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This issue's front cover...

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Welcome to the May 2016 issue of Global Cement Magazine - the world's most widely read cement magazine! As well as the latest global cement industry news, products and trends, this issue contains a wealth of articles and features.

You will find a very strong American flavour in this issue, to coincide with the 58th IEEE-IAS/PCA Cement Industry Technical Conference and Exhibition, which will take place in Dallas, Texas, USA. As always, Global Cement Magazine will be attend and will be widely distributed to delegates.

Kicking-off our coverage of the US market is David Perilli's article on the US cement industry in 2015-2016, starting on page 24, looking at the latest developments and news from the sector and at forthcoming trends. He then zooms in 0to examine the situation in Texas - the biggest cement-producing state in the Union - starting on page 32. Global Cement Magazine has been fortunate to be able to interview two of the leading lights in the US cement community: James Toscas, president of the US Portland Cement Association (starting on page 36) and Ed Sullivan, the PCA's chief economist and always a hotly-anticipated speaker at the IEEE-IAS/PCA conference (the interview starts on page 41).

Starting on page 46 of this issue of Global Cement Magazine, we also feature the Ash Grove Midlothian cement plant, which will be visited during the field trip of the Dallas conference - and which promises to be a fascinating tour. Also in the US, we have an article starting on page 54 on a new mechanical-biological treatment (MBT) project in West Virginia, built by Entsorga Italia SpA for Essroc Martinsburg, to produce refusederived fuel (RDF) for the cement plant.

Although the US is one of the world's hot-spots in terms of cement market growth, it appears that parts of the rest of the world are booming too - if the huge number of exhibitors and visitors at the recent bauma construction industry trade fair are anything to go by (page 12). It was, after all, the world's largest exhibition of any kind, ever.

We are currently planning our forthcoming issues and we're looking to feature exciting and innovative cement plants around the world. If you would like to spotlight your new cement plant - or upgrade project - then please contact me at rob@propubs.com.

Solert 1

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

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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/

> More information on all events at... www.Cement-Events.com

16th Global Gypsum Conference & Exhibition October 2016, Bangkok, Thailand

www.GlobalGypsum.com

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

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11th Global CemFuels Conference & Exhibition 2-3 February 2017, Barcelona, Spain www.CemFuels.com

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Dheinkalk GmbH has commissioned Silobau Thorwesten has a continuous weighing system with weighing cells and

N to supply a large capacity silo to its Flandersbach lime plant. The silo was originally commissioned in March 2015 and is due to become operational in March 2016. The 42m silo has an explosion-pressure shock-resistant design and is equipped with ATEXconform explosion vents and de-dusting filters from associate company Thorwesten Vent to handle combustible pulverised coal.

The scope of supply for this 1100m³ capacity silo also includes a discharging station for silo trucks which can convey the material pneumatically by rotary piston fan via the silo roof. A dust collector assists the filling process. Additionally, the new silo

.



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on two silo outlets. These installations help feed combustible material into the dosing system. For the circulation operation there is also a duct protected by a shut-off valve.

Besides planning and delivery of the main and sub-systems of the new silo, Silobau Thorwesten also handled the design and erection of the entire steel constructions along with the integration of the components into the existing process chain.

India: Beumer supplies world's highest bucket elevator to ACC

Beumer Group has supplied a HGBW-HC 1250 x 175.3m belt bucket elevator to the ACC cement plant in Wadi. Beumer claims it to be the highest such bucket elevator in the world with a distance of 175.3m between the centres. The size of this system enables a flow rate of around 600t/hour to be achieved, supported by high-strength steel wire belts. Previously Beumer has supplied bucket elevators with a height of 174m and 171m to ACC.

Germany: IKN places order for A TEC GRECO kiln burner

KN has placed an order for an A TEC Grecco kiln burner for HeidelbergCement's cement plant at Burglengenfeld. The project will be completed by the end of 2016. It is part of a general upgrade being conducted at the plant by IKN.

The scope of A TEC Greco's supply includes the engineering, design and manufacturing of a tailor-made combustion system including the required peripheral systems for operation. The burner's thermal power will be 75MW and is intended for use with lignite, sewage sludge, refuse-derived fuel (RDF) and diesel and solvents.

Austria: A TEC to install Rocket Mill for refuse derived fuel production in Austria

A TEC will install a Rocket Mill at a treatment plant of A.S.A. in Wiener Neustadt to produce refuse-derived fuel (RDF). The 7-9t/hour plant will be taken into operation in August 2016. RDF will be supplied from the plant to the cement industry with an output size of up to 15mm.

The Rocket Mill will be mainly produced at A TEC's production site in Eberstein. It will have a 2 x 315kW drive unit and a rotor speed of 580rpm.

US: Martin Engineering launches Arcoplate worldwide

Martin Engineering has launched its bimetallic Wear plate product Arcoplate around the world. Originally the wear plate was sold only in Brazil by the bulk handling products firm.

Martin Arcoplate uses a chromium carbide-rich metal alloy face plate with a steel back plate to resist gouging, erosion, temperature extremes and material build-up. The plate is marketed for excessive wear and material accumulation issues with bulk material handling. It is available in three grades. Alloy 1600 is designed for high abrasion and high impact applications; Alloy 1040 is engineered for moderate impact and cyclic temperatures up to 500°C; Alloy 8668 is suitable for extreme temperature applications, with cycles up to 700°C. Each of the plates derives its abrasion resistance from the M7C3 carbides (1500-1800Hv), with an average of 60% carbide dispersed through a softer, tougher matrix.

Turkey: Adana Çimento places order for Loesche cement mill

A dana Çimento has placed an order for a Loesche cement mill for its Adana cement plant in Turkey. The LM 46.4 vertical roller mill with a transmission power of 2750kW is used for grinding 200t/hour of raw material to white cement. The material will be ground

> to a fineness of 8% R 90µm. A period of nine months will be allowed for delivery so that the Loesche roller mill will be put into operation during the fourth quarter in 2016.

> Previously, Adana Çimento ordered a Loesche mill of type LM 53.3+3 CS for grinding clinker and slag at its Iskenderun cement grinding plant in 2007, pictured left.

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bauma 2016 - Pictures from an exhibition

The world's largest exhibition of any sort, bauma 2016 in Munich, Germany, attracted 3423 exhibitors from 58 countries and approximately 580,000 visitors from 200 countries - a rise of 9%. After Germany, the top ten countries of origin of visitors were Austria, Switzerland, Italy, France, the Netherlands, UK, Sweden, the Russian Federation, Poland and the Czech Republic. A total of 1263 exhibitors from Germany and 2160 from abroad presented their products, developments and innovations on a record 605,000m² of exhibition space. *Global Cement Magazine*'s Paul Brown and Sören Rothfahl spent three days at the event, visiting cement industry participants and sent back this pictorial record.

1: Wolfgang Grosse-Lüger, right, of EIPA wear protection specialists, welcomes interested visitors to the company's stand.

2: Lubricant experts from Fuchs Lubritech were reportedly inundated with visitors during the show.

3: Packing gurus at Haver & Boecker were kept busy throughout the show.

4: Stefan Koch, second from left, in discussion with a visitor at raw material processor Hazemag's expo stand.

5: Turkish tyre protection chain manufacturer, Las Zirh, was displaying its wares this year.

6: Staff members from Metral, Spanish packing specialist, pose for the camera. The company coexhibited with Finnish engineering group Lahti Precision.

7: Caterpillar exhibited around 60 machines occupying 8000m². The CAT770 off-highway truck can be seen on the left.







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8: Spain's Cintasa exhibited for the fifth consecutive time at bauma. The company showed part of its conveyor range.

9: Testing specialist Controls SpA welcomes *Global Cement's* Sören Rothfahl to its stand.

10: FAM from Magdeburg displayed machines and models of major mining projects covering coal, ores and cement.

11: Testing Bluhm & Feuerherdt's sales director Hans-Heinrich Reuter, right, and sales engineer Johny Leu, left, with their latest cement testing equipment.

12: Rossi gear motors displayed the company's latest developments.

13: KettenWulf was promoting its range of specialist chains for industry including, for example, feeder-breaker, apron feeder and bucket elevator chains.

15: Scutti, specialist in cement and lime, focuses on dry bulk storage and handling solutions.

16: Caterpillar's 'Water Walk,' an initiative from Caterpillar Foundation, donated 5 Euro for each lap accomplished by visitors, each carrying a 20L container, representing the 660m people worldwide lacking access to clean water, many of whom walk significant distances to fetch their water. 650,000 Euro in donations had been achieved at the time of this photo.

17: Alimak HEK, manufacturers of silo access lifts often seen at cement plants, displayed mast climbers, hoists and crane lifts at bauma.

18: Conveyor belt experts Sava from Slovenia had a busy time at bauma.

19: RUD group's Erlau tyre protection technology was on display once again this year.

20: SEW Eurodrive exhibited its innovative drive technology for the construction industry.

21: Finland's KATSA Oy was promoting the company's power transmission components. See them at Hillhead 2016 in June.









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14: Liebherr's well-known high-investment displays at bauma were once again a significant highlight, attracting large crowds of potential customers as well as admirers of mining sector technology. Seen here is the company's T264 dump truck.











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EU-Turkey trade and ties - and the status and future of the EU ETS...

Koen Coppenholle Chief Executive of CEMBUREAU, the European Cement Association



The recent agreement between the EU and Turkey has further opened the door to enhancing the existing Customs Union between the two parties. According to the European Commission, Turkey is an important trading partner for the EU. Bilateral trade in goods amounted to Euro140bn in 2015 (with a positive balance of Euro17bn in favour of the EU), making Turkey the EU's fifth trade partner, while the EU is Turkey's first. Moreover, the EU is the source of two thirds of foreign direct investment in Turkey.

The foundations of the Customs Union were first laid in 1963 further to the Ankara Agreement, namely an Association Agreement signed by the European Economic Community and Turkey. Following the establishment of a timetable for the abolition of tariffs and quotas on goods circulating between the two regions, the Customs Union in its current form came into full swing on 1 January 1996 (EU-Turkey Association Council Decision 1/95). This agreement ensures free movement of, amongst others, industrial goods. Furthermore, it ensures common external customs tariffs for these goods, as well as alignment on customs legislation, trade policy and some related economic legislation. In addition, a free trade agreement on coal and steel products came into force on 25 July 1996.

Since the start of Turkey's EU accession process in 2005, trade issues have been tackled both under the Customs Union and, in terms of legislative alignment, under the relevant economic chapters of the accession process. Since then, however, the EU-Turkey trade relationship has been overtaken by a more ambitious EU trade policy of the enlarged EU and the conclusion of bilateral deeper and more comprehensive trade agreements with other key economic partners, which has in some way eroded Turkey's presence in the EU market. Furthermore, the ongoing development of important free trade agreements between the EU and third countries (particularly the EU-US TTIP), offers an opportunity to modernise the Customs Union Agreement and the enhancement of bilateral trade relations which could be a tool for Turkey to underpin its economic reforms, improve its competitiveness and have a better standing to be able to integrate later challenging trade deals such as TTIP.

In April 2015 an EU-Turkey working group recommended that establishment of bilateral trade relations should include modernisation of the Customs Union Agreement. Work is now underway on this, with the Commission currently undertaking an Impact Assessment.

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Cement and the EU Emissions Trading Scheme

On 16 March 2016, CEMBUREAU announced that it had taken note of the report published the same day by Sandbag, focusing on cement and the EU Emissions Trading Scheme (EU-ETSi). In this regard, the Association partly shares the views of Sandbag such as the need for innovation funding to stimulate breakthrough technologies, a closer alignment between allocation and production in the form of a dynamic allocation and a stronger recognition of the role of alternative fuel and raw material use in emission reductions, with the inclusion of a landfill ban on recoverable and recyclable raw materials.

CEMBUREAU deplores, however, that despite interaction with the Association, the Sandbag report still contains a number of factual errors and wrong numbers. The allegations that the ETS has incentivised overproduction do not acknowledge the strides the cement sector has made through investments in the reduction of its CO_2 emissions and ignores the fact that the cement industry has always called for an allocation closer to production and will continue to do so. Moreover, the cement industry in Europe has been one of the hardest hit by the economic crisis with returns on capital below the cost of capital.

We reiterate our call upon policymakers to engage with us to reflect upon ways of:

• Reforming the EU ETS so as to align allocation to production and thus avoid overallocation;

• Providing the best performing plants in Europe with an incentive for the efforts done and continue to incentivise the 95% other plants to move closer to benchmark;

• Integrating the contribution of our sector to the circular economy into the overall climate change policy and CO₂ reduction efforts, through the design of its manufacturing process (recovery of energy and recycling of raw materials) and through the recyclability of its end-product concrete;

• Financing the risk part of breakthrough technologies whereby the private sector takes a responsibility along with the public sector to turn innovation projects into reality.

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Germany/Italy: HeidelbergCement announces integration plan for Italcementi

eidelbergCement has detailed its plans to integrate Italcementi into its business. Key details of the plan include the sale of Italcementi's Belgium operations along with the retention of the Italcementi brand and headquarters. The acquisition is expected to result in up to 260 job losses at Italcementi's base in Bergamo with the full inte-

gration plan expected to be complete by 2020.

Bernd Scheifele, CEO and Managing Board Chairperson of HeidelbergCement said "It is important for us to preserve Italcementi's strengths and professional expertise, which have ensured its success in Italy and abroad. I am convinced that we will be able to achieve the planned Euro400m in synergies and that we will bring Italcementi back to profits."



Bernd Scheifele, CEO and Managing Board Chairperson, HeidelbergCement

The acquisition is dependent on approval from the European Commission and the Federal Trade Commission. On 1 April 2016, HeidelbergCement formally submitted the merger plan to the European Commission.

HeidelbergCement decided to sell Italcementi's entire Belgian operations in order to remove all overlaps between the activities of HeidelbergCement and Italcementi in Belgium and the Netherlands. Divestment preparations, supported by BNP Paribas, have already started and 'significant' interest has been noted.

The plan presented in Bergamo by Scheifele intends to keep the industrial network and plants in Italy as well as the Italcementi brand. In addition, Italcementi's i.Lab, based in Bergamo will become the home of the product

research and development division of the whole group.

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In order to streamline the overall group organisation, some staff and administrative functions will be centralised in Heidelberg. Around 170 people will receive relocation offers to other offices within the group. Any redundancies in Bergamo, which could potentially affect between 230 and 260 people, will be handled using Italy's

temporary layoff scheme and severance packages will be negotiated with the unions. At the end of the transition period in 2020, about 210 to 250 professionals will remain in Bergamo. HeidelbergCement expects the closing of the acquisition of the 45% stake to be finalised in early July 2016 depending on the decision of the cartel authorities in Europe and the USA. Implementation of the integration plan will start after the closing.

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NEWS: EUROPE



E cocem is to open a new terminal at Runcorn to increase its exports of slag cement to the UK, with a second terminal in the south east of the UK to be opened later in 2016, according to the Irish Times. It has invested Euro5m towards building both terminals. The ground granulated blastfurnace slag (GGBS) producer is targeting the UK market due to demand for cement coupled with changes in the coal and steel industries.

The company says it has received orders for 0.2Mt of slag cement in its first year and that it is not taking any further orders. Opening its second terminal in the UK is anticipated to give it access to 80% of the UK market. Ecocem produces slag cement at three grinding plants in Dublin in Ireland, Moerdijk in the Netherlands, and at Fos in France.

Ukraine: Ukrcement urges government organisations to fight counterfeit cement

U krcement, the Ukranian association of cement producers, has urged government agencies to be more effective in preventing sales of counterfeit packaged cement. A study by Ukrcement with the NGO Union of Ukrainian Consumers has reportedly shown a rise in volumes of counterfeit product at large DIY retail chains.

