www.globalcement.com

Contents | Subscribe | Ad Index

global cement MAGAZINE

MARCH 2016

Failure Prediction

Process Improvement Advice

DALOG® Remote Service

Maintenance Preparation Support

Visit us on the upcoming events:

HANNOVER MESSE

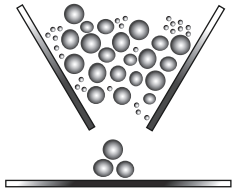
Fair: Hannover Fair 2016
Date: 25 - 29 April, 2016
Place: Hannover, Germany

2016 IEEE-IAS/PCA CEMENT CONFERENCE

Fair: IEEEE-IAS/PCA Cement Industry Technical Conference
Date: 15 - 19 May, 2016
Place: Dallas, USA

DALOG®

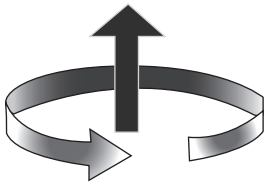
Machine Protection Concept
Online Condition Monitoring



Process Signals

Performance
Optimization

DALOG Process Monitoring System
D-PMS



Torque

Proactive
Failure Prevention

DALOG Torque Monitoring System
D-TMS

Vibration

Predictive
Failure Detection

DALOG Condition Monitoring System
D-CMS

Independent and objective

For more information contact:
Christoph Muschaweck
E-mail: christoph.muschweck@dalog.net
Phone: +49 821 74777 - 115

DALOG®
www.dalog.net

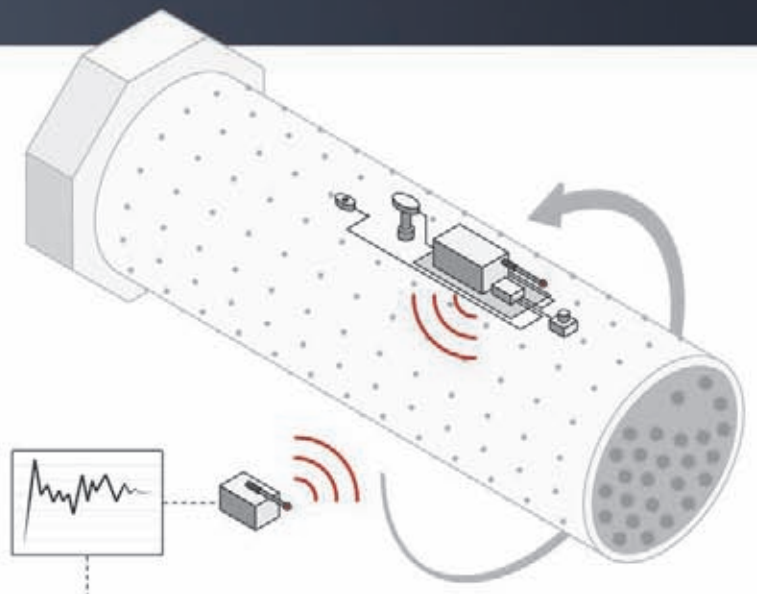
Improving your Milling Efficiency

www.kimaE.de

SmartFill

Precise fill level **measurement** for ball mills

- independent fill level of each chamber
- temperature of grinding material
- no interferences
- self-powered equipment
- suitable for closed loop control



MillMaster

Predictive **control** of grinding facilities

- higher energy efficiency
- increased production
- improved product fineness
- higher facility availability
- satisfied & relieved operators

KIMA

www.kimaE.de

Innovative Measurement and Control Systems

Guestener Str. 72 / 52428 Juelich / Germany / Phone: +49 2463 9967 0

KIMA Automatisierung GmbH

More than 15 years of development and experience make us an attractive partner in the cement industry.
Our products optimize production, save costs and enhance efficiency in more than 1 500 installations worldwide.

This issue's front cover...

110 years of innovative engineering

Since 1906, Loesche GmbH has been constructing vertical roller grinding mills. Patented in 1928, the roller grinding mill technology has been continually advanced and, in the meantime, is synonymous with Loesche GmbH.

The new year 2016 will be a very special one – celebrating 110 years of Loesche's innovative engineering and Loesche mills around the world !

For more information please refer to: **www.loesche.com**

global cement MAGAZINE

www.globalcement.com

Exclusive Official Magazine for

Global Cement Conferences: Global CemFuels, Global Slag, Global CemCoal, Global CemPower, Global EnviroCem, Global Boards, Global Well Cem, Global CemProcess.

Dear readers,

Welcome to the March 2016 issue of *Global Cement Magazine* - the world's most widely read cement magazine!

With all the exciting technologies and alternative fuel (AF) projects discussed at the recent *CemFuels Conference & Exhibition* in Prague, Czech Republic, it can be strange to remember that around 90% of the thermal energy that is used to make cement around the world actually comes from coal. It's not a topic that garners much special attention, possibly because it is so ingrained in the industry, but coal remains vital to the success of our sector. Indeed, cement producers use around 5% of all coal consumed in the world. Despite its 'dirty' credentials, coal remains abundant, cheap and calorifically stable. Around 350-400Mt was used by the cement sector in 2014. In this issue, we have attempted to forecast how the cement sector's coal demand will change in the period to 2050. The results, starting on Page 10, may surprise you.

As an 'alternative' to the coal article, we also have features on alternative fuels from FLSmidth Pfister (Page 22) and Beumer (Page 30), Of course, CO_2 capture and storage / utilisation (CCS/CCU) could also make fuel selection less important in the future. Turn to Page 26 to read about current CCS / CCU technologies used by the cement sector and others. Elsewhere in the issue, we have articles on silo safety (Page 29), road and marine distribution (Pages 30 and 32) and advances in quarrying technology (Page 36). We also have the winners, runners-up and selected commended entries from the *Global Cement Photography Competition 2016*. Our thanks go to all entrants for the high standard of entries this year, which made selecting a winner very hard indeed. Turn to Page 40 to see if your entry is there and check out the video online, which has more entries than we have space to show in the print issue!

We hope you enjoy this issue of *Global Cement Magazine* - the world's most widely-read cement magazine!

Dr Peter Edwards
Editor

Cement Industry Suppliers' Forum

Printed on Forest Stewardship Council (FSC®) certified papers by Pensord, a company with ISO 14001:2004 environmental certification.

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

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

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

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

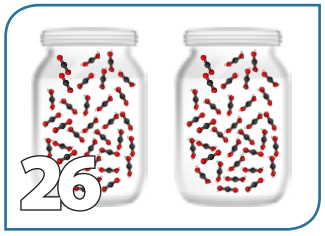
Business Development Executive
Sören Rothfahl
soeren.rothfahl@propubs.com
Mobile: (+44) (0) 7850 669169

Company manager
Sally Hope
sally.hope@propubs.com

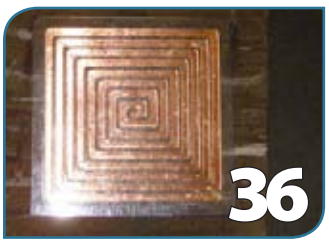
Subscriptions
Amanda Crow
amanda.crow@propubs.com

For full details on article submission, please see:
www.GlobalCement.com

ISSN: 1753-6812
Published by Pro Global Media Ltd
First Floor, Adelphi Court 1 East Street,
Epsom, Surrey, UK KT17 1BB
Tel: +44 (0)1372 743837 (switchboard)
Fax: +44 (0)1372 743838



Global Cement articles



bauma 2016
11-17 April 2016, Munich, Germany
www.bauma.de

POWTECH 2016
19-21 April 2016, Nuremberg, Germany
www.powtech.de

Hanover Fair 2016
25-29 April 2016, Hannover, Germany
www.hannovermesse.de

3rd Global EnviroCem Conference & Exhibition
10-11 May 2016, London, UK
www.Environmental-Technology.com

IEEE-IAS/PCA Cement Conference
15-19 May 2016, Dallas, Texas
www.cementconference.org

11th Global Slag Conference & Exhibition
24-25 May 2016, London, UK
www.GlobalSlag.com

Hillhead 2016
28-30 June 2016, Buxton, UK
www.hillhead.com

BULKEX 2016
5-6 October 2016, Harrogate, UK
www.mhea.co.uk/bulkex-2016/

21st Arab-International Cement Conference and Exhibition
16-18 November 2016, Abu Dhabi, UAE
www.aucbm.com

More information on all events at...

www.Cement-Events.com

Maerz lime kilns are extremely efficient in every climate. For decades.
Is it a bit cold where you are? No problem: maerz.com

maerz

Amy Saunders & Peter Edwards, Global Cement Magazine

Coal for cement: Present and future trends

Coal provides around 90% of the energy consumed by cement plants around the world, despite the environmental harm caused by its combustion. It takes 200-450kg of coal to produce 1t of cement. The cement industry consumes around 4% of global coal production, around 330Mt/yr. Given the rapidly-expanding infrastructure projects underway around the world, particularly in developing countries where coal is the main fuel, coal consumption for cement is here to stay. Here *Global Cement* discusses the global coal industry, including trends and regulations and gives a forecast for coal use by the sector in 2050.

Coal overview

The World Coal Association has estimated that there are 892Bnt of coal reserves in the world, which, at current production levels, will last around 110 years.[1] Coal reserves exist in most countries, although the biggest deposits can be found in the US, China, Russia and India.

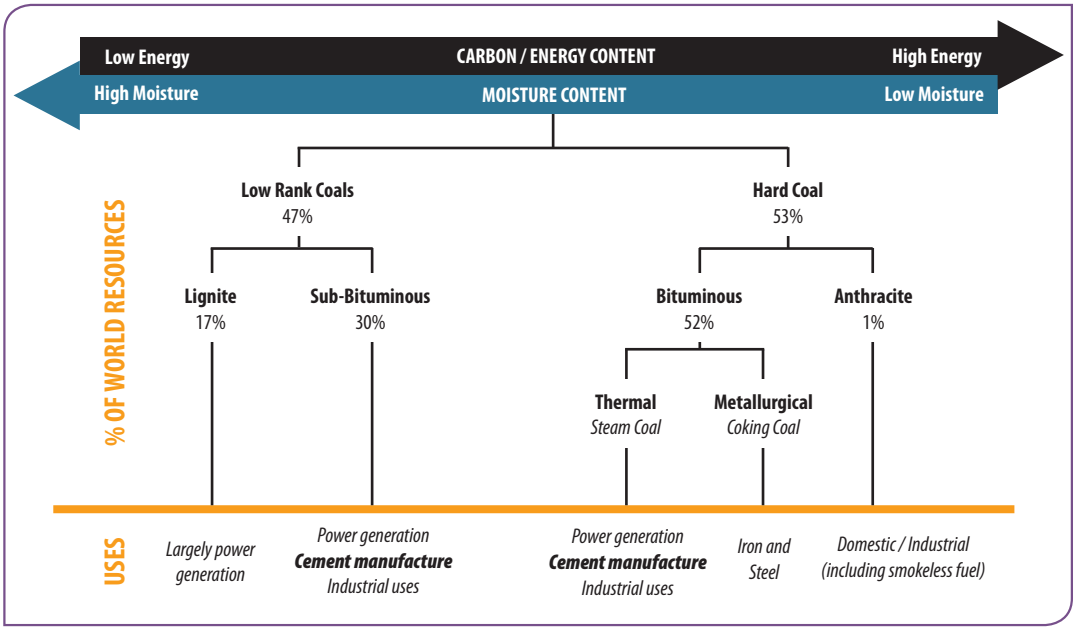
Coal is formed when vegetation is subjected to high pressures and temperatures over the course of millions of years. The type of vegetation, the depth and duration of burial and the temperatures and pressures at those depths all affect the properties of the coal. The higher the degree of 'coalification,' the lower the moisture content and the higher the carbon content and calorific value (Figure 1), which ranges from 15000-27000kJ/kg. As such, coal is divided into categories and sub-categories, as shown in Figure 1.

Cement production is extremely costly in terms of energy consumption. As the production process benefits from steady conditions, the use of fossil fuels with consistent calorific values and properties has traditionally been preferred to alternative fuels, where such values can vary widely. As coal is relatively abundant and more affordable than other fossil fuels, it has traditionally been the fuel of choice for cement production.

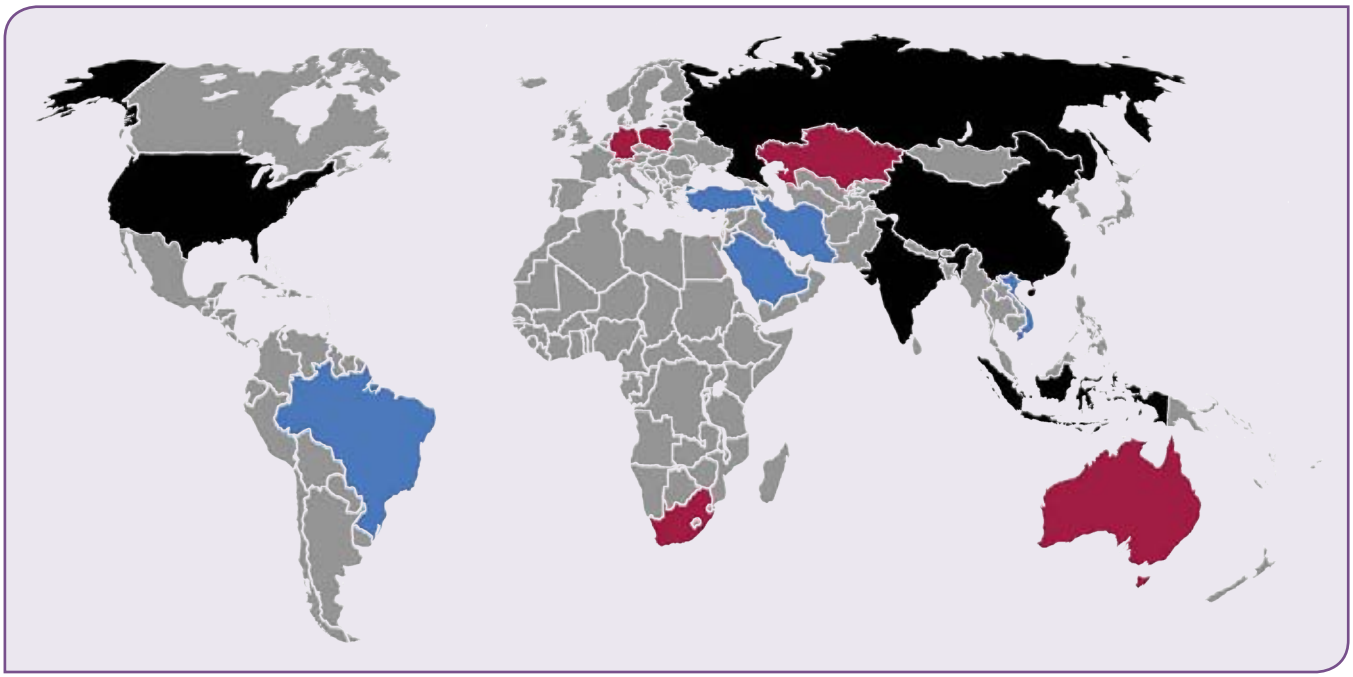
Coal production and market data

According to the International Energy Agency's (IEA) *'Coal Information 2015'* report, global coal production fell by 0.65% year-on-year to 8.02Bnt in 2014, including a 0.9% fall in steam coal, a 2.6% rise in coking coal to a record high of 1.06Bnt and a 2.9% drop in lignite production (Table 1).[2] Coal production fell most significantly in China (96.1Mt, 9.6%), Greece (5.9Mt, 10.9%) and Ukraine (24.1Mt, 35%), all of which have suffered economic and/or political turmoil in recent years.

The world's five largest coal producing countries in 2014 were China, the US, India, Australia and Indonesia (Table 2). Combined, these countries produced 6.29Bnt of coal in 2014, some 78.5% of the



Right - Figure 1: Types and applications of coal.
Source: Adapted from the World Coal Association.



Above - Figure 2: Top 10 global coal and cement producers in 2014.

Coal
Cement
Both

	2012	2013	2014	% Change 2012 - 2014
Steam coal	5900.6	6203.1	6147.2	+ 4.2
Coking coal	976.1	1037.6	1064.8	+ 9.1
Lignite	887.2	834.7	810.5	- 8.6
Total coal	7763.9	8075.5	8022.5	+ 3.3

Above - Table 1: Coal production volumes (Mt) in 2012-2014. **Source:** http://www.iea.org/publications/freepublications/publication/KeyCoalTrends.pdf.

	Cement production (Mt)	Coal production (Mt)
China	2500	3748
India	280	668
USA	83.3	916
Iran	75.0	-
Turkey	75.0	-
Brazil	72.0	-
Russia	69.0	334
Saudi Arabia	63.0	-
Indonesia	60.0	471
Vietnam	60.0	-
Australia	8.4*	491
South Africa	11.5**	253
Germany	32.1	187
Poland	14.5*	137
Kazakhstan	7.8**	116
World	4180	8023

Left - Table 2: The top 10 cement producing countries and the top 10 coal producing countries and production volumes (Mt) in 2014, ranked according to cement production. **Sources:** The USGS, http://www.iea.org/publications/freepublications/publication/KeyCoalTrends.pdf. **Note:** Countries that feature in the top 10 for both cement and coal production are highlighted in purple. * = Data for 2013. ** = Data for 2012.

world's total production. In contrast, the world's top five cement producing countries in 2014 were China, India, the US, Iran and Turkey, which between them produced 2.85Bnt of cement in 2014, some 68.2% of the global total. The limited overlap between coal and cement production is to be expected, given that the cement industry only consumes around 4% of the coal produced every year.

Global coal consumption fell by 0.88% year-on-year to 5.54Bnt in 2014 (Table 3). The top 10 coal consuming countries consumed 4.81Bnt of coal during the year, or 86.8% of global consumption volumes. Eight of the top 10 coal consuming countries reported declining year-on-year coal consumption in 2014. However, India's coal consumption grew by 12.1% to 551Mt and South Korea's grew by 4.1% to 115Mt during the year. Globally, the majority of coal, some 68%, is consumed for the generation of electricity and commercial heat.[3] For these applications it is possible for coal to be replaced by other fossil fuels or alternative fuels, as required by cost, availability or environmental regulations.

International coal trading

According to the World Coal Association, the majority of global coal production is consumed in the countries that produce it. 1.38Bnt of coal was traded internationally in 2014, just 25% of total coal production. Only 15% of hard

	2012	2013	2014	% Change 2012 - 2014
China	2690.2	2920.1	2836.0	+5.4
USA	606.9	618.2	615.8	+ 1.5
India	452.5	483.8	550.5	+ 21.7
Japan	160.9	172.4	165.3	+ 2.7
Russia	169.7	156.5	149.5	- 11.9
South Africa	138.5	136.3	132.7	- 4.2
South Korea	109.8	110.9	115.4	+ 5.1
Germany	112.3	114.3	109.4	- 2.6
Poland	79.1	82.2	77.5	- 2.0
Australia	67.1	65.8	62.7	- 6.6
World	5331.0	5593.3	5544.3	+4.0

Above - Table 3: Coal consumption volumes (Mt) for the top 10 coal consuming countries in 2012-2014. **Source:** http://www.iea.org/publications/freepublications/publication/KeyCoalTrends.pdf.

	2012	2013	2014	% Change 2012 - 2014
Steam coal exports	985.0	1072.2	1053.8	+ 7.0
Coking coal exports	282.7	295.9	321.8	+ 13.8
Lignite exports	6.80	6.60	8.00	+ 17.6
Steam coal imports	1031.1	1102.1	1125.3	+ 9.1
Coking coal imports	262.5	285.7	293.5	+ 11.8
Lignite imports	4.30	3.90	4.90	+ 14.0
Total exports	1274.5	1374.7	1383.6	+ 8.6
Total imports	1297.9	1391.7	1423.6	+ 9.7
Balancing item	23.4	17.1	40.1	-

Above - Table 4: Global coal trade volumes (Mt) in 2012-2014. **Source:** http://www.iea.org/publications/freepublications/publication/KeyCoalTrends.pdf.

coal is exported. In addition to ship and rail, coal can also be mixed with water to form a slurry, which can be transported via pipe. As transport costs represent a high proportion of overall coal costs, international trade is mainly limited to two regional markets:

- The Atlantic market - Western Europe, mainly the UK, Germany and Spain;
- The Pacific market - Developing and OECD Asian importers, mainly Japan, Korea and Taiwan.

According to the IEA, coal exports grew by 0.7% year-on-year to 1.38Bnt in 2014, including 1.05Bnt of steam coal and 322Mt of coking coal (Table 4). Coal exports have more than doubled since 2000. Steam coal exports fell by 1.72% to 1.05Bnt, while coking coal exports grew by 8.75% to 322Mt. At the same time, steam coal imports grew by 2.11% to 1.13Bnt and coking coal imports grew by 7.8% to 293Mt. There was a 40.1Mt 'balancing item' for world coal trade statistics in 2014 due to different import and export methodologies and the fact that Australia, India and Japan are reported for the fiscal year instead of the calendar year.

Indonesia is the world's largest coal exporter; in 2014, its coal exports grew by 10.5% year-on-year to 410Mt (Table 5). The country is also the world's largest exporter of steam coal, having exported 408Mt in 2014. Meanwhile, Australia, the second-largest coal exporter, reported 11.5% growth to 375Mt of coal exports in 2014. It is also by far the world's largest exporter of coking coal, having exported some 180Mt in 2014.

China is the world's largest importer of both steam and coking coal, although in 2014 its coal imports fell by 10.9% year-on-year to 292Mt. This included 229Mt of steam coal and 63Mt of coking coal (Table 6). India, the world's second-largest coal importer, also consumes significant quantities of both types of coal. In 2014, its imports grew by 26.6%. to 239Mt.

Historically, coal prices have usually been considerably lower than oil and gas. This means that coal is, and is expected to continue to be, the most affordable fossil fuel for the cement sector for many years to come. According to BP, coal prices fell in all the regions that it tracked in 2014 (year-on-year change shown in brackets):[4]

- Northwest Europe marker: US$75.38/t (-7.7%)
- US Central spot index: US$69/t (-3.4%);
- Japan coking coal import (CIF): US$114/t (-18.5%);
- Japan steam coal (CIF): US$97.65/t (+12.2%);
- Asian marker: US$77.89/t (-14.3%).

Note: CIF = Cost, insurance and freight (average freight prices).

