347m grinding plant in Arunachal Pradesh.

The company reported net profits of US\$26.7m in the quarter to 30 June 2019, up by 53.6% from US\$17.3m in the same period of 2018, against a backdrop of a struggling domestic market. National cement sales fell by 2.8% in July 2019 to 3.6Mt.



Vietnam: Extraordinary production figures continue

Vietnam's August 2019 cement output has been estimated at 7.9Mt, up by 8.7% from August 2018. This gives an eight-month figure of 63.1Mt, up by 7.6% year-on-year. Data from the government's General Statistics Office placed the country's 2018 output at 90.2Mt, a figure likely to be exceeded by early December 2019.

In the first half of 2019, Vietnam exported 31.3% of its cement, supplying 68% of China's imports of cement and clinker over that period. *Global Cement* has previously reported that Vietnamese companies comprised seven of the top 10 importers of cement to the Philippines from 2013 to 2018.

Uzbekistan: New Chinese lines boost exports in 2018

US\$105.6m over the six months to 30 June 2019, a rise of 32.3% compared to the first half of 2018.

Chinese investment in Uzbek domestic cement production saw two cement plants of 1.2Mt/yr and 2.4Mt/ yr capacity enter development in 2018. Huaxin Cement's Zafarabad plant is expected to become operational in December 2019, with Gansu Hengya Cement's Kattakurgan plant also due to enter operation in the coming months.

Pakistan: Power powers down old lines

Power Cement has shut down the older production lines at its integrated Nooriabad plant due to falling demand and prices. Chairman Nasim Beg said that the old lines were shut because they were 'inefficient' and not competitive under present conditions, according to Bloomberg. The plant had a production capacity of around 3150t/day from its older lines. In July 2019 it completed the installation of a new 2.5Mt/yr clinker line supplied by Denmark's FLSmidth.



Afghanistan: Concern for cement projects

The Afghan Ministry of Mines and Petroleum has reported progress in discussions on projects totalling an investment of US\$350m, including improvements to the Jabal Siraj and Samangan cement plants worth US\$170m and US\$136m respectively.

The Afghan Chamber of Commerce and Industries has voiced concerns as to delays caused by the lengthy approval process for the 'muchneeded projects.' With the successful conclusion of these talks, the plans will require the ratification of the High Economic Council and subsequently the Afghan Cabinet.

South Korea: Increased use of SCMs

The Korea Cement Association (KCA) says its members will increase the use of coal ash from local thermal power plants or source alternative raw materials from domestic clay mines. The decision follows a trade dispute between South Korea and Japan, according to the Aju Business Daily newspaper.

The Environment Ministry started to tighten rules concerning the import of coal ashes from Japan in August 2019 citing fears of radioactive and heavy metal contamination. Importers are now required to submit an authorised radioactive inspection report and the analysis of heavy metal components. The KCA said its members use 3.15Mt/yr of coal ash and 1.28Mt/yr is imported from Japan.

Australia: Selected results

Boral has suffered a decline in full year net profits of 38% to US\$184m. This comes following USG-Boral's statement regarding substantive changes to its gypsum dealings with Knauf.

A delaide Brighton's net profit in the first half of 2019 was US\$37.0m, down by 35% from US\$57.0m in the half year up to 30 June 2018. Chief executive Nick Miller stated that Adelaide Brighton may consider a merger with Barro Group, which holds a 43% stake in the former.

Thailand: Blockchain solution for SCG

Siam Cement Group (SCG) is promoting a blockchain electronic accounting method for procurement and payment with its suppliers and partners to improve efficiency. Its Procure to Pay platform was started in 2018 and it has 240 suppliers using it at present, according to the Bangkok Post newspaper. The company aims to reach 2400 suppliers by 2020.

Thammasak Sethaudom, vice-president for finance and investment at SCG, said that the system had helped suppliers reduce processing times by 50% from 70 minutes to 35 minutes per purchase order. The platform speeds up the time required to issue invoices. The system also helps SCG's partners to track transactions in real time.

Procure to Pay was developed with Digital Ventures, the corporate venture capital arm of Siam Commercial Bank. SCG has invested over US\$300,000 on the project so far. Expansion to SCG's subsidiaries in Indonesia, Myanmar, Laos and Vietnam is being considered.



Thailand: Local Schmersal subsidiary

Germany's Schmersal has founded Schmersal Thailand to serve the machine safety and systems solutions needs of Thailand's growing industries, including its 42.4Mt/yr cement industry. It will further support Schmersal's sales partners throughout the Association of Southeast Asian Nations (ASEAN) region.

Wagners' net profit fell by 49% year-on-year to US\$8.66m in its financial year to 30 June 2019 from US\$16.8m in the same period in 2018. It blamed lower cement sales volumes on a dispute with Boral and a delay in large infrastructure projects. It suspended its supply of cement to Boral in March 2019 when the latter company said it had found cheaper cement from a 'long established' supplier in South East Queensland. Wagners sales revenue grew by 2.3% to US\$161m from US\$157m.





Niger: Dangote Cement looks to Niger for a new integrated cement plant

Dangote Cement has expressed an interest in establishing a 1.6Mt/yr cement production unit, complete with a grinding plant and gas energy plant, in Niger. Agence Ecofin reports that Dangote, Africa's leading cement producer, aims to fill the Nigerien cement supply gap amidst an infrastructure boom fuelled by the country's oil ambitions.



Contents

Subscribe

Ad Index

Algeria: GICA set to take on importers for oil well cement contracts

Croupe des Ciments d'Algérie's (GICA) Aïn el Kebira cement plant in Setif has been certified by the American Petroleum Institute (API) to produce oil well cement products. It has been awarded two certificates following a one-year audit, according to the El Moudjahid newspaper. Djamila Tamazirt, Minister of Industry and Mining, who was on a tour of the unit, said that the development would help the country to stop importing oil well cements. The country imports an estimated 0.2Mt/yr of oil well cement at a cost of nearly US\$30m.

Nigeria: Dangote's first-half profit rises

Dangote Cement's net first half profit has increased by 5.4% to US\$329m from US\$312m in 2018. The Cement Company of Northern Nigeria has reported a corresponding increase of 163% to US\$10.1m from US\$3.0m.

Libya: Multiple factors compound a tough first half for Libyan Cement Company

The Libyan Cement Company (LCC) says taxes, poor weather and local fighting have hampered its progress over the past year. The introduction of a 183% Foreign Exchange Tax in the last quarter of 2018 has tripled the price of imported spare parts, supplies and capital goods. This has delayed repairs to the cement producer's plants. However the company believes that the tax may be lowered in the near future. A long and wet winter has also been blamed for reducing the demand for cement and reducing the company's cash flow.

Fighting in Tripoli has affected the LCC's operations in the east of the country with multi-month long interruptions to the supply of raw materials. It said that key roads have recently been re-opened following negotiations relieving the situation and that it hopes they will stay open.

The company said that it is still working towards a Euro200m upgrade project to its plant in Benghazi. The plan is to increase the unit's production capacity to 3Mt/yr from 2Mt/yr.

UAE: Arkan's profit grows

A rkan Cement's profit has grown in the first half of 2019 due to the sale of the closed Emirates Cement plan in February 2019. The subsidiary of Arkan Building Materials also said that it had benefited from cost controls and a successful insurance claim. Its profit more than doubled to US\$12.4m in the first half of 2019 from US\$4.67m in the same period in 2018. However, its sales revenue fell by 9.6% to US\$79m from US\$85.2m. It blamed this on local 'price pressure.'