"Ten samples [of packaged cement] were bought in several DIY supermarkets in Kyiv during the third phase of the project in early 2016. The conclusion is that the situation with counterfeit cement has been worsening. Violations have been revealed in all the chains," said Ukrcement CEO Roman Skylsky. "We insist on toughening oversight over the quality of cement programs and punishment for the sale of counterfeit products."

Ireland: Irish Cement defers plan to burn tyres at Limerick plant

rish Cement has deferred its plan to co-process tyres at its Limerick cement plant. According to the Irish Examiner, planning was lodged in late February 2016. A spokesperson for Irish Cement however said that the planning application was not available for public inspection due to a 'procedural' matter. They added that the company was working with the Limerick City and Country Council to resolve the issue.

Local Green Party candidate James Gaffney raised concerns about the plant upgrade in local press in mid-March 2016, alleging that no public consultation was being carried out on the plant's plans and that the application was being fast-tracked. Irish Cement denied these claims.

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UK: Competition and Markets Authority refers Breedon Aggregates purchase of Hope Construction Materials for further investigation

The Competition and Markets Authority (CMA) has referred the proposed acquisition of Hope Construction Materials by Breedon Aggregates for further investigation unless Breedon can take action to address competition concerns. An initial study by the CMA found that competition issues might arise in 27 ready-mixed concrete sites, resulting in potential price rises for end consumers. The study ruled out any competition issues with regards to the companies' aggregates and cement markets.

Sheldon Mills, CMA Senior Director of Mergers stated "The vast majority of the merger raises no concerns but there are

Switzerland: LafargeHolcim confirms divestments in South Korea and Saudi Arabia and enlargement in Morocco

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afargeHolcim has confirmed plans to divest its assets in South Korea and Saudi Arabia and to enlarge its presence its Morocco. The announcement was made as part of the release of its annual results 2015. The sales form part of the group's Euro3.2bn divestment program.

In Morocco, the group signed an agreement with SNI, its partner in the country, at the same time as the Lafarge-Holcim merger to enlarge its joint-venture by merging Lafarge Ciments Maroc and Holcim Maroc to create LafargeHolcim Maroc. LafargeHolcim and SNI would own a 64.7% stake in the new company once the merger is complete. The group expects to gain synergy savings of Euro41m over two years from the merger.

LafargeHolcim and SNI also agreed to create a common platform in French-speaking Sub-Saharan Africa. The merger is expected to close in the third quarter of 2016 subject to regulatory authorities' approval, customary closing conditions and approval by the shareholders of Lafarge Ciments Maroc and Holcim Maroc.

In South Korea, the group has confirmed that it has signed an agreement with a consortium of private equity funds - Glenwood and Baring Asia - for the divestment of Lafarge Halla Cement in South Korea for Euro427m. The sale is expected to complete in the second quarter of 2016. Lafarge Halla Cement runs one 8.3Mt/yr integrated cement plant, a distribution network across the country and has around 500 employees.

In Saudi Arabia the group has signed an agreement for the sale of the Group's 25% stake in Al Safwa Cement Company to El-Khayyat Group for total proceeds of Euro120m. This transaction is expected to close in the course of the third quarter of 2016.

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a number of areas where the companies compete strongly with each other for customers and the concern is that the loss of such rivalry could lead to price rises for customers. The businesses may now resolve these concerns or face a detailed investigation." Should Breedon not take action, an in-depth phase two investigation will be conducted by the CMA.

Breedon responded that the CMA's response was expected. Subject to agreement with the CMA on appropriate remedies, Breedon expects to complete the acquisition later in 2016. Breedon announced in November 2015 that is was planning to buy Hope Construction Materials for Euro480m.

Ireland: CRH named in Euro34bn lawsuit by Palestinian activists

CRH has been named in a Euro34bn lawsuit filed in Washington DC by Palestinian activists against a group of businesses operating in Israel. The activists are trying to sue various groups with connections to Israel for allegedly 'profiteering' from the building of Jewish settlements in the West Bank, according to the Irish Times.

The Irish building materials company sold its 25% stake in Mashav, which owned the Israeli cement producer Nesher, in December 2015. However, the lawsuit is targeting CRH over its past co-ownership. The lawsuit accuses Nesher of supplying concrete for the foundations of Jewish settlements, for building barriers in the West Bank and for allegedly extracting minerals from Palestinian territory.

Norway: Norcem signs record contract for 0.2Mt of cement

Norcem, the Norwegian subsidiary of HeidelbergCement, and Acciona Ghella JV have signed an agreement for the cement supplies to the Follo Line Project in Oslo. The supply of 280,000t of cement over a three-year period is Norcem's largest contract ever.

"This is a milestone for HeidelbergCement in Norway and will put great demands on both production and logistics," said Bernd Scheifele, CEO and Chairperson of the managing board of HeidelbergCement. "Our subsidiary Norcem made the best offer and it has the necessary production capacities and logistics to supply were due to the required volumes to this outstanding project in Norway." The cement supplies will start in mid to late April 2016.

The Follo Line Project is currently the largest transport project in Norway and includes the country's longest double track railway tunnel at 20 Km. The new railway track runs between Oslo Central Station and the new station in the municipality of Ski in the Follo district, south of Oslo. It will enable a 50% reduction in journey time between Oslo and Ski. The project is scheduled to be finalised at the end of 2021.



Alegal challenge to the cancelled Titan American Castle Hayne cement plant has ended following the termination of a challenged air pollution permit by the North Carolina Division of Air Quality. Titan rescinded the permit, following its announcement in March 2016 to cancel its cement plant project. It was originally issued in 2012.

"For years, Titan and the Department of Environmental Quality (DEQ) tried to keep citizen groups from getting a hearing on significant and avoidable air pollution from this proposed plant," said Geoff Gisler, senior attorney at the Southern Environmental Law Center who represented the North Carolina Coastal Federation, Cape Fear River Watch, PenderWatch & Conservancy and the Sierra Club. "We have achieved the goal of this lawsuit - protecting citizens of New Hanover and Pender counties from Titan's pollution when the DEQ failed to do so."

Titan will continue to operate a cement terminal at the site. On 12 April 2016, the North Carolina Court of Appeals granted the requests of multiple citizen groups to dismiss the appeal because the approval of the plant had been withdrawn, according to the Southern Environmental Law Center.

Venezuela: Venezuelan union urges government to invest in ailing cement industry

Representatives from the Sintuecav union have urged the government to invest in the cement industry. The union said that if no money is provided then Venezolana de Cementos might not be able to continue operations past June 2016, according to El Informador. Sintuecav added that cement production has more than halved since the country nationalised its cement industry in 2008. Before nationalisation, Venezolana de Cementos exported clinker from its Pertigalete cement plant. From January to September 2014 it imported 0.12Mt of clinker from Peru and Spain.

Brazil: Brazil 2016 first quarter sales drop by 14.5%

Cement sales have fallen by 14.5% year-on-year to 13.9Mt in the first quarter of 2016 from 16.3Mt in the same period in 2015 according to the Sindicato Nacional da Indústria do Cimento (SNIC). Local cement companies estimate that sales and apparent consumption will fall by up to 13% in 2016.

A survey by SNIC shows that the sales began falling in mid March 2014 due to problems in the construction industry. However, SNIC president José Otávio de Carvalho stated that this is not the worst crisis faced by the cement industry. In 1982 cement consumption fell to 19Mt from 27Mt in 1981.

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Canada: CSA Group announces first environmental product declaration for Cement Association of Canada

NEWS: THE AMERICAS

CSA Group has announced the registration of its first environmental product declaration (EPD) by the Cement Association of Canada. The registration is for general use and portland-limestone cements.

"Cement is used virtually exclusively to make concrete, a material that is literally the foundation of modern society and that will play a key role in the transition to a low carbon and climate resilient future," said Michael McSweeney, President and CEO of the Cement Association of Canada. "The cement and concrete industry is committed to doing all it can to help in this transition. Not only are EPDs an important tool for providing data and transparency on materials but also to support complex integrated design processes that help maximise the role that materials like concrete can play in advanced energy efficient design."

CSA Group is a not-for-profit standards organisation based in Canada. EPDs provide a standard way to communicate the environmental impact of available products and can be used as part of the life-cycle assessment of a building. EPDs can measure environmental impacts from raw material extraction to the end product. They take into account factors such as overall energy use and efficiency, emissions and waste generation.



US: US\$90m upgrade starts at GCC Dacotah cement plant in Rapid City

The GCC (Grupo Cementos de Chihuahua) Dacotah cement plant in Rapid City, South Dakota has started a US\$90m upgrade. The project will include new kiln equipment, provision for co-processing alternative fuels and improvements to the plant's shipping operations, according to the Rapid City Journal. The upgrade will increase the plant's cement production capacity to 1.3Mt/yr.

Brazil: Votorantim cement sales volumes fall by 6% to 35Mt in 2015

Volumes fell by 6% yearon-year to 35Mt in 2015 from 37Mt in 2014 blaming the loss of sales volumes on the poor economic situation in Brazil. However, net revenue from the group's cement business rose by 6% to US\$3.82bn due to currency variations and growing sales outside of Brazil.

Overall across all business sectors Votorantim reported that its revenue rose by 11% to US\$8.57bn. This was supported by higher metal prices in Brazil and positive effects from the consolidation of the group's foreign operations. Net income dropped by 77% to US\$103m.

THE AMERICAS: NEWS

US: Cemex fined for 2014 worker death in Kentucky

Kosmos Cement, a subsidiary of Cemex, has pleaded guilty to violating workplace safety standards. It is liable to be fined to up to US\$400,000 towards the death of a worker at its Louisville cement plant in Kentucky in 2014. Michael Egan, Cemex's executive vice president and general counsel, entered the guilty plea for the company. Contract employee Felipe Mata Vizcaya fell to his death after opening an elevator door when the elevator car wasn't there, according to the Courier-Journal newspaper.

Cemex is required to pay US\$200,000 immediately and the balance if it doesn't make required repairs within three years. It has also pledged to design, operate and test all elevators at the site to meet national safety standards and to install additional safety features.

In a statement, US Attorney John C. Kuhn called the matter "one of the worst cases of negligence on the part of a company." The company was accused of violating the Mine Safety and Health Act, and the case was investigated by the US Labor Department's Mine Safety & Health Administration.

Venezuela: Raw material shortages disrupts production at Invecem

Production has been disrupted at the Industria Venezolana del Cemento (Invecem) cement plant due to a lack of raw materials. Despite this, a new 1Mt/yr production line at the plant was inaugurated on 3 March 2016. The upgrade cost US\$168m according to the El Carabobeno newspaper. Other problems reported at the site include machine failures.

US: Georgia Power starts activity to close 29 ash ponds

Georgia Power has started preparation activity to permanently close all of the company's 29 ash ponds located at 11 coal-fired generation facilities across Georgia. Twelve ponds are scheduled for closure by mid-2018, 16 are expected to close by 2026 and one pond is expected to close by 2030. At present, around 50% of the coal combustion by-products Georgia Power produces are used to make Portland cement, concrete, cinder blocks and gypsum wallboard.

"Our primary focus throughout the closure process is maintaining a reliable generation fleet, while conducting the closure process in the most efficient way possible," said Mark Berry, vice president of environmental affairs for Georgia Power. The company will upgrade each plant to accommodate the dry handling of Coal Combustion Residuals (CCR) required by new federal regulations. The closure of all 29 ash ponds is expected to cost over US\$1bn over the next 10 years. In addition, the company has invested approximately US\$5bn in new environmental compliance technologies for its coal-fired generation fleet.



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David Perilli, Global Cement Magazine

The US cement industry in 2015 and early 2016

As the third largest producer in the world, the United States (US) cement industry sits at a pivotal moment. Growth has picked up following the financial crash of 2008 but something is stopping this industry giant from resuming its full potential. Here, Global Cement looks at a brisk fifteen months for the US sector from the start of 2015 through to the end of the first quarter of 2016.

Production and consumption trends

In 2015 the US produced 80.4Mt of OPC and 2.4Mt of masonry cement from 99 plants in 34 states. This represented a slight increase from 2014, according to the USGS. It placed the value of sales at US\$9.8bn with 70% of these sales used to make concrete. Texas, California, Missouri and Florida remained the top four cement-producing states, in that order, from 2014. However Alabama overtook Michigan to be the fifth largest cement producing state in the country in 2015. Together, these five states produced nearly 50% of all US production.

The Global Cement Directory 2016 lists 98 integrated cement plants in the United States that hold a total production capacity of 116Mt/yr. Figure 3 shows the updated integrated cement assets in the country and their capacities. They are operated by a range of multinational and local players.

The US consumed an estimated 93Mt of cement in 2015, a 4.3% rise from 89.2Mt in 2014. The Portland Cement Association (PCA) originally forecast an 8% rise in cement consumption for 2015 in late 2014, based on similar growth in that year. As 2015 progressed it then cut its forecast to 5% growth due to the strength of the US Dollar and high oil prices. "The main indicators pointing to lower intensity levels are uneven regional construction activity, a slowdown in the number of starts, and the increased use of supplementary cementitious materials in concrete," said Ed Sullivan, chief economist and group vice president at PCA, at the year end. He added that lower oil prices had significantly reduced construction activity in energy-dependent areas such as Texas and North Dakota.

Top five cement producers

LafargeHolcim

LafargeHolcim became the largest cement producer in the US on 15 July 2015 when it officially launched. It operates 15 integrated cement plants with a cement production capacity of 22Mt/yr according to the Global Cement Directory 2016. It has a presence in most parts of the country with the exception of the south-western states. LafargeHolcim reported a workforce of 11,265 at the close of 2015.

LafargeHolcim reported a continuing recovery of sales in the US in 2015. Its cement sales rose by 4.2% to 21.8Mt in 2015 from 20.9Mt in 2014 and it attributed this to growing residential investment. Sales growth was noted particularly in the second half of the year. Despite the growing revenue it re-



Right: The Essroc Nazareth cement plant in Pennsylvania. HeidelbergCement announced in July 2015 that it was purchasing a controlling stake in Italcementi, owner of Essroc.



ported reduced demand in Texas, Oklahoma and the Dakotas, where oil and commodity investment were under pressure.

Heidelberg Cement and Italcementi

HeidelbergCement is set to become the country's second largest cement producer when its acquisition of Italcementi completes in July 2016. The progress so far on the acquisition of Italcementi by HeidelbergCement is listed below. HeidelbergCement, through its local subsidiary Lehigh Cement, operates 12 plants with a capacity of 12.2Mt/yr, including a joint-venture in Texas. It has a presence in most areas of the country. Italcementi, through its subsidiary Es-

sroc, operates four plants with a capacity of 5.2Mt/yr. Its assets are concentrated in the mid-eastern states.

In its annual report for 2015 HeidelbergCement reported that its cement and clinker sales volumes, ignoring its joint-venture Texas Lehigh Cement, rose by 1.9% year-on-year to 12.3Mt. Its North and West Regions and its two white cement plants recorded the highest rise in volumes. It too, like LafargeHolcim, noted the negative impact of low oil prices on its cement sales in its South Region.

Italcementi reported growing cement sales volumes in the US in 2015 despite weakness in Puerto Rico. Overall cement and clinker sales volumes in North America rose by 1.4% in 2015.



COUNTRY REPORT: USA



tion capacity, inclusive of white cement and mothballed plants. Source: Global Cement Directory 2016, research performed for the Global Cement Directory 2017 and company websites.

ALABAMA (7.39Mt/yr)

1. Holcim, Theodore, 1.9Mt/vr. 2. Cemex, Demopolis, 1Mt/vr. 3. Cementos Argos, Roberta, 1.7Mt/yr. 4. Lehigh, Leeds, 0.85Mt/yr. 5. National Cement. Ragland, 1.94Mt/yr.