	Total (Mt)	Steam (Mt)	Coking (Mt)
Indonesia	410	408	2
Australia	375	195	180
Russia	155	133	22
USA	88	31	57
Colombia	80	79	1
South Africa	76	76	0
Canada	35	4	3

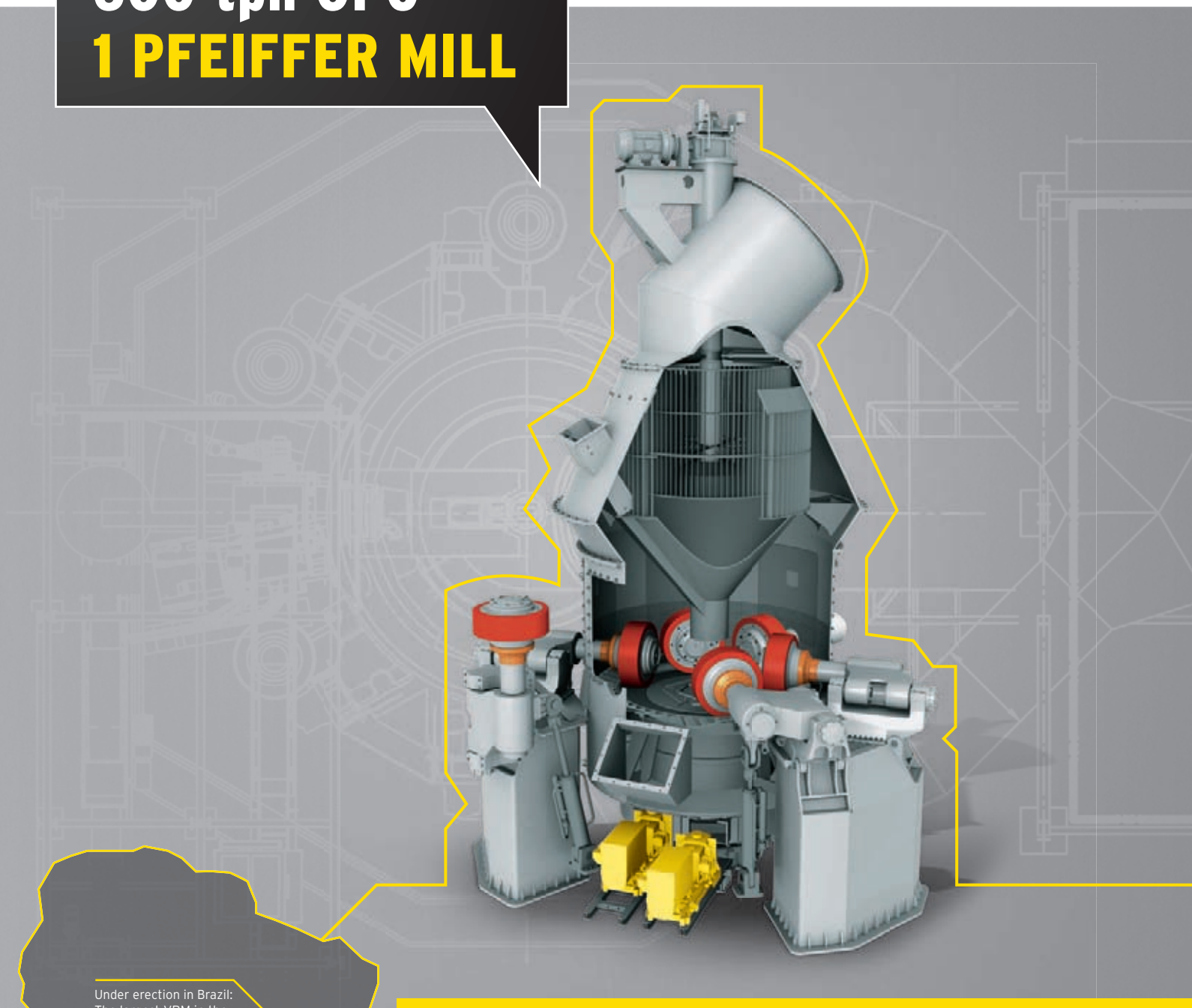
Right - Table 5: The top coal exporting countries and a breakdown of their coal export volumes (Mt) in 2014. **Source:** http://www.iea.org/publications/freepublications/publication/KeyCoalTrends.pdf.

	Total (Mt)	Steam (Mt)	Coking (Mt)
China	292	229	63
India	239	189	50
Japan	188	137	51
South Korea	131	97	34
Taiwan	67	60	7
Germany	57	47	10
UK	41	35	6

Far right - Table 6: The top coal importing countries and a breakdown of their coal import volumes (Mt) in 2014. **Source:** http://www.iea.org/publications/freepublications/publication/KeyCoalTrends.pdf.

GEBR. PFEIFFER

12,000 kW
600 tph OPC
1 PFEIFFER MILL



Under erection in Brazil:
The largest VRM in the world. From Pfeiffer:
OF COURSE!

Pfeiffer MVR with **MultiDrive®** – the ultimate one-mill solution

Discover the most powerful and economical one-mill concept for highest levels of throughput and availability: The Pfeiffer MVR vertical roller mill together with the unique and innovative high-performance **MultiDrive®**. This combined system with up to 6 grinding rollers and 3 to 6 identical drive modules stands for double active redundancy, providing an installed power of up to 12,000 kW and maximum availability even when one grinding roller or drive module is under maintenance.

Pfeiffer. Progress is our tradition.

Above: Manikgargh Cements in Maharashtra, India.
Source: Nitin Ramdas Borade, FLSmidth Pvt Ltd, entrant to the *Global Cement Photography Competition 2016.*

Recent trends and events

Coal comprises around 85-90% of the fuel consumed by the global cement industry. Over the past 20-30 years, a trend away from coal (and other fossil fuels) has been witnessed, particularly in Europe, due to concerns over CO_2 emissions and problems with waste management. However, more recently, other regions have increased their use of coal for cement production due to supply and cost volatility for other fossil fuels.

India

India, where coal is the dominant fuel used for cement production, has suffered from inconsistent coal supplies for the past several years. Both quality and availability have been hit, while price increases have been noted. Cement and power plants have been forced to halt operations at times due to a lack of fuel. The supply dearth was blamed on state-owned Coal India Limited (CIL), which, in 2013, produced 82% of the country's coal and owned 90% of its mines.[5]

According to Coal and Power Minister Piyush Goyal, India has adequate coal resources to meet demand, an estimated 302Bnt of reserves. In 2013-2014, CIL produced 462Mt of coal, missing a target of 482Mt. At the time, the Coal Ministry expected supplies to fall up to 185Mt short of the country's projected 950Mt demand in 2016-2017. CIL's 'poor' business practices, market monopoly and operating inefficiencies have been widely dubbed as the 'Coal-gate' scandal by local media since 2012.

The domestic coal market started to change in September 2014, when India's Supreme Court cancelled 214 of the 218 coal blocks that had been allocated since 1993. The blocks were originally intended for captive use by the cement, steel and power industries, but the allocation process had been accused of lacking transparency. Of the cancelled blocks, 12 belonged to cement companies. At the same time, the Indian government updated the Coal Mines (Special Provisions) Ordinance to allow commercial mining. This means that CIL will shortly have market competition. The re-allocation of the cancelled clocks commenced in December 2014, when 36 of the 98 viable coal blocks were allocated. A transparent auction process for 62 of the cancelled blocks for end-usage in power, cement and iron production started in 2015. Rounds one and two included 23 blocks each and took place in February and March 2015.

The market has continued to develop since then. In April 2015, Coal India (CIL) announced a major joint venture agreement with the India Railways to co-develop a number of railway projects to extract coal. The venture aims to create mega-infrastructure, for which about 50 separate projects across the country were identified. The plan is expected to help CIL double its coal production to 1Bnt by 2020. Later, in December 2015, CIL invested US$74.5m in India Railways to procure 2000 high-capacity wagons for coal transportation.

Signs that CIL's recent improvement efforts had begun to bear fruit became evident when the Indian government reported that CIL's coal production volumes had grown by 8.8% year-on-year to 321Mt in the April-November 2015 period. Analysts noted that improved volumes and efficiencies by CIL were 'not optional,' given that the first commercial coal mining operations were about to start. More improvements at CIL are also on the horizon. In January 2016, CIL announced plans to launch its biggest technology overhaul in four decades in order to curb 'rampant theft' and enhance efficiency. The upgrades are expected to cost around US$52m.

As the world's third-largest producer and consumer of coal, India's coal industry makes significant contributions towards global CO_2 emissions. However, India's Prime Minister Narendra Modi said in April 2015 that he would not bow to foreign pressure to commit to CO_2 emissions cuts, instead pledging to use more clean energy and traditional methods, such as switching off street lights on full-moon nights, to lead the fight against climate change. "The world guides us on climate change and we follow them? The world sets the parameters and we follow them? It is not like that," said Modi. "We can lead the world." The Indian government said that it needs to emit more to industrialise and lift millions out of poverty. While in the past Modi has downplayed the dangers posed by climate change, he has also argued that the world must focus more on clean energy and less on outright emission cuts.

Egypt

Unlike many parts of the world, Egypt has historically relied on gas for the thermal energy requirements of its cement plants.

However, Egypt's 2014 cut to natural gas and fuel oil (mazut) subsidies to factories including cement plants, combined with a shortage of natural gas, prompted the start of a major fuel regime change.

Gas shortages became so severe at the start of 2014 that cement plants ceased operations or started importing clinker, while blackouts became commonplace throughout much of the country. In May 2014, Egyptian gas production dropped to 133Mm^3/day from 166Mm^3/day due to natural decreases in well productivity, according to Mohammed Hassan, Assistant Deputy Chairman of the Egyptian Natural Gas Holding Company (EGAS). Subsequently in June 2014, EGAS cut the volume of gas it supplied to cement plants by 61% from 11.6Mm^3/day to 4.52Mm^3/day.

Prior to 2014, coal was only permitted for use in the iron and steel, coke and aluminium industries. However, Egyptian law was updated in April 2014 to allow the use of coal as fuel for cement, iron and steel, coke and aluminium production, as well as in power plants, in a bid to boost the economy and the construction sector. In a nod to environmental concerns, one caveat is that coal imports can only take place after approval from the Ministry of Environment.

As a result of the major changes in fuel availability and regulations, a flurry of fuel regime changes at Egyptian cement plants was reported by local media. In May 2014, South Valley Cement (SVCC) said that the investments needed to use coal as fuel would cost US$19.8m, while for agricultural wastes it would cost US$283,000. It applied for licences for both. SVCC's Samar Abd Al-Gawad said that substitution with agricultural wastes could not exceed 15-20%. "The challenge with agricultural wastes is that the market is not consistent and the products that are used as wastes, such as the linen seeds and corn cobs, are seasonal."

In July 2014, Sinai Cement Company (SCC) contracted FLSmidth to provide the equipment for it to replace natural gas and mazut with coal for cement production. Similarly, in October 2014, Misr Beni Suef Cement announced plans to build a US$27.9m coal mill by the end of 2015. Next, in November 2014, Titan Cement ordered a Gebr. Pfeiffer SE type MPS 2800 BK vertical roller mill for coal grinding, to be set up at line 1 at its Beni Suef plant.

In January 2015, Suez Cement, Italcementi's Egyptian arm, said that it would spend US$84m during the year to convert its Helwan and Tourah 2 cement plants to use coal. "We finished converting two plants in 2014 (Kattameya and Suez). Now we have another two plants to complete," said Italcementi's Managing Director, Bruno Carrè. Suez Cement plans to convert all of its five cement plants to coal by 2017. The company's energy costs rose by 25-35% in 2014, partly due to its commitment to the implementation of energy-efficient processes, as well as its further emphasis and utilisation of alternative fuels. These efforts helped mitigate its drop in production due to gas shortages. In the first nine months of 2015, the company's profit fell by 14.6% year-on-year due to severe energy shortages that forced it to cut output by 40%. Suez Cement is also in talks with Egyptian authorities about the viability of a proposed wind farm project.

In May 2015, Lafarge's Ecocem subsidiary signed two major contracts to manage and operate existing refuse-derived fuel (RDF) platforms in Suez and Qalyubeya. Lafarge Egypt and Ecocem have implemented many projects over the past three years in order to achieve an average fuel substitution rate of 25% by the end of 2015. More than 260,000t of waste has been processed and fired in Lafarge's Sokhna plant since 2013, equivalent to 100,000t of fossil fuels.

By May 2015, 90% of Egyptian cement plants had pledged to use coal to increase their production volumes, according to Egypt's Industrial Development Authority. Egypt's Investment Minister, Ashraf Salman, said that US$30bn of investments in the coal industry were expected by 2020.

In June 2015, Arabian Cement commissioned new alternative fuel processing machinery at its cement plant in Suez. The FLSmidth HOTDISC™ allows Arabian Cement's plant to rely completely on coal (70%) and alternative fuels (30%) to run its operations. The use of agricultural wastes,

Left: Sinai White Cement in Egypt.

Right: Two 125MW coal-fired power plants being destroyed in Zhejiang, China. **Source:** http://www.businessinsider.com/this-is-why-china-is-winning-the-green-tech-race-2010-9?IR=T.

municipal sludge and refuse-derived fuels (RDF) is expected to reduce CO_2 emissions by 60,000t/yr.

Despite the energy crisis, the use of coal at cement and power plants has caused controversy both within the government and outside. An independent coalition, Egyptians Against Coal (EAC), was formed to advocate excluding coal use from Egypt's energy and cement industry by 2017 due to its 'hazardous environmental threats.' "We are about to issue a booklet that illustrates everything related to coal use and another booklet about alternative energy resources to produce clean energy," said Amena Sharaf, a researcher at the Egyptian Centre for Economic and Social Rights (ECESR). According to the EAC, coal use in some factories caused severe harm to its labour force. It claimed that workers 'do not know about friendlier energy alternatives that could be used.'

China

China, as the largest producer and consumer of both cement and coal in the world, has long-standing problems with pollution in many of its cities. Closing coal-fired power plants is seen as a critical step in addressing pollution in China, which gets about 64% of its primary energy from coal.

Recent reports have indicated that coal use is declining in China as policy makers encourage broader use of hydroelectric power, solar and wind. The country is also pushing to restart its nuclear power programme. China's electricity consumption in 2014 grew at its slowest pace in 16 years, according to the China Electricity Council. During the year, its coal consumption fell by 2.9% and its CO_2 emissions fell by 2%, the first decline since 2001.[6]

Despite the apparent positive changes, questions regarding the accuracy of China's coal and CO_2 statistics have been raised by global media. China pledged to close 1725 small-scale (capacity <900,000t/yr) coal mines in 2014, but internal data inconsistencies, the large number of new coal mines being opened and news articles featuring the discovery of illegal and undocumented coal mines raise doubts about the real-world implementation of its policy. In 2014 alone China opened 47.3GW of new coal-fired power plants.

In 2014, Beijing closed the first of its four large coal-fired power plants, which was owned by China Datang Corp. The second and third, owned by Guohua Electric Power Corp and Beijing Energy Investment Holding Co, were closed in March 2015. The last of its large coal-fired power plants, China Huaneng Group Corp's 845MW plant, is due for closure in 2016. The plants will be replaced by four gas-fired stations with 2.6 times more production capacity. The closures are part of Beijing's plans to cut its coal consumption by 13Mt/yr between 2012 and 2017. Shutting all the major coal-fired power plants in the city, reducing coal use by 9.2Mt/yr, is expected to cut CO_2 emissions by 30Mt/yr according to analysts.

China's mammoth cement sector includes at least 803 cement plants and 1.48Bnt/yr of integrated cement production capacity, according to the *Global Cement Directory 2016*. This constitutes around 39.4% of global integrated cement capacity. China consumes correspondingly massive amounts of coal, the primary fuel source of Chinese cement plants. However, signs of cement overcapacity were noted back as far as 2003.

In October 2013, China's State Council issued the *'Guideline to tackle serious production overcapacity,'* while the Chinese Cement Association (CCA) drafted a plan to promote mergers and acquisitions to eliminate out-dated capacity and increase the industry's concentration ratio. A reduction in plant numbers and capacity would automatically reduce Chinese coal consumption.

Significant industry consolidation took place in 2013-2015. By the end of the period, China's top 10 cement producers had 52% of the market share. Several regions banned the construction of new cement plants, including Beijing in March 2014 and Tianjin in April 2014. Beijing also banned the expansion of existing cement plants. In addition, China's National Development and Reform Commission (NDRC) introduced a nationwide ban on 32.5 grade cement production with effect from December 2015. This alone is expected to reduce China's cement capacity by 340Mt/yr, or around 11%.

11th global slag CONFERENCE EXHIBITION AWARDS 2016

globalslag.com

#globalslag

Slag for profit

The 11th Global Slag Conference will make its first-ever visit to London in 2016 and is expected to attract a strong audience from within Europe and from around the rest of the world. For the first time, the event will include the 'Non-Ferrous Slags Day' on the second day, as a parallel session. The conference will allow all attendees to maximise their profits from slag, will keep them up-to-date with the industry state-of-the-art and will provide extensive networking and business opportunities.

If your business is slag, make it your business to attend the 11th Global Slag Conference in London!

Improving slag performance

New applications for slag

Global slag markets and trading

Call for Papers - Global Slag 2016

The conference convenors are interested to hear from prospective presenters for the 11th Global Slag Conference in London in May 2016

Papers should fit in with the main themes of the conference:

Slag and sustainability • Adding value to slag
Growing market share • Non-ferrous slags

Interested authors should send a proposed presentation title and the name of the author to the conference convenor, Dr Robert McCaffrey, rob@propubs.com, as soon as possible.

Who should attend?

- Slag producers
- Slag users
- Cement producers
- Cement users
- Equipment vendors
- Traders and shippers
- Academics
- Researchers

Including Global Slag Awards Gala Dinner

What the delegates say:

"Good organisation"
"Quality very good"
"Strong focus on GGBFS"
"Gave good overall picture of handling, grinding, processing and testing"
"Good to see so many potential clients from outside the iron and steel industry"
"Excellent venue, well organised event"

World's largest slag-related exhibition!

Previous events:

Düsseldorf 2005
Bangkok 2006
Istanbul 2007
Strasbourg 2008
Brussels 2009
Sydney 2010
Helsinki 2011
Las Vegas 2012
Dubai 2013
Aachen 2014

Exhibition and sponsorship enquiries
paul.brown@propubs.com
Tel: +44 1372 840950
Mob: +44 7767475998

International Slag Association sponsors

NIPPON SLAG ASSOCIATION
SCA
BRAZIL STEEL INSTITUTE
National Slag Association
asa

Event partner

EUROSLAG

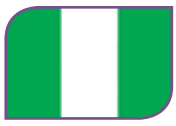
Organised by:

global cement MAGAZINE

In December 2014, the CCA and the provincial governments ordered 103 cement lines in the north-eastern provinces of Heilongjiang, Liaoning and Jilin to close for four months from 1 December 2014 to reduce overcapacity and curb air pollution. The CCA said that the winter stoppage would reduce pollution as fuel consumption increases markedly when temperatures drop. Some 20Mt of coal is required for cement production in the north of China in the winter, but this drops to 16Mt in the summer. Cement plants in north China produce cement at full capacity in the winter when energy supplies end and building operations start. However, in the summer, many operate at 50% capacity due to the oversupply of cement on the market. The overlap of cement production and energy supply in winter increases coal consumption and leads to 'haze weather.' A year later, in November 2015, China's Ministry of Industry and Information Technology (MIIT) tasked cement companies in north China to again carry out peak-shifting production in the winter.

In January 2016, new environmental regulations were launched in China to improve air quality. A three-year ban on new coal mines and a clean coal action plan that will end coal burning in urban areas from 2020 are expected to improve air quality. "China needs to better manage small-scale coal burning, which accounts for 30% of total coal consumption, and cut the number of coal mining firms, currently at over 6000, by half," said Yang Fuqiang, a Senior Advisor with the National Resources Defense Council in Beijing. "We estimate that coal consumption will drop by 2.5-3% in 2016." Tighter pollution controls are also expected to be announced in the new five-year plan, which is due in March 2016. In addition, following regional trials in 2014-2015, nationwide CO_2 trading is due to commence in 2017.

Nigeria



In August 2014, Dangote Group invested US$250m in a 54MW coal-fired power plant in Gboko, Benue, Nigeria to reduce the cost and difficulty of accessing electricity. Dangote Group's CEO, Devakumar Edwin, said that the group was also working towards installations at Ibeshe, Ogun and Obajana, Kogi. Edwin, who said that the group was currently importing coal from South Africa, revealed that it was also exploring coal extraction opportunities in Nigeria, especially in Enugu. He noted that inadequate power supply due to Nigeria's low supply of gas had affected cement production, while the high costs had impacted on the economy and increased costs for consumers. "In this country, the major issue is power," said Edwin. "With affordable power, people will make products locally, will gravitate to the private sector, which will lead to the creation of a middle class and more employment."

Tanzania

In October 2015, Nigeria's Dangote Cement signed two agreements that will enable its cement plant in Tanzania to generate 150MW of electricity from coal. It also signed a coal prospecting licence for a site in Mbinga. The plant will run on diesel until it is able to generate its own electricity from coal. The deals end a year-long dispute between the government and Dangote Cement after the Tanzania Electric Supply Company (Tanesco) failed to provide electricity. The plant plans to import coal from South Africa, which is a cheaper option than buying it locally.

United Kingdom

In March 2015 the UK Environment Minister Mark H Durkan and Devendra Mody, Industrial Director at Lafarge Tarmac, signed an agreement allowing the use of refuse-derived fuels (RDF) at Lafarge Tarmac's cement plant in Cookstown, Northern Ireland, UK. The plant, which formerly used coal for 95% of its fuel needs, will be able to substitute 35% of its coal with RDF. "Lafarge Tarmac is committing significant investment in the environment," said Durkan. "In addition to the

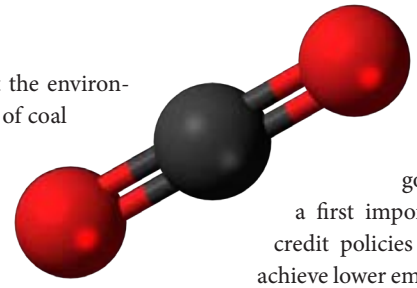
Below: The Oman Cement Company factory near Muscat, Oman is one of a number of Middle Eastern producers that has had to deal with increasing oil and gas costs recently.

many environmental benefits, it will reduce its CO_2 emissions from cement production by a minimum of 10%."

Philippines

In the Philippines in June 2015, Pasig City's government launched 'the largest facility in the Philippines for turning rubbish into fuel, capable of processing 600t/day of trash.' Coal is currently the primary fuel used at cement plants. The facility, which is a joint project between Pasig City, IPM Construction & Development Corp (IPM) and the Metro Manila Development Authority (MMDA), can process almost all of the city's daily waste production into refuse-derived fuel (RDF). Pasig City Mayor, Maribel Eusebio, said that the RDF would be supplied to cement plants for use in place of coal.

Looking to the future



Regulations that seek to protect the environment from the negative impacts of coal combustion are of the utmost importance in the face of climate change and resource depletion. In 2015, a number of key global environmental initiatives that will affect the global coal and cement industries were concluded. How these will reduce the demand for coal, including from the cement sector, remains to be seen.

United Nations General Assembly

In September 2015, the United Nations General Assembly adopted the 17 Sustainable Development Goals and 169 targets,[7] which aim to 'protect the planet, end poverty and ensure global prosperity.' The participating countries pledged to 'working tirelessly for the full implementation of this agenda by 2030.' The energy industry and the construction sector will play a key role in several of the 17 goals:

- Ensure access to affordable, reliable, sustainable and modern energy for all;
- Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation;
- Make cities and human settlements inclusive, safe, resilient and sustainable;
- Ensure sustainable consumption and production patterns;
- Take urgent action to combat climate change and its impacts (taking note of agreements made by the UNFCCC forum).

Despite the environmental harm it causes, coal, as the most affordable source of energy, will play a key role in the continual development of emerging and developing market countries, particularly fast-growing regions in Asia and Africa.