Saudi Arabia: Yanbu's net profit up by 151%

Yanbu Cement's sales revenue grew by 14% year-on-year to US\$128m in the first half of 2019 from US\$110m in the same period in 2018. Its net profit after tax and alms donation more than doubled to US\$30.1m from US\$12.0m. The cement producer attributed this to higher prices and growing clinker exports.

Oman: Raysut unveils grinding plant plans

Raysut Cement is planning the Construction of a 1Mt/yr grinding plant in the port town of Duqm. The project has a cost of US\$30m, with work beginning on 19 September 2019. Oman Cement has been building a 1.8Mt/yr integrated cement production plant at Duqm since December 2018. The new grinding plant is Raysut Cement's first development project since it received US\$50.7m in funding from the Omani Bank Nizwa.

UAE: RAK suffers falling sales in first half of 2019

Pas Al Khaimah (RAK) Cement's sales fell by 20% year-on-year to US\$25.4m in the first half of 2019 from US\$31.7m in the same period in 2018. Its profit dropped by 79% to US\$0.39m from US\$1.88m.



Kenya: EAPCC loses Athi River plant

The Kenyan government has compulsorily purchased the site of the 0.6Mt/yr Athi River cement plant, which it leased to the East African Portland Cement Company for 945 years in April 1960.

The Central Organisation of Trade Unions has complained that the National Social Security Fund, representing workers who held 28% of shares in the plant, was not consulted first. The land will be used for affordable housing, manufacturing and other urban uses.



Kenya: EAPCC seeks land sales to stop debt gap

ast Africa Portland Cement Company (EAPCC) has declared an intention to sell two parcels of idle land in Machakos County totalling an area of 2000 acres.

Business Daily reports that the 40-day leniency period during which the company has to clear its debts expires on 11 September 2019. Shareholders will vote at an extraordinary general meeting (EGM) on 27 September 2019 on whether to sell the land.

Mali: US\$33.6m grinding plant planned in Kati

Ciments et Matériaux du Mali has revealed plans for a 0.5Mt/yr grinding plant in the Kati commune. Agence Ecolfin has reported that the plant, to be supplied by the nearby Sonityeni quarry, will employ 150 Malians and 'contribute to Mali's cement self-sufficiency.' Construction of the US\$33.6m facility begins in October 2019.

Madagascar: LafargeHolcim lobbies government on imports

afargeHolcim has lobbied for cement homologisation norms to target importers. Chief Executive Officer François de Lesquen denies being scared of competition, but wants a level playing field.

LafargeHolcim owns 90% and 66% respectively of Madagascar's lbity and Mahajanga cement plants, representing the entirety of domestic production.

Namibia: Cheetah employees in 'dismay' over employment prospects

mployees at Cheetah Cement have expressed 'dismay' at the lack of Namibians in higher ranks and managerial positions at the cement producer, despite them holding the relevant qualifications. The workers claim that Cheetah Cement, located a few kilometres north of Otjiwarongo in the Otjozondjupa region, largely employs Chinese nationals.

According to a recent grievance letter, seen by The Namibian newspaper, the workers claim that the company currently employs more Chinese workers than local ones, even where Namibian employees have the necessary skills for those positions.

Speaking on condition of anonymity, one employee described the workings of the company's 'understudy programme,' which positions a Namibian to work under a Chinese employee, supposedly to allow an exchange of skills. The source stressed that the Namibian employees are often more qualified than their Chinese counterparts.

Iraq: Attock Cement gets on with the daily grind in Basra

Pakistan's Attock Cement has begun commercial operation of its Basra grinding plant. The 0.9Mt/yr unit was commissioned in April 2019.

Saudi Arabia: Najran Cement appoints new chairman

Najran Cement has appointed Mohammed Bin Manaa Bin Sultan Aballa as its new chairman. He will be supported by Salah Bin Yassin Bin Khalil Allaf as deputy chairman. Abdul Salam Bin Abdullah Bin Abdulaziz Alduraibi has also been appointed as a managing director at the cement producer.

Nigeria: Dangote lorries' death toll grows

A Dangote Cement lorry suffered a brake failure on a hill in Nasarawa State and collided with a people carrier, killing all 11 passengers. Passengers of other vehicles were also injured. The Punch newspaper has described the lorry as 'heavily-laden.'

This follows the head-on collision of a Dangote lorry with a bus in Ikorodu, Lagos State, in August 2019, which killed three and injured all 69 other bus passengers. The lorry, carrying 45t, significantly over its rated capacity, had suffered a brake failure. Both incidents are under investigation by the company.



Egypt: Arabian Cement closes petcoke supply deal

A rabian Cement has signed a 0.3Mt/yr petcoke supply deal with the Egyptian Refining Company. Sergio Alcantarilla, chief executive officer (CEO) of Arabian Cement, said that the agreement was part of the company's plans to reduce its production costs and improve operational performance by diversifying its energy sources, according to the Daily News Egypt newspaper. The company operates a 5Mt/yr integrated cement plant at Ain Sokhna in the Suez Governorate.



Kenya: Financiers face off in court over Athi River Mining Cement sale

Rai Group must pay a guarantee of US\$62.6m to forestall the sale of Athi River Mining (ARM) Cement. The Kenyan financial services company, owned by Jaswant Rai, is backing a claim by Pradeep Paunrana against PricewaterhouseCoopers over its administration of the sale of the publically-owned ARM Cement. Paunrana, erstwhile majority shareholder and managing director of ARM Cement, is contesting the cement company's sale in May 2019 to Nairobi Cement, a subsidiary of Devki Group, for US\$48.2m including a deposit of US\$9.62m. Paunrana argues that the sale was unfair because ARM Cement was misvalued, having missed opportunities to sell its fertiliser and mineral production businesses due to pressures from potential buyers. Business Daily has reported that Paunrana previously submitted an unsuccessful bid in consortium with Rai Group to buy back the company for US\$62.6m, also in May 2019.

Liberia: Government approves Star Cement's plant plans

The management of Star Cement has welcomed government approval from the Government of Liberia that will allow it to build a cement grinding plant in Monrovia. The special investment incentive was signed into law by President George Manneh Weah in a move stated to be consistent with his promise of giving 'power to the people.'

The US\$41m facility will have the capacity to produce 0.6Mt/yr of cement. Star Cement's management is optimistic that it will create employment opportunities, both directly at the plant and via the wider construction and distribution sectors. It is also expected that the new capacity will cause a reduction in cement prices, to the benefit of Liberians, particularly those building their own houses.

Meanwhile, the company is aggressively making efforts to ensure that Liberia benefits from the ECOWAS Trade Liberalisation Scheme (ETLS) by commencing cement exports. This will help the country to earn US Dollars.

Star Cement expects to begin production within the second half of 2020, at which point it will offer shares to Liberians who wish to invest in the cement sector.

Egypt: Misr Beni Suef's net profit slumps

Isr Beni Suef Cement has reported a net profit for the six months to 30 June 2019 of US\$2.76m, down by 78.8% from US\$13.0m in the same period of 2018. This is part of a wider profit slump for Egyptian domestic cement producers, with Misr Cement Qena's first half figure down by 85.2% to US\$0.87m from US\$6.0m a year ago.

Egypt: Sinai's losses grow

Sinai Cement recorded first half net losses of US\$11.3m, an increase of 20.1% on the US\$4.0m recorded in losses in the same period of 2018.

Iraq: Kufa cement plant reconstruction approved

The Ministry of Finance has approved US\$60m of construction work to restore the capacity of a cement plant in Kufa, Nafaj governorate, damaged in recent conflict. Thompson Reuters reported that work is set to commence pending the imminent release of the funds. Member of Parliament Fadhil Al-Fatlawi of the Labour and Social Care Committee has expressed the expectation that, at its full capacity of 0.18Mt/yr, the plant will accelerate the country's restoration.

