CEMENT & BUILDING MATERIALS REVIEW

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Cement and Building Materials Review

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Editor-in-Chief Eng. Ahmad Al-Rousan
Managing Editor Suha M. Canaan

CONTRIBUTIONS

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Email: aucbm@scs-net.org / aucbm1977@gmail.com
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CORRESPONDENCE

Correspondence are to be addressed to the Editor-in-chief at the following address:

Syria, Damascus – P. O. Box 9015

Tel : (+963 11) 611 5412 – 6118598

Fax : (+963 11) 612 1731

Email: aucbm@scs-net.org / aucbm1977@gmail.com

Website : www.aucbm.net

AUCBM's ***Quarterly Cement and Building Materials Review (CBMR)***

EDITORIAL SCHEDULE FOR 2019

ISSUE	THEMES	EVENTS
* September 2019	- New types of cement - Low carbon cement - White cement - Concrete - XRF and XRD analysis - Chemistry of cement - Cement additives - Silo Cleaning & Blockages - Silo design consideration - Drive systems - Weighing technologies - Sampling Techniques & Samplers	**AUCBM's 24th Arab International Cement Conference and Exhibition (AICCE24)** **Cairo, Egypt** **24-26th November 2019**

December 2019	- Lubrication Systems
	- Maintenance in Cement Plants
	  - RCM (Reliability Centered Maintenance)
	  - Computerized Maintenance System CMS
	- Repair and welding techniques
	- Spare-parts Management
	- Vertical Mills
	- Crushers
	- Coolers
	- Burner Technology
	- Refractories & testing of refractories	

* September is a bonus issue that will be distributed to the Conference participants

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September (bonus) issue: **30th August 2019**
December issue: **6th December 2019**

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ARAB NEWS

ALGERIA

Algeria exports over 0.5Mt to Europe

The Algerian cement industry has exported over 0.5Mt of clinker to Europe as part of a shift to international markets. GICA's Sodismac subsidiary was currently transporting 15,000t of clinker from its Beni Safi plant to the Ivory Coast from the Port of Ghazaouet. This is part of 15 export operations the cement producer has conducted since May 2018.

Global Cement

Algeria's GICA exports cement to Côte D'Ivoire

Hadjar Soud Cement Company, a subsidiary of Algerian manufacturers GICA, exported 37,000 tons of clinker to Côte D'Ivoire through the Port of Annaba.
The cargo represents the first export of the company to the Africa market. The company is expected to export 200,000 tons of clinker this year, as part of GICA's program to export 1.5 million tons.

Since the last quarter of 2018, several clinker exports have been handled by Port of Annaba, including one from carried out by the Cilas cement plant, in Biskra.

Cemweek

LafargeHolcim Algeria exports first white clinker consignment

LafargeHolcim Algeria has made two new export shipments from the Port of Oran. The first was a consignment of 15,000t of bulk grey cement from its Oggaz cement plant to West Africa. The second was a dual consignment of 5000t of white clinker and 25,000t of grey clinker from the same plant to Cameroon. The cement producer said that the white clinker export was the first of its kind from Algeria.

Global Cement

La Société des Ciments de Tébessa produces 0.6Mt of cement in 2018

La Société des Ciments de Tébessa produced 0.6Mt of cement in 2018. This compares to 0.53Mt in 2013. The cement producer has made environmental improvements, including installing new filters. It has also commissioned a sewage treatment unit to provide alternative fuels for its plant.

Global Cement

EGYPT

Suez Cement's Kattameya plant starts burning alternative fuels in kiln

Suez Cement's Kattameya plant has started using a 10% waste-derived alternative fuels substitution rate in its main kiln burner. It brings the plant's total thermal substitution rate up to 25%, in combination with the 15% rate of alternative fuels it already uses in the calciner. The plant's volume of waste and biomass will double to 75,000t/yr. The subsidiary of HeidelbergCement's plans to increase its substitution rate to 30% in the future.

Global Cement

Geocycle Waste Management Factory in Sokhna Opens

Geocycle Egypt, part of LafargeHolcim, announced the opening of waste management solutions factory in Ain Sokhna, in the Suez Governorate.

The total cost of the newly opened factory, largest in the Middle East and North Africa (MENA) region equipped with cutting-edge technologies, amounted to EGP 200 million (US$11.64 million).
The factory has a capacity of 400,000 tonnes annually of alternative fuel directed to the Lafarge Cement factory in Ain Sokhna city.

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Geocycle is a leading provider of industrial, agricultural, and municipal waste management services worldwide, and it focuses on applying the proven technology of 'co-processing' and utilises existing facilities in the cement industry.

China State Construction Engineering awards supply contract to Lafarge Egypt

Lafarge Egypt has been named as the sole cement supplier for base construction work by China State Construction Engineering (CSCE) for the Central Business District in the New Administrative Capital. The subsidiary of LafargeHolcim will supply its cement based on a framework of the long-term partnership between Lafarge Egypt and CSCEC to erect several high-rise buildings. It will use its Hydrocem Plus cement product for the project. Lafarge Egypt will also take part in the concrete pouring for the foundations.

Lafarge Egypt is also engaged in a number of projects in the New Administrative Capital project, including different types of concrete products and steel fibres.

Global Cement

IRAQ

Lucky Cement orders power plant from Wärtsilä for Iraqi plant

Al Shumookh Lucky Investments, a subsidiary of Pakistan's Lucky Cement, has ordered a power plant from Finland's Wärtsilä for its Najmat Al-Samawa cement plant. The equipment is scheduled for delivery towards the end of 2019, and the plant is expected to become fully operational during the third quarter of 2020.

The power plant will operate on two Wärtsilä 32 engines running on locally-available heavy fuel oil (HFO) with diesel as a back-up fuel. The engine is designed to operate with reduced fuel and water consumption in hot climates.

Global Cement

Iranian cement exports to Iraq suspended

The secretary general of Iran-Iraq Joint Chamber of Commerce says that exports of cement from Iran to Iraq and the Kurdistan region of Iraq have been suspended for the last year. Tariffs were added first before a ban. At present exports of clinker are allowed.

Global Cement

KUWAIT

Kuwait Cement makes first delivery of oil-well cement to National Petroleum Services

Kuwait Cement has made its first delivery of oil-well cement to National Petroleum Services. It is producing the product at its Shuaiba plant. It holds API Monogram licencing from American Petroleum Institute (API) to produce this type of cement.

Global Cement

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Kuwait Cement modernizes three mills

Equipment maker Magotteaux is modernizing three cement mills belonging to Kuwait Cement Company in a revamp project that started in early March 2019.

The project includes closing the open circuit with a fourth-generation Magotteaux's XP4®i separators, installing new mill internals such as diaphragms, and adapting a new ball charge gradation.

With this new investment, Kuwait Cement Company expects to significantly increase the production rate of the mills while reducing energy consumption and improving the quality of the finished product.

CemWeek

LEBANON

Lebanese minister blocks licence for Al Arz Cement plant project

Industry Minister has revoked the license of the Al Arz Cement plant project. It follows protests by local residents. A report by environmental non-government organisation (NGO) Green Globe ranked the region as the 11th most polluted area in the country due to quarrying and crusher activity. The cement plant project was launched in 2017.

Global Cement

LIBYA

Libyan Cement Company to spend Euro200m on upgrade

The Libyan Cement Company plans to spend Euro200m on an upgrade to its plant in Benghazi. The project will increase the unit's production capacity to 3Mt/yr from 2Mt/yr at present. Planning is at an advanced stage, with tenders already issued for the engineering, procurement and construction (EPC) of a mixture of new and upgraded facilities. The Central Bank of Libya, other banks and other investors will supply finance for the project.

The cement producer reopened its Benghazi plant in late February 2019. It has over 1000 employees with more openings to follow.

Global Cement

Zliten Cement Plant announces temporary halt to its production lines

Management of the Cement Plant in Zliten city has suspended work at the first production line in the factory for service and maintenance propose.

The second production line was stopped for maintenance in April, as special filter bags were provided and will be installed in the plant.

Libya Observer

OMAN

Raysut Cement confirms plans to buy Sohar Cement

Raysut Cement has confirmed its plans to buy a 1.7Mt/yr grinding plant owned by Sohar Cement based in Sohar. The acquisition also includes purchasing the company's distribution network. Sohar Cement holds a 70% stake in the business, with UAE-based Fujairah Cement Company owning the remaining share.

Global Cement

QATAR

Qatar National Cement preparing to export up to 3Mt/yr

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

Global Cement

Al Khalij Cement signs oil well cement supply deal with Qatar Petroleum

Al Khalij Cement has signed a three-year deal to supply oil well cement to Qatar Petroleum. Al Khalij Cement is a subsidiary of Qatari Investors Group.

Global Cement

SAUDI ARABIA

Al Arabiya Cement forced to delay connection of Rabigh plant to energy grid

Al Arabiya Cement was forced to delay its planned connection of the Rabigh facility to the national electricity grid, as the National Electricity Transmission Company is having trouble with the project implementation.

The National Electricity Transmission Company said that it is expecting the completion date for the Rabigh HVTP expansion project to take place in the third quarter of 2021 instead of the previously announced

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date, as the body responsible for the implementation of the project was met with delays.

Al Arabiya Cement had signed the agreement with the company in 2015, and is setting up new cement mills at the Rabigh facility, with 80% of that project being completed by November 2018.

CemWeek

Al Jouf Cement to begin production of white cement

Al Jouf Cement has signed a non-binding memorandum of understanding with Riga to convert one of its production lines to white cement. The MoU is valid for six months from the signing date, and concerns the company's second production line. Global Cement

Saudi Arabia issues close to twenty cement export licenses

The Ministry of Commerce and Investment of Saudi Arabia has issued nineteen cement export licenses over the past eight months.

Ever since the ministerial committee approved export regulations, the ministry has issued 50 licenses for outbound cement shipments.

CemWeek

Qassim Cement signs new export deal

Qassim Cement signed an agreement with Kuwait-based Al-Arada to export 120,000 tons of cement. The deal value was estimated at SAR 16.8 million, and was signed on March 1, 2019.

Its validity will be official until the end of the year, and its related financial impact will likely be stronger later on this year.

CemWeek

Tabuk Cement Inks Deal for Clinker Export

Tabuk Cement has signed an agreement with Golden Oil Co. for the export of 500,000 tonnes of clinker to Yemen. The deal will be expired by year-end.

SOMALIA

Iran to export 14,500t of cement to Somalia

Deputy head of Qeshm Free Zone Organisation for maritime transport and port affairs says that 14,500t of cement will be exported to Somalia. It will be transported on a Tanzanian ship, the AMINA-H. The Iranian cement industry has a production capacity of 80Mt/yr. It sends its exports to countries including Iraq, Azerbaijan, Turkmenistan, Afghanistan, Russia, Kazakhstan, Kuwait, Pakistan, Qatar, Turkey, the UAE, Georgia, Oman, India, Somalia and China.

Global Cement

UAE

Ras Al-Khaimah Cement to use animal waste to generate power

UAE-based manufacturer Ras Al-Khaimah wants to use animal waste generated by camels - along with other types of waste - to produce electricity and increase its energy efficiency and reduce the use of landfills.

The emirates are home to around 40 million date palms, whose waste can also be used to generate electricity, some believe. This would contribute to diversify the country's energy sources from oil and gas, freeing those for export.

CemWeek

18 Years and Counting; ASEC Renews its Technical Management Contract with Misr Beni Suef Cement Company

ASEC announced the renewal of its Technical Management contract with Misr Beni Suef Cement Company till December 2023. The signing of the contract stands as a testimony of the long-standing trust and partnership between the two companies.

Entrusted with the technical management of the first production line in 2001, ASEC has sustained the production level above the nominal capacity. The year 2007 saw the first renewal of the contract for additional five years, adding as well a second line to ASEC's operation and maintenance scope. Worth mentioning that the annual combined capacity of the two lines now stands at 3.1 Mt.

"We owe this long-term alliance to the dedication and efficiency of our staff members and evenly to the continuous support from our client. Trust is the cornerstone of our ability to deliver remarkable results and shall continue to bolster our performance in the future," commenting ASEC's Chairman and Managing Director. "We extend our thanks and gratitude to everyone who has contributed in the success of this partnership."

Pfeiffer ready2grind plant concept now also in North Africa

Algematco Steel, a company of the RAHMOUNE Group, opts for Pfeiffer Vertical Mill in the Relizane plant

Due to the continued success of Pfeiffer MVR vertical roller mills in the Algerian cement industry, Algematco Steel has now also decided to use a Pfeiffer ready2grind grinding plant with the modern MVR vertical mill technology.

The cement grinding plant consists of the following modules:

- Feed module with material dosing and transport
- MVR 2500 C-4 vertical roller mill with SLS 2650 BC classifier and drives
- Plant filter, fan and hot gas generator
- Electric switchgear with plant control system
- Silo plant
- Packing and palletizing plants
- Laboratory equipment

The plant is designed to produce different cement types at a production rate of 50-70 t/h.

Erection and commissioning of the ready2grind grinding plant are slated for beginning of 2020.

Identical r2g 2500 C-4 in Costa Rica

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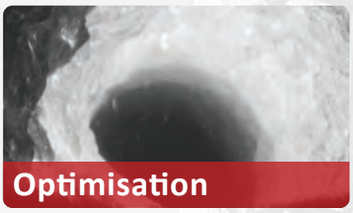
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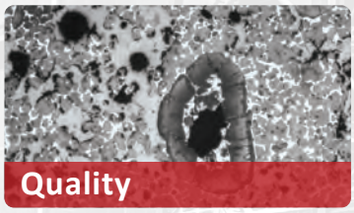
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CNBM and Fives sign a strategic agreement and seal their commitment on business worth at least €600 million

Monday, March 25, 2019, during the state visit of Chinese premier Xi Jinping and in the presence of President of the French Republic Emmanuel Macron: Mr. Song Zhi Ping, President of CNBM, and Mr. Frédéric Sanchez, Chairman of Fives, signed at the Elysée Palace a "Strategic Agreement towards Climate change & Cooperation in third countries".

Joint projects to the tune of at least €600M over three years

This agreement develops and refines, with concrete commitments, the collaboration plans drawn up in January between CNBM, the world's leading cement plant manufacturer, and Fives, the international engineering group. It forecasts a volume of business of the order of minimum €600M over 3 years, and forms part of CNBM's stated strategy of developing in partnership with western companies.

An alliance to create high-performance plants

Fives technologies to reduce environmental impact

With this agreement, CNBM is showing recognition of Fives solutions and technologies that deliver energy efficiency, reduced CO2 emissions, low water consumption and a high-quality finished product.

The complementary qualities of the two groups will deliver high performance installations that respect the environment while guaranteeing production quality at an optimum price. This agreement also shows the mutual trust between the two companies, notably with respect to intellectual property.

Collaboration to implement projects in China and other countries

This strategic agreement focuses mainly on three axes of collaboration:

Collaboration between the two organizations' technical experts

- First in China, where CNBM is committed to a wide-ranging program of modernization and upgrades to its production lines. Specific projects have been identified where Fives technologies, in grinding in particular, will significantly improve performance and return on investment.

- And internationally, where CNBM is working on numerous projects for which the two groups will combine their expertise and technologies to create modern, high performance plants.

- CNBM and Fives have created a "Joint Engineering Center" to implement these projects and promote the best technologies: an exchange platform bringing together experts from both companies. The Joint Engineering Center was inaugurated on February 28 in Shanghai.

This agreement is in full alignment with the Paris Agreement, and in the spirit of projects focused on the Industry of the future. It is an illustration of Franco-Chinese multilateralism, featuring balanced partnerships and mutual cooperation to deliver innovative projects in other countries.

About Fives

As an industrial engineering Group with a heritage of over 200 years, Fives designs and supplies machines, process equipment and production lines for the world's largest industrial players in various sectors such as steel, aerospace and special machining, aluminium, automotive and manufacturing industries, cement, energy, logistics and glass.

The effectiveness of its R&D programs enables Fives to design forward-thinking solutions that anticipate industrials' needs in terms of profitability, performance, quality, safety and respect for the environment.

In 2017, Fives achieved a turnover of €1.9 billion and employed close to 8,700 people in about thirty countries.

Press contact:

Claire Mathieu-André
+33 1 45 23 76 21
press@fivesgroup.com

SITI B&T acquires the entire minority share in Ancora S.p.A.

SITI B&T Group S.p.A., manufacturer of complete systems for tiles and sanitary ware, listed on the AIM Italia market (Ticker: SITI), announces that it has reached an agreement for the acquisition of 20% of the capital of **Ancora S.p.A**., the group company active in ceramic tile finishing thus consolidating its 100% shareholding.

"With the acquisition of the minority share in Ancora we complete the purchase of this company dedicated to the finishing of ceramic products - commented **Fabio Tarozzi**, Chairman and CEO of SITI B & T Group - which has been an example of success in relaunching a historic brand. Thanks to synergies with our Group, it has more than doubled its turnover since 2014 - last year before the acquisition -. The product range of Ancora has allowed the Group to be identified, with even greater force, as "Full Provider" of the entire ceramic production line through proprietary technologies, resulting in being the supplier with the widest range of products on the market".

In 2017 Ancora S.p.A. generated a turnover of 32.4 million Euro (36.9 million Euro in 2018), achieving an EBITDA of 4.1 million euro. The Net Financial Position at 31.12.2017 was 6.6 million Euro and the shareholders' equity of 5.9 million Euro.

The transaction was carried out for a value of 1.6 million Euro, of which 0.8 million Euro payable in 12 months.

The Company has a staff of 79 employees, of which 14 in the research and development department alone and is the owner of 58 active patents with investments in R & D of over one million Euro per year.

Ancora S.p.A. makes R&D a competitive strength, as seen with the recent introduction on the market of innovative products among which we highlight: the first line in the world of dry lapping (surface finish) (**Polidry ®**); the most complete and flexible slab finishing line on the market, with lapping, cutting, squaring and application of protective treatments (**Luxury ®**) and a completely automated squaring line through laser technology, all having supervision and control systems of evolutionary production efficiency compared to Industry 4.0.

SITI BT Group

SITI BT Group, listed on the AIM Italia market since March 2016, a supplier of technology and complete plants serving the world ceramics, tiles and sanitary ware industry, with a capillary presence in all markets and the industry's most complete range of technologies, offers solutions of excellence and innovative services, with particular attention to issues of energy efficiency and the look of the finished product. It guarantees customers a complete, personalised service, from the study of the finished product design through to the turnkey manufacture, including the maintenance and modernisation of production lines.

The SITI BT Group operates through the following operating units: "**Tile**" (complete plants for tiles), **Projecta Engineering** (digital printers), **Digital Design** (design and graphic projects), **Ancora** (lines for the surface finishing of ceramic products) and "**b&t White**" (complete systems for sanitary ware). In 2017, SITI BT Group recorded sales volumes of 203 million euros, with export accounting for 83% and investments in R&D for 7 million euros.

www.sitibt.com

AUTOMATIC DISPATCH SYSTEM, THE SOLUTION FOR TRUCKS FLOW OPTIMIZATION

How an automatic Dispatch system contributes to optimization and better customer service in cement plants

By: Vidmar, Spain

Constantly wishing to improve the quality of service to customers, cement manufactures are tending to automate truck transit and bulk loading by using flexible self-service systems for dispatching cement from their plants.

Several aspect need to be addressed in order to introduce such a system. The first is the need to achieve automatic control of bulk loading, so the truck loads the quantity ordered by the customer and the same time does not exceed the maximum permitted weight for the vehicle. Thus, time usually wasted on reloading, or unloading the product on discovery of a weight overload on departure from the plant, is minimized.

Secondly, it is becoming increasingly common to request loading at unusual times, (nights, weekends, etc.) This may already be quite usual at plants near large cities, where incoming traffic is at a standstill during peak hour. With the facility, trucks can load at any time of day or night and so avoid delays in product deliveries.