ARIZONA (3.24Mt/yr)

6. Salt River, Clarkdale, 1.13Mt/vr. 7. Drake, Paulden, 0.66Mt/vr. 8. CalPortland, Rillito, 1.45Mt/yr.

ARKANSAS (2.00Mt/yr)

9. Ash Grove, Foreman, 2Mt/yr.

CALIFORNIA (13.53Mt/yr)

10. Lehigh, Redding, 0.78Mt/yr. 11. Lehigh, Permanente, 1.5Mt/yr. 12. Lehigh, Tehachapi, 0.8Mt/yr. 13. National Cement, Lebec. 1.6Mt/vr 14. CalPortland, Mojave, 1.55Mt/yr. 15. Mitsubishi, Lucerne Valley, 1.8Mt/yr. 16. TXI (Martin Marietta), Riverside, 0.12Mt/yr. 17. TXI (Martin Marietta), Oro Grande, 2.2Mt/yr. 18. Cemex, Victorville, 3.18Mt/yr.

COLORADO (3.50Mt/yr)

19. Cemex, Lyons, 0.6Mt/yr. 20. Holcim, Portland, 1.9Mt/vr. 21. GCC Rio Grande, Pueblo, 1Mt/yr.

FLORIDA (6.55Mt/vr) 22. Suwannee Cement,

Suwannee, 0.85Mt/yr. 23. American Cement. Sumterville, 1.1Mt/yr. 24. Cemex, Brooksville, 1.5Mt/yr. (Part mothballed). 25. Titan Florida, Pennsuco, 2Mt/yr. 26. Cemex, Miami, 1.1Mt/yr.

GEORGIA (0.85Mt/yr) 28. Cemex, Clinchfield, 0.85Mt/yr.

ILLINOIS (2.32Mt/yr) 29. St. Marys Cement, Dixon, 0.62Mt/vr. 30. Illinois Cement (Eagle), La Salle, 1.1Mt/yr.

32. Lafarge, Joppa, 0.6Mt/yr. (Expanding to 3.2Mt/yr).

INDIANA (3.56Mt/yr)

33. Essroc, Logansport, 0.43Mt/yr. 34. Buzzi Unicem. Greencastle, 1.35Mt/yr. 35. Lehigh, Mitchell, 0.78Mt/yr. 36. Essroc, Speed, 1Mt/yr.

IOWA (1.95Mt/yr)

37. Lehigh, Mason City, 0.95Mt/yr. 38. Lafarge, Davenport, 1Mt/yr.

KANSAS (3.25Mt/yr)

39. Ash Grove, Chanute, 1.85Mt/yr 40. Lafarge, Fredonia, 0.4Mt/yr. (Mothballed) 41. Monarch Cement, Humboldt, 1Mt/yr.

KENTUCKY (1.65Mt/yr) 42. Cemex / Buzzi Unicem, Louisville, 1.65Mt/yr.

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MAINE (0.8Mt/yr) 43. Giant, Thomaston, 0.8Mt/yr.

MICHIGAN (4Mt/yr) 44. St. Marys Cement, Charlevoix, 1.4Mt/yr. (expanding to 2Mt/yr by 2015). 45. Lafarge, Alpena, 2.6Mt/yr.

MARYLAND (4.2Mt/yr) 46. Holcim, Hagerstown, 1Mt/yr. 47. Lehigh, Union Bridge, 3.2Mt/yr.

MISSOURI (10.15Mt/yr) 48. Continental Cement, Hannibal, 1.25Mt/yr. 49. Central Plains Cement (Eagle), Sugar Creek, 1.2Mt/yr. 50. Buzzi Unicem, Festus, 2.3Mt/yr. 51. Holcim, Ste. Genevieve, 4Mt/yr. 52. Buzzi Unicem,

Cape Girardeau, 1.4Mt/yr. MONTANA (1.43Mt/yr)

53. Ash Grove, Montana City, 1Mt/yr (est). 54. Holcim, Trident, 0.43Mt/yr.

NEBRASKA (1Mt/yr) 55. Ash Grove, Louisville, 1Mt/yr.

NEVADA (0.55Mt/yr) 56. Nevada Cement (Eagle), Fernley, 0.55Mt/yr.

NEW MEXICO (0.6Mt/vr) 57. GCC Rio Grande, Tijeras, 0.6Mt/yr.

NEW YORK (2.21Mt/yr) 58. Lehigh, Glens Falls, 0.5Mt/yr. 59. Lafarge, Ravena, 1.71Mt/yr. (Expanding to 2.8Mt/yr by 2016).

OHIO (1.22Mt/vr) 60. Lafarge, Paulding, 0.46Mt/yr. 61. Cemex, Fairborn, 0.76Mt/yr.

OKLAHOMA (2.32Mt/yr) 62. Buzzi Unicem, Pryor, 1Mt/yr. 63. Central Plains Cement (Eagle), Tulsa, 0.6Mt/yr. 64. Holcim, Ada, 0.72Mt/yr.

OREGON (1Mt/yr) 65. Ash Grove, Durkee, 1Mt/yr.

PENNSYLVANIA (6.7Mt/yr)

66. Armstrong, Cabot, 0.35Mt/yr. 67. Cemex, Wampum, 0.86Mt/yr. (Mothballed). 68. Lafarge, Whitehall, 0.82Mt/yr. 69. Lehigh, York, 0.13Mt/yr (White). 70. Buzzi Unicem, Stockertown, 1Mt/yr. 71. Essroc, Nazareth, 2Mt/yr. 72. Giant Cement, Bath, 1.2Mt/yr. 73. Lehigh, Evansville, 1.2Mt/yr.

SOUTH CAROLINA (4.45Mt/yr) 74. Giant Cement,

Harleyville, 1.15Mt/yr. 75. Holcim, Holly Hill, 2.2Mt/yr. 76. Cementos Argos, Harleyville, 1.1Mt/yr.

Chattanooga, 1Mt/yr.

TEXAS (15.98Mt/yr)

80. Cemex, Odessa, 1.4Mt/yr. 81. Ash Grove Midlothian, 1Mt/vr. 82. Holcim, Midlothian, 2.4Mt/yr. 83. TXI (Martin Marietta) Midlothian, 2.4Mt/vr 84. Buzzi Unicem, Maryneal, 0.55Mt/yr. (Expanding to 1.20Mt/yr). 85. Lehigh, Waco, 0.13Mt/yr (White). 86. Lehigh/Eagle Materials, Buda, 1.4Mt/yr. 87. TXI (Martin Marietta), Hunter, 2.3Mt/yr. 88. Cemex, Balcones, 2.4Mt/yr. 89. Alamo Cement, San Antonio, 1.1Mt/yr. 90. Capital Cement, San Antonio, 0.9Mt/yr. 91. US Cement, Brady, Planned (White).

UTAH (2.02Mt/yr) 92. Holcim, Devils Slide, 1.1Mt/yr. 93. Ash Grove Leamington, 0.92Mt/yr.

VIRGINIA (1.5Mt/yr) 94. Roanoke Cement (Titan America), Troutville, 1.5Mt/yr.

WASHINGTON (1.16Mt/yr) 95. Ash Grove, Seattle, 0.74Mt/yr. 96. Lafarge, Seattle, 0.42Mt/yr.

WEST VIRGINIA (1.8Mt/yr) 97. Essroc, Martinsburg, 1.8Mt/yr.

WYOMING (0.70Mt/yr) 98. Mountain Cement (Eagle), Mountain, 0.7Mt/yr.

COUNTRY REPORT: USA

Cemex

Formerly the largest cement producer in the US before the creation of LafargeHolcim, Cemex has 12 cement plants with a capacity of 15.2Mt/yr. Although the cement producer released no exact figures for the US, its cement sales volumes increased by 2% in 2015. However, its net sales for cement rose by 30% to US\$1.34bn. It noted that the growth was driven by residential construction with infrastructure activity picking up in the second half of the year.

Buzzi Unicem

Buzzi Unicem has eight cement plants with a capacity of 9.7Mt/yr. Its assets are spread across the southern, mid-western and north-eastern regions of the country. It reported a 2% rise in sales of portland cement in 2015 driven by the residential building sector. It also noted a 'significant' reduction in sales of oil well cement. As

part of the competition authority requirements for the merger between Lafarge and Holcim it acquired three terminals in Rock Island in Illinois, Grandville in Missouri and Elmira in Missouri. These terminals have a distribution capacity of 70,000t/yr, 90,000t/yr and 27,000t/yr respectively.

Ash Grove Cement

Ash Grove Cement operates eight cement plants with a capacity of 9.5Mt/yr. Its markets are in southern, mid-western and western states. It is the largest domestic-owned cement producer in the US.

Acquisitions and mergers

Formation of LafargeHolcim

The Federal Trade Commission (FTC) in the US allowed Lafarge and Holcim to merge in May 2015. Alain Bourguignon, previously in charge of North America and UK at Holcim, became the head of LafargeHolcim North America once the merger cleared.

However, the FTC gave its consent to the merger on condition that selected assets were divested. The FTC had previously raised a complaint that the merger would have harmed competition in 12 markets for portland cement and in two markets for slag cement. The cement markets the FTC was concerned about were in Minnesota, western Wisconsin, eastern Iowa, Tennessee, Louisiana, Michigan, Montana; and Massachusetts. The slag cement markets mentioned were in Mid-Atlantic and the western Great Lakes. In each of these markets, Holcim and Lafarge were seen to be either the only two significant suppliers, or two of, at most, four significant suppliers.



Under the terms of the agreement, Lafarge sold its 1.1Mt/yr Davenport cement plant and quarry in Iowa and seven terminals along the Mississippi River to Summit Materials, the owners of Continental Cement. Holcim sold its Trident cement plant in Montana and five terminals in the Great Lakes Region to CRH. It sold three terminals in Michigan and Illinois to Buzzi Unicem. It sold its 0.6Mt/yr Skyway slag grinding station in Illinois to Eagle Materials. Lastly, it sold its 0.7Mt/yr Camden slag grinding station in New Jersey and a terminal in Massachusetts to Essroc, the US subsidiary of Italcementi.

Acquisition of Italcementi by HeidelbergCement

Barely had the Lafarge-Holcim merger closed when HeidelbergCement announced on 28 July

Above: The Titan Pennsuco plant in Florida. In March 2016 Titan American announced that it had cancelled its Castle Haynes cement plant project in North Carolina. Source: Muhammad Khan.

Below: The Capitol Cement plant in Texas. A commercialscale CO₂ capture and utilisation unit started operating in September 2015 using emissions from this cement plant. September 2015.





Right - Table 1: Selected cement plant upgrades in 2015 and early 2016.

2015 that it had entered into a purchasing agreement to buy 45% of Italmobiliare giving it a controlling stake of Italcementi. The move will make HeidelbergCement the second largest multinational cement producer outside of China. In the US it will also create the second largest producer subject to approval by competition authorities. On the ground the acquisition will give HeidelbergCement control of 16 cement plants with a capacity of 17Mt/yr. It described the acquisition as a means to accelerate its growth, strengthening its market positions in the United States.

Since the initial announcement, the acquisition process appears to have gone smoothly, based on HeidelbergCement's statements, as it has prepared the financing and described how it will integrate the companies. The closing of the deal is expected to be complete by early July 2016 depending on approval by the competition authorities in Europe and the US. Nothing has been released by the FTC regarding the acquisition. Given that the competition bodies in the US

approved the larger Lafarge-Holcim merger, it seems unlikely that they will trouble HeidelbergCement too unduly. However, post-acquisition the cement producer will own cement plants within 75 miles of each other in Pennsylvania and in Maryland and West Virginia. The FTC may yet take exception to this.

CalPortland buys Oro Grande cement plant

CalPortland purchased Martin Marietta Materials' California cement business in late September 2015. The assets sold include the 2.2Mt/yr Oro Grande cement plant and two rail distribution terminals located in National City and Stockton.

Plant projects

Four major plant upgrades are in progress at present. These are highlighted in green in Figure 3 and further details are listed in Table 1. Together they will add 6Mt/yr of new cement capacity to the market on completion.

Of note, the Buzzi Unicem USA Maryneal plant is having a new production line built. Start of the new kiln is expected in July 2016. More detail on this upgrade can be found in the Texas cement industry report elsewhere in this issue.

Lafarge North America, part of LafargeHolcim, is continuing with major upgrade projects at its Ravena, New York and Joppa, Illinois plants. The brownfield project for a clinker and cement production line at Ravena will replace the existing two lines with one

| Plant | Upgrade details |
|---|---|
| Charlevoix , St Marys Cement, MI | Cement production capacity expansion |
| Dacotah , GCC, SD | New kiln equipment, provision for co-processing alternative fuels, shipping improvements |
| Devil's Slide, Holcim US, UT | McON air gas flow measurement system (Promecon) |
| Eagle Materials | Unspecified environmental upgrades in 2015 and 2016 |
| Joppa , Lafarge North America, IL | New production line |
| Maryneal, Buzzi Unicem, TX | New production line |
| Midlothian, Holcim US, TX | Emissions reductions equipment (CTP Sinto America) |
| Permanente, Lehigh Cement, CA | Continuous emission monitoring system in kiln bag house, Water treatment system for discharges from the quarry containing selenium |
| Ravena , Lafarge North America, NY | New production line |
| Tehachapi , Lehigh Cement, CA | Cement mill upgrade (FLSmidth) |
| Union Bridge , Lehigh Cement, MD | Limestone crushing plant (Hazemag), quarry conveyor |
| Chanute , KS; Durkee , OR; Foreman , AR; Leamington , UT; Seattle, WA – Ash Grove | Environmental upgrades including lime injection systems, selective non-catalytic reduction (SNCR) systems, dust shuttling and activated carbon injection systems, continuous emissions monitoring and data acquisition system |

1.9Mt/yr line. Clinker production is scheduled to start by the fourth quarter of 2016. A third kiln line is still being built at Joppa since the project was announced in 2008. The project merited a US\$109m impairment charge in LafargeHolcim's annual report for 2015. No further details have been forthcoming.

St Marys Cement, a subsidiary of Votorantim, announced in August 2015 that it was expanding the capacity of its plant at Charlevoix, Michigan to 2Mt/ yr from 1.4Mt/yr with start-up planned for 2017. The expansion was valued earlier at US\$130m. St Marys Cement also reopened its Dixon, Illinois plant in August 2015 after closure since 2008.

Environmental issues

Legal regulation

National Emission Standards for Hazardous Air Pollutants (NESHAP) in its latest form for the cement industry came into force on 9 September 2015. This amendment was proposed in 2012 by the US Environmental Protection Agency (EPA). Originally the deadline for compliance was set for 2013 but after industry and legal intervention it was delayed to 2015 for existing plants.

The main change from previous legislation concerned the monitoring of particulate matter (PM). As well as reducing the allowed PM levels to 9g/t clinker from 32g/t clinker, the EPA changed the compliance basis for the PM standards from continuous



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Right- Table 2: Amended

emissions standards for National Emission Standards for Hazardous Air Pollutants (NESHAP) that came into force on 9 September 2015.

| Pollutant | Previous source standard | New source standard |
|--|--|---|
| Mercury | 25kg/Mt clinker | 9.5kg/Mt clinker |
| Total Hydrocarbons (THC) | 24 ppmvd | 24 ppmvd |
| Particulate Matter (PM) | 32g/t clinker (three-run test average) | 9g/t clinker (three-run test average) |
| Hydrogen Chloride (HCI) | 3 ppmvd | 3 ppmvd |
| Organic hazardous air pollut- ants (HAP) (alternative to HCI) | 12 ppmvd | 12 ppmvd |

monitoring with a PM continuous emission monitoring systems to a manual three-run stack test and required the use of a continuous parametric monitoring system (CPMS). It also requires that sources retest once a year to reset the PM CPMS operating limit. Then if a site source exceeds its site-specific parametric operating limit, it must conduct corrective action within 45 days. Also, if the source exceeds its parametric limit four times in a calendar year, the source is presumed to be in violation of the PM emissions standard itself. A summary of the changes in emissions levels is shown in Table 2.

