
40 عاماً
40 Years
ARAB UNION FOR CEMENT AND BUILDING MATERIALS
هيئة عربية دولية

Cement and Building Materials Review

Arab Album | International News | New Products | Technical Articles | Diary Dates

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- *The Magazine editorial staff welcome the contribution of experts to enrich the contents of the magazine .*
- *Articles are not to be returned to authors .*
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Contents

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MVR 6700 C-6 in operation at LafargeHolcim's Barroso works in Brazil

ALGERIA

Algeria facing 10Mt cement production overcapacity by 2019

The head of communications at LafargeHolcim Algeria says that Algeria faces a cement production overcapacity of 10Mt by 2019. He added that the country will overproduce 1Mt in 2017 and that it imported 3.5Mt in 2016. LafargeHolcim intends to diversify its product range to cope with this anticipated production glut with a focus on roads, airports and industrial users.

Global Cement News

Algeria faces regional competition for exports

Algeria is closing in to its target of achieving self-sufficiency on cement production and will soon find itself in a state of overcapacity. In fact, overcapacity is expected to reach 10 million tons per annum in 202021-, following the conclusion of cheap housing projects.

Recently, the Minister of Industry and Mines said that the country may resort to exports in order to reduce overcapacity. However, regional competition is to be expected.

Domestic consumption has been falling consistently in Morocco, leaving the country in a state of overcapacity. LafargeHolcim Morocco is already very present in the West Africa market, dedicating a subsidiary to exports into the region.

In Egypt, capacity for cement production increased sharply from 50 million tons in 2010 to 70 million tons in 2015. Demand may soon increase in the country, and manufacturers have troubles reaching full capacity due to fuel shortages, but Egypt remains a large player in the region.

Neighboring Tunisia reached a total capacity of 11Mt in 2015, and a new cement plant with the capacity for one Mta will be operational in 2018.

CemWeek

Cement imports in 2016 down 27,41%

The National Informatics Centre and Customs Statistics (CNIS) released its figures regarding the country's building materials imports throughout 2016.

Daily Cement

Biskria Ciment orders five mills from Loesche

Biskria Ciment has ordered five vertical rollers mills from Loesche. The contract includes two raw cement mills and three clinker mills for the plant at Biskra. With these mills raw cement meal can be ground to a fineness of 12% sieving residue with 90µm at a processing capacity of 500t/hr and the cement clinker to a fineness of 3,400 Blaine. The three new cement clinker mills have already been delivered and commissioning is planned for autumn 2017. The Chinese company CBMI Construction will act as contractor in this enterprise. No value for the order has been disclosed.

Global Cement News

ThyssenKrupp to build cement plant in Algeria

ThyssenKrupp Industrial Solutions has been awarded a contract by Société des Ciments de Sigus, part of Groupe Industriel des Ciments d'Algérie (GICA), to build a cement plant at Sigus, in the Wilaya of Oum El Bouaghi, near Constantine. The plant will have a clinker production capacity of 6000t/day. Operation is planned to start in early 2019. No exact value for the order was disclosed but it was placed above US$100m.

GICA has launched several projects to increase its cement production capacity from 12Mta to 20Mta by 2019. ThyssenKrupp previously received an order from GICA in 2013 to build a 6000t/day cement plant.

Global Cement News

EGYPT

FLSmidth to supply cement production line to El Sewedy Cement Company

FLSmidth has been awarded an order from El Sewedy Cement Company for engineering, procurement and supply of equipment for a cement production line, following the license granted in December 2016 by the Industrial Development Authority to build a plant in Ain Sokhna, Suez Governorate.

Daily Cement

Misr Beni Suef Cement postpones installation of coal mill

Misr Beni Suef Cement Company has postponed the installation of a coal mill at its plant in Beni Suef for the 3rd quarter of 2017 amid financial shortages.

Daily Cement

Suez Cement to raise Helwan Cement plant's productivity

Suez Cement Company (SUCE) aims to boost the productivity of Helwan Cement after completing its plan to convert the plant to run on coal.

Daily Cement

IRAQ

Northern Cement Jordan to enter joint venture in Iraq

Northern Region Cement Co. of Saudi Arabia announced that its Jordanian subsidiary will enter a joint venture in order to upgrade and operate Basra cement plant.

Daily Cement

Southern Cement State Company increased output in 2016

Southern Cement State Company, owned by the Ministry of Industry and Minerals, announced that the cement production at its Kufa and Najaf cement plants increased in 2016, exceeding 2 million tonnes.

Daily Cement

Hefei Cement Research & Design Institute to build complete grinding plant for Attock Cement's factory in Basra

Attock Cement Pakistan Limited has awarded a contract to Chinese supplier Hefei Cement Research & Design Institute (HCRDI), part of CNBM, to build a complete cement grinding plant in Basra.

Daily Cement

LEBANON

Cement sales in 2016 up 4%

Central Bank (BDL) has published its statistical data regarding the sales volume of local cement manufacturers.

Daily Cement

MOROCCO

Domestic cement sales in 2016 down 0,7%

The Ministry of Housing published its statistical data on the country's domestic cement sales during 2016

Daily Cement

Cement industry embraces renewable energy

According to Association Professionnelle des Cimentiers (APC), the domestic cement producers already source about 80% of their energy from renewable energy sources.

Daily Cement

LafargeHolcim Morocco to build two cement plants in Souss-Massa

LafargeHolcim Morocco plans to build two new cement plants at Tizgilt, Chtouka Ait-Baha and Tidmi, Taroudant in the Souss-Massa region. The project is budgeted at Euro720m.

Global Cement

OMAN

Magotteaux upgrades dynamic separators at Oman Cement plant

Belgian company Magotteaux S.A. was awarded an EPC contract by Oman Cement to change the existing Dynamic Separators for mills 1 and 2 at the latter's plant in Rusayl Industrial Area, 60 km from Muscat.

Daily Cement

CNBM Engineering to install new rotopacker and truck loading machine at Oman Cement plant

In order to increase its packing and loading capacity, Oman Cement has awarded an EPC contract to China's CNBM International Engineering Co. Ltd. (CNBMIE).

Daily Cement

PALESTINE

Palestine will have its first cement plant

The plant will be constructed by Sanad Construction

Resources Company, a subsidiary of the Palestine Investment Fund operated by the Palestinian Authority. The project was launched in October 2016 and will take 18 months. The first phase of the cement plant represents an investment of USD 60 million and will produce 1Mta of cement; while the completed project will produce 1.3 Mta. Production may then have further increases and reach up to 5Mta.

The Palestinian market currently demands 3Mta. Palestinian Constructions, a large company in the building materials sector, will consider if the new plant will become its major supplier. For now, the company imports cement from Jordan, Turkey, and Greece

CemWeek

QATAR

Qatar National Cement to increase capacity

Qatar National Cement Company will increase its capacity during the first half of 2017.

The company will commission two new cement mills during the first half of current year, rising its daily capacity by 5,500 tons in order to cover rising demand in Qatar.

Additionally, Qatar National wants to dispose of its cement plant no. 1, closed since June 30, 2016.

In 2016, the company produced 3.7 million tons of cement, down from 3.8 million tons in the previous year. Volume of sales matched production in both years while reaching QAR 1.14 billion in 2016 and QAR 1.17 billion in 2015.

CemWeek

Qatar Primary Materials Company to inaugurate cement silos in early 2017

Qatar Primary Materials Company (QPMC) plans to inaugurate its new cement silo project in the first quarter of 2017. The project is located at the Port of Mesaieed and includes two cranes, two conveyor belts, 12 silos each with a storage capacity of 5000t and a total of 60,000t. The silos will have a discharge rate of 250t/hr with a total of 1000t/hr. The silos were to ensure a 'sustainable' supply of cement in the country, and the site is intended to store and discharge over 2Mt/yr of cement.

QPMC completed its Bulk Materials Handling System in late 2016, a 4.8km conveyor belt system connecting the Port of Mesaieed to storage areas. The conveyor operates at a speed of 3m/s allowing material to be transported to the destination in under 30 minutes. The building materials distributor says that the conveyor is the first in the Middle East and one of the longest in the world.

Global Cement News

SAUDI ARABIA

Saudi Arabian cement producers to cut production by up to 10% in 2017

Cement producers are planning to cut their production by 5 - 10% in 2017 due to a fall in demand. The decision follows declines in profits of around 17% by local companies in 2016. The decrease in demand for cement has been blamed on competition, high production costs and high energy costs. Cement sales in the country started to decline in 2015 following the low international price of oil.

Global Cement News

Producers unlikely to benefit from export ban

Cement makers in Saudi Arabia are unlikely to benefit from the government's decision to lift a ban on exports due to higher tariffs, according to Saudi Cement Chairman, Khaled Al-Rajhi.

The sector has suffered from weaker demand and lower government spending on infrastructure. As a result, clinker inventory had risen to record levels by the end of 2016.

Last September local cement producers competed for market share amid inventory build-up by offering discounts. Profit margins for most companies narrowed as high transportation costs also weighed on their finances. The sector will face new challenges due to a sustained rise in clinker stockpiles following corporate expansions.

Intercem Markets

Al Jouf Cement granted export license

Al Jouf Cement Co. (JOUFCEM) announced it was granted a license to export cement.

Daily Cement

City Cement's grinding unit to start commercial operations in H1

City Cement Co. will launch commercial operations in its grinding units in the first half of 2017.

In November the cement producer extended the trial run of its grinding unit by another three months, but indicated that the delay would not increase the project's total cost.

In May, the company started trial operations at the unit to boost grinding capacity by 265 tons/ hour.

Argaam

Najran Cement receives export license

Najran Cement Company announced it has received a

cement exporting license valid for a period of 1 year.

Daily Cement

Najran Cement halts production line

The company's clinker stockpile has mounted to one year of sales

CemWeek

Saudi White Cement Co. to raise production capacity

Saudi White Cement Company's CEO Shoail Jarallah Al Ayed said that the company intends to raise its production capacity from 320,000 tonnes to 945,000 tonnes per annum.

The increase will seek to fulfill the current need of 800,000 tpa, where the company's factory is the one and only in the Kingdom for white cement production, adding that around 500,000t are being imported.

Mubasher

Tabuk Cement secures exporting license

It is the third exporting license attributed in Saudi Arabia.

CemWeek

Yamama Cement shuts down production lines

Yamama Cement has temporarily shut down five of its production lines. The lines have a joint clinker production capacity of 5600t/day. The decision was made due to poor market conditions, low demand for cement and high inventory.

Global Cement News

SYRIA

Tartous Cement to use coal as fuel

The company will reconvert its plant from fuel oil to coal.

CemWeek

TUNISIA

Tunisian government to sell stake in Carthage Cement

Finance Minister has said that the Tunisian government has decided to sell its share in Carthage Cement. It owns an estimated 41% share of the cement producer. The decision was due to financial problems at the company as well as issues with production and export. Carthage Cement's chief executive Ibrahim Sanaa has blamed a rise in production costs on a poor construction market and production overcapacity.

Global Cement News

UAE

Arkan closes Emirates Cement Factory, one of UAE's oldest plants

Rising power costs have forced the closure of one of the country's oldest cement plants as subsidy reforms start to bite.

Arkan announced in December that it would take a series of measures to combat higher gas and electricity prices that were introduced on January 1 this year.

These included temporarily closing Emirates Cement Factory, which has been operating for 43 years, and accommodating production at its nearby Al Ain Cement Factory — a Dh1.3bn facility which opened in November 2014. But now the Abu Dhabi-listed producer has decided to shut down the factory permanently. Its Al Ain Cement Factory is now running at almost full capacity.

Cement production, which is an energy-intensive process, accounted for 72% of Arkan's sales in the first nine months of 2016.

Arkan Building Materials is part of Abu Dhabi's General Holding Corporation, Senaat, which was set up to help diversify the emirate's economy.

Intercem Markets

Emirates Global Aluminium and Arkan to test recycling hazardous waste

Emirates Global Aluminium (EGA) and Arkan have agreed on implementing a test project to recycle hazardous waste material from smelting pots as fuel for the latter's cement kilns.

Renca develops fly ash and slag cement for 3D printing

Renca, a technology start-up working with Dubai's Future Accelerators programme, has developed a geopolymer cement from fly ash and ground granulated blast slag that can be used in 3D printing. The product's advantage over Ordinary Portland Cement when used in additive manufacturing is that it can be used without additives making it cheaper.

The company is working with the Dubai Municipality to develop its material for use in 3D printing projects in Dubai. The company is also looking to set up a plant for its product in the city.

Global Cement News

It is a win for LOESCHE with the order of five large vertical roller mills on the Algerian cement market

LOESCHE mill type LM 60.4, Guangzhou, China

Advanced mill technology for the grinding of cement raw meal and cement clinker for use in high-grade building materials.

LOESCHE has been able to sell five large vertical roller mills to the emerging cement market in Algeria. The local building sector in Algeria is one of the drivers of increasing cement demand, which now stands at 24.5 million tons per year in this North-African country, and is not being met by the current annual production of around 19.5 million tons. Not least for this reason, several large-scale cement projects have recently been started there: As a result, LOESCHE will now be providing two mills for cement raw meal and three mills for cement clinker to the cement plant of the Algerian producer SARL Biskria Ciment in Biskra – 300 km south-east of the capital, Algiers. With this, the cement raw meal can be ground to a fineness of 12% sieving residue
with 90 µm at a processing capacity of 500 t/h and the cement clinker to a fineness of 3,400 Blaine.

The three new cement clinker mills have already been delivered and commissioning is planned for autumn 2017. The Chinese firm CMBI Construction Co. Ltd. from Peking, with whom LOESCHE have collaborated successfully for many years in this sector, will act as contractor in this enterprise. For SARL Biskria Ciment, Algeria is not only a strategically important market in the Mediterranean region. With the expansion of its production capacity, the company aims to acquire national and international
national market with local products, so as to ensure a stable supply with high-quality building materials at affordable prices. The commissioning of the new cement production line should see production volumes in the Algerian market rise considerably over the course of 2017 and contribute to a reduction in cement imports.

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Siwertell receives third order for road-mobile cement unloader from Acico Construction

Siwertell, part of Cargotec, has signed a contract with Kuwait-based company Acico Construction for its third road-mobile cement unloader. Similar to its last delivery in 2015, the next-generation, road-mobile unloader will be a trailer-based, diesel-powered Siwertell 10 000 S unit. It will be fitted with dust filters and a double bellows system for uninterrupted operations and like its predecessor will have a rated capacity of 300t/h. Acico also operates a Siwertell 5 000 S unit, which was delivered in 2014.

"Repeat contracts are very important indicators of performance and customer satisfaction," says Jörgen Ojeda, Director, Mobile Unloaders, Siwertell. "Acico initially enjoyed positive experiences operating Siwertell equipment belonging to third parties. This was an important factor in helping the company decide that it would like to own and operate its own unit. This positive experience has continued, making it quite an easy decision for Acico to once again choose a system from Siwertell to meet the needs of its expanding operation."

Acico Construction, part of Acico Industries Company, was founded in 1990 and has experienced sustained and steady growth. Its third Siwertell unit has been ordered so that the company can focus its operations on the increasing number of larger vessels, up to 10,000 dwt, that it now handles.

The new unit will be built at Siwertell's premises in Bjuv, Sweden and delivered by the end of the first quarter of 2017. It will operate in Kuwait's second largest port, Shuaiba, located south of Kuwait City.

The Siwertell road-mobile unloaders were originally developed for handling cement, making them ideal for this commodity, although they can comfortably handle a wide variety of dry bulk materials.

"We are seeing a lot of repeat customers who cite the efficiency and reliability of Siwertell's mobile units as reasons for returning to us," says Mr Ojeda. "We are also being approached by first-time customers looking to prioritise quality, long-term efficiency, performance and reliability over a marginally cheaper alternative investment. In the long run, a lower-priced system might prove to be considerably more expensive as a result of lower efficiencies, greater downtime and higher maintenance costs.

Acico benefits from a Siwertell Care maintenance support contract, signed in 2015. With one more year to run, it covers Acico's first two road-mobile units.

The agreement includes an ongoing training element for Acico maintenance staff, covering mechanical and electrical systems and instrumentation.

"Siwertell road-mobile units are well designed and constructed and in consequence they are inherently robust and reliable. However, expert attention delivered on a timely, planned basis is the ideal way to ensure maximum uptime, a long service life and good cost control," says Mr Ojeda.

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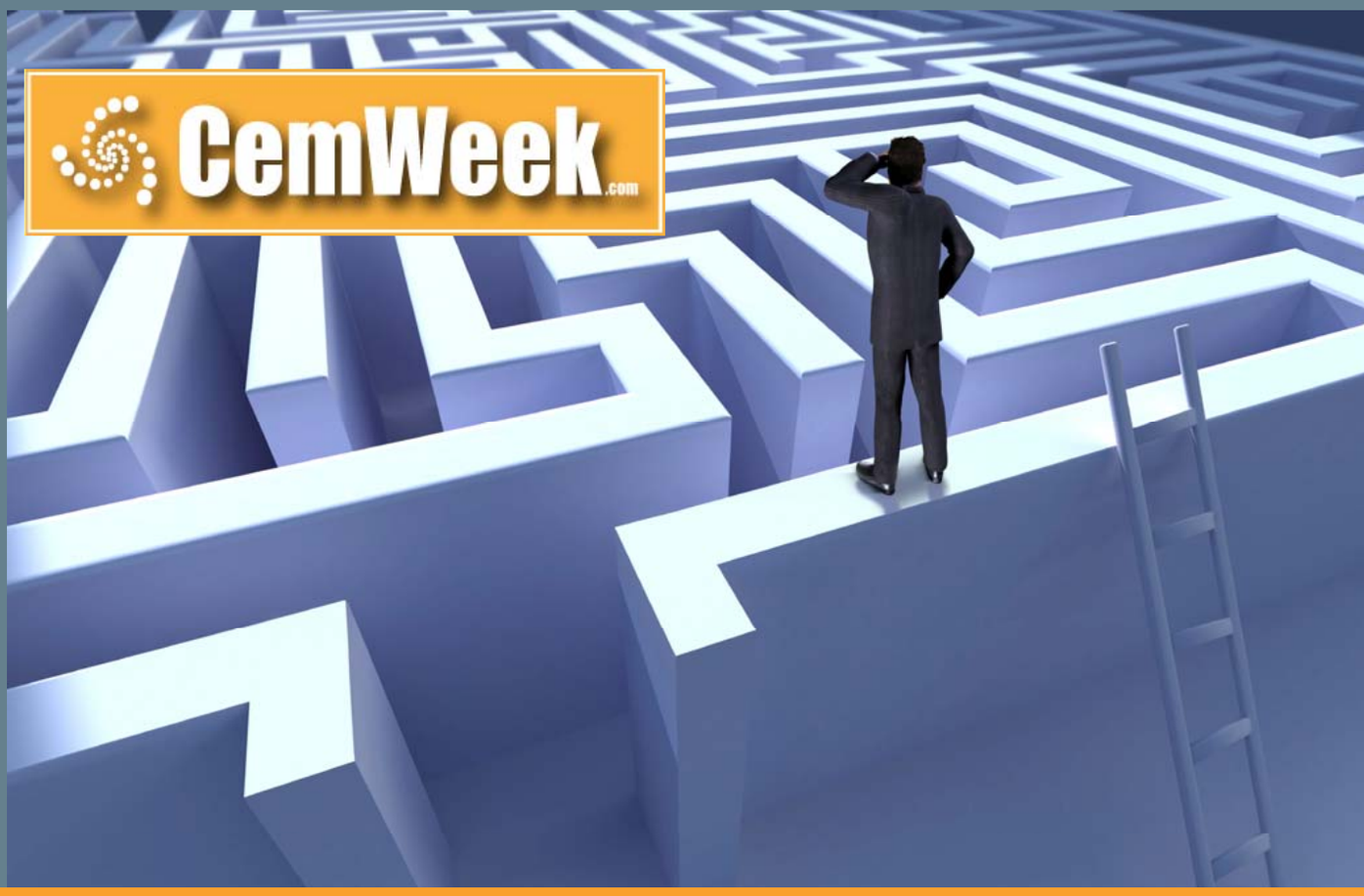
Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as alumina, biomass, cement, coal, fertilizers, grain and sulphur. Siwertell's product portfolio includes ship unloaders, mobile ship unloaders, ship loaders, conveying systems and complete bulk terminal solutions, all of which are designed to ensure environmentally-friendly and efficient cargo operations.
www.siwertell.com
Siwertell is part of Cargotec. Cargotec's (Nasdaq Helsinki: CGCBV) sales in 2016 totalled approximately EUR 3.5 billion and it employs over 11,000 people.
www.cargotec.com



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First MVR mill for the Iranian market

In September 2016, Gebr Pfeiffer SE won a contract for the supply of a raw mill of the type MVR 4250 R-4, which will be set up at Biarjaimand Cement Company's cement works in Iran.

The raw mill, having an installed drive power of 3,000 kW, is designed to grind 280 t/h of cement raw material to a product fineness of ≤ 12 % R 90 µm.

The order was placed through the Chinese General Contractor Beijing Kaysun Trading, a subsidiary of CATIC headquartered in Beijing.
Gebr. Pfeiffer SE's skilled staff will also supervise erection and commissioning.

The delivery of the equipment is slated to start in the second half of 2017.

Renowned company Villeroy&Boch chooses Sacmi-Gaiotto automation

Two GA 2000 piece preparation and glazing robots installed, ensuring reliability, efficiency, personalisation and user-friendliness

It was 1748 when Jean-François Boch founded his ceramic workshop in the Lorraine region. Later, in 1789, Nicholas Villeroy started out in the world of ceramic decoration, founding his own workshop in Wallerfangen, now in the German region of Saarland. Today, the Villeroy&Boch Group is one of the world's most renowned ceramic makers with a
long history of investing in product and process innovation.

The Group commissioned another two Gaiotto robots from Sacmi. These machines prepare and glaze pieces by way of an automatic spraying process. Reliable, precise and efficient, this Gaiotto technology will allow the company to boost quality even further and achieve greater process flexibility and efficiency. With these latest two additions, the number of Gaiotto robots at the Mettlach production facility now rises to nine.

More specially, this latest Sacmi-supplied project is a two-step affair: a first GA 2000 robot installed on the new sorting line is dedicated to spraying fired items with a solvent-based product with a sanitising and anti-limescale function; a second workstation with another GA 2000 robot glazes the pieces using innovative technology.
Successfully tested and started up, these two robots feature the latest Sacmi-Gaiotto hardware and software: To start with, there is direct joystick control (with the panel already set up in German) and advanced spraying programmes containing every single parameter, all able to be customised according to specific manufacturing requirements that vary according to the type of article to be glazed.

This key order confirms Sacmi-Gaiotto as a pivotal partner dedicated to satisfying complex customer and market requirements. In addition to the acknowledged flexibility, efficiency and reliability of its individual robotized solutions, the Group stands out for its ability to design systems together with customers and provide advanced after-sales assistance services to maximise the return on investment.