Vidmar has come to understand the needs of the cement industry and over the course of time has applied the technologies offered by the market in order to develop automatic systems for controlling truck transit and bulk loading/unloading and dispatch. It adapts to the requirements of the moment, always using comercial equipment and implementing applications that are fully upgradable and have a long period of validity. Although this Is difficult in this current digital era, it can be achieved by always applying the latest technologies.

Technology and communications

New information technologies have enabled this kind of system to make a huge leap forward, because to offer a high level of automation with fully automated processes, there must be a system of communication between customer, salesperson and control system. It is currently possible and usual for a customer to order material online at any time of day. If one then adds the communications with the loading control system, a vehicle can help itself to product and load at any time of day or night, unattended.

The use of new trends in Apps allows the smartphone of the user to be an essential tool to be able to operate even before arriving to the plant. Allowing to optimize waiting times and plant resources.

The system must have the capacity to provide the necessary Key Performance Indicators to be able to measure parameters of reliability, times, workloads, etc., which in turn will allow making the opportune decisions to optimize the process and flow of trucks.

Obviously, despite the use of all new technological trends we have not to lose sight of that one of the most important characteristics of this type of system is the hardness of the equipment, which must be able to work in harsh and aggressive environments. Therefore, it is essential to use an industrial equipment that guarantees a correct operation 24 hours a day.

Equipment

A Dispatch system any consist of a large variety of small items of equipment, depending on the required performance. It is to be remembered that the basis of successful operation lies in the system/man dialogue. The necessary equipment should therefore be provided so that this dialogue is as user-friendly and intuitive as possible, and at the same time tough enough to cope with its working environment.

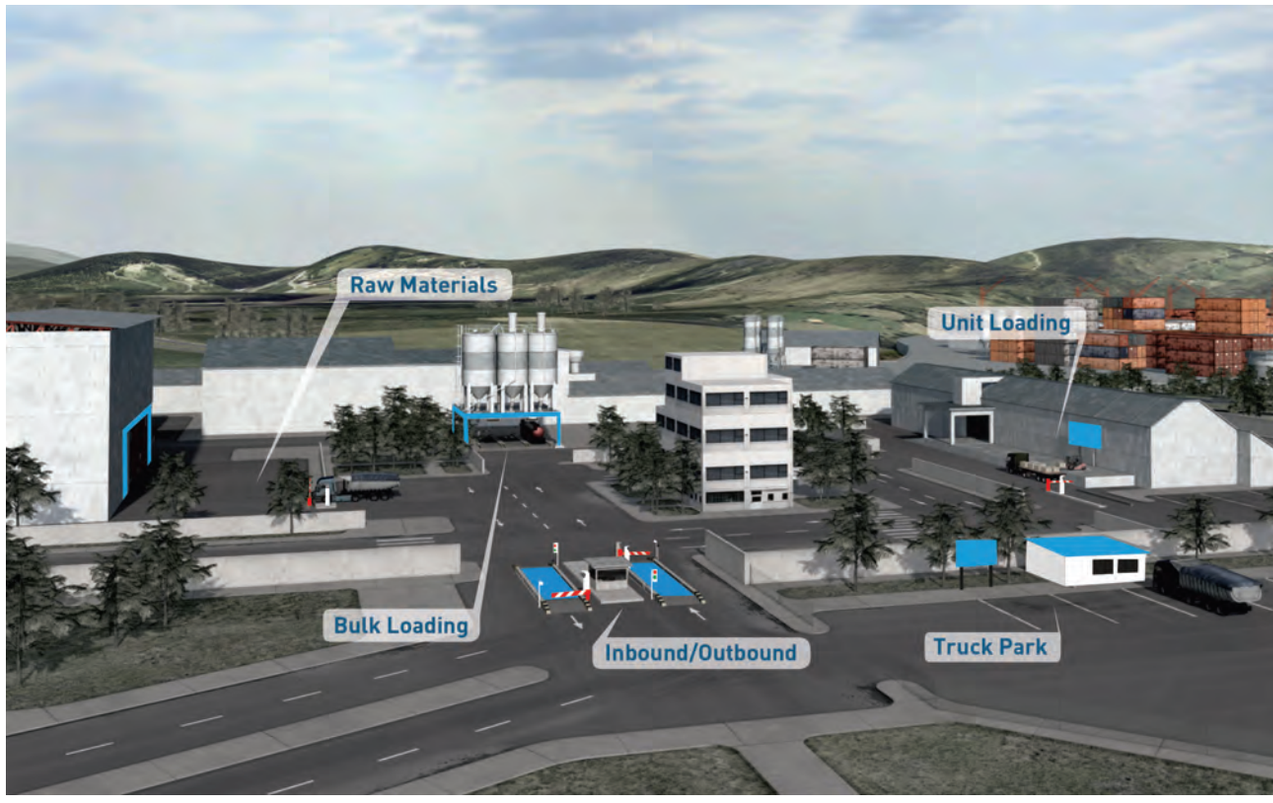


Figure 1. Complete automatic dispatch system

The equipment to be used may be divided into the following areas: Identification, Dialogue, Weighing, Automation, Printing solution.

Identification

Identification is the basis for automating the dispatch control system. Radiofrequency identification system (RFID) has been the most commonly used, which offer high reliability in any kind of situation. The problem with this kind of identification is that each vehicle or customer must carry their own identification card. There are times when this is not possible because non-regular deliveries or customers are involved.

In recent years, due to its versatility and increased reliability, 2D or 3D readers for smartphone, ANPR (Automatic Number Plate Recognition System) or biometric systems are being imposed.
The objective is to get a truck or driver to be self-sufficient and do not needs that the plant gives them a permanent ID.

Dialogue

This aspect covers all the devices that enable dialogue with the vehicle's driver or operator, whether for information only, or for data selection and entry.

The equipment ranges from simple signaling lights to mobile devices or smartphones, and in between, touch screens and message or graphic displays of all possible sizes.

As in most cases this equipment is used outdoors, it must meet a series of requirements so that visualization is correct even in a very bright sunlit environment. Therefore, systems with high-brightness LED's, rear-illuminated LCD screen or SRM (Sun-Readable Monitor) screens will always be used.

Weighing

The weighing equipment may be found at each of the plant's weighing systems, entry/exit scales or loading point (weighbridge or weighing of the hopper which contains the material).

The company's systems are set up to use any weighing equipment on the market, so by simply adjusting the parameters they can be adapted to any model and manufacturer that the customer may have. Independence is thus ensured between equipment manufacturer-customer-control system, so the customer can make a change at any time without involving additional costs in adapting software.

Automation

The automation aspect covers the system that will enable the required maneuvers to be carried out in the vehicle entry/exit and loading/unloading processes.

The automation may range from a simple access barrier maneuvers to automation of the loading spouts. For this, it is necessary to access the client's PLCs, where the most common form is the use of an OPC client.

Printing systems

The printing system to be used will depend on the location and desired quality. The most usual and also most practical is to locate the printing of tickets or delivery notes at the height of the truck cabin, so the driver does not have to get out, thus reducing the transaction time.

Currently the most reliable systems are thermal or laser printers, which go up to DIN A4 with blank or pre-printer paper, being fully integrated into the operating terminals or kiosks.

Process

The truck transit process is based on a self-service, automatic o manual operations in case they are required. The desired level of automation can be achieved depending on the equipment installed.

Two types of vehicles are distinguished, regular and non-regular. Regular vehicles are those with their own identification system, through which the data associated with the vehicle are occasional trucks which will first require data to be entered, either manually or automatically through selections made by the vehicle's driver.

There are two types of vehicles, regular and non-regular. The regular vehicles are those that have an ID through which the system can identify them and associate the data that the system possesses. The non-regular, must operate through a self-service kiosk or be attended to manually.

The system is normally based at a preliminary entry point into the factory, where regular and non-regular vehicles are identified and the data is selected which the system requires to carry out the transaction and a ticket with most significant data is issued.

The driver must now remain in the waiting area until the system calls him to enter the plant. This waiting time is advisable, to avoid a traffic jam in the plant. The system will manage vehicle entries into the factory in accordance with the product to be loaded, its availability and the number of trucks in circulation.

Once the vehicle has been called, it must go onto the entry weighbridge to measure the tare (after being identified), and then go to allocated loading/unloading point.

In the case of bulk loading, once in position it must be identified again to be able to start loading. This will be done completely automatically as the system will have informed the corresponding PLC of the exact kg to be loaded, and the origin of the material. Reloading as necessary can be carried out until the required quantity is reached.

For bag loading, the forklift has a mobile device which, after the truck has been selected, shows the product to be loaded onto the trucks, so the bag operator can proceed with the correct loading. From the bagging area, the data concerning the loading can be modified, if what is loaded does not correspond to what was allocated.

For bag loading, the forklift operator has a mobile device where can select the truck and see the product detail to be loaded onto it. It can be used also for modifying the loading order with the final quantity loaded.

In case of unloading raw materials, the dispatch system can send a permit to the automation PLC to obtain an authorization.

If there are any errors in the steps described, the system will be informed the driver and the operator so that the problems may be resolved.

Once the loading/unloading process is complete, the vehicle must go to the exit zone to obtain the corresponding delivery note.

The truck may depart through the exit weighbridge, or an exit street without weighbridge if the weighing system located in the loading areas is approved for commercial transactions.

All the control is carried out by an application and database server.

Figure 2. Self-service kiosks, cabin or stand up operation

As peripherals and communications are very important, our applications have tools for easy diagnosis of any kind of fault by maintenance staff, and logs of incidents and errors that the system may detect during operation.

Customer ERP

The dispatch system must be closely related to the customer's management system to ensure a rapid and completed data exchange between both of them. The most commonly way to communicate is using Webservices.

Third party systems

A third party system as a TMS, Security access, etc., can be linked with the Dispatch system, obtaining a total integration of plant access control.

Conclusion

With an automatic dispatch system, a better service availability may be offered to the customer, as significant improvement will be obtained in terms of waiting times, total flexibility of loading/unloading schedules, truck's flow optimization and traceability of all the transactions carried out.

BEUMER Group offers robust belt apron conveyors

Economic transportation of cement clinker

By: BEUMER Group, Germany

Robust apron conveyors (SZFs) are used in cement plants to transport clinker safely and economically from the kiln cooling system to the silos. BEUMER Group is the only manufacturer who offers a special variant, the belt apron conveyor (GSZF): Using a belt instead of a chain as traction element allows higher speeds and a slimmer design while still delivering the same level of performance. The GSZF is therefore particularly suitable for modernisations.

In general, the clinker comes out of the cooler at 80 degrees plus ambient temperature. But during the process, a so-called kiln flash can occur caused by a raw meal flash from the preheater tower or by caked clinker coming off the kiln: Within a few seconds several tons of raw meal or clinker shoot through the cooler. The material to be conveyed cannot cool down sufficiently and reaches the conveyor at temperatures of 500 to 800 degrees Celsius.

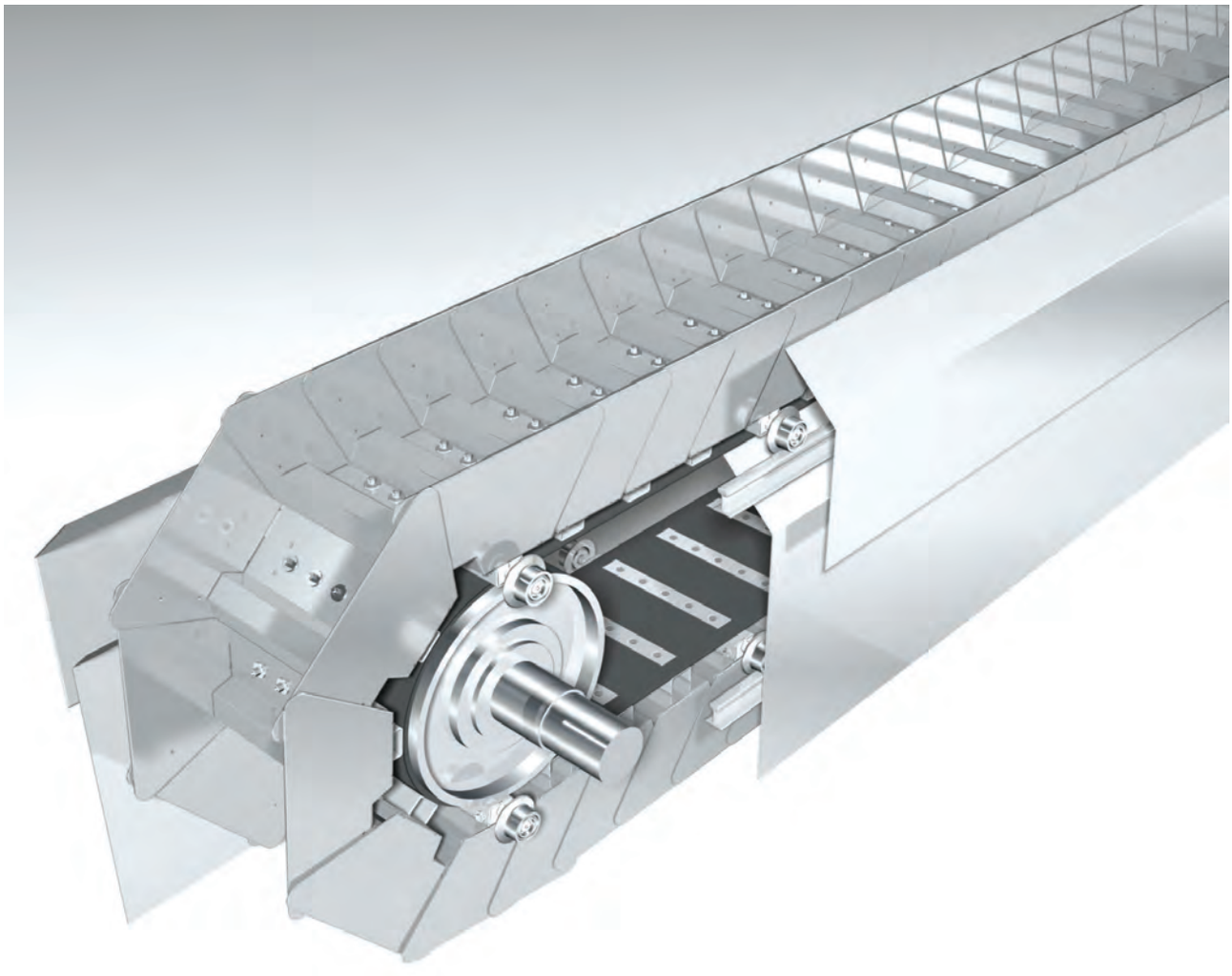
With its apron conveyors, BEUMER Group provides robust and reliable solutions. The specific design of the cells allows safe, low-friction transportation of any hot material. Sealed and overlapping side walls and bottom plates in the cells prevent the clinker from exiting and minimise the escape of dust. The traction element in this conveyor is usually a single or double strand sprocket chain. The system supplier is the only manufacturer on the market who offers apron conveyors with the tried and tested BEUMER steel wire belts from the bucket elevator technology instead of a chain as traction element. Here the cells are attached to the long-lasting, steel-wire reinforced belt in a way so that the heat of the clinker in the steel cells is not transferred to the belt. Partition plates are attached in the feeding area below the cooler and can be easily removed for maintenance, protecting the belt against hot clinker in case of a kiln flash.

One decisive advantage of the belt apron conveyor: with speeds of 0.6 metres per second, it can reach double the conveying speed compared to apron conveyors with a chain. This makes it perfect for retrofitting and modernisations. If operators want to increase the kiln capacity for example, they can replace an existing chain apron conveyor with a belt version of the same size – this means double the capacity without having to make any changes to the steel structure or the conveyor bridge. The cement plants also benefit from a new construction application: The thinner, lighter design of the GSZF reduces costs for steel structure and freight. Furthermore, the decreased net weight lowers the static and dynamic loads which affect the clinker silo and foundations for example. A new construction project can be designed for a smaller load and is therefore more cost-effective to build. The lightweight design also lowers operational costs.

Quiet, low in maintenance, reliable

The entire belt lies with its surface on the drive and return pulley which avoids the unwanted polygon effects caused by the chain. The particularly smooth running of the machine also reduces noise emissions considerably. The noise is less than half as loud as conventional SZFs with chains, which is advantageous for both the employees and the environment.

The use of the durable BEUMER steel wire belt lowers the maintenance costs, and extends maintenance intervals. Chains can break, if preventive maintenance is not performed properly, which will lead to the conveyor collapsing. The rubber of the steel wire belt only becomes brittle with age, but it would never completely break. Lubrication is also not required for the belt, whereas used frequently on a chain, if for no other reason than to reduce noise levels. Grease and oil are not only a cost factor, but also detrimental to the environment and the conveyor. The clinker dust gets stuck on it and settles in the chain links, which accelerates the wear and tear.



Picture 1: The belt apron conveyor ensures safe and efficient transportation of hot materials such as cement clinker.

Photo 2: The slim and weight-reduced design of the GSZF reduces the costs for steel structure and freight. The operator was able reduce costs considerably.

Converting a calciner from oil to natural gas firing: enabling fuel savings through CFD modelling

FCT Combustion Pty Ltd

By: R. Hassold, B. Wilson, H. Afshar, Y. Yu, FCT Combustion Pty Ltd, Australia

Introduction

Natural Gas (NG) can be an attractive fuel due to its high heating value, low carbon emissions, no need to stockpile, store, blend, grind or preheat, and, in some regions, low price. However operationally its use can cause challenges due to its high ignition temperature, high flue gas volume and low heat transfer when compared with liquid and solid fuels.

At a cement plant in the Middle East the kiln and calciner were typically run using 80% NG, supplemented by 20% Heavy Fuel Oil (HFO). However, as HFO is significantly more expensive than NG, the plant wanted to eliminate any HFO firing. When this was attempted by installing gas burners in the same location in the calciner as its HFO burners, the plant experienced significantly detrimental effects, including high temperatures and CO emissions at the preheater exit and a reduction in feed rate to 200 t/h.

The plant could have continued their trial and error approach using different burner designs and suffer high fuel costs and low production. Instead, FCT Combustion was engaged to study their calciner, determine what was limiting the substitution of natural gas and deliver a cost-effective solution. This article discusses how FCT used CFD modelling of the calciner and installed new burners that enabled the calciner to operate on 100% natural gas, saving €500k to €600k per year, whilst increasing kiln feed rate by 15% and reducing specific fuel consumption by 4%.

Modelling the Calciner

When changing a calciner from firing HFO to NG it is not just a matter of installing new burners in the same location as the existing ones. There are many factors that need to be considered and understood including:

- The inherent differences between the fuels and how they disperse, mix and burn,
- The aerodynamics of the calciner vessel,
- The location of the meal entry point(s), and
- The resultant heat transfer to the meal and degree of calcination.

In order to investigate the above factors, FCT Combustion built a computational model of the calciner in ANSYS Fluent. Table 1 below summarizes the boundary conditions used in the model. Total firing rate is 85 MW.

Figure 1:4 stage in line calciner.

his article was first published in the September 2018 issue of World Cement.

Table 1: Boundary conditions used in CFD modelling.

