



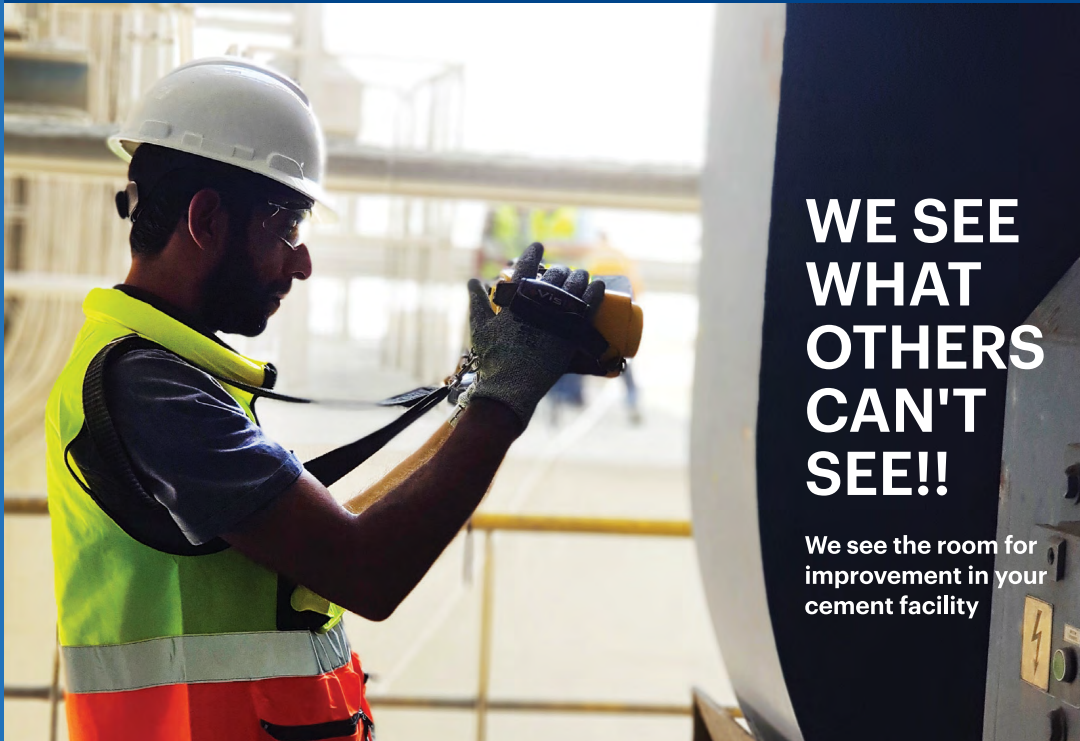
CEMENT & BUILDING MATERIALS REVIEW

Published by : Arab Union for Cement and Building Materials No.77 September 2019



THE DIAMOND SPONSER

Of the 24th Arab-International Cement Conference & Exhibition
Cairo, Egypt from 24 - 26 November, 2019



**WE SEE
WHAT
OTHERS
CAN'T
SEE!!**

We see the room for
improvement in your
cement facility

Bringing in more than 44 years of experience
in O&M, engineering & consultancy, technical
training, process audits and optimization

L & S

LIGHT AND STRONG

OUR NEW PACKING WILL BE IN THE MARKET IN MARCH 2020

OUR NEW PACKING TECHNOLOGY.

Al-Moasron is proud to offer pp woven bags (jumbo, normal and valve bags) that meet your requirements at a competitive price. At Al-Moasron we put the needs of our customers first. We use the latest technology in the packing world: L & S, to deliver the strongest bag with the lightest weight.



FEATURES:

- Compatible with materials like cement, fertilizers, chemical materials, feeds, grains and many others
- Valve bags are produced with Nano perforation
- Optional Biaxially Oriented PolyPropylene (BOPP) layer
- Optional lamination layer
- Optional colors upon customer choice (up to six colors per bags)
- Can be used for single and multi use
- Water and dust resistant



AL-MOASRON L.T.D

المعاصرون

Sahab – Sitteen St. Amman, Jordan | Email: info@almoasron.com
Tel.: +962 6 4023330 | Fax: +962 6 4023339 | Mobile: +962 79 8240030



Cement and Building Materials Review

Arab Album

International News

New Products

Technical Articles

Diary Dates

Editor-in-Chief
Managing Editor

Eng. Ahmad Al-Rousan
Suha M. Canaan

CONTRIBUTIONS

- *The Magazine editorial staff welcome the contribution of experts to enrich the contents of the magazine .*
- *Articles are not to be returned to authors .*
- *Points of view expressed in the magazine do not necessarily express points of view of the AUCBM or the magazine itself . It is rather the opinion of the author. The AUCBM does not bear legal liability or responsibility from any article .*

Advertisements

Please contact Editor-in-Chief

Annual Subscription

**Companies & Organisations
US\$ 150**

**Universities & Research Centers
US\$ 65**

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

Website : www.aucbm.net

Contents

Arab News

International News

New Products and Media

Articles:

- **New system for manufacturing corrugated/ flat fibre cement sheets for the cladding and roofing of buildings**
By: VIDMAR, Spain
- **Holderchem Services**
By: Holderchem, Lebanon
- **CMD BOGIFLEX® KGD (Kiln Gear Drive)**
By: CMD Gears, France
- **A Question of Character – on the efficient utilization of alternative fuels with varying quality**
By: Dominik Aufderheide & Dr.-Ing. Luigi Di Matteo, DI MATTEO Group, Germany
- **HEXADUR® in Cement Industry - 25 years of operation with HEXADUR® protected HPGR rollers**
By: Jörg Oligmüller, Kaushik Ghosh & Andreas Packeisen, Köppern Entwicklungs-GmbH, Germany
- **Capturing the many elusive benefits of uniform extraction from storage hoppers**
By: Lyn Bates, Ajax Equipment, UK
- **DURAG Video Analysis System Including Thermography Information to Optimise the Main Burner Flame**
By: Klaus Czirr, DURAG GmbH, Germany & Abbad Cheik, DURAG ME, UAE
- **Key Challenges for Industrial Fans and Blowers in the Cement Industry**
By: Frauke Kretzer, POLLRICH GmbH, Germany
- **Cement Industry Digitalization**
By: Osama Aly Ahmed, Engineering Consultant, Egypt
- **Chemical admixtures in cement (in Arabic)**
By: Tariq M. Awad, Senior Chemist, Badoosh Plant Expansion, Iraq

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 December Edition 2019

THEMES
- 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

Deadline for receiving articles, press releases, or advert materials is **6th December 2019**

ADVERTISEMENT TARIFFS IN US DOLLARS

PLACE	Once insertion	Twice insertion	3-times insertion	4-times insertion
Outside Front/Back Cover	1,200	****	****	****
Inside Front/Back Cover (Coloured)	900	****	****	****
Full Page (Colored)	700	900	1,200	1,300
Half Page (Colored)	400	500	600	700
Quarter Page (Colored)	250	300	350	400
Full Page (B/W)	250	300	350	400

Size: A4 + bleed on the four sides

For the **outside front/back cover**, dimensions are: 20 (height) x 14 cm (width)

Resolution: 300dpi

File: PSD, EPS, or PDF

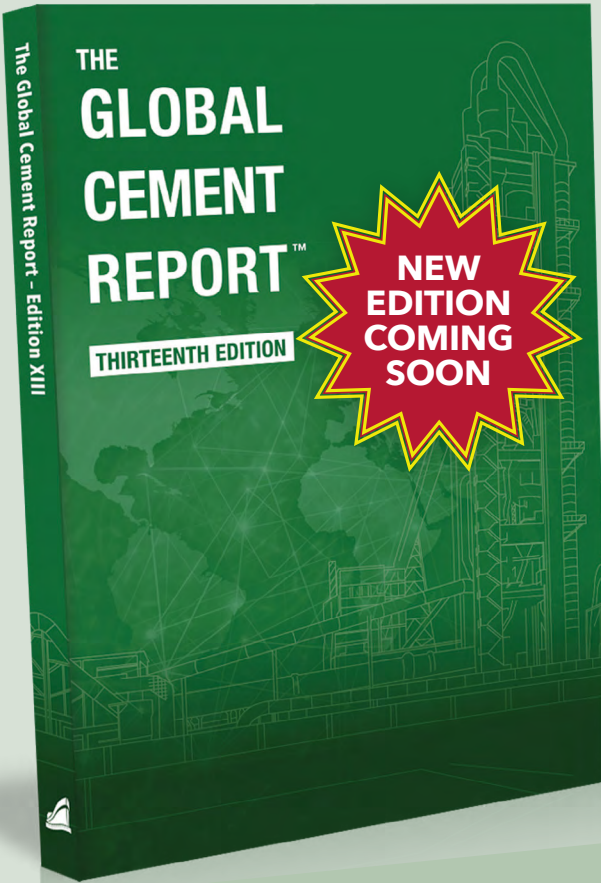
BANNERS (JPG) ON THE FIRST PAGE OF WWW.AUCBM.NET

US\$ 150 per month

Size is 200pixel w X 75pixel H

Resolution: 300dpi (please send with the requested link)

THE ONLY TRULY GLOBAL OVERVIEW OF THE CEMENT SECTOR



NEW EDITION COMING SOON

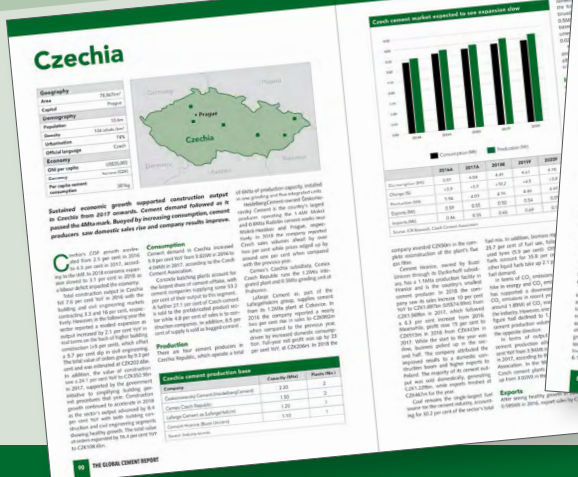
AVAILABLE TO PRE-ORDER NOW!



THE GLOBAL CEMENT REPORT™ THIRTEENTH EDITION

- Comprehensive coverage of the global cement industry
- Key data and analysis of over 170 countries
- 13-year historical database (2006-18), comprising production, consumption and trade statistics

- Forecasts to 2020
- New plant projects
- Country-by-country format
- Key industry trends and company profiles
- Thoroughly researched by ICR's experienced team of analysts



UPDATED ONLINE PLANT DIRECTORY NOW AVAILABLE!

For more information, pricing or to order your copy, please visit:
www.CemNet.com/GCR13



ALGERIA

GICA starts to market cement from its Sigus plant

Société des Ciments de Sigus, part of Groupe Industriel des Ciments d'Algérie (GICA), has started marketing Ordinary Portland Cement (OPC) from its 2Mt/yr integrated plant at Sigus, Oum El Bouaghi. The unit started producing cement in the first quarter of 2019. The project had an investment of around US\$427m. Germany's ThyssenKrupp Industrial Solutions was awarded the contract to build the plant in early 2017.

[*Global Cement*](#)

EGYPT

Arabian Cement signs petcoke deal with Egyptian Refining Company

Arabian Cement has signed a 0.3Mt/yr petcoke supply deal with the Egyptian Refining Company. The agreement was part of the company's plans to reduce its production costs and improve operational performance by diversifying its energy sources. The company operates a 5Mt/yr integrated cement plant at Ain Sokhna in the Suez Governorate.

[*Global Cement*](#)

Sinai Cement starts production efficiency plans

Sinai Cement has started implementing its plans to improve its production efficiency. Vicat Egypt, one of the owners of the company, plans to invest Euro30m into its subsidiary. It has already granted Sinai Cement a loan of Euro10.6m and the cement company received a first tranche of Euro2.6m in April 2019.

[*Global Cement*](#)

IRAQ

Iraqi government approves measures to support cement industry

The government has approved a series of recommendations from the Ministerial Economic Council to support the growth of Iraq's cement industry and to ensure that production capacity continues to meet domestic demand.

The cabinet approved a loan agreement between the Republic of Iraq and the International Bank for Reconstruction and Development for an electricity services reconstruction and enhancement project.

[*Global Cement*](#)

US\$60m reconstruction approved for Kufa cement plant

The Ministry of Finance has approved construction work to restore the capacity of a cement plant in Kufa, Nafaj governorate, damaged in recent conflict. Work is set to commence pending the imminent release of the funds. Social Care Committee has expressed the expectation that, at its full capacity of 0.18Mt/yr, the plant will accelerate the country's restoration.

[*Global Cement*](#)

Attock Cement commences operation of Iraqi grinding plant

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

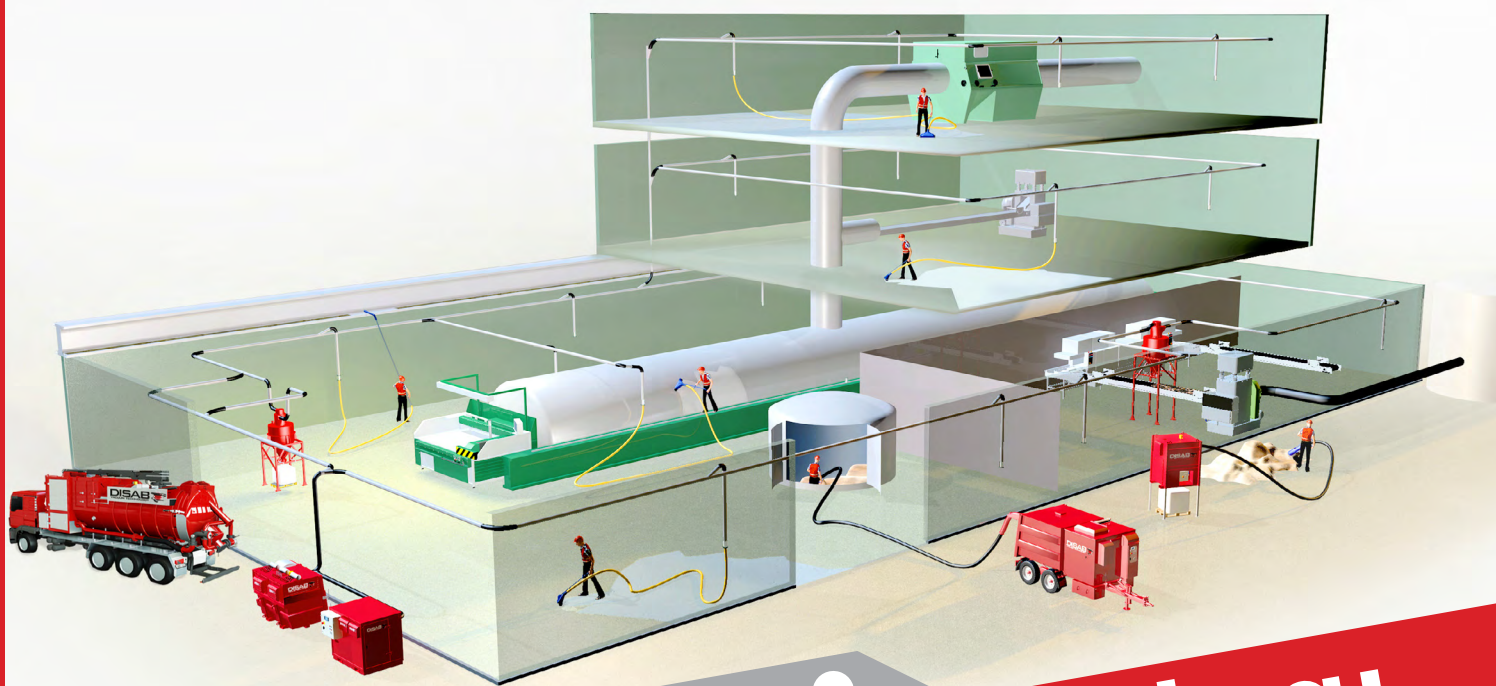
[*Global Cement*](#)

KUWAIT

Kuwait Cement Company request for waste to be converted into fuel

Kuwait Cement Company, in a recommendation to resolving the growing waste situation, has requested chairman of the Municipal Council to present the company's initiative to the Environment Committee regarding the use of municipal solid waste annually as alternative fuel at its plant in Eastern Shuaiba Industrial Area through safe disposal of waste wherein the government could use incinerators of the company for that purpose.