JAMCEM CONSULTING

VTC virtual technical centre

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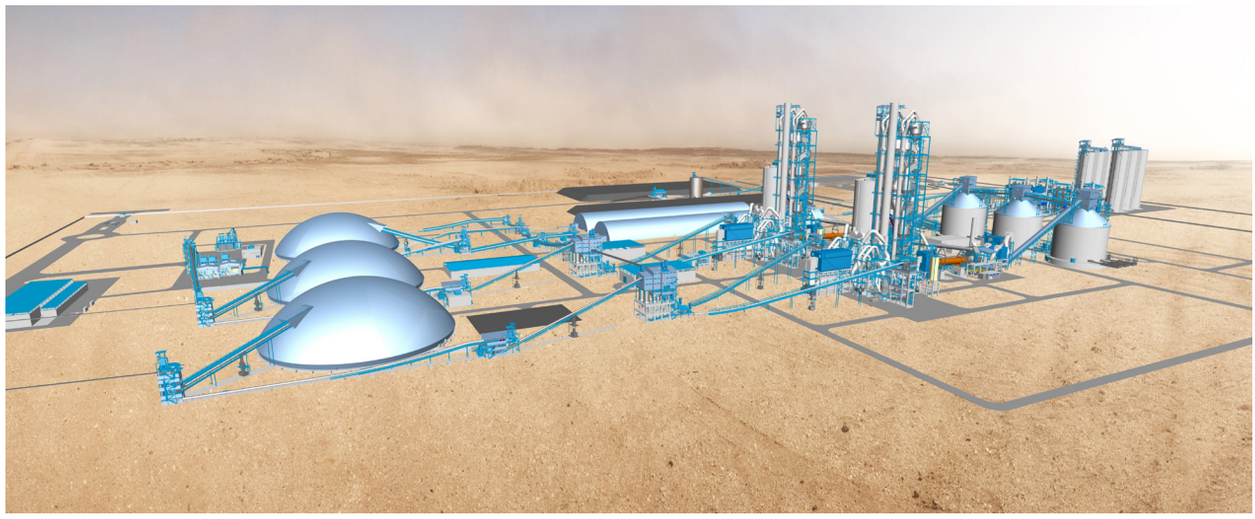
Construction of one of the largest cement plants in Saudi Arabia

By: Marcus Fritz and Dr. Markus Sauer, thyssenkrupp Industrial Solutions AG, Germany



Yamama New Plant – 3D Modell

thyssenkrupp convinces Yamama Cement Company with its highly efficient technology and trust it has established over the course of decades. Order value in the nine-digit range. Commissioning planned for 2018.

thyssenkrupp is building two turnkey cement clinker production lines for Yamama Saudi Cement Company, 80 kilometres to the east of the Saudi-Arabian capital of Riyadh, with a total capacity of 20,000 tpd of cement clinker. With an order value in the upper nine-digit range, this is the largest order that thyssenkrupp has received in the cement sector to date. The commissioning of the two production lines is scheduled for 2018.

thyssenkrupp Industrial Solutions is the plant engineering specialist of the thyssenkrupp Group, and as the EPC partner it will be performing the engineering, procurement and construction of the turnkey cement clinker production lines, including the delivery of all components, from the raw material preparation and clinker manufacturing systems, through to the cement loading facilities as well as systems for quality control and monitoring.

Many years of experience in the EPC business

thyssenkrupp Industrial Solutions has constructed thousands of plants, and is one of the world's leading engineering companies. Particularly in the EPC business, the company has many years of experience, offering the customer everything from a single source, right from the initial idea and throughout the service life of the plant, with market studies, plant layout, design, delivery, manufacturing and assembly, all the way through to commissioning and service. More than 11,000 employees on all continents apply their knowledge and engineering skills to developing innovative solutions, and consistently search for means of making more responsible use of natural resources.

Pioneering technology for the cement industry

In cement plant engineering, thyssenkrupp Industrial Solutions has more than 150 years of experience. In 1859, Andreas Ernst Gottfried Polysius opened his own workshop in Dessau. In 1870, he founded the G. Polysius iron foundry, which used high-performance mills, and quickly established itself in the building materials industry. His descendants celebrated their hundredth order for a mill in 1890 already.

Today, thyssenkrupp Industrial Solutions is a competent associate for its customers, helping with every single project to find the optimal plant solution for profitable, resource-saving and energy-saving cement production

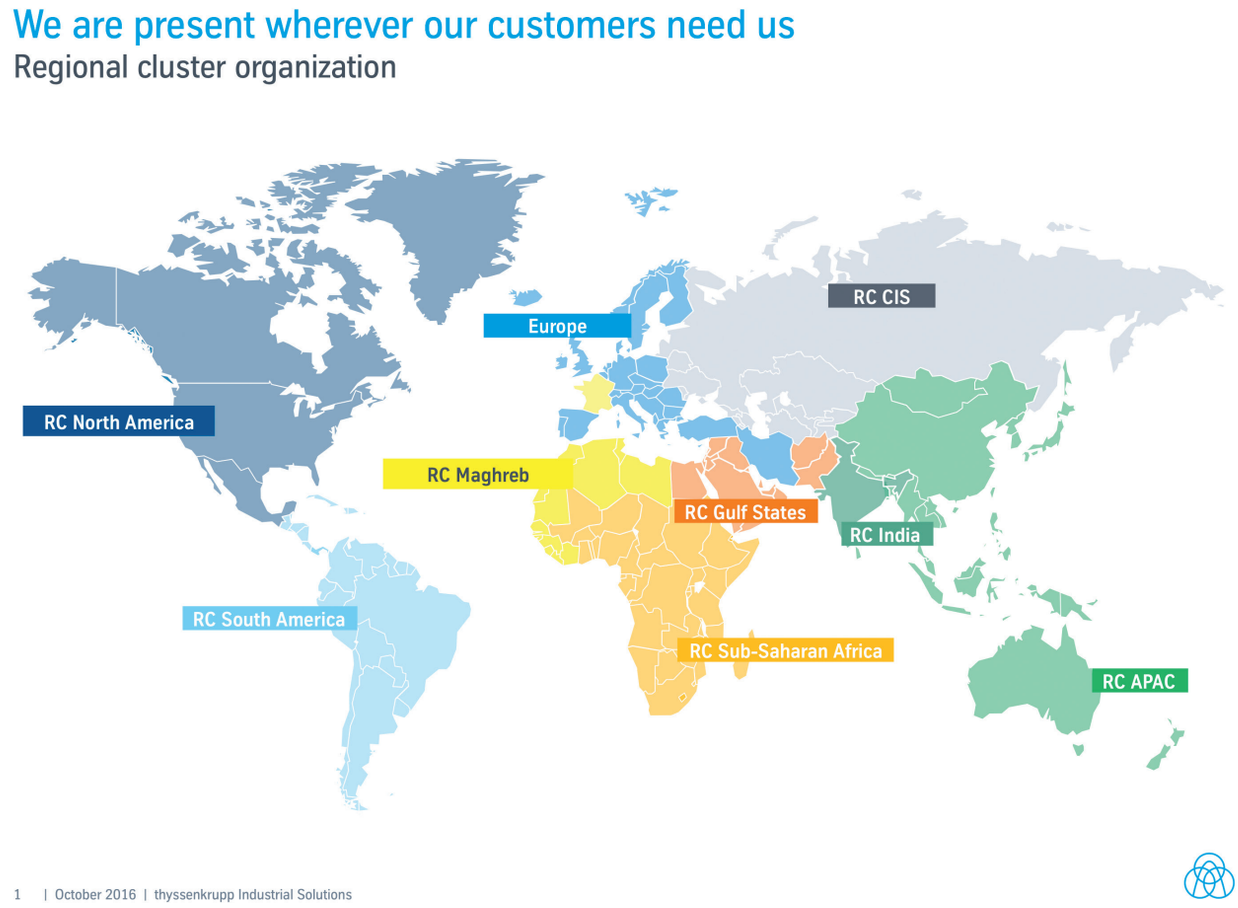
facilities. Considering the ever increasing throughput rates, it is of the utmost importance that the plant and machine components are designed correctly for their extremely high mechanical loads. thyssenkrupp has a high degree of expertise here.

Turnkey maintenance solutions

The Service business unit of thyssenkrupp Industrial Solutions supplies high-quality services for industrial facilities and systems around the world: From asset management to engineering, training and consulting, spare parts management and on-the-spot service, all the way through to upgrades and modernisation projects. On the basis of long-standing service and industry experience, and thanks to a global network of service centres and hubs, thyssenkrupp guarantees its customers in the chemicals, cement, mining and other industries around the world fast, customised solutions for the optimal and uninterrupted performance of their machinery and plants.

Strong regional presence

In addition to its technological expertise, its development skills and its service activities, the success of thyssenkrupp Industrial Solutions is also founded on its proximity to its customers. To this end, a regional organisation was built up, which facilitates project administration in the regions by means of an increased focus on local circumstances. What services should be offered and handled locally? How do the legal situation and taxes affect the quotation? Who are the local contact partners? What political, cultural or scheduling factors need to be taken into consideration? These are just a few of the questions for which the regional clusters for North America, South America, Europe (+Iran, Israel, Turkey), CIS, Maghreb, Sub-Saharan Africa, Gulf States, India and Asia Pacific come into play. The challenges can vary significantly from region to region. In the Gulf-States region cluster, thyssenkrupp has a network of local partners and its own offices in Saudi Arabia, Qatar and Egypt. The local EPC competitiveness is being continuously expanded by setting up regional centres for technological solutions and construction management.



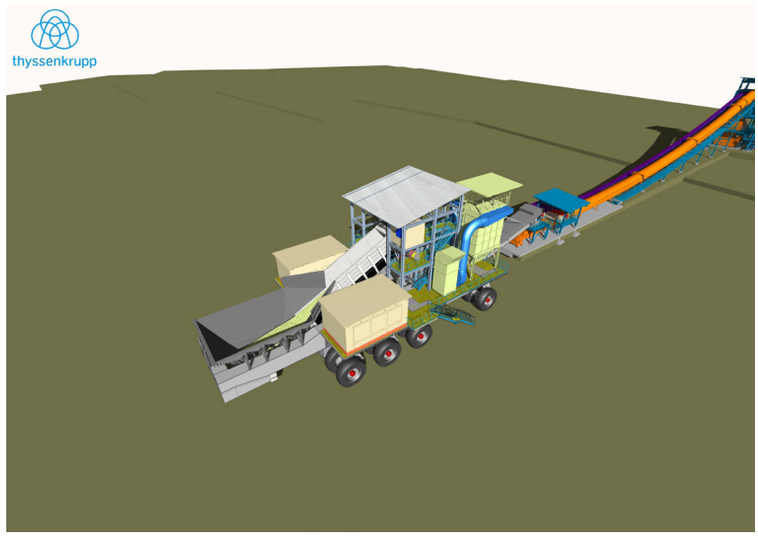
Regional cluster organisation

Partnership with Yamama Saudi Cement since 1966

A close partnership has existed between Yamama and thyssenkrupp since 1966. The starting point was a first cement rotary kiln with a capacity of 300 tpd. Over the following years, six further cement production lines were added side by side, each larger and higher-performance than the last. "On the basis of the 60-year relationship with our customer Yamama Cement, they know precisely what they can expect from us, and what they will be delivered," reports Marcus Fitz, commercial manager of the Yamama project. "We presented the customer with custom-tailored quotations, with the greatest possible commitment."

Yamama Cement Company – Existing Plant during Construction Phase of Kiln Line No. 7

Dr. Markus Sauer, technical manager of the Yamama project adds: "Naturally, YCC places the highest qualitative demands on our personnel, engineering and material. But we were still able to convince them. Our continuous local presence in particular, combined with our continuous availability, also went over well with the customer. It was thus possible to jointly discuss and coordinate the concepts and technical solutions."



Primary Mobile Crusher for Limestone

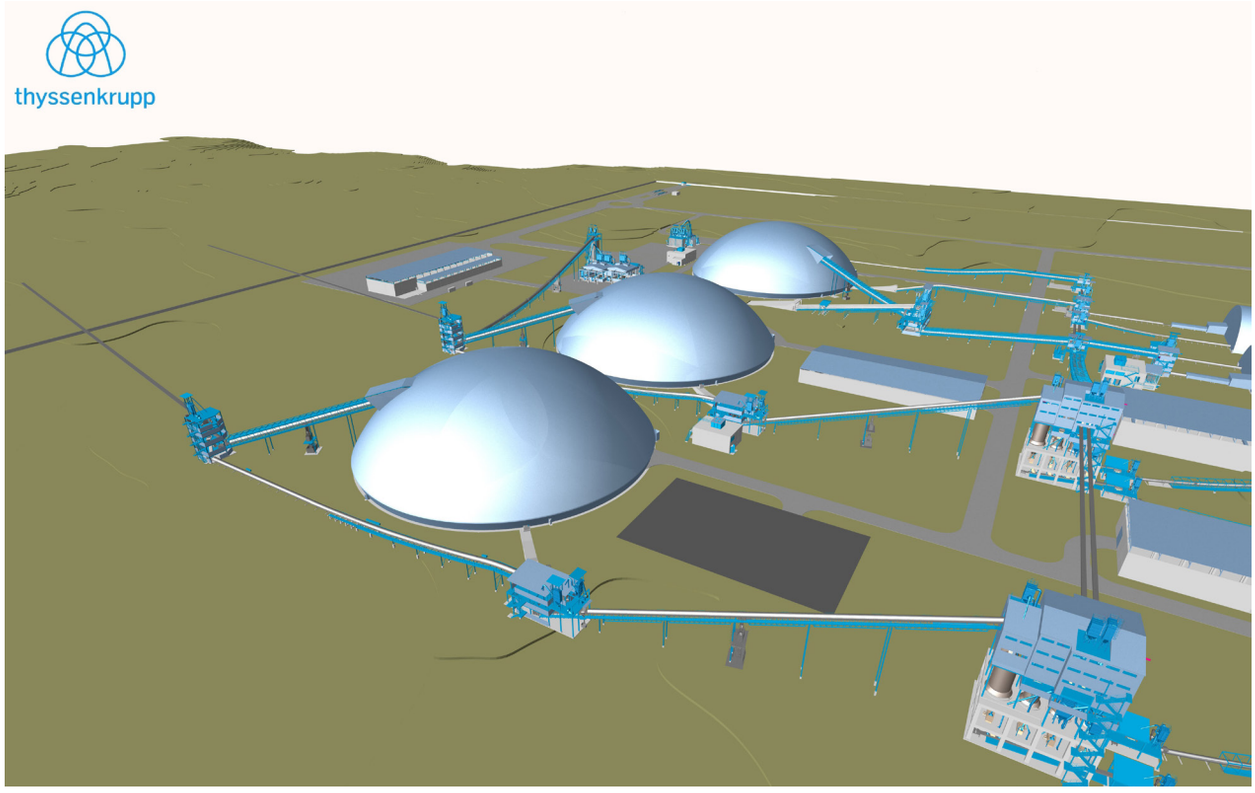
Cement works relocates

The Saudi-Arabian capital of Riyadh has expanded significantly over recent years, and has grown outwards too close to the cement plant. The government intends to ban industrial facilities from the centre of Riyadh, not least because of the emissions generated. The two new cement plants will now be built at a new location, around 80 kilometres to the east of the capital. A major challenge! Over 68,000 tonnes of deliveries, 26,000 tonnes of steel and 280,000 m³ of concrete will be installed and assembled. The extreme climatic conditions represent a further challenge. The new site is located at an altitude of approx. 635 metres, at temperatures sometimes as high as 50 degrees Celsius. Water and electricity costs should therefore be kept as low as possible, as should emissions. The use of energy-efficient equipment is all the more important here.

Main components of the cement factory

The main components include two mobile primary crushers for limestone (each 1,800 tph output), three crushers for additives (each 500 tph output), two crushers for corrective materials (each 100 tph output).

The raw material will be stored in two circular blending beds for limestone, each with a storage capacity of 80,000 tonnes, a circular blending bed for clay with a storage capacity of 80,000 tonnes, and various additive storage facilities.
Raw material storage area

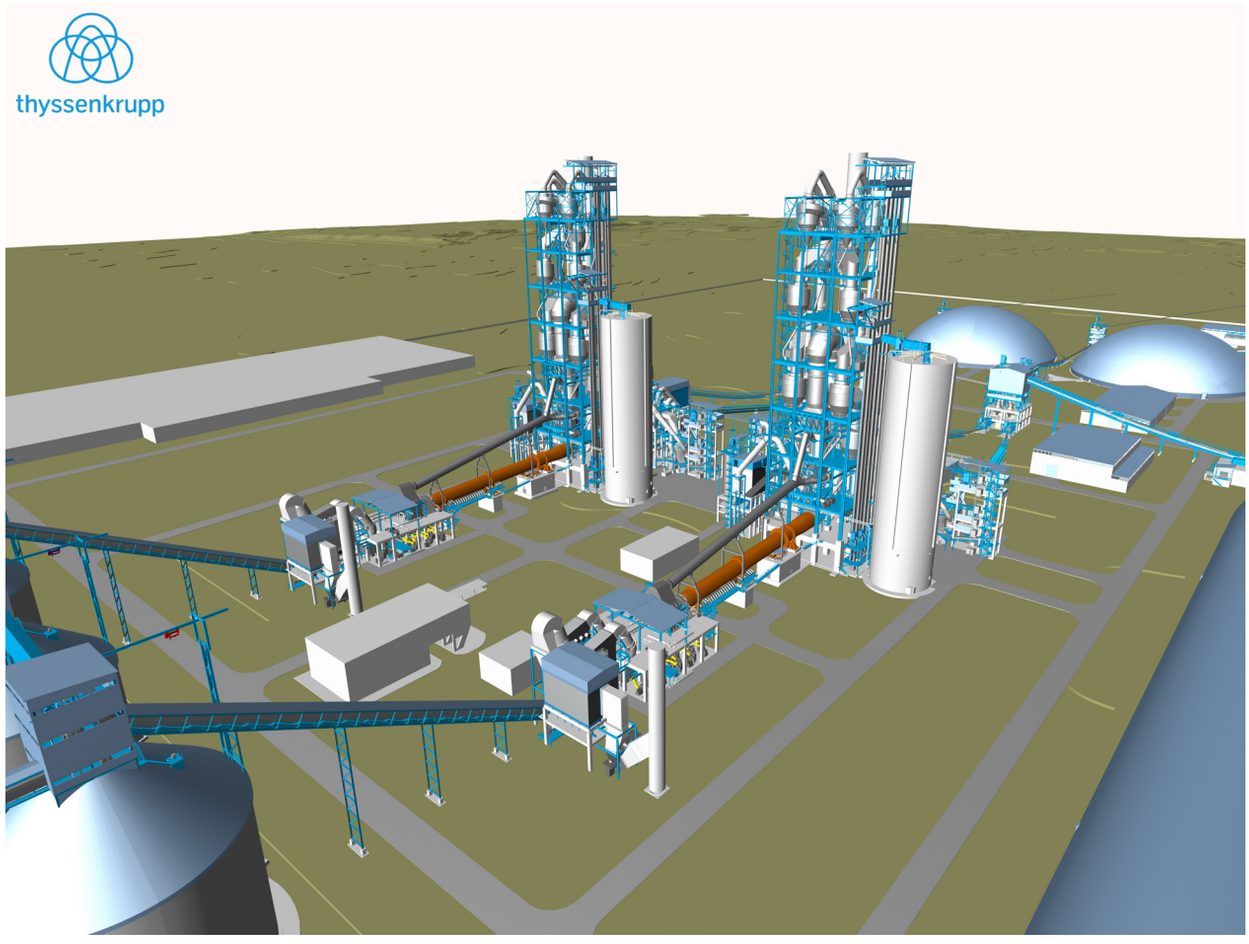


For the comminution and storage of the raw material, four QUADROPOL QMR^2 vertical mills will be used, with an output of 425 tph, and two blending silos each with a holding capacity of 35,000 tonnes. The grinding units are characterised by the following points:

- Compact roller unit
- Minimum mechanical parts
- Less moving masses
- Minimum hydraulic parts
- Pre-assembled in tkIS workshop

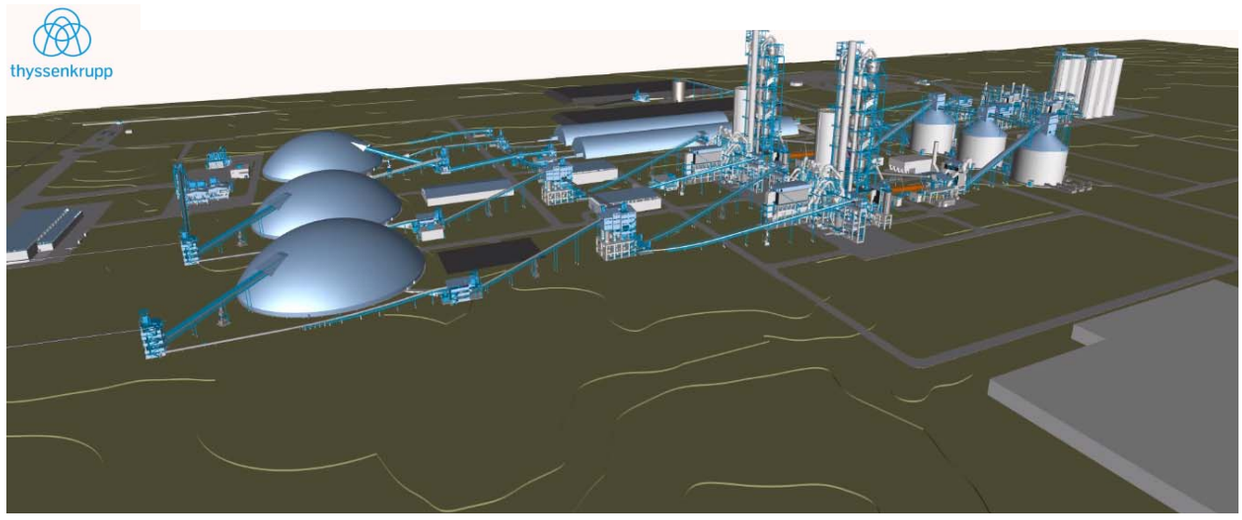
Example of a QUADROPOL roller mill, CYCNA de Oriente, Mexico

The kiln lines consist of 6-stage, 2-string preheaters with PREPOL AS-MSC calciner, the rotary kilns with clinkering zone burners POLFLAME, and the POLYTRACK clinker coolers.



Preheater, Kiln and Cooler area

The clinker will be stored in three clinker silos, each with a storage capacity of 100,000 tonnes. Four combi grinding plants consisting of POLYCOM high-pressure grinding rolls, ball mills and SEPOL separators with downstream cement coolers each produce 300 tph of cement. The cement interim storage takes place in six cement silos, each with a storage capacity of up to 25,000 tonnes. For the loading of the cement, these have six packing and loading stations for bag loading attached. For purposes of quality monitoring and control, the POLCID process control system and the POLAB laboratory automation system are being installed.



New Line - Plant Overview

Summary

The order for the construction of two cement clinker production lines for Yamama Saudi Cement Company is the largest order that thyssenkrupp has received in the cement sector to date. The two lines have a total capacity of 20,000 tpd of cement clinker, and their commissioning is planned for 2018.

A close partnership has linked thyssenkrupp Industrial Solutions and Yamama Cement Company for almost 60 years. The plant engineering specialist of thyssenkrupp built the current cement plant in a number of stages.

The decisive factors for award of the latest contract were the comprehensive EPC capabilities of thyssenkrupp and its strong presence in the region. The plant will be built with state-of-the-art technology: the right combination of technological expertise, quality products, custom-tailored solutions corresponding to customer specifications, comprehensive service over the entire service life of the plants, and competitive cost pricing.

Further information:

thyssenkrupp Industrial Solutions – Processes and plants in the cement sector at a glance

For the efficient manufacturing of high- performance cement products, it is not enough to simply line up machines or ideal individual processes. For this reason, the cement sector of thyssenkrupp Industrial Solutions consistently pools its process and plant expertise to develop innovative concepts for the fields of raw material preparation, clinker manufacturing and cement manufacturing, which culminate in sustainably economical overall solutions for the complete cement production process. Plants from thyssenkrupp Industrial Solutions utilise state-of-the-art production processes to conserve resources and protect the environment, guaranteeing the operators the highest degree of productivity and economy of operation.

Further information on the portfolio of thyssenkrupp in the cement sector can be found here:

https://www.thyssenkrupp-industrial-solutions.com/en/industries/cement/

Novel and Modified Mixtures of Concrete and Mortar Using Jordanian Bentonite as Waterproofing and Low Cost Construction Material

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[4] Qatrana Cement Company

The concrete durability performance differs due to many reasons, which include material quality and environmental conditions. Producing low permeable concrete contributes in minimizing many structural problems, and increases concrete durability. In order to enhance the permeability of conventional concrete using law cost and natural material in Jordan, Bentonie was chosen because of its availability and its potential for being a supplementary material.