As a result of the new regulations a number of plants have installed environmental upgrades of equipment to meet the amended standard that came into effect during 2015 as shown in Table 1.

Other incoming environmental legislation that the PCA has advocated against include the Clean Power Plan and amendments to the National Ambient Air Quality Standards concerning ozone.

Alternative fuels usage

The groundbreaking of Entsorga WV's refuse-derived fuel (RDF) plant in Martinsburg, West Virginia took place in January 2016. Once operational the plant will supply 50,000t/yr of RDF to the nearby Essroc cement plant. The project is a joint-venture between Apple Valley Waste Technologies, Entsorga USA and Chemtex International. Its developers say it is the US' first resource recovery facility that employs mechanical biological treatment (MBT).

Throughout the rest of 2015 various cement plants sought and announced co-processing arrangements to use alternative fuels. The Holcim US Holly Hill plant in South Carolina requested to burn wastederived fuel in its precalciner in January 2015. At that time it was only permitted to burn such fuels in its kiln. Lafarge North America's Alpena plant obtained permission to burn scrap plastic and asphalt shingles at the same time. Later in January 2015 Essroc's Speed plant in Indiana was in the process of applying for a state environmental permit to burn liquid waste-derived fuel.

Battles with activists

Two prominent cement projects faced opposition from environmental groups in the reporting period. The first, Titan America's proposed Castle Haynes cement plant in North Carolina was officially cancelled in March 2016. Titan said it took the decision on economic grounds citing insufficient local demand and risk of imports. Originally announced in 2008 the project faced opposition from environmental groups on pollution issues.

On the West Coast of the United States, the proposed US\$50m Orcem California slag grinding plant at Vallejo, California ran into trouble when the local government added the site to its heritage list in March 2016 making planning applications more difficult. Opposition to the project, being planned by Irish Cement producer Ecocem, has been mounting since December 2015.

Outlook

As Ed Sullivan says in an interview elsewhere in this issue he has downgraded his 2016 growth forecast for cement consumption to 3.4% from 5%. His reasons include slower overall US economic growth, a low oil price with all its resulting impacts in states like the Dakotas and sustained low interest rates. A volatile global economy overhangs all of this and with the risk that stored US debt brings, this might create a future economic crash in the medium term. However, the PCA sticks by its assessment that the construction industry should be growing, based on job creation and growth in residential, non-residential and public building projects. Yet, the forecasts keep being downgraded. Growth of 6.5% is currently expected in 2017.

In the meantime, whilst they wait for growth to accelerate, the major cement producers have pinned their hopes on federal government infrastructure investment projects. In December 2015 the US Congress passed the Fixing America's Surface Transportation Act (FAST). This bill is expected to add US\$280bn towards maintaining and improving the country's highways, transit systems, and transportation safety programs over the next five years until the end of 2020. The PCA estimates that the bill will add demand of an average of 0.84Mt/yr to the cement industry.

As Eagle Cement put it in its annual report for 2015, "The pace of recovery continues to hinge on the pace of growth in the US economy." The International Monetary Fund (IMF) forecast that growth in the US will remain at the same rate (2.5%) in 2016 and 2017. Increased mergers and acquisition activity is one way to boost balance sheet values where growth cannot, as the creation of LafargeHoclim and the impending enlargement of HeidelbergCement show. More such activity may follow in 2016.

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Below - Figure 1: Annual shipments of portland and blended cement in north Texas (red), south Texas (green) and the state as a whole (purple) from 2006 to 2015. Data for 2014 and 2015 is preliminary only.

The USGS defines Northern Texas as comprising the following counties: Angelina, Bell, Concho, Crane, Culberson, El Paso, Falls, Houston, Hudspeth, Irion, Lampasas, Leon, Limestone, McCulloch, Reagan, Reeves, Sabine, San Augustine, San Saba, Tom Green, Trinity, Upton, Ward and all counties further north.

Southern Texas comprises all counties south of the northern counties.

> Source: United States Geological Survey.

The Texas cement sector in 2015 and early 2016

Texas is the largest cement producing state in the United States. However, its economy has been seen as vulnerable to the low international price of oil since mid-2014. Despite this the population of the state keeps on rising. Meanwhile, cement producers report a drop in oil well related products but a mixed picture otherwise. Here, *Global Cement* takes a looks at the changing face of the Texan cement industry.

Economic outlook

The price of Brent crude oil fell below US\$50 at the start of January 2015 and a year later it dipped below US\$30. For an economy dependent on the oil and gas business this was bad news. Estimates place oil and gas extraction as being responsible for 9% of the state's gross domestic product (GDP).

The Texas Workforce Commission estimates that 60,000 jobs were lost in the sector in the state between January 2015 and January 2016. Despite this, or more likely because of it, Texan crude oil production continued to rise to 3.46 million barrels/day in 2015 according to the United States (US) Energy Information Administration (EIA).

However, production peaked in March 2015 and fell throughout the rest of the year and into 2016. Texas contains three tight oil and shale gas regions: Permian, Eagle Ford and Haynesville. Each of these regions saw its number of oil rigs decline in 2015 and so far in 2016, a trend the US as a whole shares according to Baker Hughes. In January 2015 the average number of rigs was 773 but by April 2016 this was 198.

Some commentators believe the Texan economy

to be more diversified since a glut of production in the 1980s damaged the market, making it capable of coping with the low price of oil better than at that time. The state had the second highest GDP in the country, after California, of US\$1650bn in the second quarter of 2015. Its growth in GDP was 4.5% in 2014, the fourth highest in the country by Bureau of Economic Analysis (BEA) data. However, this has since flatlined in the second and third quarter of 2015 to one of the slowest rates in the country. In spite of this the number of new residential housing starts by permit in 2015 grew to a five year high according to data from the Federal Reserve Bank of St Louis.

Cement trends in 2015

Texas remained both the biggest producer of clinker and of Portland and blended cement in the US in 2015 and in January 2016 according to the United States Geological Survey (USGS). In 2015 it produced 10.5Mt or 13% of all Portland and blended cement shipped in the country. This compares with 10.4Mt or 14% of national shipments in 2014.

Figure 1 shows annual cement shipments since 2006 in Texas with a comparison of shipments in the





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north and south of the state. Note that cement shipments have grown steadily in the state since a slump in 2009. At this time south Texan shipments overtook northern ones. The share of state shipments for the south has grown since 2009. Recently, shipments hit a peak in 2014 and have started to fall in 2015 according to preliminary USGS data.

Cement production capacity and upgrades

Figure 2 shows a map of the 11 active integrated cement plants in Texas. Together these plants have a production capacity of just under 16Mt/yr. They are operated by a mixture of international and national companies.

There has been little change to the production base of the state cement industry in 2015 with the exception of a new production line currently being built at the Buzzi Unicem Maryneal plant. Buzzi Unicem USA has invested Euro163.1m to double its installed capacity to 1.2Mt/yr from 0.6Mt/yr. The new line includes a new raw mill, a preheater/precalciner kiln and cooler system, a 4500kW finish mill, a solid fuel grinding and feed system and continued use of a newly commissioned Fives FCB Horomill Finish Mill. Start of the new kiln is expected in July 2016 after a period of tuning. The project was first announced in December 2013.

Other upgrades of note include a commercial-scale CO_2 capture and utilisation unit at the Capital Cement plant in San Antonio that launched in September 2015. The installation, run by a separate company, can capture up to 75,000t/yr of CO_2 when running at full capacity. By-products sold from the process include sodium bicarbonate, hydrochloric acid and bleach.

The 12th plant listed in Figure 2 is a US\$175m project to build a white cement plant in Brady, McCulloch County by Royal White Cement. The project gained mixed media attention in September 2015 when its representatives outlined their plans to residents. Since then the project has received local council tax incentives but is yet to gain final approval.

Cement producers

Martin Marietta is the largest cement producer in Texas with two plants and a combined production capacity of 4.7Mt/yr. The company reported that cement demand in the state is currently exceeding local supply and that it expects this to continue for the near future. Its plants operated at an average of 70% utilisation in 2015.

Cemex, the second largest producer, also operates two plants and it has a capacity of 3.8Mt/yr. It didn't provide detailed information on its operations in the state but it continually reported reduced oil well demand throughout the year. Buzzi Unicem USA also mentioned a 'significant' contraction in deliveries in oil well products and Lafarge-Holcim cited negative effects of a slowdown in oil-related investment. HeidelbergCement, which operates a 50% stake in a joint-venture with Eagle Materials at the Texas Lehigh Cement plant in Buda, reported that its cement sales fell by over 10% due to lower demand from the oil industry and adverse weather conditions.

Outlook

Demographic trends are likely to keep the Texan cement industry buoyant. Oil prices are down and GDP growth is slowing but the state population keeps on growing. As a whole the state's population grew by 490,000 people from 1 July 2014 to 1 July 2015. The Houston metropolitan and Dallas-Fort Worth-Arlington areas added about 159,000 and 145,000 residents respectively in this period. These people need somewhere to live as the growth in housing starts show. Subsequently, cement shipments have peaked overall in Texas. Yet they keep growing in south Texas, albeit at a slower rate. As long as oil prices stay low the diversity of the Texan economy will be tested and by extension so too will the local cement sector.

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Interview by Peter Edwards, Global Cement Magazine

In discussion: James Toscas, PCA President

James Toscas is the President of the Portland Cement Association (PCA), which advocates on behalf of the cement industry in the United States. Here he speaks about the PCA's key advocacy achievements in 2015, its targets for rest of 2016 and beyond, looking at the influence of legislation, new regulations, government spending and the 2016 Presidential Race. He also talks about the PCA's first 100 years in its Centennial year.



Above: PCA President James Toscas.

Global Cement (GC): How did the US cement industry fare in 2015 from your perspective as PCA President?

James Toscas (JT): We made good legislatory and regulatory progress in 2015 and this is a fight that we are constantly fighting. Crucially, we saw the implementation of the long-term Highway Bill, which will be a major driver of infrastructure investment. In that Bill there are several points that the cement sector was interested to see come to fruition.

The first point was that the provision that allowed up to 100% Federal funding for projects that use what's known as 'alternative bidding.' This allows alternative designs to be proposed compared to the one put out in the bid. This provision really encourages innovation and is something that the PCA has been pushing for, for quite a while.

Another point is authorisation for a Federal study to analyse the impact of road surface stiffness on vehicle fuel economy. The PCA has previously funded research that shows that stiffer road surfaces result in improved economy. While the difference to individual vehicles is not huge, if you multiply that by the number of vehicle miles driven in the US every year it is a very important saving in terms of money and lower CO_2 emissions. If the Federal government concludes the same from its study, there could be serious demand for concrete-topped roads in the US. The Highway Bill also included the continuation of a very good research programme on road surface technology. This has been a very beneficial programme to the PCA so far.

Additionally, ready-mix truck drivers have been exempted from hours of service regulations to take into account the fact that their working hours are not equivalent to their driving hours. For example they have to wait around on job sites while concrete is laid. This exemption allows the concrete sector, a major customer of the cement industry, to be effective.

While the Highway Bill is very important, it is by no means the only advocacy project that the PCA has been involved in. There were significant regulatory challenges that we have, so far, been able to hold off. For example, the Environmental Protection Agency (EPA) has introduced an updated ozone rule that doesn't make sense to us. In fact, we believe that it is illegal and goes beyond the scope of the EPA's authority under the Clean Air Act.

Elsewhere, the government came out with something called the Clean Power Plan, which is a contortion of the Clean Air Act. We think that it seeks to put the coal-fired power plant sector out of business, which will cause huge impacts on sectors like cement too, indeed the entire economy. So far the courts have sided with us, but this will keep hanging over the sector. Of course the last challenge like the Clean Power Plan was the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. We fought successfully for a more reasonable timetable to implement some of the changes that it demanded and the US cement sector is now actively implementing NESHAP on what we consider to be fairer terms.

GC: Do you think that the Clean Power Plan can eventually be implemented in the same 'lower pain' kind of way?

JT: The Clean Power Plan is not like NESHAP. It takes energy policy into an area that it has not been before and there needs to be much wider debate on the entire energy policy of the United States. The PCA would welcome that debate and, if the country decides to phase coal out over the next 20 years for example, we would be able to all get on board with that plan and do it. What we object to is the fact that the Administration has decided to unilaterally implement that plan, without Congressional backing.

GC: When we spoke to your predecessor Cary Cohrs in 2014, the PCA had recently enhanced its presence in Washington. How has this helped the PCA's advocacy efforts?

JT: Well, we have always had advocacy staff in Washington. What Cary was talking about was returning the level of advocacy staff following the economic downturn. However, a higher level of staff in Washington is getting us higher visibility and more effective advocacy without question, especially with the way that we do things these days. Our advocacy

"The Clean Power Plan takes energy policy into an area that it has not been before..."

policy is not to wait around until someone does something that we don't like and then pull them up on it. Our approach is to work with Congress members and regulators as they develop legislation so that their approach takes into account the perspective of the cement sector.

What we had found historically is that most of the people that were writing the rules had no idea how major industries in the US worked or how the rules that they were writing would affect them. By being close to regulators we can talk to them on a regular basis and help them understand our needs, rather than working 'against' them.

The staff that we have added in DC are either drawn from or are closely aligned with Congressional staff members so they have plenty of credibility and contacts in the sector. On top of that we have 'taken down the wall' between legislatory and regulatory activities, because we view them as two sides of the same coin. Some issues are predominantly legislative but have a regulatory component, and vice-versa.

GC: How do you expect the Presidential Race to affect the PCA's advocacy efforts this year?

JT: There are many possible combinations: Who will be elected President? Which party will control the

Houses of Congress? These and other factors will determine the ease of dealing with the government as a whole. What the PCA certainly does not want to see is a stifled government where nothing can get done. We want to see this possibility addressed.

GLOBAL CEMENT: INTERVIEW

On the Congressional side we will see progress grind to a halt in 2016 because the members of Congress will be out campaigning. Key legislation will be less likely to be introduced. On the Administration side, we believe that there may be acceleration in the rate of new legislation because it will want to get things done before the new Administration starts.

GC: Will you be drawn on the PCA's preferred Presidential candidate?

JT: No, but what I will say is that the next President must endeavour to create a stable regulatory environment where long term investment in all industries, not just the cement industry, is possible. This will mean that companies can project what future conditions will be like and invest with confidence. Also, there must be sufficient investment in infrastructure. In recent years we have not invested enough in our infrastructure to maintain it, let alone improve it. This, we hope, will be another target of the next Administration, regardless of the President's name.

GC: What are the PCA's main advocacy targets over the next 12 months?

JT: We will keep an eye on the ozone rule and Clean Power Plan that I mentioned earlier. On the legislative side we are looking towards two other key infrastructure areas, the Federal Aviation



Left: The US Congress. The PCA has stepped up its presence in Washington, DC and has seen improved advocacy results. Administration (FAA) reauthorisation and the Water Resources Development Act (WRDA). Both of these would ensure sufficient funding to two crucial areas of our nation's infrastructure that will translate down into the construction and cement sectors.

GC: Do you think that the US cement industry has finally entered a new period of more stable growth, with more stable regulations?

JT: Unfortunately, despite the growth we saw in 2015, the regulatory conditions remain tricky this year. I really hope that we can encourage the new Administration to adopt a more stable regulatory environment, in which we know what it is going to do next. It's a big problem at the moment.

To give an example on the legislatory side, prior to the new Highway Bill, Congress just approved a series of one year extensions. While that provided money, it was not possible to properly fund multiyear projects like major intersections or bridges. Who wants to start building something like that for a year if they don't know where the money for years two, three or four is coming from? I think the same holds for business and regulation. When regulations are unpredictable, there is impetus to spend on the day-to-day upkeep of a cement plant for example, but not on longer-term investments.