The company is the only firm that owns modern furnaces that can burn large amounts of municipal solid waste in a scientific manner that meets the specifications of environment safety from the technical perspective.



Good Housekeeping: Prevent dust build-ups with DISAB

DISAB prevents dust build-ups from happening by cleaning and removing dust, debris, and spillages using vacuum based technology with a powerful suction ability. Our mobile, semi-mobile, and stationary machines and system solutions help facilitate good housekeeping to increase the safety of your workers.

We offer
ATEX
compliant
machines

Meet us at the **AICCE24 exhibition** and learn how to keep your cement plant and workers safe!



DISAB
VACUUM TECHNOLOGY



www.disab.com • ContactUs@disab.com



LIBYA

Libyan Cement Company suffers from import issues, weather and conflict

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

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

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

[Global Cement](#)

MOROCCO

New Moroccan order for FLSmidth

Denmark's FLSmidth has won a contract to deliver a greenfield cement plant to a new customer in Morocco. The contract is worth US\$45m.

FLSmidth, together with Société Générale des Travaux du Maroc (SGTM), signed a contract with TEKCIM S.A. to co-deliver a 3600t/day (1.2Mt/yr) cement plant. The plant will be built in Ouled Ghanem in Morocco's El-Jadida Province and is scheduled to be fully operational during the third quarter of 2022.

The contract scope includes engineering, supply of a full range of equipment from crushing to packing and load-out, supervision, commissioning and training of a local workforce.

[Global Cement](#)

Ciments du Maroc buys Atlantic Cement and Cimsud
Ciments du Maroc has signed a deal to buy Atlantic Cement and Cimsud from Anouar Invest Group. Atlantic Cement is building an integrated plant in Settat province and Cimsud has recently commissioned a 0.5Mt/yr grinding plant at Laâyoune. Ciments du Maroc said that the agreement would strengthen its market presence in the central region.

Ciments du Maroc, subsidiary of HeidelbergCement, operates three integrated cement plants and two grinding plants. It also runs 30 ready-mixed concrete plants and four quarries.

[Global Cement](#)

Algae pond commissioned for HeidelbergCement's Morocco cement plant

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

[Global Cement](#)

OMAN

Raysut Cement to open US\$40 million grinding unit in Somaliland

Raysut Cement Company has established a partnership with MSG Group to set up a 1Mta US\$40 million grinding unit in Berbera, Somaliland. Raysut Cement will own 55% of the plant, with MSG Group set to own the remaining 45%.

Raysut Cement to further expand Sohar Cement
Raysut Cement Company has signed US\$51.08 million financing deal with Bank Nizwa to fund its operations, expansion plans. US\$ 11.8 million from this facility will be used for the expansion of Sohar Cement Plant.

Raysut Cement acquired Sohar Cement, a grinding facility with a capacity of over 1.7Mta of cement in May 2019 for \$60 million. The acquisition boosts Raysut Cement's production capacity to 4.7 million tonnes of cement per annum.

Raysut Cement announces US\$30m grinding plant plans

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

[Global Cement](#)

QATAR

Sika starts production at concrete admixture plant in Qatar

Sika is starting operation at a new concrete admixture

M/s. Allan Smith Engineering Pvt. Ltd. is a reputed name in Rotary Kiln Industry. We offer specialized maintenance services includes: Hot Kiln Alignment, Diagnostic maintenance, Assistance in Kiln and components erections, etc. We are a professionally manage company with an aim to emerge as principal in the field.

Our engineering services are designed and implemented at par with international standards with the consistent upgradation. Our ethical business practice and professional attitude has earned trust of client, with repeated business.

Our Services:

- Kiln Audit
 - Hot Kiln Alignment
 - Shell ovality analysis
 - Hidden crack detection
 - Hidden crack detection in Kiln Shell
 - Support roller shaft etc
- Grinding
 - Kiln Tyre
 - Support Roller
 - Thrust Roller & Thrust Face Grinding
- Repair & Maintenance
- Kiln and components Erection
- Kiln Diagnostic Maintenance
- Kiln and Component Design

Supply:

- Kiln Shell
- Kiln End Duplex Graphite Seal
- Tyre and Support Rollers
- Chairpad Lubrication Bar
- Isostatic Graphite Block
- Design & supply of Full floating Chairpad



ALLAN SMITH ENGINEERING PVT. LTD.

Reg. Off.: 9-C, Linden, Eden Woods, Off. Pokhran Road # 2, Thane (West) 400 610, Mumbai, India.
Landline Number: +91 22 2589 5404 | Mobile Number: +91 900 IN SMITH (9004676484)
Email: admin@smithengg.in, ase@eurokiln.com | Web.: www.smithengg.in



plant in Doha. The site will include production lines for concrete-admixture manufacturing as well as a main office and a central storage facility. The new plant follows the establishment of the national subsidiary in 2012.

[Global Cement](#)

SAUDI ARABIA

Saudi Arabia exports 25Mt of cement since mid-2017

Total exports of cement have reached 25Mt since the export rules were relaxed in mid-2017. The government is now planning to charge fees on exporters after a two-year tax holiday. The ministry has approved 53 cement export licences; 22 of these have been issued during the current year.

[Global Cement](#)

Saudi Arabia certifying domestically manufactured cement products

The Saudi Arabian Standard Organization has stated that all cement products will be certified for quality mark starting September 10, 2019.

After the quality mark certification is awarded, it is expected that imports of white cement and ready mix concrete products will not be imported or sold in the country, unless they receive the mark.

The cement companies and importers were given a two-year transition period to adjust their status.

[CemWeek](#)

Najran Cement renews clinker export licence

Najran Cement has renewed its clinker export licence. It is valid for one year from 9 July 2019.

[Global Cement](#)

FLSmidth working on dual-white and grey cement line conversion for Alsafwa Cement

Denmark's FLSmidth has revealed that it is working on a project to convert a grey cement production line at Alsafwa Cement to a dual-white and grey line. The modified kiln is expected to be commissioned in early 2020. The production objectives are to produce a minimum of 2000t/day white clinker with a maximum heat consumption of 1380kcal/kg clinker.

FLSmidth plans to install its Duoflex Burner inside the kiln. To minimise costs it says that only minor changes will be made to the current preheater with as much existing equipment as possible being reused. In this case, the oil handling equipment, clinker cooler, raw material storage system and raw mill grinding

equipment will be reused.

[Global Cement](#)

SYRIA

Arab Cement Company's Aleppo plant being renovated

Parts of the Arab Cement Company's integrated plant in Aleppo are being renovated. The unit had suffered 'heavy' damage from terrorists. The government says that industrial plants in the region are being repaired and returned to production. It took back control of the city from opposition forces in late 2016.

[Global Cement](#)

UAE

Al Ain Cement Factory, National Cement Sign Deal

Al-Ain Cement Factory, a subsidiary of Arkan Building Materials PJSC, has signed an agreement with Abu Dhabi based National Cement Factory, a fully owned subsidiary of Ittihad International Investments, which clears the way for new collaboration opportunities in the UAE's cement market.

"The new agreement is a cooperation of the two largest cement and steel slag producers in Abu Dhabi," said Eng. Abdulaziz Asad, COO, Arkan. Besides a long term clinker offtake agreement mutually beneficial to both parties; this agreement will enable both companies to reduce their production and logistics costs, resulting in improved market share and delivery time.

"With this collaboration agreement in place, National Cement Factory will have less risk in securing its long-term clinker needs", Mohamad Yassin, National Cement Factory General Manager said.

The 2 companies have a combined capacity of 3.1 million/tonnes clinker & 6.6 million/tonnes of cement per annum.

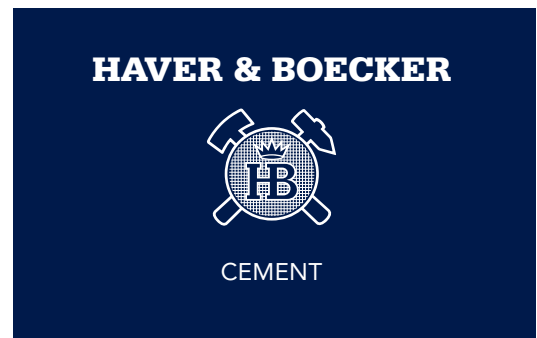
Fujairah Cement divests from Sohar cement factory

Fujairah Cement announced the sale of its Sohar cement plant for AED 220.4 million, equivalent to USD 60 million, justifying the decision with low cement prices.

The cement plant was sold to Raysut Cement, currently working on an aggressive expansion strategy.

[CemWeek](#)

TOMORROWS PACKING



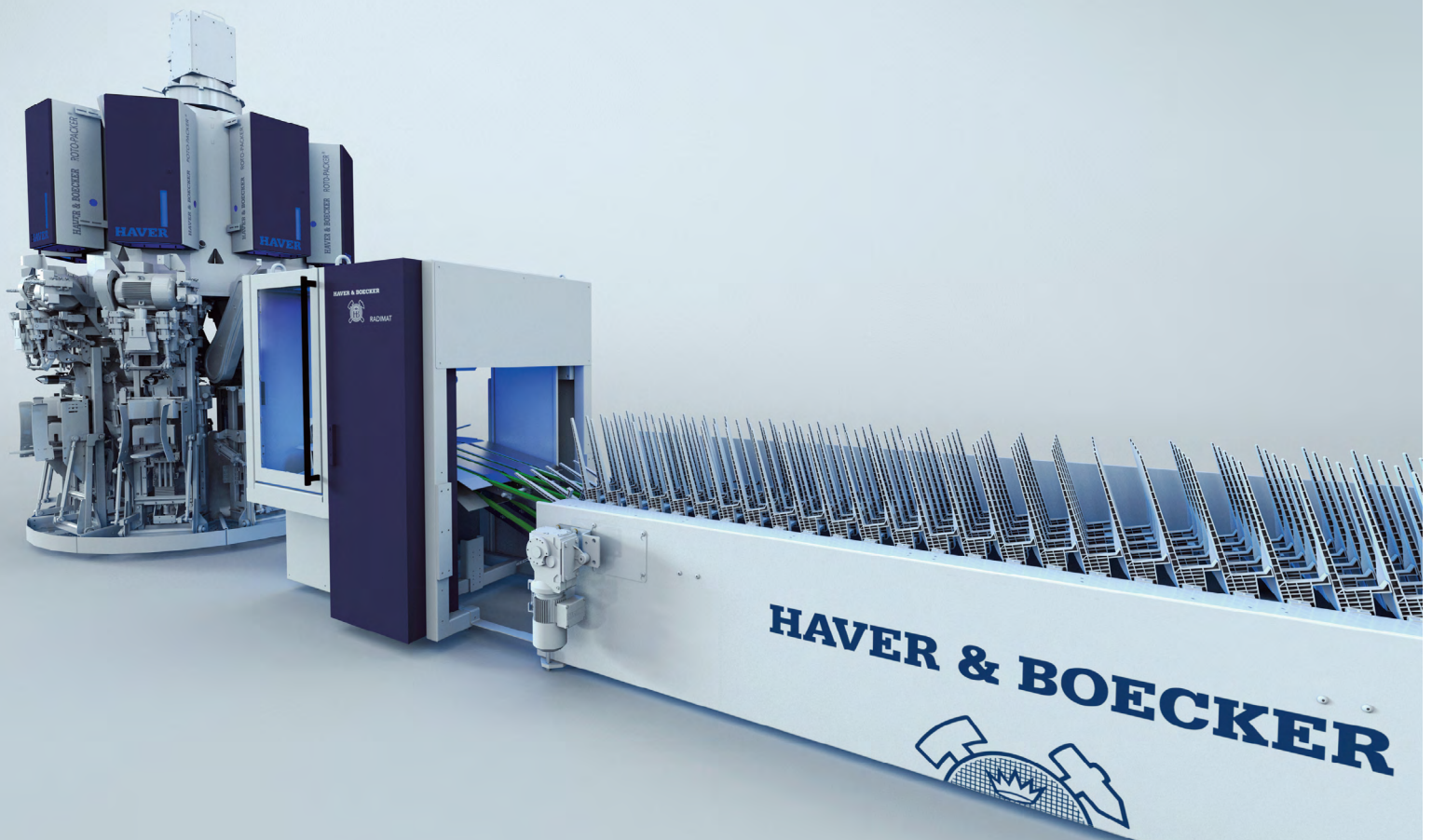
CLEAN. INTELLIGENT. PROFITABLE.

Redefine your packing with the state-of-the-art **ROTO-PACKER® RVT SEAL Edition** – Made in Germany. For full and automated performance complete your line with the original bag placer **RADIMAT®**. Your people will be satisfied and never forget!



Get in Touch:

Phone: +49 (0) 2522 30-678
E-mail: cement@haverboecker.com
www.haverboecker.com



PROCESSING STORAGE MIXING FILLING PACKING PALLETIZING LOADING AUTOMATION



Mondi introduces the first all-in-one customer platform for paper sacks worldwide

myMondi offers greater customer service and convenience

Customers of Mondi Industrial Bags, the world's leading industrial paper bags producer, can now enjoy the convenience of 24/7 customer service through the new myMondi web-based platform. It is the first all-in-one digital customer platform available in the paper sack industry worldwide.

Mondi is a leading global packaging and paper group, constantly innovating to develop better and more sustainable solutions for its customers. Yet product innovation is only half the story; just as important is to improve processes and offer innovative services. Over the past two years, Mondi's Industrial Bags team has been developing myMondi while taking into consideration the needs and input of its customers.

The resulting online service will make everyday business easier and more convenient for customers who rely on Mondi paper sacks.

Multitude of features and functions

myMondi provides up-to-date product and stock information, allows customers to place orders and track the order status anytime, anywhere. Once registered on the platform, a simple login is all that's needed to obtain an 'at-a-glance' overview of the account and manage orders in a secure online environment.

From their myMondi account dashboard, customers are immediately able to see information about their current stock at Mondi, available products to order, current open orders or claims and the newest product innovations. With just few clicks, they can download reports on their stock management, product information, certificates, and have an overview with a filtering option for their invoices and credit notes.

Moreover, they can reorder their paper sacks anytime quickly and easily, always keeping an eye on their

stock for obsolete or aged bags. Orders via the platform immediately reach Mondi's systems, speeding up the time to delivery. Should a customer wish to submit a claim, myMondi makes it possible to do so online and to check up on its progress any time.

Easy and convenient access

Two primary criteria in the design of myMondi were that it be easy to navigate and efficient to use. The objective was to make it easy for customers to obtain the right paper sacks and information for their business needs in the most timely and efficient way.

In this fast-paced world, customers appreciate being able to quickly access useful information from their account whenever they choose and from any computer, smartphone or tablet device. myMondi is available to customers worldwide in 13 languages.