Ivory Coast: LafargeHolcim builds Bouaké depot

afargeHolcim has constructed a depot in Ivory Coast's second city, Bouaké, for storage of cement produced at its Abidjan facility, 344km away.

In a press release sent to the Agence Ivoirienne de Presse, LafargeHolcim explained that the aim of the development is to bring consumers and its supply closer together. It hopes thereby to maximise the national presence of its 2Mt/yr cement plant.

Subscribe

Peter Edwards, Global Cement Magazine

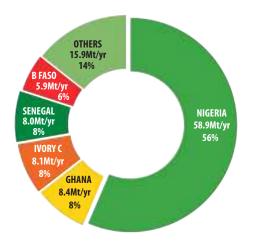
Cement in West Africa

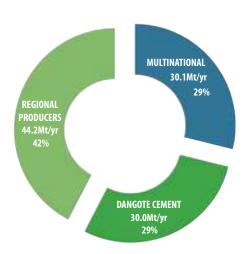
This article looks at the cement sectors of 15 West African nations: Benin, Burkina Faso, The Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

Right & Below - Table 1 & Figure 1: West African countries, ranked according to installed cement capacity in 2019. Source: Research towards Global Cement Directory 2020.

Bottom - Figure 2: The West African cement sector is split between multinational players, Dangote Cement and a range of smaller players. Source: Research towards Global Cement Directory 2020.

Test Africa is a rapidly growing region, in terms of population, GDP and cement production capacity. Following significant political instability in the region after the departure of colonial powers, mainly the UK and France, in the 1950s and 1960s, the past 30 years have seen increased stability. However, coups remain a continuing feature of the political landscape. Despite this, the GDP of the Economic Community of West African States (ECOWAS), which includes all of the countries in this review except Mauritania, averaged 4.7%/yr between 2010 and 2017. This is faster than the average global GDP growth of 3.8% over the same period.





Cement industry -By country

Seven of the 15 countries covered by this review are home to 37 active integrated cement plants that share 76.4Mt/yr of capacity. There are a further 28 grinding plants currently in operation in nine of the countries that add a further 27.9Mt/yr of capacity. The combined regional total is 104.3Mt/yr.

All countries have domestic cement production capacity, except for The Gambia and Guinea-Bissau. Most countries have capacities in the range of 1-10Mt/ yr. The single huge outlier is Nigeria, which has more cement capacity than the other countries combined: 58.9Mt/yr to 45.4Mt/yr. This information is broken down by country in Table 1 and Figure 1.

Country	Integrated (Mt/yr)	Grinding (Mt/yr)	Total (Mt/yr)	
Nigeria	ria 58.9		58.9	
Ghana	1.8	6.6	8.4	
Ivory Coast	-	8.1	8.1	
Senegal	8.0	-	8.0	
Burkina Faso	-	5.9	5.9	
Togo	3.0	1.2	4.2	
Guinea	-	2.5	2.5	
Mauritania	-	2.4	2.4	
Benin	2.0	0.3	2.3	
Mali	1.5	-	1.5	
Niger	1.2	-	1.2	
Liberia	-	0.8	0.8	
Sierra Leone	-	0.1	0.1	
TOTAL	76.4	27.9	104.3	

Cement industry - By company

There are 26 different cement producers in West Africa. The largest producer is Dangote Cement, a rising regional player owned by Africa's richest man, Aliko Dangote. The company has 30.0Mt/yr of capacity in Nigeria (28.5Mt/yr) and Senegal (1.5Mt/ yr), as well as plants under construction in Niger and Ivory Coast. It also has significant further capacity in the rest of Africa and has previously mooted projects further afield.

While LafargeHolcim, HeidelbergCement and Vicat have capacity in West Africa, multinational players have a fairly small proportion of regional capacity compared to most other world regions. They share 30.1Mt/yr of active capacity, around 29% of the regional total. Other major players include BUA Group, which, like Dangote, is based in Nigeria, and Ghana-based WACEM.

Benin

Independence: 1960 (France) **GDP/capita:** US\$829



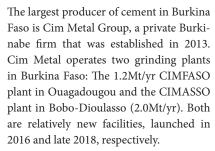
Benin's two integrated cement plants share 2.0Mt/yr of capacity, as well as a 0.2Mt/yr grinding plant. The largest producer in the country is Cimenterie du Benin, which operates the 1.3Mt/yr Massè plant. Société des Ciments du Benin (SCB), 50% owned by LafargeHolcim, is the second-largest producer. It operates a 0.7Mt/yr integrated plant in Cotonou. Cimbenin, 87.95%-owned by HeidelbergCement, operates a 0.3Mt/yr Fives FCB ball mill grinding plant in Cotonou.

In April 2019 Aliko Dangote, the chairman of Nigeria's Dangote Cement, raised issues with exporting cement to Benin. He said his company could not export cement to Benin despite its Ibese plant in Nigeria being 28km from the Beninese border. He alleged that the country was importing 'more expensive' cement from China instead.



Burkina Faso

Independence: 1960 (France)
GDP/capita: US\$670



HeidelbergCement operates the 2.0Mt/yr Cimburkina grinding plant at Kossodo. Cimburkina started upgrade work at the plant, which previously had a capacity of 0.8Mt/yr, in February 2018. The US\$25m upgrade was inaugurated by Harouna Kaboré, the Minister of Commerce, Industry and Handicraft, in June 2019.

Diamond Cement Burkina operates a 0.7Mt/yr grinding plant in the outskirts of Ouagadougou, as does CIMAF, the pan-African subsidiary of Morocco's CIMAT Group. Construction of the latter drew complaints from local residents in July 2018, but construction has since been completed. The plant is located directly opposite the CIMFASO plant.



Above: Étoile Rouge in central Cotonou, the largest city in Benin.

Left - Figure 3: Cement capacity of West African countries in 2019. Source: Research towards Global Cement Directory 2020.



MAURITANIA

THE SENEGAL
GAMBIA

GUINEA
BISSAU
SIERRA LEONE
LIBERIA

LIBERIA

MALI
NIGER

BURKINA
FASO
NIGERIA
NIGERIA

NIGERIA





Left - Figure 4
Population of West African
countries (millions).
Source: World Bank
Data Indicators.



Left - Figure 5 GDP/capita (US\$) of West African countries. Source: World Bank Data Indicators.



GLOBAL CEMENT: WEST AFRICA



Right: View across Banjul, the capital of The Gambia, with River Gambia in the distance. The country is reliant on cement imports, often via sea.



The Gambia

Independence: 1965 (UK)

GDP/capita: US\$483



Ghana

Independence: 1957 (UK)

GDP/capita: US\$1641



The Gambia has no cement production capacity at present and so is reliant on numerous importers. These include Gacem, part of Italcementi / HeidelbergCement since 1993, and Jah Cement, which has a bagging plant for imports from Spain and Algeria.

Recently the government has come under fire from some importers after the introduction of a new import tax on 1 January 2019. Alhajie Cessay, a local importer, claimed that selected government-preferred companies that import cement from Senegal appeared to be exempt from the tax, according to the Point newspaper. However, other importers have been subject to tariffs since the start of 2019.

In April 2019 Bai Lamin Jobe, the Minister of Trade, reported that The Gambia had a cement capacity utilisation rate of 23% in 2018, presumably based on its capacity to import and the amount actually imported. Local importers have a capacity of 1.9Mt/yr but national demand is only around 0.4Mt, according to the Foroyaa newspaper.