Raw bentonite samples were collected from Q'a Al Azraq, Ein Al Bayda- Al Azraq and Al Yamaniyya – Aqaba in Jordan for investigation purposes. Furthermore, around two tons of Bentonite was collected from Q'a Al Azraqarea. The sample was grinded and passed through 150 μ m mesh. Chemical and physical characterization of all starting

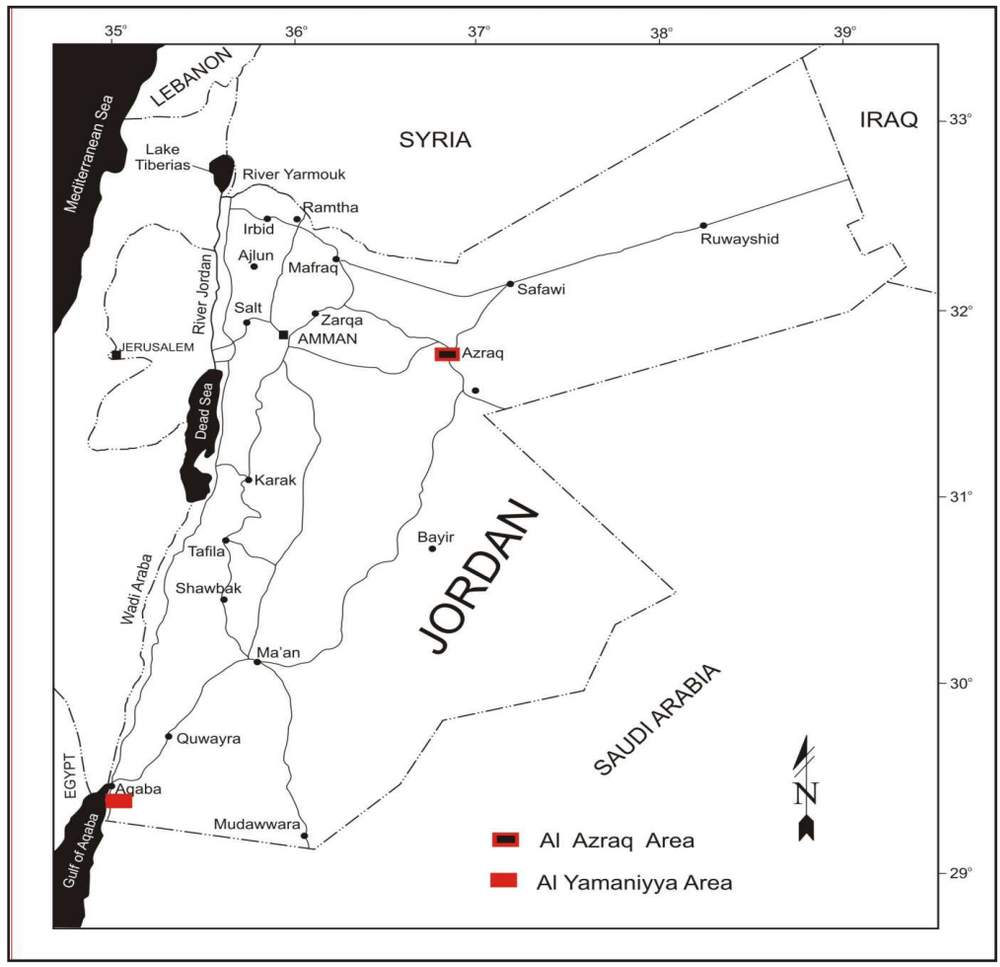


Figure (1). Location map of the bentonite deposit in Azraq Basin and Al yamaniyya area Jordan.

materials (bentonite, cement, aggregate and sand) were conducted by using, X-ray fluorescence (XRF), powdered X-ray diffraction (PXRD), atomic absorption spectrophotometer (AAS) and scanning electron microscope (SEM). A Jordanian bentonite (raw bentonite, heat treated bentonite at various temperatures and chemically modified Ca-bentonite) was incorporated in mortar and concrete mixes as a partial substitute for Ordinary Portland Cement (OPC).

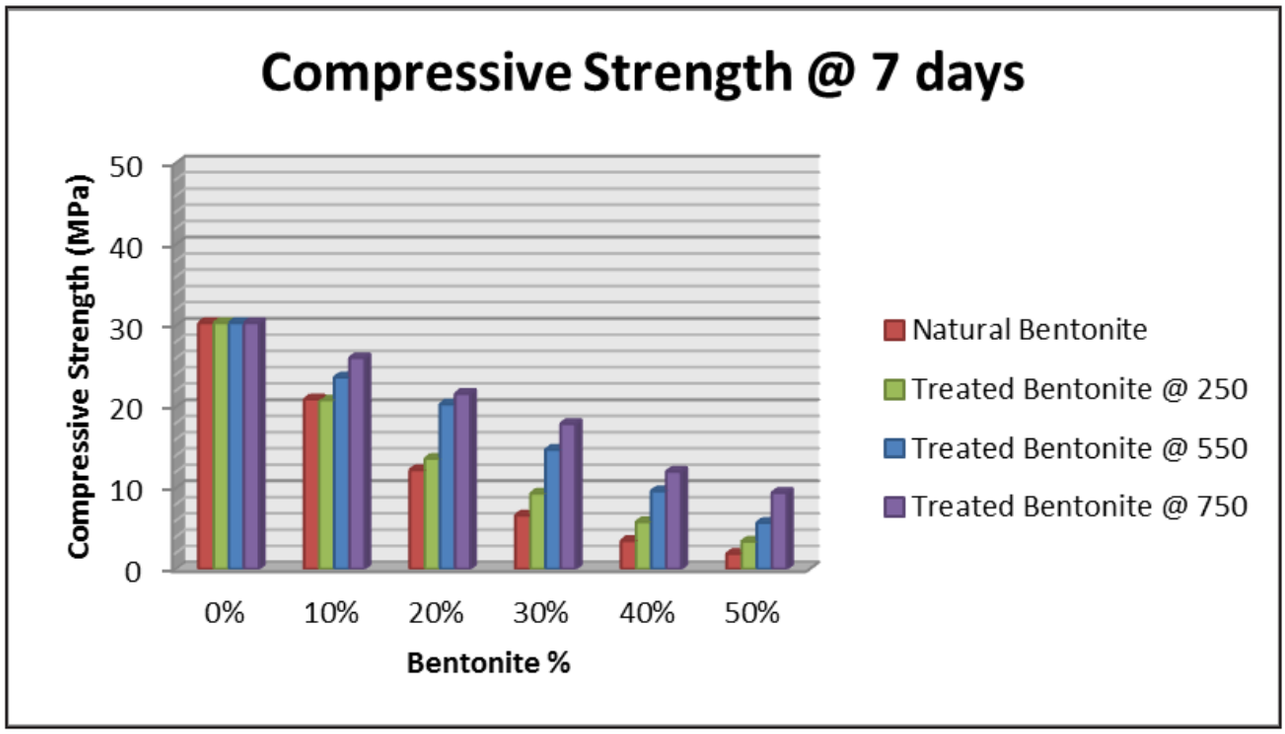
An experimental investigation was undertaken to study the influence of bentonite percentages and water content on the physical and mechanical properties of mortar mixes. Water amount was determined according to flow table test, and it was fixed to 70 mm for all mixes. Mortar prisms and brackets were prepared. The cement in the mortar was replaced by four types of bentonite (Natural, Treated at 250 °C, Treated at 550 °C, Treated at 750 °C) in proportions of (0%, 10%, 20%, 30%, 40%, and 50%) by mass.

Compressive, flexure and tensile strength tests were performed on mortar mixes. After obtaining mortar mixes results, it was decided to use 10% and 20% replacement for cement in the next project step in concrete mixes. The same procedure used in mortar mixes was followed in concrete. In addition to the cement mortar and concrete mixes, bentonite had been incorporated in Tile adhesive which was prepared by 10% replacement of cement by heat treated bentonite at 750 °C.

Results and Conclusion:

1- The study showed that mortar and concrete mixes containing heated bentonite at 750 °C achieved considerably good results at 10% and 20% cement replacement.
2- Addition of natural and Ca-treated bentonite increased fresh concrete viscosity and as results increased its cohesion.
3- both raw bentonite and Ca treated bentonite reduce concrete shrinkage at early ages due to its expansion nature.
4- Ca bentonite behavior was slightly better than natural bentonite at the early ages of concrete.
5- Concrete permeability was highly reduced by using bentonite, especially Ca treated where permeability was reduced by 60% , which is an excellent indication for using this material in producing more durable concrete structures or concrete components such as kerbstone, concrete pipes or even tiles and bricks.
6- Replacement of cement by bentonite in percentage of 10 % in tile adhesive showed promising results in terms of tensile adhesion strength, in which both formulas (control & bentonite incorporated) have close results and achieved the minimum value according to the tile adhesive European standards BS EN 12004. (More than 0.5 Mpa). Hence the results of the present work indicate that the adhesion properties of the tile adhesive in the presence of bentonite and reduced cement content have economic considerations.
7- Addition of raw bentonite leads to decrease mortar strength in comparison with control mix without bentonite due to the increase in water demand.

In conclusion, Jordanian bentonite has the potential to become an alternative inhancing material for producing more durable concrete structures or concrete components such as kerbstone, concrete pipes or even tiles and bricks. Furthermore, bentonite particles seem to act as a pore- reducing or filling material. Consequently decreases concrete permeability. In addition, this study reveals that Ca-bentonite bentonite has the potential to become an alternative material for viscosity modifier admixtures where it is very useful in the field of self-compaction concrete and that can reduce the production cost.
More investigations shall be conducted on dry mortar products and applications using treated bentonite other than tile adhesive like cement plaster, grout and repair mortar.



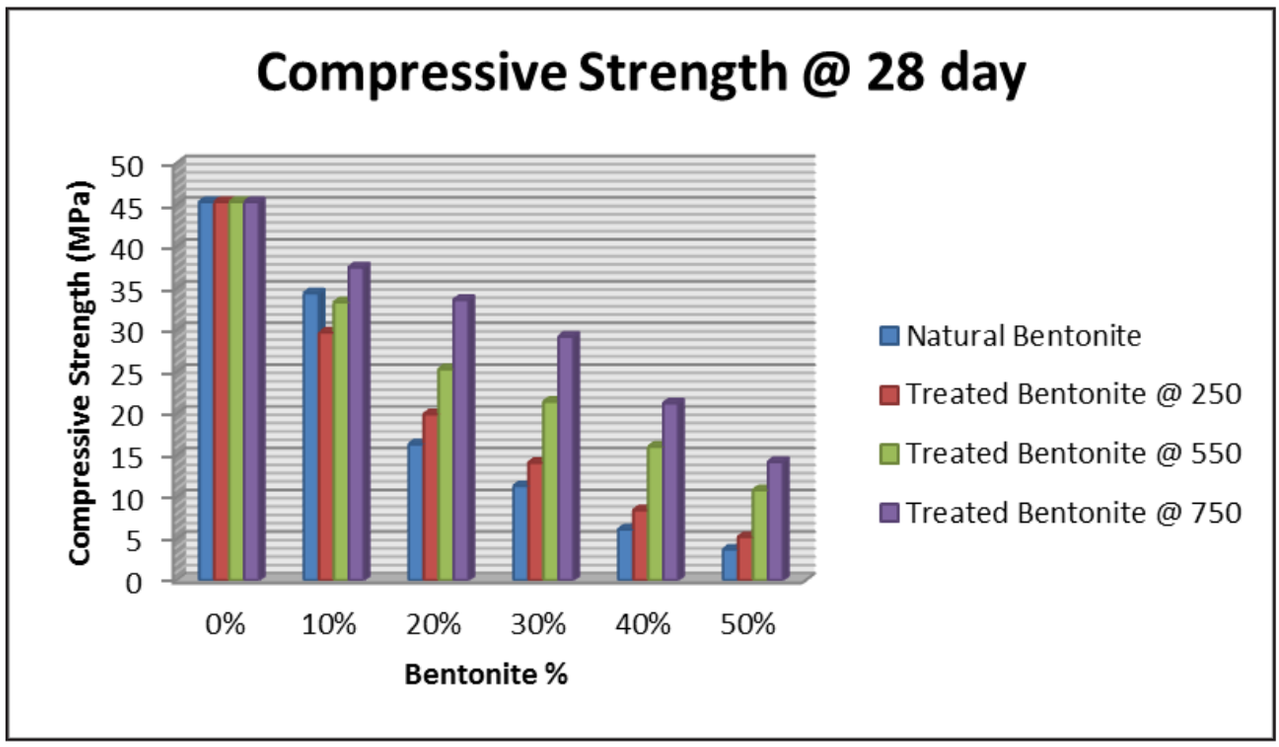
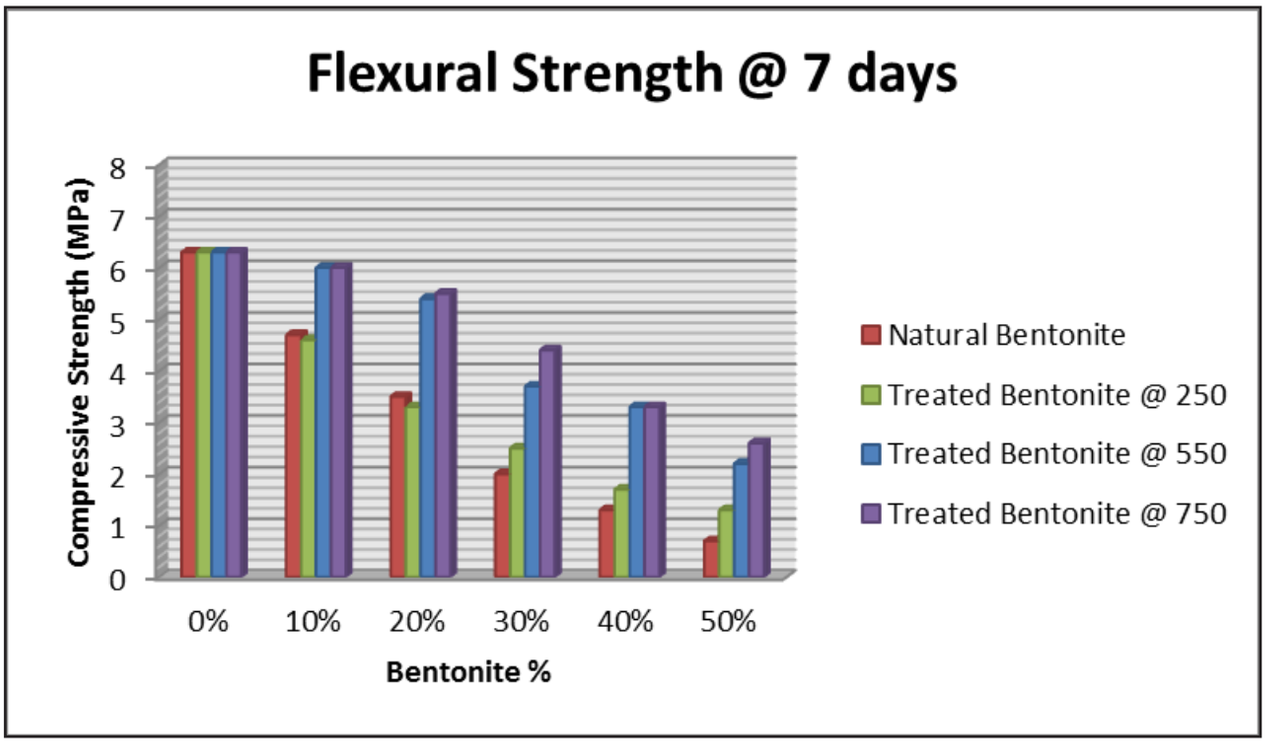


Figure (2) Bentonite mortar compressive strength at 7& 28 days



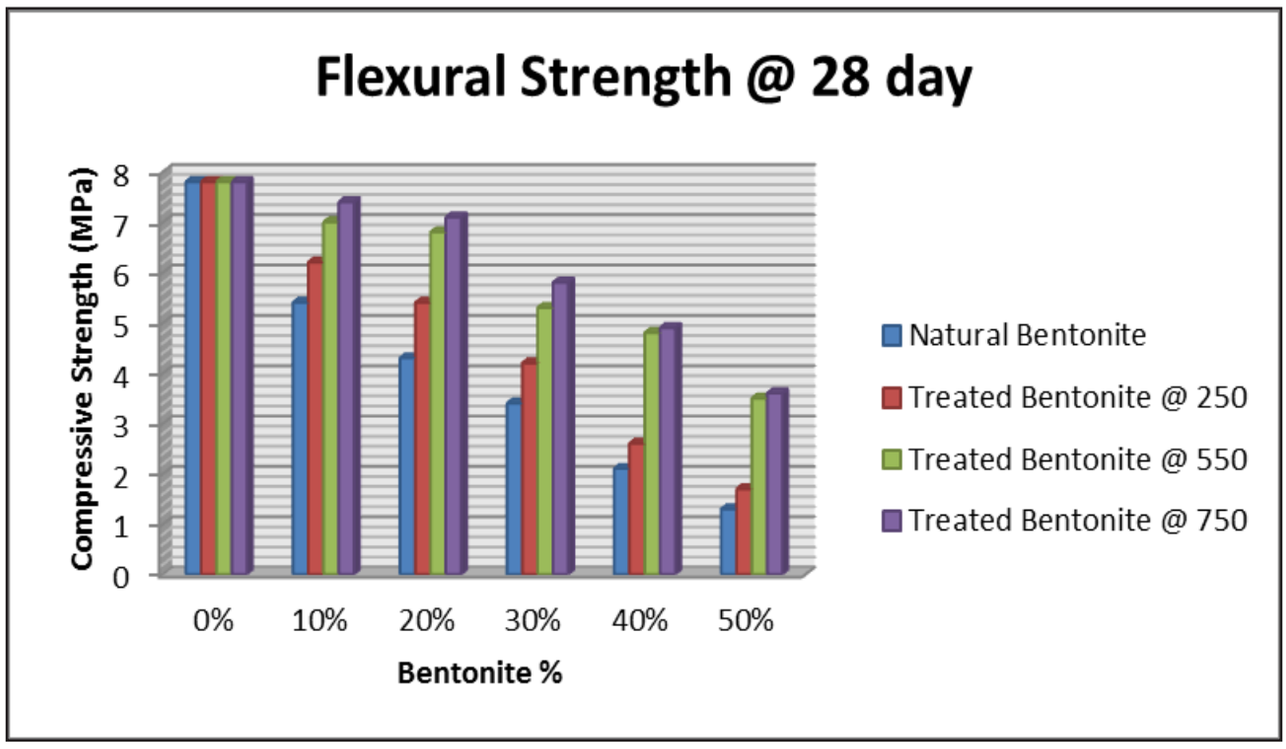
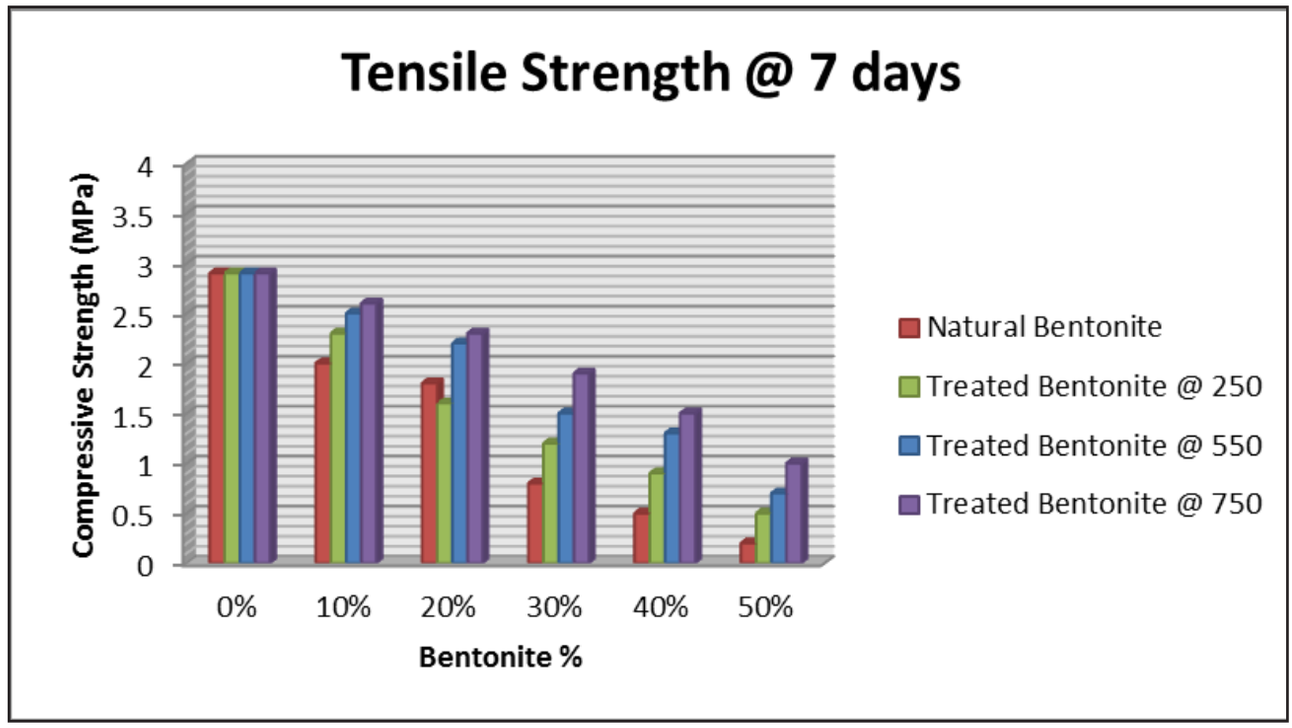