For more information

Interested customers and new users can watch a short video that introduces myMondi and its main features and functions. <https://youtu.be/09Etr4vYoCU>

For more information on how to register for myMondi (myMondi.mondigroup.com), customers are invited to get in touch with their usual Mondi sales representative or send an email to bags.

mymondi@mondigroup.com.

Mondi Industrial Bags GmbH, Marxergasse 4A,
A-1030 Vienna

www.mondigroup.com/industrialbags

A large industrial grinding mill is shown in a cutaway view, revealing its internal structure. The mill is filled with a dark, granular material. Bright blue energy lines or light beams crisscross the interior, suggesting a high-tech or optimized process. The mill's structure is composed of many small, repeating components, possibly grinding balls or segments, arranged in a circular pattern.

Meet us
at booth

C8

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

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

Visit us at
christianpfeiffer.com



**CHRISTIAN
PFEIFFER**



Höganäs Borgestad gathers all operations under a common brand

The Group comprises a number of brands that all offer refractory high temperature solutions. Now, all brands are collected under the same umbrella:

Höganäs Borgestad. The change is a natural part of the growth journey and aims to create a more coherent and customer-oriented Group.

– Gathering all entities into one strong brand will provide a greater clarity for our customers and an increased value for the whole Group, says Niclas Sjöberg, Group CEO, Höganäs Borgestad.

The headquarters of Höganäs Borgestad will be located in Gävle.

For more information:

Niclas Sjöberg, Group CEO

+46 70-554 43 86

niclas.sjoberg@hoganاسبorgestad.com



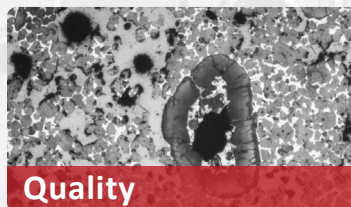
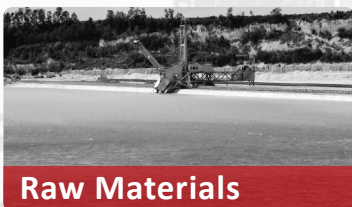
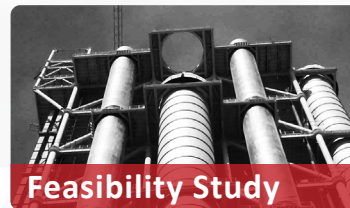
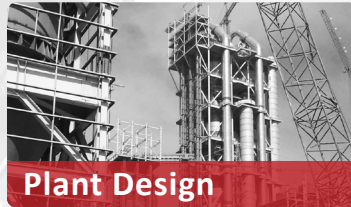
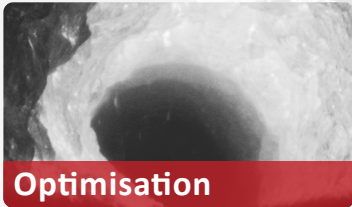
Setting new standards



JAMCEM CONSULTING

JAMCEM Consulting offers you independent consulting advice based on years of cement plant operational and technical expertise.

JAMCEM Consulting offers services in every single area of operations and business performance that could be required to compete in the current competitive global cement market



All **JAMCEM** experts have technical and operational experience with an average across the group of **30 years**. Our aim is to deliver operational and profitability improvement at minimal cost to the business thereby **maximising returns**.

JAMCEM is completely independent, offering clear unbiased advice without any motive to sell equipment or other services

JAMCEM
CONSULTING

www.jamcem.com
+44 203 405 1881
sales@jamcem.com

SACMI

Over 300 SACMI MMC mills now installed, bringing reliability, sustainability and automation to the world

Yet another order for RAK Ceramics, already a long-standing SACMI partner and one of the world's top five ceramic firms

New horizons for **SACMI grinding**, which has been leading the way in terms of innovation, **process automation, reliability** and **energy savings** for over thirty years. Now, with this latest delivery to global giant **RAK Ceramics**, SACMI has sold more than **300 MMC mills worldwide**, a milestone to match the over 700 SACMI continuous grinding plants that have been installed by key players across the worldwide ceramics industry.

Back in the mid-1980s SACMI was already busy refining the continuous grinding process, an extremely innovative solution at that time. Indeed, it revolutionised production in terms of efficiency, versatility and the

ability to implement **growing levels of automation**. Since 2005 SACMI grinding solutions have been **modular**, providing at least 15% more energy savings with respect to the previous range and much more extensive automation.

These solutions combine unique versatility and performance with the **total reliability** that has won so much customer appreciation: just consider the fact that the first continuous mill, built by SACMI back in 1984, is still in operation.

With this latest order - which provides a further boost for the plant where the Continua+ slab/large tile line is installed - SACMI has again strengthened its **close partnership with RAK Ceramics**. One of the **world's top five ceramic companies**, RAK produces 110 million m² of floor and wall tiles and markets them in 150 countries via the Group's numerous branches and facilities, located across five continents.



Cement granules magnified x100.
© Claudius Peters

Cement Technik

We make it our business to
understand the detail.



STOCKYARDS



SILO TECHNOLOGY



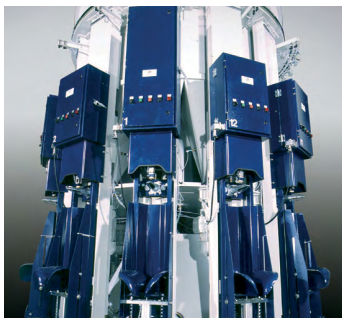
COOLING



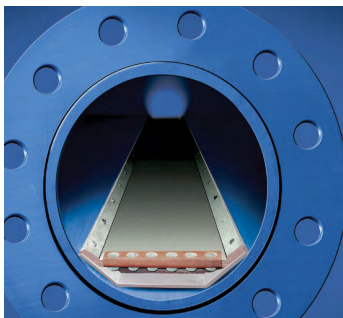
GRINDING



PNEUMATIC CONVEYING



PACKING



FLUIDCON



PALLETIZING

We know how

claudiuspeters.com

- ALUMINA HANDLING SYSTEMS ■ ALUMINIUM PROCESSING ■ CALCINING ■ CONVEYING TECHNOLOGY
- COOLING ■ DISPATCH ■ DOSING ■ DRY BLENDING ■ DRYING ■ GRINDING ■ PACKING
- PALLETIZING ■ PNEUMATIC CONVEYING ■ PULVERIZED FUEL SUPPLY ■ SILO SYSTEMS
- STOCKYARD SYSTEMS ■ MARINE POWDER HANDLING ■ TURNKEY PROJECTS

HEADQUARTERS: CLAUDIUS PETERS PROJECTS GmbH
Schanzenstraße 40, DE-21614 Buxtehude, Germany. Tel: +49 (0) 4161 706 0


CLAUDIUS PETERS

Claudius Peters Technologies SAS – Illzach / Claudius Peters (Americas) Inc. – Dallas / Claudius Peters (China) Ltd. – Beijing & Hong Kong / Claudius Peters (UK) Ltd. – London / Claudius Peters (Italiana) S.r.l. – Bergamo
Claudius Peters (Iberica) S.A. – Madrid / Claudius Peters România S.R.L. – Sibiu / Claudius Peters (do Brasil) Ltda. – São Paulo / Claudius Peters (India) Pvt. Ltd. – Mumbai / Claudius Peters (Asia Pacific) Pte. Ltd. – Singapore



VIDMAR: NEW SYSTEM FOR MANUFACTURING CORRUGATED/FLAT FIBRE CEMENT SHEETS FOR THE CLADDING AND ROOFING OF BUILDINGS.

By: VIDMAR, Spain



Figure 1. Fibre cement sheets



Figure 2. Detail of the laminating machine

Today, bringing new products to the market is absolutely essential to guarantee the future of a business since, in this way, competitiveness is increased, and the company image is also strengthened. It becomes known as an enterprising, leading company: capable of developing new innovative products and adapting to the needs of its customers.

It is for this reason that, within the RDI activities developed by VIDMAR GROUP in search of new opportunities and business niches, is the design of new construction equipment.

Study of the sector VIDMAR usually operates in and the products that we offer today means that research and development of the project “NEW PROCESS FOR THE MANUFACTURE OF CORRUGATED CEMENT SHEETS FOR CLADDING AND ROOFING” brings this added value to the company and the market.

Therefore, with this new system, VIDMAR intends to bring an innovative process for the continuous manufacture of corrugated/flat fibre cement sheets to the construction industry. This provides a new solution for roofing products at an industrial level, both for houses and for industrial warehouses.

The complete system goes from reception of the raw materials to the production of the finished sheets, although the supplies can be divided into different stages. This means that the customer can acquire the heart of the installation - the laminating machine - and then choose between carrying out some parts of the process in manual mode, (such as the longitudinal cut of the sheets, the extraction of the sheets and mould and their positioning in hold cars to be cured) or acquiring the rest of the equipment so that the process is totally automatic.

This new type of machine, which has already been patented by Vidmar, is based on a totally different concept to the one used up until now in the Hatschek system. This same system has been used since the beginning of the 20th century to produce this kind of fibre cement sheet, but in a wet process with greater investment and complexity than the VIDMAR system.

The development of this machine/system has been accepted as innovation by the CDTI (Centre for the Development of Industrial Technology), the Spanish financing system for RDI projects.

The system for the manufacture of corrugated/flat fibre cement sheets is made up of two essential parts:

A.Mortar.- Design of a mortar made up of cement, aggregate, synthetic fibre, additives and water, which makes it possible to easily laminate and mould with minimal adherence to the parts of the machine that it will be in contact with. It also offers physical and chemical characteristics that make it possible to produce sheets that are easy to handle and that fulfil existing regulations, both in terms of size and resistance, regardless of the thickness of the fibre cement sheet to be used.

B.Machinery. System to produce sheets using the designed fibre cement mortar, which is made up of 7 essential, separate parts.

Together, both systems are what allow us to obtain a machine capable of producing up to 90 longitudinal metres per hour of fibre cement sheets with a thickness of 1000 mm (90m²/hour), both corrugated and flat sheets, when the supply is complete and operation is totally automatic, from weighing the raw materials, mixing, lamination, cutting, extraction for storage in cars, to automatic return of moulds and demoulding.



Figure 3. Continuous sheet produced using the VIDMAR system before longitudinal cutting

NEW TYPES OF CEMENT

The machinery of the entire system is made up of several blocks that can be acquired separately, according to the needs and wishes of each client:

- System for storage of raw materials, dosing, weighing and transport to the mixer.
- System for mixing, laminating and moulding of the sheet.
- System for longitudinal cutting (manual or automatic).
- System for extraction and positioning of the moulds/sheet on the cars to be set.
- Automatic mould supply system.
- Demoulding system.
- Automation of the installation

The automation system is based on market equipment (PLC) and high-level sensors, which make it possible for all of the equipment that makes up the system to operate in precise synchronisation, so that the required material circulates and is distributed by the rolling-mill train at all times. During the process it is subjected to an appropriate degree of pressure in order to increase the final resistance of the sheet. All this leads to a decrease in the consumption of raw materials - mainly water - and, as an indirect consequence, fewer CO₂ emissions in the atmosphere. Therefore, the sheets produced can

be considered “environmentally friendly”.

With the development of this new system “invention”, VIDMAR brings to the market an innovative industrial production system for a key element in construction: sheets to clad roofs and side walls for use in many types of constructions. This production system represents a qualitative leap in the construction market since it will enable the production of these pieces in a more economical way, allowing a greater combination of formulations of raw materials. It will also make it much more achievable for entrepreneurs to begin productive activity, thanks to the minimisation of the costs of the investment, mainly in developing countries in Latin America, Africa and Asia.

Currently, as mentioned, there are other methods of manufacture for fibre cement sheets, such as the Hatschek process. This is a wet method with high investment costs and, subsequently, high operation and maintenance costs.

The manufacturing method that VIDMAR has developed “invented” with the implementation of this system is based on the direct mixing of cement with fibres, water and additives, like any kind of concrete, without having to dilute or liquefy it. Furthermore, no vacuum water absorption stage is needed, therefore

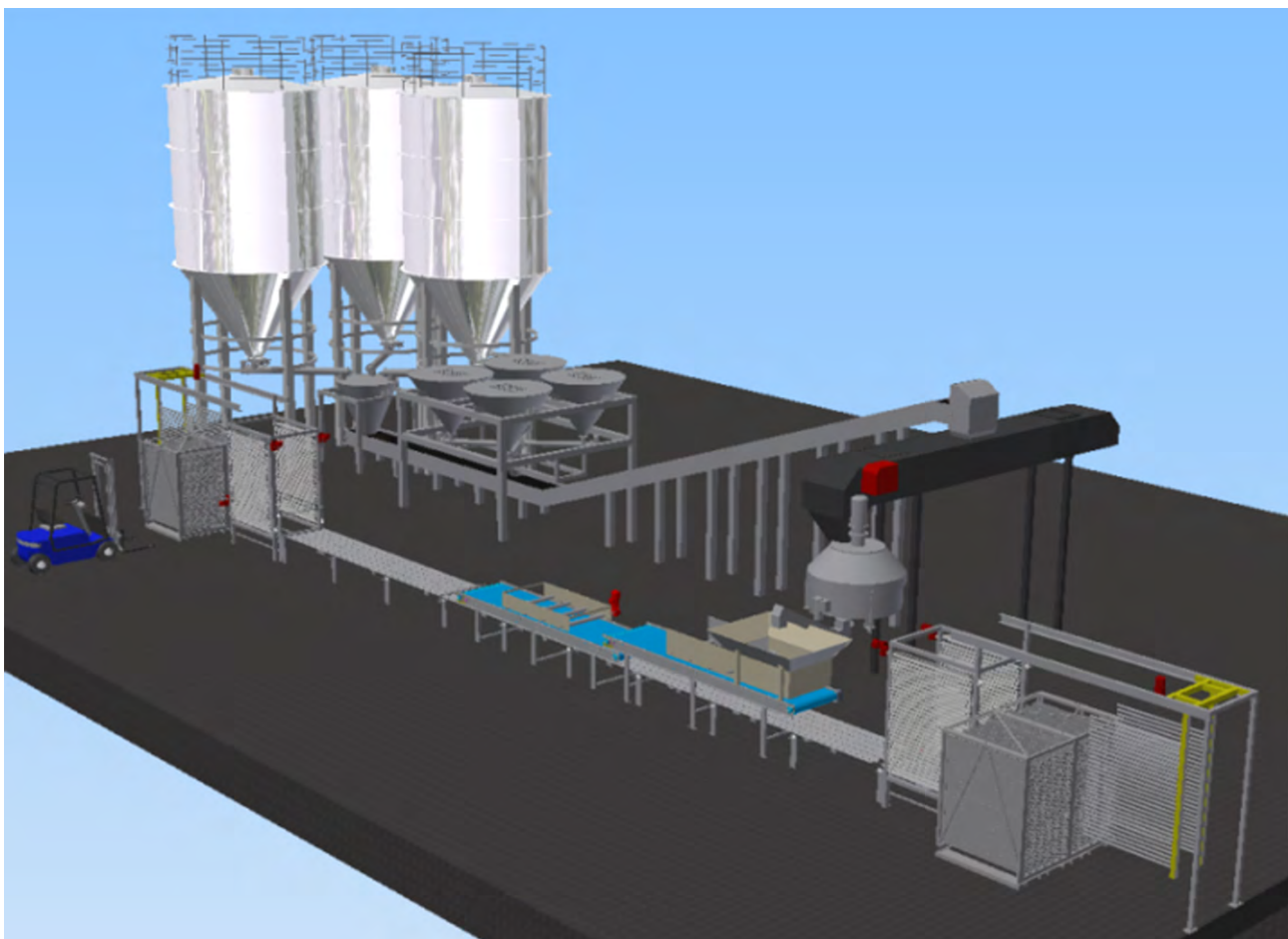


Figure 4. Three-dimensional view of the whole, completely automatic plant

generating a very small amount of residual water. That these two operating conditions are not required in the manufacturing system designed by VIDMAR indicates a radical change and an advance in the state of the current technique. It makes the mass production of these fibre cement sheets less complex, without affecting the quality of the final product, and therefore, with less investment.