Boundary	Mass flow rate	Temperature	Composition
Tertiary air inlet	26.17 kg/s	850 ºC	Air
Kiln inlet	16.8 kg/s	1050 ºC	17.25% H_2O; 12.48% CO_2 0.401% O_2; 0.2% CO
NG inlet	1.497 kg/s	15 ºC	86.85% CH_4; 7.97% C_2H_6 4.67% N_2; 0.5% CO_2; 0.01% O_2
Primary air for gas burner	2 kg/s	13 ºC	Air
HFO inlet	0.3856 kg/s	100 ºC	$C_{19}H_{30}$
Primary air for oil burner	0.0753 kg/s	12 ºC	Air
Meal inlet	54.83 kg/s	780 ºC	54.85% $CaCO_3$; 26.47% SiO 8.71% CaO

Simulating the Existing Operation

To understand the performance of the existing calciner, three operating conditions were modelled: (a) 100% HFO; (b) 20%HFO:80%NG; (c) 100% NG. In its original configuration, the calciner performance was characterised as:

- 100% HFO: fuel burns out well without high levels of CO,
- 20%HFO:80%NG: some CO is generated limiting further increase in natural gas firing and
- 100% NG: not possible due to high CO levels.

Figure 2 shows the aerodynamics and the temperature in the calciner vessel for these scenarios. In all cases the dominance of the tertiary air is evident, generating flow recirculation in the calciner. However, the flow fields are quite different, and recirculation regions change sides as NG is introduced in the system. These changes in flow pattern, associated with the higher ignition temperature and lower heat transfer of NG, influence the flame position and the upward extent of the high temperature region, creating stratification and impacting on calcination.

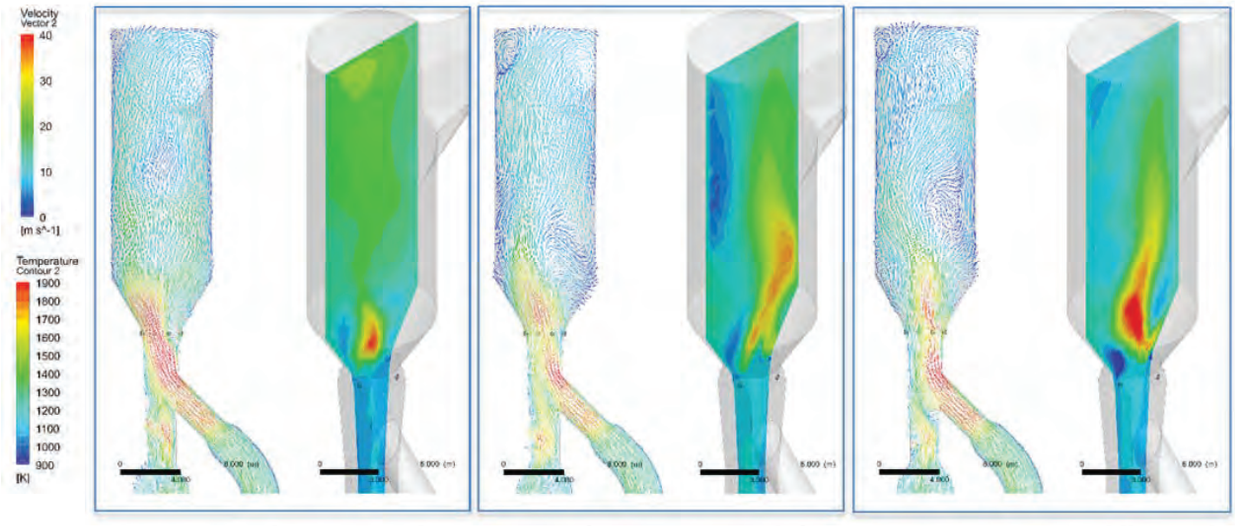


Figure 2: Aerodynamics and temperature for 100% HFO (left), 20%HFO:80%NG (middle), and 100%NG for existing burners (right).

Modelling of the calcination showed that for 100% HFO firing the calcination is complete at approximately half the height of calciner vessel, while in the cases where gas is co-fired or used as the only fuel, part of meal particles reaches the top of the vessel with its full content of CaCO3, i. e., completely uncalcined.

When the fuel burnout was assessed, for 100% HFO, the burnout is 100% complete by 9m above the burners. However, when firing with 20%HFO:80%NG, the fuel burnout is not complete at the calciner exit and combustion continues on into the bottom stage cyclone, raising the calciner exit temperature and, therefore, also the preheater exit temperature. When firing 100% NG, at least 6% of the fuel leaves the main calciner vessel unburnt. Although fuel oxidation continues in the outlet duct, approximately 1.8% of the fuel enters the cyclone unburnt, causing the high CO emissions.

Finding a Solution with CFD

The computational predictions of the existing calciner and burners were consistent with the actual calciner performance issues seen on the plant. In particular they showed that there is a difference in the velocity and temperature fields between the various firing configurations, which also affects the calcination pattern.

In order to find a solution for the 100% NG case, FCT considered a wide range of new burner designs and locations for the calciner. The best solution identified was to install two new FCT burners in the exit of the Tertiary Air Duct (TAD) to preheat the tertiary air and, therefore, enhance the rate of reaction of the natural gas injected at the main burners. In this configuration, 87% of the total firing rate is provided by the existing four burners, while the two new FCT burners in the TAD burners provide the remaining 13% of the heat output. In this way the temperature of tertiary air is raised to accelerate the reaction rate of NG to be comparable with HFO rate so that calcination reaction is activated with sufficient heat and completed within meal particles average residence time. The effect of new burners in the TAD on the calciner temperature field is shown in Figure 3.

The impact of new burners in the TAD on calcination was predicted to be comparable to the 100% oil case, without uncalcined particles reaching the top of the equipment.

The effect of different burner configurations on the fuel burn-out, as a percentage of total fuel consumption, is compared at various distances above the existing burners in Figure 4. The burnout

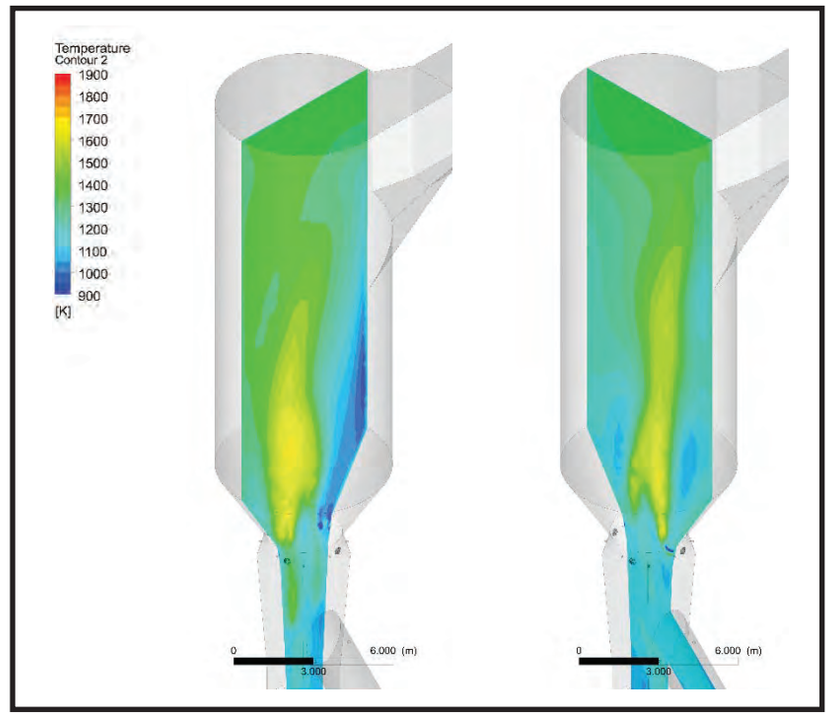


Figure 3: Temperature field in the calciner after the addition of the new FCT burners in the TAD.

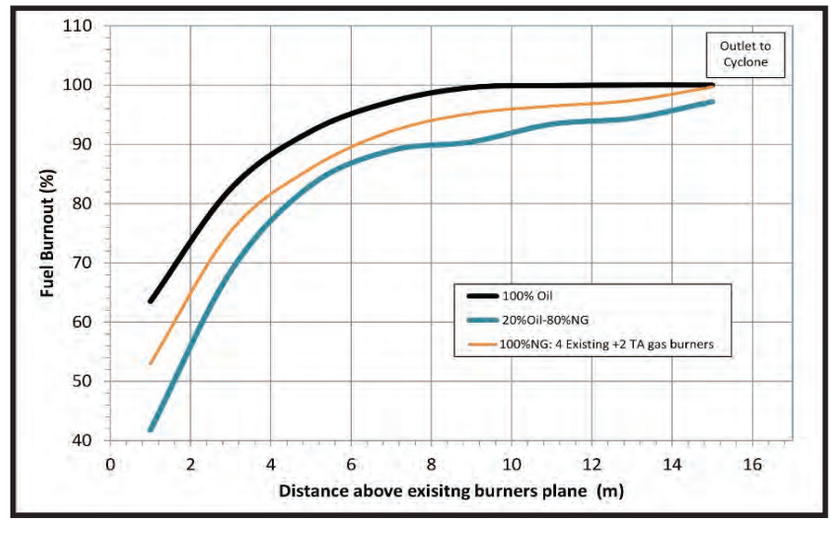


Figure 4: Fuel burnout comparison of the existing burners with the addition of the FCT burners in the TAD.

performance on 100% NG with the new TAD burners is better than the existing 80%NG-20% HFO, approaching that of the 100% HFO case.

Results from Real Life Implementation

The CFD study predicted that adding two small gas burners in the TAD will produce a significant increase in performance. This was a practical and cost-effective solution that did not require altering the design/layout of the existing gas burners. Hence, two new burners from FCT Combustion were purchased. These burners were designed to fire about 10% of the total gas supply to the calciner. They were installed in opposing positions in the TAD, as shown in Figure 5.

Figure 5: Installation of the FCT burners in the TAD.

During the commissioning period, the kiln was initially operated on the original burners firing 100%NG, achieving a feed rate of only 200t/h. Within seconds of turning on the additional FCT burners the preheater exit temperature dropped 16 °C even though there was increase in the total calciner firing rate, demonstrating that the new burners had improved the calciner performance by increasing the degree of calcination and absorbing more heat from fuel combustion.

In the days following the installation of the new FCT burners, the kiln feed rate was increased by 15%, to 230t/h, whilst maintaining the preheater exit temperature at the level previously attained at 200t/h, as shown in Figure 6. In addition, the specific fuel consumption dropped 4% and clinker quality was maintained.

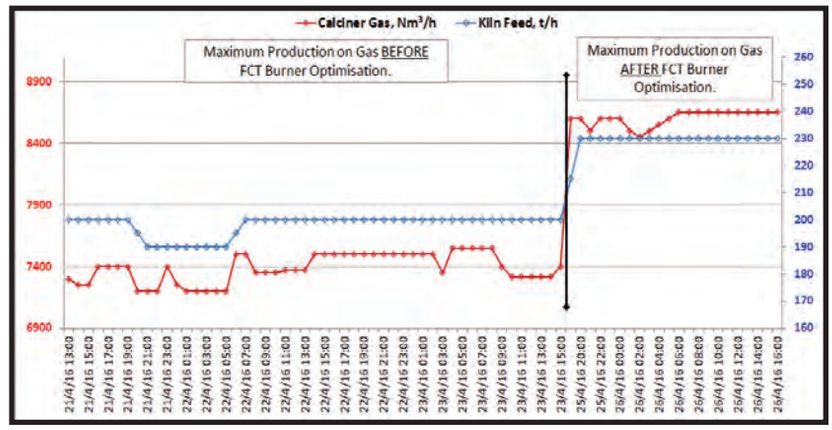


Figure 6: Calciner gas firing rate and kiln feed rate before and after FCT burner optimisation.

Conclusion

Using CFD, FCT Combustion has successfully improved the operations of a cement kiln calciner, in particular decreased its fuel costs and increased its production. The computational model built by FCT enabled unique insight into the aerodynamics, combustion and calcination process in the calciner in the existing operation and to develop a cost-effective solution that delivered substantial benefits when implemented in real life.

The CFD model demonstrated that the key difference from firing different fuels in the calciner was the velocity and temperature fields between the various firing configurations, which affected the calcination pattern. A solution was identified of installing new FCT burners in the TAD, in order to accelerate combustion of natural gas and produce an even heat distribution in the calciner vessel. Only 10% of total gas supply was redirected to these new burners, which were simple to install. This illustrates that in a calciner, the burner location is often more important than the design of the burners themselves.

When the new FCT burners were installed in the TAD, the calciner was successfully able to operate on 100% NG. By eliminating the use of HFO, it is estimated savings of €500k to €600k per year were realised. Furthermore, the kiln feed rate was increased 15%, whilst maintaining the preheater exit temperature, the specific fuel consumption dropped 4% and the clinker quality was maintained.

ENVIRONMENTAL RANKING OF CEMENT

Lawrie Evans and Mark Mutter, JAMCEM Consulting Ltd

By: Mark Mutter & Lawrie Evans, JAMCEM Consulting, UK

It is becoming increasingly evident that global warming is a generational challenge. There may still be head in the sand politicians attempting to ignore the warnings, but the mass of scientific data is now pointing to the conclusion that the challenge to reduce carbon dioxide emissions is critical to our future climate. The "Big Four" major sources of carbon dioxide now standing in the dock are transport, power generation, steel and cement. Transport is making substantial moves to electrification, but any attempt to increase fuel costs and reduce usage meets an immediate adverse reaction. Look no further than the "gilets jaunes" in France. Power generation is also rapidly pursuing a route to renewable sources, leaving steel and cement as the two major sources without a clear route for substantial reductions of carbon dioxide emissions.

Also, cement in its current form isn't going away in a hurry. Predictions are that the global peak of cement production is still in the future and likely to be 12% higher than current volumes. This is supported by the well-known curve shown in Figure 1, in which there are many countries - notably India and almost the entire continent of Africa - which lie on the growing left-hand side of the climb to peak cement consumption per capita.

The Portland cement recipe requires decarbonation of calcium carbonate and a large amount of heat for the process, both of which imply evolution of carbon dioxide. Many alternative cements to the Portland recipe with lower carbon dioxide footprints have been proposed but have yet to make a significant dent in the dominance of Portland cements in both pure and additions formats. With a global cement capacity approaching 6 billion tonnes and with a conservative asset valuation of $150/annual tonne, total cement global assets are worth approximately $900 billion and this will not be sacrificed or replaced easily.

So what are the regulating authorities and the cement industry doing? The actions can be divided conveniently into developmental and major evolutionary steps.

The industry developmental steps include

a) Reducing fuel and power consumption.
b) Reducing clinker content of cement.
c) Moves to alternative fuels, especially those with a significant biomass content.

For the authorities, the major action has been the introduction of carbon trading, most significantly in Europe but with other schemes emerging in many regions around the world. Unfortunately, carbon trading has tended to become more significant as a

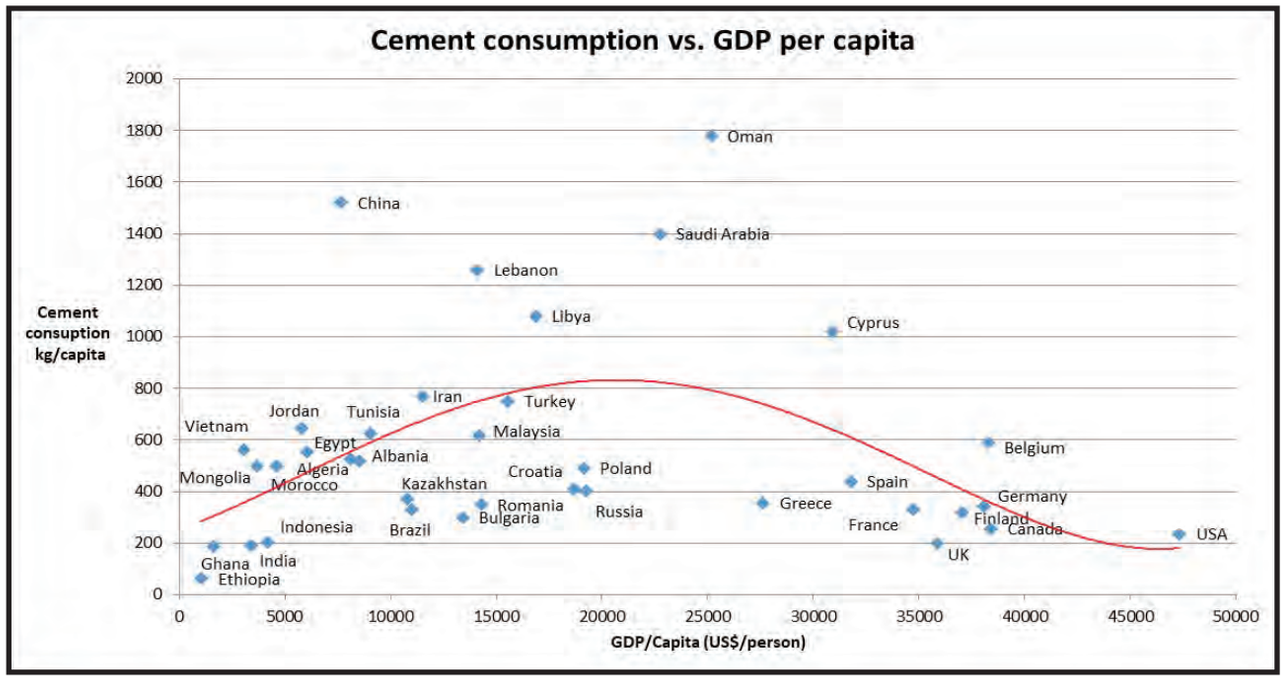


Figure 1: Cement Consumption kg/capita versus GDP/capita (Historic data)

financial tool rather than a driver of change and for every forward step in reducing specific emissions, such as in Europe, there have been other setbacks such as in Egypt, where the change from natural gas/oil to coal/petcoke has adversely impacted specific carbon dioxide emissions.

More evolutionary steps include

a) Several routes to capture and dispose of carbon dioxide from modified kiln processes. But current costings indicate a trading cost of over $100/t for carbon dioxide before breakeven is achieved.
b) Using carbon dioxide in concrete (i.e. Solidia) with current developments directed at the pre-cast industry.
c) The most advanced thinking with the current cement recipe is to source heat for the kiln process from diverse sources i.e. hydrogen, 100% biomass and electrification, but the issue of carbon dioxide from calcium carbonate remains.
d) Other cement recipes remain in development but have yet to be produced in significant volumes.

What is clear is that the impact of these initiatives is rarely clear to cement consumers and the general public and most often references to "green" cements are made with little or no justification or quantification.

One potential idea that could drive cement producers to focus more on reducing CO_2 is that of giving cements a clear environmental ranking, such that consumers and the general public can understand the CO_2 generated in the manufacture of cement. This will influence customer behaviour and therefore the revenue streams of the cement producers. The measures of Kg of CO_2 per tonne of clinker or cement are certainly useful, but what is not clear is how much of any improvement in this measure is due to the production of lower strength cements. As the vast majority of cement is used for the strength it can produce in concrete and mortar applications, the parameter proposed for ranking has to take both CO_2 emissions and resultant strength of the produced mortar / concrete into account. The CO_2 factor would be that attached to the original clinker source and the percentage content in a given cement. Where cement from grinding plants use outsourced clinker, it is proposed that the clinker(s) used are ranked for kg CO_2 / tonne clinker in order to correctly assign a ranking to the cement produced by that grinding plant.

The compressive strength parameter would be defined as that achieved at 28 days, the parameter generally used for the majority of concrete designs. Thus kg CO_2 / tonne cement / MPa of 28 day mortar strength using EN standard testing methods would become the standard environmental performance for cements. EN standards for compressive strengths have been selected as the standard in most widespread use. There are also well-known conversion factors which can allow strengths obtained from other standards to be converted to EN standards. It is further proposed that the kg CO_2 / tonne cement / MPa parameter should be classified in a similar manner to those of domestic appliances such as washing machines, televisions etc. and be ranked in bands A+++ to F. This will allow more clarity in labelling. As well as CO_2 from the kiln process any emissions from slag and fly ash driers and from artificial pozzolan calciners etc. should be included in the CO_2 measure for the ranking.