In future, The Gambia will join the ever-growing list of cement producing nations. Firstly, Jah Cement has previously announced plans to upgrade its terminal into a grinding plant. Construction work started in 2018 and it is expected to be completed by late 2019. Meanwhile it was reported in late 2017 that Salam Company was in the process of building a 0.3Mt/yr cement grinding plant in Banjul. The plant, which has a ball mill ($\emptyset = 3m$, L = 9.5m, Motor = 1250kW) is currently being constructed by Austria's CEMTEC and it is expected to come online in 2019.

Ghana has the second-largest cement sector in West Africa after Nigeria. It is home to 8.4Mt/yr of capacity from six grinding plants (6.6Mt/yr) and one integrated plant (1.8Mt/yr).

Its largest producer in Ghana is WACEM (4.2Mt/yr), which operates a 1.8Mt/yr integrated cement plant at Buipe and three grinding plants at Volta (0.8Mt/yr), Takoradi (0.6Mt/yr) and Bokro (1.0Mt/yr). They are controlled via a number of subsidiaries.

HeidelbergCement is the other main player in the Ghanaian cement market via its Ghacem subsidiary. It has 3.4Mt/yr of cement grinding capacity at Tema (2.2Mt/yr) and Takoradi (1.2Mt/yr).

The third and final producer is Morocco-based CIMAF, which operates a 1.0Mt/yr grinding plant at Tema. Nigeria's Dangote Cement also has an import terminal in Tema.

Ghana's seven cement plants will soon be joined by an eighth. Ghana and Iran are jointly building a 0.6Mt/yr cement plant at the Dawa Industrial Enclave near Tema. The plant, in which the Iranian government has a 90% stake, is scheduled for completion in late 2019. In August 2017 CBI Ghana began construction of a US\$55m cement grinding plant at Tema. At the time it was publicised that the plant would take 12 months to build but no news of its inauguration has been forthcoming.

Solomon Namliit Boar, the regional minister-designate for Ghana's newly-created North East Region, says that negotiations are also on-going for a new cement factory to be built in the Nalerigu Municipality. The project is intended to make use of a 20Mm³

limestone deposit in the area, according to the Daily Guide. The project has remained in the planning stage for some time with Vice President Alhaji Dr Mahamadu Bawumia assuring local residents in 2017 that the government would find investors.

Right: Ghacem headquarters in Tema, Ghana. **Source:** Ghacem website.







Maintenance free for continuous non-stop operation









Assembly with Click-On System

RECLAIMER CHAINS

WITH **SEALED CHAIN SYSTEM (SCS)**



For over 90 years, KettenWulf, as an expanding global company, has stood for quality, reliability and flexibility. More than 1400 employees develop, manufacture and market customized solutions in the field of bulk material handling industry at ten locations across Europe, America, Australia and Asia.

- » SCS PO Permanently Oiled
 - The chain joint is equipped with our special SCS PO design. The one hundred percent oil-tight system allows continuous maintenance-free operation.
- » Protects the sealed chain joint against contamination
- » Field-tested under the toughest environmental conditions

GLOBAL CEMENT: WEST AFRICA



Guinea

Independence: 1958 (France)

GDP/capita: US\$825



Guinea currently has three cement grinding plants. The largest is GI Ciment's 1.4Mt/yr Kagbélen plant near Dubréka, work upon which was completed in October 2018.

The second-largest is the 0.6Mt/yr Conakry plant run by Ciments de Guineé, a 59.9%-owned Lafarge-Holcim subsidiary. In June 2019 LafargeHolcim Guinea ordered an MVR 2500 C-4 vertical roller mill from Germany's Gebr. Pfeiffer for the plant. The cement mill will have a total drive power of 1300kW. It has been designed to grind 75t/hr of CEM IV 32.5 and 69t/hr of CEM IV 42.5 to a specific surface of 3440cm²/g and 3340cm²/g according to Blaine respectively. The order for the mill was placed by China's CBMI working as a general contractor on the project, which was signed in late November 2018. No value for the order has been disclosed.

The third plant is the 0.5Mt/yr plant Dubréka plant, built by Morocco's CIMAF in 2012. In April 2019 Mamady Touré, the adminstrative and finance director of Ciments de l'Afrique (CIMAF) Guinea, said that the company plans to triple the production of its Dubréka grinding plant to 1.5Mt/yr.

A fourth grinding plant will join these three in mid-2020, after Germany's Intercem Engineering was contracted to build a new 500t/day cement grinding plant for Les Cimentèries de la Basse-Guinée. Ground breaking was scheduled for the start of March 2019. Cement production is expected in mid-2020. No value for the contract has been disclosed.

The contract includes: a raw material storage with a capacity of 12,000t; a 70t/hr cement grinding plant with a vertical roller mill with four rollers and installed power of 1250kW and a high efficiency separator; the transport of two 1000t cement silos; two truck loading stations for bulk cement; a packing plant with eight-spout rotary packer and two loading stations for bagged cement; the sub-systems; the electrical equipment; the complete engineering; the supervision of the erection; and the commissioning. All the equipment will be delivered from European manufacturers.

Right: Aerial view of Conakry, the capital of Guinea.

Right: Along a major road

into Bissau, Guinea-Bissau.

Opposite page: Little and

large in the port of Abidjan,

Ivory Coast, the scene of

many a cement delivery

in recent years.



Guinea-Bissau

Independence: 1974 (Portugal)

GDP/capita: US\$723



Unlike its northern namesake, Guinea-Bissau has no cement capacity of its own. In 2018 it was reported that an Austrian cement mill supplier was in the process of supplying a mill ($\emptyset = 3$ m, L = 9.5m, Motor = 1250kW) for a 0.3Mt/yr grinding plant for CIMAF in the capital Bissau. The project has been discussed at least as far back as 2015, but there is no news of its completion to date. Separate plans announced by HeidelbergCement's Scancem subsidiary in association with Maxime Cardoz - which also began in 2015 - also appear to have stalled.



Ivory Coast

Independence: 1960 (France)

GDP/capita: US\$1662





Ivory Coast has a diverse and rapidly-growing cement sector. There are currently five grinding plants (8.1Mt/yr) and several other grinding projects in development.

The largest producer is Cim Ivoire, which operates a 2.9Mt/yr grinding plant in Abidjan. The company is in the process of building a second grinding plant, a 3.0Mt/yr facility in Abidjan.

Also in Abidjan is LafargeHolcim, Ivory Coast's second-largest cement producer. It expanded its grinding plant in the capital from 0.9Mt/yr to 2.0Mt/yr in February 2018 at a cost of US\$28.5m.

Also joint second-largest, Morocco's CIMAF operates a 1.0Mt/yr cement plant, again in Abidjan, as well as a 1.0Mt/yr mill in San Pedro from Austria's CEMTEC. CEMTEC is currently in the process of adding a second 0.5Mt/yr line identical to the first. CIMAF is also in the process of constructing a 0.3Mt/yr mill in Bouake.

In March 2019 Prestige Cement inaugurated a 1.2Mt/yr grinding plant at Abidjan. The Chinese-Ivorian joint venture had an investment of around US\$35m. The unit has two 0.6Mt/yr production lines that use vertical roller mills.

In April 2019 Dangote Cement announced that its US\$260m, two line 3.0Mt/yr cement plant in Ivory Coast was 70% complete. Also under construction is a 1.0Mt/yr plant by the Turkish Limak Group, once again in Abidjan. Commissioning had been expected in the fourth quarter of 2018 but appears to have since been delayed.

In February 2019, the Mayor of Gagnoa, Issouf Diabaté, announced that a new cement plant would be built close to the city. He noted that the preferred location for the plant is in Galbré sub-prefecture between Soubré and Gagnoa but declined to name the producer involved. It is not clear whether this is connected with the January 2019 announcement from China's Tianjin Cement Industry Design & Research Institute that it had received a provisional acceptance certificate (PAC) from an unnamed customer for a grinding plant in November 2018.