The specific objectives and technical specifications achieved with our VIDMAR system are detailed below:

- Research the different possible mortar compositions, with the objective of increasing the range of raw materials to be used in the process.
- Achieve speed in production, whilst guaranteeing the quality of the material in accordance with functional and regulatory requirements.
- Reduce the machinery needed in the manufacturing process, making the system more compact and therefore reducing maintenance costs.
- Reduce the consumption of water in the formulation stage.
- Reduce/eliminate residual water.
- Obtain a “moveable” manufacturing system, that is, one that can be easily moved to another location.

- A compact system which does not require large spaces for its installation.
- A system that can manufacture different kinds of sheets, simply by changing the moulds.
- Possibility to manufacture fibre cement sheets of any desired length.

Main technical features:

- The VIDMAR system is made up of an installation to produce corrugated/flat fibre cement sheets, using moulds that are 1500 long x 1000 mm width, with the possibility of thicknesses from 5 to 12 mm, always in accordance with the guidelines of existing regulations.
- An outline of the process, detailing each phase in the new manufacturing system, can be seen below:

José Roda
Vidmar Group General Director

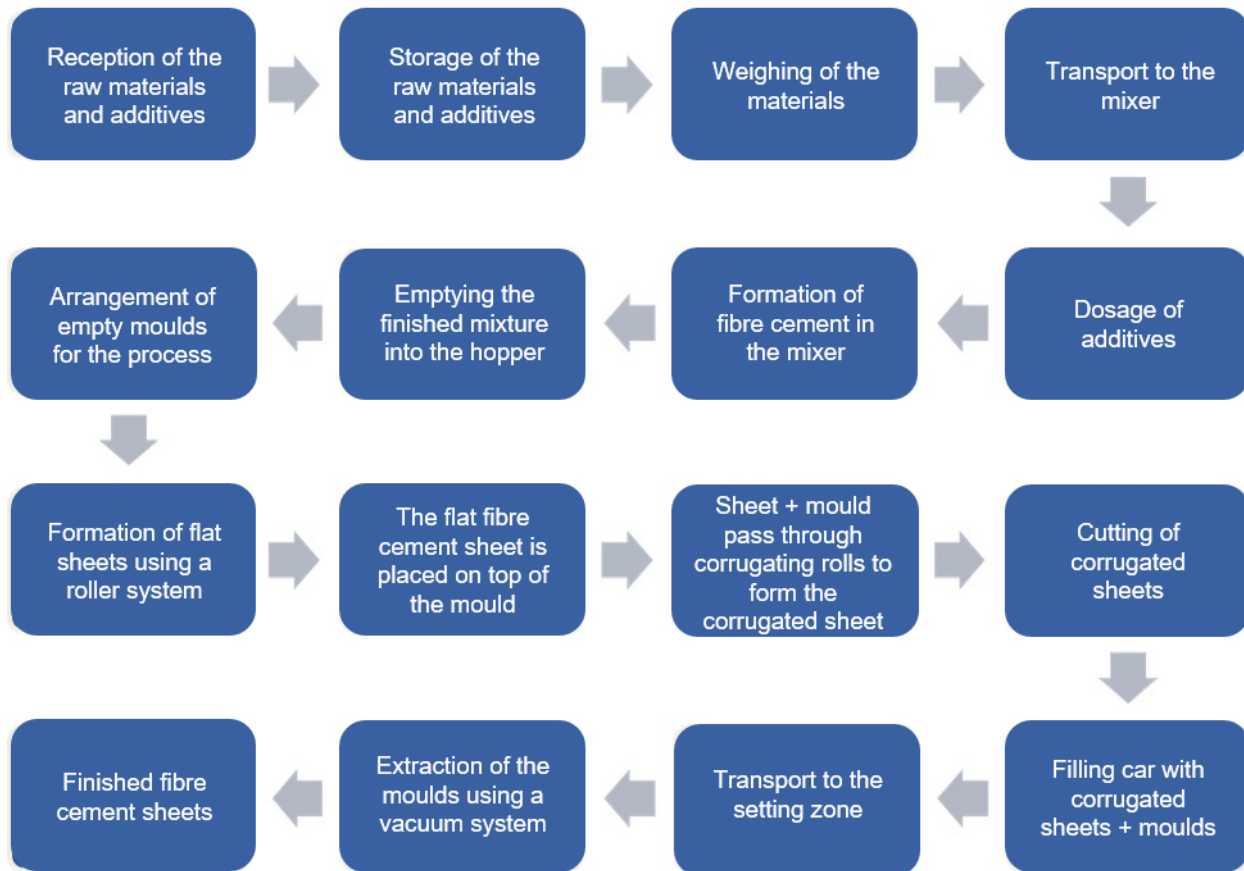


Figure 5. Phases in the new manufacturing system

HOLDERCHEM



Holderchem offers products and services to enhance the productivity of cement mills, and properties of cement, concrete and masonry products. Holderchem cement additives supplied under the Batimix trademark, increase mill productivity, and enhance the properties of cement and characteristics of concrete and mortars.

Holderchem also supplies cement companies with specialty cement additives for specific applications, including air-entrainers used in the production of masonry cement; water reducers to decrease the water demand of cements for given concrete or mortar consistencies, or to improve their workability for given w/c ratios; setmodifiers (retarders and accelerators) to enable proper adjustment of cement setting times; water permeability reducers for optimized moisture absorption rates; and chromium VI reducers, available in both powder and liquid forms, which offer even at low dosages, a significant and durable reduction in Hexavalent chromium.

Reducing energy consumption is a main target in the field of cement mill technology. By increasing the production rate at same total energy consumption levels, a lower cost of energy per ton of cement produced is achieved. The mechanism for achieving higher mill productivity is explained by a physico-chemical process. By decreasing the size of the clinker, the free energy of the surface increases, reducing mill efficiency. As Batimix grinding aids are absorbed, the particles surface charge and energy required to break them are reduced. In addition, cement additives cause a change in electrostatic forces lessening the attraction (Van Der Waals forces) between particles, thus increasing repulsion. Better powder fluidity is typically achieved with grinding aids, reducing clogging during storage, packing or offloading from bulk transport trucks or silos.

Slag is more difficult to size reduce than clinker. Thus the energy required to grind slag cement to a given fineness is higher than for clinker. Both slag and clinker

are harder than limestone and thus the grinding of the latter will require significantly less energy. However, a reduction in the clinker factor that results from the substitution of clinker with limestone is likely to affect cement early and late compressive strength. In such circumstances, the addition of Batimix quality strength improvers can mitigate losses in early and late compressive strengths. In addition to better grindability, the substitution of clinker with limestone is likely to yield better workability and rheological properties.

The Blaine specific surface or fineness of the finished cement is a main factor affecting early strength development. Rapid hardening cement is produced with a Blaine in excess of 500 m² /kg. To achieve high fineness, Batimix amine based grinding aids are recommended as they also have a beneficial effect on the hydration process. Cement has a positive charge while the charge of sand and aggregates is negative. Water molecules are dipolar. Surfactants cancel out opposite charges, decreasing free energy. Batimix cement additives can be used to increase or decrease setting times and thus are particularly suited to extend the use of Supplementary Cementitious Materials.

It is worthwhile noting that in some circumstances, different dosages of same cement additive might result in a decrease or increase in setting times, highlighting the importance of identifying the right product and dosage to meet the requirements of a specific application.

Our sales consultants sales@holderchem.net & crm@holderchem.net are ready to assist customers in lab and field tests find the right solution for their cement manufacturing needs.

193 Street 35, Sector 2, Yarzé – Baabda, Lebanon
Mailing Address: PO Box 40206 Baabda, Lebanon
Tel: +961 5 923986 / 924799, Fax: +961 5 921118
Website: www.holderchem.net

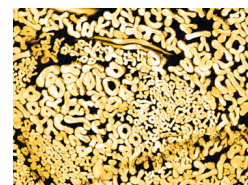
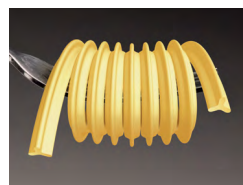
What can pasta teach us about filtration?



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

The Profile makes the difference.

.....
P84



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

CMD Gears, introduces the KGD, its solution dedicated to kiln drive, and the advantages brought to the cement manufacturer.

By: CMD Gears, France

The performance of a cement plant heavily relies on the performance of the kiln, and the stability of its running behaviour. One of the main challenge being: maintaining the capacity to rotate the kiln in difficult circumstances of global and local shell deformation. Often driven with a conventional and not suitable solution of girth gear and pinion, maintenance of the kiln becomes a continuous concern of the maintenance team and management. By introducing the Bogiflex® KGD, CMD is aiming at making the drive system a reliable part of the kiln performance, by enhancing its reliability and cost performance.

Conventional kiln drive systems

In the vast majority of the plants, the kiln drive systems include a girth gear and a pinion. This basic concept has been existing for more than a century and has not drastically been reinvented since.

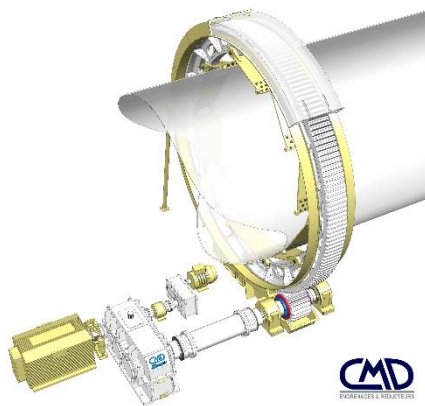


Fig 1 - Conventional kiln drive system

Conventional kiln drives of today (see fig 1) therefore includes:

- A girth gear, mounted onto the kiln via an elastic assembly system
- A pinion meshing with the girth gear. This pinion usually has wider teeth than the girth gear in order to cope with the axial movement of the kiln
- A gearbox driving the pinion through a gear coupling.

The weak point in this drive system is usually the open gear set (pinion and girth gear). Indeed, the girth gear following the kiln movement and deformation, while the pinion is fixed to the ground, proper meshing

between the pinion teeth and the girth gear teeth can't be achieved.

Kiln running behaviour – the idea behind the Bogiflex® KGD

The kiln running behaviour greatly impacts on the running conditions of pinion and girth gear. Indeed deformation of the kiln shell is prone to modify the girth gear geometry, in the following ways :



Fig 2 – Thermal readings of running kiln

- A kiln shell thermal or mechanical crank will impact on center distance between the pinion and girth gear and will lead to wobbling
- A kiln shell eccentricity will impact on the geometry of the girth gear (axial and radial runout) and will affect center distance and / or alignment between the pinion and girth gear
- Deformation and movements of the kiln shell will negatively affect the working conditions of the pinion and girth gear

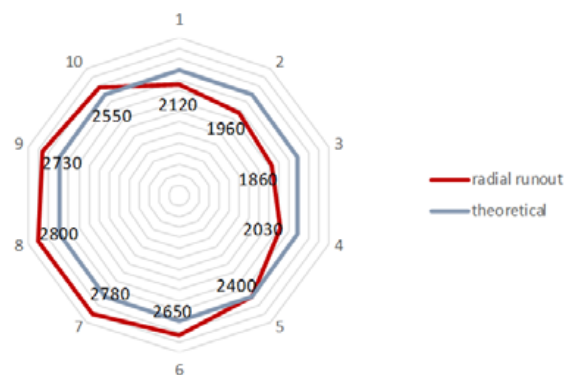


Fig 3 – Radial Runout readings



Fig 4 –Axial Runout readings (1/100mm)

Recent developments in the way kilns are run, like the use of recycling fuels, can impose higher kiln shell temperature and can even amplify the above listed issues.

Return of experience records show that approximately 10% of installed new kilns face a forced stoppage within 1st year of operation and 50% of them over 12 years operation.

In comparison, Bogiflex® KGD is operating now for more than 10 years without any forced stoppage.

In recent years, self aligning pinions were introduced in order to improve the pinion / gear meshing. However, this type of pinion only deals with the tilting of the girth gear. It does not deal with its movement or runout, and therefore only partially improves the situation.

The Bogiflex® KGD concept

This led CMD into developing a completely new solution, which would solve the listed issues.

The solution was actually already in CMD’s toolbox: The Bogiflex® basic concept had been created in the 1960’s and was already used in many steel or sugar industry applications.

The Bogiflex® is a floating and self-aligning gearbox. Self-alignment capability is allowed by the fact that the gearbox output pinion, thanks to some degree of liberty, self-aligns automatically to the driven gear wheel.

In the start of 2000’s, the decision was taken to develop a modern version of the Bogiflex® for kilns. A fruitful partnership started together with the Holcim group, which ended in the creation and application of this new breed of kiln drive system.

The Bogiflex® KGD (for Kiln Gear Drive) is a drive system which is floating on, and self-aligning to, the kiln girth gear. It follows the movement of the girth gear, and therefore kiln shell, in every direction; it compensates for any kiln deformation or movement and ensures that meshing conditions between the

CMD BOGIFLEX® KGD (Kiln Gear Drive)

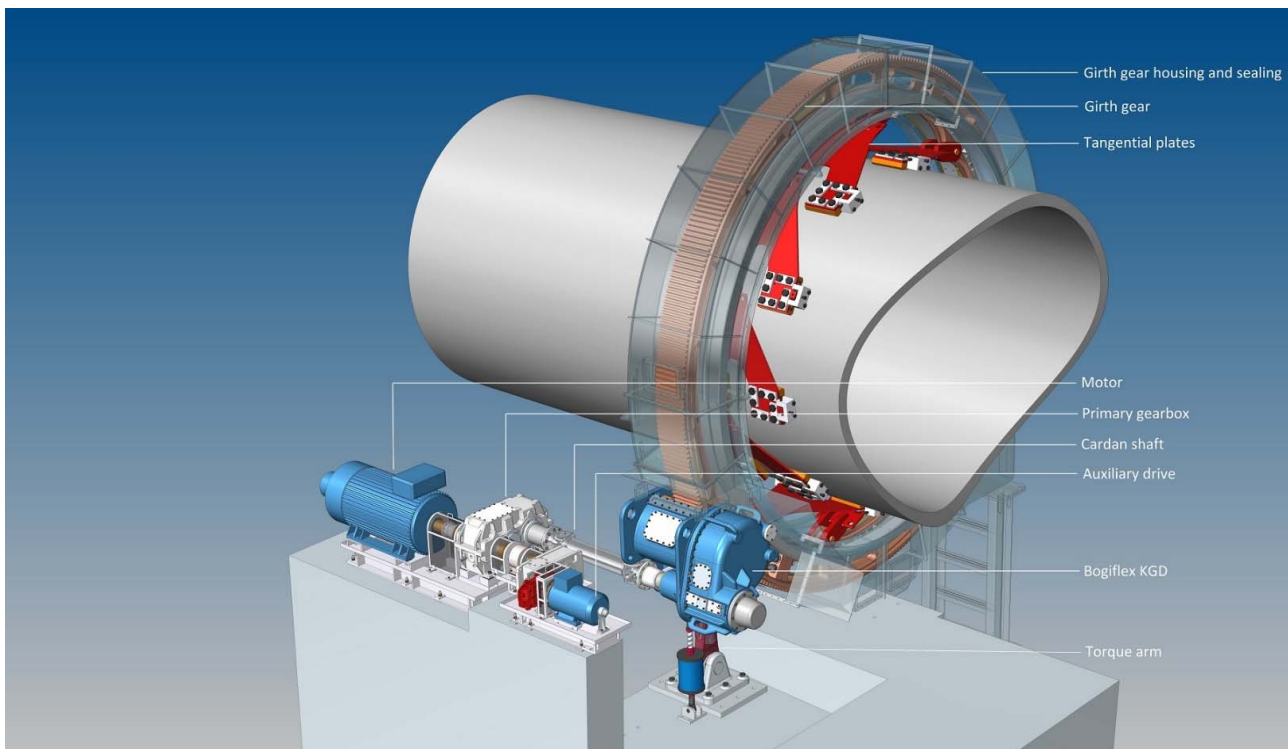


Fig 5 – Bogiflex® KGD mounted on kiln

pinion and girth gear are always constant.