There are several counter arguments to this type of environmental ranking i.e.

a) 28-day strength is not the only consideration i.e. for precast customers.
b) Mortar strength performance is not always replicated in concrete applications.
c) CO_2 emissions from the production of slag and fly ash are not included.
d) The CO_2 emitted from power generation and used on the plant or from any captive power generation installed at a plant is not included.
e) The ranking takes no account of the minimum cement requirement in many concrete specifications.

No ranking method can entirely eliminate discussion as to the exact measures to be used but the relatively simple ranking which has been adopted for domestic appliances using methods largely initiated by the European Union has led to a virtuous circle of development such that even A+++ ranking is not sufficiently good to include current best practice. Today it is difficult to imagine a customer buying an E ranked washing machine and given equal price who would buy a B ranked machine over an A++ ranked?

As an example of cement environmental ranking a typical CEM I 52.5N in Europe has a kg CO_2/tonne cement of 828 for a 28-day compressive strength of 63MPa. By dividing the 828 by 63 a ranking of 13.2 is produced. By comparison an average CEM II/A-L 42.5N, with a lower clinker content than the CEM I, has a kg CO_2/tonne cement of 747 for a 28-day compressive strength of 53MPa. This produces a ranking of 14.1, apparently inferior in ranking to the CEM I. Why is this the case? The major part of the explanation is usually to be found in the cement grinding system, where the softer limestone in the CEM II is preferentially ground over the clinker. With poor separators this leaves a higher proportion of clinker insufficiently ground to contribute to strength development in mortar and concrete. By comparison, cements with fly ash, slag and pozzolanic additions give significantly better results as the additions are active in developing strength, especially at ages of 28 days and beyond. However, even in this case it is important that

preferential grinding and poor separators do not rob the cement of any potential strength development.

As an illustration of this point, figures for the range of products from a typical European plant are shown in Table 1

Table 1: Cement Types and kg CO_2 / t cement / MPa compressive strength at 28 days for a typical European cement plant. Conventional kg CO_2 / t cement data also included for comparison.

It can be seen that there is a significant range of kg CO_2 / t cement / MPa compressive strength at 28 days data and not necessarily in the expected direction as shown by the more conventional kg CO_2 / t cement data. However, the fly ash cement (CEM IV/A-V 32.5R) is clearly the best performer on both counts.
Overall, the suggested ranges for the overall environmental ranking of cements are shown in Figure

2. These ranges cover most cements produced.

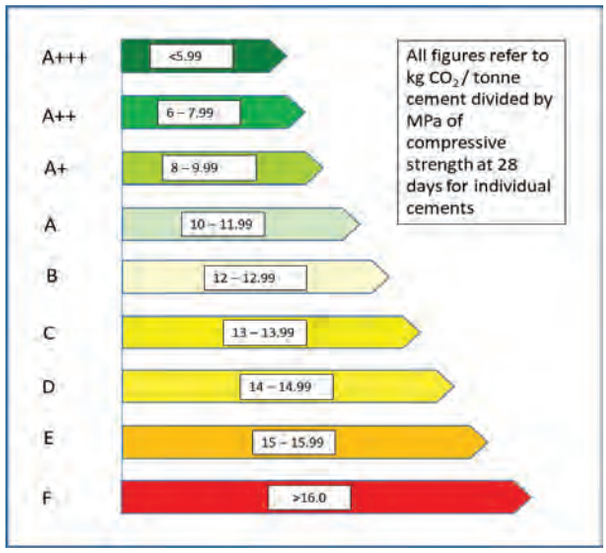


Figure 2: Proposed environmental rankings for cements

The overall result for a given cement is the classification shown in Figure 3. In this case it is for the CEM II/A-LL 32.5R in the plant example given in Table 1.

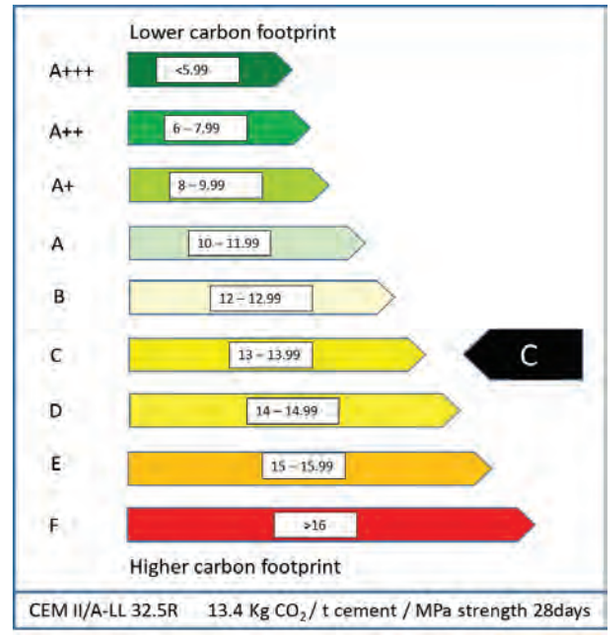


Figure 3: Example of environmental labelling for cements

The result is clearly labelled as a "C" classified cement and customers can also evaluate competing cements for their environmental ranking and make decisions based on the rankings.

As previously stated, the issue of minimum cement content in concrete has to be addressed in parallel with any attempt to rank cements. Worldwide standards for minimum cement content in concrete vary widely and there are many expert opinions suggesting that a critical review of these standards is urgently required. This review could significantly reduce the amount of cement used in many concretes.

Moving the cement industry to a more carbon dioxide friendly future will follow many routes, but by ranking cements in the manner proposed, the efforts of manufacturers to progress in fuel consumption reduction, biomass utilisation, improved grinding and better use of active additions can be seen clearly by customers, government bodies, environmentalists and the wider public.

CEMENT TYPE	kg CO_2 / t cement / MPa strength 28d	kg CO_2 / t cement
CEM I 52.5N	12.9	794
CEM II/A-LL 42.5R	13.4	700
CEM II/A-LL 32.5R	13.4	649
CEM II/B-LL 32.5R	15.7	573
CEM IV/A-V 32.5R	12.2	571

MULTIFUNCTIONAL CONCRETES OF NEW GENERATION

By: Bickbau M.Ya, Professor, PhD in chemistry
Nesvetailo V.M., Head of R&D

A new concept of creating concrete based on mechanochemical activation of Portland cement and modifying it to nanocement has been proposed. Such concretes have a number of improved properties, including their complete impermeability to liquids and gases. Examples of applications of ultra-durable concrete based on nanocement in extreme environmental conditions are given.

Introduction

Nowadays, it is finally recognized that when developing new concretes, the focus should be not on reducing it's cost, but on creating more durable and technologically viable options. Such concretes are named multifunctional concretes (High Performance Concrete). The concept and the term covers concretes with such combination of properties that are impossible to achieve using conventional cements, traditional preparation of concrete mixes and standard methods of pouring. The new properties are, for instance, a combination of high durability and self-compacting (bulk) consistency. According to estimates by Japanese scientists, the service life of such concretes can reach 500 years. It should be noted that the requirements for multifunctional concretes have already been included in the national standards of some countries.

The impressive example of the use of multifunctional concretes, namely, high-strength and durable, is the platform built in Norway for oil production in the North Sea. Its height - 470 meters, and it is designed for the impact of a hurricane storm with a maximum wave height of 30 meters. The life of the platform is at least 100 years. Similar platforms are built on the oceanic shelf of the Arctic Ocean, which are operated in the zone of solid multiyear ice sheet, the movement of which creates enormous shear stresses. As an example, a bridge built in eastern Canada can also be cited. Its length is 13 km; the supports are immersed in water to the depth of 35 meters. Operational life is 100 years.

It should be noted that construction of concrete structures with high durability, longevity and strength is not an easy task, even with modern developments of concrete science. For this purpose, cement grade 600, washed and graded aggregates, active mineral additives (micro fillers), hyper plasticizers and some other special components must be used.

Placing and compaction of such concrete mixtures presents certain difficulties, since they have a consistency of 3 to 5 cm of cone slump, and for this reason require the use of powerful compaction equipment (poker vibrators).

In addition, such concrete contains 2 times more components than ordinary concrete, some of which are introduced into the concrete mix in very small quantities. In addition, to ensure uniform distribution of the components, the mixing plants must be equipped with additional supply paths for the components in the form of micro-dispensers, as well as special mixers.

It is well known that in concretes prepared according to traditional technology, there is a fairly strong segregation and water bleeding of concrete mixtures. This happens for a number of reasons and mainly due to the absence of a superfine fraction in the aggregate composition: from 50 to 150 microns (0.05-0.15 mm). As a result, concretes prepared according to standard technology, after hardening, have great water

absorption and, as a result, a decreased longevity. The durability of concrete today is estimated by its frost resistance. At the same time, the determination of frost resistance by direct method takes a very long time. At that, accelerated methods are excluded from the latest edition of GOST.

Accelerated methods to determine frost resistance by indirect indicators (water absorption, ultrasound velocity, and others) are not developed sufficiently today and are not applied in practice. Thus, it should be recognized that modern concrete mix designs do not take into account its durability. In this regard, the author believes that durability of concrete is most correctly determined by its water absorption. If there is no water absorption, then there is no destruction of a concrete structure from frost and chemical aggression.

As proof of this hypothesis, it is possible to refer to the well-known data on frost resistance of concrete grade 600 on Portland cement. In a normal environment, when water absorption is equal to 3%, its frost resistance is F300, and when water absorption is 0.3%, it increases to F900. The same is observed in an aggressive environment. At water absorption of 3%, the frost resistance of concrete in aggressive environments is equal to F50, and at 0.3% it increases to F800. Nanocements allow to produce concretes with the lowest possible water absorption.

Basic principles of the new technology

The goal of many years of the research done by the author as well as by other scientists working on this problem was and remains the creation of a simple and affordable technology for producing multifunctional concretes (High Performance Concrete). This article will consider one of the varieties of multifunctional concretes, namely, super-durable heavy-duty concrete from self-compacted mixtures using mechanochemical processing of cement. In the course of creating such concrete, we have tried various ways to solve the problem, starting with water magnetization and ending with a grinding of cement in liquid nitrogen. As a result of the long-term research, it was found that the task can be successfully accomplished by mechanochemical treatment of ordinary Portland cement in a special installation. Such a technology was first called cement activation technology, then renamed to its modern version: the nanocement technology.

Concretes manufactured according to the proposed technology can be considered as 5th generation concretes, bearing in mind that the concrete of the first generation contained only cement, aggregates and water. The second generation additionally contained the simplest plasticizers, the third generation concretes (most common today) contain super plasticizers, and the fourth (High Performance Concrete) additionally contain a hyper plasticizer and a micro filler. The proposed technology includes mechanochemical treatment of Portland cement and its modification into nanocement. The author proposes to consider concretes manufactured on the basis of nanocements as fifth generation concretes.

The main difference and critical advantage of the technology of mechanochemical activation of cement is that for the first time in the world it was possible to introduce into cement concrete an increased (up to 10%) amount of plasticizer. It turned out that, depending on the amount of plasticizer, the grains of cement are covered with either continuous or partial plasticizer shell. The thickness of such shell, calculated theoretically at the initial stage of technology development, was estimated by us at 20-150 nanometers. In 2012, the thickness of this shell was experimentally measured and ranged from 50 to 100 nanometers, which is in line with our initial calculations.

A variety of devices for cement mechanochemical activation was tried during the research: planetary, jet and vibratory mills, dismembrators and a number of other devices. The use of a conventional ball mill, used in the production of Portland cement, was considered the best implementation of the technology.

The developed technology provides for self-compacting self-leveling concrete mixes (cone slump of 22-24 cm) and at the same time lowers the water-cement ratio of concrete mixes by more than 2 times (to 0.20 - 0.22). This makes it possible to abandon the mandatory use of cement M600, hyper plasticizers and high quality aggregates and, ultimately, allows you to make almost everlasting concrete.

Application of new generation concretes

One of the most important tasks of modern concrete engineering is protection of reinforced concrete structures from corrosion. It is generally recognized, that this task will be solved, if permeability function of chloride salts and other substances aggressive to concrete and reinforcement, is reduced by a factor of ten or more. Concretes on nanocements have a complete waterproofing capacity and reduced ability to capillary absorption of aqueous solutions of salts. Such concretes can be used in burial of toxic and radioactive waste, preservation of spent nuclear power units and nuclear facilities, and in other cases where it is necessary to ensure that structures are impermeable for a very long time.

The mechanochemical activation of Portland cement

and its modification into nanocement dramatically improve such characteristics of concrete as strength (up to 200 MPa), sulphate resistance (up to 90-98%), frost-resistance (up to F2000) and water resistance (up to W50). According to the results of research conducted by the author, the use of nanocement significantly increases durability of material in sulphate media. The advantages of concretes on nanocements with a strength of 150 MPa are shown in Table 1.

According to the author, such concretes can also be widely used in the construction of bridges, roads and marine structures: berths, offshore platforms, etc. It is necessary to state that it is practically impossible to achieve these parameters on existing materials and using old technologies. The nanocement technology will allow to make even acid-resistant concrete on the basis of ordinary Portland cement without the use of liquid glass and quartz micro filler.

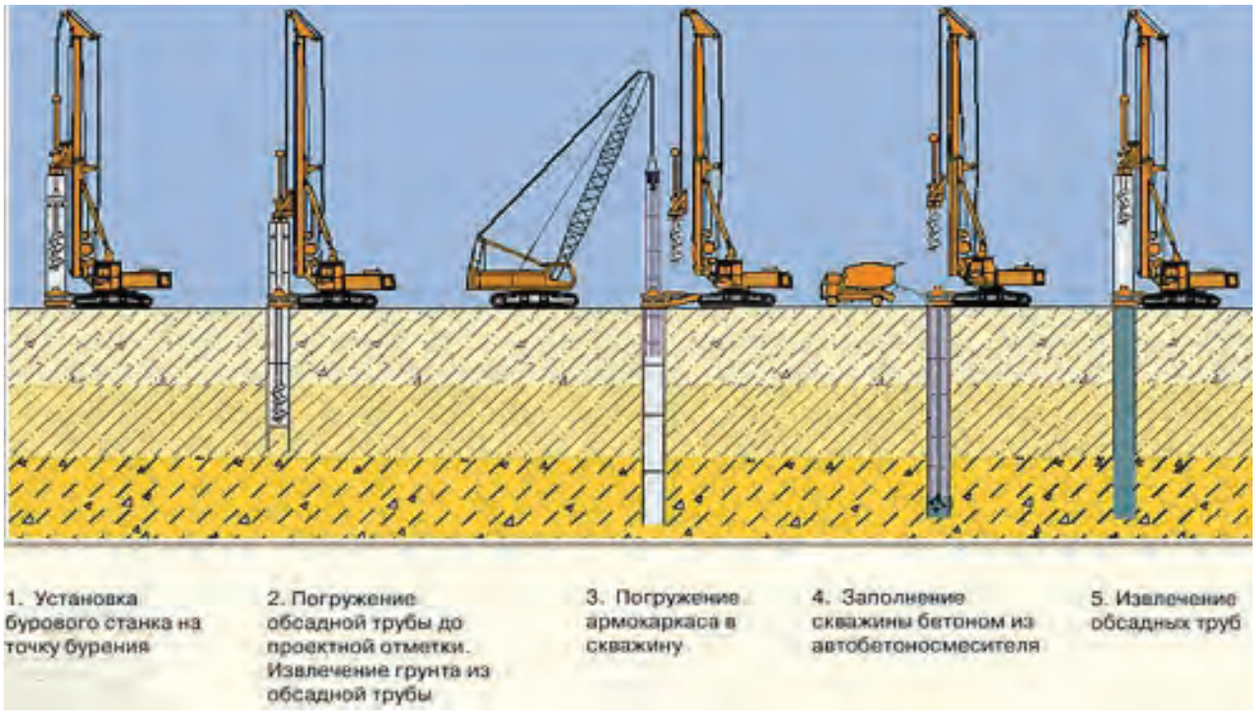
Thus, the technology of mechanochemical activation allows to obtain concrete, which can be attributed to the multifunctional in terms of water impermeability, high resistance in sulphate environments and frost resistance (along with high strength). The use of this technology can be considered a solution to the problem of creating concrete that retains operational functions during extremely long periods.

Let us consider in more detail some examples of the application of the proposed technology.
Underwater concrete

In this case, the following properties are the priority: the concrete mix must resist wash out and have high cohesion. The nanocement technology allows to mix only the activated cement and normal aggregates with water in a standard mixer. The presence of nanocement eliminates the use of M600 cement, micro silica, special polymer and hyper plasticizer in a concrete mix. Also, no dispensers for adding minerals and chemical additives are needed for concrete mixing equipment.

Auger-cast grout piles

Here, the following properties of concrete are the most important:
Almost complete absence of concrete segregation and water bleeding. The proposed nanocement technology makes it possible to ensure early strength, even during



the autumn-winter period, and at the same time to increase piles' load bearing capacity. The presence of nanocement eliminates the use of M600 cement, micro silica, special polymer and hyper plasticizer in a concrete mix. Also, no dispensers for adding minerals and chemical additives are needed for concrete mixing equipment.

Marine terminals and offshore drilling platforms supports

One of the qualities of concretes on nanocements is extremely high resistance to saline seawater. The proposed technology and nanocements make it possible to abandon the use of sulfate-resistant cement and at the same time provide concretes with extremely high resistance to sulfate aggression.

Mining shafts and vaults

The impact of permafrost adds to the aggressive effects of mine waters containing hydrogen sulfide. Our technology and nanocement make it possible to abandon the use of any special cements (including sulphate-resistant) and, as a result, to reduce the cost of mining.

Findings

1. A simple and reliable technology has been developed for the production of the fifth generation concrete - super-durable High Performance Concrete. The strength of such concretes based on nanocements can reach up to 200 MPa.

2. The fifth generation concrete can be produced using the existing equipment of concrete plants without additional feeders for mineral and chemical additives.

3. High durability of concrete can be ensured on nanocement without the use of hyper plasticizers and air-entraining additives. The resistance of concrete on nanocements to the effects of aggressive media is provided without the use of special cements, including sulphate-resistant and chemical-resistant.