As well as rapidly-rising domestic capacity, Ivory Coast has been a popular destination for cement exports in recent years. Imports of clinker rose by 2.3% year-on-year to 3.10Mt in 2018 from 3.03Mt in 2017, according to Connection Ivoirienne. The value of the product increased by 9.7% to US\$162m from US\$148m.



Liberia

Independence: 1847 (US)

GDP/capita: US\$456



Liberia has one cement grinding plant, which is located in the capital Monrovia. It is operated by Cemenco, an 81.67% HeidelbergCement subsidiary. The 0.8Mt/yr plant has been in operation since 1968.

In August 2019 the Liberian government gave permission for Star Cement to build a cement grinding plant, also in Monrovia. President George Manneh Weah signed a special order in a move that he said was consistent with his campaign promise of giving 'power to the people.' The US\$41m facility will have the capacity to produce 0.6Mt/yr of cement. Star Cement's management is optimistic that it will create employment opportunities, both directly at the plant and via the wider construction and distribution sectors. It is also expected that the new capacity will cause a reduction in cement prices, to the benefit of Liberians, particularly those building their own houses.

Meanwhile, the company is aggressively making efforts to ensure that Liberia benefits from the ECOWAS Trade Liberalisation Scheme (ETLS) by commencing cement exports. This will help the country to earn US Dollars.

Mali

Independence: 1960 (France)

GDP/capita: US\$824



Mali has three active cement grinding plants. Two, at Astro and Dio Gare, are run by Diamond Cement Mali, part of the Ghanaian producer of the same name. They share a capacity of 1.0Mt/yr. The local subsidiary of CIMAF, CIMAF Mali, operates a 0.5Mt/yr plant at Diago Koro, which has been in operation since late 2016.

In December 2016 the Malian government agreed that Gaia Equity could build a 1.5Mt/yr integrated cement plant at Guinbané in collaboration with Chinese cement plant manufacturer Sinoma. However, there appears to have been limited progress with this project to date.

In May 2019, Ibrahima Dibo, a director of Diamond Cement Mali denied that his company had been responsible for recent cement price rises in Mali. At a press conference on the issue he explained that the cement producer has had fixed prices in conjunction with the government at its units at Astro and Dio Gare since 2012. Instead, he pointed the finger at traders, who he said had exploited cement shortages and poor transport links. Dibo added that the company produced 0.73Mt of cement in 2016 from its two units in the country but that its sales have fallen since then. As a whole the country has an estimated 3.0Mt/yr demand for cement.



Left: Bagged cement made by Diamond Cement Mali.

GLOBAL CEMENT: WEST AFRICA



Mauritania

Independence: 1960 (France)

GDP/capita: US\$1136



Nigeria

Independence: 1960 (UK)

GDP/capita: US\$1968





Mauritania has no integrated cement plants but has four grinding plants that share 2.4Mt/yr of capacity. Ciments de Mauritanie operates a 1.0Mt/yr grinding facility in Nouakchott. HeidelbergCement operates a 0.4Mt/yr grinding plant via its subsidiary MAFCI, also in Nouakchott. Vicat, via its 65% subsidiary BSA Ciment operates a 0.5Mt/yr plant, once again in Nouakchott. Nouakchott is also home to CIMAF's 0.5Mt/yr CEMTEC-built plant, which came online in 2017.

Right: Raw gypsum supplies from SAMIA in Mauritania.



Niger

Independence: 1960 (France)

GDP/capita: US\$378



Niger has two integrated cement plants. The larger is the Malbaza Cement Company, which made the first tonne of cement at its Malbaza plant in late December 2018. The plant has a production capacity of 0.7Mt/yr. It is expected to cover around 80% of domestic demand for cement and reduce imports. The site was a workforce of 347 employees, including 276 Nigeriens. The other plant is the 1964-vintage wet process facility operated by Société Nigeriénne de Cimenterie in the south west of Niger, close to the border with Benin. It has a capacity of 0.5Mt/yr.

These two plants will shortly be joined by a third. Nigeria's Dangote Cement started construction of a 2.5Mt/yr cement plant at Keita in October 2018, at an investment cost of US\$275m. Construction of the facility, which will also include a 100MW captive coal-fired power station, is expected to last until the end of 2020.

Below: The desert meets the Niger River close to Niamey, capital of Niger.



With 13 active integrated plants that share a total capacity of 58.9Mt/yr, Nigeria has by far the largest cement sector in West Africa. The largest by capacity is home-grown Dangote Cement, owned by Africa's richest man Aliko Dangote. Each of its three integrated plants are huge: 12.5Mt/yr at Obajana, 12.0Mt/yr at Ibese and 4.0Mt/yr at Benue. Its total capacity is thus 28.5Mt/yr, nearly half of Nigeria's national capacity (48.4%).

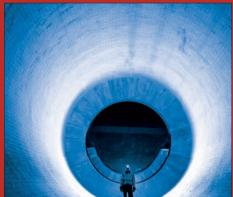
Dangote Group has grown very rapidly since it acquired the Benue Cement Company from the Nigerian government in 2000. It bought Obajana Cement from the Kogi State government in 2002, reinvigorating a project that had floundered since the early 1990s. Obajana Cement changed its name to Dangote Cement in July 2010 and merged with Benue Cement in September 2010.

In the 2010s Dangote Cement entered a phase of even more rapid expansion. It opened its 6.0Mt/yr Ibese plant in February 2012 and completed a 5.0Mt/yr expansion to the Obajana plant, to take it to 10Mt/yr, in June 2012. The plants at Ibese and Obajana were taken to 12.0Mt/yr and 12.5Mt/yr, respectively, in November 2014. Since 2015 the company has expanded its presence into Ghana, South Africa, Cameroon, Ethiopia, Zambia, Tanzania, Sierra Leone and Republic of the Congo. It is currently building a plant in Niger and has long-standing plans to build an integrated plant in Nepal.

Domestic sales growth drove Dangote Cement's financial results in 2018. Its local cement sales volumes grew by 11.4% year-on-year to 14.2Mt in 2018 from 12.7Mt in 2017. Sales in the rest of Africa remained stable year-on-year at 9.4Mt. Sales revenue grew by 11.9% to US\$1.71bn in Nigeria and by 9.6% to US\$784m in the rest of Africa. Overall revenue grew by 11.9% to US\$2.49bn from US\$2.23bn. Earnings before interest, taxation, depreciation and amortisation (EBITDA) increased by 12.1% to US\$1.20bn from US\$1.07bn.

"This is a record financial performance by Dangote Cement, driven by a strong increase in our home market, Nigeria, despite heavy rains and uncertainties about the election," said Joe Makoju, group CEO. Makoju added that, although Pan-African volumes were unchanged in 2018, he was confident that the group would see an increase in 2019, driven by higher volumes in Tanzania, Ethiopia, Congo and Sierra Leone. Elsewhere in Africa the cement producer said that plant shutdowns in Tanzania due to delays to a gas turbine installation, civil unrest in Ethiopia and a reduction of imports







For first hand information on refractories



Dedicated to the refractory user industry from the sectors of iron and steel, non-ferrous metals, aluminium, cement, lime, glass and ceramics, high-performance composites and coatings, foundry, petrochemical, power generating and waste incineration.

refractories Worldforum

Manufacturing & Performance of High-Temperature Materials

Subscription

Petra Blank

Phone: +49(0)7221-502-242 E-Mail: p.blank@goeller-verlag.de

Advertising

Corinna Zepter

Phone: +49(0)7221-502-237 E-Mail: c.zepter@goeller-verlag.de



from Nigeria to Ghana had reduced its sales in those countries.