Figure (3) Bentonite mortar flexural strength at 7& 28 days



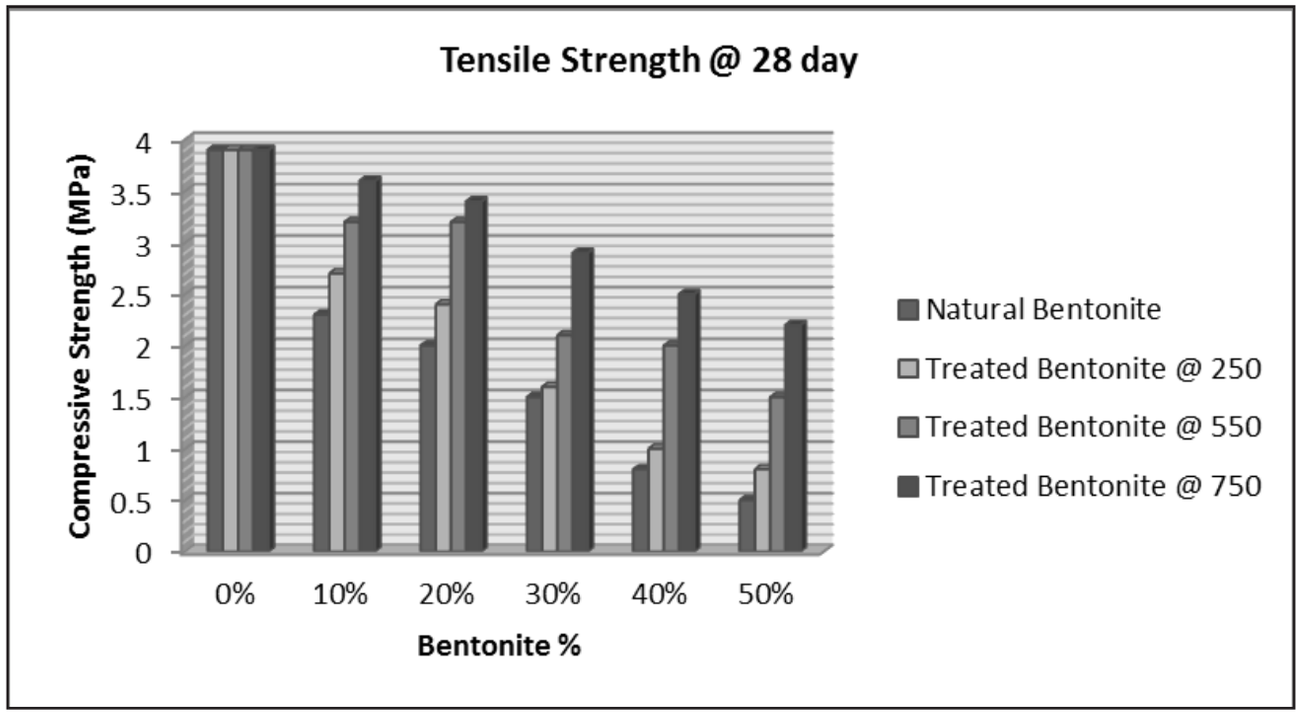
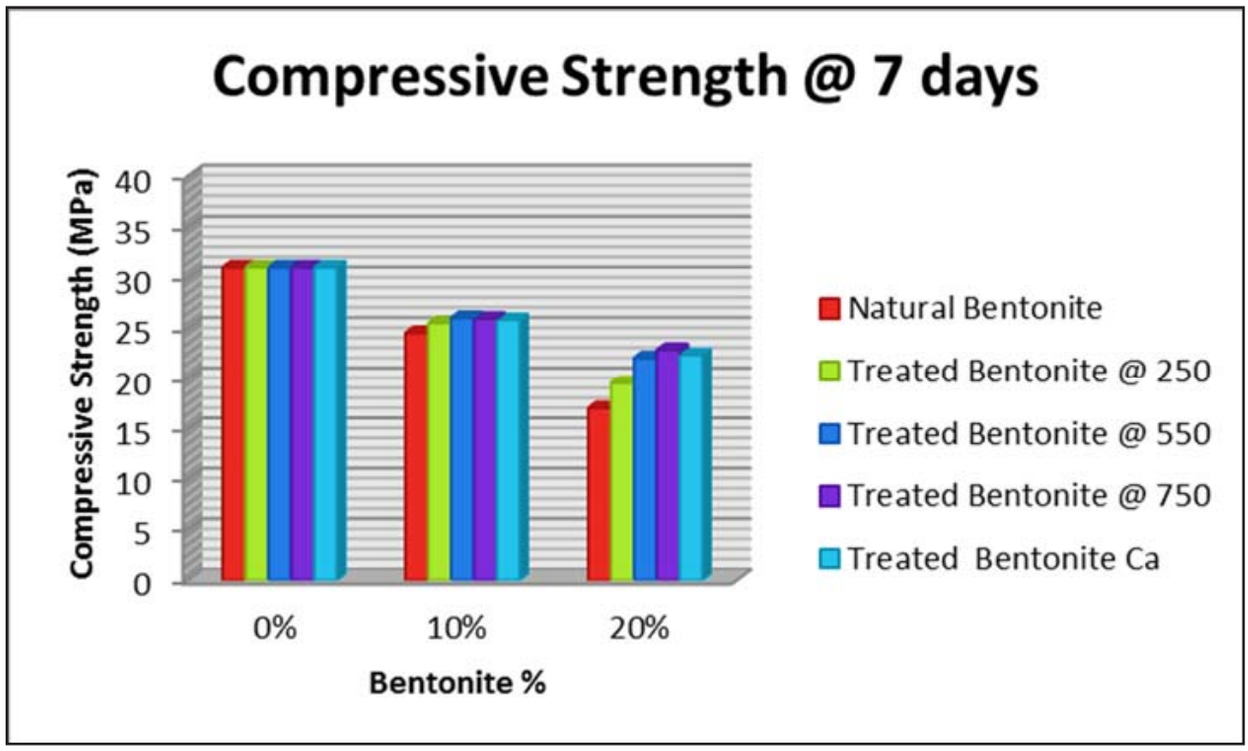


Figure (4) Bentonite mortar tensile strength at 7& 28 days



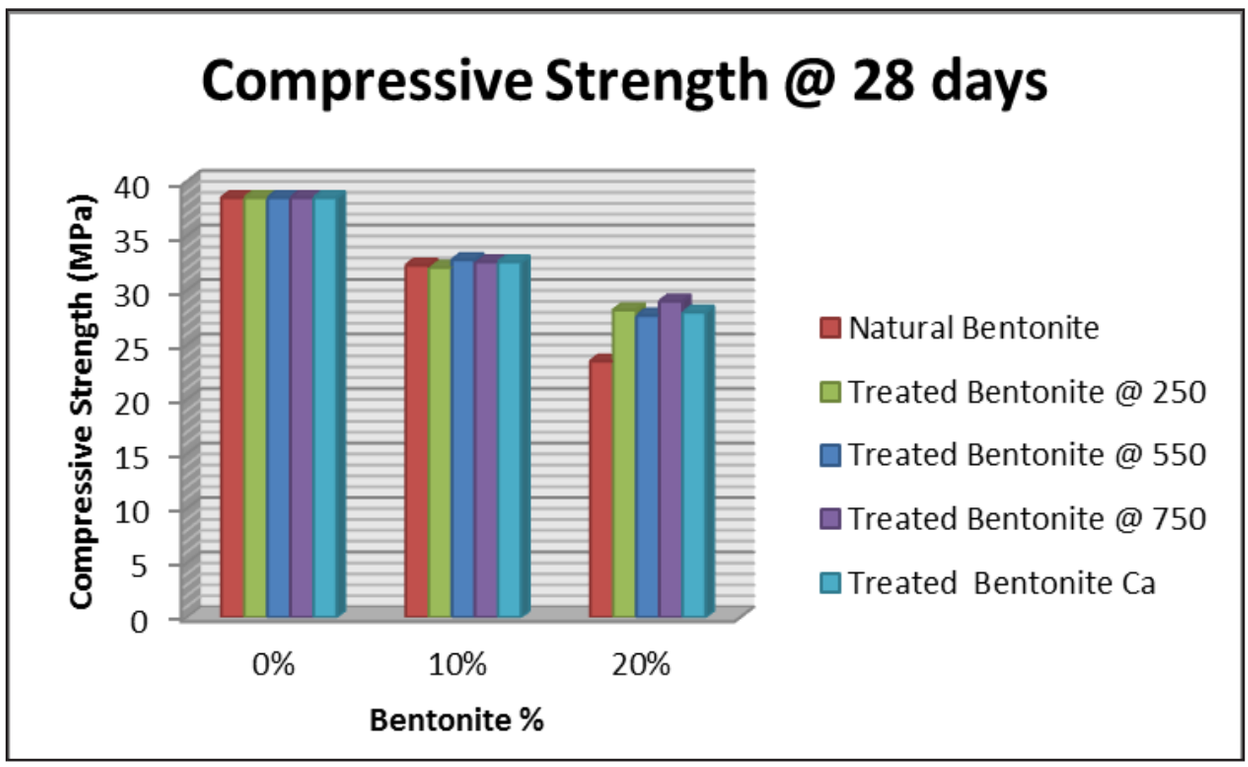


Figure (5) Bentonite Concrete compressive strength at 7& 28 days

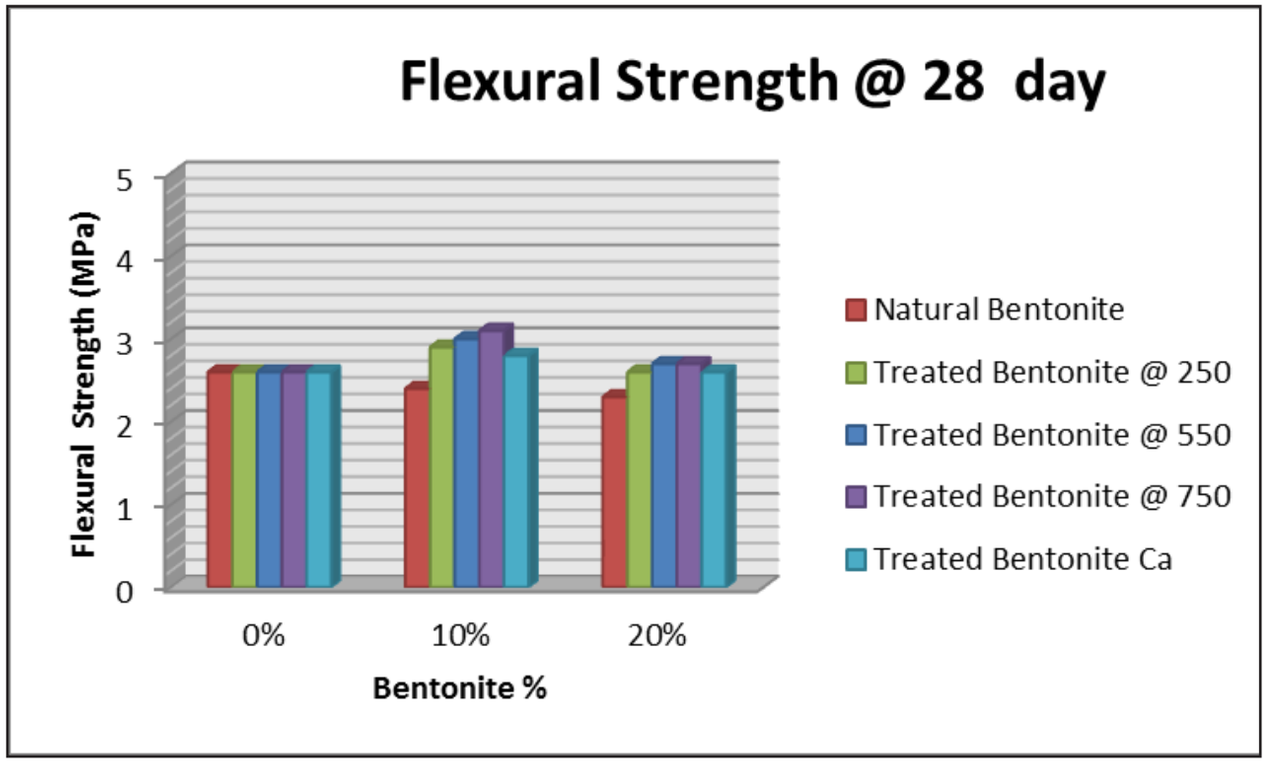


Figure (6) Bentonite Concrete flexural strength at 28 days

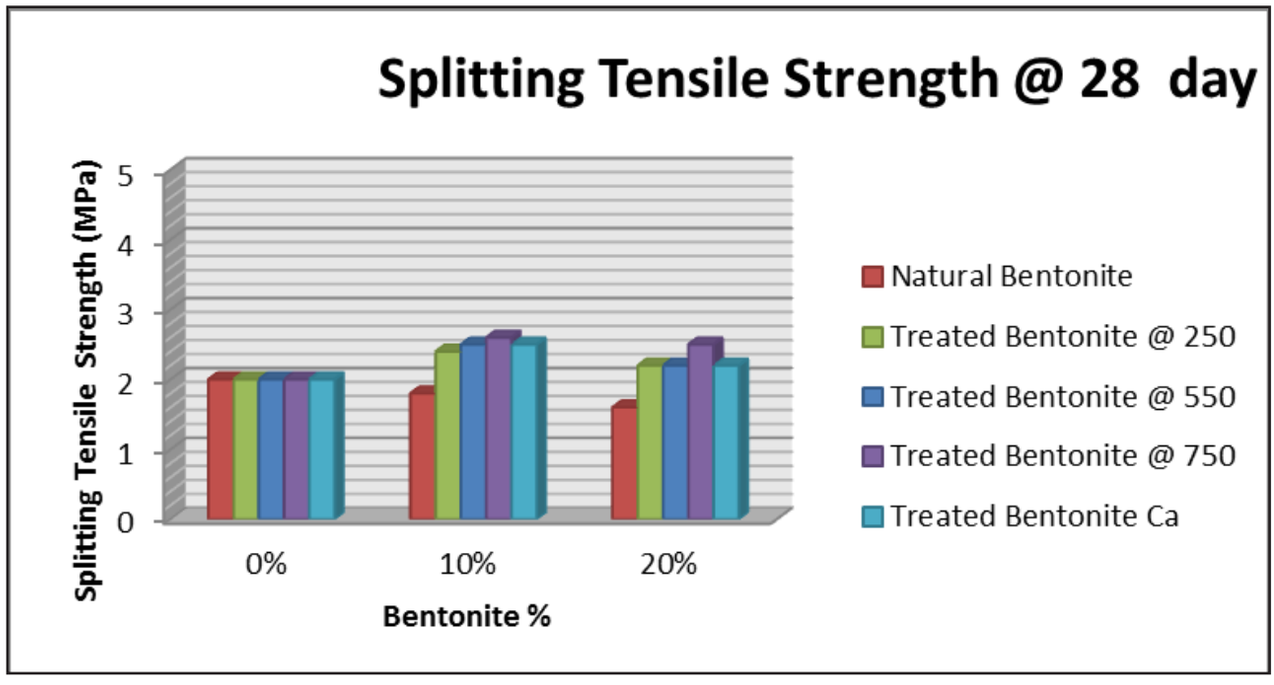


Figure (7) Bentonite Concrete splitting strength at 28 days

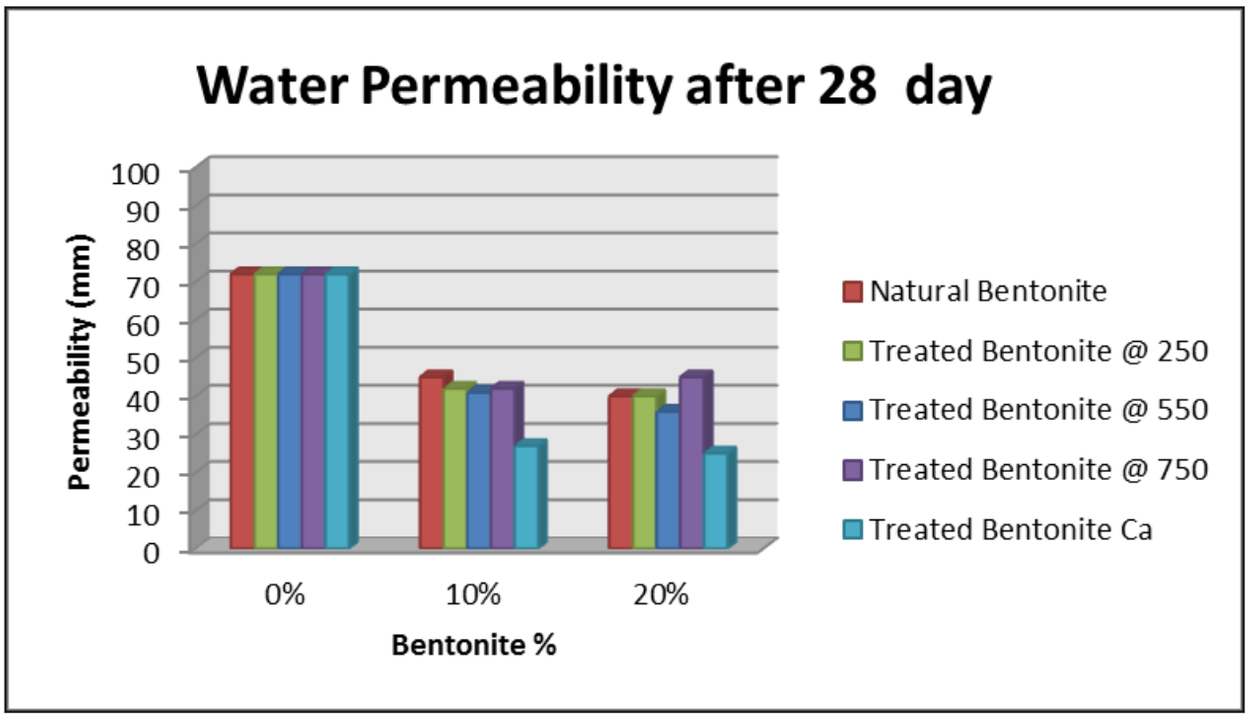


Figure (8) Bentonite Concrete shrinkage results at 28 days

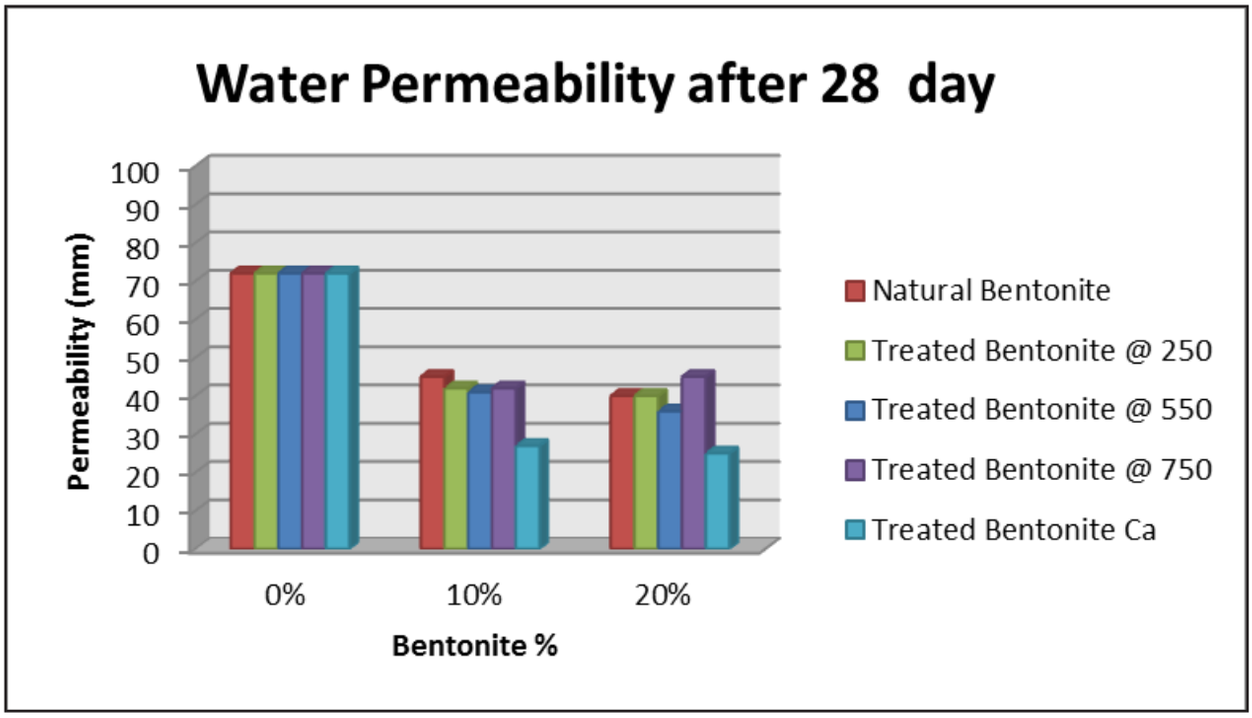
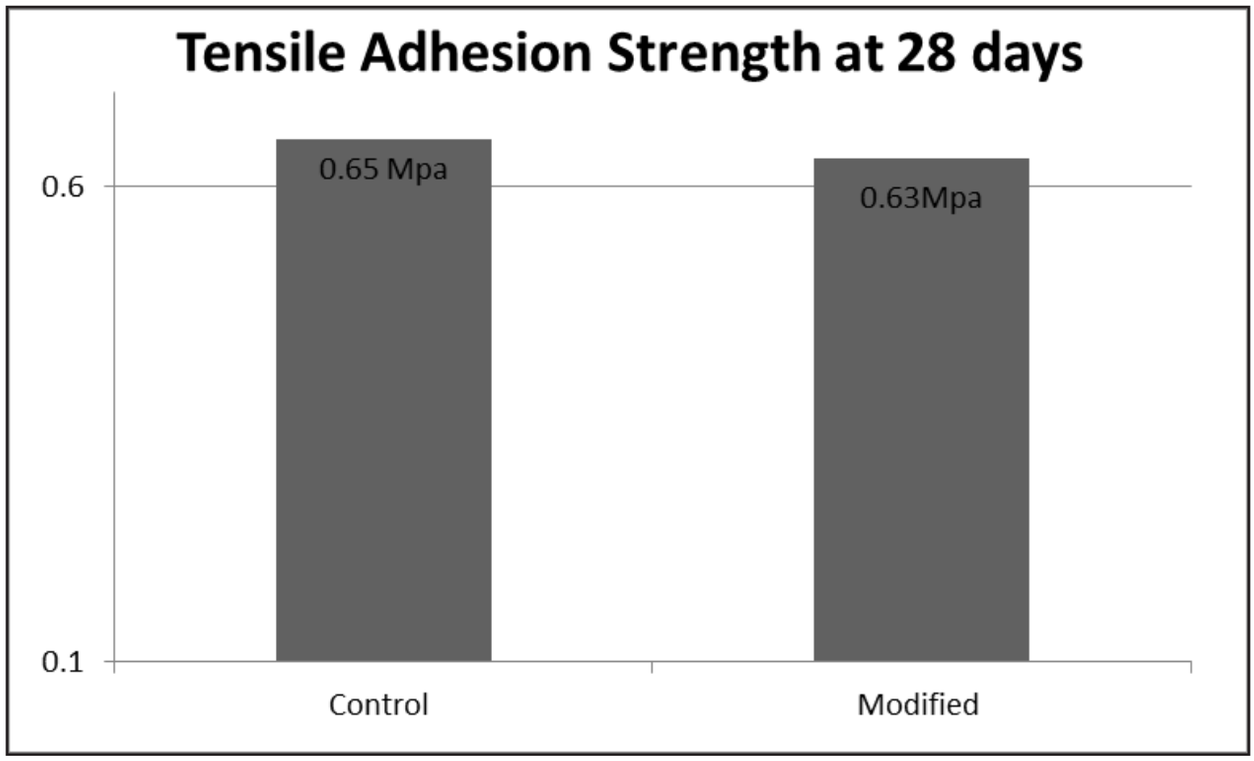


Figure (9) Bentonite Concrete permeability results at 28 days



Figure(10). Tensile adhesion strength for the tow formulas of the tile adhesive have been evaluated according to the European Standards BS EN 12004.

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Fly ash blended cements: process and hydration improvement through the use of cement additives

Davide Padovani, Paolo Forni, Awadalkarim Fakhraldin, MAPEI SpA

1 Fly ashes in cement

One of the most effective ways to lower the manufacturing cost of cement is by lowering the clinker factor. Clinker is the single most expensive component of cement, due to the high-energy process required to obtain it in the kiln. Many standards all over the world allow for the manufacturing of blended cements, where part of the clinker is substituted by supplementary materials as limestone, fly ash, or blastfurnace slag. These secondary materials are directly ground together with clinker and gypsum, or milled in a separate stage, followed by blending with ordinary Portland cement. Each of them provides advantages and disadvantages (related to cost, grindability, chemical reactivity, availability) that can drive their specific application.

Fly ash is one of the most widely available supplementary cementitious materials, being the byproduct of coal burning in power plants. During the burning, fused fine particles are carried away by the flue gas and solidify by cooling to glassy amorphous ash particles with a glass content of approximately 6085%- in weight (Lutze and vom Berg, 2004). Composition in terms of crystalline phases and chemical elements has been investigated by many authors (e.g. in Prause, 1991, Richartz, 1984 and Kautz and Prause, 1986). Hydration reaction in alkaline conditions is the phenomenon that allows their extensive use as a clinker replacement: simplifying, this consists in the reaction of amorphous silica contained in the ashes with the calcium hydroxide produced by the hydration of cement clinker. This means that the effectiveness of the ashes in providing strength through the formation of C-S-H gel is mainly focused at later ages, since some time is needed to thoroughly spread the presence of $Ca(OH)_2$ in the matrix of cement to get it reacting with the fly ash particles. Hence, blended cements based on the substitution of clinker with fly ashes usually suffer from lower early strengths (Fraay, 1990, Huettl, 2000, Lee C. Y. et al., 2003, Mueller et al.). Several studies have been published regarding the activation of fly ash through chemical compounds, both inorganic (e.g. alkali sulphates) and organic (e.g. alkanolamines) (Gartner and Myers, 1993, Sandberg, 2008). In particular, triethanolamine has been the subject of several investigations regarding the activation of blended cements containing fly ashes or other secondary components (e.g. in Lee C. Y. et al., 2003). Additional work has been done to try and correlate the chemical composition of fly ashes with their reactivity (Schulze and Rickert, 2011).