GC: What do you think are the main opportunities for PCA members in 2016 and 2017?

JT: The WRDA and FAA will be major opportunities if they are passed. These will provide opportunities for new infrastructure. Outside of that, the largest positive we can hope for is if we can somehow get the economy rolling again, which is proving to be very difficult. That would be a major opportunity but a lot depends on the government.

GC: What are the biggest threats?

JT: Apart from unnecessarily complicated regulations and legislation, a major threat is misguided economic policy. We don't spend our money in the right places and we spend too much of it. At the moment, the Federal government is taking over the reigns from the states for some activities. It has cut back on things like infrastructure, things that the Federal government was designed to do, and is instead pouring money into things like welfare, which have historically been dealt with at the state level. I call that misguided and it is my personal view.

Also, the increase in national debt, for example, will ultimately come back in the form of high inflation, unless the economy can magically side-step the normal rules of monetary economics.

GC: Do you expect any effects in the US market from the merger between Lehigh (HeidelbergCement) and Essroc (Italcementi)?

JT: We see this as the next step in a gradual consolidation of the US cement sector, which is reflective of growing consolidation in the global cement industry. There won't be much change on the ground because of this from a production standpoint, although mergers generally result in lower overall numbers of administration and support staff.

GC: What do you think the effects of the new McInnis cement plant in Quebec will be?

JT: Competition is always good but some players won't necessarily welcome extra capacity. The McInnis plant is actually on the path to becoming a PCA member, which is a good thing. We welcome the new plant and it will certainly have an impact on the US, especially in the north east. We might see some older or less efficient plants throttle back on production or indeed close but that is the nature of the market.

Right: The Cemex Balcones plant in New Braunfels, Texas.



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100 years of the PCA

GC: What is the PCA doing to celebrate its Centenary in 2016?

JT: We are celebrating in many ways. We officially kicked off our Centenary celebrations at the World of Concrete Congress in Las Vegas in February 2016. Our aim throughout the year is not only to celebrate, but use the Centenary as a reminder that the cement sector has come a long way and highlight the critical contribution of cement and concrete to the development of the modern world. We are also looking to show how we can improve our position and the standing of the industry going forward.

We have several events for the industry. Indeed at our spring conference we were in the same hotel meeting room as the first PCA meeting 100 years ago. In the summer we are having an open-house event where industry representatives will have a large picnic at our buildings in Chicago. Our message outward is that the PCA has been around for 100 years but that cement and concrete, as building materials, have been around for millennia. This is something that people don't realise and it is a good time for us to highlight the importance of our sector and the very valuable product it produces.

GC: Is there an official Birthday as such?

JT: No, we are taking the whole of 2016 as the 'Birthday' because the PCA was actually formed from a preceding organisation. The original organisation was actually formed to manage the recycling of cement sacks. Cement was sold in large sacks that were taken to the job site and emptied. They had deposits on them but they were frequently left on site and stolen for the deposits. The producers decided to standardise recycling across the whole industry and the Association's activities grew from there.

Also in 2016 we will start to phase in a new campaign, like a new version of the *Think Harder*, *Concrete* campaign, which we are in the process of phasing out. We will be launching something later in the year.

GC: Apart from getting the deposits back from the cement sacks, what have been the major achievements of the PCA over its first 100 years?

JT: Among the PCA's highest achievements was setting the initial quality standards for cement. The PCA was instrumental in some of the first standards to be used internationally and now we have cement as a global commodity product. The quality and consistency are the same for cement made in all sorts of different countries.

Secondly, the PCA was heavily involved in cement and concrete testing in the early days of the modern industry. Now that is all taken care of by the pro-

PCA

Portland Cement Association

ducers themselves but the US cement sector would never have evolved as quickly as it did without that early testing. The PCA still maintains a large expertise and one of the two largest libraries on the subject of cement production anywhere in the world, the other being held by the VDZ in Germany. What the VDZ did for the European market the PCA did for the US market.

From an advocacy standpoint, the PCA has helped the cement industry to withstand what could have been massive blows to the sector. For example, we have fought against what we see as sometimes restrictive legislation that, combined with imports, could have killed off large parts of the US cement industry. There is no law that says cement must be produced in the US. It could have left the country like so many other industries have.

GC: What are the major targets for the PCA to address as it starts its second hundred years?

JT: We should continue to adapt to the changing needs of the industry. We always want to be a technical centre for the industry and a strong promoter of cement and concrete and be the voice of the industry. The way we do those things may have to change as time goes on.

In the realm of sustainability there is a lot of work to do. CO_2 production is part of cement production process but to address this, we have conducted work on alternative production processes for cement and other cementitious materials. Of course, in collaboration with the producers, we have already done a lot of work to reduce CO_2 intensity through switching to more efficient technologies, introducing alternative fuels and other measures.

The Cement Sustainability Hub at MIT has done a large amount of research into the properties of cement, from the nanoscale to the megascale. Such a wide-ranging body of research has not been undertaken previously. I feel that, over the next decade or so, this information will be used by the industry to help make cement more efficiently with a lower environmental burden and lower production cost. This is one way US players can increase their competitiveness, at the same time as improving their social and economic performance.

GC: Thank you for taking the time to speak to us today James.

GC: You are very welcome.

Interview by Peter Edwards, Global Cement Magazine

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In discussion: Ed Sullivan, PCA Chief Economist

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Ed Sullivan is the Chief Economist of the Portland Cement Association (PCA), which advocates on behalf of the cement industry in the United States. His regular cement industry forecasts are closely watched by PCA members within the US and by many more overseas, especially since the onset of lower global fuel prices, which have completely reversed some former cement trends in the US. What does he expect for the rest of 2016, 2017 and beyond? *Global Cement* gets the low-down...

Global Cement (GC): Let's jump straight in. How does the PCA forecast the US cement industry to expand in 2016?

Ed Sullivan (ES): We have three forecasts per year. The current forecast is from November 2015 and it includes data from August 2015. Things have changed quite a bit since then, both for the cement industry and the economy in general. In the last forecast, we forecast 5% growth for 2016 as a whole. However, I can tell you that, for a range of different reasons, we now expect there to be significant downsides to that estimate. We could be talking around 3.5% growth. That may change further, but hopefully not.

GC: What are the main reasons for this?

ES: Firstly, the economy is growing more slowly than we expected. We had expected it to gain traction and see GDP growth at 2.6% but now I think we will struggle to see 2% growth in GDP in 2016. Slower than expected growth will affect jobs. That, in turn, affects non-residential private construction and public construction, because tax revenues are lower.

Secondly, the oil price is really low. If you look at how the US economy has recovered, it has been led in part by the fracking revolution in a small number of important states. I fear that we are still searching for a 'bottom' in terms of oil prices. Saudi Arabia said recently that it would allow oil prices to fall to US\$20/barrel. There has been a tremendous amount of investment in the oil states to develop new oil production infrastructure and the production cost is well above US\$20. It's about US\$60-70/barrel.

There has been a massive reduction in drilling activity but don't just look at it that way. If we turn to the Dakotas, which were booming, the situation is now very different. Lower drilling activities mean lower populations and there is no need to build extra housing, no need to build that new store and no need to upgrade that highway to accommodate increased traffic flows. For every one tonne of cement that would have been used in oil well cementing in these sorts of places, there are *three tonnes* that would have been used on these sorts of projects. Oil is so critical in characterising the cement market in the United States at the moment.

Thirdly, we have had a long era of very low interest rates. The US debt is huge and it has been based, once again, on certain assumptions that are wrong. This is exactly what happened in 2007-2008. The wrong assumptions include that China will continue to see steady growth. This, we know, is an increasingly shaky assumption. China is broadly isolated, but rate rises in the US are not out of the question. On top of this, the continued success of the oil sector had been a basis for a lot of debt. There is the potential for massive defaults in that area. Also, there is a lot of student debt out there and it is also defaulting. The PIIGS (Portugal, Italy, Ireland, Greece and Spain) in Europe are also a weaker area, as are Russia and Brazil, both developing economies that have suffered a lot from the falling oil price. How bad the effects of this will be is based a lot on China. China fails and the commodity markets fall.

Separately, I don't think that any of these debt factors are enough to detract from the growth path of the US economy because the fundamentals are still strong. We are creating 200,000 new jobs monthly, and that is transferring down into the construction sector. However, in a perfect storm, when everything comes to ahead in the same time frame, there are some pretty scary debt issues out there that could put a significant spanner in the works. This may not be an issue for 2016 but it should be considered as a possible effect for 2017. We are not sure how much of an adverse impact it will see but I must highlight that all the fundamentals in the US look great now and we are still struggling to get 2% growth!

GC: Where are the areas that performed the best and worst in 2015 relative to 2014?

ES: There are a few areas that did well in 2015, some that did 'so-so' and some that did really badly. The 'bad' areas saw cement consumption fall due to the oil price factors that I already mentioned. The West South Central region, which includes Arkansas,



Above: Ed Sullivan, the PCA's Chief Economist.



"Oil is so critical in characterising the cement market in the United States at the moment..."

Louisiana, Oklahoma and Texas, collectively declined by a little over 3% last year.

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At the opposite end of the spectrum we have the Pacific coast regions. California grew by 9% year-onyear and Oregon grew by 11%. The region as a whole grew by 9% and was fuelled, in part, by residential construction growth recovering from a low base.

Another key area, the South Atlantic (Delaware to Florida) grew by 7%. Georgia grew by nearly 17% in 2015 compared to 2015. That's in the fourth-largest cement-consuming state. These are also areas that suffered a lot during the downturn. Their consumption was pushed down so low that the growth rates now look astronomical.

GC: How are these states' absolute cement production volumes relative to the situation prior to the downturn?

ES: Well the US, as a whole, consumed around 90Mt of cement in 2015 compared to over 120Mt before the downturn. Taking Florida as an example, it consumed around 11Mt/yr and now it's struggling at 4Mt/yr in 2015. That said, the recovery really is kicking in on both coasts. As the oil states fade in terms of cement consumption, the coasts are once again on the rise.

GC: Where are the 'so-so' regions?

ES: The North East region is a good example of a 'so-so' steady growth area. New England for example grew by around 3% in terms of cement consumption in 2015. The key indicators in that region are Massachusetts and Connecticut, which saw 3% and 8% growth respectively.

The Mid Atlantic region (New York, New Jersey and Pennsylvania) was really going for it. New York gained 13%. The whole East Coast and the whole West Coast contributed to the growth.

GC: Have any states surprised you?

ES: Yes, but unfortunately it was a bad surprise in the oil states, which I already mentioned. We use Energy Information Agency (EIA) forecasts for oil prices in our own forecasts. When we did our November 2015 forecast, the EIA expected oil prices to hang around US\$100/barrel in 2015 and 2016. As that price has not been 'missed by a wide margin,' we did not anticipate the performance of the oil states to be as bad as they were. There was such a hit. You hit Texas and you hit the whole country!

GC: How will Texas and its oil-state compatriots fare for the rest of the year? Is there worse to come?

ES: I think that a lot of the 'hit' has been taken by these states and they have mostly adjusted to the new oil price. Will there be continued downturn? Absolutely, but it is not going to be anything like as dramatic as the changes we have already seen. I think that those areas will remain weak but they will not continue to drag on the coastal growth rates.



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GC: What about the rest of the states in 2016?

ES: If we see 2% GDP growth this year rather than the previously-forecast 2.6%, we will probably have to revise the consumption of all states downwards for 2016.

GC: Including the fast-growing coastal states?

ES: Cement production growth in the coastal states will actually accelerate in 2016 because they were large contributors to cement consumption prior to the downturn. Their economies still have a long way to go before we reach pre-recession 'normal' levels.

GC: When will volumes return to 'normal?'

ES: In terms of the national

picture, assuming current conditions, we expect prerecession levels to be seen within the next two to three years. That would be around 105Mt/yr. Right now we expect 96Mt for 2016 but, as I mentioned earlier, we might have

to shave that down. For 2017 we currently forecast 102Mt, but that will also be shaved down and that, as I alluded to earlier, will be with a higher level of downside risk than for 2016.

GC: What are expectations over the longer term?

ES: Over the next five years, assuming that we *don't* have a major downturn, we will be seeing cement volumes of 119Mt/yr demand. US cement capacity starts to stretch at around 95Mt/yr. There is not a lot of expansion out there, so we will have to import. There is also the risk that National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations could cause the closure of five plants within the same time frame, which would mean higher imports. As regulations get stronger in the future, we could see a lower number of plants in the US, especially as 80% of capacity is now owned by the big multinationals.

Forecasting over the longer term inherently brings more risks, but some things are more easy to predict than others. For example, demographics tell us that there will be 55-60 million more US citizens in 2036 than in 2016. That's the entire population of the UK. It's huge population growth!

That new population is going to add to demand for things like houses, schools, hospitals and shopping malls, all of which require lots of cement. If we extrapolate forward, holding cement per capita consumption fairly constant, we will see cement demand rising to 150Mt/yr by 2036, breaking all past records. This is a bonanza for cement producers, but also for those importing cement. At the moment the Dollar is strong, which favours imports. Whether or not that stays the same we will see. If we do see that level of imports, we will have to build a lot of new port capacity for cement handling.

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GC: What is the number one downside risk to your 2036 estimate?

ES: It is the debt that the US and other countries have at the moment. I think that, combined, they represent a perfect storm that could really tighten credit activity, hitting housing and non-residential construction. That would obviously have knock-on effects for our sector.

GC: Is there uncertainty for the cement sector in 2016 due to the Presidential Race?



ES: I would say that there isn't a difference from an economics point of view. I think that in the past people used to say that the Federal Reserve would 'game' the conditions to suit who they wanted in

the Oval Office but, these days, what are they going to do!? Interest rates are still almost zero and, of course, the Federal Reserve is completely independent. I don't think that there are any fiscal policy initiatives that it can undertake. It can't pump the economy somehow or twist things to make it perform better.

The other question that often follows this is, *'Which President would be best for us?'* This is a totally unanswerable question, unless you can tell me who is elected and what their monetary policies are going to look like... in detail! But that information simply isn't out there at the moment. We can't even begin to form an opinion on the subject.

GC: Are you happy with your forecasting record as a whole?

ES: Yes. If you look at the past few years, the Wall Street Journal actually said that the PCA was the first or among the first to see that a contraction in the housing market would spread to the wider economy. We were the first to talk about the downturn.

In general, it is very difficult to draw a line in the sand, stand by it and not move. In the last 12 months, we have been knocked by the oil price though. We are aware of our standing in the cement sector and we are very aware of the need for careful guidance for the cement industry.

GC: Ed, thank you very much indeed.

ES: It's been a pleasure!

Right: Will the cement sector be affected by the Presidential Race in 2016? Even Ed Sullivan can't be sure...



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Global Cement Magazine visited with key Ash Grove manufacturing executives recently to hear about the Midlothian plant's history and the transformational changes it has undergone in the past few years.

> Insets: Scenes from the construction of the new kiln line (including views of the old wet kilns). Main picture: Ash Grove Midlothian plant today.

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n mid-May, IEEE-IAS/PCA Conference at-L tendees will have the opportunity to tour Ash Grove's Midlothian plant, the first kiln in the United States to be compliant with the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Ash Grove Cement Company's Midlothian, Texas, plant modernised its pyroprocess and was NESHAP compliant by September 2014, a whole year ahead of most other US cement manufacturing plants. Plant leaders and staff gained a great deal of experience dealing not only with NESHAP compliance, but also with the commissioning bugs that the plant experienced after its three wet kilns were replaced with one semi-dry preheater/calcincer kiln, as well as a new cooler, low-NOx burner and the country's first HOTDISC® Reactor.

Global Cement Magazine asked a number of manufacturing executives at the plant about the genesis of the factory, as well as its evolution over the years to where it finds itself today.