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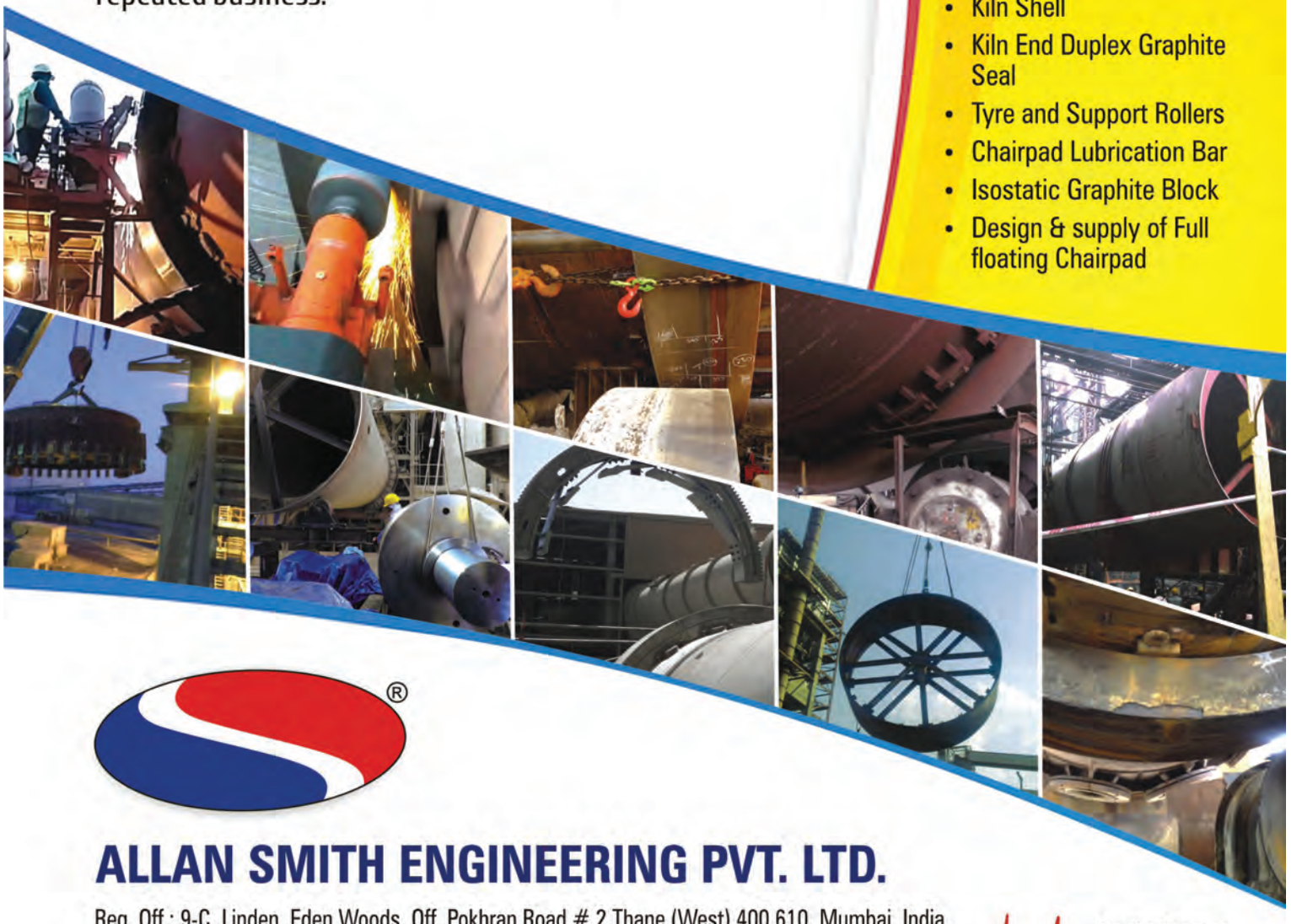

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Ingredients	High Performance Concrete technology	Mechano chemical activation technology	Results achieved when using nanocement
Cement	M600 and higher grade. Must be without mineral additives; the content of tricalcium aluminate should not exceed 6%	Nanocement of all classes	Availability of materials. Cost reduction
Sand	3 fractions. Must be washed. The content of dust particles should not exceed 0.5%	1 fraction. Unwashed with dust content up to 10%.	
Aggregate	2 fractions. Rough and washed with the content of dust particles no more than 0.5%. Flakiness no more than 10%	1 fraction. Unwashed	
Plasticizer with water reducing additive.	No less than 40%	No less than 20%	
Silica fume	yes	no	Simplification of mix design Reduced cost
Cone slump, cm	1 - 2 2 - 5	60 - 75 22 - 25	Guaranteed absence voids when pouring, even in densely reinforced structures
Water bleeding,%	1 - 2	0.01 – 0.02	Uniformity of properties. Resistibility to wash out of concrete mix in water
Strength at 1 day, MPa	30	70	Acceleration of construction
Water resistance	25	50	Extended operational life in saline water up to 100 years
Gas permeability coefficient, g/ м*h*Pa	0,01	0,001	Long-term storage of highly toxic waste and materials
Maximum frost resistance, cycles	1000	2000	Extended operational life up to 200 years

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The most precise way of sample division – guaranteed of up to 99.9 %

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- The sample delivery funnel guides the sample material exactly centred on the tip of the rotating cone – for even more accuracy during sample division.
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- Practical quick clamping for rapid and safe fixing of sample bottles with 250 ml and 500 ml useful capacity.
- Glass collecting vessels in different sizes from 15 ml to 500 ml for up to 4 litres total volume – dishwasher-safe and therefore particularly easy to clean.
- Depending on the used dividing head chemically and physically identical subsamples of 8, 10 or 3 can be created at ratios of 1:8, 1:10 or 1:30.
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Select exactly the right dividing head for your LABORETTE 27 as an accessory according to your application in the division ratios of 1:8; 1:10 or 1:30 made of stable POM plastic. Anodised aluminium dividing heads – 1:8 and 1:10 – are available for materials and suspensions with abrasive properties. And for especially aggressive solids and suspensions, the resistant PTFE-coated aluminium dividing head 1:30 is also available.

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New safety cable for VPFlowScope M

Over the past 20 years VPInstruments has supplied many compressed air flow meters to customers worldwide. We had zero accidents with them in the field, and we would like to keep it that way.

To ensure safe installation, our VPFlowScope M comes with a proprietary safety cable for installation under pressurized conditions. The design has proven itself. At VPInstruments we highly value safety though and we have decided to upgrade the safety cable further to a thicker and sturdier version so use applications are covered.

The thickness of the cable has been increased from 2.5 mm (0.098") to 3 mm (0.118"), resulting in a 1.4 times higher strength. Furthermore, the endings of the safety cable have also been strengthened.

At VPInstruments, we continuously strive to improve the quality of our products, to make them more reliable, and easier to use over time. That's also a way to provide easy insight into energy flows.

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VPInstruments offers industrial customers easy insight into energy flows. We believe that industrial energy monitoring should be easy and effortless, to enable insight, savings and optimization. VPInstruments' flow meters are calibrated on state-of-the-art calibration facility. Our calibration equipment is maintained under our ISO 9001 Quality Management System and is traceable to National Standards.

VPInstruments' products are recommended by leading energy professionals worldwide and offer the most complete measurement solution for compressed air flow, gas flow and electric energy consumption. Our monitoring software, VPVision, can be used for all utilities, and enables you to see where, when and how much you can save. Our products can be found all over the world. We serve all industrial markets, for example; automotive, glass manufacturing, metal processing, food and beverage, and consumer goods. We can also help your industry. Let us open your eyes and start saving energy.

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We are pleased to announce that the VPFlowScope electronics platform has been upgraded providing more robust protection against static discharges and short-circuiting. We implemented a new, ultra-robust Modbus transceiver circuit, which can hold up to ±60V on A and B lines. It can also allow a larger common mode range of ±24 Volts, which makes biasing of your RS485 network less critical. This transceiver was already in use in the VPFlowScope M and has now been integrated into the complete VPFlowScope product line, including the VPFlowScope Probe, DP, and In-line.

Features:

- Protection from overvoltage line faults up to ±60V
- ±15kV ESD interface pins
- Extended common mode range: ±24V
- Guaranteed failsafe receiver operation

Background

In many industrial devices, for example, compressor controllers and sensors, RS485 transceivers are easily blown by static discharges, especially when connecting wires for the first time without any protection. Therefore, static protection is very important. We also experienced that one of the most common wiring errors is to reverse data and power lines. Connecting the 24V power supply across the data lines of any traditional RS485 port will result in the transceiver chip going up in smoke, which means the end of your VPFlowScope.

All your VPFlowScope products are now protected with the new integrated overvoltage protection. The new transceiver will protect your VPFlowScope against incorrect connection to the 24V power commonly found in building automation installations, and the data lines will withstand connection to 24V power indefinitely. The protection is rated for a maximum of ±60V.

At VPInstruments, we continuously strive to improve the quality of our products, to make them more reliable, and easier to use over time. That's also a way to provide easy insight into energy flows.

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VPInstruments offers industrial customers easy insight into energy flows. We believe that industrial energy monitoring should be easy and effortless, to enable insight, savings, and optimization. VPInstruments' flow meters are calibrated on a state-of-the-art calibration facility. Our calibration equipment is maintained under our ISO 9001 Quality Management System and is traceable to National Standards.

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For more information, contact:
VPInstruments
Joyce van Eijk -
joyce.van.eijk@vpinstruments.com
Buitenwatersloot 335, 2614 GS
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A new, more compact Flender conical bolt connection for the plate packs enable quick and easy installation of the N-Arpex couplings, especially in high torque ranges. This new addition enhances the power density of the N-Arpex series. The revised component first appeared in 2017 with the ARN-6 type. Its compact design and enhanced bore capacities already ensured an optimal ratio between torque and use of materials. The N-Arpex thus focusses even more sharply on the price-performance ratio.

With the two new N-Arpex couplings, Flender has introduced a modular system which increases the number of available types as well as simultaneously reducing the number of components required. The three standard series of the predecessor Arpex merge into one N-Arpex series. This standardization simplifies storage, making the couplings more readily available and reducing spare parts complexity for the customer.

The new series of couplings has also been designed for use in potentially explosive environments as defined in directive 2014/34/EU and fulfil the requirements of API610/ ISO13709 and API671/ISO10441. N-Arpex all-steel couplings are designed as standard for use at very low temperatures down to -50 degrees Celsius. With these all-steel couplings, transmission of torque between the machine shafts accompanied by displacement compensation is backlash-free, torsionally rigid and flexible. This enables them to simultaneously compensate for axial, angular and radial offset. The N-Arpex coupling plate packs are made of stainless spring steel, are not subject to wear and are therefore maintenance-free.

Contact for journalists
Tobias van der Linde
Phone: +49 174 2415434;
E-mail: tobias.vanderlinde@flender.com

Flender GmbH, a Siemens Company, headquartered in Bocholt, Germany, is a leading global supplier for mechanical drive systems and has the reputation for highest performance, innovation, quality, and reliability of mechanical components for more than 115 years. Flender offers a broad variety of gear units and couplings and associated services, with a focus on key industries such as wind power, cement, mining, oil & gas, power generation, water and wastewater, marine, conveyor and crane technology. Flender products and services combine the latest technology with high quality and have been reliably providing the optimal transmission of power for decades. On October 1, 2018, Flender had around 6,000 employees globally. Further information is available on the Internet at www.flender.com.

This press release and a press picture is available at **www.flender.com/press.**

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FRESH BREEZE FOR MEXICAN POWER PLANT

New fans according to old plans

Siegen, Germany

In October 2018, four new industrial fans were installed in a power plant in northeastern Mexico, replacing the existing over 40 years old systems. In spite of numerous refurbishments, the old fans from Rothemuehle had become inefficient and maintenance-intensive in the course of time. On this account the operator had decided to replace the 1975 installed machines completely. By switching to two state-of-the-art fresh air fans and two new induced draft fans as well as simultaneous implementation of the inlet vane control units from the old Rothemuehle concept to the low-maintenance and more simple POLLRICH design, higher plant efficiency was achieved with greatly reduced energy consumption.

This order is exceptional in many ways. First of all, the contractor is remarkable, as POLLRICH with locations in Siegen and Moenchengladbach is the company in which Rothemuehle's know-how as well as the service and spare parts business have meanwhile come to fruition. With his inquiry the client therefore deliberately turned to the expertise successors from the past. The operator also provided another special feature concerning the design and model of the four new fans. As the basis for the installation of new systems – including slide bearings, oil supply systems, modern silencers and propulsion engines, two inlet vane control units and actuators – the original drawings of the machines from the 1970´s were to be used. Therefore, construction engineers, normally working on a very high technical level, had to be extremely flexible and to do a lot of fundamental work to get the job done.

Due to the rather tight schedule for delivery and installation, the POLLRICH team had to deal with the problem of rethinking proven work processes in order to achieve the shortest possible delivery time. The static parts of the delivery – such as engine and bearing blocks, housings, suction boxes, foundation anchors and internals – were taken over by the customer at the destination port on-time. All other components such as impellers with shafts, plain bearings, oil systems, swirl regulators and actuators were to be sent by air freight to Central America one month later. The intensive communication between POLLRICH and its suppliers, forwarding agents and the customer reduced this period considerably. Actually only one impeller had to be transported by plane to Mexico, which meant savings in the six-figure range for the customer. POLLRICH won another satisfied customer due to energy savings, significant reduction in planned transport costs and the increased efficiency of the state-of-the-art fans.

The total delivery included about 90 tons of material in 69 packages. This meant distribution to several sea containers and boxes on flats, with each one of the four shafts delivered weighing almost eight tons. In order to transport as many packages as possible in one ship's cargo, some external operations such as annealing, sandblasting, MT testing and turning were taken over by the customer’s personnel in Mexico at his own request. Supervision was carried out on site by specialists from POLLRICH so that professional assembly and commissioning could be ensured at all time.

This exceptional order and the customer’s confidence confirm POLLRICH's expertise in manufacturing heavy duty industrial fans and international project management, demonstrating that flexibility and creativity remain indispensable even in the age of Industry 4.0 and in the context of global competition.

For more information, please visit **www.pollrich.com.**

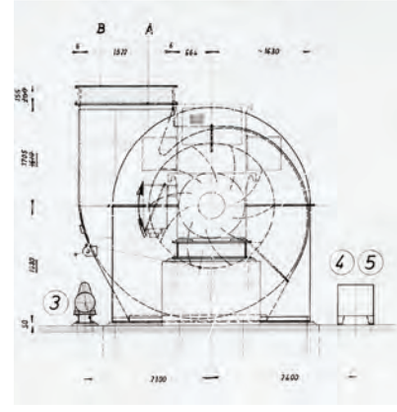
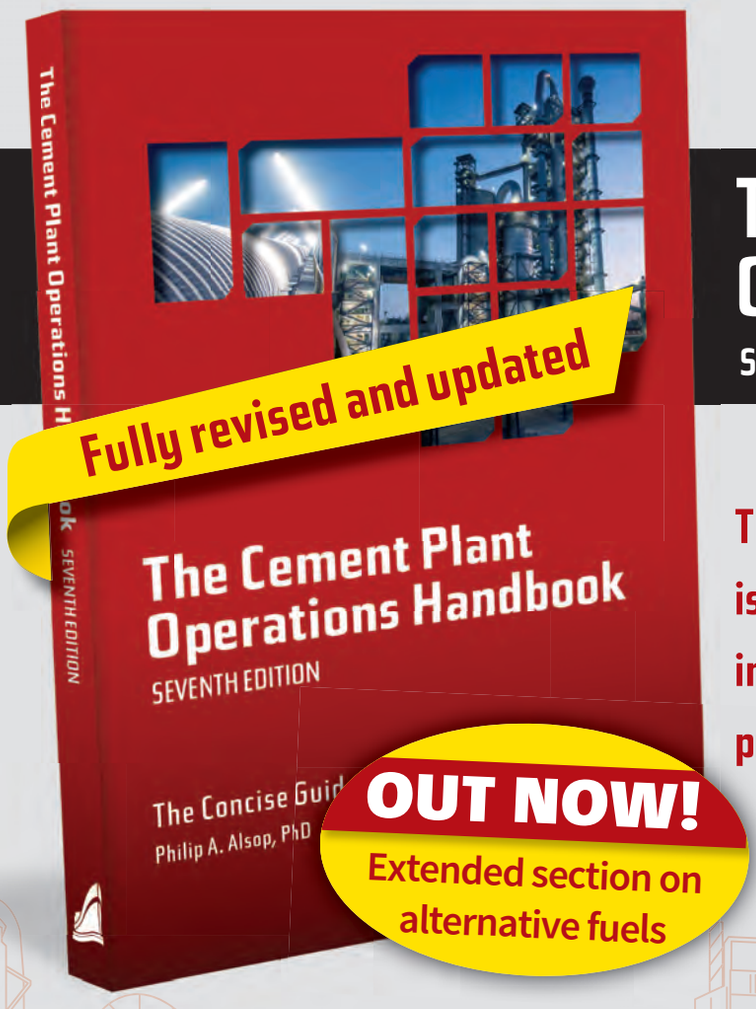


Fig. 1: The basis for the construction of the new fans were the original drawings from the year 1975.

Fig. 2: One of the four shafts delivered weighs almost eight tons.

Fig. 3: POLLRICH inlet vane control units featuring low-maintenance design.



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- Scalable from small process modules up to the largest process plants in the world

Siemens sets new standards in process automation and is launching an innovative web-based process control system for all industries at the Hannover Messe. Simatic PCS neo is a brand-new system software, which offers companies in the process industry unique opportunities in the age of digitalization. Main features include global web-based collaboration in engineering and operation and intuitive handling representing all relevant information in a single workbench.

Users benefit from an intuitive graphical user interface (GUI), where every application can be reached with just a few clicks. The workbench of Simatic PCS neo makes it easy to change at any time between Engineering and Monitoring&Control view. The seamless object-oriented data model increases efficiency and quality over the entire plant lifecycle.

Simatic PCS neo sets new standards in global collaboration for all project stakeholders. All information can be accessed at any time and from any location easy and directly using a secure Internet connection. Web-based parallel working for any number of users does not require any local software installation. This basis is created by a clear rights and role administration. Consistent information is ensured at any time through the object-oriented data management as well as a clear session concept.

Simatic PCS neo impresses with an open and flexible architecture, in which modular engineering with support of Module Type Packages (support of the open MTP standard) is already integrated. Maximum scalability enables the use of control technology from small process modules up to the largest plants in the world. This is made possible through the maximum reusability of engineering codes for the easy scale-up and adaptation to different plant sizes.

Simatic PCS neo will meet the requirements of the standard IEC 62443. It sustainably implements the well-known multi-layer "Defense-in-depth" security concept. The system also consistently fulfills the specifications defined in the Charter of Trust.

New Simatic PCS neo system software uses the recently innovated hardware portfolio and application architecture of the powerful, comprehensive process control system Simatic PCS 7 version 9.0. In this way, Siemens can provide its customers with investment and know-how protection combined with the advantages of the new system.

SIEMENS

Siemens sets new standards in process automation and is launching an innovative web-based process control system for all industries at the Hannover Messe.

Simatic PCS neo is a brand-new system software, which offers companies in the process industry unique opportunities in the age of digitalization.

For further information on Simatic PCS neo, please see
www.siemens.com/simatic-pcs-neo

Siemens Digital Industries (DI) is an innovation leader in automation and digitalization. Closely collaborating with partners and customers, DI drives the digital transformation in the process and discrete industries. With its Digital Enterprise portfolio, DI provides companies of all sizes with an end-to-end set of products, solutions and services to integrate and digitalize the entire value chain. Optimized for the specific needs of each industry, DI's unique portfolio supports customers to achieve greater productivity and flexibility. DI is constantly adding innovations to its portfolio to integrate cutting-edge future technologies. Siemens Digital Industries has its global headquarters in Nuremberg, Germany, and has around 75,000 employees internationally.

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 170 years. The company is active around the globe, focusing on the areas of power generation and distribution, intelligent infrastructure for buildings and distributed energy systems, and automation and digitalization in the process and manufacturing industries. Through the separately managed company Siemens Mobility, a leading supplier of smart mobility solutions for rail and road transport, Siemens is shaping the world market for passenger and freight services. Due to its majority stakes in the publicly listed companies Siemens Healthineers AG and Siemens Gamesa Renewable Energy, Siemens is also a world-leading supplier of medical technology and digital healthcare services as well as environmentally friendly solutions for onshore and offshore wind power generation. In fiscal 2018, which ended on September 30, 2018, Siemens generated revenue of €83.0 billion and net income of €6.1 billion. At the end of September 2018, the company had around 379,000 employees worldwide. Further information is available on the Internet at www.siemens.com.

SIEMENS

Optical reader optimizes production processes and supply chains

- **Higher reading rates and reading reliability**
- **Additional Gigabit Ethernet interface for diagnostic and service purposes**
- **Easy connection to cloud applications via Simatic S7-1500 and CP 1545-1**
- **Powerful, flexible accessories and easy handling**

Siemens has introduced the Simatic MV550, the second optical reader in its new high-end Simatic MV500 series. The device is characterized by higher computing power, which allows a fast reading process and increased reading reliability – even under difficult conditions. It has an additional Gigabit Ethernet interface for diagnostic and service purposes. The Simatic MV500 can be easily and securely connected to cloud applications. This enables users to optimize production processes and supply chains, and to increase the efficiency and quality of production, logistics and asset management.