2 Fly ash cements enhancement with additives

The first approach to improving strengths of fly ash cements, and hence the amount of fly ash substituting clinker, is through the use of a chemical activator. Cement additives can be added in the grinding stage to gain the simultaneous benefit of decreasing the energy needed to reach a given fineness and enhancing the hydration process of cement. For the purpose of demonstrating the effect of the additives, a laboratory programme was set up. Two laboratory cements were selected (ground using clinkers internally coded C4564 and C4705 and a natural gypsum), together with four different fly ashes (coded C4672, C4736, C4737 and C4738). All materials were analysed for their composition with a combination of analytical techniques (XRD-Rietveld, TGA, XRF). Results are collected in the following tables.

Table 1 - Composition of OPCs (XRD, TGA), %

Sample	OPC C4564	OPC C4705
C_3S	59.7	62.8
C_2S	20.3	17.3
C_3A, cubic	4.4	4.3
C_3A, orthorombic	1.5	-
C4AF	6.4	6.9
CaO	0.5	1.0
MgO	2.1	1.1
Gypsum (dihydrate)	2.2	2.3
Bassanite	-	0.5
Anhydrite	0.2	-
Calcite	-	0.9
Portlandite	1.0	1.2
Arcanite	1.1	0.8
Ca-Langbeinite	-	0.9
Aphtitalite	0.6	-

Table 2 – Composition of fly ashes (XRF), %

Sample	Fly ash C4672	Fly ash C4736	Fly ash C4737	Fly ash C4738
MgO	1.06	1.54	1.18	1.61
K2O	0.62	1.76	1.74	1.45
Al2O3	29.61	24.29	19.32	27.72
SiO2	51.43	57.51	60.60	50.74
CaO	5.49	3.36	1.73	5.32
Na2O	0.00	1.33	0.60	0.44
SO3	0.27	0.00	0.00	0.28
TiO2	1.64	1.35	0.84	1.75
P2O5	1.22	0.31	0.23	0.62
Fe2O3	3.34	6.03	8.71	3.93
LOI and not determined	5.32	2.52	5.05	6.14

OPCs and fly ashes described above were dry mixed to yield blended cements with 20% fly ash content. These blended cements were used to prepare EN-196/ 1 mortars and determine compressive strengths. Strengths were measured on blank cements and by adding chemicals in the mixing water. On each cement and fly ash combination, the following chemical activators were added (dosage refers to total cementitious):

- MA.G.A. activator at a dosage of 250 ppm
- MA.P.E. activator, type A at a dosage of 2000 ppm
- MA.P.E. activator, type B at a dosage of 2000 ppm

Choice of dosages was dictated by actual use of these formulations in practical use.

Strength values are reported in the following tables. The first table refers to the first clinker mixed with the different fly ashes, the second table refers to the second clinker. Each cement was coded according to the codenumber of the fly ash used.

In all cases the additives give good/very good strength enhancement at early ages, with less pronounced effect at 28 days. This is what is normally desired with fly ash cement for the reasons detailed above.

Table 3a – Clinker C4564 Compressive strengths (EN-1961/), MPa

Sample		1d str	%	2d str	%	28 str	%
FA C4672	blank	12.7		24.0		52.4	
FA C4672	MA.G.A. activator	13.7	7.9	23.9	0.4	52.6	0.5
FA C4672	MA.P.E. activator, type A	14.7	15.7	25.4	5.8	52.5	0.3
FA C4672	MA.P.E. activator, type B	16.0	26.0	26.5	10.4	52.6	0.5
FA C4736	blank	13.1		23.0		53.3	
FA C4736	MA.G.A. activator	13.4	2.3	23.8	3.5	53.7	0.8
FA C4736	MA.P.E. activator, type A	15.0	14.5	24.8	7.8	53.6	0.6
FA C4736	MA.P.E. activator, type B	15.9	21.4	25.1	9.1	53.6	0.7
FA C4737	blank	11.9		22.2		47.9	
FA C4737	MA.G.A. activator	12.8	7.6	22.9	3.2	48.2	0.6
FA C4737	MA.P.E. activator,	14.2	19.3	23.8	7.2	49.7	3.8
FA C4737	MA.P.E. activator, type B	14.5	21.8	24.3	9.5	48.7	1.7
FA C4738	blank	10.6		23.6		53.6	
FA C4738	MA.G.A. activator	13.4	26.4	25.3	7.2	56.8	6.0
FA C4738	MA.P.E. activator, type A	15.0	41.5	26.4	11.9	54.4	1.5
FA C4738	MA.P.E. activator, type B	15.3	44.3	26.2	11.0	53.7	0.2

Table 3b – Clinker C4705 Compressive strengths (EN-1961/), MPa

Sample		1d str	%	2d str	%	28 str	%
FA C4672	blank	13.4		23.2		49.5	
FA C4672	MA.G.A. activator	13.6	1.5	24.3	4.7	49.8	0.6
FA C4672	MA.P.E. activator, type A	15.1	12.7	24.0	3.4	49.8	0.6
FA C4672	MA.P.E. activator, type B	16.2	20.9	24.8	6.9	50.6	2.2
FA C4736	blank	13.4		22.2		45.9	
FA C4736	MA.G.A. activator	14.3	6.7	23.4	5.4	46.1	0.5
FA C4736	MA.P.E. activator, type A	14.4	7.5	23.6	6.3	48.9	6.5
FA C4736	MA.P.E. activator, type B	15.4	14.9	23.8	7.2	48.0	4.6
FA C4737	blank	12.8		22.6		46.0	
FA C4737	MA.G.A. activator	13.7	7.0	22.9	1.3	48.0	
FA C4737	MA.P.E. activator, type A	14.4	12.5	22.8	0.9	46.8	4.3
FA C4737	MA.P.E. activator, type B	15.1	18.0	24.5	8.4	47.1	2.4
FA C4738	blank	13.9		22.7		50.6	
FA C4738	MA.G.A. activator	14.6	5.0	23.7	4.4	50.6	0.0
FA C4738	MA.P.E. activator, type A	15.4	10.8	24.2	6.6	50.9	0.6
FA C4738	MA.P.E. activator, type B	15.8	13.7	25.1	10.6	50.9	0.6

Despite the fact that after 28 days the strengths tend to reach the same values between the blank and the added samples, microscopic investigation with ESEM shows that the hydration products structure is different. This means that the additives are able to modify the structure due to the different speed of reaction in the first days of hydration. In fact, the higher is the strength increasing effect at early ages, the higher is the density of the hydration products. Images (figure 1a-d) clearly show this trend in the scale
blank < MA.G.A. activator < MA.P.E. activator, type A < MA.P.E. activator, type B.
Less voids are present going from blank to MA.P.E. activator, type B.

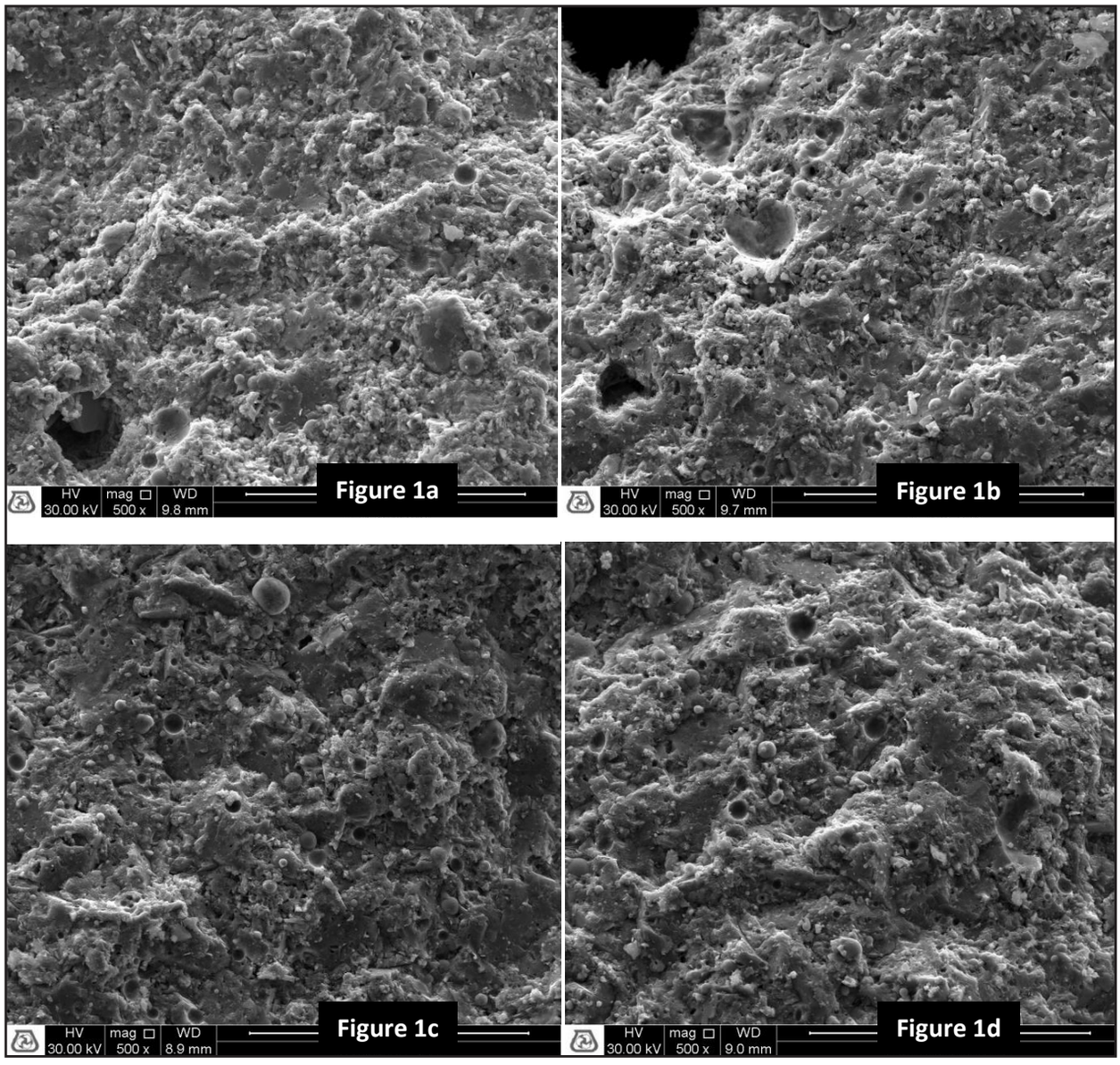


Figure 1: SEM images of hydrated cement pastes. 1a: blank sample – 1b: sample treated with MA.G.A. activator – 1c: sample treated with MA.P.E. activator, type A – 1d: sample treated with MA.P.E. activator, type B

In the case of the blank, at higher magnification several areas rich in needle-shaped crystals are visible, as well as some Portlandite crystals. For samples treated with additives, needle crystals are no longer visible, and the overall structure looks much more compact. In general, the presence of additives enhances the envelopment of the fly ash spheres into the hydration gel matrix (figure 2a-d).

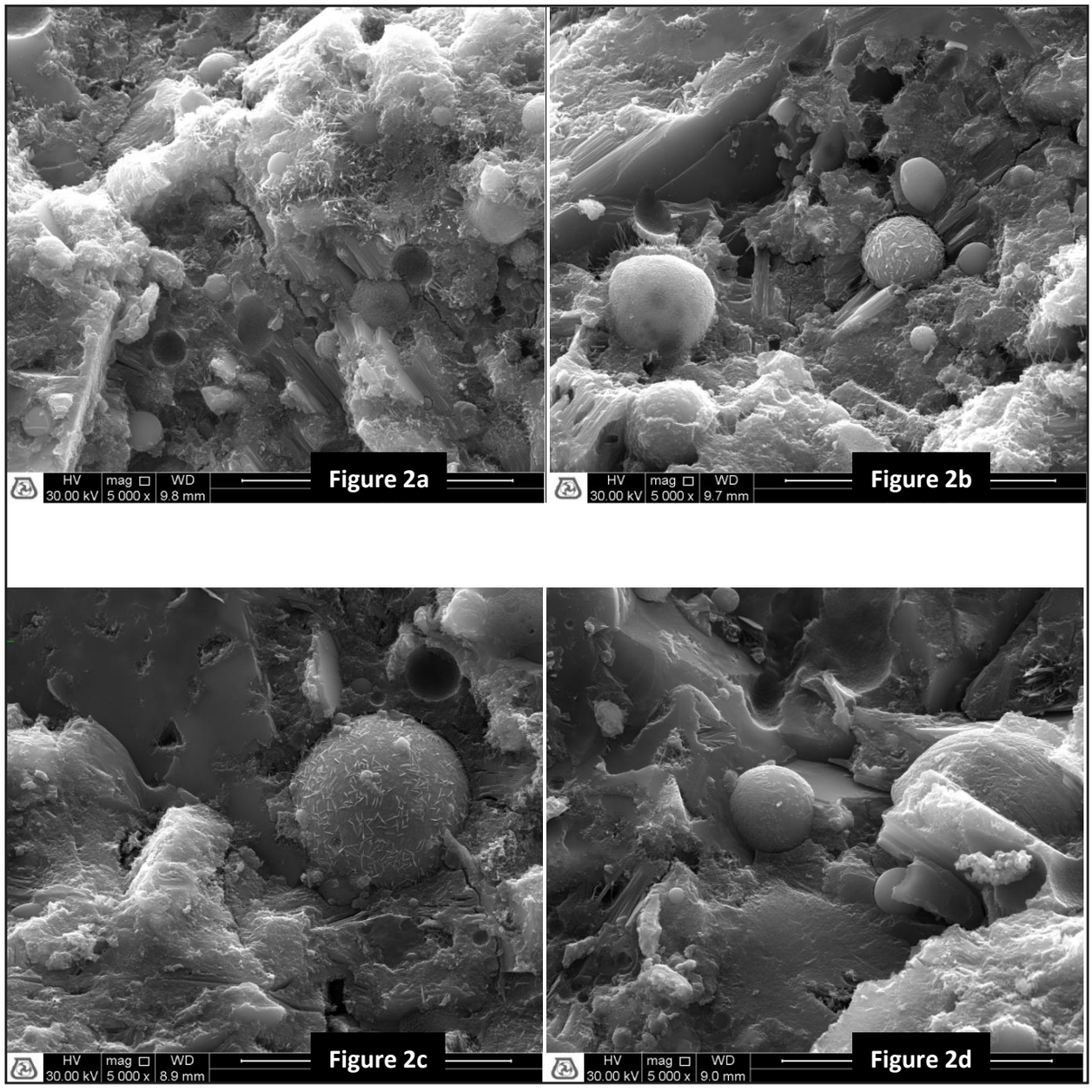


Figure 2- SEM images of hydrated cement pastes. 2a: blank sample – 2b: sample treated with MA.G.A. activator – 2c: sample treated with MA.P.E. activator, type A – 2d: sample treated with MA.P.E. activator, type B

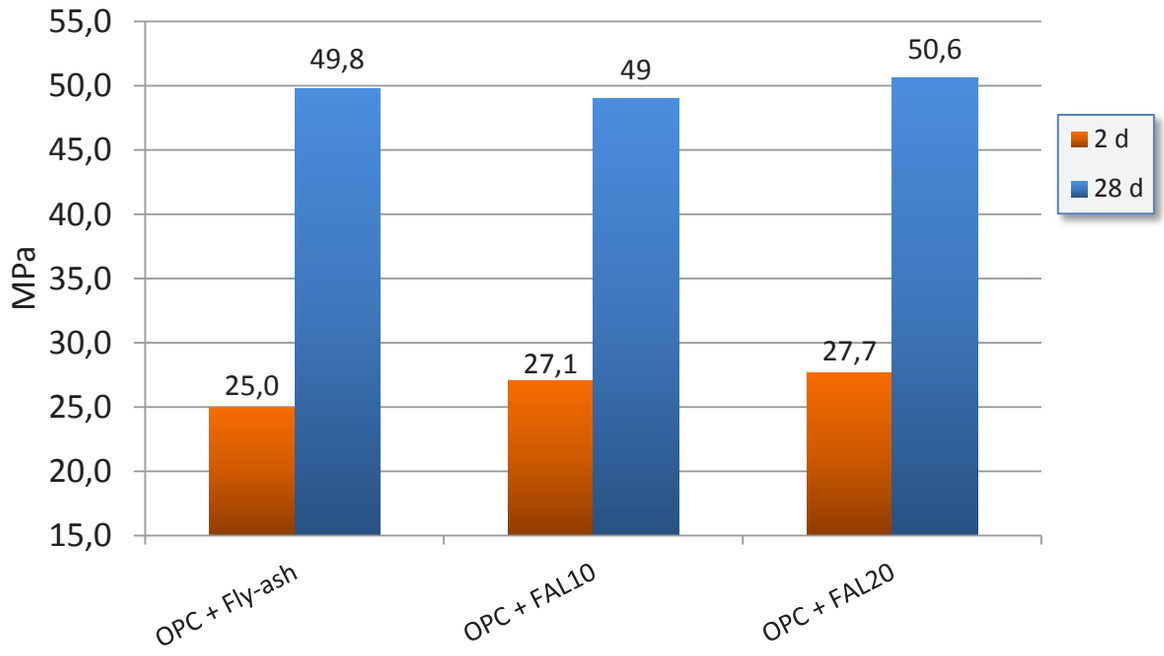
3 Fly ash cements optimisation with grinding and additives

An additional series of investigations has been carried out by grinding fly ash together with limestone, with the scope of enhancing its performance from the strength development point of view, so to allow for higher clinker substitution.

An OPC was ground in the lab (with only clinker and natural gypsum), and three different mineral additions were prepared:

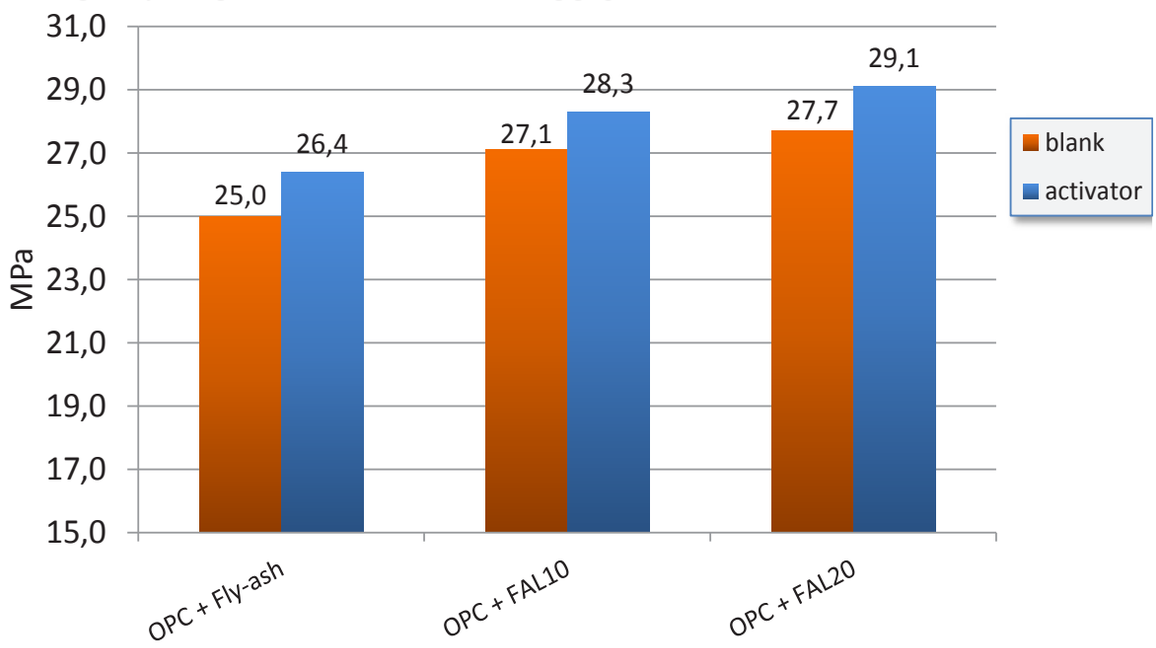
a) Standard fly ash (i.e. not treated or ground)
b) A mix of 90% fly ash and 10% limestone, ground in the lab (FAL10)
c) A mix of 80% fly ash and 20% limestone, ground in the lab (FAL20)

As above, composite cements were prepared by dry mixing the OPC with each of the additions (80% OPC and 20% addition). Strengths of the mixes (according to EN-1961/) are reported in the following graph:



Graph 1 – Strengths of blended cements with different mineral additions

As can be seen, the modified additions enhance 2d strength significantly, while 28 days are not affected as much. The same mixes were treated with an activator (MA.P.E. activator, type B) added in mixing water: results show very clearly that combining chemical activation with the use of the modified mineral addition the effect is outstanding. Early strength data is shown in the following graph:



Graph 2 – Early strengths of blended cements with different mineral additions and MA.P.E. activator, type B

Strength increase at early ages is maximised, so that an even higher clinker substitution is possible.
The reason of the enhanced reactivity can be attributed to the grinding of the fly ash with limestone: the fly ash spheres are in fact broken during grinding, hence exposing more surface to hydration. This can clearly be seen in the following electronic microscope pictures.

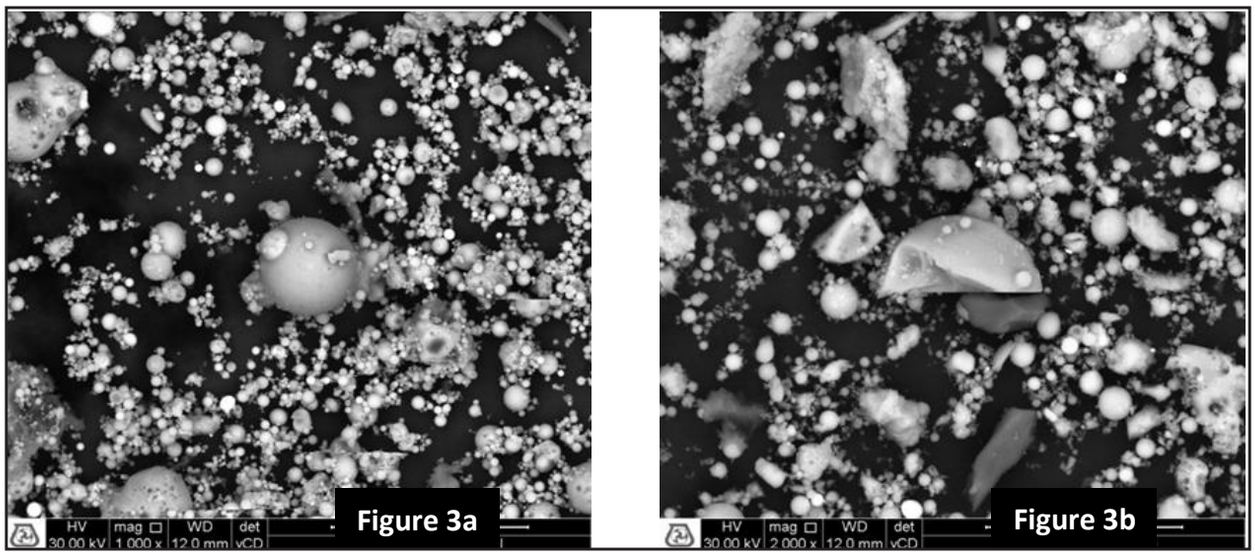


Figure 3- SEM images of mineral additions – a) fly ash, unground; b) FAL20, ground

In addition, the presence of the fine limestone provides nucleation surface for the hydration reaction, facilitating the development of the early strengths.
The process is additionally sped up by the presence of the chemical activator, resulting in the outstanding strength increase.
Further investigation on the ground additions seems to indicate that in ground fly ashes the amount of unburnt carbon is decreased. Loss on ignition data is reported in the following table:

Addition	Loss on ignition
Unground fly ash 2.48%	2.48%
Ground fly ash	1.22%

Of course, the less unburnt carbon is present, the higher is the reactivity of the fly ash, so this can provide an additional advantage to the strength development.