In the first quarter of 2019. Dangote's earnings fell due to elections and price cuts in Nigeria and even greater competition in the rest of Sub-Saharan Africa. Its EBITDA dropped by 11.2% year-on-year to US\$312m in the first quarter of 2019 from US\$351m in the same period in 2018. Sales revenue fell slightly to US\$670m, mostly 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.

"Group sales volumes were only slightly down on last year and this was a solid performance against the impact of delayed elections and increased competition from new capacity in Nigeria, as well as operational and economic challenges in key territories such as Ethiopia and South Africa. However, we saw a stronger performance from Tanzania, which is now running on gas turbines, and also from Senegal, where our sales volumes are more than 100% of our rated capacity," said Makoju.

In the first half of the year, Dangote Cement's sales revenue fell by 3% year-on-year to US\$1.30bn in the first half of 2019 from US\$1.34bn in the same period in 2018. Its EBITDA dropped by 11.4% to US\$605m from US\$683m. Cement sales volumes decreased slightly to 12.3Mt. Revenue, earnings and sales volumes all fell in Nigeria, but only earnings fell for its operations outside of the country.

Aliko Dangote said that his company is targeting exports of US\$600m/yr to sub-Saharan Africa in

2019, to make it the largest exporter of cement in the region in 2019. It will focus on those African countries with limited limestone reserves. To assist with exports, Dangote plans to open terminals at Lagos and Port Harcourt later in 2019. These will export clinker to its grinding plants in West Africa. The company could export up to 8.0Mt/yr of cement. The firm was particularly keen to increase the proportion of cement imported into Cameroon, most of which currently comes from other continents.

Nigeria's second-largest cement producer is LafargeHolcim, which holds stakes in Ashaka Cement (42.63%), Lafarge Africa (72.74%) and UNICEM (50%). The total capacity controlled by these entities is 18.5Mt/yr. Taking the various stakes into account, we see that LafargeHolcim 'owns' around 10.0Mt/yr of cement capacity in Nigeria.

The third-largest cement producer is BUA Group, which operates 11.5Mt/yr of integrated cement capacity via its subsidiaries Edo Cement (4.0Mt/yr) and the Cement Company of Northern Nigeria (CCNN), which has 5.5Mt/yr of capacity at Sagamu and 2.0Mt/yr at Kalambania. The latter was formerly a separate subsidiary known as Sokoto Cement until it merged with CCNN in January 2019.

Also in January 2019, BUA ordered a 3.0Mt/yr production line from China's CBMI for CCNN's Kalambania plant. The Group will have a production capacity of 11.0Mt/yr once the new project is completed.

In addition to the above, Ibeto Cement is in the process of building two integrated cement plants in Nigeria, at Enugu (2.2Mt/yr) and Effium (5.0Mt/yr), both in Ebonyi State. It has hired China's Sinoma to

DANGOTE CEMENT

- 1. Benue Cement (Dangote), Ikoyi, Lagos State, 4.0Mt/yr.
- 2. Dangote Cement, Obajana, Kogi State, 12.5Mt/yr.
- 3. Dangote Cement, Ibese, Ogun State, 12.0Mt/yr.

LAFARGEHOLCIM

- 4. Lafarge Africa (72.74% LH), Ewekoro, Ogun State, 1.1Mt/yr (Expanding to 2.7Mt/yr).
- 5. Lafarge Africa (72.74% LH), Sagamu, Ogun State, 0.9Mt/yr.
- 6. Lafarge Africa (72.74% LH, Ewekoro, Ogun State, 2.5Mt/yr.
- 7. UNICEM (50% LH), Calabar, Cross River State, 7.5Mt/yr.
- 8. Ashaka Cement (42.63% LH), Gombe, Gombe State, 3.0Mt/yr.
- 9. Ashaka Cement (42.63% LH), Ashaka, Gombe State, 3.9Mt/yr.

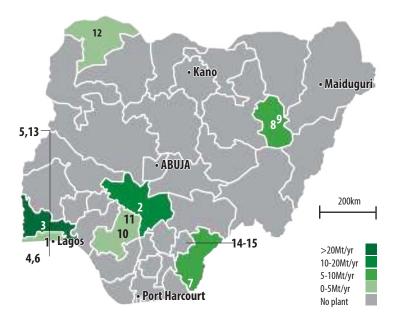
BUA GROUP

- 10. Edo Cement (BUA), Auchi, Edo State, 0.5Mt/yr.
- 11. Edo Cement (BUA), Okpella, Edo State, 3.5Mt/yr.
- 12. CCNN (BUA Group), Kalambania, Sokoto State, 2.0Mt/yr (Upgrading to 3.0Mt/yr).
- 13. CCNN (BUA Group), Sagamu, Ogun State, 5.5Mt/yr.

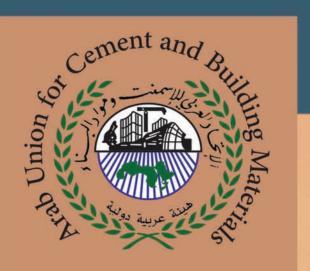
NEW PLANTS & PROJECTS

- 14. Ibeto Cement, Enegu, Ebonyi State, 2.2Mt/yr (Under construction).
- 15. lbeto Cement, Effium, Ebonyi State 5.0Mt/yr (Under construction).
- **16.** Cross River State Cement Plant 1, Government, Announced 2017.

Below - Figure 6: Map of Nigerian States, colour coded by integrated cement capacity. **Source:** Research conducted towards *Global Cement Directory 2020*









عبي المجانب المديدة المرابع المديدة المرابع المرابعة المر

القافرة - كهوربة مصر العرببة InterContinental Cairo Citystars

24 - 26 November 2019

Cairo, Egypt

Arab Union for Cement & Building Materials (AUCBM)
The Event Secretariat

www.aucbm.net aicce24@aucbm.email

GLOBAL CEMENT: WEST AFRICA



build the plants at a total cost of US\$850m. In addition, the Cross River Ministry of Solid Minerals Development announced that it was seeking investors to build a cement plant at Akamkpa in July 2017.

Senegal

Independence: 1960 (France) GDP/capita: US\$1033



Senegal operates the fourth-largest cement sector in West Africa. It has 8.0Mt/yr of capacity across three integrated plants. France's Vicat is the largest producer by installed capacity, with a 3.5Mt/yr plant held via its SOCICIM Industries subsidiary, which traces its history back to 1948. The modern facility was completed in 2009 at a cost of US\$268m.

The second-largest producer is Ciments du Sahel, which operates a 3.0Mt/yr plant in Dakar. It currently has two lines, with a third under construction that will take capacity to 5.9Mt/yr when it is commissioned. Funding for the line was announced in early 2018 but further information has since been lacking.

The third-largest producer in the country, Nigeria's Dangote Cement established its 1.5Mt/ yr plant in Port Thiés in 2014. It was previously reported to be undergoing an expansion to 3.0Mt/yr, but construction work appears to still be ongoing. If they come to fruition, the above-mentioned expansions will increase the Senegalese national cement capacity to 12.4Mt/yr in the coming years.

However, the limited information about Senegalese cement production that is available suggests this amount is excessive. Cement production fell by 10% year-on-year to 0.59Mt in the first quarter of 2019 from 0.66Mt in the same period in 2018. If replicated throughout the rest of 2019, this would indicate production of 2.36Mt, just 30% of the current capacity. This was in part due to a clinker line failure at the SOCOCIM plant. Exports also dropped in the first quarter of 2019, not helped by new restrictions imposed by The Gambia.