According to Michael J. Hrizuk, senior vice president of manufacturing, the Midlothian plant was built in phases. "The crushers, first mills, kiln, cement silos and associated belts were built 40 years ago. In 1968-69, the second kiln, raw mill, finish mill and several more material silos were built. By 1973, the third and final kiln was operating."

"The plant has been owned and managed by





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various entities during its lifetime. Gifford-Hill, which built the plant, remained its owner until the late 1980s, when North Texas Cement Company, LP, acquired and managed it. Ownership of this partnership changed several times until early 2003, when Ash Grove Cement Company became the sole owner.

Soon after, the Midlothian plant was conveyed to Ash Grove Texas, L.P., and it is now part of the Ash Grove Cement Company," explained Hrizuk.

So how, asked *Global Cement Magazine*, does this plant fit into Ash Grove Cement Company's overall business plan?

"The Texas market is one of the largest and most important among the states. The current demand for cement in Texas outstrips the supply of in-state producers, so having the capacity (approximately 900,000t) at the Midlothian plant is important for Ash Grove to be able to supply its customers' demand," according to Hrizuk. "We have cement distribution terminals nearby in Denton and Fort Worth, which extend our company's reach among customers throughout North Texas."

The plant's primary product is ASTM Type I/ II cement, and it also manufactures a speciality product used to manufacture house siding, according to Hrizuk. "The plant's rail facility was upgraded prior to the modernisation project so we could handle cement during the tie-in of the new equipment."

Modernisation projects

Ronald J. Vidergar, vice president - technical services, mentioned some earlier modernisa-

Right: The FLSmidth Atox 17.5 coal-grinding mill at Ash Grove's Midlothian cement plant, supplied in 2014.



tion projects at the plant: "In 1995, we completed installing the tyrederived alternative fuel mid-kiln injection systems. Those systems were followed by the selective non-catalytic reduction (SNCR) systems in 2007, which had the effect of reducing the plant's NOx emissions by more than 60% since 1996."

So, asked *Global Cement Magazine*, how did Ash Grove make the decision to modernise its Midlothian plant? "We weighed the challenges the industry faces in North-Central Texas and based on the reserves of rock in our Midlothian quarry and the strong Texas market, we considered alternatives," said Hrizuk. "As a 134-year old company, our board of directors and my colleagues in manufacturing were acutely aware of the challenges we faced going

forward, the most notable of which was compliance with air emissions standards. Our plant is approximately 30 minutes drive south of the Dallas-Fort Worth metropolitan area, where nearly 7 million people live and reliance on automobile transportation put the region in a 'non-attainment status' for ozone. It was unclear to us what direction federal regulators would take in issuing future federal ozone standards and, combined with the region's current non-attainment status, the Ash Grove board decided to invest in and modernise the Midlothian plant. The modernisation also ensured that the company would create a solution for meeting the then-newly revised portland cement NESHAP regulations."

"The Ash Grove board decided to invest US\$140m in the modernisation, which included eliminating two of the three existing wet kilns and modifying the remaining kiln, which would further reduce air emissions and plant operating costs," Hrizuk added.



NESHAP rule a catalyst

"The NESHAP rule was a central part of our thinking as we made the recommendation to the Ash Grove board," said Curtis D. Lesslie, Ash Grove vice president of environmental affairs, who oversees the company's environmental compliance. The NESHAP rule governs pollutants including: particulate matter (PM), mercury, dioxin/furans, HCl, organic hazardous air pollutants (HAP) and total hydrocarbons. The rule took effect in September 2015.

"Before we modernised the plant,

we were controlling NOx emissions using staged combustion through the use of mid-kiln tyre injection as well as SNCR. We were able to reduce our NOx emissions by 60% through the combination of these technologies. However, we wanted to include these technologies and improve on them with the updated pyroprocess," Lesslie said. "The Midlothian plant is considered to be a 'new source' under NE-SHAP and New Source Performance Standards, so lower emission rates are required for PM, mercury, NOx and SO₂. Our objective with the modernised kiln system was to be the first source in the US to

> demonstrate compliance with these new source standards and we achieved compliance with them. Overall, PM emissions have been reduced by 90%; NOx emissions were reduced by an additional 60% and SO_2 emissions have been reduced by more than 95% with the modernised process," Lesslie said.

Equipment selection

Global Cement Magazine asked if everything changed with the latest project, or if some things stayed the same. "Good question! There were no changes made to the quarry through to the slurry stor-

Top: Laserhawk and Lighthawk continuous emissions monitoring equipment on the Midlothian stack.

Above: Emissions monitoring electronics at the plant, from C.E.M. Solutions.

Left: The FLSmidth DuoFlex burner at the plant - also seen (right) is part of the FLS CrossBar cooler.







age systems during the modernisation, nor to the cement grinding and cement storage areas," according to Hrizuk.

The Midlothian modernisation project was a design-build contract between Ash Grove Cement Company and FLSmidth. FLS engaged H&M Construction Company to perform the construction and the balance of the plan engineering. The foundation work began in 2012, the preheater tower steel was erected starting in January 2013, and first clinker production was 6 June, 2014.

Given the importance of the project to the company, as well as its size, the correct selection of the equipment in the modernisation project was crucial. "First, we selected a semi-dry process from FLSmidth, which allowed us to re-use equipment from the quarry through to the slurry basins. This is the second such pyroprocess operating in the US" according to Hrizuk. In the modernisation process, the 12-feet in diameter by more than 400 foot long (3.7m x 133m long) wet kiln was shortened to 246

feet (75m), and two of the five support piers were removed. The kiln drive and gear were uprated, as were the kiln support rolls on the drive pier. "The new equipment includes the Hot Disc reactor and dryer crusher, the large process bag filters and a coal grinding and dosing system. A new cement unloading system was installed to support cement sales."

"While the pyroprocess was designed to produce 2600 short tons of clinker per day (2358 tonnes/day), Ash Grove and FLSmidth continue to work to achieve this design capacity," he added. Constructing the new equipment around the existing kilns was another challenge. "Two kilns remained in operation during the construction period," Vidergar noted, " The combination of construction around an operating manufacturing plant was a challenge to both the plant employees and the construction team."

Ronald J. Vidergar offered some more details about the equipment the company selected: "The semi-dry preheater tower consists of a hammer mill dryer crusher, dedusting cyclone and a single stage cyclone preheater with an in-line calciner. The kiln drive is capable of 5 rpm, and it is the fastest in our system. The Stage 1 cyclone diameter is the largest in our fleet of plants." He said that Ash Grove now has the latest generation of the FLSmidth Cross-Bar[™] clinker cooler with a fixed inlet and heavy duty roll breaker.

What are the most unusual aspects to the process at Ash Grove Midlothian? Are there any things the IEEE field trip delegates should not miss?



Right: A view from the preheater tower, showing the raw meal silos. The coal system is seen in the left centre.

Right: Tyre reception and handling: The trailer tipper is top right, surge bin and tyre singulator is at the bottom right and the tyre conveyor is at the bottom.

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Right: Tyre receiving station, with trailer tipper in action.

"Delegates will want to see the Hot Disc* reactor, where we burn tyres in the modernised plant," said Vidergar: "The Hot Disc reactor is a combustion device designed to burn tyres and provide hot gasses to the in-line calciner. The Midlothian reactor is the largest unit currently operating in the world and the first in the US, with a table diameter of 26 feet (8.66m). It is designed to process 7.7 short tons (7 tonnes) per hour and at rated kiln capacity, tyres could represent nearly 50% of the heat input to the system."



To manage NOx emissions, SNCR using a 19% solution of aqueous ammonia is utilised. For mercury emissions control, the plant uses powdered activated carbon injection. Particulate emissions are controlled with a 12 compartment pulse jet bag filter that FLS Airtech supplied. The filter is designed for a gross airto-cloth ratio of 2.6 feet (0.86m) per minute.

Delegates will see other new equipment. According to Vidergar, "Coal is ground with an ATOX 17.5 three-roller vertical mill with a RAKM type dynamic separator. Pulverised fuel metering in the main kiln burner and in-line calciner is accomplished using Pfister rotary feeders. Hydrocarbon emissions from the coal grinding system are controlled by a regenerative thermal oxidiser (RTO). We use coal and natural gas as our primary fuels and passenger car tyres as an alternate fuel, which we burn in the newly installed HoT DISC reactor," Vidergar said.

"Clinker alkali and sulphur levels are controlled with a kiln bypass and calcium chloride injection,"

he said. "The bypass system has the capacity to remove up to 20% of the kiln process gases. The bypass filter is a single-compartment pulse jet collector with 1078 fibreglass bags that FLS Airtech supplied."

Midlothian plant was the

Another change to the



Delegates interested in emissions monitoring will want to see the Continuous Emissions Monitoring System (CEMS), which was provided by CEM Solutions Inc. This equipment measures and reports emissions of particulate matter, NOx, SO₂, mercury, ammonia, carbon monoxide and total hydrocarbons. Stack opacity is measured and reported as well as stack oxygen and carbon dioxide levels. The Data Acquisition System (DAS) is CemLink6 by VIM Technologies. This CEMS/DAS design is very similar

to that installed at all of Ash Grove's PC NESHAP plants and provides commonality of equipment and software across the fleet, Vidergar explained.

Education and training

Ash Grove's Vice President of Manufacturing, Midwest Division, Stuart E. Tomlinson said that the employees were vital in the modernisation process. "Ash Grove had a stable base of employees who had to be educated concerning the

operation and maintenance of the new equipment - HoT DISC reactor, dryer crusher, large process bag filters, ATOX coal mill, new kiln drive - which had not been used in the previous wet kiln process. Training everyone to understand how the equipment was intended to correctly operate was an important part of the modernisation effort."

With so much new equipment, FLS provided specialised equipment and operations



Right: After tyre singulation, tyres are conveyed to a chain conveyor, where hooks pick up individual tyres (above) and take them to the feed-point. An ingenious slide device (right) smoothly delivers them to the final feed conveyor.

training, according to Tomlinson. "The training programs, held at both the Midlothian plant and at FLS' United States headquarters, were designed for mechanical, electrical and operations personnel, and the training programs took place as employees continued to operate the existing cement plant," he said.

"During the commissioning process, plant employees invested a significant amount of time and effort to become familiar with the new equipment and to get the plant to operate successfully. It was a much greater effort than we initially anticipated," Tomlinson said. "Ash Grove employees from other plants also assisted in equipment check-out and plant start up. They worked in two and three week rotations over a six month period."

Tomlinson also noted, "Despite challenges with the initial kiln operations and performance, Friday 6 June 2014 will always be remembered among Midlothian employees as the day that the first clinker was made in the modernised plant."

"To date," Vidergar said, "the major challenges have been demonstrating compliance with new source emissions limits, which the plant has succeeded in accomplishing. The thing that is now our main focus is to determine what is necessary to achieve the plant's rated kiln capacity."

IEEE tour

Local Chair Scott Nielson, Ash Grove's corporate environmental manager, explained, "All of us at



Ash Grove are looking forward to hosting the tour on Thursday, May 19. The tour of the modernised Midlothian plant will be an event that conference attendees will want to stay and participate in that day."

> "The logistics are what you would expect. Busses will be provided for participants' convenience. During the ride, a brief safety training program will occur. We will provide safety glasses and hard hats at the site. We ask all attendees to wear closed toe shoes and clothing suitable for a cement plant tour. Attendees will interact with plant personnel who will be staged in various locations at the plant to respond to questions and ensure visitor safety. We will provide lunch before guests return to the conference hotel," Nielson added.

> "We are excited to host our industry colleagues and show them our modernised Midlothian, Texas, plant," Nielson said.

> Global Cement Magazine thanks the assembled executives, and Jacqueline K. Clark, Director of Communications and Public Affairs at Ash Grove, for their time and effort on our questions and on this article!

Left: Even at night, there is no mistaking the Midlothian plant of Ash Grove Cement.

Left: FLS ET 450x400 dryer-

crusher, with worker for scale. Note air-cannons to ensure

trouble-free operation.



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GLOBAL CEMENT: ALTERNATIVE FUELS

Interview by Peter Edwards, Global Cement Magazine

A new world for Entsorga's MBT technology in West Virginia

Entsorga Italia SpA is based in Tortona, Italy. It was founded in 1997 on the basis of leveraging technology to improve environmental protection and standards. Today, Entsorga is a leading provider of technologies such as composting, mechanical biological treatment (MBT) and anaerobic digestion for both organic and municipal solid wastes. Here, the company's Managing Director and President of the Board Pier Cella speaks to *Global Cement's* Peter Edwards about a new and exciting project with the Essroc Martinsburg cement plant in West Virginia, USA.

Company and process introduction

Global Cement (GC): Please could you briefly introduce Entsorga?

Pier Cella (PC): Entsorga is a technology company that is a provider of composting, aerobic and anaerobic digestion and mechanical biological treatment (MBT) plants. The company has an impressive track record of plants that it has built in Europe and North Africa.

Now we are building a new plant in the US while many projects are in the pipeline in other countries such as Canada and Brazil, as well as in the Far East. Entsorga has developed a comprehensive suite of proven and bankable solutions aimed at improving environmental protection, including the Entsorga MBT process.

GC: How does the MBT process work?

PC: The MBT process is a proven technology that

has successfully been used to meet European reduced landfill disposal requirements, develop more economically-feasible methods for municipal solid waste (MSW) disposal and create an environmentally low impact method of solid waste disposal.

The process converts MSW to solid recovered fuel (SRF) to a required specification in four stages: reception, pre-treatment, biological treatment and refining. The mechanical pre-treatment prepares the input waste. The biological treatment harnesses the bio-energy within the organic fraction of the waste to trigger aerobic fermentation, which develops heat from the organic fraction to be used for waste drying. Temperatures are typically in the region of 40-50°C but only around 3% of the total organic fraction is consumed by this process. Due to its biogenic content it is eligible to be considered as a Renewable source. On top of this, it was also confirmed by the US Environmental Protection Agency (EPA) as meeting the eligibility criteria to be considered a 'non-waste' product.



Right: Aerial image of a typical Entsorga MBT installation, located in Westbury, Wiltshire, UK. In Europe the total MBT installed capacity by Entsorga is nearly 0.6Mt/yr.

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GLOBAL CEMENT: ALTERNATIVE FUELS



Project Profile: Entsorga West Virginia

Location: Conceived at: Global CemFuels Conference 2009 **Construction began: Completion expected:** Summer 2017 **Project Partners:** Entsorga Italia SpA Chemtex International Inc

Martinsburg, West Virginia, USA 6 January 2016 Apple Valley Waste Technologies



Further mechanical refinement of the product removes inerts, metals and undesirable plastics, allowing for the production of a specified SRF, while recovering recyclable material. It takes around 15 to 20 days from the time of receipt of the MSW at the facility to the generation of the SRF.

The perks of the MBT process are: Low operation and labour costs; Low CO2 footprint and low energy consumption; Efficient process management and automation; Low investment costs; Small plant footprint; A safe and clean working environment and: Low energy loss from raw MSW to the SRF.

A new plant at Martinsburg

GC: Why is there a new MBT plant being built in Martinsburg, rather than elsewhere in the US?

PC: This is a great story actually! At the 3rd Global CemFuels Conference in Toronto, Canada in 2009, one of our employees met Gianni Gallozzi, the Alternative Fuel Director of Italcementi (Essroc's parent company), in the elevator. They shook hands and discovered that they were the only two Italians at the conference. They started to talk about alternative fuels and SRF.

After that first introduction, a meeting in Italy followed, during which Italcementi declared itself willing to have an SRF stream for its revamped plant in Martinsburg, West Virginia, USA, which was about to be completed.

From that time onwards, we started to work on the project, creating the public consensus in the area, applying for permits, achieving non-waste status for the SRF from the Environmental Protection Agency (EPA) and, finally, building up the funding.