OECD export credits

In November 2015, the Organisation for Economic Co-operation and Development (OECD) agreed new rules on support for coal-fired power plants.

The new agreement encourages exporters and buyers of coal-fired power plants to move towards high-efficiency technologies. It removed support for large (>500MW) super and sub-critical coal-fired power plants and enabled support for small (<300MW) sub-critical plants in developing countries and for medium (300-500MW) super-critical plants in countries with energy poverty. The new support restrictions do not apply to power plants with operational carbon capture and storage (CCS) systems. The agreement, which is subject to the completion of the European Union internal decision making process, will come into effect from 1 January 2017.

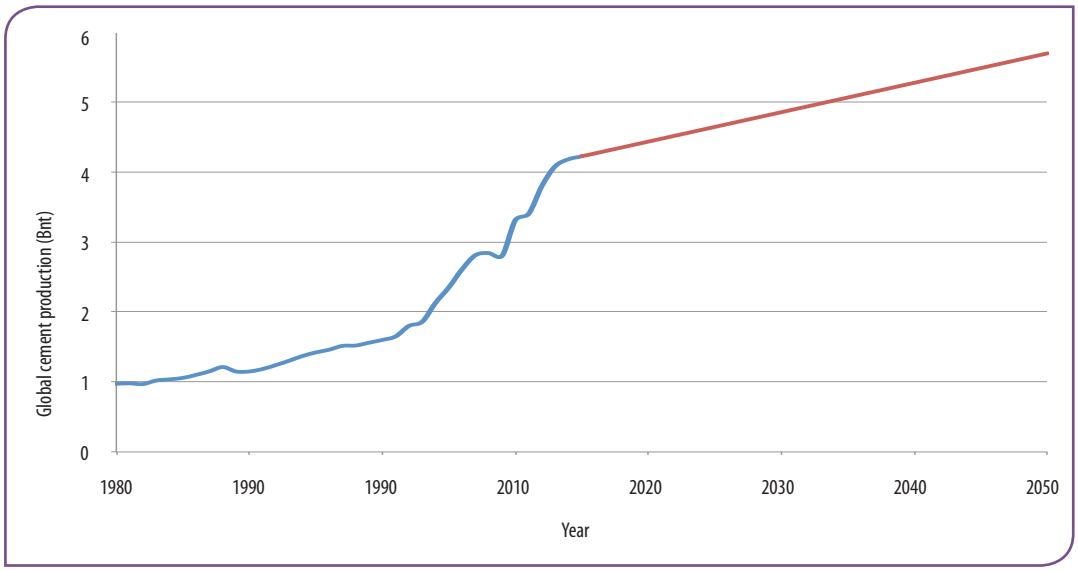
"After two years of intense negotiations, the agreement represents a first important step towards aligning export credit policies with climate change objectives to achieve lower emissions," said Pekka Karkovirta, Vice President for International Relations in Finland's export credit agency, Finnvera, and Chairman of the Participants to the Arrangement.

The Paris Agreement

In December 2015, the 2015 United Nations Climate Change Conference (COP21) concluded with the creation of the Paris Agreement, which governs CO_2 emissions reduction measures from 2020 via a combination of mandatory and voluntary statements that apply to almost 200 countries. These included:

- To effect a peak in greenhouse gas emissions as soon as possible and achieve a balance between sources and sinks of greenhouse gases in the second half of this century;
- To keep global temperature growth 'well below' 2°C and to pursue efforts to limit it to 1.5°C;
- To review progress every five years;
- To provide US$100bn/yr in climate finance to developing countries by 2020, with a commitment to further finance in the future.

At COP21, the global cement industry reaffirmed its commitment to help tackle climate change by releasing action plans to reduce CO_2 emissions by 1Bnt by 2030, compared to business as usual. "Cement production accounts for approximately 5% of worldwide man-made CO_2 emissions. This collective effort by the cement industry to mitigate its emissions is highly encouraging and showcases the importance



Right - Figure 3: Historical (blue) and forecast (red) global cement production.

of leadership and collaboration in making the transition to a low carbon economy," said Peter Bakker, President and CEO of the World Business Council for Sustainable Development (WBCSD).

Attempts at forecasting

Taking the above into account, the IEA expects global coal demand to grow by 0.4%/yr and account for 30% of global electricity production by 2040. Although coal consumption is expected to grow slowly for the foreseeable future, growth will be unevenly distributed. Higher coal consumption will be reported in rapidly-developing emerging market economy countries such as India.

In developed market countries, coal consumption will continue to fall as pressure from regulators prompts the conversion to more environmentally-friendly alternatives, such as renewable and nuclear energy sources. Coal consumption in the cement industry will continue to vary according to market prices and availability and, as for other uses, will be more prevalent in developing markets than mature ones. Even with the rise of alternative fuels and low oil and gas prices, it is clear that coal will have a very large role to play in the most-rapidly growing cement industries, including those in Africa and the Middle East. The United States, which is seeing strong resurgence in its cement sector at present, is also a strong user of its domestic coal.

Cement demand for coal in the long term

To estimate how much coal will be required by the cement industry at a given point in the future, it is first necessary to estimate future cement demand. However, simply extrapolating recent growth rates is unadvisable, due to the recent anomalous behaviour of China. Chinese growth, which has recently been typified by wild over-construction, is by far the largest single factor behind rising global cement consumption over this period (Figure 3).

A more likely outcome is a gradual reduction in the rate at which new production will be demanded in the coming years. A better growth 'baseline' to take, therefore, might be that seen in the period between 1983 and 2003. Over this 20-year period, Chinese growth was far more in line with trends seen in other countries today and production was added at an average of 42Mt/yr. If we extrapolate this growth rate from present, we arrive at 5.7Bnt/yr of cement produced in 2050, the time by which the COP21 agreement seeks to achieve a balance between sources and sinks of greenhouse gases.

Assuming 5.7Bnt of cement production in 2050 and 350-400Mt of coal[8] used to produce 4.2Bnt of cement in 2014, we arrive at coal consumption of 475-540Mt for the cement industry in 2050.

However, this is not the end of the calculation. Alternative fuels, an ever-reducing clinker factor and more thermally-efficient cement production technologies will all each take a bite out of the amount of coal used.

Alternative fuels: As developed markets, such as Europe, currently have the highest levels of alternative fuel use, the extent to which alternative fuels will reduce demand for coal from the cement sector by 2050 will depend on uptake in markets that are currently developing.

The 34 year period to 2050 is similar in length to the time that European cement producers have already used alternative fuels. The CSI states that, in 2012, European cement producers had an average alternative fuel substitution rate of around 35%.[9] If the entire global cement sector achieves this substitution rate on average by 2050, it would significantly reduce the amount of coal (and other fossil fuels) required. In reality, this substitution rate may be a little bit high,

given that EU legislation and economic factors drove the adoption of alternative fuels very strongly in that region. In light of this, we estimate that 25% is a reasonable estimate for a global alternative fuel substitution rate for 2050.

This 11% change in alternative fuel substitution rate will reduce the amount of coal required by the cement sector by 2050 by around ***12.8%*** relative to the CSI's 2012 level of 14%. (For the sake of this calculation we have defined 'coal' as any non alternative fuel used by the cement sector).

Clinker factor: The use of alternative cementitious materials reduces the amount of clinker required to produce cement, and hence reduce the amount of fuel to produce the cement, whichever fuel is used. Their inclusion saves producers money.

If we extrapolate CSI data that shows the reduction in clinker factor (from 83% in 1990 to 75% in 2012)[10] forward to 2050, we anticipate that a clinker factor of around 65% is realistic for 2050. Current performance in Brazil (67% clinker factor) shows that this is technially possible. If this estimate comes to pass by 2050 the change in clinker factor will be ***13.3%*** relative to the CSI's data for 2012, again reducing the amount of coal needed by the sector.

Thermal efficiency: The switch from wet to dry cement production is almost complete across the global cement industry. While the advantages of this have already been felt, small incremental improvements in performance continue.

CSI data shows that heat consumption for grey cement fell from 3750MJ/t in 2000 to 3526MJ/t in 2012.[11] If we continue with this trend to 2050, we see a 710MJ/t reduction to around 2816MJ/t by 2050. This is below current Indian performance, which was around 3000MJ/t in 2012, representing the best-performing cement plants in the world.

In reality, some plants will be unable to reach the 3000MJ/t level, including many in established markets like the EU and North America. Due to this, we estimate an average heat consumption of around 3300MJ/t in 2050. If this improvement can be achieved, the cement sector will require ***12%*** less thermal energy (and hence coal) by 2050.

Calculation

By combining the estimate for cement consumption in 2050 and the above anticipated improvements for alternative fuel use, clinker factor and efficiency, we can calculate the likely amount of coal required by the cement sector in 2050.

2050 cement demand estimate = 5.7Bnt
2050 cement sector coal requirement* = 475-540Mt
Value taken forward = **510Mt**

Alternative fuels (100%-12.8%) x **510Mt** = **444.7Mt**

Clinker factor (100%-13.3%) x **444.7Mt** = **385.6Mt**

Thermal efficiency (100%-12%) x **385.6Mt** = **339.2Mt**

Even if the cement industry grows significantly in the next 34 years, relatively minor improvements to alternative fuel rate, clinker factor and thermal efficiency may mean that the sector will actually require around the same amount of coal as it does at present ~340Mt/yr.

Some might argue that the estimate presented here represents insufficient improvement if the cement industry is to meaningfully contribute to curbing climate change. Others may accuse this estimate of being too optimistic. What is certain however is that, whatever happens to the cement industry over the next 34 years, coal will play a very important role as *the* primary fuel source. While other technologies and fuels may each take a small bite out of demand, the global cement sector will continue to consume vast quantities of coal.

References

1. World Coal Association

2. https://www.iea.org/bookshop/667-Coal_Information_2015

3. http://hub.globalccsinstitute.com/sites/default/files/publications/196843/global-status-ccs-2015-summary.pdf

4. http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-coal-section.pdf

5. Saunders, A., *'The highs and lows of India's cement industry,' Global Cement Magazine*, March 2015

6. Saunders, A., *'The cement industry of China - 'A new normal,' Global Cement Magazine*, July-August 2015

8. Edwards, P. *'The rise and potential peak cement demand in the urbanized world,'* in *Cornerstone*, Volume 3, Issue 2, Summer 2015.

7. http://www.un.org/sustainabledevelopment/sustainable-development-goals/

9. Cement Sustainability Initiative (CSI). (2012), GNR Project – Reporting CO_2. Parameter 3211a. http://www.wbcsdcement.org/GNR-2012/index.html

10. Cement Sustainability Initiative (CSI). (2012), GNR Project – Reporting CO_2. Parameter 3213. http://www.wbcsdcement.org/GNR-2012/index.html.

11. Cement Sustainability Initiative (CSI). (2012), GNR Project – Reporting CO_2. Parameter 329. http://www.wbcsdcement.org/GNR-2012/index.html.

Note: All news information can be found at www.globalcement.com/news

Thomas Jennewein, FLSmidth Pfister GmbH & Franz-Josef Schäfers, Spenner Zement

Multi-fuel dosing strategy for alternative fuels

Germany's Spenner Zement has already used alternative fuels for more than two decades. Its substitution rate lies on the national average. Here, authors from the company and FLSmidth Pfister describe the development of Spenner Zement's alternative fuel systems, which developed in parallel with the use of Pfister weighfeeders for alternative fuels. The project was first announced at the *Global CemFuels Conference & Exhibition* in Prague, Czech Republic in February 2016.

Refuse-derived fuels (RDF) such as plastic and paper waste were the first non-fossil sources of energy with which Spenner Zement experimented back in the mid-1990s. It fed RDF to its main furnace and calciner in partial substitution for lignite, the primary fuel of the time.

Spenner Zement installed its first alternative fuel supply system, a tank infeed system with stuffing screw as air seal for pneumatic conveyance to the main furnace, in 1995. However, it was confronted with the problem that the feed technology did not work and that its supplier could not provide a solution. The improvised volumetric solution, which used a previously-installed silo discharge technology and a star feeder (developed for powder dosing) to charge the rotary furnace proved too inexact and susceptible to faults. The fuel was not weighed during feeding and the conveyor air of the downstream conveyor system counteracted the conveyance of the light material (<0.05 kg/dm³). "A volumetric feeder is not suitable for supplying a rotary furnace with RDF," concluded Franz-Josef Schäfers, head of Engineering and Maintenance at Spenner Zement, at the time.

Problem meets solution

The moment this problem met its solution was when FLSmidth Pfister identified the trend towards the use of renewable energies and 'wastes' in cement production. At that time it was already testing adapted versions of its gravimetric rotor weighfeeder technology for coal dust and raw meal feeders for feeding alternative fuels. The completely closed Pfister TRW-S rotor weighfeeder that was developed for this is based on a star wheel that rotates horizontally at a slow speed of a few revolutions per minute.

The alternative fuel drops into the rotor via a pre-hopper above the rotor weighfeeder and is dosed gravimetrically, while being transported from the inlet to the outlet. The precise speed of the rotors is controlled by weighing electronics and is inverse to the measured force. This enables a constant rate of material discharge at the outlet of the rotor weighfeeder. "We then implemented a rotor weighfeeder at the end of 1996 to feed RDF to the main furnace and were immediately able to achieve the performance we wanted in our cement works," recalls Schäfers.

Right: Spenner Zement produces and markets cement, lime and dry-building materials. It is the largest family-run cement business in northern Germany. Located in Erwitte, it has a workforce of almost 200, of which around 10% are apprentices. The raw material needed for production is obtained from quarries in Erwitte and Brilon. Apart from its site in Erwitte, Spenner Zement also runs a granulated slag crushing mill in Duisburg, where it also produces granulated-slag cements (blast furnace cements).

During the development of the Pfister TRW-S rotor weighfeeder, every possible potential fuel and every possible flow characteristic of the different bulk materials were considered so that the complete feed system can weigh and discharge materials that flow both badly and well, both accurately and reliably.

As it was becoming increasingly easier to dose secondary fuels that flow easily, the drives and torque-transmitting components of the Pfister rotor weighfeeders were designed for substances that flow badly due to their particle sizes and high bulk densities. A pre-hopper mounted directly at the inlet to the actual rotor weighfeeder is equipped with an agitator to prevent compression of the secondary fuel. Use of the agitator also enables discharge of bridge-building materials and materials that flow badly.

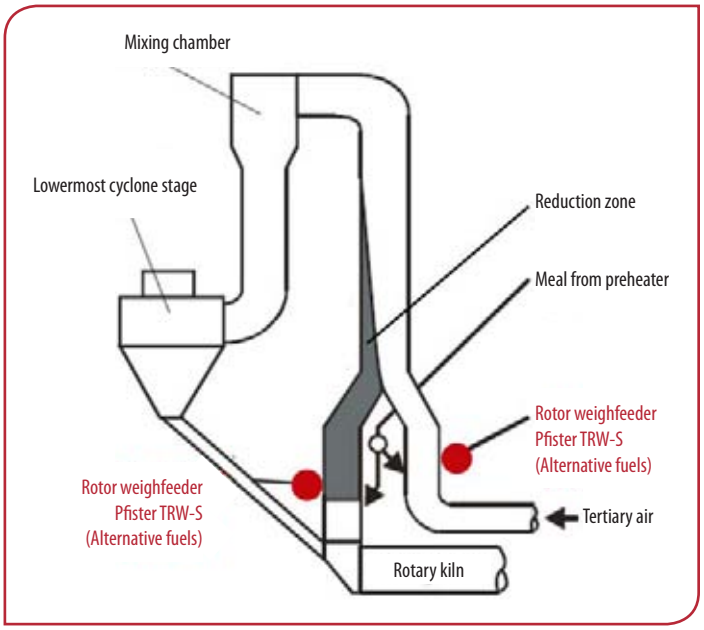
Thanks to constructional elimination of the equipment weight, it is even possible to weigh alternative fuels with a very low bulk density. In addition to this, a Pfister rotor weighfeeder is able to cover the large range of bulk densities of alternative fuels by enabling a speed variance of up to 1:100.

These positive experiences with use of substitute fuel for the main flame of the rotary furnace resulted a year later in a next step at Spenner Zement in the use of RDF in the calciner as well. A Pfister TRW-S rotor weighfeeder is also used for feeding here.

Left: A Pfister TRW-S rotor weighfeeder doses alternative fuels to the calciner at Spenner Zement.

A growing range of alternative fuels: multi-fuel dosing as a solution

Whereas only industrial wastes such as foil, paper and board were used in the initial phase, the fuels became more varied in the following years. Unfortunately the energy content also went down. Plastic wastes from refuse collection were also increasingly used. During the BSE crisis, Spenner Zement helped to dispose of animal meal with the approval of the authorities. The Pfister rotor weighfeeders were able to feed this material without any problem and could switch between feeding animal meal and RDF.



Left: Secondary fuels are dosed at three points at Spenner Zement. There are twin feeders at the position shown on the left.

Following use of RDF in other industrial production processes as well, the various materials have found not only a market price dependent on their calorific values, impurities and process-impacting compositions, but also new buyers. Spenner Zement is now experimenting with materials with lower calorific values and typical impurities such as minerals and metals. It has proved possible to improve Spenner Zement's fuel quality by installing additional equipment for removal of ferrous and non-ferrous metals as well as coarse minerals. "The rotor weighfeeder for secondary fuels from FLSmidth Pfister is *de-facto* the only system available on the market that can really be

Right: Rendering of a Pfister TRW-S rotor weighfeeder. As the fuel is transported from the inlet to the outlet in the completely closed rotor weighfeeder, the fuel is weighed and dosed. The pre-hopper is equipped with a stirrer which ensures the flowability of even extremely light or compressed materials.

called 'multi-fuel'," says Thomas Jennewein, responsible at FLSmidth Pfister for dosing of alternative fuels. "Frequent changes in the type of fuel, the particle sizes and compositions are the order of the day when it comes to burning alternative fuels. When an operator of a cement plant wants to have a changeover and / or adjustment without downtime when using such fuels, the feed system must also be able technically to manage this." Apart from ongoing changes in the composition of the RDF feedstock, the size of the shredded waste material being used at Spenner Zement has, for example, been increased from 20mm to 30mm over the course of time.

Rotor weighfeeder replaces belt weighfeeder

The equipment for feeding alternative fuels at Spenner Zement was expanded in 2003. The storage capacity for fuel was enlarged for additional feeding to the calciner. A dosing hopper with mixer arm for homogenisation is filled with a wheel loader. A downstream belt weighfeeder controls the collecting screw underneath the hopper. From there, a tubular belt conveyor transports the material to the calciner tower and discharges it via a star feeder. However, due to the compression of the material in the collecting screw, the feed result was unsatisfactory.

When a further increase in the substitution rate was planned, two proposals to improve the feed quality of the alternative fuels were developed: use of a Pfister TRW-S rotor weighfeeder directly after the hopper screw conveyor, or installation of this gravimetric feed system in the calciner tower behind the tubular belt conveyor. Spenner Zement decided to install this third Pfister TRW-S rotor weighfeeder in the calciner tower. The advantages of such a configuration are: The rotor weighfeeder acts as a material buffer directly before the flame; Variations in pre-feeding and material compaction by the intermediate conveyor can be balanced out by the pre-hopper; The material buffer in the pre-hopper supports the star feeder in sealing off against the vacuum pressure.

One aspect, however, remains a challenge for all systems used: the less readily available alternative fuels are extremely abrasive. This increases the maintenance costs for both the shredding tools and the feed systems. In Spenner Zement's case there are also costs for removal of the chlorine introduced into the process by the alternative fuels.

To reduce maintenance on the rotor weighfeeders caused by the highly abrasive secondary fuels to a minimum, all parts subject to wear have since been designed for easy replacement or furnished with replaceable wear protection. In addition to this, there is only one moving part, the rotor star feeder itself.

Third generation rotor weighfeeder systems

As the market for alternative fuels has changed continuously over the last two decades and Spenner Zement has also adjusted to new requirements, FLSmidth Pfister engineers have also continuously developed their rotor weighfeeder technology further.

Pfister rotor weighfeeders are now controlled by the third generation of controllers since their launch on to the market. The new F-Control generation runs completely on Ethernet networks and can be both integrated in company intranets and operated by browser on the internet. This controller can be accessed from anywhere in the plant.

The changes and upgrades to the dosing electronics did not always proceed without problems. "Thanks to a cooperative working relationship with the experts from FLSmidth Pfister, we have also always been able to sort out the teething problems in the last 20 years," says Schäfers. "In any event, we again opted for the latest rotor weighfeeder generation from this supplier when it became necessary to modernise our feeding technology for secondary fuels in 2015."

The search for alternative fuels and their use to increase the substitution rate remain a constant topic of discussion. In addition to licensing aspects, the focus here lies on process and emission requirements. The cost analysis also considers the negative accompanying substances (impurities such as metals, foreign bodies, moisture, chlorine, etc.). This also applies to consideration of the resultant residues and possible reduction of denitrification agents.

Höganäs Bjuf
Refractories

March 2016

Dear customer,

Höganäs Bjuf is now making big investments for the future, building the world's most modern plant for production of monolithic products in Bjuv, Sweden.

We have been manufacturing refractory products for more than 200 years and we have a technology-leading position in the market. In recent years, we have intensified and strengthened our research and development. We have for example recruited international refractory expertise and built one of Europe's most modern laboratories for refractories. These extensive investments are fully in line with our ambition to be able to offer our customers a total solution, which in addition to a wide range of products also includes design, engineering, logistics, supervision and installation.

This is also the reason behind the strategic decision to develop a next generation of monolithic products with even better properties than the current one. This is why we are investing in the world's most modern plant for production of monolithic products. The first step was taken before Christmas and the plant will be inaugurated on September 1. You can follow the entire process on our campaign site: **hoganasbjuf.com/newplant**.

In short: we intend to become an even better and more complete supplier. You will soon receive news and more information about our new factory and products.

Best regards

Egil Friestad
CEO

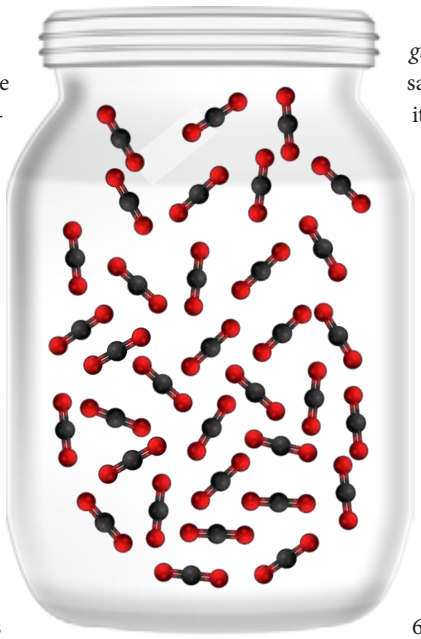
Amy Saunders & Peter Edwards, Global Cement Magazine

CO_2 capture and storage / usage for cement

CO_2 capture and storage / usage (CCS / CCU) are terms used to describe a range of nascent technologies that, if technically and commercially viable, could drastically reduce future CO_2 emissions from the combustion of conventional and alternative fuels, including in the cement sector. Here we present a round-up of major projects and attempt to assess the viability of the technology.