The additional Gigabit Ethernet interface transfers data at a rate of up to 1 Gbps. Images that are recorded in applications at a very high reading rate can be transferred to and archived on an IT server. This is the only way of ensuring faultless error diagnosis in high-speed production plants. At the same time, it increases plant availability by reducing downtimes. If the interface is not used for diagnostics, a PC can be directly connected to perform service and maintenance work via the web browser. The additional Gigabit Ethernet interface also facilitates network separation. This prevents the two data flows (from the camera to the controller and from the camera to the server) from influencing each other, which gives interference-free communication.

With the introduction of the Simatic MV550, Siemens has also significantly extended the accessory portfolio for the entire Simatic MV500 series. For example, additional e-focus lenses are available with different focal distances and ring lights in additional light colors and designs. This significantly expands the range of possible applications. The e-focus lenses make the "electronic focusing" function available to the optical readers. The flexibly controllable built-in ring lights allow readers to automatically adapt to product and ambient conditions, for example different incidence directions. The extensive range of accessories allows the devices to be automatically adapted to changing production conditions. This reduces incorrect parameterization during commissioning and contributes toward very high reading reliability and consequently to reduced downtimes.

Device configuration by web-based management and integration into the TIA Portal make an easy job of configuration. The one-button configuration for network and reading parameters makes the commissioning of Simatic MV500 devices particularly simple. The readers' high degree of protection (IP67) and their rugged construction make them especially suitable for use in harsh industrial environments. The modular setup of the products allows flexible adaptation to a very wide range of application requirements.

Like the Simatic MV540, the first device in the Simatic MV500 series, the Simatic MV550 can be securely and simply connected via the Simatic S7-1500 controller and the CP 1545-1 communications processor to cloud applications such as MindSphere, the open, cloud-based IoT operating system. Operating data, such as

SIEMENS

product identification and quality data with position and time, can be transferred to the cloud and recorded statistically to optimize production processes and supply chains.

Siemens has introduced the Simatic MV550, the second optical reader in its new high-end Simatic MV500 series. The device is characterized by higher computing power, which allows a fast reading process and increased reading reliability – even under difficult conditions.

For further information, refer to **www.siemens.com/optical-identification**

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Blog: https://blogs.siemens.com/mediaservice-industries-en

SIEMENS

Simit V10.1 – More openness for even more integrated simulation

□ **Re-use of domain-specific simulation models**

□ **Standardized interfaces for more system openness**

□ **Real-time simulation of systems and machinery**

Siemens has extended its Simit simulation platform for virtual commissioning and operator training to include numerous new functions. The additions in Version 10.1 improve the simulation of automation applications through the re-use of various domain-specific simulation models over the entire lifecycle of manufacturing and process systems. Improved performance, openness and flexibility make the solution even easier to use, supporting the user in the creation of a comprehensive and integrated simulation.

Not only can automation applications be checked in detail through virtual commissioning with Simit; at the same time Simit can provide the system operator or production manager with a realistic training environment even before actual commissioning takes place. Various operations can be simulated dynamically, and can also be stored for subsequent analysis.

Due to the use of standardized interfaces, the system openness provided by Simit ensures that information can be exchanged or integrated even more easily, comprehensively and effectively. Data exchange is standardized on the basis of the OPC Unified Architecture (OPC UA) communication protocol. In addition, a dedicated interface enables the integration of the Advanced Process Modelling Platform gPROMS developed by Process Systems Enterprise (PSE). As a result of this increased openness, in Version 10.1 models from other simulation tools can also be integrated in the form of Functional Mock-up Units (FMUs), via the Functional Mock-up Interface (FMI). The specific optimization of the technical process, including during system operation, is supported by the integration of the gPROMS platform from PSE with Simatic PCS 7. The range of operational uses for the models includes monitoring, soft-sensing, predictive controller and optimization applications.

For a fast-reacting simulation, Simit Version 10.1 offers the option of distributing simulations over various powerful processors. This means that complete machines can be validated virtually in real time, with mechatronic models and behavioral models for actuators and sensors being simulated as well as PLC applications being synchronized, emulated and finally tested. The Simit Unit now also supports the failsafe function for i-Devices on Profinet for time-critical and safety-related areas. The realistic simulation ensures commissioning can be carried out more quickly and with fewer risks.

Version 10.1 of the Simit simulation software supports both the established Simatic PCS 7 process control system and the new web-based Simatic PCS neo control system from Siemens. The latest functions of the Simatic ET200SP HA automation peripherals and the Simatic Compact Field Unit (CFU) can also be simulated. With Simit Version V10.1, Siemens also offers a new licensing concept for the costeffective emulation of the Simatic S7-300 controller.

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Siemens has extended its Simit simulation platform for virtual commissioning and operator training to include numerous new functions. The additions in Version 10.1 improve the simulation of automation applications through the re-use of various domain-specific simulation models over the entire lifecycle of manufacturing and process systems.

For further information on Simit, **please see** www.siemens.com/simit
For further information on PSE, **please see** www.siemens.com/pse
For further information on virtual commissioning, **please see** www.siemens.com/virtual-commissioning

DIARY DATES

CEMENT

INTERCEM Shipping Dubai
Date : 16 - 17 September 2019
Venue: Habtoor Grand Resort, Dubai, UAE
Email: sarika.sareen@intercem.com
For more information please visit: http://
www.intercem.com/ShippingDubai

6th Alternative Fuel Symposium
Date : 23 - 25 September 2019
Venue: Wyndham Duisburger Hof Hotel, Duisburg, Germany
For more information, please contact:
Mr. Dirk Lechtenberg, Managing Director
Tel: +49 (0) 20334 65 160
Fax: +49 (0) 20334 65 1650
Email: workshop@lechtenberg-partner.de
https://www.lechtenberg-partner.de

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

Cemtech Europe 2019
Date: 30 September – 03 October 2019
Venue: InterContinental Hotel, Berlin, Germany
Tel.: +44 1306 740 363
Fax: +44 1306 740 660
Email: papers: info@cemtech.com – Exhibition: e.compos@cemnet.com
www.Cemtech.com/Europe2019

15th TÇMB International Technical Seminar & Exhibition
Date : 08 - 11 October 2019
Venue: Kaya Plazzo Golf Resort, Belek, Antalya, Turkey
For more information, please contact Turkish Cement Manufactures' Association
Email: tekniks@tcma.org.tr

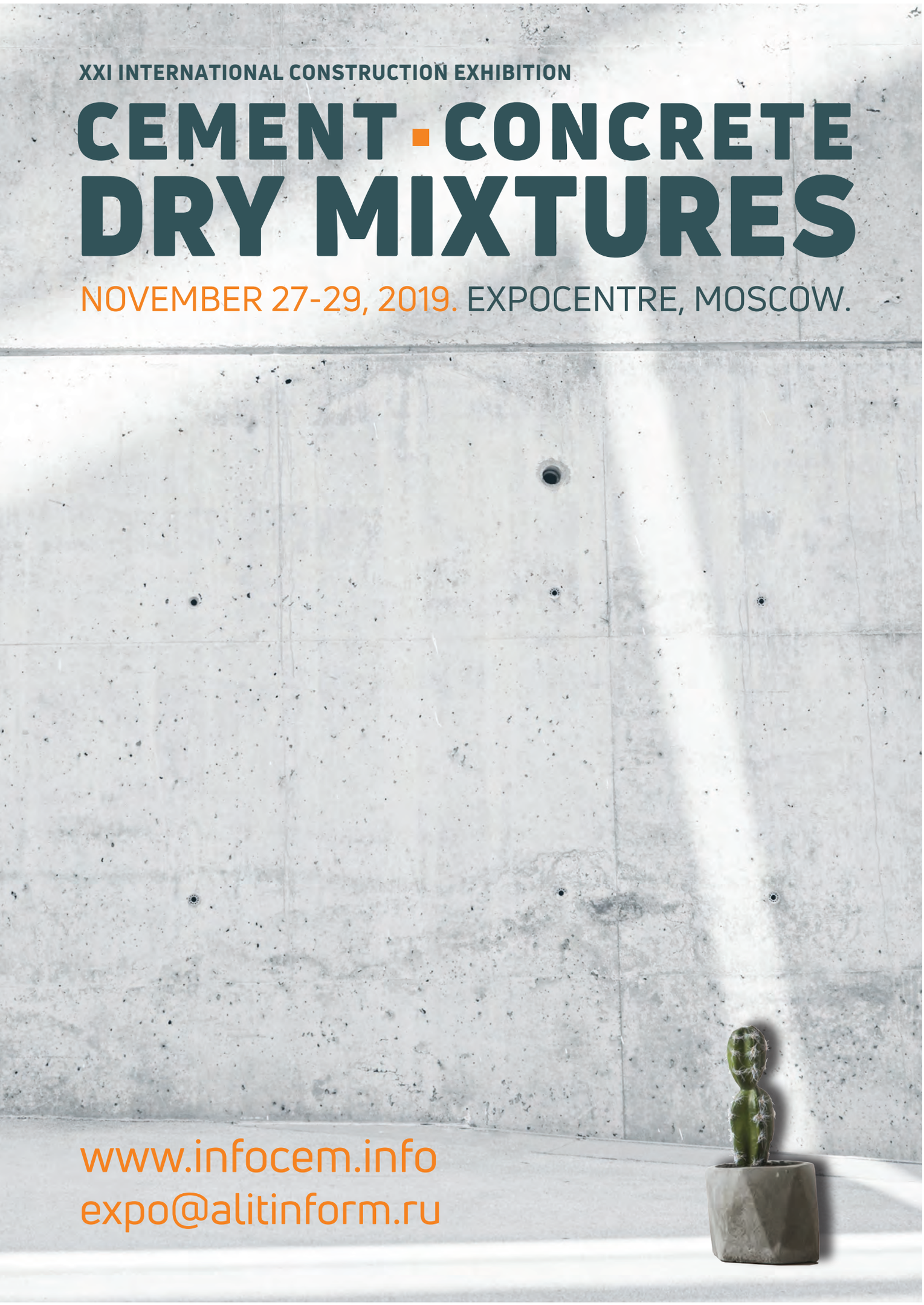
3rd International Conference on Calcined Clays for Sustainable Concrete
Date : 15 - 17 October 2019
Venue: New Delhi, India
For more information, please visit: http://lc3.cimglobal.net/

Cement. Concrete. Dry mixtures
Date : 27 - 29 November 2019
Venue: Expocentre, Moscow, Russia
Email: expo@alitinform.ru
For more information, please visit:
www.infocem.info

XXI INTERNATIONAL CONSTRUCTION EXHIBITION

CEMENT · CONCRETE DRY MIXTURES

NOVEMBER 27-29, 2019. EXPOCENTRE, MOSCOW.



www.infocem.info
expo@alitinform.ru

26th International Conference CONCRETE DAYS 2019
Organizer: Czech Concrete Society
Date : 20 - 21 November 2019
Venue: KC ALDIS, Hradec Kralove, The Czech Republic
For more information, please visit: http://
www.cbsbeton.eu/en/seminars/odborne-akce/26th-concrete-days-2019-call-for-papers
Email: Conference Secretariat: cbsbeton@cbsbeton.eu

16th NCB International Seminar on Cement, Concrete and Building Materials
Date : 03 - 06 December 2019
Venue: New Delhi, India
For more information, please visit: http://
www.ncbindia.com

4th Global CemBoards Conference & Exhibition on cement-based boards 2020
Date : 21 - 22 January 2020
Venue: Munich, Germany
For more information, please contact:
Mr. Robert McCaffrey, Global Boards Conference convenor
Tel: +44 (0) 1372 743837
Fax: +44 (0) 1372 743838
Email: info@propubs.com

14th Global CemFuels 2020
Date : 19 - 20 February 2020
Venue: Cyprus
For more information, please contact:
Mr. Robert McCaffrey, Global Boards Conference convenor
Tel: +44 (0) 1372 743837
Fax: +44 (0) 1372 743838
Email: info@propubs.com

2nd Global GypSupply 2020
Date : 18 - 19 March 2020
Venue: Brussels, Belgium
For more information, please contact:
Mr. Robert McCaffrey, Global Boards Conference convenor
Tel: +44 (0) 1372 743837
Fax: +44 (0) 1372 743838
Email: info@propubs.com

15th Global Slag 2020
Date : 06 - 07 May 2020
Venue: Vienna, Austria
For more information, please contact:
Mr. Robert McCaffrey, Global Boards Conference convenor
Tel: +44 (0) 1372 743837
Fax: +44 (0) 1372 743838
Email: info@propubs.com

3rd Global CemProcess 2020
Date : TBA 2020
Venue: Germany
For more information, please contact:
Mr. Robert McCaffrey, Global Boards Conference convenor
Tel: +44 (0) 1372 743837
Fax: +44 (0) 1372 743838
Email: info@propubs.com

ULUSLARARASI INTERNATIONAL
TEKNİK TECHNICAL
SEMİNER SEMINAR
8-11 EKİM / OCTOBER ANTALYA / TURKEY, 2019
TÇMB 2019

15. TÇMB International Technical Seminar & Exhibition
8-11 October 2019
Kaya Palazzo Golf Resort, Belek, Antalya/ Turkey

15. TÇMB International Technical Seminar & Exhibition

15th TÇMB International Technical Seminar and Exhibition will be held in Kaya Palazzo Golf Resort Belek, Antalya, Turkey between 8th and 11th October, 2019.

The program is open for both national and international attendees from cement industry, service and technology providers. The event is important for the manufacturers to follow up the recent developments and creates an opportunity for the participants to consider the new investments while having a chance to benchmark their business for every two years.

14th TÇMB International Technical Seminar and Exhibition held in 2017 was found very successfull by global cement industry with the participation of more than 576 participants, also 131 foreign and national companies from cement and related industries.

Main Theme:

Towards Circular Green Economy and Digital Transformation

Sub-Themes:

- Energy Recovery from Urban Solid Waste
- Industry 4.0
- Innovative Production Technologies
- Industrial Symbiosis
- Zero Waste

Official Airline

TURKISH AIRLINES
A STAR ALLIANCE MEMBER

Turkish Airlines is the "Official Airline" of 15th TÇMB International Technical Seminar & Exhibition and special discounts will be offered on certain booking classes.

In order to reach the flight code for the event, please contact with tekniks@tcma.org.tr

ALL THE BOOTHS ARE SOLD OUT, THANK YOU FOR THE INTEREST.
YOU CAN STILL BE THE PART OF THIS EVENT

For Registration: tekniks@tcma.org.tr

TURKISH CEMENT MANUFACTURERS' ASSOCIATION
Tepe Prime Blocks A Floor:18-19 Eskişehir Devlet Yolu 9. km No: 266 Ankara/ Turkey

DIARY DATES

TRAINING

VDZ Process Operator Training
Date : 2 - 20 September 2019
Venue: Training centre near Düsseldorf, Germany
For more information please visit:
www.vdz-online.de/en/training

VDZ Seminar Wear of Refractory Materials
Date : 23 September 2019
Venue: Göttingen, Germany
For more information please visit:
www.vdz-online.de/en/training

VDZ Seminar Installation of Refractory Materials
Date : 24 - 25 September 2019
Venue: Göttingen, Germany
For more information please visit:
www.vdz-online.de/en/training

VDZ Crash Course for Young Engineers
Date : 2 -6 December 2019
Venue: VDZ's premises in Düsseldorf, Germany
For more information please visit:
www.vdz-online.de/en/training

Global Cement Events 2020

For details, please visit each event's web site.

Events organised in cooperation with the AUCBM.

Member companies of the AUCBM gain additional delegate registration discounts on these events. See registration pages for details.

4th global cemboards

21-22 January 2020,
near Munich, Germany
cem-boards.com

The 4th Global CemBoards Conference will look at global market trends in cement-based boards, 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. ***If you produce or use cement-based boards or make equipment to make boards, then you should attend!***

14th global cemfuels

19-20 February 2020,
Cyprus
cemfuels.com

The Global CemFuels Conference and Exhibition will visit Cyprus for the first time in 2020 and will 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 and includes a field trip to Vassiliko Cement. ***If you produce or use fuels and alternative fuels in the cement and lime industry, then you should attend!***

2nd global gypsupply

18-19 March 2020,
Brussels, Belgium
gyp-supply.com

The second Global GypSupply Conference and Exhibition will look at the different supply sources of gypsum worldwide, including natural gypsum, synthetic gypsum and recycled gypsum, will examine transport and shipping options, and will match up miners, syngyp producers and recyclers with buyers and users of gypsum including cement producers, wallboard and plaster manufacturers, and agricultural users. ***If you use gypsum in your process, then you should attend!***

15th global slag

6-7 May 2020,
Vienna, Austria
globalslag.com

The 15th Global Slag Conference and Exhibition will take place in Vienna, convenient for all of Europe's iron-, steel- and slag-producing areas. 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 or needs slag, then you should attend!***

3rd global cemprocess

Dates in 2020 TBC,
Germany
cemprocess.com

The third Global CemProcess Conference and Exhibition on process optimisation, de-bottlenecking, production maximisation and troubleshooting in the cement industry will take place in Germany in 2020, with top-level technical information and world-class networking with cement industry peers from around the world. ***If you would like to maximise cement production while decreasing costs, then you should attend!***

DIARY DATES

GENERAL

GEOVIA Connect - Mining Forum
Date : 03 - 04 July 2019
Venue: Kempinski Nile Hotel Garden City, Cairo, Egypt
For more information, please contact:
Yolande Forst
Email: Yolande.Forst@3ds.com

Administrative Mastery Seminar
Date : 08 - 12 July 2019
Venue: Capital Hotel, Sandton City, Johannesburg, South Africa
For more information, please contact:
Brenda Mweshi
Tel: +27 10 035 5016
C-WhatsApp: +27 67 274 6447
Email: brenda.mweshi@acaeglobal.com
registrations@acaeglobal.com
http//: www.acaeglobal.com

2nd Annual Industry 4.0
Date : 10 - 11 July 2019
Venue: Kuala Lumpur, Malaysia
Email: amyw@paytoattendthevent.com

Manufacturing Summit
Date : 10 - 11 July 2019
Venue: JW Marriott Hotel Kuala Lumpur, Malaysia
For more information, please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0067
Email: johnk@trueventus.com

OEM Summit
Date : 10 - 11 July 2019
Venue: Kuala Lumpur, Malaysia
For more information, please contact:
Trueventus
Mr. John Karras
Tel: +603 2775 0067
Email: johnk@trueventus.com

QA & Materials Testing Summit
Date : 10 - 11 July 2019
Venue: JW Marriott Hotel Kuala Lumpur, Malaysia
For more information, please contact:
Trueventus
Ms. Casey Lee
Tel: +603 2775 0067
Email: caseyl@trueventus.com

8th Annual Modular & Prefabrication Construction
Date : 24 - 25 July 2019
Venue: Hotel Fort Canning, Singapore
For more information, please contact:
Trueventus
Ms. Amy Wong
Tel: +603 2775 0067
Email: amyw@paytoattendthevent.com

BIM Summit
Date : 24 - 25 July 2019
Venue: Singapore
For more information, please contact:
Trueventus
Ms. Amy Wong
Tel: +603 2775 0067
Email: amyw@paytoattendthevent.com

Data Science Summit
Date : 24 - 25 July 2019
Venue: Singapore
For more information, please contact:
Trueventus
Ms. Amy Wong
Tel: +603 2775 0067
Email: amyw@paytoattendthevent.com

JORDANBUILD 2019
Date : 29 July - 01 August 2019
Venue: Amman, Jordan
Tel: +962 79 5926237
Email: muna.alkam@jordanbuild.net
www.jordanbuild.net

Lime 2019

ufi Member

国际石灰及深加工技术装备展览会

2019 International Lime and Deep Processing Technology Equipment Exhibition

>>> Time: Oct 26-28 2019

>>> Location: Handan International Conference and Exhibition Center Hebei Province ,China

Introduction about Lime Expo

In order to push the industry towards high-quality development, break down the barriers and promote the transformation and upgrading of the industrial structure, we look forward to your joining us to create new opportunities for global lime development.