4 Conclusions

A study on fly ash cement activation was carried out, focusing on early strength enhancement, so to allow for increase of clinker substitution in composite cements. Chemical activators provide a very good solution to the problem; however maximum effect can be obtained by using them and at the same time using fly ashes ground together with a small amount of limestone.
These results are given by the combination of three effects:

a) The chemical effect on cement hydration promoted by the cement additive (MA.G.A. or MA.P.E.)
b) The physical effect of the enhanced available surface of the fly ash
c) The physical effect of the presence of additional surface provided by the limestone

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Safe, Effective and Remote removal of even the toughest build-ups and blockages from silos – the Primasonics PrimaWhip

By: Primasonics, UK

Under certain conditions materials such as cement, gypsum, coal, fertilisers, chemicals, animal feeds and food products will adhere to silo walls creating hang ups and blockages. These blockages significantly reduce the effective use of the silo disrupting material filling and discharge resulting in delay in production and bulk despatch and reducing storage capacity. This can lead to unplanned shutdowns, serious commercial loss of unrecoverable material, risk of fire and even fatal accidents.

Where serious deposits have already built up or where the blockage with material is particularly tough, Primasonics' specially developed PrimaWhip technology offers the perfect solution. The PrimaWhip is the quick, safe and highly cost effective solution to the removal of even the toughest build-ups of material without the need for dangerous, time consuming and expensive man entry.

Based around a specially developed powerful pneumatic motor mounted eccentrically within the cleaning head for maximum torque and stability, the PrimaWhip is manufactured from non-sparking aluminium which also provides for lightweight manoeuvrability. Access is gained through a suitable hatch on top of the silo and has an adjustable boom length of between 2.2 and 7.5 metres. It comes with a standard 50 metre of specially stretched air hose which can be extended to 75 metres operated by a pneumatic winch and hose reel. The PrimaWhip uses a range of different 'whips' such as non-sparking brass chain or plastic blades. All these important design points make the PrimaWhip suitable for use even in the most hazardous Zone 1and Zone 2 conditions.

Because of its flexibility, the PrimaWhip is suitable for a vast range of silo, hopper and process vessel cleaning applications. Here are just some of the applications in which the system has a proven record.

Cement, Clinker, Limestone, Iron Oxide, Gypsum, PFA, Sand, Coal,
Aluminium Catalyst, Sugar, Flour, Oil Seed Extracts.

- Mining operations:
  Gypsum, a wide range of Ores, Screenings, Potash and Zinc Oxide.

- Chemical industry:
  Dicalcium Phosphate, Carbonates and Sulphur.

- Agricultural applications:
  Grain, Rape Seed, Husks, Cereal, Salt and Animal Feeds.

T
Primasonics International provides full, export training in all aspects of the operation and maintenance of the PrimaWhip on customer's sites worldwide. The company take great pride in the knowledge that their Prima Whips are operating in many different applications and countries worldwide, helping to ensure 100% silo safety and thus preventing any totally unnecessary fatalities from occurring.

By popular request the company also offer the PrimaWhip on a monthly rental basis and also lease purchase again with full training also available.

The special advantages of the PrimaWhip system

- Because the PrimaWhip is purchased by your organisation and operated by the customer's own staff, following training by the Primasonics team, if frees them from the expense and availability problems of bought-in 'experts'.

- The PrimaWhip is a wholly remote system, meaning there is no need for dangerous, time consuming man entry operations that potentially put customer's staff in close proximity to hazardous unstable blockages and hang-ups.

- The PrimaWhip cleaning process can be simply and quickly set up yet is capable of delivering highly effective cleaning results in even the largest of silos.

- Constructed from lightweight aluminium, the system is highly manoeuvrable. This material, combined with a compressed air drive system ensures no risk of sparking in Zone 1 and Zone 2 fire hazard areas.

- The PrimaWhip is highly effective in use and is capable of removing even the toughest deposits or a wide range of materials.

- Because no man-entry is required, production need not be interrupted during the cleaning process, making important savings in expensive downtime.

- The PrimaWhip operation can be carried out by just two of your operators, so it doesn't make the excessive demands on your highly qualifies personnel that a correctly supervised and operated man entry operation would.

The Primasonics PrimaLance

With totally blocked silos, the PrimaLance drill can be used in conjunction with the PrimaWhip. The PrimaLance, also made from non-sparking materials and operated by compressed air can be used to 'drill' through the material either from beneath the material bridge, which is usually quicker and uses less energy, or if preferred, from the top of the silo. Once a hole is made the PrimaWhip can be used to commence total cleaning of the silo. Different designs of Drill-Head are available depending on the application.

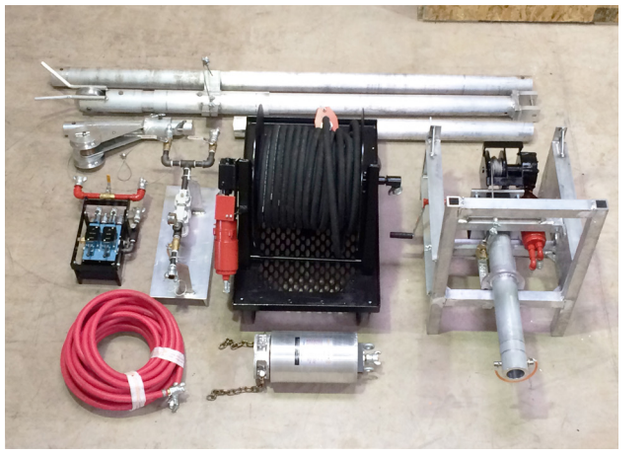
Technical Spefications.

PrimaWhip
Minimum Air Requirement
Pressure 6 bar (6.12 Kg/cm²) Pressure 6 bar (6.12 Kg/cm²)
Volume 100 c.f.m. (2.83 m³/mn) Volume 45 c.f.m. (1.3 m³/mn)

PrimaLance
Minimum Air Requirement
Pressure 6 bar (6.12 Kg/cm²)
Volume 45 c.f.m. (1.3 m³/mn)

For further details contact:
Primasonics International Limited
North Lakes Business Park
Penrith
Cumbria
UK
Tel +44 (0)1768480372
E-mail - sound@primasonics.com
Web link:
http://www.primasonics.com/products/prima-whip

The PrimaWhip



The PrimaWhip in kit form

The PrimaWhip Cleaning Head

The PrimaWhip on-site training

Making central cone silos even better

By: IBAU HAMBURG, Germany

Summary
IBAU HAMBURG has equipped more cement silos with central cone extraction systems than any other supplier and has always set the standards for this technology. Tried and tested solutions have been the starting point for the company's engineers to develop even better solutions for their customer's requirements. In the last two years large-scale tests have been made at the silo plants of several clients to identify how the energy requirements of silo extraction can be reduced. The results are better than expected. Not only can up to 40% of energy consumption be reduced, but wear in the downstream equipment can be minimized and bulk loading times significantly improved. It is also possible to reduce silo wall loads and improve silo safety. The new concept is available for all new IBAU Central cone silos and existing silos can be modernized with a return on investment being achieved very quickly.

1 Introduction
Energy efficiency has become a major focus of the cement industry and IBAU Hamburg has been looking at ways to reduce the energy demand of large central cone cement silos, which use compressed air for fluidizing the cement material within the discharge process. Typically the energy requirement for such silos including material extraction and transport is in the range of 0.06 to 0.12 kWh/t of extracted cement, depending on the extraction rate. This energy requirement is relatively low, when compared to other material transport and especially grinding systems.

About 70 to 75 % of the power consumption is for the material extraction from the silo, while 25 to 30 % is for material transport from the silo to bulk loading stations, where the biggest energy consumers are the vibrating screens for sieving foreign bodies and the bulk loading winches. Normally silo aeration uses about 40 to 50 % of the power consumption for material extraction from the silo and the rest is used by filter fans, venting systems and control air for the devices.

However, besides the power requirement, there are many other important aspects to limiting excess compressed air for silo aeration. One such aspect is the wear of the flow-control gate, another is the noise from excess air being blown off via an overflow valve and another is the longer loading time due to excess air blocking the system. Additionally, during discharge in large central cone silos material flow channels can be formed, which can cause damage to the silo walls. The less aeration air is used, the smaller are the flow channels.

2 The central cone discharge technology
The central cone silo was introduced to the market in 1975 and is used for silos with diameters from 10 to 30 m and with storage capacities of up to 40 000 t (Fig 1). Such large-capacity silos for the storage of cement require an efficient and trouble-free discharge system.

The central cone has a displacement function for the material in the silo, which allows the material to flow freely during discharge. The central cone forms a ring area on the silo bottom, which is divided into individual aeration sections that are inclined slightly downwards towards the discharge openings in the cone. The silo bottom (_ Fig. 2) is equipped with open fluidslides (aeration pad type) that have an air-permeable fabric on the upper side. The aeration air is blown under the fabric in order to fluidize the cement on the fabric. Each aeration section has its own discharge outlet with a flow control gate (Fig. 3) that provides a controlled discharge from the silo to the downstream collecting bin.

Figure 1: IBAU Central cone silo

Figure 2: Silo bottom of central cone silo

For silo discharge, one silo section is active at a time. This means that only the fluidslides of one section are aerated and the relevant flow-control gate is opened for discharge. The silo bottom is aerated section by section, so that all sections are aerated in a complete cycle. Each outlet has a right-hand and a left-hand aeration sector that can be actuated individually, one after the other, to generate small discharge flow funnels as required by the aeration scheme. So, for discharge only the bulk material above the activated section is in motion and with the uniformity of this procedure, large uncontrolled material movements and load peaks on the silo walls are avoided. The result is a controlled silo discharge with a controlled mass flow in the silos according to the "Safety First" principle.

The advantages of the IBAU Discharge system are:

»» 100 % safe operation
»» Complete usage of the storage volume
»» No uncontrolled material movements within the silo
»» Almost uniform discharge during an aeration cycle
»» No interruption during silo operation

The quantities of material that can be discharged with such a system vary between 50 and 1 000 t/h, depending on the size of the silo and loading requirements. Only very small quantities of air are needed for the material discharge, and the aeration air is removed along with the discharged cement. Typically the energy requirement for such silos with extraction rates of 250 t/h is in the range of 0.09 to 0.11 kWh/t of extracted cement, of which only about 40 to 50 % is used for the silo aeration system.

3 The Gdischarge concept

The idea behind the Gdischarge concept was to optimize the energy requirement for large cement silos with an advanced discharge control system using the latest rotary lobe blowers. With a controlled limitation of the differential pressure for the silo bottom aeration, the power used for the generation of the compressed air can be significantly reduced. Furthermore, due to less pressure loss and other energy saving operations, the energy consumption and energy costs are significantly reduced.

No compromises have been made to the IBAU Central cone concept which is characterized by a number of separate discharge outlets (Fig. 4).

Figure 3: Discharge outlet with flow-control gate

Figure 4: Discharges in an IBAU Central cone silo

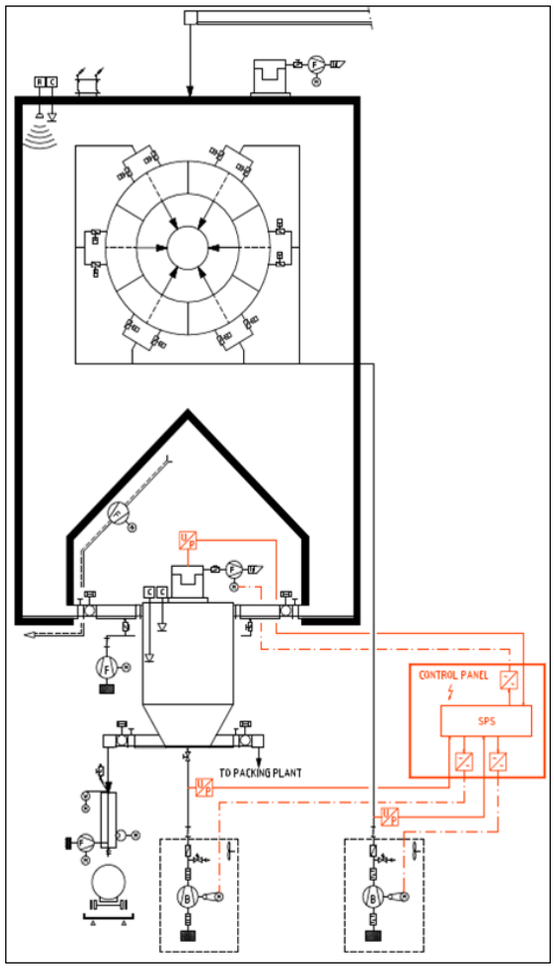


Figure 5: Flow sheet of an IBAU Central cone silo with Gdischarge

All system components such as fans and metering devices are designed for maximum discharge capacity and optimized by the Gdischarge system for the required discharge situation. This means that during operation the air volume flow of the blower is automatically adjusted via a controller. In the control procedure alternative discharge requirements for downstream conveying to varying numbers of trucks, railcars, mixers and packing plants
can be integrated.

Fig. 5 illustrates the control system of the silo extraction in a central cone silo with six discharge outlets and a material flow to two downstream systems, which are usually for truck loading, packing or mixing. A frequency converter for the blower and a pressure sensor at the blower form the control unit, which is linked to an intelligent controller. This controller regulates the motor speed of the blower to adjust the volume flow depending on the measured back pressure in the aeration pipe.

Target and actual pressure in the flow line regulate the air quantity of the blower. The blowers that are used by IBAU allow a very wide control range from 25 to 100 %. It goes without saying that these blowers are robust and durable, very easy to service and maintain and provide complete oil-free aeration air. In another option, control of the under pressure in the silo and venting air can be incorporated. Measuring the material flow from the silo discharge is best when the collecting bin for the silo discharge is equipped with a weighing system.

4 Test results and Gdischarge advantages

The new silo discharge system has been tested by IBAU Hamburg at different plants in Western Europe under real operating conditions. The results of the Gdischarge are very impressive. In the tests, first the power consumption, loading capacities and the loading time of the existing silo systems were analyzed and attempts were made to optimize them. The main process parameter variations in the tests were the back pressure of the flow line and the loading capacities. After the initial tests the silos were modified and the Gdischarge system was installed.

In most of the tests at the different silo facilities the existing roots blowers were not exchanged and only frequency converters for the blowers were installed. At one location in Germany the blowers were also exchanged and newly equipped with the latest technology including integrated frequency controllers. In addition to the frequency converter a pressure control system comprising of a pressure sensor, pressure measuring line and a controller were installed.
Table 1 summarizes the latest results at a Lafarge-Holcim cement plant in Germany. The results of 12 truck loadings without Gdischarge are compared with the results of a 15 truck loadings test with Gdischarge. At the beginning of the tests the optimal target pressure in the flow line was measured. All the data in Table 1 are normalized, and given per ton of loading capacity or as an average figure.

The loading capacity (flow rate) could be increased from 100.7 t/h without pressure control to 140.6 t/h with pressure control, which corresponds to an increase of 39.6 %. Concurrently the power consumption was reduced from 0.033 kWh/t without pressure control to 0.019 kWh/t with pressure control which equates to a power reduction of 41.6 %. Finally, and not surprisingly to the experts, the loading time was improved by almost 40 %.

Furthermore, the wear is reduced within the system of flow-control gates (Fig. 6) and valves due to a reduction in the air quantities and velocities used, resulting in a reduction of the maintenance costs of the system. The filter loads are also reduced due to the lower air

quantities in the system and smaller filter systems can be designed leading to significant cost advantages.

Figure 6: Wear characteristics of flow-control gates

Another very positive effect is that faster loading operations for trucks and railcars (Fig. 7) can be achieved due to less aeration air in the system needing to be removed from the vessels during the loading operation. The reduction in loading times is about 30 to 40 %, which means that loading procedures can be significantly improved. In some cases where an additional loading lane is planned, this investment can be avoided with the installation of the efficient Gdischarge system. Cement producers should consider all the benefits of the Gdischarge system when considering the cost of upgrading existing systems.

Last but not least, a very positive effect is achieved on the formation of flow funnels in the silo. Because of the reduced silo aeration pressure and aeration air quantities, the flow funnels in the silo are smaller in diameter and the core funnels do not touch the silo walls so that the horizontal pressures on the silo walls are more homogenous within the silo and peak loads are reduced.

5 Outlook

The new Gdischarge system has been tested under real operational conditions by several cement producers. The test results from different silos and different extraction rates are achievable at any site and show a number of advantages when compared to conventional discharge systems. Therefore, IBAU Hamburg has decided to use the Gdischarge as its new standard for all new cement silos and self-discharging cement carriers.

	Standard	Gdischarge	Difference
Loading capacity [t/h]	100,7	140,6	+39,6%
Power consumption [kWh/t]	0,033	0,019	- 41,6%

Table 1: Test results of the Gdischarge system

Figure 7: Truck loading operation

The Gdischarge system is already successful in operation on multiple self-discharging cement carriers and in a reference silo in Malaysia. Several new IBAU Silos which are equipped with Gdischarge will be commissioned this year worldwide. Because of its modular design, existing silos can also be modified and equipped with the system. In a next step, measurements by 3D-laser scanning are envisaged to illustrate the "Safety concept" and the reduced formation of flow funnels in the silos.

Quality development strategy for the Middle East

By: Mark Mutter, Managing Director –

Introduction

In a sold-out market, cement quality is less of a differentiator between different cement suppliers, with availability of product and loading time at the plant of the cement producer being much more of a priority to the customer. As long as the cement meets a certain minimum standard, the quality of the cement is less important. However, when the market is not sold out, quality can be developed to become a major differentiator between cements for the customer. We can consider quality in several different ways, such as:

- Performance of the product on a standard test such as final strength and setting time.
- Consistency of the product from delivery to delivery
- Development of new products with different attributes for different sectors

Within the article, we discuss some of the key considerations when aiming to improve quality performance of cements i.e. the first of these two of the areas above.

Quality from the start

The drive for quality in industries such as the car industry brought about the realisation that if quality defects can be eliminated and/or corrected at the earliest stage in the process, the overall cost of the product will be less. Trying to correct the defect once the product is almost complete results in high costs to re-work the product. This same principle applies in the cement industry, but is quite often forgotten. Examples of upstream lack of quality control that will influence the final properties of the cement are:

- Raw meal that is produced with a high residue
- Reduced clinker due to poor combustion
- Over or under-burnt clinker
- Poorly cooled clinker

All of these quality imperfections that are introduced throughout the process up to the clinker stage will result in the need to over-grind the clinker to create the necessary fineness and particle size to give the required final strength. Alternatively, some manufacturers use cement modifiers to create the final product properties which should be present in a well manufactured clinker, adding cost and reducing profit. Over-grinding of the cement will lead to a reduction in the throughput of the mill and wasted electrical energy. Therefore, selecting the correct quality targets throughout the process and ensuring that they are maintained is essential to an optimised cement milling section.

The product drives the raw materials

A further mistake that can often be made is to accept that the raw materials that are available in the quarry are the starting point and then make a cement that fits with the raw materials. This strategy is the complete opposite of almost any other manufacturing industry and if we think of the car industry, manufacturers do not start with a set of parts and then put them together to see what the product looks like. Rather they start with a final specification and work backwards to identify what they need to produce that specification.

Applying this to the cement industry, the desired cement types – these being the types that the market requires – should be identified and then the appropriate raw mix designed. If additional raw materials are required – such

as an alumina or iron source or the addition of gypsum to balance alkalis – they should be purchased and added at the start of process as opposed to making a sub-optimal clinker and then trying to improve its properties later.

Consistency is essential

Whilst the ultimate values for parameters such as final strength and setting time are important, just as important is the consistency of the product. In the readymix concrete sector, the customer needs to have the confidence that they will get the same final strength from the concrete every time they add the same amount of cement to a batch. Any lack of confidence in the cement will lead to the customer having to add extra cement to ensure that there isn't a failure in the concrete. This leads to a higher cost for the customer and therefore lower margins and eventually this customer will leave and find a different source of cement. With concrete products manufacturers, they need the confidence that the product will set in the same amount of time, every time, to allow the production planning to be maximised and profitability to be improved.

Therefore, it is essential to not only measure the values of the key chemical and physical parameters at each process stage – kiln feed, clinker and cement – but also over time measure the variability of the parameters by tracking the standard deviation around the target; if variability is found , the cause must be established and eliminated

Make the separator do the work

All too often, the separator is not operating in the manner for which it is designed and therefore both efficiency of the milling system and the quality of the product is compromised. The separator needs to be loaded up with sufficient material and the air to cement ratio needs to be correct for the separator to function as designed. Often separators are working at much higher levels of by-pass than designed, meaning that fine material from the separator returns to the mill and is over-grounded, making the mill inefficient. Inversely, coarse material passes out of the separator in the fines stream making the final product too coarse. It is well known that particles above 32 micron add nothing to cement strength, so an inefficient separator with a high by-pass will certainly lead to a lower strength cement.

The role of marketing

Marketing departments have a key role to play in the cement business and it is often the case that the marketing department and the plant production and quality departments are kept separate. Good communication is required between these departments to ensure that the plant is producing what the customers wants and that any comments from customers are received by the plant.

The marketing department also needs to take on the role of educating the customer. For example, a view that is often heard in the Middle East is that the darker the cement, the better the final strength. This a complete misconception and JAMCEM has worked on assignments where the decision not to use a lighter pozzolan has been taken as the cement would become lighter and customers would believe that the cement will not perform as well. In instances like this, it is the marketing departments role to educate the customer and assist the plant is reducing production costs.

Summary

Quality improvement on the plant needs inputs and cooperation from a number of departments including Quality Control, Production, Process Engineering and Marketing. Simple steps can be taken and the starting point is to know about your process – implementing quality targets and standard deviation targets throughout the process to identify where problems may exist. The Process Engineering function can then task themselves with finding solutions as well as ensuring the cement mill separators are functioning correctly. At the same time, communication between the Marketing Department and the plant needs to be frequent and informative, ensuring that the products that are made are what the customers want as well as feeding back customer comments so that improvements can be made.

LAST CHANCE TO BENEFIT YOUR EARLY BIRD DISCOUNT (-22%)

May 17–19, 2017

White Nights

IV INTERNATIONAL CEMENT BUSINESS CONFERENCE

Grand Hotel Europe, St. Petersburg, Russia

MAIN PROGRAM*

Day I (May 17)
17:00 registration of participants at Belmond Grand Hotel Europe. Welcome reception
18:00 St. Petersburg city tour

Day 2 (May 18)
10:00–18:00 plenary session
19:00 visit to Mikhailovsky theatre
23:00 White Nights boat tour on the Neva river. Bridge raising. Gala-dinner

Day 3 (May 19)
12:00 lunch
13:00–17:30 plenary session

PROGRAM FOR ACCOMPANYING PERSONS*

Day I (May 17)
17:00 registration of participants at Belmond Grand Hotel Europe. Welcome reception
18:00 St. Petersburg city tour

Day 2 (May 18)
10:00–17:30 tour of Peterhof (fountains, Big Palace)
19:00 visit to Mikhailovsky theatre
23:00 White Nights boat tour on the Neva river. Bridge raising. Gala-dinner

Day 3 (May 19)
14:00–17:30 Tour of Menshikov's and Stroganov's palaces

ADDITIONAL TOURISTIC PROGRAM**

Day 4 (May 20)
10.00–17:30 Tour of Catherine palace (Amber room)

Day 5 (May 21)
10:00–17:00 Tour of the Hermitage, Church of the Savior on Blood, Museum of Alexander Pushkin

**Subject to changes*
*** Provided upon the participant's request*

PRELIMINARY LIST OF KEYNOTE SPEAKERS

Vladimir Yakovlev, President, Russian Union of Builders, Russia

Marco Goisis, Research Fellow, Italcementi — Heidelberg-Cement Group, Italy

Dr. Eduard Bolshakov, Chairman of the Committee of the Russian Union of Builders for Cement, Concrete and Drymix Mortars, Russia

Prof. Dr. Ivan Borisov, Belgorod State Technological University named after V. G. Shukhov

Prof. Dr. Sui Tongbo, Vice President of China Sinoma International Engineering, China

Alexey Tomashevskiy, CEO, Aalborg Portland Russia

Paul Daugalis, Chairman, European Asset Management Committee, European Federation of National Maintenance Societies, Belgium

Çağlan Becan, Regional Representative Middle East and Turkey, World Cement Association, United Kingdom

Dr. Sergey Sivkov, Associate Professor, D. Mendeleev University of Chemical Technology of Russia, Russia

Dr. Hans-Wilhelm Meyer, Partner, CemCon AG, Switzerland

John Kline, CEO, Kline Consulting, USA

Vladimir Guz, Managing Partner, SM-Pro, Russia

Organizers: Russian Union of Builders; ALITinform. Цемент. Бетон. Сухие смеси. Cement. Concrete. Dry Mixtures; Belgorod State Technological University named after V. G. Shukhov

Official partner: WCA World Cement Association

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Contact person: Nadezhda Lukyanova, n.lukyanova@alitinform.ru

Thorwesten Vent brings explosion-protection up to date at Eternit

In the manufacturing of fine wood-chippings, which are required in the production of cementitious particle boards, large volumes of process-related dust arises, which is explosive under certain circumstance. In order to be able to guarantee the safety of its fine wood-chippings line, Eternit GmbH, based in Beckum, Germany, decided to upgrade its entire process chain with the latest explosion-protection technology. On the recommendation of its own property insure as well as its technical competence, Thorwesten Vent, also based in Beckum, was selected as its project partner.