The CMD Bogiflex® KGD (Kiln Gear Drive) includes the following components:

- The girth gear, mounted on the kiln via tangential blades. It is 100% manufactured by CMD and its sister company Ferry Capitain, and can be made either of cast steel or cast iron.
- The Bogiflex® itself, meshing with the girth gear, and supported by the reaction arm
- The cardan shaft
- The primary gearbox
- The auxiliary drive
- The lubrication units
- The girth gear cover

The whole above package being delivered by CMD.

The girth gear and Bogiflex® themselves were designed to be standard components and therefore allow commonality of spare parts between several plants.

The tuning of the drive reduction ratio is obtained by adjusting the specification of the primary gearbox

3 standard sizes of Bogiflex® KGD units exist so far, covering most of the existing kiln sizes, reaching to the biggest lines above 10000TPD :

KGD size	Kiln shell diameter (m)	Clinker capacity (Tons per day)
KGD20	Up to 4.6	2000 to 4000 TPD
KGD26	4.6 to 5.2	4000 to 8000 TPD
KGD32	More than 5.2	8000 to 13000 TPD

Table 1 – Bogiflex® KGD range

How does the Bogiflex® KGD work?

The Bogiflex® itself includes the main pinion, meshing with the girth gear. Two pinion rollers are mounted on the pinion shaft, at each side of the pinion, and roll onto two girth gear external tracks (These tracks are cast in, at each side of the girth gear teeth). Thanks to the “pushing effect” (the angle formed between the meshing forces and the reaction arm position actually pushes the pinion towards the girth gear), the pinion rollers are permanently in contact with the girth gear tracks. This maintains a constant position of the pinion vs the girth gear, and therefore constant center distance and alignment.

Another set of rollers, mounted in the Bogiflex® casing, roll onto two girth gear internal tracks. They are only useful to maintain the Bogiflex® in position when the kiln is stopped or rolling backwards.

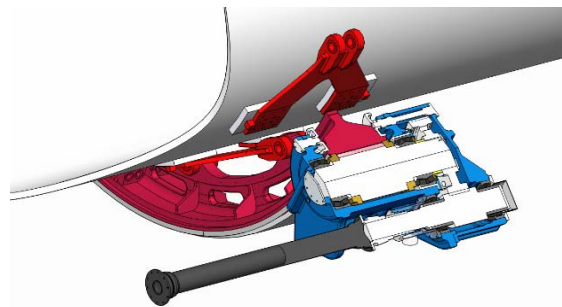


Fig 6 – Bogiflex® KGD cross section view

The freedom of movement of the Bogiflex® is allowed by the possibility of axial movement of the input pinion inside the Bogiflex®, and by the fact that the Bogiflex® is linked to the foundations via an articulated reaction arm.

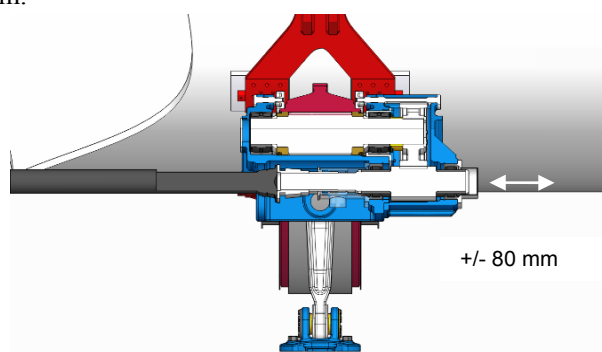


Fig 7 – Bogiflex® KGD axial and tilting movement capacity

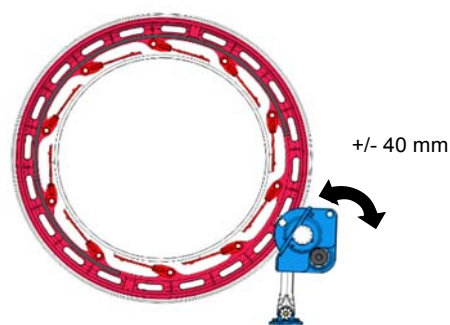


Fig 8 – Bogiflex® KGD radial movement capacity

Low viscosity and High viscosity oil circulation systems are supplied with the Bogiflex®. Thanks to their integrated monitoring, they ensure the safety of the drive.

Bogiflex® optimizing the TCO (Total Cost of Ownership) :

Some of the advantages brought by the Bogiflex® concept are obvious:

- Constant position of the pinion to the girth gear, and therefore constant meshing conditions and excellent load repartition on the pinion and gear teeth
- A direct consequence is the increase of pinion and girth gear life
- Reduction of shutdown risk thanks to stable working conditions
- No more pinion alignment required

The globalization and standardization of the concept also bring other advantages:

- Safety of the integrated oil circulation systems
- Integrated monitoring system (for vibration, temperatures, optional monitoring of torque available)
- Standardized spare parts, which can be shared between several plants
- Reduced foundations requirement (the Bogiflex® itself is only supported by a reaction arm), which allows its use for new kilns as well as for the replacement of existing drives.

These technical advantages make the Bogiflex® KGD solution a cost effective system as well. Net present value (NPV) calculation carried out by Holcim did show this.

Field approved technology

A total of 14 units were ordered so far, 6 for existing kilns (increase of capacity and/or kiln shell behaviour) and 8 for new projects, in various areas of the world. These units are behaving as designed, and the kilns are now driven in a reliable and resilient way.



Fig 9 –Kiln upgrade with Bogiflex® KGD26



Fig 10 – example of Bogiflex® KGD20 during installation

Conclusion

The Bogiflex® is an innovative, reliable and cost effective solution for the kiln drive applications. Its versatility allows it to be used on either new kilns or existing kiln drives replacements.

CMD is at the disposal of all engineering companies and cement makers to adapt this solution to their kilns.

Please contact contact@cmdgears.com for further information. Video: <http://bit.do/eMvJ5>

A QUESTION OF CHARACTER – ON THE EFFICIENT UTILIZATION OF ALTERNATIVE FUELS WITH VARYING QUALITY

By: Dr. Dominik Aufderheide & Dr.-Ing. Luigi Di Matteo, DI MATTEO Group, Germany

Abstract

There is no reasonable alternative for the usage of alternative fuels (AF) as the main source of energy for the clinkering process in modern cement manufacturing, since the economic and ecological advantages are too obvious to be able to be denied. However, the optimal implementation strategy for alternative fuels needs to be chosen wisely, since typical substitute fuels differ immensely from classical fuels regarding their general bulk properties and incineration characteristics. This article collects some best practice guidelines for AF installations from decades of experience made by DI MATTEO with projects realised all around the globe. In this context mainly the proper selection of preparation equipment, such as screeners, classifiers and desagglomerators, will be discussed.

Keywords: Alternative fuels, bulk material storage, gravimetric dosing, screeners, desagglomeration

1. Introduction

The high energy demand of the cement manufacturing process initiated the wish to substitute classical fossil fuels for the clinkering process by more cost effective and sustainable alternatives already decades ago. Besides the obvious economic advantages of such an approach, it can be also considered to be without any alternative when it comes to an evaluation of the ecological aspects of modern cement production. Especially in times, where typical stakeholders of the cement plants are more sensitive regarding the protection of the environment and sustainable manufacturing strategies, it is important that the implementation strategies for alternative fuels (AFs) are chosen wisely. In this context it need to be understand by all involved parties from the very beginning of a project, that typical material streams for AF differ immensely from those for other raw materials and fuels. Most substitute fuels are nowadays derived from industrial and/or municipal waste streams (e.g. residue derived fuels – RDF), biomass (e.g. rice straw, corn plants, etc.) or tires (e.g. in shredded or fluffy form), where one of the major challenges for the utilisation of AF starts even before the material even arrive in the cement plant. The establishment of a proper logistic chain requires often the involvement of more than a single exclusive preparation plant as a supply partner, which has certain advantages if it comes to guarantee a continuous material stream, but the more fuel sources are used, the instability of the quality and properties of the AF increases. Even if smart contracting and purchasing can compensate some of the problems, it is important to consider that the installed equipment for handling, storing and dosing of the AFs within the cement plant are able to function with a high availability and low maintenance costs under all circumstances derivable from changing material characteristics. Since the overall development of AF usage started almost three decades ago in the German cement industry in the very neighbourhood of the DI MATTEO Group located in Beckum, Germany, the company can look back to more than thirty years of realising AF projects all around the globe. Since that the company developed a general seven stage concept (SSC) for the design and realisation of AF feeding installations, as already introduced in [1]. Figure 1 provides an overview of the typical material streams of an AF scheme beginning from the waste stream over the generation of fuel (pre-processing) to the final usage of the AF within the combustion process (co-processing).

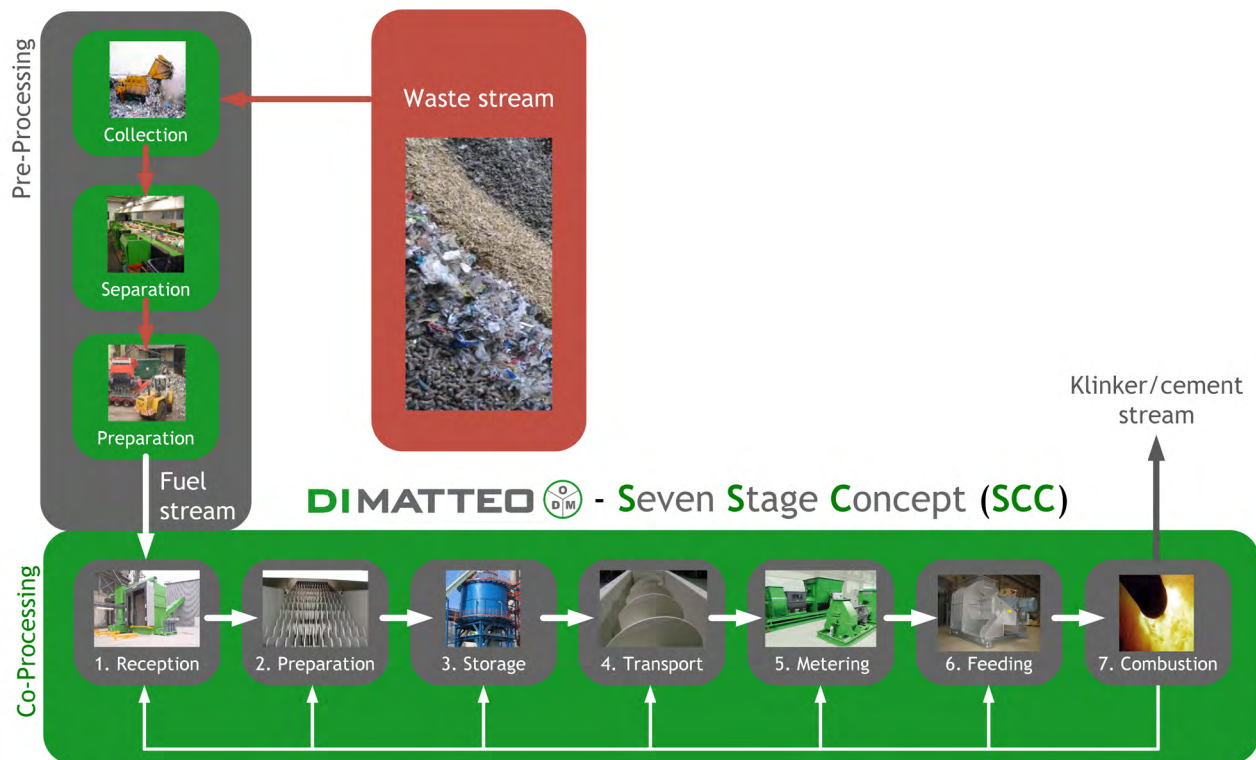


Figure 1- Seven Stage Concept (SSC) for the systematic classification of AF handling plants

On the co-processing side, the SSC includes the seven main stages for using substitute fuels in the cement plant from the reception, over storage, transport and dosing, to the actual process feeding. This article will provide some best case strategies for a very important aspect, which is often underestimated during the planning and realisation stage: the inclusion of proper preparation equipment within co-processing feeding lines.

The remainder of this article is therefore organised as follows: in section 2 a short overview of important properties and characteristics of AF is given in order to derive the problematic character of varying fuel qualities. Based on these findings, proper preparation concepts, such as screening and desagglomeration are introduced in section 3, before subsequently in section 4 efficient gravimetric dosing concepts are introduced.

2. Varying fuel qualities and their typical implications

As already mentioned, one of the typical pitfalls of implementing AF installations can be derived by the varying qualities of the fuel streams over time and between different suppliers. Typically for the experienced engineers at DI MATTEO, a clear characterisation of the AF are essential for a proper design of the feeding lines. As described in [2] this would include mainly the properties as summarised in Table 1.

For cement production, the geometric properties of the flame and the corresponding temperature distribution are a major aspect and these parameters depend significantly on the transport properties of AF particles within the flame. In Figure 2 an example of the combustion of AF particles within a flame is shown according to [3]. Here two trajectories are shown, where the one marked in green represents a high quality AF particle with a relative small surface area and a general 2D morphology mainly based on plastic foil. The particle ignites fast and the combustion process is limited to the flame, while bigger particles with a bigger surface area and especially those with a 3D morphology (e.g. hard plastic pieces) would ignite much slower and would not completely burn within the flame. Particles with a larger ignition delay and higher particle-velocities burn later (low quality AF particle – red trajectory in Figure 2) as well as their heat release is also required for optimal conditions in the cement kiln.