This work included the founding of Entsorga West Virginia, which is a joint venture between Apple Valley Waste Technologies, Entsorga Italia SpA and Chemtex International Inc. Entsorga West Virginia is now in the process of developing the MBT SRF production plant in Martinsburg.

GC: What is the relationship like with Essroc?

PC: The relationship has always been very productive. Essroc has focused on the strategy of replacing fossil fuels with alternative fuels, so it is a 'win-win' partnership.

Essroc and Italcementi, with their technical strength, helped a lot in defining the dialogue with the EPA about the use of SRF and in achieving the 'non-waste' status. Being the largest local employer, the plant gave the project massive credibility. Lastly, the plant has entered into an offset contract for SRF that made funding possible. Without Essroc, the project simply wouldn't have been possible.

GC: How has the local population reacted?

PC: We have found that the local residents are very willing to know more about the new plant and understand the process. There is a very high level of environmental awareness. A non-profit organisation called the Berkeley County Waste Authority (BCWA) is pushing for better waste management and reduced



Above: The location of the Entsorga West Virginia project within the USA and West Virginia.

Left: The FLSmidth kiln and bypass from the top of the preheater tower at the Essroc Martinsburg plant in West Virginia.

dependency on landfill in the local area. This is particularly pertinent in West Virginia, as the ground is very porous. This means that, if the landfill leaks, there are massive consequences on the quality of groundwater supplies.

When the BCWA saw the plans for the plant, understood them and became convinced that the process was sound, it became extremely supportive. It has great credibility in the local area, so that has helped massively in terms of informing the community. The BCWA has been key in helping this project to fly.

It is important to remember that our wider neighbouring community includes the politicians in Washington. We hope that the plant can become a well-known example of good waste management.

GC: What will be the plant's business model?

PC: The plant will be owned by Entsorga West Virginia. The fuel will be delivered to the Essroc cement plant and used as a supplement to coal. Entsorga West Virginia and Essroc have entered into a long-term contract for the provision and acceptance of the SRF.

The SRF will have an agreed specification and will have a positive gate fee, which will provide a revenue for the Entsorga West Virginia plant. In addition, the plant will get the gate fee for the waste in the range of US\$50-55/t. The incoming waste is regulated and guaranteed by a long-term contract with a local hauler and Apple Valley Waste.

Funding has been supported by the State of West Virginia, which issued industrial bonds for US\$25m to finance the construction. The bond will be repaid within 15 years.

GC: Can you describe the design of the new plant in Martinsburg in detail?

PC: The waste is tipped by collection vehicles into re-



ception pits. One of two cranes will grab the material and load it into the mechanical pre-treatment section where the bags are opened and the oversize material removed. At this point the material will be split into two fractions: overscreen, typically >150-250mm which will be sent for mechanical treatment and underscreen, which will undergo biological treatment.

The underscreen will be transferred into the biological treatment area, where it will undergo an aerobic fermentation process to evaporate the moisture from the waste. This process lasts 10-15 days. Once the waste is dry, it can be loaded into the mechanical refinement system where the unwanted fractions are removed by means of screeners, magnets and near infra-red sorters. The final SRF is removed and properly granulated in order to obtain a product meeting the specification required by the cement plant.

Finally the SRF is loaded into moving floor trailers and transported to the docking station and pneumatic feeding line, which is also supplied by Entsorga, before delivery to the calciner at the Martinsburg cement plant. The fact that we supply the SRF directly to the calciner is an important part of the project, as it means we can serve plants with energy at a known price directly to the plant.

The MBT plant will receive 110,000t/yr of MSW and commercial industrial waste and, at full capacity, it will be capable of producing approximately 50,000t/yr of SRF. Over 75% of the total incoming waste will be reduced, converted or recycled.

Like all similar installations, the plant will be under negative pressure to avoid odour release. The process air will also be filtered and cleaned through a biofilter.

GC: Is the plant a typical Entsorga design or does it have some unique features?

PC: This is broadly a typical Entsorga design but it does have some unique features like being capable of treating both MSW and commercial and industrial waste at the same time. Another feature is the implementation of a new near-infra-red sorter that we call 'The Falcon,' which Entsorga developed specifically for SRF. The equipment is aimed for sorting out PVC from SRF in order to keep the level of chlorine very low. However, at the same time, it is capable of analysing the quality of the SRF in terms of composition, moisture and calorific value. It gives real-time information about the SRF quality.

The Entsorga technology takes MSW treatment to the next level in the US and creates an EPA recognised 'engineered fuel.' This means that facilities using SRF produced by the Entsorga technology, as an alternative fuel, will not be subject to the EPA Commercial/ Industrial Solid Waste Incinerator (CISWI) rule and that the engineered SRF meets certain standards that other fuels cannot meet.

Below: Internal view of the biological treatment area at an Entsorga MBT plant in Westbury, Wiltshire, UK.

GLOBAL CEMENT: ALTERNATIVE FUELS

Right: Typical incoming miunicipal solid waste (left) and outgoing SRF (right).



GC: What are the environmental benefits?

PC: This plant will not only have a significant impact on reducing the amount of waste disposed of in landfills, but it will have a meaningful impact on fossil fuel dependency. It is a 'sneak peek' at the next generation of waste collection and disposal in the US.

The use of SRF from the Entsorga process has been proven to generate emissions comparable to or less than those found in traditional US fuels like coal or petcoke. Facilities that have used SRF as an alternative fuel have reduced their greenhouse gas emissions and their overall CO_2 footprint. As a result of less MSW being disposed of in landfills, a substantial emissions reduction of 24,800t/yr of CO_2 equivalent will be achieved.

The Martinsburg plant's alternative fuel substitution rate is currently around 3-4%, due mostly to the use of tyres. Once the MBT plant is fully up and running, this will go up to approximately 30%, which is also the current limit set by the plant's permit.

GC: What has been the biggest challenge in the construction project so far and how was this overcome?

PC: This is the first plant of its kind to be built in the US. There have been plants that convert waste to refuse-derived fuel (RDF) but, in most cases, this was in the form of pellets with a much lower quality than what we expect to produce.

In the end the real big challenge was the long lead time of the project. When opening up this new type of facility, both permitting and funding were difficult. We needed five years to deliver the project. Over such a long period of time things change, the people in charge, the economic situation, the politics, the laws. Thanks to the strong commitment of all the players involved, the project has now reached construction.

GC: When will erection be complete and when is production expected to start?

PC: The ground-breaking of the plant took place on 6 January 2016 and the plant is expected to be operational in mid 2017.

GC: Do you expect the US waste stream to behave any differently from European waste streams?



PC: Waste production per capita in the US is nearly twice that of Europe. Around 167Mt is produced per year and an incredible 137Mt/yr is landfilled. The MSW that is currently being landfilled has a high calorific value due to high content of plastic and is higher than in Europe. As a result of this, we expect to have higher SRF yields and higher SRF quality.

The US market and the future

GC: What are your hopes for the alternative fuels / MBT sector in US over the next five to 10 years?

PC: The Martinsburg plant is our flagship and 'show-room' in the US. Now that the path is open we expect to replicate the business model many times. The alternative fuel substitution ratio in the US is much lower than what we have in Europe and we are very willing to help close that gap.

In the area from Washington to Boston alone there are many cement kilns, just think of the Lehigh Valley! My dream is to be capable of creating a stable, valuable SRF stream for each kiln. This way we can massively improve upon current waste management practices and save millions of tonnes of CO₂.

GC: Where else does Entsorga plan to develop MBT facilities in the coming years?

PC: Our most promising new projects are in South America, Canada and the Far East. Recent developments show that China will be a massive SRF user but we are still at a very early stage of the business development there.

Our work is heavily influenced by the price of fossil fuels, which, at the moment, are very low. Despite this, the alternative fuel strategies of cement companies are long-term strategies. We do not expect the current situation will jeopardise the market in the longer term, even if some delays are inevitable.

It is important, especially as we are now involved in the US, to remember that this is a market-based solution. It does not require any subsidies. The model is not only relevant to the US but, with minor modifications, can be applied to any country where there is a cement kiln. We are willing to pursue projects all over the world.

GC: Thank you very much indeed for your time.

PC: You are very welcome. Thank you!

GLOBAL CEMENT NEWS: ASIA

Taiwan: Taiwan Cement pins hopes on stronger second half of 2016

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n comments reported by the Taipei Times, Taiwan Cement chairperson Leslie Koo Taiwan has conceded that its business has remained weak since 2015 but that it hopes to see a rise in sales in the second half of 2016.

Taiwan Cement senior vice-president Edward Huang claimed that overall demand for cement and clinker in 2016 should remain the same or improve from 2015, citing transportation infrastructure projects in Taiwan and potential demand in China as measures for growth.

Taiwan Cement expects production overcapacity to end in 2016 as the Chinese government continues to close cement plants along with cement price growth throughout the year. The company plans to build four production lines in 2016. A new cement plant in Shaoguan, China, is expected to start production in the first half of 2017.

Taiwan Cement's net income fell by 47% to US\$178m in 2015 from US\$334m in 2014. Sales dropped by 21% to US\$2.89bn from US\$3.65bn. It blamed the result on falling prices and demand in China due to oversupply of cement.

China: Asia Cement revenue falls by 22% in 2015

Asia Cement's revenue has fallen by 22% year-onyear to US\$986m in 2015 from US\$1.26bn in 2014. Its gross profit fell by 50% to US\$148m from US\$295m. It blamed the result on falling demand and 'intense' market competition leading to a 10-year market low price of cement in August 2015.

The Chinese cement producer reported sales volumes of 28Mt of cement in 2015, a similar figure to 2014. Clinker sales volumes meanwhile rose slightly to 1.76Mt. By region sale volumes of cement fell in the group's Southeastern, Central and Eastern regions but rose in the Southwestern region. The biggest fall was noted in the Eastern region, where sales volumes fell by 11% to 2.34Mt.

Asia Cement has cut costs, pushed efficiency drives, and focused on overseas markets in an effort to cope with the market. In May 2015, the Group's silo in Taizhou commenced operation and started exporting products. A total of 0.23Mt of different cement products were exported to Singapore, the US and other overseas markets during 2015.

Asia Cement noted in its outlook that China has entered an 'adjustment' phase in 2016 as market demand continues to decline and production capacity continues to rise. It expects the industry to 'first fall and then rise' in 2016 with demand picking up on the back of new infrastructure projects including the Yangtze River Economic Belt development strategy. In the medium term the group has pinned its hopes on continued government-implemented structural reform in the cement industry to eliminate overcapacity.

China: Chinese mayor rocked by corruption investigation in connection to Shanshui Cement

Yang Luyu, the mayor of Jinan in Shangdong province, is being investigated for corruption by the Communist Party of China Central Commission for Discipline Inspection (CCDI). Yang has been accused of 'serious disciplinary violations' according to Xinhua news agency. He is also the city's Communist Party deputy secretary.

Yang was named in a writ filed with a Hong Kong court in March 2016 according to the South China Morning Post. Two companies, China Pioneer Cement (Hong Kong) and Shandong Shanshui Cement Group, allege that Yang and his deputy mayor, Su Shuwei, conspired with former company directors to take control of the Jinan plant on 7 December 2016. The ex-directors were named as Zhang Caikui and his son Zhang Bin.

China Pioneer Cement (Hong Kong) and Shandong Shanshui Cement Group are subsidiaries of China Shanshui Cement Group. Shanshui Cement's assets are in the process of being auctioned off by courts after defaulting on bonds to pay its creditors US\$372m. Shanshui Cement's statement to the Shanghai Clearing House described almost 100 lawsuits against the company with the total amount being sought at around US\$764m.

Shanshui Cement has faced financial troubles since a battle for control of the company that took place in late 2015 between Tianrui Cement, its biggest shareholder, and the Zhang family, its secondlargest shareholder and former owners.

India: Ambuja Cement and JP Cement accused of tax avoidance in Himachal Pradesh

Two cement plants in Himachal Pradesh have been accused of evading goods tax worth US\$9m, the Comptroller and Auditor General of India (CAG) has said. The Ambuja integrated cement plant at Darlaghat and the JP Cement Himachal grinding plant at Bagha allegedly avoided the tax.

The companies transported 1.7Mt of limestone and 0.21Mt of shale from their quarries between April 2012 and March 2014. Ambuja Cement and JP Cement were liable to pay US\$5.1m and US\$3.9m respectively. The CAG only became aware of the shortfall in December 2015.

Thailand: HeidelbergCement to use Italcementi presence in Thailand for future expansion

Thailand will continue to be Italcementi Group's production base in the Association of Southeast Asian Nations (ASEAN) and as its springboard for expanding into Myanmar after HeidelbergCement acquires a 45% stake in the company in July 2016. In an interview with the Nation newspaper. Italcementi CEO Carlo Pesenti said, "HeidelbergCement, which will be the major shareholder of Italcementi when the deal is complete this July, has a policy to maintain the business in Thailand and its business plan to expand into Myanmar."

Italcementi Group holds a 49% stake of Asia Cement in Thailand. Asia Cement and its subsidiary Jalaprathan Cement have cement production capacity of 5Mt/yr. Asia Cement has set aside an investment budget of up to US\$14m to maintain its three clinker and cement plants in Thailand. However, the company is waiting for the acquisition of Italcementi by HeidelbergCement before it can decide about expansion plans in Cambodia and other territories.



Pakistan: APCMA: Pakistan's production capacity to grow 10Mt by 2018

A fter claiming that Pakistan doesn't produce enough cement to meet its domestic consumption, Morteza Lotfi, head of the Fars & Khuzestan Cement Company, has also revealed that Iran will supply cement to Pakistan and in return Pakistan will export the same amount of cement to its neighbouring countries under Iran's name. This is part of The Pakistan cement industry plans to invest up to US\$1bn towards production capacity growth of 10Mt/yr by 2018.

The growth will be targeted at the growing real estate market and expected China Pakistan Economic Corridor (CPEC) projects stated Mohammad Ali Tabba, chairman of the All Pakistan Cement Manufacturers Association

•••••

China: CNBM net profit falls by 83% to US\$157m

China National Building Material Company's (CNBM) net profit has fallen by 83% year-on-year to US\$157m in 2015. Its revenue fell by 17.8% to US\$15.4bn.

Two of CNBM's cement subsidiaries also reported falling financial results. China United saw its sales fall by 28% and South Cement reported that its revenue fell by 21%.

Tajikistan: Domestic cement production increased in first quarter of 2016

Cement production volumes have increased by 33% year-on-year to 0.373Mt in the first quarter of 2016 from 0.249Mt in the same period in 2015. The majority of the production was produced by Huaksin Ghayyur Cement, which accounted for 55% of the output. Domestic demand for cement is estimated vto be up to 3.5Mt/yr in 2016. Existing local cement production capacity should fully meet this, according to the Avesta news agency.

India: Jammu and Kashmir state government to purchase cement from JK Cements

The state government of Jammu and Kashmir has required that all of its departments in Jammu Valley should buy cement from Jammu and Kashmir Cements as a first preference. Government order 89-IND of 2016 enforces the order according to the Early Times. Under the directive all relevant departments are only able to purchase cement from the open market where Jammu and Kashmir Cements is unable to supply the order and a non-availability certificate is obtained. (APCMA) in comments to the Business Recorder. "Four companies have already announced their plans in this regard. Cherat Cement is going to do it from next year, and then Attock Cement, DG Khan Cement and Lucky Cement will materialise their plans," said Tabba.

He added that at present the country has a production capacity of 46Mt/yr, a demand of 38Mt/yr and a capacity utilisation rate of 80 – 85%. His argument for cement industry growth rests on the industry hitting this capacity utilisation rate. The last time a significant increase in industry capacity was undertaken was in 2005 -2006 when it was increased from 17.9Mt/yr to 42.3Mt/yr in 2008 – 2009.