CO_2 capture and storage (CCS) is a process in which industrially-produced CO_2, such as that produced by coal-fired power plants and cement plants, is captured and transported to a long-term storage site to prevent it from entering the atmosphere. Unlike CO_2 capture and utilisation (CCU), where the CO_2 is reused, in CCS the CO_2 enters long-term storage. Storage sites are usually underground geological formations or in the form of mineral carbonates. Ocean acidification prevents the use of underwater sites. There are three main CO_2 capture methods:

- **Post-combustion capture** - The CO_2 is captured after combustion from flue gases at power plants or other large point sources;
- **Pre-combustion capture** - The fossil fuel is partially oxidised, as in a gasifier. The resulting syngas is converted to CO_2 and H_2. The CO_2 is then captured from a relatively-pure exhaust stream and the H_2 is used as fuel;
- **Oxy-fuel combustion capture** - The fuel is burned in O_2 instead of air. Cooled flue gas is re-circulated and injected into the combustion chamber. The flue gas consists mainly of CO_2 and H_2O, the latter of which is condensed through cooling. The result is an almost pure CO_2 stream.



Right: Trapping and keeping a lid on CO_2 has long been a industrial dream. Is it now shifting to reality?

Examples of CCS

The first commercial example of CCS was the Weyburn-Midale Carbon Dioxide Project in 2000-2012.[1] Around 8500t/day of CO_2 captured by the Dakota Gasification Company in Buelah, North Dakota, US, was compressed to a liquid and transported via a 320km pipeline to the Weyburn and Midale oil fields in Saskatchewan, Canada, for injection. The CO_2 and water was injected 1500m underground into the two depleted fields to increase the reservoir pressure and oil fluidity, enabling oil to escape from rock pores and flow more readily.

Each tonne of CO_2 in the ground increased oil production at Weyburn by 2-3 barrels. Some of the injected CO_2 at Weyburn and Midale was pumped back to the surface with the oil and water, then separated and re-injected. At the end of the enhanced oil recovery period, almost all injected and recycled CO_2 was permanently stored.

The Global CCS Institute's *'The global status of CCS: 2015'* report said that CCS technology, which, it argues, 'is the only technology which can reduce emissions on a significant scale from fossil fuel power plants and industrial processes,' is now entering a landmark period.[2] According to the report, there are currently 15 large-scale CCS projects operating around the world with 28Mt/yr of CO_2 capture capacity between them. Two came on-stream in 2015, in Canada and Saudi Arabia. However, the IEA has predicted that, in order to limit climate change to 2°C, some 6000Mt/yr of CO_2 must be captured by 2050. In 2016-2017, a further six CCS projects are expected to go live in Illinois (US), Mississippi (US), Texas (US), Abu Dhabi (UAE), Western Australia (Australia) and Alberta (Canada) with a combined CO_2 capture capacity of more than 10.2Mt/yr. This excludes the Canadian project, for which a capacity is not yet known.

Despite the importance of CCS to global climate change, the Drax coal-fired power station and UK government withdrew its support from the UK-based 2Mt/yr CO_2 capture capacity CCS White Rose Project in September 2015.[3] This was a major blow to the country's efforts to develop its CCS infrastructure. Indeed, on 31 January 2016, the UK's

Guardian newspaper announced that the National Audit Office will launch an investigation into the decision by Chancellor George Osborne to scrap the US$1.4bn project.[4]

A pioneering stance at Brevik

Elsewhere, HeidelbergCement's Norcem subsidiary has been conducting extensive trials at its Brevik cement plant in Norway.[5] Four different technologies have been tested to date. The results of the project will be presented in full at the start of 2017.

The most well-known supplier that has come to the Brevik plant was Aker Solutions, which tested an amine-based sorbant for CO_2. It brought a pilot plant that had already been coupled up to a variety of industrial facilities in other countries. It was the most mature technology that was tested and was capable of capturing 2000-4000t/yr of CO_2. The set-up ran for 18 months, clocking up 8000hr of run-time. It was dismantled at the start in January 2016.

The second was RPI, a research institute from North Carolina. It had a small bench-scale pilot that was also based on amine technology. It will return to conduct phase two testing with a new, larger test rig in April 2016.

The third was the Membrane Consortium, which comprised the Technical University of Norway, a Dutch company and some Israeli engineers. A second phase will be carried out, albeit with different consortium members, later in 2016.

The fourth technology was a carbonate looping solution from Alstom. This process is very interesting from a cement production perspective because the technology uses limestone as an adsorbant. It could eventually be possible to use the carbonated limestone in the cement production process itself.

CCU: Making useful intermediates

In May 2015 *Global Cement Magazine* reported that Skyonic Corporation was building its first SkyMine installation, the 'first commercial-scale CCU plant anywhere in the world,' at the Capitol Cement plant in San Antonio, Texas, USA.[6] The SkyMine process reacts flue-gas CO_2 with NaOH to produce $NaHCO_3$. The plant makes its own NaOH via the electrolytic chloralkali process, which also liberates H_2 and chlorine Cl_2 gases. The H_2 and Cl_2 is combined to produce HCl and NaClO. The $NaHCO_3$, HCl and NaClO produced was expected to be sold.

When running at full capacity, the SkyMine unit should capture 75,000t/yr of CO_2. Including the CO_2 emissions that the plant will offset through the fact that its products will not have to be made elsewhere, the SkyMine will have a total CO_2 reduction effect of 300,000t/yr. When this is accounted for, Skyonic claims that the entire operation will be CO_2 negative.

The unit was projected to make US$48m/yr in sales and cost US$20m/yr to run, leaving a profit of US$28m/yr, or US$370/t of CO_2 removed from the cement plant stack. This compares favourably with the US Department of Energy's (DoE) estimate for the current carbon capture costs for coal-based combustion and gasification systems of around US$60/t of CO_2.

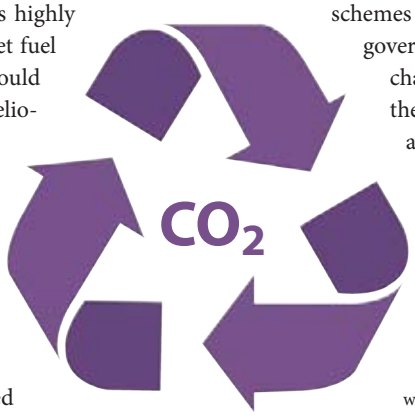
The SkyMine launched operations in September 2015, although it has yet to reach its full capacity.[7] "Barring any unforeseen delays, we expect to be running at 100% capacity in the next few months," said

Left: Construction of the Capitol SkyMine, as seen from the adjacent Capitol Cement plant in early 2015.

Molly Anderson, Skyonic Director of International Business and Government Relations, in January 2016. The SkyMine's current revenues have not been revealed, although the plant is selling $NaHCO_3$, HCl and NaClO to specifications requested by its customers as per its commercial plan.

Other developments

In December 2015, Joule, a producer of liquid fuels from recycled CO_2, announced a partnership with HeidelbergCement to explore the application of Joule's technology to mitigate CO_2 emissions in cement manufacturing.[8] Joule's Helioculture process directly and continuously converts sunlight and waste CO_2 into infrastructure-ready fuels, including ethanol and alkanes, which serve as highly blendable feedstock for diesel and jet fuel products. A successful partnership could result in the co-location of Joule's Helioculture Technology at one or more HeidelbergCement plants, which could supply Joule with the waste CO_2 required for its process.



Elsewhere, Taiwan Cement and the Industrial Technology Research Institute inaugurated their joint calcium looping project pilot in mid-2013.[9] It was last reported to have a CO_2 capture rate of 1t/hr. St Marys Cement in St Marys, Canada started a bioreactor pilot project in July 2014. This process uses flue gas to grow algae that can then be used for bio-oil, food, fertiliser and sewage treatment. NewCO_2Fuels also has an innovative process that converts exhaust CO_2 and waste H_2O into syngas, which can be made into synthetic transportation fuels or chemicals using current technologies.

Clever concrete

In February 2016, Colombia's Cementos Argos announced that it had started incorporating and capturing recycled CO_2 in several of the concrete mixtures it produces at its US plants, specifically in Atlanta, Georgia.[10] The CO_2 is collected, stored and taken to the plant by the Canadian company CarbonCure, which developed the batching technology. The gas chemically reacts with the calcium hydroxide and the water of the concrete, making insoluble calcium carbonate.

"We are extremely proud of being the first company in the US to be able to offer its customers a product with CO_2-capturing and incorporating properties," said Jorge Mario Velásquez, CEO of Cementos Argos. "This concrete, even when demolished, never releases the CO_2 contained within its structure, allowing us to close the gas' cycle and contribute to making the construction sector more and more sustainable and eco-friendly."

Summary and opinion

There is a vast number of current CCS/CCU plants and trials underway in different industrial sectors, including several that are applicable to the cement industry. However, many of these are not yet commercially sound, despite demonstrating their technical feasibility in many cases.

The remainder of the current decade will be a key period of time in which CCS/CCU has to prove its effectiveness and value in the reduction of CO_2 emissions. Its commercial success, which is (unfortunately) still the primary driver of whether or not CCS/CCU will be adopted, will be affected by the cost of conventional fuels, the success (or otherwise) of national and regional CO_2 trading schemes and how successfully national governments implement climate-change regulations, including the implementation of recently-agreed climate targets such as the United Nations' 17 Sustainable Development Goals and the COP21 resolutions.

References

1. Petroleum Technology Research Centre website, http://ptrc.ca/projects/weyburn-midale

2. Global CCS Institute, *'Global status of CCS 2015,'* 4 November 2015, http://hub.globalccsinstitute.com/sites/default/files/publications/196843/global-status-ccs-2015-summary.pdf

3. BBC website, *'Drax pulls out of £1bn carbon capture project,'* 25 September 2015, http://www.bbc.co.uk/news/business-34356117

4. Guardian website, *'Spending watchdog to examine scrapping of £1bn carbon capture plan,'* 31 January 2016, Spending watchdog to examine scrapping of £1bn carbon capture plan

5. Edwards, P. , *'Norcem Kjøpsvik: The world's most northerly cement plant,'* in *Global Cement Magazine*, December 2014, Pro Global Media Ltd., Epsom, UK and subsequent discussions with plant representative.

6. Perilli, D,' *'The Skyonic SkyMine: The future of cement plant carbon capture?'* in *Global Cement Magazine*, May 2015, Pro Global Media Ltd., Epsom, UK

7. Hendricks, D., *'Look, in the sky, it's lower emissions,'* San Antonio Express-News website, 8 January 2016, http://www.expressnews.com/business/business_columnists/david_hendricks/article/Look-in-the-sky-it-s-lower-emissions-6746540.php

8. HeidelbergCement website, *'HeidelbergCement and Joule announce partnership,'* 11 December 2015, http://www.heidelbergcement.com/en/joule-partnership-11-12-2015

9. Perilli, D., '*Capturing the cement carbon capture market,'* http://www.globalcement.com/news/item/3050-capturing-the-cement-carbon-capture-market, 12 November 2014

10. Global Cement website, *'Cementos Argos launches CO_2 capturing concrete in Atlanta,'* http://www.globalcement.com/news/item/4599-cementos-argos-launches-co2-capturing-concrete-in-atlanta, 9 February 2016

David Green & Mark Stevenson, Hycontrol

Hycontrol ensures essential silo safety for Sika

Integrated SPS Silo Protection Systems, installed and commissioned by Hycontrol, have helped global cement additive specialist Sika to meet the latest UK Mineral Products Association (MPA) safety guidelines. New over-pressurisation systems have been installed on nine 50t capacity silos at Sika's UK headquarters in Welwyn Garden City, three of which contain cement and six of which contain sand.

Sika had become concerned that its existing protection systems at its UK headquarters fell short of the MPA guidelines. It asked Hycontrol to carry out a thorough survey of the silos so that updated instrumentation could be installed. Hycontrol found evidence that product had been leaking from the pressure relief valves at the top of the silos. Clearly all was not well. The survey revealed that the silos were fitted with original outdated hinged-door pressure relief valves (PRV) and that the high level alarms (HLA) were provided by aging paddle switches. In addition there was no pressure monitoring instrumentation or auto-shut off systems to halt the filling process if pressure or product level in the silo exceeded safe levels.

UK MPA guidelines for silo protection systems (SPS) recommend that silos should be fitted with three essential components: **1.** A pressure relief valve that is sized appropriately for the application; **2.** An effective high level alarm device that is programmed to allow sufficient ullage above the final product level and; **3.** An automatic shut off system that halts the filling process if the fill level exceeds safe levels.

Hycontrol's SPS sets the benchmark for effective silo protection. In addition to meeting the MPA requirements, the SPS also has an integrated pressure sensor and a Ground Level Testing (GLT) feature, which allows operators to test all key components, including the PRV, before every fill. For Sika, Hycontrol's final recommendation was for nine complete systems. Each incorporated the company's latest PRV, a self-cleaning DP150 Diamond Point vibrating probe on a 1m-long cable (providing the HLA), a FLEX501-D pressure sensor and a bespoke alarm panel with GLT and automatic shut off.

Left: Three of Sika's nine cement and sand silos at its UK headquarters in Welwyn Garden City, Hertfordshire. The nine silos have recently been fitted with SPS Silo Protection Systems from Hycontrol.

Hycontrol's MD Nigel Allen is clear on the importance of effective silo protection. "Silo protection systems sit on top of silos, often 'out of sight out of mind,' and are expected to work if there is a problem. Even if regular visual inspections are carried out, our experience shows that these cannot necessarily determine whether key components such as the PRV will work when required. Our GLT capability carries out a quick, effective test in a few seconds. Only when the system has passed can the interlock be opened to commence the filling process in a safe and secure manner."

Sika's Engineering and Facilities Manager Nick Luxemburg is very pleased with the new installation: "We take site safety very seriously and had recognised that the existing silo protection systems needed upgrading. The complete installation has been carried out with minimum plant disruption, with Hycontrol engineers working closely with our in-house staff. The SPS systems exceed MPA guidelines and we can rest assured that the silo filling process can be carried out safely and expediently."

Left: The silo-top level meter, pressure relief valve (PRV) and pressure sensor.

Left: Bespoke alarm panel with GLT and automatic shut off.

BEUMER Group

Schwenk Zement installs new BEUMER alternative fuels solution

Cement manufacturing is energy-intensive. In order to reduce the use of expensive primary fuels like coal and oil, cement plant operators focus increasingly on alternative fuels such as high-calorific value wastes that cannot be further recycled. In order to help customers efficiently convey, store and dose the treated fuels, BEUMER Group has established its new Alternative Fuels and Raw Materials (AFR) business segment.

Germany, October 1973: For political reasons, Arab countries reduced their oil production, which caused oil prices to skyrocket. This was a very precarious situation, because crude oil was an important energy source. With this first oil crisis, cement plant operators started to shift towards using cost-effective fuels and raw materials.

Besides mineral wastes that can be used as alternative raw materials, the cement sector primarily employs the use of fuel alternatives, because approximately 30% of production costs are spent on energy. In addition to fluid alternative fuels, such as used oil or solvents, the majority of solid fuels consist of complete or shredded scrap tyres, scrap wood and mixtures of plastic, paper, composite materials and textiles. After they have been treated and quality-controlled, they show calorific values similar to lignite. The calorific value of scrap tyres is even comparable to that of hard coal. When producing cement, it is also necessary to ensure that the quality of the ash residues matches the quality of the end product, as all material components are completely incorporated into the clinker and mineralised. Their use makes for an economic production process. In addition, primary raw and fossil fuel supplies are conserved and landfill volumes are reduced.

BEUMER enters cement AFR sector

BEUMER Group now offers tailor-made AFR systems to lime and cement plants for the safe transport and storage of solid materials. Based on wide-ranging experiences and the customer's requirements, the systems comprise the entire chain, from receiving and unloading the delivery vehicle, to storing, sampling, conveying and dosing of solid alternative fuels. BEUMER Group, provider of intralogistics, now supplies its customers worldwide with three systems, which are described below.

Tailored to every application

BEUMER Group's programme includes the starter system that is used at the main burner. In the cement and limestone industry, primary fuels are usually ground to grain sizes of less than 100µm and fed via the burner. In order to use solid alternative fuels in the sinter zone burner, they should deliver a calorific value that is at least similar to lignite (~22 ± 2MJ/kg), have grain sizes of less than 30mm and a levitating burn out.

The prepared material is usually delivered in moving-floor trailers. BEUMER Group provides a docking station that also serves as storage on site. Once the trailer is emptied, the material is placed in a large tent using a wheeled loader. The material is metered volumetrically and conveyed to the clinkering zone burner. This solution is deliberately designed as a test system. This way, the operator can test its suppliers, the quality of the fuels and the behaviour of its kiln.

Right: The BEUMER pipe conveyor takes alternative fuels from the storage to the main burner. It produces very little noise and is completely dust-proof.

Calciner solution

With BEUMER's second system, the calciner can be fed with more coarse alternative fuels, such as tyre-derived

Left: View along a BEUMER pipe conveyor as it unwraps and delivers solid alternative fuel.

fuel or the fuels described above, but in a more coarse state. They are generally less processed, contain three-dimensional particles and therefore require more time to burn out than for example the more intensively processed, exclusively 2D alternative fuels used in the main burner.

Coarse calciner fuel is delivered in moving-floor trailers or tippers. The alternative fuels are quickly unloaded and stored temporarily in a dust-proof facility. Another storage area serves as a flow buffer, which can hold the 900m^3 capacity of the preceding bunker. From here, a BEUMER pipe conveyor transports the material to the calciner in the preheater tower. Here, the alternative fuel is weighed and dosed. During the feed towards the calciner, there is often the risk that the material or the conveying system can catch fire due to thermal radiation or feed variations. For this reason, a valveless special feeding system was developed so the material can be safely fed to the calciner.

In order to ensure safe and automatic fuel supply after successful testing, BEUMER Group provides systems for permanent operation with high thermal substitution rates. The systems consist of the receiving area and a storage system, where the crane system can store material of different quality into different storage zones and boxes. Experiences so far have shown that operators always have to calculate for disruptions due to off-spec fuels or blockages. This is why the entire storage and conveying technology in the hall can be provided with equipment that is able to separate metal, wet and three-dimensional disruptive material from the fuel for the main burner and keep oversized grains from the calciner fuel.

Equipped with the necessary sensor technology, the operation runs automatically. The crane can be used independently for homogenisation (in order to minimise quality variations) or feed material towards the main burner and/or the calciner.

Pipe conveyor stands the test

Schwenk Zement AG's production capacity makes its plant in Bernburg one of the largest and most efficient cement plants in Germany. In order to reduce energy costs, the cement plant is increasingly using alternative fuels that are engineered in external pre-processing plants into high-quality fuels with defined product parameters.

Until now, the manufacturer had been using drag chain conveyors. After almost a decade of use and numerous modifications however, more and more maintenance was required. The fuel quality also improved over time, so that,

Left: Fill level measuring probes and other sensors monitor the automated processes.

at a density of 0.2t/m^3, the existing technology was no longer sufficient to convey the required quantities towards the main burner. This created the need for a reliable, eco-friendly and low-maintenance solution. In addition, the new conveyor needed to be optimally adapted to the curved routing in the plant.

Schwenk Zement KG opted for the BEUMER AFR system with its pipe conveyor to feed the main burner with alternative fuels. The system works almost completely automatically, from receiving to the feeding system of the rotary kiln. Cranes pick up the engineered alternative fuels in the storehouse and fill them into the discharge bunkers fitted with discharge equipment. From there, a chain belt conveyor transports the fuel continuously towards the pipe conveyor, which conveys it to the weigh feeders before the main burner.

The curved pipe conveyor at the core of the system requires little maintenance and its enclosed design and quiet operation protect against emissions and the wind-blown loss of the fuel. It is able to transmit material long distances without interruption and navigate tight radii curves that adapt to the individual conditions of the plant.

Interview by Peter Edwards, Global Cement Magazine

In discussion: Andreas Mossandl, Karl Mossandl GmbH & Co

Karl Mossandl GmbH & Co is a diversified southern German cement transporter. Peter Edwards recently spoke to Managing Director Andreas Mossandl about the company...

Above: Andreas Mossandl, Managing Director of Karl Mossandl GmbH & Co.

***Global Cement (GC):* Can you provide our readers with a brief history of the company Karl Mossandl?**

Andreas Mossandl (AM): Mossandl was established in 1961. The headquarters of Mossandl is in Dingolfing in Bavaria, Germany. Today the company employs over 100 people. Mossandl is active in the business segments of sand / gravel production, ready-mix concrete and disposal and in logistics for powdery goods, including cement.

***GC:* Is the company a cement trader, a cement transporter or both?**

AM: Mossandl is a transporter of cement, not a trader. It first started transporting cement in the early 1980s when it began supplying its own concrete factory. Recently, in 2014, the company constructed a cement handling plant in the eastern harbour in Regensburg. It has four dedicated silos and a total capacity of 6000t. This has succeeded in shifting our distribution so that several thousand truck loads can now be taken by rail. Only the 'last mile' of the delivery to the customer is now by truck.

Right: Location of Regensburg in the state of Bavaria, Germany.

We have a fleet of 30 silo trucks and several permanent contractors. Around 15% of our income comes from cement transportation activities. We also sell trucks and have acted as a dealer for Scania since 1984. In addition, we have lots of partnerships, such as with GHH Rand and MAN Truck & Bus.

***GC:* Can you elaborate on the partnerships?**

AM: Mossandl is dealer as well as service partner of Scania. The company also has a partnership with GHH Rand. GHH Rand's compressors are integrated in all of Mossandl's trucks, which we use for cement distribution. Additionally GHH Rand products are sold and used in Mossandl's truck garage.

Customers and markets

***GC:* Which cement-producing companies does Mossandl currently work with?**

AM: We work with a large number of multinational, national and regional players. In fact Mossandl collaborates with nearly all of the cement producers that operate in southern Germany. This includes Cemex, Opterra (CRH), HeidelbergCement, Rohrdorfer Zement, Lafarge Zement, Solnhofer Portland-Zementwerke and Schwenk Zement. From the location in Regensburg, Mossandl distributes cement by truck across the whole of Bavaria and Southern Germany.

***GC:* How have these areas changed over time?**

AM: Over the years our silo logistics business has developed from single regional customers into an exhaustive Bavarian-wide distribution operation.

Now that we have the transfer plant in Regensburg, both rail and ship can be connected with the road. With a large number of our own vehicles and permanent subcontractors, we are in a position to offer a range of customised logistics solutions.

***GC:* How is the lower cost of fuel affecting operations at the moment?**

AM: The lower fuel price is expected to be a short-term development only, so the long-term strategy of

Left: Mossandl trucks filling up at the cement handling plant in Regensburg, Bavaria.

our company is not affected. Unfortunately, the positive cost effects of low fuel prices are being completely depleted by increasing personnel costs due to a shortage of skilled employees.

The future

***GC:* What are the greatest threats to Mossandl's cement distribution at present?**

AM: There are three main threats. Firstly, we expect energy prices to rise in the longer term, which will affect our outgoings. Secondly, there is a shortage of trained truck drivers, which means wages are high. Thirdly, the road and rail networks are increasing congested, which slows down all of our operations.

***GC:* What is the greatest opportunity for the company?**

AM: It is our expectation that, due to the housing shortage, which is being added to by the influx of refugees into Germany, there will be an increase in the number of building projects, which is good for the construction sector and good for us as a cement transporter.