Table 1 – Typical properties of solid alternative fuels (SAF)

	Property	Values/Definitions	Implication for the process
PHYSICAL	General appearance	e.g. fluffy, sticky, lumpy, etc.	Selection of transport devices, selection of preparation elements, etc.
	Bulk density ρ	t/m ³	Design of volumetric capacities of transport and storage elements, selection of proper dosing device
	Compressibility, e.g. measured as $\rho=f(p)$	t/m ³ per N/m ²	Definition of time consolidation tendency and associated selection of storage
	Particle size distribution (PSiD)	Histogram for m ³	e.g. high amount of very small particles (<0.5mm) can be considered to be pure dust, while large particles (>200mm) are often even defined as impurities.
	Particle surface distribution (PSuD)	Histogram for m ²	Specific surface of the particles are important for tasks such as drying, but will of course mainly affect the combustion behaviour.
	Amount of impurities	%	Necessity for screening and/or separation of metallic parts
CHEMICAL	Chlorine and sulphur contents	mg/kg	Associated impact on calciner and kiln operation, e.g. chlorine loops and saturation
	Heavy metal components	mg/kg	Necessity to remain within certain regulative limits
	Humidity	%	Ability to be stored; effects of corrosion; etc.
THERMAL	Ignition temperature(s)	°C	Injection speed and retention times of different components of AFs
	Calorific value	kJ/kg	Definition of a general relation between thermal energy needed for the process and actual volume of infeed material
	Retention time	s	Definition of injection speed e.g. for pneumatic injection at the main burner
SAFETY	K _{St} value	bar m/s	Maximum rate of explosion pressure rise of dust clouds
	P _{max}	bar g	Maximum explosion pressure of dust clouds
		St 0 - St 3	Basis for later definition of ATEX zones

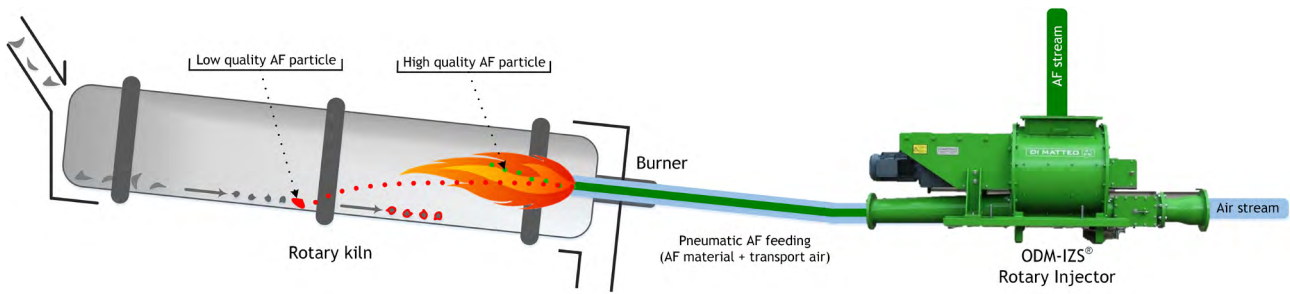


Figure 2- Trajectories of alternative fuel particles during co-combustion in a rotary kiln

These particles could only be tolerated to a small degree. This is the reason why RDF could only be substituted to the point where constant operating conditions could be guaranteed. Consequently, a RDF-co-fired flame has to meet the same flame geometry like a 100 percent fossil fuel fired flame.

In comparison with coal- or oil-particles, short burnout times are needed. The variation in lower and upper calorific value and transport properties controlling the particle trajectories are technical challenges but also necessary parameters to forecast and steer the firing system. In the following section an overview of preparation techniques is given in order to guarantee a stable operation despite the volatile nature of the instream of fuels into a typical feeding installation.

3. Preparation concepts

One logical consequence of a varying material input stream would be the inclusion of adequate equipment in order to homogenise the material stream as much as possible, which would lead to an at least partial compensation of the aforementioned process implications. However, this is easier said as really done, since the volatile nature of the different characteristics is even very difficult to measure in real time. Therefore most characteristic values are even not known at the time when they are fed to the burning process, but just characterised afterwards by lab personnel (e.g. chlorine content, bulk density, etc.).

Nevertheless there are some parameters which can be influenced by implementing the correct equipment within the feeding line quite efficiently. In this context it is possible to mention mainly screeners, classifiers, desagglomerators and drying facilities. While the first three machines are mainly important in order to deal with impurities within the material stream, dryers are an important measure for the efficient manipulation of the material humidity. Both shall be introduced and

discussed within this section.

3.1 Dealing with impurities

In surveys about reason for downtimes of AF feeding installations, most of the typical answers will be related to impurities of the material stream. However, even if it is quite well known for every experienced process technician that typical AF streams will be never completely free from foreign particles, there are numerous examples where this fact is completely ignored during the design phase, which leads to scenarios where the availability of those installations suffer enormously from downtimes due to blockages (e.g. oversized parts in pneumatic feeding lines) and even machine damage (e.g. caused by metallic parts). Not to mention the various possible process problems related to the infeed of undesired pieces of materials into the combustion process. This is surprising, since there is adequate equipment and associated concepts available in order to overcome these problems.

The following figure provides a typical example of the actual manifestation of impurities within residue derived fuel (RDF) and its relevance within typical quality assurance frames for co-processing. It can be seen in Figure 3, that the main impurities within an AF material stream can be identified to be coarse particles which have a particle size above the actually defined maximum. Furthermore particles which lie within the specified size can create agglomerates, e.g. due to the influence of humidity and/or time consolidation effects within storages. This leads to lumps of material which cause the same problems as coarse particles or even worse, since the agglomerates can be quite big. Furthermore ferrous metallic impurities are part of the AF stream even if during the preparation of the fuel magnetic separators are used.

DI MATTEO developed for all these impurities adequate machinery which can be integrated within typical AF feeding lines in order to make sure that

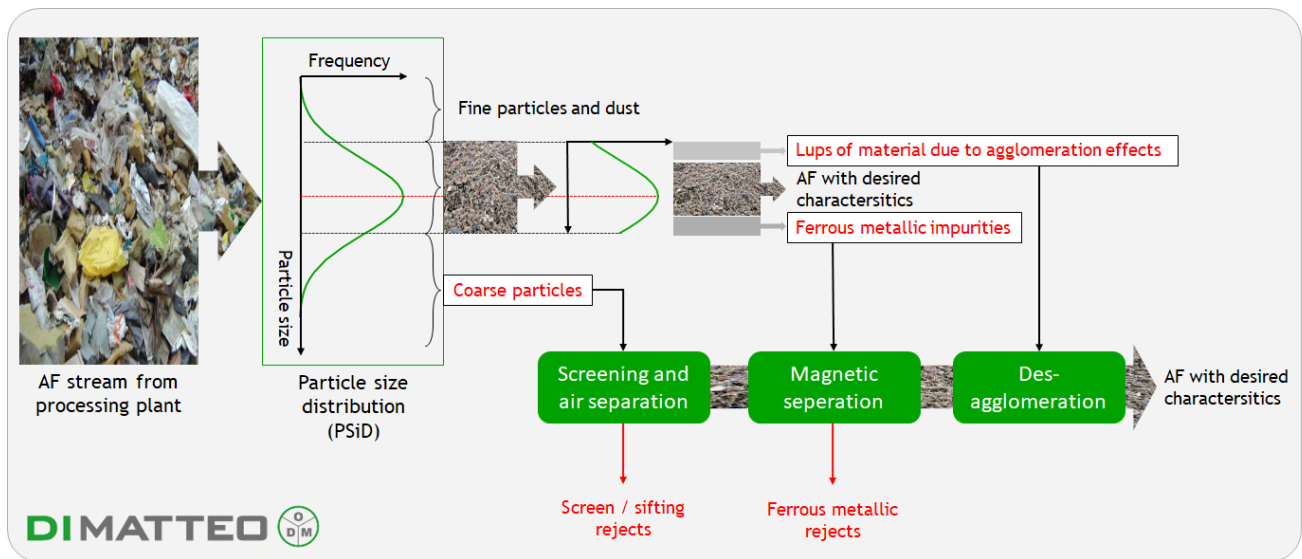


Figure 3- Impurities within AF streams

these impurities would neither influence the burning process nor damage other machines.

3.2 Screening and air separation

As mentioned earlier, oversized three-dimensional impurities could affect your material flow and disturb the operation of facilities. A disc separator (ODM-DiscSCREEN) should be used to avoid this and to protect the machines further along in the process. To separate out oversized sediment material, the entire material flow is guided over the rotating sorting screens. During the conveying process, fine materials fall between the sorting screens or sorting rollers. The oversized sediment is transported further along and then ejected. The disc shape, construction materials, spacing, and layout, as well as the size of the sorting

area are tailored to the bulk materials and the specific sorting job. The gaps between discs can also be refined to accommodate other materials. Figure 4 shows the machine in the premises of DI MATTEO in Germany and typical rejects from a disc sorter.

Alternatively DI MATTEO offers also air separators, like the ODM-AirSEP which can be also directly included within existing pneumatic transport lines. Continuous air separation occurs with the aid of ambient air. If a simultaneous drying process is also needed, the separation takes place with the heated air. The routed material is separated in proportion to the gravitational force and the flow force. Since no amount or only small amounts of heavy particles or foreign matter are subsequently found in the bulk material, the use of air separators produces a more stable and a more even pneumatic conveyance during subsequent processing.



(a)



(b)

Figure 4- ODM-DiscSCREEN disc separator – (a): machine; (b): typical rejects

Each air separator is adapted to the requirements of the bulk material. For material producing heavy wear, especially robust implementations in a heavy-duty design are available.

3.3 Magnetic separation

Besides the impurities which are mainly distinguished from the main material stream due to its size, also non-ferrous and ferrous metallic parts are causing problems within the AF feeding. These particles cannot be separated by typical screens or sifters, due to the fact that their size or weight can be quite small. Therefore DI MATTEO typically implements within



(a)



(b)

Figure 5- ODM-MAS magnetic separator – (a): machine; (b): typical rejects

their feeding lines magnetic separators (ODM-MAS). The compact and modular design of the drum magnetic separator makes it possible for it to be easily integrated into already existing equipment. With the appropriate construction materials, the magnetic separator is especially low-wear and needs little maintenance. Figure 5 provides an overview of the machine and the related typical rejects. The working principle is based on a magnetic drum rotating within the material stream. Non-ferrous particles are just conveyed to the main outlet chute, while ferrous particles stick to the magnetic drum and can be separated from the material stream.

3.4 Desagglomeration

From time to time it is observable that fractions of the overall material stream are building lumps. Especially the influence of humidity and time consolidation lead to material agglomerations which are typically rejected by screeners or classifiers. However the lumps consist of high quality alternative fuel which is just trapped in agglomerates. Therefore it is more reasonable to try to destroy the material lumps and feed them back to the normal fuel stream. For this task DI MATTEO offers the ODM-DES desagglomerator. During breakdown of the agglomerate, the entire material flow is transported and loosened over a rotating baffle plate in the direction of discharge. To accomplish the breakup process, the breaking tools on opposing shafts fit together like intertwined fingers. This produces a very uniform product. Since the desagglomerators are modularly constructed, they can be adapted for a variety of purposes. The robust design promises an extra-long service life.

4. Conclusion

The proper integration of preparation machines, such as screeners, classifiers and des-agglomerators, within feeding lines for alternative fuels can help in order to guarantee a trouble-free operation of the overall installation. Furthermore possible contaminations of the clinker as a result of undesired combustion behaviour of AF particles of poor quality can be avoided. However, the proper selection of adequate equipment and the associated arrangement is essential for a proper preparation of the AF before process feeding. For this a proper knowledge of the material properties are important. DI MATTEO can help to design a specific arrangement of equipment in order to guarantee a maximum availability of the installations. In this context an adaption of existing feeding lines can be mostly realised without much efforts and the inclusion of screening and separation techniques will have an immediate effect on the quality of the process feeding.

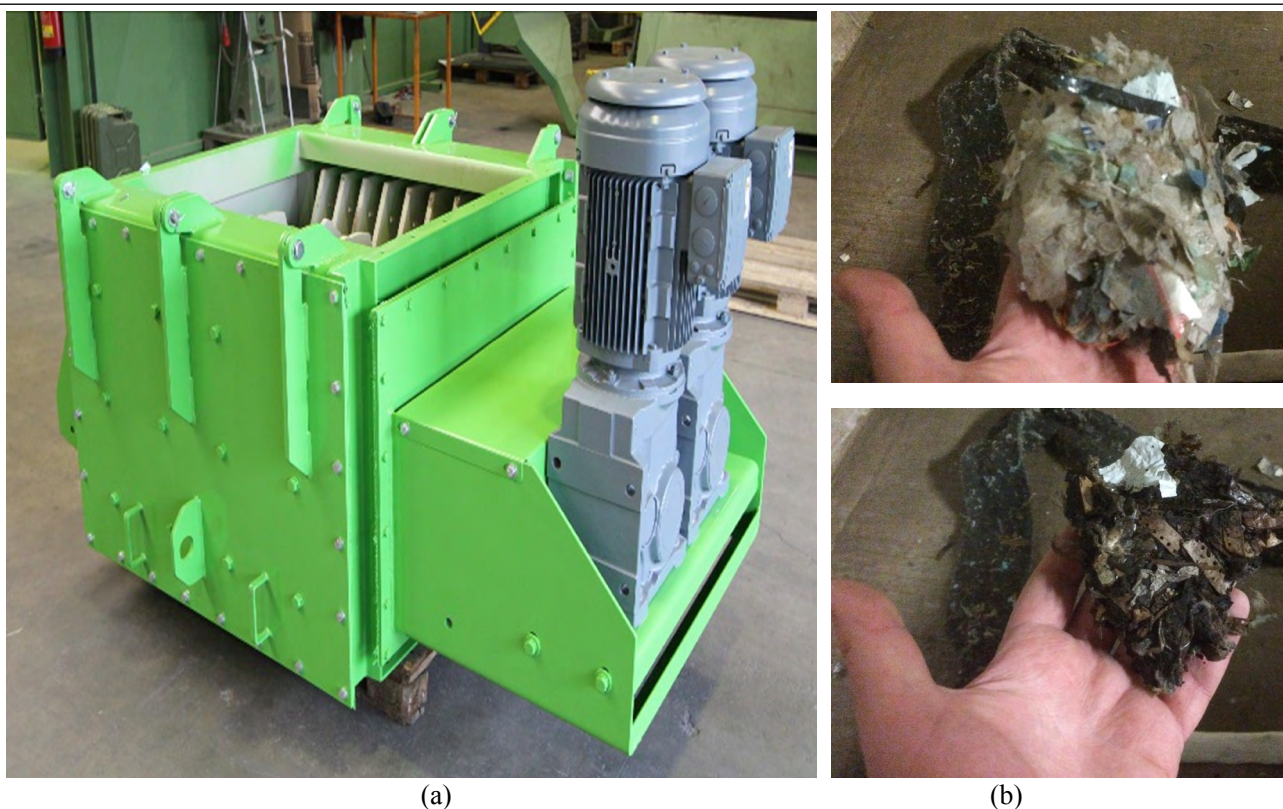


Figure 6- ODM-DES desagglomerator– (a): machine; (b): typical lumps (material agglomerates) to be broken by the machine

References

- [1] Aufderheide, D. and Di Matteo, L.: A systematic classification and modularization of handling systems for alternative fuels. In ZKG International 5 (2016), Bauverlag, Gütersloh, Germany - ISSN 0949-0205
- [2] Aufderheide, D. and Di Matteo, L.: Best practice approaches for co-processing of alternative fuels in the cement industry. In Cement International 1 (2017), pp. 26-33, Verlag Bau und Technik, Erkrath, Germany – ISSN 1610-6199
- [3] Krüger, B., Mrotzek, A. and Wirtz, S.: Separation of harmful impurities from refuse derived fuels (RDF) by a fluidized bed. In Waste Management 34 (2014), pp. 390-401

About the authors

Dr. Dominik Aufderheide is the Head of the Automation and Research department at the DI MATTEO Group, Germany. He holds a PhD in Electrical Engineering

from the University of Bolton in the UK. He has been an active researcher in the field of process technology, automation and sensor technology for more than a decade and participates actively in the development of new technologies within the field of co-processing of alternative fuels within the cement industry.

Dr. Luigi Di Matteo is the CEO of the DI MATTEO Group, Germany. He received his doctorate degree from the Technical University of Braunschweig, Germany. His contributions to the field of conveying and process technology, especially for problematic bulk materials, have become a key element for utilizing alternative fuels within the clinkering process.

Contact:

Di Matteo Group
Dr. Dominik Aufderheide
Head of Automation and Research
dominik.aufderheide@dimatteo.de
www.dimatteo.de



Bauverlag BV GmbH, 33311 Gütersloh, www.bauverlag.de

APPGRADE YOUR KNOWLEDGE.