India: Competition Appellate Tribunal delays sale of Lafarge India

The Competition Appellate Tribunal has delayed the sale of Lafarge India following an appeal by Dalmia Cement Bharat. The sale has been halted until a hearing on 9 May 2016.

"Operation of order dated 2 February 2016 passed by the Competition Commission of India (CCI)... shall remain stayed," read the COMPAT order passed by its chairperson Devender Kumar Sikri. LafargeHolcim has been asked to reply to Dalmia's appeal before the hearing in May 2016.

Lafarge India is selling all of its assets in India including a cement production capacity of 11Mt/yr. It received approval from the CCI in February 2016.

Vietnam: Ha Tien 1 Cement net profit falls by 48% in first quarter of 2016

a Tien 1 Cement has reported that its net profit fell by 48% year-on-year to US\$5.86m in the first quarter of 2016. The company cited currency variations for the drop in profit. Its net revenue rose by 9% to US\$78m in the period.

China: Asia Cement revenue drops 11% to US\$185m in first quarter of 2016

Asia Cement's revenue has fallen by 11% year-on-year to US\$185m in the first quarter of 2016. Its gross profit fell by 45% to US\$18m. The Chinese cement producer blamed the result on falling sales prices.

Sri Lanka: Tokyo Cement resumes clinker imports from Japan

Colombo-based Tokyo Cement has resumed importing clinker from Japan. The clinker will be used to make the producer's NIPPON-PRO branded cement.

"We at Tokyo Cement having identified the demand for a high performance cement tied up with a leading Japanese manufacturer to import clinker with high specifications," said Dashantha Udawatte, Group Marketing Manager at Tokyo Cement. Tokyo Cement operates a 2.4Mt/yr cement grinding plant in Trincomalee.

Syria: Army establishes control over Al-Badiah Cement Company plant

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The Syrian military has regained control over the Al-Badiah cement factory in East Damascus from Takfiri militants related to the so-called Islamic State. According to the Syrian Arab News Agency (SANA), on 7 April 2016 a 'group affiliated to the ISIS terrorist organisation kidnapped more than 300 workers and contractors.' SANA also reported on 15 April 2016 that 'an army unit, in cooperation with popular defence groups, established control over the plant'.

Aamaq, the so-called Islamic State's affiliated news agency, had previously claimed that the majority of the workers were released after questioning about their religious and political backgrounds. It said that four workers who belonged to the Druse community were killed and 20 other pro-government personnel were still being held before the military stormed the facility and forced the Takfiri militants' retreat.

Malawi: Cement import licences defended by government ministry

The government of Malawi has defended its decision to introduce licences for cement importers, stating that there is no ban on importing the building material. Wiskes Mkombezi, Ministry of Industry and Trade spokesperson, stated that the government was issuing the licences to protect consumers from an overpriced and monopolised local industry and from the threat of smuggling. He added that the licences were to regulate and bring what he described as "sanity" to the industry.

Saudi Arabia: Saudi Arabia lifts cement export ban

S audi Arabia has lifted a ban on exporting cement, claims Yanbu Cement CEO Ahmed bin Abduh Zugail. Zugail, who is also the deputy head of the Saudi national committee of cement companies, added that cement companies have welcomed the relaxation of the ban. Full details of the new regulations are yet to be released by the Ministry of Commerce.

Local press reported in late November 2015 that government bodies were considering cutting the ban on cement exports. The ban was originally introduced in Saudi Arabia due to a shortage of cement which was hindering infrastructure projects built using oil revenue and causing an overinflation of cement prices.

Saudi Arabia: Yanbu Cement profit falls in first quarter of 2016

Yanbu Cement Company has reported an 11.1% year-onyear fall in its net profit to US\$49m in the first quarter of 2016, from US\$55m in the same period in 2015. The Jeddahbased cement producer has blamed the profit reduction on a fall in sales and a rise in fuel prices.

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Rwanda: PPC's Cimerwa plant to reach full production by mid-2018

PC says that its 0.6Mt/yr Cimerwa cement plant in Bugarama, Rusizi will reach full production by mid-2018. According to Business Daily, the greenfield plant is part of PPC's strategy to make 40% of its turnover from outside of South Africa by 2018. The plant is currently running at approximately 60% of its production capacity.

Cimerwa sales volumes have exceeded 0.1Mt from commissioning to February 2016, with further sales, marketing, and distribution efforts expected to improve this in the future. The plant sells cement domestically in Kigali and exports it to the Democratic Republic of Congo and Burundi.

PPC is building cement production capacity in Africa with plants being built in the DRC, Ethiopia and Zimbabwe. Capacity is expected to reach 12.7Mt/yr in 2018 from 8.6Mt/yr in 2015.

Zimbabwe: Construction of PPC Ruwa Plant making progress

PC sources told the Financial Gazette that civil and structural construction of the 0.7Mt/yr PPC Ruwa Plant in Msasa is now more than 50% complete. The US\$80m plant is expected to be running by the end of 2016.

Ethiopia: Derba Cement plans US\$300m expansion

erba Cement has annnounced a plan to build a US\$300m expansion to its cement plant in Chancho City, Sululta. The expanded plant will have a production capacity of 2.5Mt/yr and is expected to take 18-24 months to complete once started, according to the Cihan News Agency.

The subsidiary of MIDROC is in talks with China National Building Materials Company to build the new plant. According to Derba Cement CEO Haile Assegide, the company is negotiating with the Development Bank of Ethiopia, International Financial Corp, the World Bank Group investment arm, the African Development Bank and the European Investment Bank to finance the project.

Assegide lauded Derba Cement's decision to build an upgrade in a market with excess production capacity due to the project's cost efficiency, with the new plant planned to use existing infrastructure. The plant will also benefit if the government implements the Second Growth and Transformation Plan (GTP II) which would see an increased demand for cement.

Derba Cement currently has a 2.5Mt/yr cement plant at Chancho City. The facility however is producing 0.5Mt/yr less than its capacity due to power supply interruptions. The Gilgel Gibe III Dam that started producing electricity in late 2015 is expected to normalise the electric supply to the plant.

Cameroon: Shareholders add capital to Medcem Cameroon

he share capital of Medcem Cameroon has risen to US\$689,000 from US\$17,200, the company has revealed in a statement. The cement grinding plant however has not produced cement for the local market in at least six months according to the Agence de Presse Africaine. Medcem's production stopped after several shutdowns in early 2015 and a period of testing in late August 2015.

Medcem Cameroon, a subsidiary of Turkish company Eren Holding, has a cement production capacity of 0.6Mt/yr. Les Cimenteries du Cameroun (CIMENCAM), a subsidiary of LafargeHolcim, and Ciments de l'Afrique (CIMAF), part of the Moroccan Addoha group, both operate integrated cement plants in the country. Dangote opened a cement grinding plant in August 2015 and Mira is also planning to build a grinding plant in the country.

Nigeria: Dangote launches construction of 6Mt/yr cement plants in Okpella

angote Cement has started building a 6Mt/yr cement plant in Okpella, Edo. According to AllAfrica.com the Nigerian cement producer has invested US\$1bn in the plant, with the company also building another 6Mt/ yr cement plant in Itori, Ogun. Dangote's cement production capacity in Nigeria is expected to grow to 41Mt/yr once construction of both plants is complete. The groundbreaking event was part of the celebrations to mark company owner Aliko Dangote's 59th birthday.

Bahrain: Abu Dhabi Financial Group to acquire 10% stake in Falcon Cement

he Abu Dhabi Financial Group (ADFG) has signed a sale agreement with GFH Financial Group to buy a 10% stake in the Falcon Cement Company, according to Gulf News. Jassim Al Seddiqi, chief executive officer of ADFG stated "With Falcon Cement's strong market position and potential for future growth following the completion of a second production line later in 2016, the company represents an attractive investment opportunity for ADFG."

Falcon Cement currently only has one cement plant in Bahrain with a production capacity of 0.35Mt/yr. Production capacity is expected to increase to 0.85Mt/yr when the second production line launches at the end of 2016.

Uganda: 2016 – 2017 budget proposes doubling excise duty on cement

Excise duty on cement is set to be doubled in the 2016 – 2017 Uganda budget as part of a set of measures designed to increase government expenditure. The excise duty charged on a 50kg bag of cement is to be raised by over 93% to US\$0.29 from US\$0.15. Industry commentators in local press have warned that this could raise market prices, depress consumer demand and discourage new investments. Other commodities affected by the increased duties include petrol and vehicle lubricants.

Expressing his displeasure with the proposed budget, Joseph Kitone, a hardware dealer quoted by the EastAfrican newspaper said "Cement is a very price-sensitive product among retail buyers and the proposed tax increase could suffocate demand patterns. This situation has partly resulted in relatively small margins of about \$0.05 earned per bag among local dealers. I feel the excise duty rate on cement should have been kept stable to allow producers and agents to remain afloat under difficult economic conditions."

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South Korea: South Korea's Fair Trade Commission (FTC) has fined six cement makers a combined US\$167.8m, on a charge of price rigging. The country's cement price has risen 43% in less than a year.

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The makers accused of price rigging are Ssangyong Cement Industrial Co., Tongyang Cement & Energy Corp., Sungshin Cement Co., Hanil Cement Co., Hyundai Cement Co. and Asia Cement Co., which together account for 76.4% of the nation's cement market. This is the fourth time that the country's cement industry has come under fire for price fixing.

Their alleged coordinated price fixing buoyed the country's cement price by 43% from US\$38.74 per ton in the first quarter in 2011 to US\$57.94 in April 2012.

Egypt: Cement prices in Egypt continued to be stable in March, said Minister of Supply Khaled Hanafy. All cement companies, excluding Spanish-Egyptian Cement Company, kept March prices at their levels of a month earlier, he noted. Lately, the country's cement industry has seen an increase in production and a decline in supply and local purchasing. The maximum sale price was set for Suez Cement Group at US\$95.72 per ton and for National Cement at US\$84.46 per ton, Hanafy added.

Pakistan: The price of cement in Pakistan is almost double its neighbouring countries, builders say, accusing local cement makers of 'minting money' on the pretext of the Gas Infrastructure Development Cess (GIDC) and customs tax on coal.

All-Pakistan Cement Manufacturers Association (APCMA) Chairman Muhammad Ali Tabba has categorically stated that cement manufacturers were unable to cut prices due to the imposition of GIDC and a 6% customs duty on coal imports. In contrast to the decreasing

global coal prices, cement

manufacturers in Pakistan have raised prices over the past three years, from US\$7.23 per 50kg bag in 2013 and to US\$7.83 in 2014 to US\$7.78 in 2015, Mr Gohar said. The commodity is still being sold at more than US\$7.13 per bag.

Philippines: Cemex Holdings Philippines advised dealers and distributors about a US\$0.21-per-bag increase starting April 10. Rizal Portland cement, one of the brands manufactured by Cemex in the Philippines, will be sold at US\$4.84 per 40kg bag, up from US\$4.62 per bag previously. Prior to the impending price hike, the brand also increased its price by US\$0.13 in the month of February. Meanwhile, Holcim Philippines Inc. plans to bring in imported cement. Industry monitoring showed that imports were coming in at US\$4.52 per bag. Holcim Philippines plans to bring in imported cement from Vietnam at US\$4.52 per bag, the standard rate in Palawan. Recent industry figures showed that cement sales in 2015 reached 24.36Mt, up by 14.3% from 21.3Mt sold in 2014.

Hong Kong: UOB Kay Hian raised its target price for China Resources Cement to US\$0.37 from US\$0.34/ share.

In light of better control over production costs, UOBKH lifted its gross margin estimate by 1.2% and lowered its forex loss assumption by 17% for 2016. Accordingly, it raised its 2016 net profit forecast by 14%.

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

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What if the hippies were right?

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The Hippie Movement was an informal counter-cultural collection of ideas that gained currency in the 1960s in the US, but which had largely been overtaken by other cultural movements by the 1980s, leaving only isolated adherents clinging to their out-dated ways, with believers increasingly looking like unwashed madmen from the last century.¹ Right?

Yes, that's about right - but not completely right. Being an informal 'state of mind,' the Hippie Movement had no official creed, but 'hippieism' might be boiled down to a belief in peace and love (and a strong anti-war stance), anti-materialism/anti-consumerism, love of music, cultural and religious diversity, individualism, hedonism, healthy living, communal living, a longing to 'get back to nature,' intake of drugs and a strange adherence to Frisbee. Comparing US culture before the hippies (which espoused a widespread conservatism) to that afterwards and looking at today's culture, not just in the US but in Europe and elsewhere, it's interesting to note how many of these hippie beliefs have gained traction in the mainstream. Maybe Frisbee not so much.

I've been reminded of the hippies in the last couple of months due to the general weakness of trading results of cement companies around the world. ('How are these connected?' I can almost hear you thinking). First of all, let's look at the current state of the cement industry worldwide. In Europe the industry is still coping with a massive crash after the boom in the early-2000s. Every country has seen a fall in demand, some by as much as 80%. Production capacity has been scaled back, mothballed, closed and in some cases demolished. We are groping our way back to a sustainable level of production capacity, after the 'irrational exuberance' of the pre-crash years. Eastern Europe has also now seen a decade's worth of weak growth: remember when those post-Communist states were seen as the new 'Tiger Economies' of the New Europe? That seems a long time ago now. India and China are in a similar situation but for different reasons: China went mad for a decade, building perhaps 50% too much production capacity, building too many dwellings and more infrastructure than its economy can usefully use (and afford) at the moment, and is now busy destroying a fair proportion of the un- and underused cement production capacity, partly by diktat from central government (they can do that in Communist China). In India, too many ambitious and perhaps unrealistic cement companies have been building castles in

the sky, laying claim to future market share that has not materialised, resulting in a similar massive over-capacity. Both huge countries (which between them make up 40% of the world's population and perhaps half of the world's cement production capacity) are now confronted with the near-impossibility of making money from cement production without turning to cartelisation. Southeast Asia is suffering from oversupply, the Middle East is riven with factional and sectarian infighting and has been hit by the drop in the oil price (with even Saudi Arabia running a budget deficit in 2015). US companies are doing better, with higher levels of cement demand - but levels that are not nearly as high as the PCA had forecast them to be. South America has its hotspots (and low-points - Brazil is descending into recession, only a few years after it was touted as one of the ill-fated BRICs) and Africa could yet be an economic dynamo for the rest of the world (it has the population, after all). Overall, the cement industry around the world is in the doldrums.

What is happening out there? Are people (and companies) sitting on their hands, not spending money, not investing, hoping that prices will fall in today's deflationary environment? Perhaps they are squirrelling it away for a rainy day (the Chinese, Japanese, and Germans, for example, are inveterate savers, with some of the highest savings rates in the world²). The Global Savings Glut³ means that European non-financial companies have over Euro1trn of cash on their balance sheets. High savings rates might make the much-touted Chinese pivot from export-led industrial development towards an economy powered by domestic consumption a very difficult Uturn to accomplish.

What's this got to do with the hippies though? Well, perhaps the anti-materialism/anti-consumerism ethos of the hippies is finally being affirmed (and being reflected in plateauing cement demand). Once you have your water, food, warmth, clothes, habitation/home, safety, friends and the means for self-respect, you may not need a whole lot more⁴. A Rolex, a 60" flat-screen TV, Gucci handbags, a Maserati and holidays in Mauritius might be something that a few might aspire to, but most people, I suggest, are happiest with orderliness and quiet, family and friends, security, stability and - yes - peace and love.

1 https://en.wikipedia.org/wiki/History_of_the_hippie_movement 2 http://data.worldbank.org/indicator/NY.GNS.ICTR.ZS 3 https://en.wikipedia.org/wiki/Global_saving_glut 4 https://en.wikipedia.org/wiki/Maslow%27s_hierarchy_of_needs



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