There is also a need to expand the road network to relieve the increasingly congested roads.

***GC:* What about the company's greatest strength and weakness?**

AM: The greatest strength of Mossandl is the diversification of the enterprise. The company stands on different pillars like disposal, selling trucks, logistics, sand and gravel-production and more. Due to our broadly diversified business segments our customers can get everything from one source.

Furthermore Mossandl is a family-controlled company in which short communication paths rule. This means that quick decisions are possible to adapt to change.

Our major weakness is that we are not yet established outside of Germany. This means that our development is directly linked to the health of the local economy.

***GC:* And how do you think the cement sector will develop in south Germany in the next five years?**

AM: Our expectation is a very small steady growth. With that in mind, we are open-minded to further expansion and interesting possibilities.

***GC:* Thank you for your time.**

AM: You are most welcome!

Below: One of Mossandl's fleet on the road.

Global Cement staff

Marine transport highlights

With more and more cement taking to the high seas, *Global Cement* rounds up some recent news and contracts from the marine loading and unloading sector.

Van Aalst building two terminals for Holcim New Zealand

Right: Image of the Van Aalst installation at Holcim's new Timaru terminal in New Zealand.

Netherlands-based Van Aalst Bulk Handling is in the process of constructing and comissioning two cement import terminals for Holcim New Zealand, part of the LafargeHolcim group. One of the terminals is located in Timaru on New Zealand's South Island and the other is in Auckland on the North Island.

Both of the terminals will have dedicated ship unloaders, each with capacity of 600t/hr. They will unload cement from bulk carriers with 35,000 dwt. Van Aalst is also installing aerated dome floors to reclaim cement from 30,000t storage domes that had already been built by another supplier, one at each site.

The scope of supply also includes two conveyors at each site (one from each side of the dome) that remove cement from the storage domes. In the case of Timaru, cement will be taken to a ship loader and/or a bulk loading station for trucks. At the Auckland site, the cement will be taken to a truck loading station only, without the facility to tranfer cement back onto ships.

It is anticipated that cement will be imported to both locations from various locations in Asia, to serve the New Zealand market.

Following an order signed with Tenovar International Ltd in Malta in late June 2015, the first unloader was delivered promptly in August 2015. In February 2016 it will be commissioned in Tobruk, Libya and will operate for Mediterranean Cement, also known as Al Bahar Al Mutawaset Cement.

The second unloader was ordered in November 2015 by Koastal Industries Pte Ltd, on behalf of leading Vietnamese cement exporter The Vissai Cement Group and was also delivered just one month later in December 2015. It will be used for cement unloading at two sites in Vietnam and was ordered as part of the group's ongoing expansion plans. The contract includes the spare parts needed for two years of operation. Commissioning is scheduled for the spring of 2016.

Siwertell delivers road mobile unloaders to Libya and Vietnam

Right: The Siwertell mobile unloader drives up to the site...

Siwertell, part of Cargotec, has delivered two more of its market-leading 10 000 S road-mobile unloaders for cement unloading operations in Libya and Vietnam. The new trailer-based, diesel-powered machines are fitted with a double bellows system and dust filters and can handle cement at a rated capacity of 300t/hr.

Left: ...and undergoes a rapid transformation.

Jörgen Ojeda, Director of Siwertell Mobile Unloaders, says, "The ease of setting up, operating and folding away our road mobile unloaders makes them extremely flexible and cost effective for multi-terminal operations. For example, The Vissai Group's operation will use its mobile unloader at a number of ports in central Vietnam, separated by distances of up to around 300km. Both customers were influenced by the reliability offered by Swedish-built technology and by Siwertell's ability to offer scrupulously clean unloading operations and excellent references from the cement industry."

Siwertell mobile systems were originally developed for unloading cement. Years of experience and development reflect the company's deep understanding of cement handling and gives it the ability to provide valuable advice to its customers.

Siwertell says that its road-mobile unloader is one of the most reliable, eco-friendly and sustainable systems on the market today for cement operations. Its flexibility and capacity, combined with low operational and maintenance costs are key advantages. As there is no need for any civil engineering works, the mobile unloaders can start operations almost immediately after they arrive on site.

Michael C Mound, TDD International, Switzerland & Kenneth L Dudley, NASA Langley Research Center, USA

Core analysis with dielectric sensors

Dielectric reflectance spectroscopy is a maturing science that can be used to derive significant information about mineralogy with little or no sample preparation.[1] It may be used in applications when other methods would be too complicated, too time consuming or require destruction of precious samples. In this article we propose a dielectric measurement system concept capable of being embedded in drilling tools and drill heads for use in down-hole operations. The system can also be adopted for core sample analysis.

As an electromagnetic wave enters a mineral, a portion of the energy is reflected from grain surfaces, while some of the energy is absorbed. The remainder of the energy passes through the grain structure. The electromagnetic energy that is reflected from grain surfaces or refracted through a particle are said to be scattered. Scattered energy may encounter another grain or be scattered away from the surface so that it may be detected and measured. For certain classes of minerals, spectroscopy is an excellent tool. Among these classes are clay minerals, carbonates, OH-bearing minerals, iron oxides and hydroxides, sulphates, olivines and pyroxenes.[2]

Above - Figure 1: Proof of concept sensor placed on a geological sample.

The energy in an electromagnetic wave interacts with materials through either a relaxation or resonance process. The index of refraction is determined by chemical, thermal, mechanical and electronic mechanisms in the core material as a function of frequency. At lower frequencies, electromagnetic excitation causes physical movement and relaxation of the ionic or polar molecules within a sample. At higher frequencies, electromagnetic excitation causes resonances of the atomic nucleus or the electron cloud surrounding the nucleus. Depending on the nature of the material, the dielectric mechanism and the excitation frequency, energy is either stored or lost.[3-4]

Electromagnetic energy can be absorbed in minerals by the processes described above. The variety of absorption processes and their wavelength dependence allows for the derivation of information about the chemistry of a mineral from reflected or emitted electromagnetic energy. This may be recorded as an energy spectrum that is unique to the constituents of the core material sample.[5]

Theory of SansEC

Electromagnetic resonance theory is well established for classical electromagnetic resonators such as resonant cavities, dielectric resonators and inductive-capacitive-resistive resonant circuits or structures.[6-8] An open circuit resonant sensor has been developed for the purpose of dielectric spectroscopy of geological materials. The SansEC sensor is a planar resonant spiral or helical structure that is configured as an open circuit without (Sans) direct electrical connection (EC) to the material it is sensing or to the recording instrumentation. The sensor is composed of conductive material that is formed in such a geometry that it self-resonates when impinged upon by an external electromagnetic field.

The open-circuit resonator used as a sensor is a technology that has unique features and applications. It is interrogated by a magnetic near field, self resonates at a specific fundamental frequency with useful harmonics, has a high power exchange efficiency and responds to perturbations within its self-resonant field by detectable shifts in frequency, amplitude, phase and resonance bandwidth.[9] This is the foundation for using open-circuit resonators for sensing purposes.

When resonating, the open-circuit sensor produces both electric and magnetic fields. For a planar spiral sensor, the magnetic field and electric field will penetrate into the space beyond the planar surface of the sensor. This is an important feature for sensing purposes, because it allows the sensor to measure the properties of materials placed in close proximity to it. Any physical quantity that affects the material's permittivity, permeability or conductivity will affect the sensor's resonant parameters and therefore can be measured.

SansEC Spectrometer

The SansEC reflectance spectrometer is an arrangement of an array of multiple open circuit planar resonant spiral sensors each operating at a unique fundamental frequency. The array is intended to either be brought into contact with an extracted geologic core sample or to be brought into contact

GEOSCAN-C

Model UCG

ON-BELT ELEMENTAL ANALYSER FOR CEMENT

On-line Real Time Analyser 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

SCANTECH
PROCESS CONTROL SPECIALISTS

GEOSCAN –C Model UCG Advantages

- Small Footprint
- Very Light
- No Contact with the Belt
- High Performance Detectors
- Multi-Detector Configuration
- Advanced Digital Electronics
- Easy Calibration

10-11 MAY 2016 **LONDON**

3rd global. envirocem

ENVIRONMENTAL TECHNOLOGY FOR CEMENT & LIME

BOOK NOW!

environmental-technology.com

Following the success of the previous events, the 3rd EnviroCem conference will provide information on the state-of-the-art in environmental technology for cement and lime production, including case studies and information on how to fix cement plant environmental challenges.

Main themes:
Regulation trends
Mercury emission abatement
Dust, NOx, CO2
Emissions monitoring
Air filtration & ESPs
SNCR, SCR, TO

Who should attend?
Cement producers
Lime producers
Researchers and academics
Equipment producers
Service providers
Consultants
Legislators

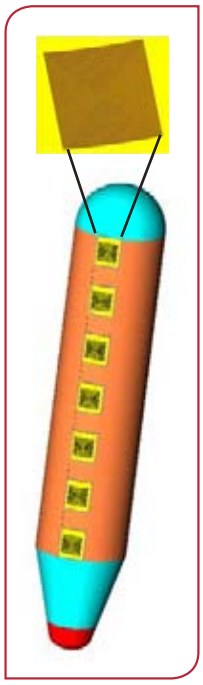
Exhibition and sponsorship enquiries:
paul.brown@propubs.com
Tel: +44 1372 840950
Mob: +44 7767475998

Organiser
global cement MAGAZINE

with the material surface of the wall of a down-hole bore hole.

The way in which the sensor array is brought into contact with the test sample relies on getting electromagnetic waves to travel from the SansEC sensors into the rock sample. As the incident electromagnetic energy couples into the rock, changes occur in amplitude and phase that are directly related to the electric permittivity, magnetic permeability and conductivity of the core sample or mineral formation. As there is a large contrast between the permittivity of rock and the baseline permittivity of free space, the spectrometer tool easily makes a direct measurement of the reflection properties of the rock. Depending on the nature of the rock, the permittivity, permeability and conductivity differ for different frequencies of the incident electromagnetic waves.

In proof-of-concept tests, three sensors were placed in the exact same position on the flat smooth surface of a semi-cylindrical geologic core sample to simulate a linear array of sensors scanning across the sample. This allowed multiple interrogation frequencies to couple into the rock sample. The scattering of multi-frequency electromagnetic energy from grain surfaces or refracted through mineral particulates and layers causes dielectric dispersion. Dispersion allows us to take into account the molecular material properties that constitute a mineral. With multiple frequency measurements the phenomena of dielectric dispersion may be observed as scattering parameter spectra representative of the unique characteristics of the test sample and relevant to the geological identification of the core materials and formations from which the sample was extracted.



Right - Figure 2: Cylindrical bore-hole penetrator.

Response characteristics of cores

Six unique core samples (similar to those seen in Figure 1) were measured using the three sensor multi-frequency SansEC spectrometer technique. All six experiments produced repeatable and promising results. The initial laboratory experiments proved that a SansEC sensor placed on a geological material is capable of determining physical characteristics and qualities about the material upon which it is placed.[7-11] The detection of the differences in frequency and amplitude of the induced currents within a material substrate offers a means of identifying geological specimens.

An array of SansEC sensors of unique frequencies may also be arranged on the surface of a bore tool. If arranged in a linear fashion along the longitudinal axis of a cylindrical penetrator, the sensors could sense the dielectric reflectance profile of the wall surface as a function of depth as the tool moves down the bore hole. Figure 2 depicts such a device with seven unique frequency SansEC sensors attached to form the multi-frequency spectrometer array.

Computational experiments

Computational Electromagnetic Modelling (CEM) and simulation is a very useful research and development tool. By using iteration and feedback to model physical hardware and then validate the CEM against that physical hardware by means of experimental measurements, a better and more economical hardware product can be realised. Simultaneously a more robust design tool is developed that will enhance the next stage of design complexity. As understanding and confidence in the computational model and the experimental measurement increases, the ability to integrate sub-elements into larger systems occurs. In this manner we undertake steps in designing, integrating and understanding SansEC resonant sensors both as computational models and physical hardware components.

The modelling effort enables an intuitive understanding of the electromagnetic field penetration interactions with simulated geological formations and core samples. The insights gained are used to inform the experimental design and testing on actual geological core samples.

References

1. Clark, R.N., *'Spectroscopy of rocks and minerals and principles of spectroscopy,'* in *Manual of Remote Sensing, Volume 3, Remote sensing for the earth sciences*, John Wiley and Sons, New York, USA, p 3- 58, 1999. **2.** Clark, R.N., *'Reflectance spectra,' AGU Handbook of Physical Constants,*178-188,1995. **3.** Hippel A.R., *'Dielectrics and waves,'* N. Y.: John Willey & Sons, 1954. **4.** Kremer, F.; Schonhals, A.; Luck, W., *'Broadband dielectric spectroscopy,'* Springer-Verlag, 2002. **5.** Volkov A.A.; Prokhorov A. S., *Radiophysics and Quantum Electronics,* 2003, vol. 46, Issue 8, p. 657–665. **6.** Meitzler, A.H (Ann Arbor) & Saloka, G.S. (Ford Motor Company); Dearborn, Michigan, US Patent No. 5361035, 1 November 1994. **7.** Ali Bitar, et al, Caterpillar Inc., Peoria, Illinois, US Patent No. 4737705, 12 April 1988. **8.** Fonseca, M.A.; Allen, M.G.; Kroh, J.; White J., *Solid-State Sensors, Actuators, and Microsystems Workshop,* Hilton Head Island, South Carolina, 2006, pp. 37-42. **9.** Kurs, A.; Karalis, A.; Moffatt, R.; Joannopoulos, J.D.; Fisher, P.; Soljačić, M., *Science,* Vol. 137, July 2007, pp. 83-86. **10.** Wang, C.; Dudley, K.L.; Szatkowski, G.N., EMSS, *'Open circuit resonant (SansEC) sensor for composite damage detection and diagnosis in aircraft lightning environments,'* AIAA Paper 2012-2792, in *Proceedings of the 4th AIAA Atmospheric and Space Environments Conference*, 25-28 June 2012, New Orleans, Louisiana, USA. **11.** Smith, L.J.; Dudley, K.L.; Szatkowski, G.N., *'Computational electromagnetic modeling of SansEC sensors,"* in *27th International Review of Progress in Applied Computational Electromagnetics,* Williamsburg, Virginia, USA, 27-31 March 2011.

Berichte der Deutschen Keramischen Gesellschaft

cfi ceramic forum international

The leading ceramics magazine for the production industries

www.cfi.de
print run: 6.500

refractories WORLDFORUM

Manufacturing & Performance of High-Temperature Materials

For first hand information on refractories

www.refractories-worldforum.com
print run: 9.000

CERAMIC APPLICATIONS

Components for high performance

The platform for all innovative engineers for all user industries

www.ceramic-applications.com
print run: 11.000

For subscription please contact:

Petra Blank
Phone +49-7221-502-210
p.blank@goeller-verlag.de

For advertisement please contact:

Isabelle Wilk
Phone +49-7221-502-226
i.wilk@goeller-verlag.de

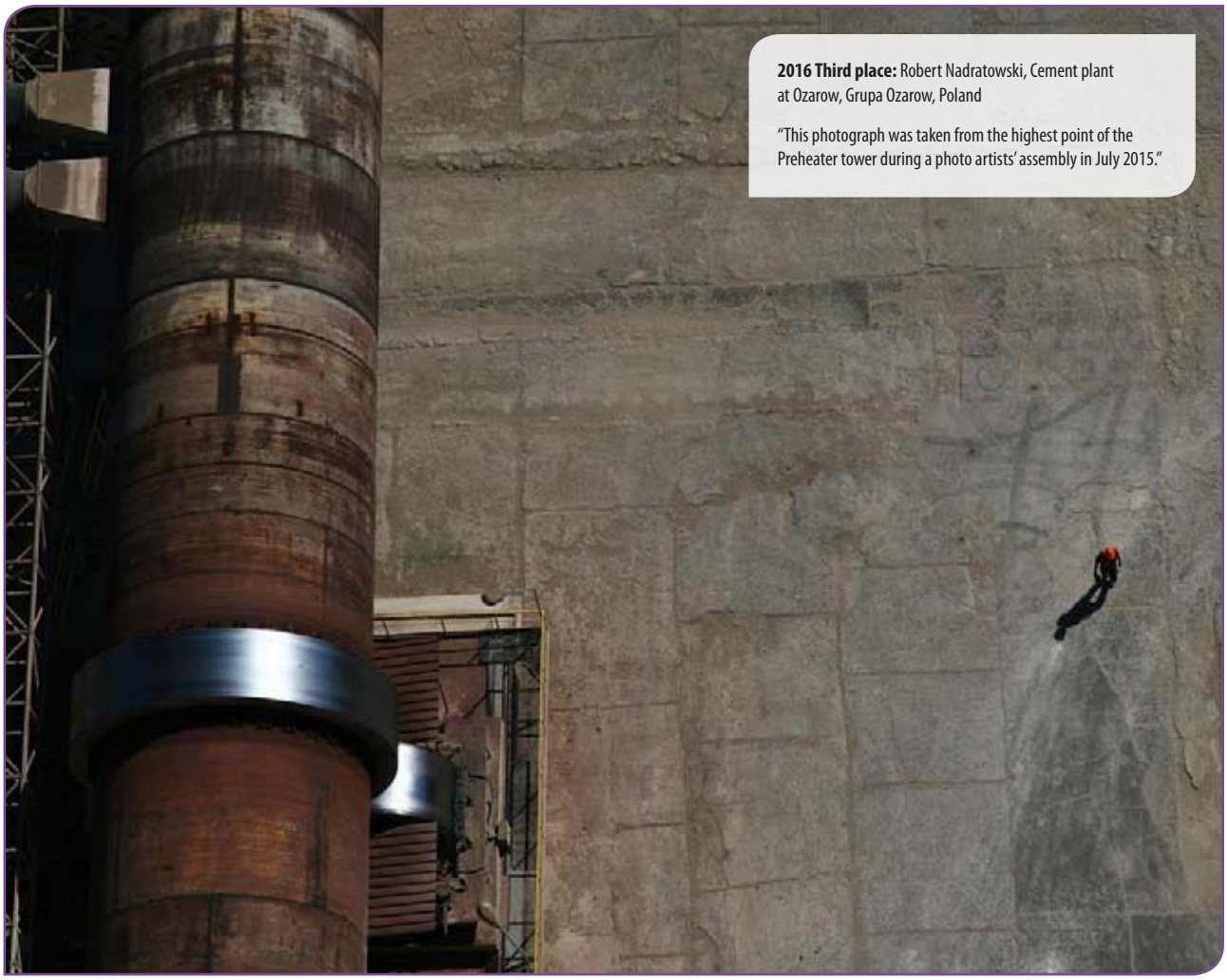
Göller-Verlag GmbH
Aschmattstraße 8 · 76532 Baden-Baden · Germany

2016 Winner: Erina du Toit, AfriSam Dudfield Plant, Lichtenburg, South Africa

"The picture shows the rehabilitated quarry to the north of our site where wildlife was introduced. The rehabilitated area is separated from the plant by a wire fence and the animals roam freely. This is our pride and joy for the past seven years!"

2016 Second Place: Jennings Alabanza, AfriSam Dudfield Plant, Lichtenburg, South Africa

"This photo was taken from the raw water dam at our Dudfield operations, with Line 1 and Line 2 as a backdrop. A lot of people don't know that water is an integral part in cement production. It is mainly used for cooling equipment and cooling exit gas from the kiln as well."



2016 Third place: Robert Nadratowski, Cement plant at Ozarow, Grupa Ozarow, Poland

"This photograph was taken from the highest point of the Preheater tower during a photo artists' assembly in July 2015."

Highly Commended: Carlo Manzoni, MCM Consulting Srl
Colacem, Gubbio, Italy

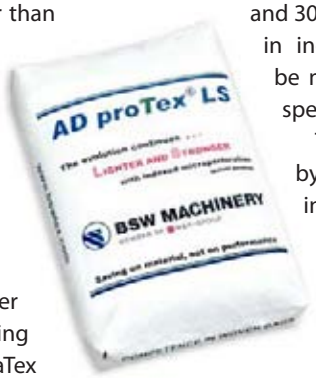
Highly Commended: Paul Touliatos, Titan Cement
Titan Cement, Drupano, Greece

Thank you to all entrants this year! ***See the Global Cement Photography Competition 2016 movie*** on YouTube, with the winner, runners up, highly commended entries and many more finalists than we have had space to show here!

See more
http://bit.ly/
1RFLIQi

Austria: BSW Machinery launches 20% lighter polypropylene woven bag

BSW Machinery has presented a new type of woven polypropylene (PP) bag that is 20% lighter than comparable bags. Using its Light & Strong (LS) technology, BSW has produced 64g bags that it says outperformed standard 80g bags commonly used in the cement industry in drop tests. Key elements of the LS technology include advanced extrusion technology for higher tape tenacity and indexed micro perforation.



The Vienna-based subsidiary of Windmöller & Hölscher has implemented new processing technology on BSW's tape extrusion line tiraTex to achieve higher strength without compromising elasticity. Tenacity values of 7g/den can be achieved with elongation at break values ranging between 25% and 30% using standard PP grades commonly used in industry. The processing characteristics can be maintained at high outputs and production speeds of 500m/min or more.

The LS bags also have higher edge strength by protecting edges and other areas through indexed perforation. The perforation is disengaged whenever vulnerable sections of bag material are passing through the bag conversion machine. Synchronisation ensures that the unperforated areas are matched to the print on the bag and are placed such that, in the final bag, the critical zones are built from unperforated material.

Turkey: Korfez announces recent orders in Turkey

KORFEZ ENG. has announced a series of contracts for cement mill components in Turkey. No values for the orders or client details were disclosed.

The cement and mining industries casing manufacturer has received an order to convert a cement mill from two grinding chambers to one by means of a new mill shell lining system. The new WAVE 35/55 mill shell lining will be installed in a cement mill with a diameter of 4.4m. This plate profile leads to an optimal fine grinding in the whole grinding compartment. This is the third major order for Korfez within two years from a private cement company north of Istanbul.

In January 2016 Korfez signed a contract to convert two cement mills at another cement plant near Istanbul. The two existing two-chamber cement mills will be modified to mono-chamber mills. The scope of supply includes the reconstruction of the complete mill inlet with a new step chute, a new wave mill shell lining system in high chromium alloyed steel casting and a new complete discharge diaphragm. Delivery and installation is planned for April - May 2016.

Finally, Korfez has signed an order to deliver a new shell lining system for another Turkish cement producer. The scope of the order is a complete replacement of a wear shell lining for a single-compartment mill Ø4.0m and 14.5m effective grinding length, the mill discharge and complete new manhole covers in modified execution. The complete lining is as a wave profile type: WAVE 35/50 in a highly wear-resistant steel castings with 27% chromium content. The complete contract scope is to be completed and delivered in six weeks.

KORFEZ ENG. has announced a number of contracts in Turkey.

Germany: Hengst acquires Nordic Air Filtration

Hengst has acquired all the shares of the Danish filtration specialist Nordic Air Filtration. The Münster-based filtration manufacturer said that the acquisition was part of its growth strategy.