THE ZKG INTERNATIONAL APP.

MORE MULTIMEDIA: enjoy more videos, pictures and interactive content. **MORE TRANSPARENCY:** use our search engine to find articles from all published issues. **MORE OVERVIEW:** store all your issues in our archive. **Scan the QR Code to install our app onto your mobile device or visit www.app.zkg.de for the desktop version.**

www.app.zkg.de
the desktop version



HEXADUR® in Cement Industry - 25 years of operation with HEXADUR® protected HPGR rollers

***By: Jörg Oligmüller & Kaushik Ghosh, Maschinenfabrik Köppern GmbH & Co. KG, Germany;
Andreas Packeisen, Köppern Entwicklungs-GmbH, Germany***

Introduction

Since 1986 high-pressure grinding rolls (HPGRs) have been used in the cement industry for grinding of clinker, limestone and blast furnace slag.

Feed material is fed to the gravity feeding system from a filled hopper and then into the gap between two rollers rotating against each other. The movable (floating) roller is hydraulically pressed against the material bed and the fixed roller. Within the particle bed compressive and shear forces cause mechanical interactions of the individual drawn in particles responding with fracture or crack initiation [1,2]. Due to the high pressure, acting in the gap, the feed material is densified to an agglomerate (flake). Disagglomeration of this flake requires minimal energy because of the numerous pre-cracked particles. Using this indirect crushing operation in HPGRs results in a remarkably lower energy consumption compared to other conventional methods for comminution such as ball mills or vertical mills [3,4].

Although comminution with HPGR's keeps the contacts between feed material and roller surface to a minimum, the crushing tools wear out because of abrasion and indentation. This reduces availability, generates significant costs for regeneration or replacement of the roller, causes production losses and increases energy costs. Thus, wear surface developments target the combination of high service lifetime and low operating costs [5]. Improvements in the intake behavior as well as the surface wear protection contribute to an overall cost reduction.

Operational experiences with HPGRs show that only hard phase rich materials are able to resist tribological loads in the roller gap properly. Morphological parameters such as type, shape, size, volume fraction and distribution of the hard phases are of particular importance [6].

In this article, we will focus on the commonly available wear protection surfaces and their performance related to output and maintenance.

Welded roller surfaces (hard facing)

In many applications, solid welded rollers are in use, which have been hard-faced by welding on an iron based high wear resistant material. Welded rollers are manufactured with hard faced patterns such as chevron, diamond, zigzag, etc. The patterns help in building up a layer of the feed material on the roller surface (Autogenous Protective Layer-APL) which helps in improving the friction factor and thereby improving the output and additionally protecting the underlying hard faced layer from further wear. However, the patterns need to be regularly maintained so that feed material sticks onto the surface.

In the majority of cases, a crack-free hard facing is not possible. Initiated cracks can propagate and combine in or beneath the welded hard layer leading to large-scale spalling of the roll surface. Refurbishment of such failures requires complete removal of the hard facing, gouging off of detected cracks in the roller base material as well as rebuilding of the whole wear protection layer. This procedure generates high costs and technical risks. According to experience, any further refurbishment can cause an increase of crack depth in the base body, so that irreparable spalling cannot be excluded [7]. Nevertheless, hard faced rollers can be repaired by welding several times before they have to be scrapped. The welded roller surfaces take advantage of relatively low entry costs and could be operated at higher specific pressing force of up to 6500 kN/m², but being maintenance intensive and therefore not the optimum solution for the long run. The throughput of the machine directly depends on the patterns and fluctuates with pattern wear.



New hard faced rollers



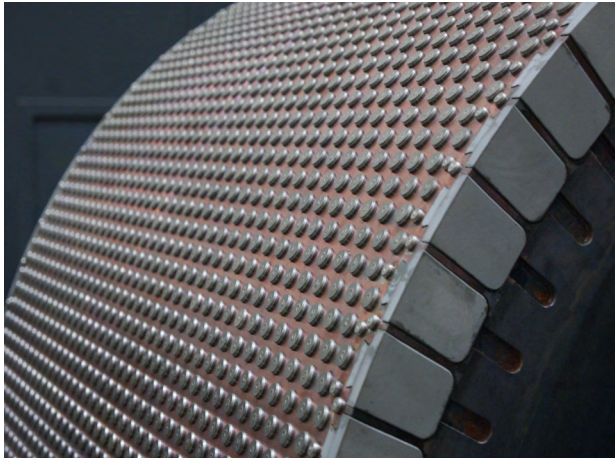
Used hard faced rollers

Studded roller surfaces

Studs or cemented carbide pins fitted into the roller surface are also being used since many years for wear protection. Due to its material composition, it has high hardness and therefore is highly wear resistant. The geometry of the location of the studs also supports feed material sticking onto the roller surface (APL) and therefore constant throughput.

Stud rollers are delivered in sleeve form so the customer has the possibility to keep on using the roller core even though the sleeve has reached its end of lifetime.

Stud wear protected surfaces are relatively costlier compared to welded surfaces and require less maintenance provided being operated only upto some lower specific forces but not to the desired range of 6500 kN/m^2 which is required for grinding of clinker. Operation at lower forces will compromise the output and hence higher energy costs. Operation at higher forces leads to fracture or chipping off of the hard studs. Due to these fractures, the APL is lost and hence wear of the steel base body occurs. Increasing maintenance costs have to be surely considered if operated at higher forces.



New stud Roller

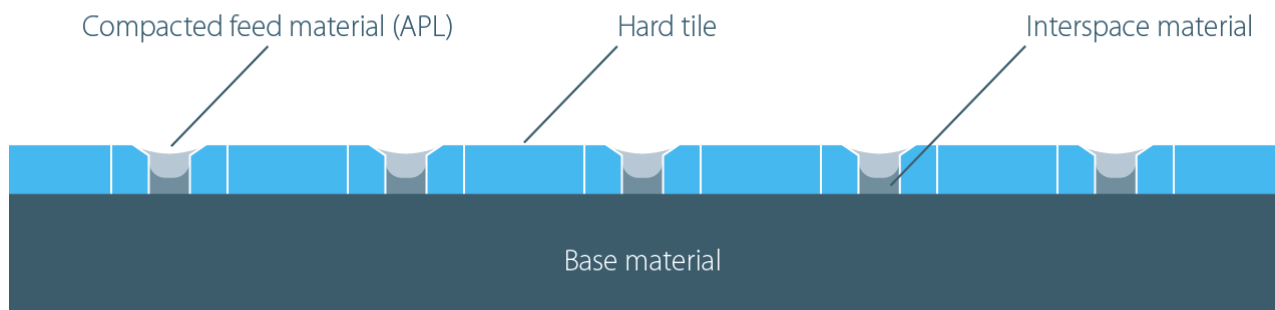


Used stud Roller

The Hexadur® System – Zero Maintenance Wear Protection Technology

The Hexadur® system has been developed especially for HPGR applications with sleeve-shaft technology to adhere to the requirements in the areas of process technology (rough tool surface in order to produce high friction between the roller and feed material),

feed material acting as an autogenous protection layer (APL). This comb-like profile increases the friction between the tool surface and feed material and subsequently improves intake behavior as well as throughput of the machine. Furthermore, these effects can be enforced by generating a macroscopical surface profile with hexagons having different heights.



wear resistance (high volume fraction of hard phases in the wear protection layer) and structural integrity (high strength, ductility and fracture toughness of the roll material).

The Hexadur® wear protection concept comprises an applied combination of materials with different, but well-defined required properties. Hexadur® involves coating a forged steel sleeve with a thick wear resistant layer using powder metallurgy and HIP-cladding-technique [6]. During hot isostatic pressing (HIP) (i.e. under extreme high pressure and temperature), a special structured wear resistant layer is diffusion-welded on a ductile base body of sufficient strength. The hexagonal tiles have an extremely high and application-oriented wear resistance, the interspacing between the hexagons exhibits a systematically lowered resistance to abrasive wear. These interspacings wash out after a short time in service. The arising grooves are filled up with crushed

The thickness of a Hexadur® layer depends on the feed material as well as the required service lifetime and is selectable from 10 to 50 mm.

The hexagonal areas are made of wear resistant powder metallurgical hard alloys or metal matrix composite (MMC) consisting of an iron-, nickel or cobalt-based metal matrix and ceramic hard phases (e.g. tungsten carbides, titanium carbides, niobium carbides, vanadium carbides, chromium carbides, chromium borides, titanium borides or mixtures thereof). Composition and morphology of the material within these hexagons determine the wear resistance of the surface, so that high volume fractions of fine dispersed hard phases, as well as coarse hard phases of adjusted size and shape can be used. A homogenous microstructure causes the relatively high toughness of the powder metallurgically produced materials in contrast to materials produced by casting or welding. Due to the considerably decreased

hard phase content, the interspacing material between the hexagons possesses a particularly high resistance against crack propagation, avoiding transmission of local damages to other hexagons and thus spillings of large-scaled surface areas. The abstracted principle of the HEXADUR® surface is given above. It is specially designed according to the demands on high wear resistance and structural integrity. Many different combinations of metal matrices and hard phases can be realized by HIP-cladding, even those configurations which cannot be produced by melt metallurgical techniques such as welding.

Experiences with HEXADUR®

In 1996, first HEXADUR® roller was installed at a Norwegian cement plant onto a Köppern HPGR for testing under real service conditions as well as comparison with a conventional welded (hardfaced)

roller [6]. The thickness of the Hexadur® layer was 10 mm. The wear protection of the counter roller consisted of a usual multilayer hard facing of type OA600 with hardness of 58 HRC and thickness of 15 mm. Whereas the hard faced roller wore out completely after 2500 service hours, only about one sixth of the Hexadur® thickness was lost. Finally, Hexadur® rollers in this application reached a lifetime of 76000 hours of operation.

Hexadur® is being used in many plants around the world and also for HPGR's from other suppliers. In all the applications, Hexadur® has shown a very low wear rate ranging from 1.5 mm to 3 mm for every 10000 hours of operation inspite of operating at higher specific force of 6500 kN/m². The profile remains unaltered throughout its lifetime and hence no loss of production was experienced.



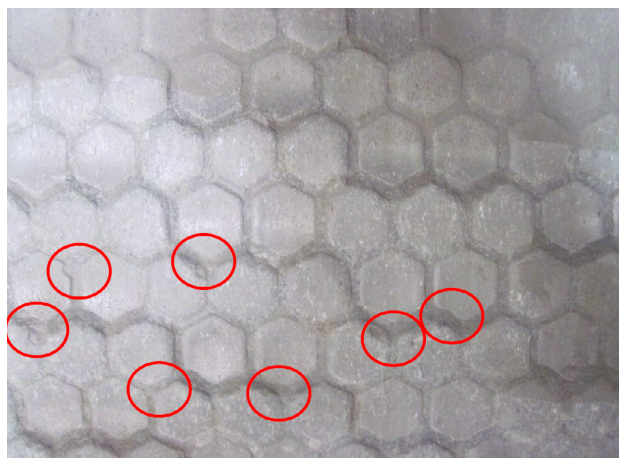
New Hexadur® Surface



Hexadur® surface after 33600 hours of operation
Expected Lifetime of wear surface more than 100000 hours of operation.



Hexadur® surface after 76000 hours of operation

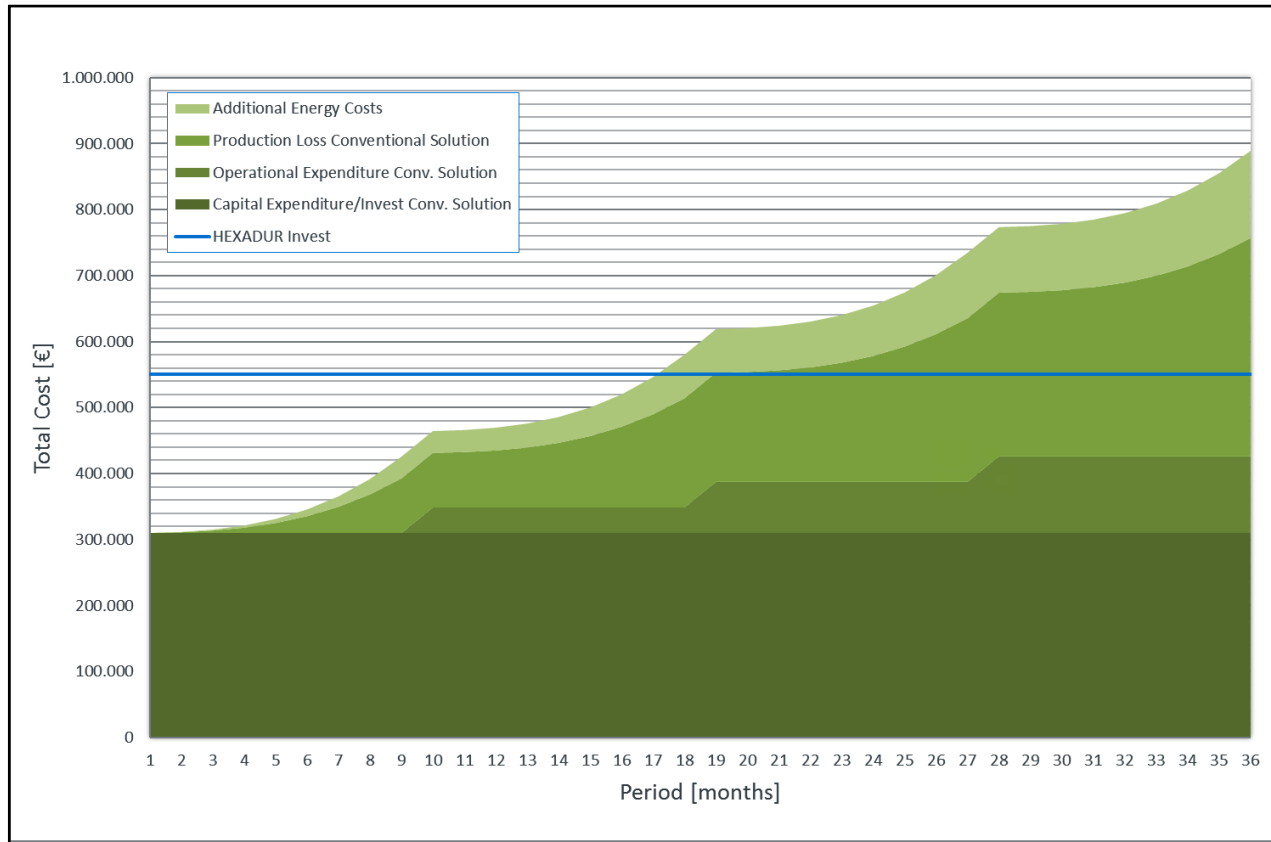


Such damages due to passage of foreign metal do not require any kind of maintenance repair as the cracks do no propagate due to multi metal compound material.

Financial aspects of Hexadur®

Operational costs of an HPGR mainly consist of energy and wear protection costs [5]. Repairing charges for

America, Middle East and Asia that the lifetime of HEXADUR® rollers exceeds the lifetime of welded (hardfaced) rollers up to a factor of ten [14].



maintenance and inspection of wear parts have to be considered, which may act as a counterbalance to the energy savings. If an HPGR has to be operated under reduced pressing force and throughput for reasons of prolonging the tool life time, the advantages of that comminution technology could be lost with respect to the energy costs [7,13].