Organizer

CCPIT Building Materials Sub-Council

China Lime Association

Handan Government

Hebei Council for the Promotion of Trade

Co-organizer

Beijing Building Materials Expo

Science&Technplogy Department Co.,Ltd

Handan Council for the Promotion of Trade

Lime 2019

2019 国际石灰及深加工技术装备展览会 International Lime and Deep Processing Technology Equipment Exhibition

Time: Oct 26-28 2019

Location: Handan International Conference and Exhibition Center Hebei Province ,China

CONTACT US
联系我们

CCPIT Building Materials Sub-Council
Contact: Ms Cassie Cheung
Tel: 010-88084602
M: 8610-13683000445
E-mail: zhanghanwen@ccpitbm.org
Web: www.limeexpo.com

GENERAL

Next Gen: Quality Assurance and Material Testing
Date : 28 - 29 August 2019
Venue: Bangkok, Thailand
Tel: +603-2775 0067
Email: stevej@strategictruconferences.com

RWM 2019
Date : 11 - 12 September 2019
Venue: Birmingham, UK
For more information, please visit: **www.rwmexhibition.com**

Sensor Tech
Date : 25 - 26 September 2019
Venue: Bangkok, Thailand
Tel: +603 27750067
Email: amyw@paytoattendthevent.com

European PVC Industry Summit
Date : 25 - 26 September 2019
Venue: London, United Kingdom
For more information, please contact:
Neha Desadla
Tel : +910 2048523143
Email: ndesadla@acieu.net

Digital Shutdown & Turnaround
Date : 25 - 26 September 2019
Venue: Bangkok, Thailand
For more information, please contact:
Mr. John Karras
Tel: +603 2775 0067
Email: johnk@trueventus.com

Digital Predictive Maintenance
Date : 25 - 26 September 2019
Venue: The Berkeley Hotel Pratunam, Bangkok, Thailand
For more information, please contact:
Mr. John Karras
Tel: +603 2775 0067
Email: johnk@trueventus.com

European Bulk Liquid Storage 2019
Date : 02 - 03 October 2019
Venue: Antwerp, Belgium
For more information, please contact:
Cheryl Williams
Tel: +44 203 141 0623
Email: cwilliams@acieu.net

VDZ Training Courses Overview
September - December 2019

Seminar Wear of Refractory Materials

23 September 2019

Goettingen, Germany; nearest airport Hannover (HAJ)

Topics:

- Thermal, chemical and mechanical causes of wear
- Visual inspection of refractory damage
- Influence of alternative fuels
- Kiln shell corrosion

Seminar Installation of Refractory Materials

24 – 25 September 2019

Goettingen, Germany; nearest airport Hannover (HAJ)

Topics:

- Installation methods in rotary kilns
- General rules for the installation in rotary kilns
- Special installations in rotary kilns
- Refractory lining in the static areas

Process Operator Training

2 – 20 September 2019

Training centre near Duesseldorf, Germany

Topics:

- Raw material extraction
- Material technology
- Raw material preparation
- Clinker production and burning technology
- Raw material and cement grinding
- Environment and emissions abatement
- Refractories
- Simulator training
- Cement plant visit

Crash Course for Young Engineers

2 – 6 December 2019

VDZ's premises in Duesseldorf, Germany

Topics:

- Raw material handling
- Clinker production
- Cement production
- Chemistry and mineralogy
- Concrete technology
- Environmental issues
- Product quality assurance
- Plant visit

For further information and booking please visit our website:
www.vdz-online.de/en/training
or feel free to contact us:
training@vdz-online.de, +49-211-45 78-402

vdz.

14th Carbon Dioxide Utilisation Summit
Date : 09 - 10 October 2019
Venue: Dusseldorf, Germany
For more information, please contact:
Mr. Rohan Baryah
Tel: +48 61 646 7022
Email: rbaryah@acieu.net
Supply Chain Congress
Date : 09 - 10 October 2019
Venue: Bangkok, Thailand
Tel: +6032775 0067
Email: amyw@paytoattendthevent.com

2019 International Lime and Deep Processing Technology Equipment Exhibition
Date : 26 - 28 October 2019
Venue: Handan International Conference and Exhibition Center, Hebei Province, China
For more information, please visit:
www.limeexpo.com/

ACI's European E-Fuels Conference
Date : 06 - 07 November 2019
Venue: Munich, Germany
For more information, please contact:
Marcin Janecki
Tel: +48 61 646 7047
Email: mjanecki@acieu.net

European Methanol Summit
Date : 13 - 14 November 2019
Venue: Düsseldorf, Germany
For more information, please contact:
ACI (Europe) – Active Communications International Ltd
Email : skanwar@acieu.net
http://www.wplgroup.com

16th Edition SteelFab 2019
Date : 13 - 16 January 2020
Venue: Expo Center Sharjah, UAE
E-mail: info@expo-centre.ae
For more information please visit:
www.steelfabme.com

Solids 2020
Date : 01 - 02 April 2020
Venue: Dortmund, Germany
For more information, please visit:
www.easyfairs.com

Hillhead 2020
Date : 23 - 25 June 2020
Venue: Hillhead Quarry, Buxton, Derbyshire, UK
For more information, please visit:
www.hillhead.com

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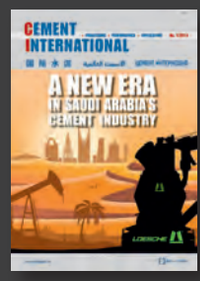

www.cementinternational.com

عالم الإسمنت ومواد البناء

تصدرعن : الاتحاد العربي للإسمنت ومواد البناء العدد 76 يونيو / حزيران 2019

المؤتمر والمعرض العربي الدولي الرابع والعشرون لصناعة الإسمنت

٢٤ - ٢٦ نوفمبر / تشرين الثاني ٢٠١٩

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جمهورية مصر العربية

www.aucbm.net
aicce24@aucbm.email


الاتحاد العربي للاسمنت ومواد البناء
هيئة عربية دولية

عالم الإسمنت ومواد البناء

الملف العربي | أخبار عالمية | موضوعات تقنية | منتجات جديدة | مؤتمرات ومعارض

رئيس التحرير الأمين العام / المهندس أحمد محمود الروسان
مدير التحرير سها منير كنعان

المساهمات

- ترحب هيئة تحرير المجلة بمساهمة السادة المهتمين والمتخصصين بهدف اثراء المادة التحريرية .
- لا تلتزم المجلة برد الموضوعات إلى أصحابها .
- الآراء الموجودة بالمجلة لاتعبر بالضرورة عن رأي الاتحاد أو المجلة وإنما عن الرأي الخاص بكاتبها ولا يتحمل الاتحاد أية مسؤولية قانونية تجاه ذلك .

الاشتراكات السنوية

الشركات والمؤسسات	150 دولار أمريكي
الجامعات ومراكز البحوث	65 دولار أمريكي

Email: aucbm@scs-net.org / aucbm1977@gmail.com

Website : www.aucbm.net

المحتويات

المراسلات

توجه كافة المراسلات بإسم رئيس التحرير / الاتحاد العربي للاسمنت ومواد البناء
الجمهورية العربية السورية - دمشق - ص . ب 9015
هاتف : 98 85 611 - 12 54 611 (11 963 +)
فاكس : 31 17 612 (11 963 +)
Email: aucbm@scs-net.org / aucbm1977@gmail.com
Website : www.aucbm.net

مجلة عالم الإسمنت ومواد البناء

جدول موضوعات المجلة لعام 2019

العدد	الموضوعات	المناسبات
* سبتمبر/أيلول 2019	* أنواع جديدة من الإسمنت * الإسمنت ذو النسبة المنخفضة من الكربون * الإسمنت الأبيض * الخرسانة * التحليل بتألق الأشعة السينية (XRF) وبحيود الأشعة السينية (XRD) * كيمياء الإسمنت * مضافات الإسمنت * انسداد الصوامع وتنظيفها * النقاط التي تؤخذ بعين الاعتبار عند تصميم الصوامع * منظومات التحريك * تكنولوجيا الوزن * تقنيات وأنظمة الاعتيان (أخذ العينات)	المؤتمر والمعرض العربي الدولي الرابع والعشرون لصناعة الإسمنت: القاهرة / جمهورية مصر العربية 26-24 نوفمبر / تشرين الثاني 2019
ديسمبر/كانون الأول 2019	* أنظمة التشحيم * الصيانة في مصانع الإسمنت - الصيانة المتمركزة حول الموثوقية - منظومات الصيانة المحوسبة * تقنيات الإصلاح واللحام * إدارة قطع الغيار * الطواحين العمودية * الكسارات * المبردات * تكنولوجيا الحراقات * الحراريات وفحص الحراريات	

- سيتم توزيع عدد سبتمبر / أيلول إلى المشاركين في المؤتمر

آخر موعد لاستلام المقالات أو النصوص الصحفية أو الإعلانات لأعداد عام 2019 هو على النحو التالي :

1. عدد سبتمبر / أيلول (عدد خاص) : **30 أغسطس / آب**
2. عدد ديسمبر / كانون الأول : **6 ديسمبر / كانون أول**

الإعلانات

(بالدولار الأمريكي)

	الإعلان في عدد واحد	الإعلان في عددين	الإعلان في ثلاثة أعداد	الإعلان في أربعة أعداد
غلاف خارجي ملون (يمين أو يسار) A4	**1,200**	*	*	*
غلاف داخلي ملون (يمين أو يسار) A4	**900**	*	*	*
صفحة داخلية ملونة A4	**700**	**900**	**1,200**	**1,300**
نصف صفحة داخلية ملونة A4	**400**	**500**	**600**	**700**
ربع صفحة داخلية ملونة A4	**250**	**300**	**350**	**400**
صفحة أسود وأبيض	**250**	**300**	**350**	**400**

أبعاد الإعلان : A4 مع مسافة على الأطراف الأربعة
أبعاد الإعلان على الغلاف الخارجي : ارتفاع 20 سم وعرض 14سم
الدقة : 300dpi
نوع الملف : PSD أو EPS أو PDF

إعلان على موقع الاتحاد WWW.AUCBM.NET

- عرض 200 بيكسل وارتفاع 75 بيكسل ، بقيمة 150 دولاراً أمريكياً في الشهر الواحد
- يرجى إرسال الصور مع اللينك المطلوب ربطه بها بدقة 300 dpi (dot per inch)

أخبار عربية

أخبار عربية

أخبار عربية

الإمارات العربية المتحدة

شركة بايونير للاسمنت تتحول إلى استخدام الوقود من النفايات من أجل الإنتاج

قامت شركة بايونير لصناعة الإسمنت برأس الخيمة بتوقيع اتفاقية مع (RDF) الإماراتية التي تهدف إلى استخدام الوقود المستخرج من النفايات المنزلية لإنتاج الإسمنت .

وفي تصريح لها باعتبارها من الشركات التابعة لأكبر الشركات المصنعة للإسمنت في سلطنة عُمان وهي شركة ريسوت للإسمنت أوضحت بأنها ستصبح من أول شركات الإسمنت في المنطقة التي تستخدم وقود النفايات .

المصدر: www.eyeofriyadh.com

الجمهورية الجزائرية

مجمع جيكا: تصدير 15 ألف طن من الكلنكر انطلاقاً من ميناء الغزوات

قام المجمع الصناعي لإسمنت الجزائر (جيكا) عبر فرعه شركة توزيع مواد البناء (سوديسماك) بعملية تصدير حوالي 15 ألف طن من الكلنكر انطلاقاً من ميناء الغزوات (تلمسان) إلى جمهورية ساحل العاج ، علماً بأن السوق المستهدفة للتصدير حالياً هي سوق غرب أفريقيا .

الجزائر تصدر الكلنكر

تم الإعلان عن تصدير 38 ألف طن من الكلنكر من الجزائر إلى جمهورية ساحل العاج ، حيث ذكرت إدارة مصنع سيلاس في بسكرة أن الشحنة انطلقت من ميناء عنابة ، وتشكل رابع شحنة من الكلنكر توجه للتصدير نحو غرب إفريقيا ، بمجموع 140 ألف طن ، متوقعة تصدير مليون طن من الكلنكر خلال العام الحالي 2019 .

وقد نفذت الشركة حوالي 15 عملية تصدير عبر موانئ مختلفة في الجزائر منذ مايو / أيار 2018 حيث تم تصدير أكثر من 500 ألف طن من الكلنكر إلى أوروبا .

وأضاف مسؤولو شركة سيلاس أنها تعتمد في مخططها للتصدير على الدعم التجاري واللوجستي الذي توفره شركة "لافارج هولتسيم تريدينغ" المتخصصة في التجارة الدولية . وتستأثر هذه بنسبة 50 % من تجارة الكلنكر والإسمنت في حوض البحر الأبيض المتوسط وغرب أفريقيا . كما تستهدف شركة سيلاس الجزائرية التوصل إلى تصدير مليوني طن من الكلنكر والإسمنت خلال العام المقبل 2020 وتجاوز 10 ملايين طن في العام التالي 2021 .

المصدر: www.mena-monitor.org

لافارج هولسيم الجزائر تصدر 45 ألف طن من الإسمنت والكلنكر نحو غرب أفريقيا

نفذت شركة لافارج هولسيم الجزائر عملية تصدير شحنتين من ميناء وهران ، أولاها شحنة بوزن 15 طن من الإسمنت الرمادي بكميات كبيرة من مصنع لافارج للإسمنت بعقاز إلى غرب أفريقيا والثانية قدرها 5,000 طن من الكلنكر الأبيض لأول مرة في الجزائر و25 ألف طن من الكلنكر الرمادي من مصنع لافارج للإسمنت بعقاز إلى الكاميرون .

وتواصل شركة لافارج هولسيم الجزائر استراتيجيتها التصديرية لتأمين الفرص التجارية للإنتاج المحلي الكبير، بهدف تصدير مليوني طن من الإسمنت والكلنكر بحلول عام 2021 .

المصدر: www.akhbardzair.com

ارتفاع إنتاج مجمع إسمنت تبسة بمقدار67 ألف طن في 5 سنوات

بلغت الطاقة الإنتاجية لمصنع الإسمنت بتبسة نحو 500 ألف طن من الإسمنت نصف المصنّع ، من إجمالي20 مليون طن سنوياً من الإنتاج الوطني ، حيث ارتفع الإنتاج خلال السنوات الخمس الأخيرة من 528 ألف طن سنوياً خلال سنة 2013 إلى 595 ألف طن سنوياً خلال عام 2018 .

وقد عرف الإنتاج خلال هذه الفترة تذبذباً بسبب بعض الأعطاب التقنية والميكانيكية ، منها الخلل التقني الذي تعرض له الفرن

العملاق بوحدة الإنتاج ببلدية الماء الأبيض في سنة 2016 والذي تفوق درجة حرارته 1400 درجة مئوية .

ودخلت المؤسسة حيز الخدمة والإنتاج الفعلي سنة 1995 وتمتلك مقالع متعددة لمختلف المواد الأولية كمقلع الرمل والكلس والطين المتواجدة بالقرب من مصنع إسمنت الماء الأبيض بتبسة والتي تستغلها في إنتاج الإسمنت ، كما أنها تزود باقي المصانع بمادة الرمل ، كمصنع حجار السود بسكيكدة ومصنع عين التوتة بولاية باتنة وبصدد تموين مصنع سيقوس بولاية أم البواقي .

المصدر: www.djazairess.com

المملكة العربية السعودية

الإسمنت العربية: توسعة محطة رابغ تتأخر إلى الربع الثالث 2021

قالت شركة الإسمنت العربية بالسعودية إن مشروع توسعة محطة تحويل رابغ للجهد الفائق سوف يتأخر اكتماله إلى الربع الثالث 2021 . وبينت الشركة أنها تلقت خطاباً من شركة نقل الكهرباء يفيد أن التاريخ المتوقع لاكتمال التوسعة المطلوبة لتنفيذ مشروع توسعة محطة تحويل رابغ للجهد الفائق جهد 380 / 110 ك.ف . (مصدر التغذية) سيكون بحلول الربع الثالث من عام 2021 .

وأوضحت الشركة أن سبب تأخر اكتمال المشروع يعود إلى تأخر الجهة المسئولة عن تنفيذ مشروعها .

المصدر: www.namaazone.com

إسمنت الجوف توقع اتفاقية مع ريجا لتحويل خط إنتاج ثانٍ للاسمنت الأبيض

أعلنت شركة أسمنت الجوف عن توقيع مذكرة تفاهم غير ملزمة مع شركة ريجا لتحويل خط الإنتاج الثاني لإنتاج الإسمنت الأبيض .

وأفادت الشركة بأن مدة سريان المذكرة تبدأ من تاريخ التوقيع عليها ولمدة ستة أشهر . وتجدر الاشارة إلى أن الشركة الصينية ما زالت لم تكمل الملاحظات على الجزء غير المستلم من الخط الثاني ، وستقوم باستكمالها خلال فترة تحويل خط الإنتاج لإنتاج الإسمنت الأبيض .

المصدر: www.gulf365.co/business

وزارة التجارة السعودية تصدر 44 رخصة لتصدير الإسمنت

أصدرت وزارة التجارة والاستثمار السعودية 121 رخصة لتصدير الحديد والإسمنت السعودي منذ بدء قرار فتح باب التصدير وحتى الآن ، حيث أصدرت الوزارة 44 رخصة لتصدير الإسمنت و77 رخصة لتصدير الحديد .

المصدر: www.aleqt.com

إسمنت القصيم توقع عقداً مع مؤسسة العرادة لتصدير إسمنت إلى الكويت

أعلنت شركة إسمنت القصيم عن توقيع عقد مع مؤسسة العرادة لمواد البناء لتصدير 120 ألف طن إسمنت إلى دولة الكويت ، حيث تقرر أن يبدأ العقد من تاريخ التوقيع وحتى نهاية عام 2019 .

وقد بلغت القيمة الإجمالية المتوقعة للعقد 16.8 مليون ريال .

المصدر: www.maaal.com

إسمنت تبوك توقع عقداً مع جولدن أويل لتصدير كلنكر إلى اليمن

أعلنت شركة إسمنت تبوك عن توقيع عقد مع شركة جولدن أويل لتصدير 500 ألف طن كلنكر إلى جمهورية اليمن، حيث يبدأ التصدير من تاريخ توقيع العقد وينتهي بنهاية عام 2019 .

المصدر: www.maaal.com

حلول صديقة للبيئة من إسمنت المدينة ومعادن

وقعت شركة معادن للألمنيوم التابعة لشركة التعدين العربية السعودية «معادن» مع شركة إسمنت المدينة اتفاقية تعاون لتقديم حلول مبتكرة وصديقة للبيئة ، تهدف لإعادة استخدام المواد الصناعية المستهلكة ومعالجتها لاستخدامها في إنتاج الطاقة لتلبية احتياجات إسمنت المدينة ، وتعد هذه الاتفاقية الأولى من نوعها في الصناعة السعودية ، وتعكس اهتمام الشركتين بتعزيز الاستدامة والحفاظ على البيئة ورفع كفاءة استهلاك الطاقة .

الجدير بالذكر أن "معادن" تعمل على استثمار موارد المملكة من البوكسايت لإنتاج الألمنيوم ، من خلال أول وأكبر مجمع تكاملي مترابط عالي الكفاءة لتصنيع الألومنيوم يشهده العالم ، في مدينة رأس الخير الصناعية .