Nordic Air Filtration produces industrial air filtration systems and supplies dealers and original equipment manufacturers worldwide. The company has three locations in Denmark and in the UAE and employs around 100 staff who generate sales of over Euro15m/yr. The company has a very large portfolio of around 4000 different filter products and more than 20 different filter media for gas turbines and industrial applications. André Radley Grundahl, who was formerly Managing Director of Nordic Air Filtration, will continue to oversee business operations.

Qatar: CHRYSO® Group acquires Corrotech Qatar

France's CHRYSO Group has concluded the acquisition of Corrotech Qatar. Created in 2006, Corrotech Qatar is based in Doha and has developed quickly in the Qatari market. It holds a leading position in the market of concrete admixtures and supplementary cementitious materials such as fly ash, micro silica and slag.

With this acquisition, CHRYSO strengthens its position in the Gulf area thanks to this new industrial base. The 19th subsidiary of the group will soon be named CHRYSO Qatar and will offer the comprehensive CHRYSO technologies dedicated to the cement and concrete markets.

Quarrying + Construction + Recycling
28 – 30 June 2016

Hillhead Quarry
Buxton Derbyshire, UK

Hillhead 2016

Register now...
Hillhead 2016

@hillheadshow
#hillhead2016

Follow us now

www.hillhead.com

ETS costs... we can't just pass them on!

Koen Coppenholle Chief Executive of CEMBUREAU, the European Cement Association

In the context of the debate on the future of the EU Emissions Trading Scheme (ETS), one of the issues on the table is the ability (or not) of a sector to pass on to their customers additional costs arising from the purchasing of CO_2 allowances.

Based on a recent study by Pricewaterhouse-Coopers, it is clear that the European cement industry cannot pass through these additional carbon costs onto its customers. This is demonstrated by both economic theory and market data.

Firstly, the ability to pass on such costs is affected by changes in supply and demand. Over the last seven years, the construction industry across the EU has been in a recession. This has had a negative impact on cement demand, which is further compounded by the long business cycle of the sector. This is primarily due to high initial investment costs. As a result, this high supply, low demand environment restricts the carbon cost pass-through possibility of the sector.

Secondly, while exports can be used as a means of tackling this overcapacity, European cement producers face a much greater price pressure in export markets. This is due, in particular, to the fact that many of our main trading partners have yet to implement a comparable climate change policy. Indeed, EU28 export prices are decreasing even more so than local prices and are now just 76% of the 2008 level.

Finally, cement is a homogeneous product. This means that it is facing commodity pricing and can easily be substituted by a competing product either from within a local market or from different geographical markets.

Cement producers in Europe appear to be price takers with nil pass-through: in spite of increasing energy costs, the industry has not been able to adjust prices upwards. If some pass-through rate was applied, it would result in a loss of market share.

Although the construction sector in the EU28 has been in recession, real GDP figures for the third quarter of 2015 showed no recession anywhere across the EU, with recovery speeding up in Spain and remaining at rather moderate rates almost everywhere else. However, the macroeconomic picture remains uneven, as recovery appears to be uncertain and conditional to many potentially hindering factors, primarily subdued domestic demand in the EU and a slowdown in exports, despite a continued depreciation of the Euro, due to a downturn in emerging economies. This is in particular due to plummeting revenues from commodities as the oil price has reached new record lows, pushing emerging economies into a recessionary phase. Deeper-than-expected recession during the third quarter of 2015 in Brazil and two quarterly economic contractions in Russia, among others, contributed to a substantial slowdown in global demand.

The EU's macroeconomic recovery remains disconnected from the construction cycle and appears to be driven by external factors rather than a major rebound in private investment. In addition, geopolitical tensions connected to IS-driven turmoil in Syria and the aftermath of the recent terrorist attacks in Paris are likely to undermine business and consumer confidence within the EU over the next few quarters. In November 2015, business and the Economic Sentiment Indicator (ESI) remained broadly stable in both the Eurozone (at 106.1) and the EU (-0.1 points to 107.6).

On the other hand, the same external factors continued to be supportive of the EU economy and industry. Oil prices continued to decline and this downward trend is likely to continue. Other commodity prices continued to decrease as well, putting pressure on commodity-producing countries and depressing *their* domestic demand. The US$/Euro exchange rate has continued to decline towards parity and reached a record low of 1.08 in December 2015 (down from 1.36 in June 2014) and is expected to fall even further reflecting the interest rate hike in the US, which will result in appreciation of the Dollar.

Cement manufacturing indices in the third quarter of 2015 remained around record lows across the EU, having recorded quarterly drops in the EU and in Italy (where the index reached a new record low). The indices also recorded some improvement in Germany and France and was still on the rise in Spain, albeit around very low levels in historical terms.

EXPLORE THE DYNAMICS OF

POWTECH 2016

19–21.4.2016
IN NUREMBERG, GERMANY

YOUR INDUSTRY.
YOUR NETWORK.
YOUR EXHIBITION.

MAKING BULK SOLIDS TECHNOLOGY FUTURE-PROOF:
IDEAS FOR ALL MECHANICAL PROCESSES

WORLD-LEADING TRADE FAIR

PROCESSING, ANALYSIS, AND HANDLING
OF POWDER AND BULK SOLIDS

TOGETHER WITH
PARTEC 2016

HONORARY SPONSORS
VDI APV

NÜRNBERG MESSE

UK: CMA publishes final cement price announcement order

The Competition and Markets Authority (CMA) has published a final order affecting the suppliers of cement and cementitious products in Great Britain (GB). The order says that these suppliers will be prohibited from sending generic price announcement letters to their customers. Instead, any price announcement letter will have to be specific and relevant to the customer receiving it, including setting out the last unit price paid, the new unit price and specific details of other charges that apply to the customer. The order is effective from 23 January 2016.

The order results from the Competition Commission's (CC) investigation into the supply or acquisition of aggregates, cement and ready-mix concrete in GB, which required Lafarge Tarmac to sell one of its cement plants and Hanson to sell one of its ground granulated blast furnace slag (GGBS) plants to enhance competition in the cement and GGBS markets. The CC also said that it would implement two further remedy measures aimed at reducing transparency in the GB cement markets, comprising a prohibition on generic cement price announcements and restrictions on the disclosure and publication of market data.

Italy: Italcementi loss grows to Euro69.3m

Italcementi's loss has grown by 41.7% year-on-year to Euro69.3m in 2015 from Euro48.9m in 2014. The multinational cement producer blamed this on falling revenue per unit amidst general poor markets, particularly in Egypt. Despite this its revenue grew by 3.5% to Euro4.3bn in 2015 from Euro4.16bn in 2014, boosted by a stronger fourth quarter and currency effects.

Overall cement clinker sales volumes remained unchanged in 2015 at 43.4Mt. Growth in North Africa, Middle East (Egypt and Kuwait) and the more contained growth in North America was counterbalanced by downturns in Europe, Asia and Trading.

Italcementi expects growth in North America, moderate sales growth in Egypt and stability in emerging markets in 2016. Demand for building materials is expected to be stable overall in Italy, France and Belgium, with a general recovery elsewhere in Eastern European and Mediterranean markets. It plans to raise prices in all areas except for India and Thailand.

The group also announced that it has completed the procedures for the sale of non-core assets to Italmobiliare, under the agreements signed by Italmobiliare with HeidelbergCement. Italcementi will sell to its parent Italmobiliare the stakes it holds in renewable energy company Italgen and e-procurement specialist BravoSolution, in addition to a building in the centre of Rome. The asset sales will be wrapped up on finalisation of the agreement between Italmobiliare and HeidelbergCement.

Italy: Buzzi Unicem sales revenue up in 2015

Buzzi Unicem has reported that its revenue rose by 6.2% year-on-year to Euro2.66bn in 2015 from Euro2.51bn in 2014. Clinker and cement sales volumes increased by 1.7% to 25.6Mt from 25.1Mt. It attributed the growth to market recovery in the US and Eastern Europe and an additional contribution from the Korkino cement plant in Russia.

Following a sharp drop in business during the first six months of 2015, the group reported that the recovery in international trade recorded in the second half of the year was weaker and less than expected, especially in mature countries. Subsequently, its growth in 2015 was half of its previous estimate. Construction activity in the last quarter of 2015 was bolstered by a dry and mild climate in Italy, Central and Eastern Europe allowing construction activity to remain at levels above the seasonal average.

The group's net debt fell to Euro1.03bn in 2015 from Euro1.06bn in 2014. It expects from preliminary data that its earnings before interest, taxation, depreciation and amortisation (EBITDA) will be Euro470m in 2015.

Italy: Cementir profit on the rise

Cementir Holding has reported that its profit rose by 3.1% year-on-year to Euro103m in 2015 from Euro100m in 2014. Its revenue rose by 2.2% to Euro969m from Euro948m. It attributed the growth to good performance of operations in the Scandinavian countries, Malaysia, Italy and Egypt.

"The Group ended 2015 with earnings before interest, taxation, depreciation and amortisation (EBITDA) in excess of the target of Euro190m. Improved performance in Scandinavian countries and Italy, plus the stable contribution of the Far East, offset the lower earnings in Turkey and Egypt caused by socio-political tensions across the Mediterranean and the Middle East, as well as the negative impact of the depreciation of some foreign currencies," said Francesco Caltagirone Jr, Chairman and Chief Executive Officer of Cementir. He added that the group reduced its net debt to Euro222m in 2015.

The Italy-based building materials company produced 9.37Mt of cement in 2015, a decrease of 2% year-on-year from 9.56Mt in 2014.

Russia: LafargeHolcim closes plant

LafargeHolcim has permanently stopped clinker production at its Voskresenskcement plant in the Moscow region due to market constraction and oversupply. The decision is part of a reorganisation its cement production structure in the Central region of Russia to fight the impact of the recession in the construction sector. The new structure includes cement production at the Schurovo (Moscow region) and Ferzikovo (Kaluga region) plants, leveraging their competitive cost structure.

"With the reorganisation of its cement production structure in the Central region of Russia the company ensures its viability and is well positioned in the country to meet customer requirements and make a valuable contribution to the Group," said Guillermo Brusco, CEO of LafargeHolcim Russia. Staff at Voskresenskcement will be transferred internally where possible. Current customers of Voskresenskcement will be offered products from the Schurovo and Ferzikovo plants.

Portugal: Semapa sales grow by 11%

Semapa has reported that its cement sales grew by 11% year-on-year to Euro477m in 2015 from Euro430m in 2014. It attributed the increase to growth in turnover of operations in Portugal, Lebanon and Angola and the integration of the Supremo Group on 1 July 2015. Earnings before interest, taxation, depreciation and amortisation for its cement business grew by 14.7% year-on-year to Euro85.4m from Euro74.4m in 2014. However, its pre-tax profit fell to a loss of Euro18.3m from a gain of Euro9.7m a year earlier.

Semapa noted that cement sales in Portugal rose by 3.4% year-on-year in 2015, the highest increase since 2008. In Lebanon it reported a 8.6% year-on-year drop in cement consumption in 2015. In Tunisia it reported a drop in cement demand in the second half of the year. In Angola it reported that cement consumption fell by 11.7%. Despite these market conditions its turnover in Lebanon and Angola grew in 2015.

In Brazil Semapa acquired the remaining 50% of the Supremo Group in June 2015, taking control of its 2Mt/yr production capacity. However, Semapa reported SNIC data that the Brazilian cement market has dropped by 9.2% in 2015. Looking ahead, Semapa forecasts that the cement market is expected to drop slightly in 2016, but with growth in Portugal.

Turkey: Votorantim orders Loesche mill for Sivas 2

Brazilian cement producer Votorantim has placed an order for a type LM 48.4 Loesche mill for grinding cement at its Sivas 2 RM project at its Sivas cement plant. The order was placed on behalf of Votorantim by the Tianjin Cement Industry Design & Research Institute (TDI).

The raw mill will be designed with a capacity of 420t/hr and the material will be ground to a fineness of 14% R90µm. The gearbox will have a power output of 2860kW. The engineering for the cyclone separators is also included in the scope of supply. The lead time for the main components of the mill is eight months and the gearbox will be supplied within the next nine months. The commissioning of the vertical roller mill is planned for the end of 2017.

UK: New Senior VP at Tarmac

Martin Riley has been appointed Senior Vice President of Tarmac. He will report to Ken McKnight, President Europe Heavyside. Riley was previously Managing Director, Aggregates and Asphalt at Tarmac. The appointment is part of the transition of the businesses acquired from Lafarge Holcim into the European Heavyside business of CRH.

In addition, the Tarmac Cement and Lime business will integrate into a new CRH business cluster consisting of UK Cement, Ireland and Spain, led by Oliver Mahon, Senior Vice President, who will also report to Ken McKnight. As part of this reorganisation the former CEO of Tarmac since 2013, Cyrille Ragoucy, will leave the business.

Poland: Gorazdze to raise thermal substitution rate to 80%

Gorazdze Cement intends to cut costs partly by increasing its usage of alternative fuels, according to its CEO Ernest Jelito. As the Polish cement producer is currently operating at a 60-70% of its capacity utilisation rate it has no plans to increase its capacity. Gorazdze Cement has a thermal substitution rate of around 50% at present and it intends to raise this to 70-80%.

Turkey: TÇMB signs agreement with union

The Turkish Cement Manufacturers' Association (TÇMB) has signed a two-year labour agreement with the CIMSE-IS union. Under the terms of the deal workers wages will rise by 10.5% from 1 January 2016, according to CIMSE-IS and Reuters. Subsequently, workers will receive a raise on 1 January 2017 based on an individual factory basis. Adana Çimento, Aslan Çimento, Unye Çimento, Mardin Çimento, Bursa Çimento and Bolu Çimento are members of the union.

Lithuania: Akmenes' revenue drops

Akmenes Cementas has reported that its revenue fell by 6% year-on-year to Euro55.4m in 2015 from Euro59.2m in 2014. It sold nearly 1Mt of cement in 2015. Nearly half of its revenue came from exports to Poland, Scandinavia and Kaliningrad. CEO Arturas Zaremba said that cement consumption in Lithuania fell by 5% in 2014 and by 7% in 2015. He blamed this on increased competition from cement producers in Belarus.

Russia: Sberbank holds 6% of LafargeHolcim

Sberbank CIB, the investment banking arm of Russian lender Sberbank, has announced that it holds 6% of LafargeHolcim following a repurchase deal with Eurocement. Under the terms of the agreement, Sberbank CIB had organised financing for Eurocement Holding AG in return for 37m shares in LafargeHolcim. Eurocement has the right to buy back the shares at a specific price and on a certain date.

The agreement was implemented on 21 January 2016. No further details were disclosed. Before the repurchase deal Eurocement was among the largest shareholders of LafargeHolcim.

UK: Hope Construction Materials to launch bagged cement product

Hope Construction Materials has announced the launch of a new bagged cement product scheduled for later in 2016. The new product, called Professional Grade Cement, will be marketed in the south of England.

"Hope Works has been making cement for more than 80 years and has an outstanding reputation for consistent quality and service. We are delighted to be able to offer our product in our own branded bag to customers for the very first time," said Hope's Commercial Director for Cement, Gary Brennand.

The new product packaging will feature a large ram, paying homage to the company's origin in Derbyshire, which is transparent to ensure the consistent colour of Hope cement is always clearly visible. All the bags will be plastic, weatherproof and packed to give end users confidence that they can store the bags outdoors.

Hope cement had previously been available in bags through a third party supplier. This launch marks the first time Hope cement will be on the company's packaging. The new product follows an 18-month research and development process with consultation of merchants and professional builders.

Sweden: Höganäs Bjuf to build world's largest monolithic refractory plant

Refractory manufacturer Höganäs Bjuf has announced that it is building the world's largest facility for the production of monolithic products in Bjuv, Sweden.

Höganäs Bjuf has been manufacturing refractory products for more than 200 years and already has a leading position in the market. The company says that its investments in the new monolithic plant and its recent investment in one of Europe's most modern laboratories for refractories are 'fully in line with our ambition to be able to offer our customers a wide total solution.'

Höganäs says that the first step in the construction of the plant was taken before Christmas 2015. The plant will be inaugurated on 1 September 2016.

Romania: Sofiane Benmaghnia appointed as CEO of Holcim Romania

Sofiane Benmaghnia has been appointed as the Chief Executive Officer of Holcim Romania effective from 1 April 2016. He will replace François Petry, who has became the CEO of Aggregates Industries, the LafargeHolcim subsidiary in the UK, in December 2015.

Benmaghnia, aged 39 years, has been the general manager of Meftah Cement Operations, Aggregates & Concrete in Algeria since 2011. Previously, he was the Chief Financial Officer of Lafarge Betoane si Agregate in the Middle East for three years. He joined LafargeHolcim group in 1999 as financial analyst.

Denmark/Ireland: FLSmidth takes process and quality order from CRH

Denmark's FLSmidth has been awarded a contract for process and quality optimisation of 17 cement plants acquired by the CRH Group in 2015. FLSmidth's ability to deliver the large number of systems within 14 months was a factor in the order.

The order is the largest advanced process optimisation project awarded to FLSmidth and includes process optimisation of 12 kilns and 40 grinding mills, as well as quality optimisation of 14 raw mills. In addition, the order includes a service agreement, covering all 66 applications, where FLSmidth will provide support and on-going remote monitoring and optimisation by its process specialists.

The contract uses FLSmidth's ECS/ProcessExpert and QCX/BlendExpert products. The ECS/ProcessExpert system aims to improve plant performance by stabilising the process of the plant, optimising the production, managing and correcting process disruptions and minimising wear on plant equipment.

The QCX/BlendExpert system controls the proportioning of raw material feed to raw mills to obtain the desired chemical product quality with respect to chemical constraints, process constraints and material costs.

CRH is the third largest building materials supplier in the world and has more than doubled its cement production volume due to the recent acquisition of 34 plants (including grinding stations), divested as part of the LafargeHolcim merger in 2015. Many of the plants are already using optimisation systems, but CRH chose to standardise on FLSmidth's ECS/ProcessExpert and QCX/BlendExpert solutions.

Turkey: Aşkale Çimento orders KHD grinding units for two plants

Aşkale Çimento has placed orders with KHD for new cement grinding systems at cement plants in Akoluk and Bilecik. Commissioning of both COMFLEX® systems is planned for early 2017.

At Akoluk the new COMFLEX system will be installed in front of a new 100t/hr ball mill. At Bilecik the COMFLEX unit will allow Aşkale Çimento to increase the existing capacity from 100t/hr to 210t/hr at 3800 Blaine. Between 2006 and 2011 KHD supplied three kiln lines to Aşkale plants in Askale, Van and Gümüshane.

KHD's scope includes engineering as well as the supply of mechanical and electrical equipment. KHD will also supervise erection and commissioning of the new systems.

The core equipment of the COMFLEX SC16-3500 clinker grinding system includes: Roller Press RPS 16-170/180 with ROLCOX® system for control and monitoring; Cascade separator, type VS 618 as static classifier; High efficiency separator SEPMASTER, type SKS-VC 3500 as dynamic classifier; System fan HKSK 212/275.

Turkey: TÇMB signs agreement with CIMSE-IS union

The Turkish Cement Manufacturers' Association (TÇMB) has signed a two-year labour agreement with the CIMSE-IS union. Under the terms of the deal workers wages will rise by 10.5% from 1 January 2016, according to CIMSE-IS and Reuters. Subsequently, workers will receive a raise on 1 January 2017 based on an individual factory basis. Adana Çimento, Aslan Çimento, Unye Çimento, Mardin Çimento, Bursa Çimento and Bolu Çimento are members of the union.

Russia: Four power plants for Eurocement

Rolt Company has started project development on four power plants under a contract with Eurocement Group. The plants are intended for cement factories situated in Central and North Caucasian Federal Districts of Russian Federation.

Each power plant will have a total electric output of 100MW. Rolt Company will develop the projects of power plants construction for Lipetskcement (23.2MW), Oskolcement, Kavkazcement and Voronezhsky affiliate of Eurocement Group (15.2MW each).

UK: UNTHA UK appoints Brew as Managing Director

Untha UK has appointed Marcus Brew as its new managing director. Brew was previously the sales director. The previous managing director since 1997, Chris Oldfield, will become the company chairman.

"Having been a part of the business for seven years, it is a pleasure to now lead the company through our next phase of growth. In truth, Chris and I won't feel much of a change, as we've both been concentrating on these responsibilities for some time – the new titles are really just a formality," commented Brew.

Markus Brew, the new Managing Director of UNTHA UK.

US: PCA says cement consumption will grow by up to 5% in 2016

Domestic cement consumption will grow by as much as 5% in 2016, according to a report from the Portland Cement Association (PCA). Edward Sullivan, PCA chief economist noted that 'the fundamentals of our economy are sound' at the 2016 World of Concrete event.

"With the recently passed federal highway bill and continued net increases in new jobs, we see clear indications that positive growth will continue," said Sullivan. The PCA's Market Intelligence Group will release an updated report on US cement consumption in March 2016.

US: Eagle Materials earnings up in third quarter

Eagle Materials has reported that its earnings from its cement business rose by 11% year-on-year to US$41.8m in the third quarter of 2015. The earnings increase was attributed to a 4% increase in average net cement sales prices and record quarterly cement sales volumes.

Cement revenues for the third quarter rose by 9% to US$97.1m. Cement sales reached 1.2Mt, a rise of 1% year-on-year. Eagle also reported that its cement businesses in Texas and Oklahoma was impacted by heavy rains in October and December 2015, which resulted in lower sales volumes in both of those markets. Additionally, in Texas, increased demand for construction grade cement continues to offset much of the impact from lower oil well cement demand.

Bolivia: FLSmidth to supply OK 36-4 cement grinding system to SOBOCE

SOBOCE has awarded a contract to FLSmidth for an OK 36-4 cement grinding system to be installed at its Viacha cement plant in Bolivia. The scope of supply includes cement grinding system equipment, engineering and site advisory services.

This will be the first vertical roller mill for cement grinding in Bolivia and will produce high strength cement with 5000 Blaine. Furthermore, at 4000m above sea level, it will have the highest installed elevation for any OK mill in the Americas. Additional scope of supply includes a longitudinal stacker, a sizer for gypsum and pozzolan, Airtech filter, Ventomatic silos and a packing plant.

Once installed, the new cement mill grinding system and packing plant will allow SOBOCE to increase its production capacity to meet cement demand in Bolivia. FLSmidth installed the existing line at Viacha in the late 1990s and in 2010 an expansion project that enabled the plant to double its capacity.

Mexico: Cemex announces return to positive income in 2015

Cemex has announced its results for the fourth quarter and full year 2015. On a like-for-like basis, for ongoing operations and adjusting for currency fluctuations, consolidated net sales increased by 2% during the fourth quarter of 2015 to US$3.4bn. They rose by 5% for the full year to US$14.1bn. Operating earnings before interest, tax, depreciation and amortisation (EBITDA) (also on a like-for-like basis) increased by 7% during the fourth quarter to US$663m and went up by 9% for the full year to US$2.6bn.

The increase in consolidated net sales, on a like-for-like basis, was due to higher prices of Cemex's products, in local currency terms, across most of its operations, as well as higher volumes in the US, the Mediterranean and Asia. On a like-for-like basis, operating earnings before other expenses, net, in the fourth quarter increased by 11% to US$410m and in the full year increased by 17% to US$1.7bn versus the same periods in 2014.