Elsewhere, President Macky Sall announced in May 2019 that a new tax would be applied to cement to directly support a new government house-building initiative. He justified the increase by stating that Senegal had the least expensive cement in West Africa. This last point is clearly related to the country's huge overcapacity.

Sierra Leone

Independence: 1961 (UK) GDP/capita: US\$499



With a single Fives FCB ball mill at Freetown, Sierra Leone Cement Corp (Leocem), part of HeidelbergCement, is Sierra Leone's only cement producer. The plant's 0.1Mt/yr capacity gives the country the smallest capacity of any country in West Africa that has a cement industry. The plant site dates back to 1994. In addition, Dangote Cement has operated a 0.5Mt/yr bagging terminal in Sierra Leone since January 2017.



Togo

Independence: 1960 (France) GDP/capita: US\$617



Togo has two integrated cement plants (3.0Mt/yr) and two grinding plants (1.2Mt/yr), giving it a capacity of 4.2Mt/yr. The total capacity is equally split between Scantogo (HeidelbergCement) (1.5Mt/yr integrated, 0.6Mt/yr grinding) and WACEM (1.5Mt/ yr integrated via West African Cement, 0.6Mt/yr grinding via Fortia Cement).

Scancem, which became part of HeidelbergCement in 1999, has been involved in the Togolese market since the mid 1960s. The integrated plant was established by HeidelbergCement in March 2015.

Far right: Scantogo's integrated plant. Source: HeidelbergCement website. [©]Jarle Andersen.

Right: Loading vehicles at

the Leocem plant.

Source: CETA website.

Right: Macky Sall, President of Senegal, announced a tax on cement sales in May 2019. The tax will pay for a national home-building programme. Source: 360b Shutterstock.com.





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 76. In this issue subscribers receive information from more countries, including Argentina, China, India and Malaysia.

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 11 September 2019: Arabian Cement (Al Mosalah) = US\$49.58/t; Arabian Cement (Al Nasr) = US\$48.54/t; Elnahda Cement (Al Sakhrah) = US\$48.35/t; Wadi El Nile Cement (Wadi El Nile) = US\$49.14/t; Lafarge (Al Makhsous) = US\$48.83/t; Medcom Aswan Cement (Aswan) = US\$48.34/t; Arish Cement (Alaskary) = US\$48.83/t; Sinai Cement = US\$48.53/t; Suez Cement = US\$48.95/t; Helwan Cement = US\$49.38t; Shora Cement (Al Shora) = US\$48.65/t; South Valley Cement (Ganoub Elwady) = US\$48.77t; Misr Cement Qena = US\$48.48/t; Al Watania Company for Cement = US\$49.26/t.

White cement prices as of 11 September 2019: Sinai White Cement (Alabid Elada) = US\$149.35t; Sinai White Cement (Super Sinai) = US\$150.25/t; El Menya Cement (Super Royal) = US\$155.44/t; El Menya Cement (Royal Elada) = US\$149.04/t; Menya Helwan Cement = US\$155.44/t.

Blended cement prices as of 11 September 2019: Sinai Cement (Al Nakheel) = US\$43.28/t; Helwan Cement (Al Waha) = US\$43.58/t.

Sulphate-resistant cement prices as of 12 August 2019: Cemex (Al Mukawem) = US\$54.31/t; Lafarge (Kahger Albehar) = US\$52.66/t; Suez Cement (Al Suez Sea Water) = US\$51.56/t.

ing scale with the sc

Philippines: The Department of Trade and Industry (DTI) has introduced a customs duty on imported cement of US\$4.81/t. The Manila Times reports that the measure is subject to annual review and will be in place for three years, decreasing by US\$0.48/yr.

The government previously imposed a provisional tariff of US\$4.02/t, in spite of protests from Vietnam that any executive action would be in contravention of World Trade Organisation rules. Philippine law allows for the imposition of such measures where an appointed advisory body has determined that increased imports 'threaten to substantially cause injury to the domestic industry.'

The advisory body in question is the Tariff Commission, which, in August 2019, recommended a tariff of US\$5.68/t. Secretary of Trade and Industry Ramón López said that the figure aimed to address the threat, while also having a minimal impact on cement buyers.

Cement prices in the country hit a low in early January 2019 of US\$98.6/t, rising to US\$108.25/t after the imposition of the provisional tariff.

Vietnamese cement producers will be the hardest hit by the tariff, with 75% of the Philippines' imported cement originating in Vietnam. Asian Review reports that a further 18% comes from neighbouring China and 8% from Thailand.

Bangladesh: Cement prices in Bangladesh rose by US\$0.59-0.71/bag (50kg) during August 2019, severely impacting the cost of ongoing construction projects. Traders said that the increase was due to rising VAT and advance income taxes. They are expected to rise further in the future due to rising production costs. A source from the Ministry of Commerce stated that 'syndicated' behaviour was to blame. In June 2018 cement cost US\$4.26-4.50/bag. It now costs US\$5.56-6.04/bag, a mean increase of 32%.

Do you have your finger on the cement price pulse where you are?

If so, Global Cement Magazine needs you!

Contact: Peter Edwards peter.edwards@propubs.com

Regular contributors receive a free subscription to Global Cement Magazine!



Subscribe to ...



...the world's most widely-read cement magazine



Subscribers to Global Cement Magazine receive:

- Priority-mailed print copy every issue (11 copies per year);
- High-resolution printable PDF download straight to your inbox;
- Extra cement prices;
- 33% discount on Global Cement Directory 2020.

Subscribe via: www.globalcement.com/magazine/subscribe



1 year (11 issues) = £110

2 years (22 issues) = £195

3 years (33 issues) = £275

Independent Analysis • Industry Trends • Global Cement news National & Regional reports • Interviews • Technology What are your values? And your company's values?

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



s my wife shopped in a branch of Hobby Lobby, $oldsymbol{\Lambda}$ a giant American craft shop, I picked up a copy of the founder's autobiography which was languishing near the tills. David Green's book, 'Giving It All Away... and Getting It All Back Again: The Way of Living Generously,' recounts how he started his company by making picture frames in his garage in 1970. His firm now has over 700 stores and he is worth around US\$7.9Bn. He seems to be a humble man, despite his vast wealth, and is seeking to give away much of his money - and not necessarily to the people who might expect to receive it. He says that it is never too early to consider what your legacy may be. He considers that one of his own legacies (apart from a precedent-setting US Supreme Court case), are the values that he has instilled in his own family.

I was intrigued by this idea and mentioned it to my teenage daughters, Elizabeth (19) and Jemima (17). I asked them what they considered to be our own family's values. I was somewhat shocked to hear that they thought that we did not have any, but digging a little deeper I managed to extract a few general ideas that they thought that we had inculcated into them over the years. These include the following:

- Respect for everyone;
- Being kind;
- Being polite (saying 'Please' and 'Thank you');
- Being considerate (of other people's feelings);
- Telling the truth (but my elder daughter said that we, as parents, should be relieved at some of the 'non-truths' that she has told us over the years);
- Loyalty as a family and to each other;
- Reliability, doing what you say you are going to do;
- Trying not to hurt one another's feelings (or 'diplomacy' more generally);
- Trying your best;
- Doing the right thing;
- 'Thinking outside the box;'
- Being (or at least pretending to be) civilised (on the basis that if you pretend to be civilised often enough, you will actually become civilised);
- Speaking clearly;
- Self-respect (looking after yourself, eating healthily, brushing your teeth, getting enough sleep, etc);
- Doing your fair share of the chores;
- Sitting up at the table to eat;
- Eating with good table manners;
- Not having any devices at the table during meal-

times (breakfast, for some reason, is excepted);

• Not having any devices in their bedrooms.