المصدر: www.algarea.com

الجمهورية العربية السورية

إعادة تشغيل معمل رقم 3 في الشركة السورية للإسمنت بحماة بطاقة إنتاجية 3,300 طن يومياً

تمت إعادة تشغيل فرن المعمل الثالث في الشركة السورية للإسمنت بحماة بطاقة إنتاجية تصل إلى 3,300 طن كلنكر يومياً وذلك بعد توقفه عن العمل بداية شهر يناير / كانون الثاني نتيجة أعمال الصيانة الدورية السنوية .

وتسعى الشركة إلى خفض تكاليف الإنتاج وزيادة الطاقة الإنتاجية والمحافظة على سلامة المعدات والآلات والعمل على تأهيل وتدريب الكوادر الفنية .

إنجازات الشركة السورية لصنع الاسمنت في حماة - زيادة في الإنتاج وتوفير مئات الملايين

أنجزت الكوادر والكفاءات الفنية لدى الشركة السورية لصنع الإسمنت ومواد البناء في حماة مجموعة من المبادرات والتصاميم الإنتاجية التي أمنت استمرار الإنتاج وزيادته في ظل الحرب الإرهابية على سورية والحصار الاقتصادي كما وفرت مبالغ مالية كبيرة تقدر بمئات الملايين من الليرات نتيجة الاستغناء عن الاستيراد .

وكان أبرز الإنجازات التي حققتها الشركة من الناحية الإنتاجية مشروع الاستفادة من الطاقة الحرارية المنبعثة من مبرد الكلنكر في تسخين مادة الفيول عبر المبادلات الحرارية وتوفير كميات من الوقود اللازمة لتشغيل حراقات الشوندير من خلال الاستفادة من الطاقة الحرارية داخل مبرد الكلنكر في المعمل رقم 3 لدى الشركة وذلك بتركيب مبادل حراري على الجدران الداخلية لمبرد الكلنكر .

كما تم تنفيذ مشروع استبدال نظام التحكم بمجمع المواد من سلكي إلى لاسلكي ما أدى إلى الاستغناء عن معدات تقدر قيمتها بعشرات ملايين الليرات فضلاً عن تصنيع جكات هيدروليكية لمبرد الكلنكر بخبرات محلية في الشركة وبكلفة زهيدة جداً بدلاً من استيرادها من الخارج بأسعار عالية .

ومن المشروعات الإنتاجية الجديدة في الشركة مشروع إنتاج بلوك وبمقاسات مختلفة وبكمية إنتاج 1,000 بلوكة يومياً بشكل مبدئي قابلة للزيادة حتى 3,000 خلال الفترة المقبلة مصنعة من مخلفات الإنتاج في الشركة إضافة لتصنيع أطاريف وبلاط الأرصفة وإنتاج الزرادة والبحص والنحاتة من خلال استثمار المقالع المتوفرة لدى الشركة والتي بينت التحاليل المخبرية جودتها .

ومن أهم الإنجازات التي سجلتها الشركة مؤخراً تصنيع الإسمنت المقاوم للكبريتات بالطريقة الجافة الأمر الذي حقق قيمة مادية وإنتاجية مضافة ووفورات مالية بمئات الملايين، حيث أن الشركة تنفرد على مستوى شركات الإسمنت في سورية بتصنيع وإنتاج مختلف أنواع الإسمنت كالإسمنت المقاوم للكبريتات والإسمنت البورتلاندي العادي بصنفيه 32 .5 و42 .5 والإسمنت الخاص بآبار النفط والإسمنت البورتلاندي البوزولاني .

الصومال

تصدير أكثر من 14 ألف طن من الإسمنت من قشم الإيرانية إلى الصومال

أعلن المدير العام لموانئ النقل البحري بشركة تنمية وإدارة موانئ منطقة قشم الاقتصادية الحرة أنه تم تصدير 14,500 طن من إسمنت قشم إلى الصومال، وذلك على متن سفينة Amina-H التنزانية . ونوع الإسمنت هو إسمنت بورتلاندي رمادي وفي عبوات 50 كيلوغرام .

المصدر: www.ar.farsnews.com

جمهورية العراق

العراق يوقف استيراد الإسمنت من إيران

أعلن رئيس الغرفة التجارية المشتركة بين إيران والعراق عن وقف تصدير الإسمنت إلى العراق نتيجة حصول الاكتفاء الذاتي داخل العراق، بالإضافة إلى زيادة الرسوم الجمركية على واردات الإسمنت من إيران، حيث تمكنت العراق من إنتاج 40 مليون طن من الإسمنت ولم تعد بحاجة إلى استيراده من إيران .

ويعد معمل إسمنت الكوفة بمحافظة النجف وسط العراق من أهم المعامل العراقية التي تمت إعادة تأهيلها وتشغيلها منذ سنوات .

المصدر: www.irakna.com

سلطنة عُمان

إسمنت ريسوت تستكمل استحواذها على مصنع إسمنت صحار

وقعت شركة ريسوت للإسمنت على اتفاقية شراء مصنع إسمنت صحار وتم حيازة كامل أسهم المصنع وبقيمة شراء بلغت 60 مليون دولار أمريكي .

وأوضحت الشركة أن الطاقة الإنتاجية لمصنع إسمنت صحار تُقدّر بأكثر من 1 .7 مليون طن من الإسمنت في العام ، وستتمكن الشركة من زيادة إنتاجها المحلي إلى 4,7 مليون طن في العام .

وأكدت الشركة أن عملية الاستحواذ هذه تمثل المرحلة الأولى من استراتيجية التوسع المخطط لها من قبل شركة ريسوت للإسمنت .

المصدر: www.atheer.om

قطر

قطر الوطنية تستعد لتصدير فائض إنتاجها من الكلنكر

أوضح رئيس مجلس الإدارة والعضو المنتدب لشركة قطر الوطنية لصناعة الإسمنت أن الشركة قد يكون لديها فائض مع نهاية هذا العام بنحو 3 ملايين طن من الكلنكر، مشيراً إلى أن الشركة بصدد التفاوض مع أسواق خارجية جديدة ، حيث تقوم الشركة حالياً بتصدير منتجاتها إلى كل من آسيا وأفريقيا ، ويجري التفاوض حالياً مع السوق الكويتي .

وأشار إلى أن الشركة تركز بشكل أساسي على تلبية احتياجات السوق المحلي وتأمين وفرة المنتجات للمشاريع الإنشائية القائمة في الدولة .

المصدر: www.raya.com

«قطر للبترول» و«إسمنت الخليج» توقعان اتفاقية لتوريد إسمنت آبار النفط

وقعت قطر للبترول وشركة إسمنت الخليج، إحدى الشركات التابعة لمجموعة المستثمرين القطريين، اتفاقية لمدة ثلاث سنوات لتوريد إسمنت آبار النفط .

وجاءت هذه الاتفاقية بعد حصول شركة إسمنت الخليج على شهادة مرموقة من المعهد الأمريكي للبترول (API) ، والتي استطاعت الشركة بموجبها إنتاج إسمنت آبار النفط من الفئة (G) عالي المقاومة للكبريتات في مصنعها بـ/أم باب/ ، لتصبح أول شركة في قطر توفر هذه النوعية عالية الجودة من الإسمنت ، وذلك بعد اجتيازها عملية المراجعة الشاملة التي أجراها المعهد الأمريكي للبترول .

المصدر: www.al-sharq.com

الكويت

إسمنت الكويت تزود نابيسكو بإسمنت آبار البترول

أعلنت شركة إسمنت الكويت عن بدء إنتاج إسمنت آبار البترول وتزويد شحنتها الأولى للشركة الوطنية للخدمات البترولية نابيسكو .

وقد بدأت الشركة إنتاج هذا النوع من الإسمنت محلياً في مصنعها الكائن بمنطقة الشعيبة الصناعية الشرقية بعدما حصلت الشركة على شهادة الجودة المعتمدة من المعهد الأمريكي للبترول (API) اللازمة لإنتاج هذا النوع من الإسمنت، لتكون شركة الإسمنت الأولى في دولة الكويت الحاصلة على هذه الشهادة لإنتاج إسمنت آبار البترول لتستطيع تلبية متطلبات القطاع النفطي في الكويت والشرق الأوسط .

وشركة إسمنت الكويت هي الشركة الصناعية الوحيدة في الكويت التي تقوم بصناعة وإنتاج الكلنكر بجميع مراحل التصنيع بدءاً من المواد الأولية لإنتاج الإسمنت بأنواعه ، حيث تقوم حالياً بإنتاج كل من الإسمنت البورتلاندي العادي ، والإسمنت المقاوم للأملاح/5 ، والإسمنت البورتلاندي الأبيض ، وإسمنت آبار البترول ، ومادة GGBS .

وبلغ إجمالي الطاقة الإنتاجية لمصنع الشركة ما يزيد على 5 ملايين طن سنوياً من الكلنكر ومثلها من الإسمنت .

المصدر: www.mubasher.info

الجمهورية اللبنانية

إبطال ترخيص معمل الإسمنت في عين دارة

أصدر وزير الصناعة اللبناني الفور قراراً ألغى بموجبه الترخيص المعطى لشركة ترابة الأرز ، المصنع الذي كان سيعرض صحة الناس للخطر ويهدد البيئة في منطقة تقع ضمن المحيط الحيوي لأكبر المحميات الطبيعية في لبنان (محمية أرز الشوف) .

المصدر: www.anbaaonline.com

ليبيا

تشغيل خطوط إنتاج الليبية للإسمنت

ذكر المدير العام للشركة الليبية للإسمنت بمدينة بنغازي أن الشركة تستعد لتشغيل خطوط إنتاجها قريباً . حيث تم تقديم عرض مفصل حول مشروع جديد بقيمة 200 مليون يورو لتطوير خطوط إنتاج الشركة ، والذي سيكون على مرحلتين ، ويهدف إلى زيادة الطاقة الإنتاجية حتى 50 % ، بالإضافة إلى الطاقة الإنتاجية الحالية وبتقنية حديثة إلكترونية وصديقة للبيئة .

المصدر: www.libyaakhbar.com

إيقاف خط الإنتاج الأول بمصنع زليتن للاسمنت بشكل مؤقت للصيانة

قامت إدارة مصنع الإسمنت في مدينة زليتن بإيقاف الخط الأول للإنتاج بهدف الدخول في مرحلة الصيانة.

وأوضحت الإدارة أن الخط الثاني للإنتاج تم إيقافه للصيانة حتى مطلع أبريل / نيسان ، منوهة عن وصول أكياس خاصة للفلاتر من الشركة الليبية بمدينة بنغازي و تونس و تركيا، لبدء أعمال الصيانة .

وأكدت الإدارة أن الشركة تعمل على توفير 4,500 كيس من أجل التقليل من الغبار والأتربة التي عادة ما تخرج من المصنع ، وذلك للحد من معاناة المواطنين القاطنين بالقرب من المنطقة الصناعية للشركة .

المصدر: www.sahiftranwa.com

جمهورية مصر العربية

مصنع إسمنت القطامية يستخدم المخلفات كوقود بديل داخل الحارق الرئيسي

في إطار حرص مجموعة شركات السويس للإسمنت على تحسين وحماية البيئة نجح فريق العمل بمصنع إسمنت القطامية في استخدام المخلفات كوقود بديل داخل الحارق الرئيسي بالفرن وتقليل الاعتماد على الوقود الاحفوري بنسبة حوالي 10 % من إجمالي الوقود المستخدم بالمصنع .

وتم إحلال نسبة 15 % من إجمالي الوقود المستخدم بالمصنع في البرج (المكلسن) ليصل إجمالي إحلال الوقود البديل بالمصنع إلى حوالي 25 وبهذا سوف تتضاعف كمية المخلفات «النفايات

والمخلفات الزراعية» التي سيتم حرقها هذا العام لتصل إلى 75 ألف طن ، مما سيساهم في تقليل انبعاثات ثاني أكسيد الكربون بمعدل 100 ألف طن سنوياً .

ويعتبر حرق المخلفات في أفران الإسمنت حلاً نموذجياً للتخلص الآمن منها والتخلص منها بطريقة علمية نظراً للارتفاع الشديد في درجة حرارة الأفران والتي تصل إلى 1500 درجة مئوية مما يؤدى إلى تحلل المركبات العضوية مما يعود بالنفع على البيئة بوجه عام .

وتتطلع المجموعة لزيادة اعتمادها على المخلفات كوقود داخل مصانعها ليصل إلى 30 % من إجمالي مزيج الوقود المستخدم حالياً ، وللوصول لهذه النسبة ستقوم المجموعة بحرق ما يقرب من 500 ألف طن سنوياً من المخلفات .

افتتاح مصنع لإدارة المخلفات بالعين السخنة

افتتحت شركة جيوسايكل مصر المتخصصة في تقديم حلول إدارة المخلفات مصنعها بالعين السخنة بمحافظة السويس . وتم إنشاء مصنع جيوسايكل على أحدث التكنولوجيا العالمية في المجال باستثمارات 200 مليون جنيه ، ليصبح بذلك أكبر مصنع للمجموعة في منطقة الشرق الأوسط وأفريقيا .

ويستقبل المصنع المخلفات الزراعية والصناعية والبلدية غير الخطرة ، كمادة خام من المحافظات المختلفة وتحويلها إلى وقود بديل عالي الجودة قابل لإعادة الاستخدام كبديل للسولار والمازوت والغاز. ويعمل المصنع بطاقة إنتاجية 400 ألف طن سنوياً لتوفر الوقود البديل في شكله النهائي إذ يتم توجيهه لمصنع لافارج للإسمنت مصر بالعين السخنة ليدخل في عملية التصنيع .

وتعد جيوسايكل مصر جزءاً من أنشطة مجموعة لافارج هولسيم العالمية لمواد البناء ، بدأت العمل في مصر عام 2011 تحت اسم إيكوسيم لتقديم خدمات إدارة المخلفات وتوفير وقود بديل محسن ومرن لمصنع لافارج للإسمنت مصر كبديل للوقود الأحفوري لتضيف إلى ميزته التنافسية في السوق .

المصدر: www.mobtada.com

لافارج مصر المورد الوحيد للإسمنت الخاص بأساسات أطول برج في أفريقيا بالعاصمة الإدارية الجديدة

تم اختيار شركة لافارج للإسمنت مصر لتصبح المورد الوحيد للإسمنت الخاص بأعمال الاساسات الخاصة بمشروع الأبراج في العاصمة الإدارية الجديدة بما في ذلك البرج الأيقوني والذي من المقرر أن يصبح أطول برج في أفريقيا .

وتم توريد إسمنت لافارج مصر، «هيدروسيم بلس» عالي الجودة ، كما تساهم الشركة في أعمال الخرسانة الجاهزة المستخدمة في بناء الأساسات الخاصة بالمشروع في منطقة الأعمال المركزية . ولقد تم صب الخرسانة لمدة 48 ساعة متواصلة بدلاً من 72 ساعة التي كانت مقررة للصب مما يعد معدلاً قياسياً جديداً لصب الخرسانة المسلحة إقليمياً .

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دراسة الاستفادة من الحرارة الضائعة من أفران السمنت لتوليد الطاقة الكهربائية

بقلم رئيس مهندسين أقدم عباس عبد الكريم عباس

إن هذه الاستفادة ليست لتوليد الطاقة الكهربائية فقط وإنما الخلاص من الحرارة المهدرة والمضرة للبيئة . وإن لصناعة السمنت خصائص الحرارة المنبعثة وتستحق الدراسة .

إن أهم عناصر تشكيل العالم الجديد هو الطاقة البديلة وإن مصدر هذه الطاقة تؤثر على قوة هذه الدول غناؤها أو فقرها . بانتهاء عصر البترول سيبدأ عصر جديد وحسابات جديدة فهل نحن مستعدون لهذا العصر؟

أنواع الطاقات البديلة (المتجددة) والتي يمكن الاستفادة منها والتي تعتبر من أنواع الطاقات النظيفة (صديقة البيئة) أو تلك التي تعمل على خفض تلوث البيئة وأنواعها :

1 -الطاقة الشمسية

2 - طاقة المد والجزر (الطاقة القمرية)

3 -طاقة الرياح

4 -الطاقة المولدة من مساقط المياه

5 - الطاقة الناتجة عن الحرارة المنبعثة من حرق النفايات

6 -الحرارة المولدة من مداخن المصانع

الموضوع الذي نتحدث عنه هو الحرارة المولدة من مداخن المصانع وخاصة أفران معامل السمنت بسبب انبعاث لكميات من الغازات ذات الدرجات الحرارية العالية من مبرد الكلنكر وبرج التبادل الحراري طبقاً لأجهزة القياس المركبة على مدخل ومخرج الفرن . تسحب هذه الغازات الساخنة دون التأثير على عملية الإنتاج ، أي لا يؤثر على كمية الهواء الثانوي الساخن الذي يساعد على الاحتراق في الموقد الرئيسي للفرن وموقد المكلس الأولي . ويعمل استخدام هذه الغازات الساخنة على التقليل من التلوث الحراري وتقليل تكلفة الإنتاج الكلية .

مصادر الغازات الساخنة من أفران معامل السمنت:

1 - الغازات الصاعدة من مبرد الكلنكر: عند سقوط الكلنكر على المبرد تكون درجة حرارة الغازات الساخنة حوالي (600 - 1250) درجة مئوية هذا الهواء يتم توزيعه إلى الهواء الثانوي للحرق داخل الفرن والثاني إلى المكلس الأولي في مدخل الفرن بواسطة أنبوب يمتد من المبرد إلى المكلس الأولي (وحسب تصاميم الشركات) وبقية غازات المبرد تتراوح حرارتها عند (90 - 600) درجة مئوية عند مخرج الكلنكر. ويؤخذ المتوسط بين درجة الحرارة هنا عند (300 - 1250) درجة مئوية ليخرج من منطقة المبرد .

وللاستفادة من الحرارة الخارجة من المدخنة يتم تحويل مخرجين لأخذ الهواء الساخن للغلاية أحدهما عند موقع الحرارة العالية (لحظة سقوط الكلنكر) والآخر عند درجة الحرارة المتوسطة . هذه الحرارة وكمية الهواء الساخن يمكن استخدامها في غلاية لإنتاج البخار .

2 - الغازات المنبعثة من برج التبادل الحراري (preheater): تمر الغازات الخارجة من الفرن ببرج التبادل الحراري ويتم الاستفادة من جزء منها والبقية تتصاعد الى الهواء الجوي وهي عبارة عن طاقة مهدرة أيضاً . هذه الكمية يمكن إدخالها في غلاية لإنتاج البخار أيضاً .

الغلاية:

تعتبر الغلاية الوحدة الاساسية لتوليد إمداد البخار حيث يتم التبادل الحراري بين الغازات الساخنة الناتجة من المصدر الحراري والماء لإنتاج البخار . والغلايات التي تستخدم في مصانع الإسمنت تسمى غلايات أنابيب المياه التي تعرف أيضاً بغلايات الحرارة المهدرة وهي تمتاز بالاستفادة من الملوثات (العوادم) وذلك بتقليلها وكذلك الاستفادة من الحرارة الكامنة فيها لإنتاج البخار .

إنتاج الطاقة الكهربائية:

يطبق نظام ضغط البخار المنفرد حالياً على أنظمة إنتاج الطاقة الحرارية وذلك بجمع ناتج البخار من غلاية المبرد وغلاية المبادل الحراري وإدخاله في التوربين البخاري وتحريكه لإنتاج الطاقة الكهربائية . وهناك أنواع أخرى من أنظمة ضغط البخار ذات مواصفات تختلف عن ما ذكرناه مثل نظام ضغط البخار المزدوج (dual pressure system) والنظام الحراري ومعدلات تدفق حرارة البخار (thermodynamic system and parameters of steam pressure) .

المصدر/

مشروع نيل شهادة البكالوريوس في الهندسة الميكانيكية /جامعة وادي النيل – مصر- 2018

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