Fernando A Gonzalez, Cemex Chief Executive Officer, said, "Despite a challenging macroeconomic environment, which has affected many of our markets, our industry and Cemex in particular, we have been able to meet these challenges and deliver strong operating and financial results, on a like-for-like basis."

"Our full-year net income was positive for the first time in six years. In addition, our operating EBITDA increased by 9%, on a like-to-like basis, reflecting our cost-reduction program of US$150m as well as a positive operating leverage in several of our markets, which translated into a 1.1 percentage-point improvement in operating EBITDA margin. I am particularly pleased with the growth in our free cash flow after maintenance capex of more than US$480m, which enabled us to reduce our debt by close to US$1bn during the year."

Sales in Cemex's Mexican operations decreased 19% in the fourth quarter of 2015 to US$672m, compared with US$827m in the fourth quarter of 2014. Operating EBITDA decreased by 10% to US$231m versus the same period of last year.

Cemex's operations in the United States reported net sales of US$967m in the fourth quarter of 2015, up by 5% from the same period in 2014. Operating EBITDA increased 26% to US$173m in the quarter, versus US$138m in the same quarter of 2014.

In Northern Europe, net sales for the fourth quarter of 2015 decreased 18% to US$738m, compared with US$901m in the fourth quarter of 2014. Operating EBITDA was US$71m for the quarter, 14% lower than the same period of 2014.

Fourth-quarter net sales in the Mediterranean region were US$370m, 4% higher compared with US$357m during the fourth quarter of 2014. Operating EBITDA decreased 5% to US$63m for the quarter versus the same period in 2014.

Cemex's operations in South, Central America and the Caribbean reported net sales of US$436m during the fourth quarter of 2015, representing a decrease of 15% over the same period of 2014. Operating EBITDA decreased 25% to US$125m in the fourth quarter of 2015, from US$165m in the fourth quarter of 2014.

Operations in Asia reported a 4% increase in net sales for the fourth quarter of 2015 to US$162m, versus the fourth quarter of 2014, and operating EBITDA for the quarter was US$46m, up by 4% from the same period of 2014.

US: Steve Rowley to retire as President and CEO of Eagle Materials

Steve Rowley will retire as president and CEO of Eagle Materials on 31 March 2016. Dave Powers, Executive Vice President for Gypsum Wallboard at Eagle since 2005, will succeed Rowley as President and CEO. He will also be appointed to the Board of Directors.

"Steve has positioned Eagle for an exciting future. He has led the doubling of the scale of our cement business and has guided the growth of our gypsum wallboard business in achieving its nation-wide scope. He also has successfully led the company through the longest and most challenging construction market down-cycle in US history," said Larry Hirsch, Chairman of the Board. Health reasons were cited for Rowley's retirement.

Dave Powers, aged 65, holds over 35 years of experience in the building materials industry. He joined Eagle Materials (formerly Centex Construction Products) in 2002 as Executive Vice President, Sales and Marketing. In January 2005, he was promoted to his role as Eagle's Executive Vice President for Gypsum (and President, American Gypsum Company LLC).

Peru: Unacem's profit falls by half

Unacem has reported that its profit fell by over 50% to US$40m in 2015 from US$83m in 2014. The Peruvian cement producer blamed lower output, rising costs and a foreign exchange loss in a report to regulators.

Sales rose by 3.4% to US$429m in 2015. However, cement production fell by 2.7% to 5.57Mt. Clinker output fell by 7.3% to 5.72Mt. The company attributed this to delays in infrastructure projects such as Line No. 2 of the Lima metro and a decline in homebuilding. Exports dropped by 5.2% to 0.97Mt.

Unacem said that its domestic market share slipped to 49.6% in 2015 from 49.9% the previous year. Peru's cement production fell 2.5% to 10.4Mt in 2015, according to the cement producers' association Asocem. Nationally, exports increased to 0.36Mt from 0.31Mt.

Sustainable Strength through Innovation

2016 IEEE-IAS/PCA CEMENT CONFERENCE

Dallas, Texas ★ May 15 - 19

MEETING ENVIRONMENTAL CHALLENGES IN A BOOMING TEXAS ECONOMY

- **Attend** the biggest cement industry conference of the year
- **Tour** the Ash Grove Midlothian Cement Plant
- **Discover** the latest advances in environmental controls and technology
- **Experience** the Gaylord Texan Resort and Convention Center in Grapevine, Texas

REGISTRATION IS NOW OPEN

Visit www.CementConference.org

DALLAS 2016

May 15 - 19

IEEE IAS PCA America's Cement Manufacturers™

US: Orcem Americas' plan to build cement mill meets opposition

Irish cement maker Ecocem's US subsidiary, Orcem Americas, has been accused of attempting to influence the planning process in Vallejo, California, where it wants to build a US$50m grinding mill. The mill would be the group's first venture in the US. However, the town's residents are objecting to the proposal on environmental grounds.

The company recently found itself at the centre of a row over its involvement with an unofficial economic committee of Vallejo's city council that some local politicians and campaigners say could potentially breach California law.

Orcem is represented on the Mare Island Straits Economic Development Committee, which is made up of local council members, state officials and private sector interests. Its involvement in the committee, alongside the city's Deputy Mayor, Jess Malgapo, at a time when it was seeking permission to build its facility at a sensitive site in Vallejo, sparked anger among the project's opponents. Some of them have claimed that its activities have potentially breached the Brown Act, a California law that guarantees the public's right to attend and take part in meetings of local councils and legislative bodies. However, the councillors involved, including Malgapo, deny the act was breached, saying that the committee was established to aid the city's economic development and not to pass legislation.

Canada: Falling shipments

Cement manufacturers produced 1.11Mt of cement products in November 2015, down by 12.2% compared to October 2015. Domestic cement shipments fell by 15% from October 2015 to 1.08Mt in November 2015. Including imports, shipments were down by 19.9% to 1.10Mt.

Brazil: InterCement sells quarries

InterCement has sold two quarries, Guarulhos and Barueri, in São Paulo state to Polimix Concreto for US$25m. The sale includes the properties, assets and exploration rights of both quarries.

The quarry sales follows a sale of a 16% stake in Yguazu Cementos (Paraguay) for US$35m that was announced on 21 December 2015. In that sale InterCement retained a 51% stake in Yguazu Cementos to retain control of the subsidiary. The remaining share capital was held by InterCement's Paraguayan partner Concret Mix.

Mexico/US: Cemex contributes to restoration of main trade route

Cemex has contributed cement to the restoration of the Monterrey-Nuevo Laredo highway, the main export-import route between Mexico and Texas, US. With 52% of all of Mexico's imports and exports moving along this highway, it is one of the main trade routes across the Mexican and US border.

Paraguay: INC shuts down kiln for fuel upgrade project

Industria Nacional del Cemento (INC) has shut down its kiln for 30 days to start work on a fuel upgrade project. The US$45m project is intended to allow the kiln to use other fuels as well as the fuel oil that it currently uses. A further 90-day stoppage period has been scheduled for mid-2016. The project is expected to be complete by the end of 2016.

INC's president Jorge Mendez has reassured the public that the cement supply from his plant will not drop during the maintenance period. INC will continue delivering between 50,000 - 55,000 bags/day. The firm has 86,500t of clinker in stock. In addition, the government will import 200,000t of cement to maintain levels. INC is the country's sole integrated cement plant.

Peru: Cementos Pacasmayo's profit rises to US$60.4m in 2015

Cementos Pacasmayo's net income rose by 12.1% year-on-year to US$60.4m in 2015 from US$53.8m in 2014. Its revenue fell slightly to US$351m from US$354m. Its cement production volumes fell slightly by 0.7% to 2.3Mt from 2.35Mt.

The cement producer attributed its profit growth to cost savings despite a 'challenging' operating environment. It managed to hold its cement production volumes at a stable level, due to the ramping up of its Piura cement plant in the fourth quarter of 2015 despite falling volumes from its Pacasmayo and Rioja cement plants.

US: Vulcan Materials appoints four staff to management team

Vulcan Materials has appointed Stan Bass, Michael Mills, Jerry Perkins and Brock Lodge to its management team. Bass, aged 54 years, formerly Senior Vice President (West) has been named to the new position of Chief Growth Officer. Mills, aged 55 years, formerly Senior Vice President & General Counsel, has been named to the new role of Chief Administrative Officer. Perkins, aged 46 years, formerly Assistant General Counsel and Corporate Secretary, has been named General Counsel and Corporate Secretary, succeeding Mills. Lodge, aged 43 years, formerly Vice President & General Manager of Vulcan's Western Division, has been promoted to President of that Division.

Colombia: New VP of Caribbean and Central Region for Cementos Argos

Camilo Restrepo has been appointed the Vice President of the Caribbean and Central Region for Cementos Argos. He replaces Mauricio Ossa, who recently became president of the Colombia construction company Odinsa.

India: LafargeHolcim confirms revised sale plan for Lafarge India

LafargeHolcim has confirmed that it is considering selling its subsidiary Lafarge India. The sale will require the approval of the Competition Commission of India (CCI) as an alternate remedy for the merger of the Group's legacy companies. Lafarge India has a cement production capacity of 11Mt/yr.

The announcement follows a regulatory filing by Birla Corporation stating that it is considering taking legal action against LafargeHolcim for stopping a previous deal. However, LafargeHolcim has not said why it terminated the deal with Birla Corporation.

Originally, LafargeHolcim was in discussion with Birla Corporation for the sale of the Jojobera and Sonadih cement plants in Eastern India that was previously announced. The plants have a combined cement production capacity of 5.1Mt/yr. Due to the current regulatory issues relating to the transfer of mining rights, captive and critical to the two plants, LafargeHolcim was obliged to submit an alternate remedy to the CCI to ensure compliance with the order.

LafargeHolcim now says that an 'alternate remedy' is under consideration by the CCI.

India: New head for LafargeHolcim

Martin Kriegner will be appointed Head of India for LafargeHolcim, effective on 1 March 2016. He will report to Eric Olsen, Group CEO and succeed Bernard Terver who has decided to retire. Kriegner is currently the LafargeHolcim Area Manager for Central Europe.

Kriegner, an Austrian national, joined LafargeHolcim in 1990 and has previously held several senior leadership positions in the Group, including CFO and CEO of the Group operations in Austria as well as Head of Lafarge India and Regional President Cement for Asia. He graduated from Vienna University with a Doctorate in Law and obtained an MBA at the University of Economics in Vienna.

Bernard Terver joined the Group in 1994 and became member of the Senior Management in 2012. He was responsible for Ambuja Cements and ACC in India since 2014 and was appointed Head of India at LafargeHolcim following the merger.

India: New chairman at Kakatiya

Kakatiya Cement Sugar & Industries has appointed Shri P Veeraiah as its chairman and managing director effective from 3 February 2016. He was previously the joint managing director of the company. The appointment has been made following the death of Shri P Venkateswarlu. It is subject to the approval of shareholders, which is expected to be obtained at the next annual general meeting.

New Zealand: Holcim plans rehabilitation of Westport cement plant

Plans for the future use of Holcim's Westport cement plant after it closes are still unknown. Holcim plans to close its Westport plant in 2016 in favour of importing cement from Japan, resulting in 105 staff and contractors losing their jobs.

The company announced in September 2015 that the Westport plant might close at the end of May 2016 and plans were under way for the plant to be demolished and the quarry site rehabilitated. Holcim owned more than 500 hectares of land around Westport, including the Cape Foulwind cement plant and quarry, 11 houses at Cape Foulwind and a rail siding near Westport.

General Manager Ross Pickworth said that no decisions had been made on the future of the company's land and assets in Westport. "The focus is on looking after our people and the work that needs to be done before plant closure. Preparatory and planning work is being carried out with a focus mainly on the plant site, quarry and houses," said Pickworth. Pickworth said that demolition work was unlikely to commence until late 2016, so any potential users had, "Quite some time to register interest."

Philippines: Cement sector grows 14% in 2015

Cement sales volumes grew by 14.3% to 24.4Mt in 2015 according to the Cement Manufacturers' Association of the Philippines (CEMAP). The sales volume was 21.3Mt in 2014. In the fourth quarter of 2015 cement sales rose by 16.6% year-on-year to 6.1Mt from 5.2Mt in the same period in 2014.

CEMAP president Ernie Ordonez attributed the growth to higher investments in construction of the public sector backed with the private sector's confidence in the government, new housing projects with low interest rates and better weather in 2015.

Afghanistan: Jabalo Saraj cement plant to reopen in 2017

The Jabalo Saraj cement plant will reopen in early 2017 according to the ministry of mines and petroleum. A spokesman for the ministry said to local media that the plant is being rebuilt, reported by BBC Monitoring.

The Jabalo Saraj cement plant closed in 1996. The ministry of mines and petroleum has allocated US$1.5m for the reconstruction effort using local engineers.

At present only the Ghori cement plant is operational in the country. According to the ministry it produces up to 420,000t/yr and it only meets 6% of the country's demand.

Australia: Boral profit grows by 23% to US$97.2m for half year

Boral's profit after tax has grown by 23% year-on-year to US$97.2m in the first half of its 2016 financial year. It reported a profit of US$80m for the same period in its 2015 period. It attributed the growth to a strong residential market and growth in New South Wales (NSW) with cost cutting, price rises and slightly higher property earnings for its construction materials and cement business. Overall revenue fell by 4% year-on-year to US$1.6bn.

"The success of the first half is underpinned by a very strong residential construction market in NSW, a solid performance in South-East Queensland, further recovery in the US and a successful growth strategy in the gypsum business in Australia and Asia," said Boral CEO and Managing Director Mike Kane.

Boral's cement business reported a 6% rise in external revenue to US$113m. Profitability was also aided by cost cutting initiatives including improved utilisation of assets and sourcing of raw materials and energy at lower cost.

South Korea: Bid made for Lafarge Halla Cement

The South Korean private equity fund Glenwood Private Equity will join with Hong Kong-based private equity fund Baring Private Equity Asia to buy Lafarge Halla Cement from LafargeHolcim for US$455m, according to investment bank sources.

LafargeHolcim will decide whether to give a final nod to the acquisition proposal ahead of its shareholders' meeting scheduled for March 2016.

India: Kakatiya Cement's Chairman and MD passes away

Kakatiya Cement Sugar & Industries' Chairman and Managing Director, Shri P Venkateswarlu, passed away on 11 January 2016.

Turkmenistan: Production up

Turkmenistan produced over 3Mt of cement from January to November 2015, exceeding its annual capacity, according to local media. Between 2007 and 2015 the country has increased its cement production by a factor of 3.8.

Vietnam: Ministry of Construction expects 74-75Mt of cement consumption in 2016

Around 74-75Mt of cement is expected to be sold in 2016, some 3Mt more than that in 2015. In 2016, no new plants will be put into operation, as the capacity of current plants will meet demands. According to Le Van Toi, Head of the Building Materials Department under the Ministry of Construction, total output of cement will rise in 2016, as a plant of the Cong Thanh Cement Group increased its capacity by 3.6Mt/yr in late 2015.

In 2015, two cement projects were put into operation, raising the number of production lines to 76 with a total designed capacity of 81.5Mt/yr. Over 72Mt of cement is estimated to have been sold in 2015, up by 3% compared to 2014. Some 16.3Mt was shipped abroad, down by 17.3% year-on-year, but domestic consumption rose by 11.1% to 56.5Mt.

Pakistan: Exports in decline since July 2015

Data from the All Pakistan Cement Manufacturers Association (APCMA) show that exports have been in decline since July 2015. Exports declined by 24% year-on-year to 3.4Mt in the seven month period between July 2015 and January 2016 compared to 4.5Mt in the same period a year earlier. However, domestic cement consumption has risen in the same period, according to local press.

"A substantial reduction in the exports has drastically affected foreign exchange earnings of the country and cement makers are finding it difficult to maintain their existence in export markets because of high costs of business in Pakistan and the absence of export incentives," said an APCMA spokesman.

Cement despatches between July 2015 and January 2016 increased by 6.4% year-on-year to about 21Mt compared to about 20Mt previously. Cement sales volumes in the north of the country grew by 14% year-on-year to 14.8Mt from 13Mt. These producers saw exports fall by 22.4% to 2.2Mt from 2.8Mt. Cement sales volumes in the south grew by 23% year-on-year to 3Mt from 2.5Mt. These producers saw exports fall by 29.2% to 1.3Mt from 1.8Mt.

The APCMA recommended that the government should impose an additional 20% duty for cement imports alongside the existing customs duty to protect the local cement industry. It added that taxes on energy inputs such as a gas and coal should be reduced and measures put in place to make exports more competitive.

India: Reliance Infrastructure to sell cement business to Birla Corporation for US$709m

Reliance Infrastructure has sold its cement business to Birla Corporation for US$709m in order to lower its debt. "The transaction is subject to approval of the Competition Commission of India and other applicable regulatory approvals," the company said.

"Reliance Infrastructure today announced the signing of share purchase agreement with Birla Corporation Limited, the flagship Company of the M P Birla Group, in relation to the 100% sale of its subsidiary RCCPL," the company said in a statement. It added that SBI Capital Markets acted as the financial advisors to Reliance Infrastructure for this transaction.

Reliance Infrastructure has an integrated cement production capacity of 5.08Mt/yr at Maihar, Madhya Pradesh and Kundanganj, Uttar Pradesh and a 0.5Mt/yr cement grinding unit at Butibori, Maharashtra. The deal was valued at US$140/t of cement production capacity.

Iran: Jovein Cement wins environmental award

Jovein Cement has won an award for the most environmentally conscious cement manufacturer in Iran.

Reasons for winning the award included: the cement producer's efforts to extend the lifetime of its kiln refractory bricks by optimising the rate of production and thereby the energy consumption of natural gas; the recycling of refractory materials; investing in installing an online pollution analyser on the plant's main exhaust; using electro-filter technology to reduce the amount of cement dust and other general pollution released to the neighbouring community.

Future plans by Jovein Cement include the installation of a waste heat recovery system to recycle up to 30% of the heat generated by the plant. As an ancillary benefit the plant will also be able to heat water used at the site.

Kazakhstan: Huaxin to build plant

The Governor of Aktobe, Berdybek Saparbayev, and Chairman of the Board of Huaxin Cement, Xu Yongmo, have signed an agreement on an investment project for the construction of a cement plant in Kargaly, Aktobe.

Huaxin Cement has decided to invest US$150m in the construction of the 1Mt/yr plant, which will produce different cement types, including oil-well cement. The construction of the plant is scheduled to start in the middle of 2016. The project does not require any investment from the state budget. In addition, it will reduce the need to import cement from Russia.

Vietnam: Plant orders Loesche mills

Song Lam cement plant has ordered four Loesche mills via Sinoma. Two type LM 60.6 Loesche mills have been ordered to grind raw material to a fineness of 12% R90µ, with a capacity of 2 x 520t/hr and a gearbox power of 4600kW. Metal detectors and sealing air fans are also included in the scope of supply. The lead time for the main components of the mill and for the additional units included in the scope of supply is 10 months. The commissioning of the vertical roller mills is planned for the fourth quarter of 2016.

Two type LM 63.3+3 CS Loesche mills have been ordered to grind clinker. These mills are designed with a capacity of 300t/hr of ordinary Portland cement in order to grind the material to a fineness of 4000 Blaine. The gearboxes of these mills each have a power of 7000kW.

China: Probe into excess capacity in north east

The Vice minister of Industry and Information Technology, Xin Guobin, recently led a delegation to investigate excessive cement capacity in north-east China. Xin urged local governments, industry associations and key enterprises to work together to further reduce excessive capacity and try to reverse losses in the cement industry in the region.

Thailand: SCG Cement profit drops 22% in 2015

The cement business of Siam Cement Group (SCG) reported a 22% decrease in profit in 2015 to US$286m from US$368m in 2014. Its revenue fell by 3% year-on-year to US$5bn from US$5.2bn. It blamed the performance on poor market recovery in Thailand. Overall, SCG reported increased profits due to its chemicals business.

"As for the progress of SCG's investments in the Association of Southeast Asian Nations (ASEAN), we are continuing as planned and are able to accommodate and meet the market demand dynamics. The cement plant in Indonesia commenced commercial operation in November 2015, while the cement plants in Myanmar and Laos are expected to begin operation in the middle of 2016 and 2017, respectively. These investments are integral to the ability to support our market expansions and serve our ASEAN customers' demands," said Roongrote Rangsiyopash, President and CEO of SCG.

SCG expects that the ASEAN Economic Community will advance its businesses in key export markets in Cambodia, Laos, Myanmar and Vietnam in 2016. Positive economic trends are also anticipated in Thailand due to government stimulus policies and projects.

China: Shanshui defaults on US$270m bond

Shandong Shanshui defaulted on a US$270m three-year bond that matured on 21 January 2016. It is the second default for its owners, China Shanshui Cement, since November 2015. The move places Shanshui Cement at increased risk of bankruptcy and complicates plans by Tianrui Group to purchase the company. The previous debt default triggered multiple lawsuits from creditors that have already seen some of its assets frozen or put into impending auctioning.

"The underlying cause of Shandong Shanshui's debt problems is unresolved disputes over shareholders' control, which restricted its fund-raising channels," said Shandong Shanshui in a statement. Since the estimated value of the company's assets far exceeds its debt, it expects court-ordered assets sales to bring in less proceeds than claims made by creditors, it added.

China: Tiered electricity prices for cement

China will implement a tiered electricity pricing system for cement plants to promote 'structural adjustment' in the cement industry, according to a circular released by the National Development and Reform Commission (NDRC). The tiered electricity pricing system for the domestic cement industry will be based on comprehensive electricity consumption of clinker and implemented on an annual basis from 1 January to 31 December. Local governments will also be able to implement the system and raise the electricity prices for cement plants.

Ghana: Dangote faces investigation in Ghana

The Ghanaian Ministry of Trade and Industry (MTI) has announced that it will investigate Dangote Cement's operations, following allegations of predatory pricing made by Diamond Cement, according to the This Day newspaper. A ministry spokesman said that it was looking at the 'price of input' in manufacturing cement.

"There was no way Dangote could produce in Nigeria, bring goods into Ghana, pay tariffs and still sell at a price lower than Diamond Cement," said Ahmad Nasir, Deputy Communications Manager at the MTI. Diamond Cement is reported to have complained that competition from Dangote has reduced its cement production from 1.8 million bags to 1.3 million bags.

Jordan: Lafarge proposes urban development for Fuheis

Lafarge Jordan has proposed a US$2.8bn plan to replace its Fuheis cement plant with an urban development, according to the Jordan Times. The company sent an official letter to the Investment Commission in October 2015 informing it of the plan but still has not received any response. The Fuheis cement plant has been non-operational since 2011 when it was converted to petcoke but the local community objected.

Nigeria: Dangote to build two new Nigerian plants

Dangote Cement has announced that it will build new cement plants in Nigeria, in Okpella in the northern part of Edo State and Itori in Ogun State. Dangote said that the new plants are expected to add 9Mt/yr to the company's current output of 29.25Mt/yr, raising it to 38.25Mt/yr.

The Group's Managing Director Edwin Devakumar, made the announcement in Lagos. He explained that the Okpella plant will have one 3Mt/yr cement line and that the Itori plant will deliver 6Mt/yr from two production lines. Both plants are expected to come on stream within the next three years.