At the end of 2015 engineers performed an initial status analysis, during the course of which the optimization requirement, the measures to be adopted and an estimation of costs were ascertained. It was determined that, in the roughly 30 years old plant, neither a zoning conforming with ATEX safety directives nor an effective isolation of the installed components were present. In the case of an explosion, the installation would cope neither with the high speed of flame propagation nor with the related pressure. The result would be devastating damage to components and buildings that could take place at any time.

The existing explosion-protection measures were evaluated to be inadequate and, at times, ineffective. As a consequence, Thorwesten Vent created a new plant concept; into which the latest findings of modern explosion-protection technology would be incorporated. For the affected cyclone, supply silo and process filter, the required explosion pressure relief surfaces were determined on the basis of technical data and the new construction-related measures were designed. The latter largely comprised the isolation of the individual units by installing the necessary explosion-relief vent and the fitting of pipework in several sections, as well as the partial renewal and retrofitting of the fine wood-chippings silo to a pressure-shock resistance of 2bar over pressure. In addition, the silo was equipped with a modern explosion pressure-relief flap, a de-dusting filter and the appropriate sensor technology. On the basis of the measures stated above the company Eternit GmbH is acquiring an explosion-protection certificate through a notified body.

What is noteworthy about this project is not least the considerable extent of engineering that was preformed prior to the upgrade. In close cooperation with the customer, Thorwesten Vent took on the measuring of the pipework structure in the building as well as the entire creation of plant component drawings in 3D, in addition to the structure analysis of the silo and building structures. The building work was also realized by Thorwesten Vent.

The Beckum-based company once again underlines through this project its position as a recognized specialist in the field of structural explosion-protection for components and systems for process industry.

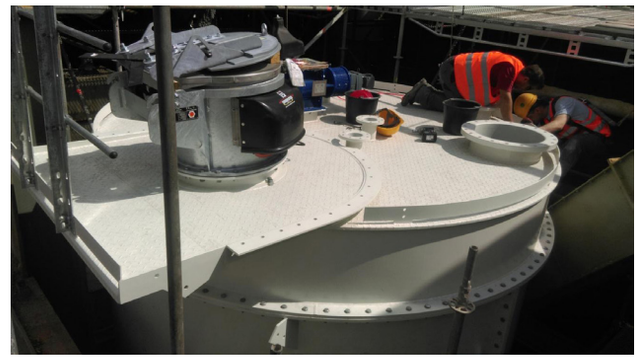

Figure 1: Fitting of a silo roof with modern explosion pressure relief flap on a new fine wood-chippings silo.

Figure 2: Installation of an explosion vent by Thorwesten Vent personal.

Figure 3: The newly installed explosion vent with explosion pressure relief flap isolates the system and prevents damage to machinery and buildings.

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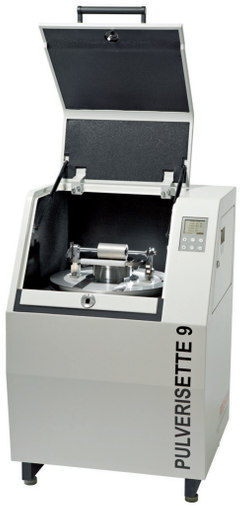
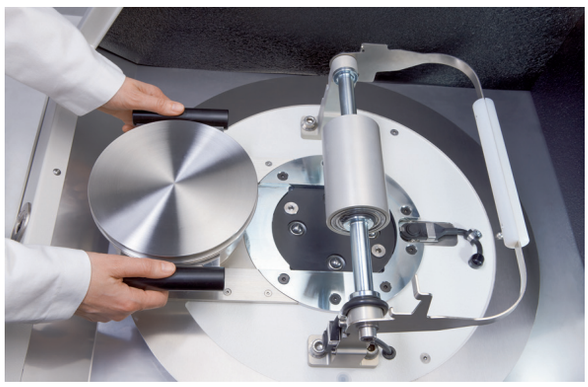


Vibrating Cup Mill PULVERISETTE 9



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BEUMER

Solution-oriented all down the line

At the interpack in Düsseldorf from May 4 - 10, BEUMER Group will exhibit its high level of expertise as a solution provider for integrated packaging and intralogistics systems. In addition to highly efficient palletising and packaging systems, BEUMER Group also provides tailor-made components for material flows specific to different industries. Customers can get everything from one hand, including the software and comprehensive customer support.

As a single-source provider, BEUMER Group supplies and installs the packaging lines and adjusts them individually to the products of the customer. The new BEUMER fillpac R filling machine fills bulk material from the building materials industry and other industrial pulverized goods into bags in an efficient and gentle way and with the required throughput. It can fill very fine to very coarse materials into different bag formats and types, such as valve bottom bags and flat valve bags. BEUMER Group has now complemented the rotary filling machine with a bag placer and a ream magazine. This means that performance and efficiency can be further increased. Due to its modular design, the BEUMER fillpac R can be easily integrated and adjusted with existing packaging lines. The highly efficient form fill seal system BEUMER fillpac FFS is used in the chemical and petrochemical industries. It forms bags from a prefabricated tubular PE film and fills them with the product of the customer. Both systems are equipped with a specialised weighing unit which ensures the correct quantity of the filled material.

Picture 1: The bag placer applies the valve bag with precision on one of the filling spouts of the BEUMER fillpac R

The bags are then stacked on pallets. For this, BEUMER Group offers the BEUMER paletpac high-capacity palletiser. It is incorporated into high-performance packaging lines to process even sensitive and valuable products as well as products with special flow characteristics in a gentle and efficient manner. Depending on the product requirements, it can be equipped with a clamp-type turning device or a twin-belt turning device. BEUMER offers the BEUMER robotpac, a space-saving articulated robot, for palletising cartons, boxes, canisters or trays. This fully automatic articulated robot is able to solve even complex palletising and de-palletising challenges reliably and efficiently. BEUMER has developed fully automatic gripping systems that are easily exchangeable and suitable for each item to be packed.

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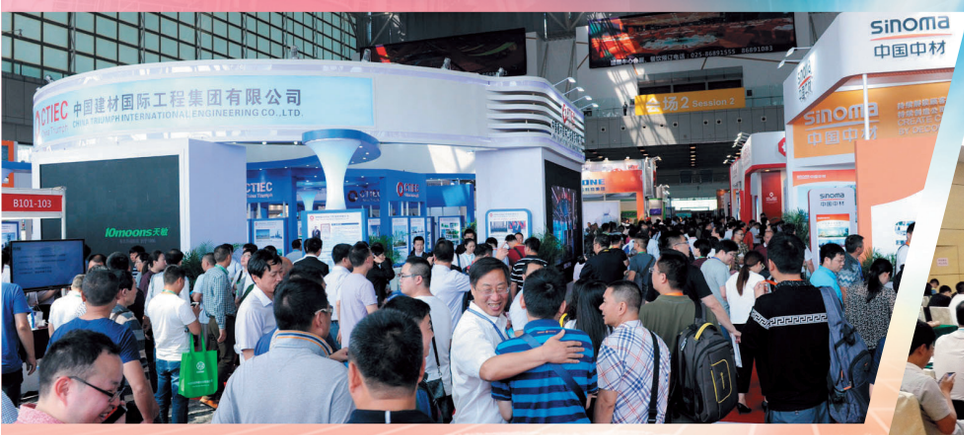

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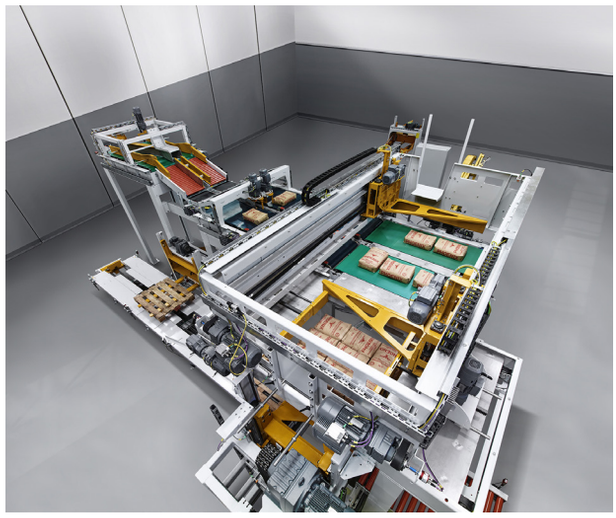

Picture 2: The BEUMER paletpac creates exact, stable, space-saving bag stacks

During transport, the palletised products must be secured on the pallet and protected against dust, rain or other atmospheric influences. The BEUMER stretch hood high capacity stretch hood system can be used for this. The BEUMER stretch hood A is the result of the intralogistics specialist completely redesigning its tried-and-trusted packaging system. Compared to previous versions this machine series now offers higher throughput, gentle transport of the film in the system and requires 40 percent less floor space. In addition, the systems supplier can now provide the system with a newly developed easy opening hood: this worldwide innovation allows employees in retail stores and logistics centres to quickly and easily remove the film when unpacking or repacking the goods, without the use of any cutting tools.

Picture 3: The easy, intuitive and reliable operation of the new BEUMER stretch hood A is especially appealing to customers

Through its palletising and packaging systems division, BEUMER Group is also implementing applications that are specific to the industry and that allow the customer to expand the packaging lines into entire intralogistics systems. The lines are equipped with standardised components such as conveying elements or vehicle-based systems, various solutions for handling and manipulators such as robots, buffer and storage modules along with the suitable software. The customer gets the entire intralogistics system from one source with BEUMER as a reliable and competent partner to contact.

The BEUMER Group is an international leader in the manufacture of intralogistics systems for conveying, loading, palletising, packaging, sortation, and distribution. With 4,000 employees worldwide, the BEUMER Group has annual sales of about EUR 750 million. The BEUMER Group and its subsidiaries and sales agencies provide their customers with high-quality system solutions and an extensive customer support network around the globe and across a wide range of industries, including bulk materials and piece goods, food/non-food, construction, mail order, post, and airport baggage handling. For more information, please visit: **http://www.beumergroup.com.**

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The Pfister® Wear Index: Brand-new Tool for Targeted Maintenance of Pfister® DRW Rotor Weighfeeders

Machine life is rough in a cement plant. Unpredictable wear may cause expensive downtime when unscheduled maintenance becomes necessary. Sturdy materials and a smart predictive maintenance strategy is the key to uninterrupted production and highest customer satisfaction, the ultimate goal of Pfister engineers. Introducing the Pfister® Wear Index, another important step towards flawless operations has been taken. At just one glance, system operators are provided comprehensive information about the current status of wear parts and are issued a predicted time to maintenance. The result: increased machine life and lower service and operational cost.

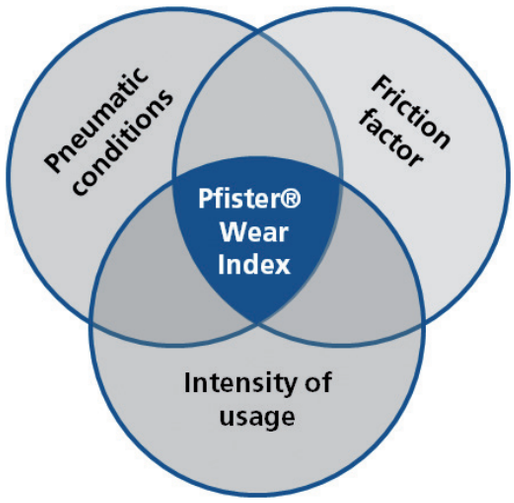
The rotor weighfeeder Pfister® DRW is designed for dosing pulverized fuels such as petcoke, lignite or coal dust to the kiln in the cement making process. It is a compact system which integrates material extraction, weighing, dosing and material transfer into the pneumatic conveying line. Additionally, due to its dosing strategy ProsCon® it allows for high short- and longterm accuracy as well as dosing stability.

To ensure runtime just as reliable as proper dosing, FLSmidth Pfister has developed several mechanisms to predict wear effects and to decrease them where wear is unavoidable. As part of its predictive maintenance strategy, Pfister® further deep-dived into analyzing the root causes for wear of the Pfister® DRW by taking a tribosystem perspective and consequently developing the Pfister® Wear Index.

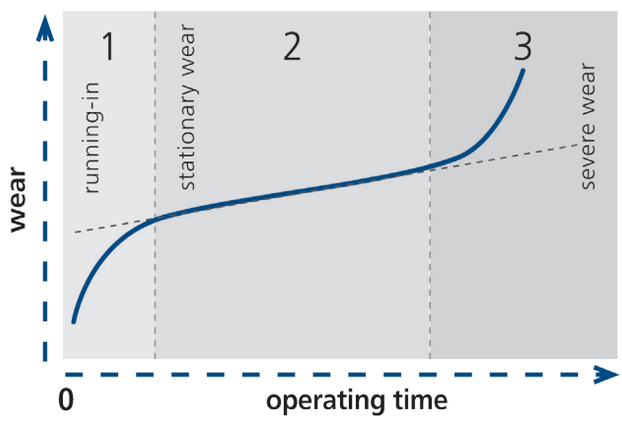
Several factors contribute to wear: the intensity of usage, pneumatic conditions and the individual friction factor have to be taken in consideration. To clearly understand and analyze the reciprocity of effects, a scientific approach was needed. Tribology, or the science of interacting surfaces in relative motion, proved to be the key to develop a maintenance pre-warning system. Mini portions of pulverized fuel residues act as wear agents between parts moving relative to each other. Additionally, the pneumatic extraction of the pulverized fuel out of the rotor chambers causes abrasion. Combined, this leads to two major wear symptoms: surface alteration and metal loss. Analyzing wear drivers and their impact patters led FLSmidth Pfister head of R&D Dr.-Ing. Daniel Kasperek to the development of model-based condition surveillance. In a standardized model, the typical phases of wear in correlation to operation time have been identified. Based on the typical curve of wear, the control system indicates the current condition of a running system and supports the customer in proper maintenance planning, thus reducing the risk of wear-triggered downtime.

Each cement plant is different, so the wear index is customized to individual field conditions. After each visual inspection of wear parts during maintenance, the wear index's prediction quality is rated in three steps: wear index too high, correct, or too low. Each time, the result automatically re-calibrates the index, making individual prediction quality better and better over time.

www.flsmidthpfister.com



1. Three factors, one answer: the Pfister® Wear Index. The new tool to fit maintenance plans to actual maintenance needs.



2. Time of usage is not the only indicator of strong material wear. The Pfister® Wear Index leads from model-based condition surveillance to individualized prognosis.

About FLSmidth Pfister GmbH:
Stable and accurate dosing of fuels and materials are key elements required to produce clinker profitably and efficiently. With its state-of-the-art Pfister® rotor weighfeeder concept, FLSmidth Pfister is offering a future oriented technology that is able to dose small to huge numbers of tons per hour. With almost 3,000 installations worldwide, customers of FLSmidth Pfister are feeding millions of tons each and every year.

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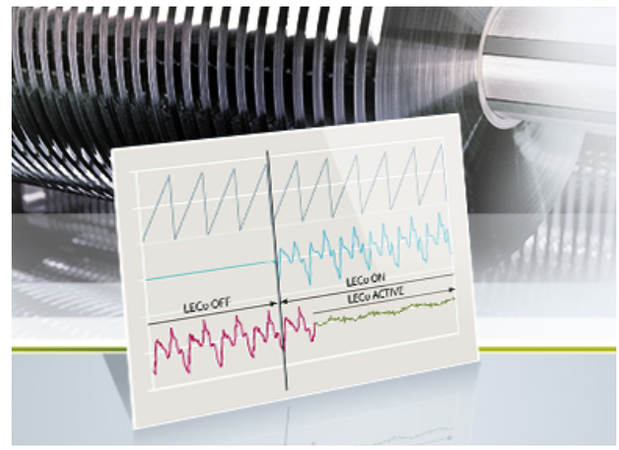
Siemens optimizes converting machines with new compensation functions

- **New Simotion Motion Control functions for higher winding quality, machine speed and process reliability**
- **Prismatic winding compensates for path length differences on non-circular winding bodies**
- **Learning Error Compensation (LECo) compensates for cyclic disturbance variables in the process**

Siemens has expanded its Simotion Motion Control solutions for converting machines to include prismatic winding and Learning Error Compensation (LECo). Prismatic winding compensates for path length differences on non-circular winding bodies. The advantages are higher winding quality, machine speed and process reliability. The new self-learning LECo function compensates for periodic disturbance variables in the process, and quickly restores the process and product quality. Deviations, such as position errors of a process axis triggered by mechanical shock, are already largely compensated for after just one cycle. The new Simotion applications are used, for example, in the manufacture of battery electrodes as well as in the processing of corrugated cardboard or material webs.

Winding on non-circular cylindrical, near elliptical bodies creates web length changes between the material support point and the deflector roller. These were previously compensated mechanically or by a variable winding speed. The new Siemens Motion Control solution for prismatic winding calculates cyclically in advance the support points of the material on the deflector roller and winding body, and feeds these into the controller. The machine constructor benefits from higher winding quality, higher machine speed and process reliability.

The new self-learning LECo application replaces the previous dynamic position controllers. These correct position errors of the process axes caused, for example, by a mechanical shock, but only after a delay. By continuously monitoring the process axes, the new Siemens solution quickly detects deviations, calculates the pre-control value on the basis of the following error, and feeds this into the controller in the next cycle. Deviations are already largely compensated for after the first cycle. In the following cycles, a learning algorithm continuously monitors the result of the compensation, fine tunes the drive control, and thus also increases the process accuracy.



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Further information is available on the Internet at www.siemens.com.

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Substantially more possible applications for Siemens logic modules

- **Logo! 8 logic module series can be used down to minus 20 degrees Celsius for the first time**
- **Modbus TCP/IP communication and NTP time synchronization**
- **Software Logo! Soft Comfort V8.1 with new practical functions**
- **Evaluation of process values during operation with Logo! Access Tool**

Siemens has substantially widened the range of possible applications for the current Logo! 8 logic module series. The temperature range has been extended down to minus 20 degrees Celsius to allow the logic modules to be used for the first time at sub-zero temperatures. Modbus TCP/IP (Transmission Control Protocol/Internet Protocol), date and time synchronization via NTP (Network Time Protocol), and the Logo! configuration software have also been added to the communication functions. The new Soft Comfort version 8.1 has been expanded to include many practical functions. The Logo! Access Tool, which is also new, now transfers the user process values into an Excel table for evaluation during operation.

The logic modules of the current Logo! 8 series (as from version FS:04) can now be used throughout a wide temperature range from minus 20 to plus 55 degrees Celsius without condensation. The previous range of use was from 0 to 55 degrees. So for the first time, the user can now also use the devices outdoors when temperatures are below zero. The Modbus TCP/IP communication protocol has been integrated into Logo! 8 basic units to enable the logic modules to be used even more flexibly in existing infrastructures. Date and time synchronization according to the NTP standard is also new, so with appropriate configuration, all the NTP devices in a network synchronize themselves automatically. Modbus TCP/IP and NTP allow Logo! 8 to run as client and server simultaneously.

The new Logo! Soft Comfort V8.1 software version offers not only user-friendly operation, configuration and acceptance of programs from previous versions, but also many new practical functions. One highlight is the easy configuration of the communication with Modbus devices linked by TCP/IP. Also worthy of mention are the simple configuration for date and time synchronization by means of NTP, new function blocks for converting floating point values into integer values and vice versa, and the automatic color coding of specific markers and reference lines. There is also a new reset function for shift registers, automatic installation of all standard languages (DE, CN, EN, ES, FR and IT), sorting functions, such as "Goto block number", and a larger area for bar charts in message texts. Logo! Soft Comfort V8.1 can run under 32 and 64-bit versions of Windows, including Windows 10, as well as Mac and Linux.

The user now has the new Logo! Access Tool to transfer process values directly into an Excel table, and save the data in a log file on the PC during operation. This data is then available for evaluation.

Background information:

For 20 years now, the Logo! logic module has enabled small automation projects to be implemented with ease. The universally usable logic module was launched by Siemens in 1996 as "Logo!, a new class of devices for electrical engineering – made by Siemens". It was intended for performing smaller switching and control tasks in housing technology, and in the construction of control cabinets, machines and apparatus, replacing the conventional technology that was still frequently being used. It was also intended to facilitate functions such as contactor relays, time-delay relays, switch clocks, latching relays, current surge relays and counters. Since then, the range of functions has been continually expanded, and the performance improved. Whereas the first generation had, for

example, a 30 block memory capacity and a cycle time of 100 milliseconds, today's Logo! 8 (FS:04) generation has over 400 blocks and cycle time of 40 milliseconds Ethernet communication with up to sixteen connections has also become standard now, so that Logo! logic modules are today an established technology in the market – positioned between conventional controls and powerful automation technology with controllers such as Simatic. Logo! is easy to install with minimal wiring effort and user-friendly

programming. Logo! saves space in a control cabinet and enables functions such as time-delay switches, time relays, counters, auxiliary relays, PI (proportional integral) control and data logging to be implemented easily.

Siemens has substantially widened the range of possible applications for the current Logo! 8 logic module series. The temperature range has been extended down to minus 20 degrees Celsius to allow the logic module to be used for the first time at sub-zero temperatures.

For further information, please see www.siemens.com/logo

For further information on Siemens at the SPS IPC Drives 2016, please see
www.siemens.com/sps-ipc-drives and www.siemens.com/press/sps2016

Siemens and Atos offer complete security solution for manufacturing industry

- **Joint security expertise for production and office IT**
- **Comprehensive security services and products from a single source**

Within the framework of their strategic digital alliance since 2011, Siemens and Atos cooperate in the field of cyber security for industrial companies. Together, they provide customers in the manufacturing and processing industries with comprehensive security services and products for production and office IT. The offer ranges from security assessments and the installation of protective mechanisms, such as firewalls, through to the continuous monitoring of plants and offices. These services help industrial companies to keep up with continuously changing threats to their security and to safeguard the productivity of their enterprises.

The increased networking of industrial infrastructures ("Industrial Internet of Things" or "Industrie 4.0" as it is known in Germany) and production and office IT make adequate protective measures essential. Peter Weckesser, COO of the Siemens Product Lifecycle Management Business Unit, explained, "Siemens offers a comprehensive range of solutions, products and services for industrial security. Our cooperation with Atos now enables us to support our customers from the automation to the office level, and to reduce security risks. This gives us an important foundation for the digitization of industry." Pierre Barnabé, COO Big Data & Security, from Atos, said, "The digital transformation requires holistic security concepts. Siemens and Atos invest and complement each other optimally because of their respective competence in production IT and office IT."