I have to say that we do not stick to all of the rules all of the time, and it's arguable that despite our exhortations that some/several/all of these values are more often broken than achieved. Some of them are perhaps just my own wishful thinking. I wonder if *you* have your own list of family values?

Anyway, you may be wondering what this has to do with the building materials industry. Well, a new trend of companies having wider 'values' is now upon us (wider values than just maximising returns to shareholders, that is).

For example, the US 'Business Roundtable' has just updated its 'Statement on the purpose of a corporation'. Previously it had stated that 'corporations exist principally to serve their shareholders.' Now though, the organisation (and the 181 CEOs that form the 'Roundtable') has committed to:

- Delivering value to customers;
- Investing in employees;
- Dealing fairly with suppliers;
- Supporting communities;
- Generating long-term value for shareholders.

This all sounds to me like a good idea to build long-term value into companies, but apparently it has been viewed as revolutionary, bordering on 'socialism' (a controversial idea in today's America). I noted that National Gypsum Company, Owens Corning, Rockwell Automation and Siemens USA were among the signatories (as were Apple, Amazon and IBM). Some companies are conspicuous by their absence.

In another ongoing trend, companies are having themselves certified as a 'B Corp,' by the B Corporation², provided that they believe that 'we must be the change we seek in the world,' that 'all business ought to be conducted as if people and place mattered' and that 'businesses should aspire to do no harm and benefit all.' Again, all of this seems self-evident to me.

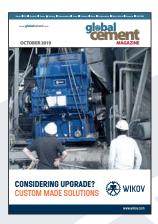
After all this talk about values, you might be interested to hear about our own Mission Statement, which is (in its shortened form): 'Pro Global Media aims to be the most-trusted, most highly-regarded and market-leading provider of information and events to the heavy building materials industries.' It's a start!

 $1\ https://opportunity.business round table.org/our commitment/$

2 https://bcorporation.net/about-b-corps

GLOBAL CEMENT: ADVERTISERS OCTOBER 2019







+44 (0) 7767 475 998 / paul.brown@propubs.com **Advertising** Paul Brown: enquiries:

Sören Rothfahl: +44 (0) 7850 669 169 / soeren.rothfahl@propubs.com

Peter Edwards: +44 (0) 1372 840 967 **Editorial enquiries:**

peter.edwards@propubs.com

Advanced Material Handling Ltd.	55	dgalloway@advancec
Aerzener Maschinenfabrik GmbH	37	diı
4th Arab-International Cement Conference, Cairo, Egyp	t 73	a
Christian Pfeiffer GmbH	IBC	360@christian
Coal Mill Safety Pte Ltd	46	info@coalr
DALOG Diagnosesysteme GmbH	IFC, 3	
vonik Fibres	31	guente
cuchs Lubritech GmbH	OBC	lubritech
Gebr. Pfeiffer SE	Ins. 18/19	kv-p@ge
Global CemBoards Conference 2020, Munich, Germany	39	rob
Global Cement Magazine	37	rob@propubs.co
Global CemFuels Conference 2020, Cyprus	33	
Global Gypsum Conference 2019, Kuala Lumpur, Malaysi	a 9	rob@
HARDTOP Gießereitechnologie GmbH	45	info@har
larsco Environmental	5	hem@harsco
EKO Ketten GmbH	Ins. 18/19	
8th International Cement Seminar 2019, Atlanta, US	49	
KettenWulf	67	service@
(HD Humboldt Wedag GmbH	11	ba
(IMA Process Control GmbH	27	со
ORFEZ Eng.	29	nadine.knier
Refractories WORLDFORUM	71	c.zepter@goeller-verlac
obecco GmbH	13, 57	rober
ICIT Group SpA	23	adayen
icantech Pty Ltd	8	geoscan@s
esting Bluhm & Feuerherdt GmbH	17	J C.
horwesten Vent GmbH	47	thorwesten.vent@thorw
Vikov Group	FC	

edmaterial.ca · www.advancedmaterial.ca irk.koob@aerzen.com • www.aerzen.com aicce24@aucbm.email • www.aucbm.net npfeiffer.com • www.christianpfeiffer.com lmillsafety.com • www.coalmillsafety.com info@dalog.net · www.dalog.net er.gasparin@evonik.com • www.P84.com h@fuchs.com • www.fuchs.com/lubritech ebr-pfeiffer.com • www.gebr-pfeiffer.com b@propubs.com • www.cem-boards.com com • www.globalcement.com/magazine rob@propubs.com • www.cemfuels.com propubs.com • www.globalgypsum.com rdtop-gmbh.de • www.hardtop-gmbh.de o.com • www.harsco-environmental.com info@heko.com • www.heko.com www.internationalcementseminar.com @kettenwulf.com • www.kettenwulf.com astian.hampel@khd.com • www.khd.com ontact@kimaE.de • www.kima-process.de eper@korfez-eng.de • www.korfez-eng.de g.de • www.refractories-worldforum.com ert.becker@robecco.de • www.robecco.de m@sicitgroup.com • www.sicitgroup.com scantech.com.au • www.scantech.com.au info@testing.de • www.testing.de westen.com • www.thorwesten.com/vent Isteiner@wikov.com • www.wikov.com

Next issue: November 2019

Regional report: Middle East

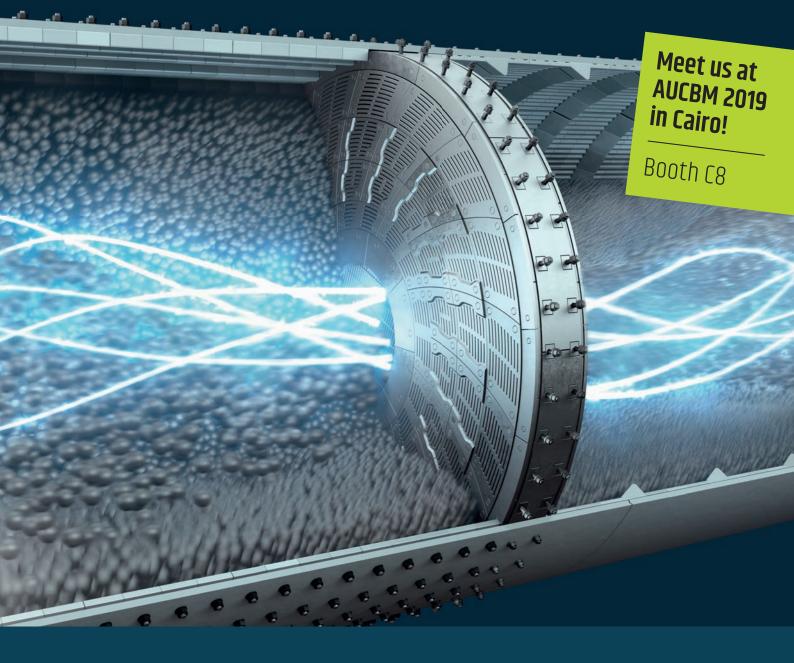
Distribution: 24th Arab-International Cement Conference, Cairo, Egypt

38th International Cement Seminar 2019, Atlanta, US XXXVI FICEM Technical Congress, Dominican Republic

Features: Al in logistics, Technical: Dust Control, Refractories, Conveying, Alternative fuels, Maintenance, Spare parts Advances in Arab cement production

Advertising deadline: 11 October 2019

Review:



More than just grinding and separation: **EFFICIENT PROCESSES**

We understand, analyze and optimize the entire grinding and separation process. Thanks to this expertise, we've been one of the technology leaders in the grinding industry for over 90 years.