Devakumar said the company's expansion drive was targeted at expanding its nationwide presence and reducing the transportation cost component of its operations. He added that the new investments will also lower the cost of production, bring about a future reduction in the price of cement and generate employment opportunities in the host communities.

Group Managing Director for Cement, Onne van der Weijde, said the demand for cement was still rising, considering the population growth in Nigeria. He observed that Nigeria's consumption of cement, at 100kg/capita, was relatively low by international standards, indicating growth potential.

Van der Weijde added that Dangote Cement can supply to the entire western and central Africa region. Dangote Cement currently exports cement to Niger, Ghana and Togo, with plans to also move into the Ivory Coast.

Egypt: More plants will be converted to coal

Suez Cement plans to spend US$77m to convert its Helwan and Torah cement plants to use coal and refuse derived fuel (RDF), according to local media. The Kattameya and Suez cement plants were converted in 2015.

The company intends to start the conversion process in February 2016 at Helwan and in July 2016 at Torah. The upgrade is expected to take 12 - 18 months. Subsequently both plants will use 70% coal for their energy. Helwan Cement will supplement this with 20 – 25% RDF and 5% natural gas. Torah Cement will use 30% heavy fuel oil. These conversions are expected to reduce the company's operating costs.

Meanwhile, South Valley Cement has signed a US$14m contract with Sinoma CDI to convert its plant to burn coal. The contract is expected to be complete by April 2017. South Valley Cement previously signed a US$38m contract for Sinoma to build a grinding line for the plant.

Zambia: Lafarge Zambia commissions Cemengal Plug & Grind grinding plant

Lafarge Zambia has successfully commissioned a Cemengal Plug & Grind cement grinding plant in Ndola, which will produce 100,000t/yr of cement and take the plant's total capacity to 500,000t/yr. It has been constructed on spare land within the Ndola plant.

"This project has utilised very minimal amount of land. It is fitted with state-of-the art technology and has bag filters to aid environmental management," said Lafarge Zambia CEO, Emmanuel Rigaux. He added that the plant will produce Supaset Cement. This will be exported to the Democratic Republic of Congo and other neighbouring countries.

Also present at the event was the LafargeHolcim Group Area Manager for East Africa and Indian Ocean, Dominique Drouet who was on a three day visit to Zambia.

From left to right: Samba Katari (Ndola Plant Manager), Emmanuel Rigaux (CEO of Lafarge Zambia), Hon. Mwenya Musenge (Copperbelt Provincial Minister) and Dominique Drouet (LafargeHolcim Area Manager, East Africa and Indian Ocean).

Arab Union for Cement and Building Materials

21st Arab International Cement Conference and Exhibition

16 - 18 November 2016

Abu Dhabi National Exhibition Centre (ADNEC)

www.aucbm.org

Supported by: global cement MAGAZINE

News in brief

Qatar: QNCC profit up by 10%

Qatar National Cement Company (QNCC) has reported that its profit rose by 10% year-on-year to US$127m in 2015 compared to US$115m in 2014. Revenue increased by 11% to US$321m from US$288m. Gross profit increased by 6% to US$130m from US$123m.

Sudan: Cement production capacity to rise

The Minister of Investment Mudathir Abdul-Ghani has revealed state plans to increase cement production capacity from 3Mt/yr to 5Mt/yr. The aim is to achieve self-sufficiency and to build an export surplus, according to local media.

Saudi Arabia: New appointment at Saudi Cement

Halla Waleed Al-Juffali has been appointed as a member of the Board of Directors (independent director) of the Saudi Cement Company. Her appointment is subject to shareholder approval. She replaces Waleed Ahmed Al-Juffali, who resigned with effect from 4 February 2016 due to health reasons.

Oman: Raysut Cement profit drops by a fifth

Raysut Cement reported a 21.5% drop in fourth-quarter net profit, according to Reuters. The largest cement firm by market value in the sultanate made US$13.4m in the three months ending 31 December 2015, compared with US$17.0m in 2014. Raysut's net profit for 2015 was US$54.6m, down by 23.6% on the US$71.2m it earned in the previous year.

South Africa: LafargeHolcim workers strike

LafargeHolcim staff walked out on Friday 12 February 2016 during a strike over wages, according to the National Union of Mineworkers (NUM) and Pretoria News.

The NUM, which started pay talks with the company in October 2015, was demanding a salary increase of 13% and benefits including a housing grant, according to union shop steward Petrus Mositi. NUM members made up about half of the company's workforce in South Africa.

South Africa: PPC reports 3% drop in sales in first trading quarter of 2016

PPC has reported that its cement sales fell by 3% for its first trading quarter, which ended on 31 December 2015. Cement sales in its South African business declined by 1.6% while its international businesses recorded an 8% decline.

The South African cement producer reported that coastal regions in South Africa achieved positive volume growth. However this was offset by declines recorded in Gauteng and inland regions. During this period, average selling prices fell by 4%.

In Zimbabwe the completion of major infrastructure projects in Zimbabwe has led to declines of over 10% in local sales. Cement exports have also reduced due to exchange rate effects. In Botswana cement sales fell due to competition and weak demand. In Rwanda sales fell due to high rainfall and limited exports. However, the company's new 0.6Mt/yr cement plant was reported to be performing 'satisfactorily' and the kiln has passed its performance test for output and heat consumption.

Liberia: CEMENCO wastes 'endanger residents'

Chemical wastes that are reportedly being disposed of by the Liberian Cement Corporation (CEMENCO) during the demolition of its former cement plant are allegedly posing a serious threat to human lives, residents of adjacent communities have complained.

The company's General Services Manager, James D Gibson, Jr., said that the CEMENCO plant was a grinding plant and not an integrated plant. He said that cement from its old plant was 'caked' or 'baked' cement, which has no asbestos, as had been claimed by residents. He added that the current demolition exercise posed no health risk to local residents.

CEMENCO, which is a subsidiary of HeidelbergCement, was established in Liberia in 1968 and was the only cement plant in the country prior to the demolition of the plant.

Egypt: FLSmidth signs operation and maintenance contract with Arabian Cement Company

Denmark's FLSmidth has signed a contract with Arabian Cement Company (ACC) for operation and maintenance of the production lines at its cement plant near Suez, Egypt. The contract covers five years of operation and maintenance of two production lines with a capacity of 6000t/day each. FLSmidth has been operating and maintaining the two lines since 2008 and 2010, respectively. Both lines were built by FLSmidth.

The scope of supply includes operation and maintenance of two clinker production lines, one coal mill, two alternative fuel handling and dosing installations, four cement mills and six packing lines. The operation and maintenance of the mills and packing lines is an addition to the current scope.

"Arabian Cement Company was our first operation and maintenance customer and we have supplied operation and maintenance services at its plant since 2008. The demonstrated performance over the past nearly eight years was the main motivation for ACC to expand and continue the cooperation with us. The prolongation of the operation and maintenance contract illustrates the strength of our productivity-enhancing 'Design-Build-Operate'-model, where we offer to design, build and operate customers' plants," said Group Executive Vice President, Cement Division, Per Mejnert Kristensen.

Here ***Global Cement Magazine*** presents its monthly review of global cement prices, in US$ for easy comparison. Much more price information (including the latest information on prices and market trends throughout the global cement industry from our price correspondents) is only available to subscribers of ***Global Cement Magazine***.

To get additional prices, you should subscribe - **See page 64**. In this issue subscribers receive more information from Barbados, Nigeria, DRC, Sudan Republic, South Africa, Egypt and Zambia.

Argentina: According to the Chamber of Construction (CAC) in Mendoza, Mendoza Province, prices of cement continue to rise. It reported a rise of 11% for November 2015, a rise of 5% in December 2015, 6% in January 2016 and another increase of 6% from 1-22 February 2016.

According to hardware stores and other retailers in Mendoza, cement is currently priced at US$7.58/bag (50kg), although it is expected that levels could reach US$8/bag during March 2016, also taking the rising value of the US Dollar into account. It is to be noted that cement prices have increased by 56.9% since February 2015, when prices were around US$4.78/bag on average.

Cement firms have cited the rising value of the US Dollar as well as high gas and electricity costs as reasons for the price increases. Another increase is reportedly planned in March 2016, due to the withdrawal of government energy subsidies for cement firms. Businesses and retailers have pointed out the need to restart the 'Precios Cuidados' price control scheme for the construction sector. Some industry sources have commented that building projects, mostly private ones, have been delayed because of rising cement prices.

Ghana: Dr Ekwow Spio-Garbrah, Minister of Trade and Industries, has said that his Ministry is undertaking a thorough evaluation of various interests in the current 'trade-war' between local cement manufacturers and importers. He said the exercise, with references to price increases in other countries, should enable the Ministry to pronounce appropriately on the issue.

Local cement makers continue to claim that cement imports from Nigeria and China are flooding the market, thus making their businesses uncompetitive. However, Spio-Garbrah said any move by Ghana would be in conformity with international trade practices and sub-regional pacts.

He added that the ministry expects the revenues that make up the shop price of imported cement as provided by the exporters to be transparent. He said that competition would make cement price cheaper than it is currently.

Tati Ramarao, General-Manager of Diamond Cement, said the company is not afraid of competition but only wants an equal playing field, adding that, since Nigeria's Dangote Cement started to transport cement to Ghana by road Diamond Cement had had to cut production from 5000t/day to 3000t/day.

Russia: Eurocement Group raised its cement retail prices by 8% on 15 February 2016. The prices for the group's products was increased by US$3.81/t, taking its average price on the market to US$57.20/t as a result. Due to the size of Eurocement, it is expected that concrete producers will also have to raise the prices for their products.

Elsewhere, the average price of cement traded by our correspondent in the North West Federal District of Russia in December 2015 was US$48.71/t.

Kazakhstan: Steppe Cement's cement prices fell by 8% throughout the 2015 calendar year.

Prices are for cement in metric tonnes, unless stated otherwise. Where a source has given a range, the published price is the minimum value.

FOB {+ the named port of origin} = Free On Board: The delivery of goods on board the vessel at the named port of origin (loading), at seller's expense. Buyer is responsible for the main carriage/freight, cargo insurance and other costs and risks.

CIF {+ the named port of destination} = Cost, Insurance and Freight: The cargo insurance and delivery of goods to the named port of destination (discharge) at the seller's expense. Buyer is responsible for the import customs clearance and other costs and risks.

ASWP = Any safe world port.

Conversions to US$ from local currencies are as at the time of original publication.

GLOBAL CEMENT MAGAZINE: *SUBSCRIBE TODAY*

- Independent thinking and analysis
- Global cement industry trends
- Global cement news
- Country reports
- Plant visits and reports
- Industry interviews
- Global cement technology
- Your own copy, every issue!

global cement™ MAGAZINE

SUBSCRIBE TODAY TO GET MORE!

High-res download (printable)

Your own print copy - every issue

Additional cement prices

Global Cement Magazine SUBSCRIPTION FORM - March 2016

To subscribe to *Global Cement* simply fill in this form and fax it to **(+44) 1372 743838**, post it to **Global Cement**, First Floor, Adelphi Court, 1 East Street, Epsom, Surrey, KT17 1BB, UK or scan and email it to **subscriptions@propubs.com**.

First name:_____ Family name:_____

Company:_____ Position:_____

VAT No. including country prefix (required for all EU companies):_____

Nature of business:_____

Address:_____

_____

Phone:_____ Fax:_____

Email:_____ Internet:_____

Date:_____ Signature:_____

I wish to subscribe to Global Cement Magazine for:

☐ **3 years GC €382.5** **(normally €450 - total discount 15%)**

☐ 2 years ***GC*** €270 (Normally €300 - **total discount 10%**)

☐ **1 year GC €150 (11 issues per year)**

_____

Three payment options are available:

☐ Send a cheque payable to Pro Global Media Ltd. to the address above with a completed copy of this form. A paid invoice will be sent to the address you have specified.

☐ Pay by credit card*: Card No: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiry date mm/yy: _____/_____ Security code (last three figures on signature strip) ☐☐☐

Name on card (if different from the subscriber named above)_____

A paid invoice will be sent to the address you have specified.

**Please note, credit card payments will be taken in UK£ using www.XE.com exchange rates on the transaction date. US$, Euro or other local currency amounts charged on your card will therefore vary depending on currency fluctuations.*

☐ Pay by bank transfer (direct payment). Send a copy of this form to Pro Global Media Ltd. at the address above or to the fax number or email address above. An invoice including our bank details for payment will be sent to the postal or email address that you have specified. Please quote the invoice number with your payment. You must pay ALL bank charges related to the transfer.

NB: *Subscriptions are zero-rated for UK VAT but come under the reverse charge system for customers in other EU countries.*

Should I stay or should I go now?

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

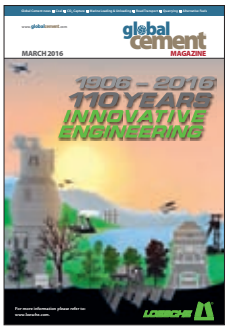
The British Prime Minister David Cameron has returned from Brussels to metaphorically declare that he has done a deal with the continental powers, echoing Neville Chamberlain's infamous 'I hold in my hand a piece of paper,' speech after meeting Mr Hitler in 1938. In his turn, Mr Cameron claims to have wrested important concessions from the current rulers of Europe. The difference between 1938-9 and now being that the deal will be put to the test of the referendum ballot box instead of by being tested by opposing armies. The British people, including the restive Scots (themselves arch-Europeans and sometimes seemingly half-French), will now vote on 23 June on whether to remain in the EU or to leave.

I will not be at all surprised if what the Germans call the 'Inselaffen,' the 'island apes' of Britain, decide to go their own way and vote to leave the EU. The over-riding British characteristic, I would say (and I'm not the first to say it), is an inherent and deep-seated 'bolshiness' or pugnacious objectionability, with an undertone (beneath the outward politeness) of powerful rage. If he asks himself any rational questions, the 'man in the street' will probably ask himself two main questions: 'If I vote to leave or to stay, will I be richer or poorer?' and 'What would life be like outside the EU?' The UK's net contribution to the EU is around £8.5bn each year, but the Confederation of British Industry, a trade association, estimates that the direct economic advantages are close to £80bn in return. However, according to the prognostications of a variety of economic pundits, if the UK leaves the EU, British citizens will either be a little bit better off, a little bit worse off or just about the same as before. So, they obviously don't know, one way or the other. (Bringing to mind the old adage that 'If you laid all the economists in the world end-to-end, they still wouldn't reach a conclusion.')

On the question of what life might be like outside of the EU, (we obviously know what life is like inside the EU), we have a few models to compare with. Neither Norway nor Switzerland are in the EU, but to be able to take full advantage of trade links with EU states, effectively they have to comply with all relevant EU standards and laws. That isn't necessarily a big problem, since the UK already does this. However, like Norway and Switzerland, a UK outside the EU would have to comply with the standards and laws while having no say over them. On the other hand, states and companies wanting to trade with Britain would need to comply with UK laws and standards as well, so it works both ways. In the same manner, part of the antagonism towards the EU is undoubtedly the large number of immigrants that have come to the country in the last 10-15 years, perhaps up to eight million according to some sources (although many have subsequently gone home again). There is an argument to say that each of these people has contributed to the economy, paying taxes, buying goods and services and doing jobs that British people don't want to do (or are not skilled enough to do). Immigrants have certainly driven down the price of some services (a kitchen-fitter friend of mine is often told that to get the quoted-for building project, he has to give a 'Polish price.') The problem with pulling up the British drawbridge to stop people coming in is that there is another drawbridge on the other side of the English Channel - and that the continentals could easily pull theirs up in retaliation. British people like to go on holiday, buy property and do business on the continent. Not being able to do so quite as easily would hurt (but it would hurt both sides, too). Approximately the same number of British people now live and work 'on the continent' as people from the rest of the EU now live and work in the UK. So, it's complicated, and the question of 'should we leave or remain,' does not have a simple answer. If the answer does come back as a 'Leave,' then we can expect to see the biggest political horse-trading fair for the foreseeable future between all those politicians (and lawyers).

The reason that I have dwelled so much on this subject this month, on what seems to be such a parochial UK-centric subject, is not because it is Britain and that I live there, but because of the fact that any state in Europe can ask exactly the same question. I wonder what the world might be like in five years' time if the same question was asked of the populations of France, Germany, Italy, the Netherlands and Sweden (the other current top net contributors to the EU budget) and they all said 'Leave.' There would not be much left of the EU.

Despite the ambivalence of many people in the UK towards the EU, and the fact that many on the continent feel that the British are a bunch of whingers who always want special treatment (undoubtedly there is a hint of truth in this), there was a cheering show of hands at the recent Global CemFuels Conference in Prague (to be reviewed in our next issue). When asked if they would like the UK to stay in the EU, there was unanimous agreement from the assembled delegates from 30 countries: We are stronger together.



global cement™ MAGAZINE

The world's most widely-read cement magazine

Advertisers: March 2016

Arab-International Cement Conference, Abu Dhabi, UAE	61	aucbm1977@gmail.com • www.aucbm.com
BME Services	35	marketing@servicesbme.com • www.servicesbme.com
CASTService GmbH	IBC	castservice@castservice.de • www.castservice.de
DALOG Diagnosesysteme GmbH	IFC, 3	info@dalog.net • www.dalog.net
Gebr. Pfeiffer SE	13	kv-p@gebr-pfeiffer.com • www.gebr-pfeiffer.com
Global EnviroCem Conference, London, UK	37	rob@propubs.com • www.Environmental-Technology.com
Global Slag Conference, London, UK	17	rob@propubs.com • www.GlobalSlag.com/conferences
HARDTOP Gießereitechnologie GmbH	51	info@hardtop-gmbh.de • www.hardtop-gmbh.de
Hillhead Quarrying and Recycling Show 2016, Buxton, UK	45	harvey.sugden@qmj.co.uk • www.hillhead.com
Hotel-Restaurant Alt Vellern	48	hotel@alt-vellern.de • www.alt-vellern.de
IEEE-IAS/PCA Cement Conference 2016, Dallas, USA	55	bill@world-class-events.com • www.cementconference.org
Kima Echtzeitsysteme GmbH	4	contact@kimaE.de • www.kimaE.de
Lindner Recyclingtech GmbH	29	office@l-rt.com • www.l-rt.com
Loesche GmbH	FC	Karin.Boeker-Mahr@loesche.de • www.loesche.com
Maerz Ofenbau AG	9	caren.mueller@maerz.com • www.maerz.com
POWTECH 2016	47	visitorservice@nuernbergmesse.de • www.powtech.de
Refractories WORLDFORUM	39	i.wilk@goeller-verlag.de • www.refractories-worldforum.com
robecco GmbH	8	robert.becker@robecco.de • www.robecco.de
Scantech Pty Ltd	37	geoscan@scantech.com.au • www.scantech.com.au
Starlinger	OBC	office@starlinger.com • www.starlinger.com
Testing Bluhm & Feuerherdt GmbH	53	info@testing.de • www.testing.de

Next issue: April 2016

Advertising deadline: 23 March 2016

Distribution: BAUMA, Powtech, Hanover Fair

Alternative fuels, Pneumatic conveying, Bagging, Palletising

Plant report: BaselCement Achinsky plant, Russia

Country report: Germany

Event Previews: *Global EnviroCem Conference*, London IEEE-IAS/PCA Dallas, *Global Slag Conference*, London, UK

Event Review: *10th Global CemFuels Conference*, Prague

Following issue: May 2016

Advertising deadline: 25 April 2016

Distribution: IEEE-IAS/PCA Conference, Dallas, USA; *3rd Global EnviroCem Conference*, London, UK; *Global Slag Conference*, London, UK

Alternative fuels, Environmental Technology, Wear, Slag

Plant report: Ash Grove Midlothian plant, Texas, USA

Interviews: James Toscas & Ed Sullivan, PCA

Country report: USA (with focus on Texas)

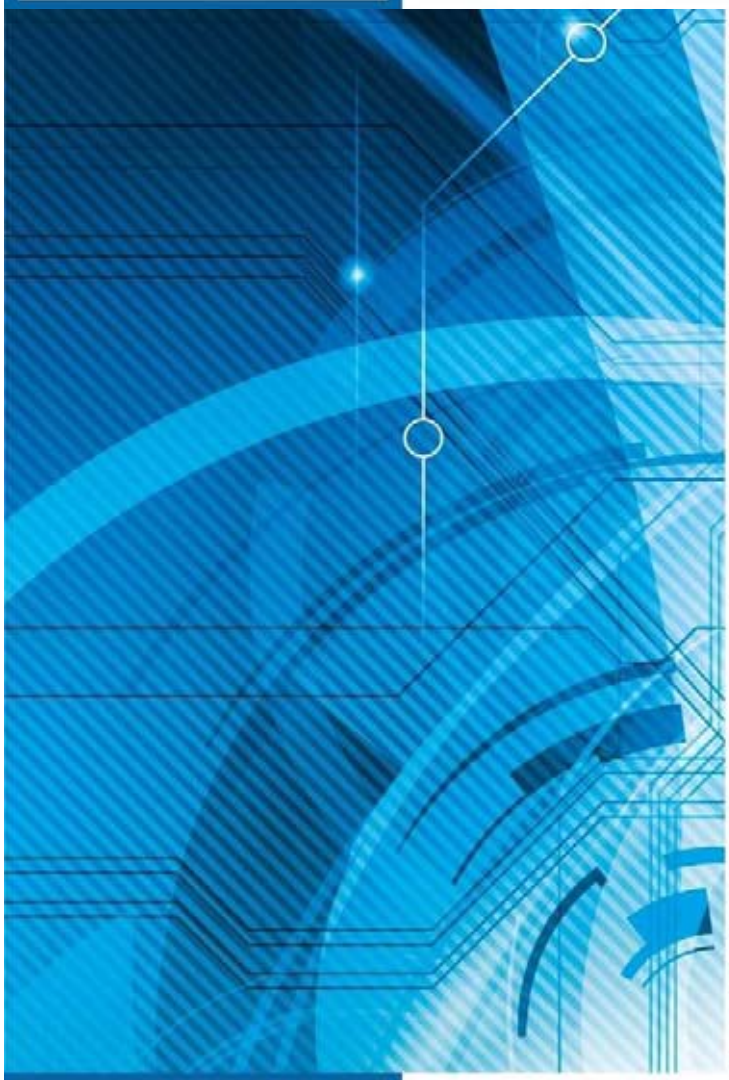
Event Previews: Hillhead 2016, Buxton, UK

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

Sören Rothfahl - soeren.rothfahl@propubs.com +44 (0) 1372 840 857

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

CASTService GmbH



TÜVRheinland®
ZERTIFIZIERT

CASTService GmbH

Limestone and cement industry

Permanently reliable

www.castservice.de

CONVERSION LINE ad*starKON SX+

AD*STAR®

Giving converters a technological head start in block bottom sack conversion.

This performance excellence is achieved through combining outstanding production speeds with market-proven efficiency and unmatchable flexibility.

Visit us at:
Chinaplas 2016, April 25 – 28, Booth W1 B41
Iran Plast 2016, April 13 – 17, Hall 38 Booth 133

Starlinger

Starlinger Head Office:
Sonnenuhrgasse 4, 1060 Vienna, Austria
T: + 43 1 59955, F: -25, office@starlinger.com
www.starlinger.com
A member of Starlinger Group

textile packaging | consumer bags | recycling technology | viscotec