The cooperation provides industrial companies with integrated solutions for production and office IT in four phases: assess security, implement security, manage security and certify security. In the "assess security" phase, both Siemens and Atos conduct assessments to determine the actual situation in a company. The results form the basis for protective measures, jointly proposed by Siemens and Atos as an integral implementation plan, including such elements as the installation of firewalls and virus protection programs, with which the security level can be raised even further. To manage security, Siemens and Atos will also support customers with a range of proactive services to successfully counteract ever-changing cyber threats. These include, for example, the continuous monitoring of plants and offices. Finally, both partners will support industrial companies with their certification in the certify security phase.

it-sa 2016
At the it-sa IT Security Expo and Congress 2016 being held October 18 through 20 in Nuremberg, Atos will present the joint offer for the first time at the common BITKOM booth 446 in Hall 12.

SPS IPC Drives
Siemens will also present the joint offer in Hall 11 at the SPS IPC Drives 2016 being held from November 22 through 24 in Nuremberg.

For more information visit www.siemens.com/plant-security-services

About Atos
Atos SE (Societas Europaea) is a leader in digital services with pro forma annual revenue of circa € 12 billion and circa 100,000 employees in 72 countries. Serving a global client base, the Group provides Consulting & Systems Integration services, Managed Services & BPO, Cloud operations, Big Data & Cyber-security solutions, as well as transactional services through Worldline, the European leader in the payments and transactional services industry. With its deep technology expertise and industry knowledge, the Group works with clients across different business sectors: Defense, Financial Services, Health, Manufacturing, Media, Utilities, Public sector, Retail, Telecommunications, and Transportation. Atos is focused on business technology that powers progress and helps organizations to create their firm of the future. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and is listed on the Euronext Paris market. Atos operates under the brands Atos, Atos Consulting, Atos Worldgrid, Bull, Canopy, Unify and Worldline. For more information, visit: www.atos.net.

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Contracts and Planning Manager
Eren Enerji

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2. solidfuels@argusmedia.com
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RAK Porcelain (Arab Emirates) invests in the new “green” line by Sama

Revolutionary pressure casting technology, bristling with functions aimed at drastically cutting energy consumption, wins over international tableware group, which has chosen the PCM 200 GREEN/D

The new “green” pressure casting machine line by Sama has won over Rak Porcelain. They’ve chosen the new PCM 200 GREEN/D for its manufacturing plant in Bangladesh. An international leader in the manufacture of high-end tableware for the hotel, healthcare and retail industries, Rak Porcelain – part of the Rak Ceramics multinational group – immediately grasped the advantages of this new series. Alongside the acknowledged productivity, quality and flexibility of this revolutionary technology, the PCM 200 GREEN/D offers outstanding energy performance, with benefits ranging from up to 50% lower electricity consumption to the near-elimination of plant cooling water consumption.

The core advantage of the PCM technology developed by the Sacmi Group (the world-leading tableware plant engineering provider) lies in being able to manufacture high-class tableware at productivity and efficiency levels that are particularly high with complex items (oval or irregularly shaped products made in multi-cavity moulds). More specifically, the new PCM 200 GREEN/D – which can run up to 30 cycles/hour with 4 moulds – stands out on account of a design that reduces energy consumption by optimising the hydraulic circuit.

That latter, in fact, has been equipped with an energy-saving accumulator that– depending on production cycles – allows energy savings of up to 50%, while the hydraulic pump start&stop system (which, in practice, only operates as and when needed) reduces both plant consumption and noise levels, thus ensuring a safer, healthier workplace.

Optimisation of energy performance also means, as a direct result of lower electricity consumption, the almost total elimination of any need for cooling water (in the hottest parts of the machine a heat exchanger has been installed for safety purposes) while other design features ensure maximum system efficiency at variable speeds, giving advantages in terms of both output and flexibility.

Lastly, the high degree of automation – a distinctive feature of all PCM series machines – together with advanced control software capable of saving dozens of production ‘recipes’ for different article types, helps workers simplify their tasks and maximise results. Hence, then, this latest order for one of the industry’s pivotal players, strengthening Sama’s role as a global, high-end tableware partner.

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www.yanbucement.com

Briqueterie EPRA (Algeria) is renewed by choosing SACMI/COSMEC

New investment in the firing dept.
The management team of the EPRA / ASICOM group, more and more oriented to innovation, energy savings and increasing efficiency in plant engineering, has chosen to invest in a modern and reliable automation technology, choosing a strong partner and available to provide all the necessary support on both technical and technological level to project the brick plant between producers discerned in terms of quality in the Algerian market.

Part of a project of total renovation of the existing brick plant, the supply chosen by the EPRA / ASICOM group concerns a new dryer supporting platforms handling system, a new dry product unloading system, the modification of the dry product loading system on the kiln cars, and a new fired product unloading system.

For Sacmi Heavy Clay - which produces and manufactures these systems in synergy with Cosmec, part of the Sacmi Group and professional in the design of solutions for the automated handling of bricks - it is a strategic supplying, which consolidates the growing positioning of SACMI on the Algerian market and opens the way for further similar references throughout the area.

Global Cement: Events 2017-18

www.GlobalCement.com

1st global cemprocess

24-25 April 2017, London UK

Global CemProcess is the new conference and exhibition for the cement industry that looks at process optimisation, de-bottlenecking, production maximisation and troubleshooting. With cement plants around the world in sold-out or in hyper-competitive markets, the drive for each additional tonne of production and for process efficiency is ever-more important. Including confirmed visit on Wednesday 26 April to Hanson Cement's Ketton plant.

12th global slag

18-19 May 2017, Düsseldorf, Germany

The 12th Global Slag Conference will take place in Düsseldorf, close to the heart of the European 'slag universe'. Slag producers and users are expected to attend from throughout Europe and from the rest of the world: Slag products have the potential to be profitable for both the iron and steel industry and also for the cement, concrete and construction products industries. If your business is in slag, then you should attend!

1st global cemtrans

6-7 June 2017, Antwerp, Belgium

Global Cement is pleased to announce the inaugural Global CemTrans Conference and Exhibition on cement and clinker transport and logistics - 'From Silo to Site.' The conference will cover all aspects of transport and logistics, from the cement plant silo to the final job site, in bags, big bags and bulk; in trucks, on barges, in ships, via rail including intermodal transport. The event will focus on moving cement and clinker 'from A to B' while optimising profitability.

3rd global boards

January 2018, London, UK

The third Global Boards Conference and Exhibition will take place in January 2018, looking at global market trends in cement-based boards and panel systems, at the latest advances in production technology and at how producers can add value to their products worldwide. In addition to equipping delegates with the latest information, news and developments, the networking opportunities will once again be excellent.

12th global cemfuels

FUELS FOR CEMENT AND LIME

20-21 February 2018, Berlin, Germany

The popular Global CemFuels Conference will visit Berlin for the first time in 2018 and is expected to attract one of its largest-ever audiences from around the world. The event will showcase the state-of-the-art in handling, processing and firing all types of conventional and alternative fuels for cement (and lime) production. If your business is in fuels and alternative fuels for the cement and lime industry, you must attend this event !

Our conferences have taken place in the following world cities: Aachen, Abu Dhabi, Ankara, Bangkok, Barcelona, Berlin, Brussels, Cancun, Chicago, Dresden, Dubai, Düsseldorf, Geneva, Hamburg, Hanoi, Helsinki, Houston, Istanbul, Jeddah, Krakow, Kuala Lumpur, Las Vegas, London, Miami, Moscow, Mumbai, Munich, New Orleans, Paris, Prague, Puerto Rico, Riga, Rio de Janeiro, Riyadh, San Francisco, Shanghai, Strasbourg, Sydney, Tehran, Toronto, Vienna and Washington DC.

DIARY DATES

CEMENT

1st Glo bal CemProcess Conference and Exhibition
Process optimization, de-bottlenecking, production maximization and troubleshooting
Date : 24 - 25 April 2017
Venue: London, UK
For more information please contact:
Pro Global Media Ltd
Tel: +44 1372 743837
Fax: +44 1372 743838
www.Global-CemProcess.com

BusinessCem Moscow 2017
Date : 24 - 26 April 2017
Venue: Moscow, Russia
For more information please contact:
BusinessCem Media
Tel.: +7 499 977 4968
Fax: +7 499 977 4495
Email: valev@businesscem.msk.ru
http:// www.businesscem.ru

Argus Asian Petroleum Coke 2017
Date : 25 - 27 April 2017
Venue: Mumbai, India
For more information please visit: **www.argusmedia.com**

Cement & Concrete Exhibition 2017
Date : 30 April - 03 May 2017
Venue: Riyadh International Convention and Exhibition Center, Riyadh, Kingdom of Saudi Arabia
For more information, please contact:
Ms. Lama Nabil Project Manager of Cement & Concrete Exhibition 2017
Tel: +20 2 2270 35 84 /5
Mobile: +20 10 96662964
Fax: +20 2 2270 35 86
E-mail: lama@arabiangerman.com
http://www.arabiangerman.com

Technical workshop on:
Increasing energy efficiency in the cement production in the Arab region
Date : 14 - 15 May 2017
Venue: Cairo, Egypt
For more information, please contact:
Eng. Ingy Waked, Executive Director
G&W Science and Engineering
Tel./Fax: (+20 2) 22639783
Email: gw-group@gw-egy.com
http:// www.gw-egy.com

INTERCEM 2017
Date : 15 - 17 May 2017
Venue: Istanbul, Turkey
For more information please visit:
www.intercem.com

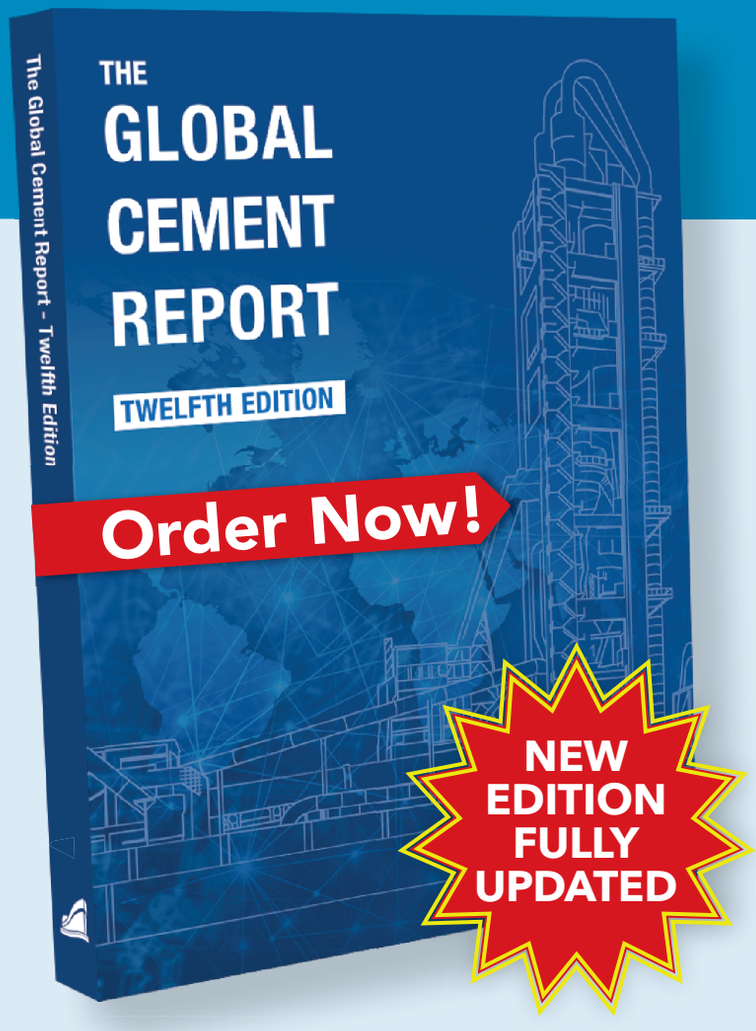
CW SUMMIT DUBAI 2017
Date : 17 - 18 May 2017
Venue: Dubai, UAE
For more information, please visit:
http://www.gmiforum.com/cw-summit?view=event&id=56&catid=11

12th Global Slag Conference, Exhibition & Awards
Date : 18 - 19 May 2017
Venue: Düsseldorf, Germany
For more information please contact:
Pro Global Media Ltd
Tel: +44 1372 743837
Fax: +44 1372 743838
For more information please visit:
www.globalslag.com

VDZ Training: Cement manufacturing course - Module 1
Date : 08 May - 02 June 2017
Venue: VDZ's premises, Düsseldorf, Germany
For more information please visit:
www.vdz-online.de/en/training

2017 China International Cement Industry Exhibition
Date : 10 - 12 May 2017
Venue: Nanjing, China
Email: jinx@ccpitbm.org
For more information please visit:
www.cementtech.org

IV International Business Meeting
White Nights: Cement. Concrete. Dry Mixtures
Date : 17 - 19 May 2017
Venue: Grand Hotel Europe, St. Petersburg, Russia
For more information please visit:
www.white-nights.info



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www.CemNet.com/GCR12

Global CemTrans Conference and Exhibition
Cement and Clinker Transport and Logistics - From Silo to Site
Date : 06 - 07 June 2017
Venue: Antwerp, Belgium
For more information please contact:
Ms. Amanda Crow
Pro Global Media Ltd
Tel: +44 1372 743837
delegates@propubs.com

Argus Mediterranean Solid Fuels 2017
Date : 06 - 08 June 2017
Venue: Madrid, Spain
For more information please visit: **www.argusmedia.com/solidfuels**

INTERCEM Shipping Americas
Date : 19 - 20 June 2017
Venue: Florida, USA
Tel: +44 208 669 5222
Email: caroline.dillon@intercem.co.uk
For more information please visit:
www.intercem.com

VDZ Training: Plant maintenance and refractories course
Date : 19 - 23 June 2017
Venue: VDZ's premises, Düsseldorf, Germany
For more information please visit:
www.vdz-online.de/en/training

Middle East & Africa Summit
CW Group's Cement Strategy, Finance & Trade Summit 2017
Date : 11 - 12 July 2017
Venue: Dubai, UAE
For more information and group rates:
Ms. Beatrice Ene, Client Development & Marketing Director (International)
Email: be@gmiforum.com
Mobile: +40 722 764 802
Mr. Ali Assad, Business Development Executive
Email: aga@gmiforum.com
Mobile: +40 754 023 330

VDZ Training: Process operator training
Date : 04 - 22 September 2017
Venue: VDZ's premises, Düsseldorf, Germany
For more information please visit:
www.vdz-online.de/en/training

INTERCEM Asia
Date : 11 - 13 September 2017
Venue: Jakarta, Indonesia
Tel: +44 20 8669 5222
For more information please visit:
www.intercem.com

VDZ Training: Cement manufacturing course - Module 2
Date : 25 September - 20 October 2017
Venue: VDZ's premises, Düsseldorf, Germany
For more information please visit:
www.vdz-online.de/en/training

Cement.Concrete.Dry mixtures 2017
Date : 29 September - 01 December 2017
Venue: Moscow, Russia
Email: a.sidorova@alitinform.ru
For more information please visit:
www.infocem.info/eng

Cement Business & Industry Africa 2017
Date : 04 - 05 October 2017
Venue: Johannesburg, South Africa
Email: communication@gmiforum.com

14th TÇMB International Technical Seminar& Exhibition
Main theme: "Sustainable Environment & Energy"
Date : 10 - 13 October 2017
Venue: Kaya Palazzo Golf Resort, Belek, Antalya, Turkey
For more information please visit:
http://www.tcma.org.tr/ENG

1st International Conference on Cement & Concrete Technology
Date : 20 - 22 November 2017
Venue: Military Technological College, Sultanate of Oman
For more information please visit:
www.concreteconference.org.uk

3rd Global Boards Conference and Exhibition
Date : 22 - 23 January 2018
Venue: London, UK
For more information please visit:
http://www.propubs.com

12th Global CemFuels Conference & Exhibition on alternative fuels for cement and lime 2018
Date : 20 - 21 February 2018
Venue: Berlin, Germany
For more information please visit:
http://www.cemfuels.com

15th International Congress on the Chemistry of Cement (ICCC 2019)
Date : 16 - 20 September 2019
Venue: Prague, Czech Republic
For more information please visit:
http://www.iccc2019.org

DIARY DATES

GENERAL

Calculating the Durability and Fatigue of Mechanical Equipment Training Course
Date : 26 - 27 April 2017
Venue: Bangkok, Thailand
For more information please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0001
Fax: +603 2775 0005
Email: johnk@trueventus.com

Design-Build, Epc, P3 - Construction Project Delivery Solutions for the 21st Century
Date : 26 - 27 April 2017
Venue: Bangkok, Thailand
For more information please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0001
Fax: +603 2775 0005
Email: johnk@trueventus.com

Advanced Concrete Technology for Durable and Sustainable Civil Infrastructure
Date : 26 - 27 April 2017
Venue: Bangkok, Thailand For more information please contact:
Trueventus
Casey Lee
Tel: +603 2775 0067
Fax: +603 2775 0055
Email: caseyl@trueventus.com

Silver Anniversary of Arab Economic Forum
Date : 02 - 03 May 2017
Venue: Beirut, Lebanon
Email: headoffice@iktissad.com
For more information please follow the link:
http://www.iktissadevents.com/events/AEF/25

6th Annual Modular & Precast Conference
Date : 03 - 05 May 2017
Venue: Bangkok, Thailand
For more information please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0001
Fax: +603 2775 0005
Email: johnk@trueventus.com

IE expo 2017
Date : 04 - 06 May 2017
Venue: Shanghai New International Expo Centre, China
For more information please visit:
www.ie-expo.com

Construction Project Cost Control & Management Masterclass
Date : 07 - 08 May 2017
Venue: Dubai, UAE
For more information please contact:
Jackie Kim:
Tel: +603 2295 5462
Email: jackie.k@businessintelligencekl.com

GEBR. PFEIFFER 2nd Panel in Africa
Date : 09 - 10 May 2017
Venue: Johannesburg, South Africa
For more information please contact:
Amber Hobson, Marketing Manager
Tel: +27 11 807 3069
Email: amber.hobson@bmepkg.co.za

Asphalt Mix Design
Date : 10 - 11 May 2017
Venue: Makati, Philippines
For more information please contact:
Trueventus
Casey Lee
Tel: +603 2775 0067
Fax: +603 2775 0055
Email: caseyl@trueventus.com

Crisis Communication Management Workshop
Date : 14 - 18 May 2017
Venue: London, UK
For more information please contact:
Mr. Kinan Taha:
Email: ktaha@arado.org
Mobile: 0020 11 21 26 84 96.

INTERMAINT Group

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Brief

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- Installation of insulation works.
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Contact Information

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E-mail : hesham@intermaint.net

Intertek UKAS ISO 9001:2008 Intertek UKAS OHSAS 18001:2007 Intertek UKAS ISO 14001:2004

Rostering and Shiftwork for all Industries Training Course
Date : 10 - 11 May 2017
Venue: Manila, Philippines
Tel: +6030067 2775-
Email: mikej@attendingyourevent.com

The Biggest Development in Open Waters - Land Reclamation & Coastal Engineering
Date : 17 - 18 May 2017
Venue: Manila, Philippines
Tel: +603 2775 0067
Email: mikej@attendingyourevent.com

Brownfield Asia Summit
Date : 17 - 18 May 2017
Venue: Hong Kong, China
For more information please contact:
Trueventus
Casey Lee
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Fax: +603 2775 0055
Email: caseyl@trueventus.com

Buildafro Tanzania 2017
Date : 22 - 24 May 2017
Venue: DJ Hall- Dar Es Salaam, Tanzania
Email: sales@mxfairsone.info
For more information: http://mfairsafro.info/buildtanz/buildtanz.php

40th YAPI - TURKEYBUILD Istanbul
Date : 23 - 27 May 2017
Venue: Istanbul, Turkey
Email: yapifuari@news-iteturkey.com
www.yapifuariistanbul.com

NETZSCH Fine Powder Processing: "Energy Efficiency and Process Optimization"
Date : 31 May - 01 June 2017
Venue: Hanau, Germany
For more information please visit:
www.netzsch-grinding.com

2nd Central American Drymix Mortar Meeting
Date : 27 June 2017
Venue: Mexico City, Mexico
For more information, please visit:
www.drymix.info

Intelligent Buildings and the Impact of IOT Training Course
Date : 26 - 27 July 2017
Venue: Goodwood Park Hotel, Singapore
For more information please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0001
Fax: +603 2775 0005
Email: johnk@trueventus.com

Irexpo
International Real Estate & Investment Exhibition
Date : 26 - 28 July 2017
Venue: Tabriz International Fairground, Iran
Tel: +90 212 273 18 18
Email: info@irexpo.net
www.irexpo.net

Big Data and Data-driven Innovation: Business impact and Opportunities
Date : 29 - 30 August 2017
Venue: Singapore
For more information please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0001
Fax: +603 2775 0005
Email: johnk@trueventus.com

Risk Management and Value Management
Date : 29 - 30 August 2017
Venue: Goodwood Park Hotel, Singapore
For more information please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0001
Fax: +603 2775 0005
Email: johnk@trueventus.com

LOESCHE Symposium
111 Year's LOESCHE - Evolve the Future
Date : 06 - 07 September 2017
Venue: Dusseldorf, Germany
Email: symposium@loesche.de
www.loesche.com

IFAT Africa 2017 Trade Fair for Water, Sewage, Refuse and Recycling
Date : 12 - 14 September 2017
Venue: Johannesburg, South Africa
For more information please visit:
www.ifat-africa.com

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SEMİNER SEMINAR
10-13 EKİM / OCTOBER ANTALYA / TURKEY, 2017
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Using of Alternative Fuel and Alternative Raw Material

Energy Optimization

Use of Renewable Energy

Exhibition area booths are completely sold out

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For details & register as participant

tekniks@tcma.org.tr

Second Asia Mortar Summit
Date : 19 September 2017
Venue: Shanghai, China
For more information, please visit:
www.drymix.info

11th Global Insulation Conference & Exhibition
Date : 25 - 26 September 2017
Venue: Kraków, Poland
For more information, please visit:
www.GlobalInsulation.com

11th Erbil Int'l Building-Construction, Municipality Equipment Exhibition
Date : 27 - 30 September 2017
Venue: Erbil, Iraq
For more information, please contact:
Ms. Burcu Uca / Sales Representative
Tel: +90 212 356 00 56 (Ext:1530)
Email: burcu.uca@expotim.com

8th Addisbuild International Construction, Construction Materials and Technologies Exhibition
Date : 13 - 16 October 2017
Venue: Addis Ababa, Ethiopia
For more information, please contact:
Ms. Burcu Uca / Sales Representative
Tel: +90 212 356 00 56 (Ext:1530)
Email: burcu.uca@expotim.com

6th International Congress of Mining Machinery and Technologies (IMMAT)
Date : 18 - 21 October 2017
Venue: Izmir, Turkey
For more information, please visit:
www.immat.org

17th Global Gypsum Conference & Exhibition
Date : 25 - 26 October 2017
Venue: Kraków, Poland
For more information, please visit:
www.GlobalGypsum.com

Fifth Latin American Drymix Mortar Conference ladmmc five
Date : 26 October 2017
Venue: São Paulo, Brasil
For more information, please visit:
www.drymix.info

International Symposium on Occupational Health and Safety in Mining 2017
Date : 2 - 3 November 2017
Venue: Adana, Turkey
Email: maden@maden.org.tr

Cement. Concrete Dry Mixtures 2017
Date : 29 November - 01 December 2017
Venue: Moscow, Russia
Email: a.sidorova@alitinform.ru

Cameroon Build Construction and Construction Materials Exhibition
Date : 30 November - 03 December 2017
Venue: Cameroon
For more information, please contact:
Ms. Burcu Uca / Sales Representative
Tel: +90 212 356 00 56 (Ext:1530)
Email: burcu.uca@expotim.com

4th Arabiamold 2017
Date : 11 - 14 December 2017
Venue: Sharjah, UAE
Tel: +971 6 5770000
Fax: +971 6 5770111
Email: info@expo-centre.ae
For more information, please visit:
www.arabiamold.com

Bauma China 2018
Date : 27 - 30 November 2018
Venue: Shanghai, China
For more information, please visit:
www.bauma-china.com

Bauma 2019
Date : 08 - 14 April 2019
Venue: Munich, Germany
For more information, please visit:
www.bauma.de