For comminution of high abrasive feed material, the Hexadur® wear protection concept promises clearly increased tool lifetime and financial savings compared to the other available wear protection layers and wear resistant castings. If tramp material causes local damages, repair work becomes redundant owing to the self-regenerating potential of the surface [14]. In addition to this, intake behavior and material throughput will also be enhanced. Higher entry costs are compensated as a result of significant cost savings due to a maintenance- and trouble-free operation. The typical return of Investment (ROI) for existing customers was between 12 to 24 months of operation. Hexadur® warranty and operational life are much higher than the ROI, therefore customers have profited from the savings rather than spending on energy and maintenance cost. It has been shown in a number of further applications in Europe, North and South

Köppern supports customer by calculating the payback period based on the actual operational and maintenance costs. Above is a typical example in which the customer paid €300,000 for a set of welded rollers but went on spending on those rollers for repair and refurbishment, production losses thereby energy losses. The blue line is the cost of Hexadur® rollers. The payback achieved by this customer was between 17 and 18 months of operation.

Conclusion

The HIP-cladded HEXADUR® wear protection comprises an applied combination of materials with different, but well defined properties with regard to process technology, structural integrity and wear resistance.

The interspacings between the hexagons are filled up with crushed feed material, building up a comb-like autogenous wear protection layer (APL) and improving intake behavior as well as throughput of the machine. A tough interspacing material creates high resistance against propagation of local damages to neighboring hexagons. Moreover, the hexagons are very tolerant to tramp material due to the potential for smoothing

partial chippings without any consequences for the tool life.

The completely maintenance-free operation of Hexadur® rollers combined with maximum availability over a prolonged operation period has improved the total cost frame and clearly spoken for the Hexadur® wear protection system.

Additional services provided by Köppern

Since last years Köppern has provided various support/solutions to its customers in the form of mechanical and process audits of the existing grinding circuits (with or without HPGR's) to find out the bottlenecks and decrease the energy demand. After the site visit, the customer receives a report with recommendations with time limits such as short, mid and long-term goals and with financial indications on each. Köppern has also successfully supplied hydraulic and feeding systems for HPGR's of other makes and due to these modifications, the customers have benefited from production increase and lower energy demand.

For more details, please contact us at info@koeppern.de or www.koeppern-international.com

References

- [1] Schönert, K.: „Energetische Aspekte des Zerkleinerns spröder Stoffe“, ZKG 32 (1979) 1, 1-9
- [2] Schönert, K.; Knobloch, O.: „Mahlen von Zement in der Gutbett-Walzenmühle“, ZKG 37 (1984) 11, 563-568
- [3] Kellerwessel, H.: „Betriebsergebnisse von Hochdruck-Rollenpressen“, Aufbereitungstechnik 27 (1986) 10, 555-559
- [4] Rosemann, H.; Ellerbrock, H.-G.: „Mahltechnik für die Zementherstellung – Entwicklung, Stand und Ausblick“, ZKG-International 51 (1998) 2, 51-62
- [5] Klymowski, R.; Cordes, H.: „Die moderne Rollenpresse – Praktische Anwendungen in der Erz- und Mineralstoffindustrie“, Aufbereitungstechnik 40 (1999) 8, 387-397
- [6] Schumacher, M.; Theisen, W.: „HEXADUR® - Ein neuer Verschleißschutz für Hochdruck-Walzenmühlen“, ZKG International 50 (1997) 10, 529-539
- [7] Gudat, G.; Rieke-Zapp, H.; Schneider, R.; Uwa, M.: „Betriebserfahrungen mit dem Verschleißschutz bei Hochdruck-Rollenmühlen“, ZKG International 50 (1997) 7, 384-392
- [8] Patzelt, N.: „Verschleißschutzalternativen für die Beanspruchungsflächen von Gutbett-Walzenmühlen“, ZKG 47 (1994) 2, 83-86
- [9] Gudat, G.; Trauth, M.; Engeln, I.: „Erfahrungen mit verschiedenen Verschleißschutzkonzepten für Gutbett-Walzenmühlen“, Aufbereitungstechnik 41 (2000) 10, 458-461
- [10] Brachthäuser, M.; Wollner, M.: „Erhöhung der Verfügbarkeit von Gutbett-Walzenmühlen durch konstruktive Maßnahmen“, ZKG 44 (1991) 2, 93-98
- [11] Patzelt, N.; Tiggesbäumker, P.: „Konstruktive Lösungen für betriebssichere Mahlwalzen von Gutbett-Walzenmühlen“, ZKG 44 (1991) 2, 88-92
- [12] Packeisen, A.; Höfter, A.; Oligmüller, J.; Halvorsen, T.; Aakre, T.: „A Lifetime of Success in Norway“, World Cement (2009) Sep., 109-114
- [13] Ellerbrock, H.-G.: „Gutbett-Walzenmühlen“, ZKG 47 (1994) 2, 75-82
- [14] Broeckmann, C.; Packeisen, A.: „Under Pressure – Hexadur®, a New Wear Resistant Concept for High Pressure Grinding Rolls“, World Cement 35 (2004) May, 55-58

Capturing the many elusive benefits of uniform extraction from storage hoppers

By: Lyn Bates, Ajax Equipment, UK

Screw feeders are widely used to discharge bulk materials such as cement at a controlled rate from bulk storage hoppers and silos. Favorable feature of these machines are total containment and that variation in the screw geometry enables material to be progressively extracted from extended outlet lengths of a plain flow hopper. The slot length must be at least three times its width to secure full flow benefits and even longer slots are useful for extra storage capacity, provided the whole outlet area is in flow during discharge. A fully 'live' flow outlet is essential for mass flow but the extraction rate usually varies at different regions along the outlet slot. Uniform extraction is more difficult to achieve, but has major flow and operational benefits in dealing with products that have difficult flow characteristics or other handling problems.

These include: -

1. Remixing products that segregate during filling a hopper or silo.

Products that segregate in the filling process invariably have radial variations in composition around the point of fill. Whereas lateral differences can be mitigated in plane flow, and homogeneity improved further by inserts, axial variations will be captured by differential extraction rates and uneven compositions discharged. The situation is even more complex if the hopper is reloaded prior to being fully empty because the uneven surface profile that develops distributes the incoming material in an uncertain pattern. Uniform extraction will create an even surface profile and collects product evenly from along the slot, re-mixing material from different regions to discharge in a 'first-in, first-out' blended manner.

2. Avoiding preferential flow channels for materials that tend to 'flush'.

When cement is loaded into hoppers it is inevitably diluted in free fall, especially in a warm condition at high fill rates. The surface layers may be slow to settle to a stable condition as escaping air from the surface layers tends to be replenished by air escaping from below. Differential extraction rates will create surface depressions that fill with fresh loose powder that, if in

a fluid condition, exert a hydrostatic pressure within the flow channel. The horizontal pressure of this will be greater than that of more settled material and so progressively develop preferential penetration of the loose material if the extraction is uneven. The velocity of material flow is counter to that of air rising to escape, which resists the bulk settlement to a stable condition. Should the material eventually penetrate to the hopper outlet in a fluid state it will allow the flow channel contents to 'Flush' uncontrollably, possibly disturbing the remaining contents to follow. It should be noted that a screw feeder cannot contain a fluid product and any material handled must settle to a stable flow condition before reaching the screw.

3. Avoiding extended storage times for products that deteriorate in either quality or in its flow condition during extended storage.

The shorter residence time of some product that discharges through a region of high extraction means that other material must have an extended, if not indefinite, residence time.

It is often erroneously stated that Mass Flow produces a 'First-in, First-out' flow pattern, but this is not often the case with Mass Flow alone, as this definition only requires that all the hopper contents is in motion during discharge and flow takes place along the total hopper outlet. Whilst extraction from the whole length of a hopper outlet slot may be achieved by a screw feeder, the flow rate developed is almost invariably uneven.

4. Securing uniform process conditions for heating and cool operations, void gas stripping and continuous reaction processes.

Uniform bulk condition and residence time is essential for efficient process operations, such as heating and cooling, void gas stripping, leaching and reaction processes. These process operations are often conducted in 'Moving Bed' systems that can only be achieved efficiently by uniform extraction rates across the total flow channel. Differential flow velocities not only vary the exposure time for process operations, but also create different degrees of dilatation, permeability and conductivity that can influence the efficiency of the process. Faster moving material have a shorter

residence time and also have a higher void ratio that allows easier gas percolation than in slower moving regions, with a consequent difference in gas contact rate. More dilute conditions also reduce the heat transfer ability of the bulk, with loss of efficiency in heating and cooling operations.

5. Securing consistent density and stable discharge conditions.

Different flow velocities and variable time settling periods due to uneven extraction result in regionally different density conditions, so the state in which a bulk material is discharged can depend on where the extraction is coming from. The density of the material discharged will change as the hopper empties unless the drawdown is uniform. Local regions of flow at a higher rate tends to form surface depressions that are first to fill with fresh material when the hopper is recharged, to aggravates the settling period discrepancy. A feature of mass flow is that changes in depth of material above a relatively low head of material above the outlet does not affect the flow stresses, which uniquely reflect the density of the bulk material. This is particularly relevant to Loss-in-Weight feeders that must deliver material under volumetric control during the refill period. Feeders that do not drawdown evenly therefore require to a refill at a deeper bed of product to avoid deviating from an even discharge rate.

6. Minimize feeder power requirement.

The shear strength of a bulk product depends on the products density and stresses acting normal to the failure surface. Uniform flow will avoid the formation of regions of more settled material that are harder to shear.

The more even the flow, the longer the minimum residence time and lowest maximum counter flow velocity of escaping air for settlement and shortest maximum residence time for product quality and uniformity of condition.

Unfortunately, these full benefits are rarely achieved by screw feeders because uniform extraction is difficult to attain for a number of reasons.

First of all, any converging flow will exhibit velocity contours over its cross section. Variations are lower in plane flow than radial flow and can be further attenuated by the use of hopper inserts or/and a preceding parallel flow channel to give a standpipe effect.

More importantly, extraction from a plane flow channel requires a screw feeder to generate a progressive axial

in increments that are in proportional to the length of outlet slot being served, so that the differential increase over the previous flight section enables each unit section of screw flight to extract an even input from the hopper contents.

A major impediment to securing uniform extraction is that the void in the screw volume caused by the axial transfer of the first section of screw exposed to the hopper contents can be refilled from the hopper contents, whilst subsequent sections of screw can only extract the differential transfer capacity over the prior screw section. This feature usually severely compromises the screw construction as it inevitably relates to the shortest pitch, and hence most axially efficient transfer section of the screw. To secure a similar rate of input over the remaining length demands radical changes in flight transfer capacity, which soon outstrips practical geometry. A novel Lynflow™, form of feeder construction, as registered design No. 6038827, has been developed to address this difficulty within minimum headroom.

A common fallacy is that uniform extraction can be secured by a continuous increase in the pitch of the screw, but this is not the case for a number of reasons. Although a longer pitch screw will usually axially transfer more than a shorter pitch screw, the increase is not proportional due to the reduced transfer efficiency of the longer pitch flight. Excessively long increases in screw pitch can actually reduce the amount moved, especially with bulk materials that have a high surface contact friction value. In addition to the lower transfer efficiency, longer pitches have to extract from a proportionally longer section of the hopper outlet slot, so the extraction rate per unit length is inevitably reduced.

The reason why transit efficiency is reduced on longer pitch feeder screws is that, unlike screw conveyors, where the volume of material between the flight blades is promoted axially by gravity sliding down the face of the screw flight and so moves one pitch length for shaft rotation, the contents of a screw feeder moves in a helical path according to the combined helix angle of the blade and the friction value of the material being handled on the face on the flight surface. The distance that material in the screw moves forward is determined by the axially resolved value of this helical progress. The axial transfer efficiency of the flight varies with the change in pitch, longer pitches pitches having a reduced efficiency to the stage where the transfer capacity reduces progressively to zero and then to negative values. An exacerbating axial transfer feature inherent in screw construction is that the flight face inclination varies from tip to root as the different circumferences at

these points have to extend over the same pitch length. The coarse helix angle of the central region of the flight is much less efficient in forward progress of the screw contents, especially as the surface drag of friction on the centre shaft and the 'corner effect' at the junction of flight and shaft also act to resist relative motion in favour of rotation with the screw.

A common problem when handling fine powders is for material to build up in this corner region and further reduce the feeding efficiency. In extreme cases this can result in 'logging' of the screw and a failure to extract material. This adverse feature is addressed in the design of 'LynflowTM' screw feeders to enable the more uniform extraction over longer hopper outlets. The shear strength of the material to some extent attenuates these axial transfer differentials and an approximate axial transfer assessment may be made on the basis that the contents may be considered to move coherently according to a 'mean helix angle', where the flight face area on which material is moving forward more than the average axial distance balances the area on which the material lags behind.

In practice, the range of pitch variation that can be employed is quite limited as, even with changes in the centre shaft dimension, it is not good practice to employ pitch sizes less than that of the prior flight along the axis of the outlet slot. A very short pitch can also give rise to 'logging' of the product between the screw flight; where the frictional drag on the flight and shaft surface exceeds the shear strength of material at the periphery of the flight diameter that otherwise restrains the material from rotation with the screw. At the other extreme, flight pitches that are long in relation to the face width of the flight not only move less efficiently but develop high flight face pressures to overcome the regenerative frictional resistance generated against the machines casing and the centre tube. For these reasons flight pitch dimensions are usually restricted to between two thirds to three times the flight face width, but not to exceed the flight diameter value.

The total discharge of the feeder is determined by the extraction capacity of the last screw flight that is exposed to the hopper contents. This flight and subsequent flights transfers material through a cross section with a tip clearance, whereas previous flights shear material at their periphery. The degree of 'carry over' depends on the size of this gap and the respective values of wall friction and internal friction of the bulk material.

The average 'draw' per unit length to be extracted for uniform drawdown is the axial transfer capacity of

this flight divided by the length of the slot. The pitch of the last exposed flight is often equal to the screw diameter, whereas the length of the hopper outlet could be up to eight times the screw diameter. As such, the amount this flight should only extract from the hopper contents one eighth of its axial transfer capacity. This can be accommodated by the flight receiving a pre-feed of 7/8th of its feed potential from the previous flight, and so on for the remaining screw flight construction. By contrast, the initial flight section extracts its full axial transfer capacity, whilst following flights extract only their incremental transfer capacity. 'Smoothing out' this differential has to be accommodated over the succeeding length of the hopper outlet, with the efficiency of axial transfer changing with each variation in the screw geometry.

The use of a taper shaft is often recommended to improve the evenness of extraction. Whilst this can improve the uniformity of draw over some of the outlet, an economic, practical profile of the centre shaft diameter cannot compensate for this drastic initial change of the extraction capacity. The design of an extracting screw to generate uniform extraction therefore requires some expertise and is essentially a task for specialised suppliers. A typical sophisticated construction will embrace a wide choice of design features based on measured bulk property values of the material handled relative to the screw construction.

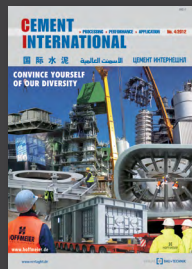
Amongst the techniques available to secure uniform increments in axial transfer capacity are combinations of: -

- Increase in screw pitch.
- Decrease in shaft diameter.
- Use of ribbon flights.
- Change of flight contact surface to one of different friction value.
- Small change in screw diameter, but similar slot width.
- Exploit taper end wall at start of outlet.
- Exploit 'stressed arch' at discharge.
- Use insert(s), in hopper.

In summary, uniform extraction from a bulk storage facility is not easy to achieve and demands an integrated approach with the hopper design, but small theoretical differences tend to be attenuated by the transfer of shear from faster to slower moving regions of the flow channel. The rewards of smooth, reliable and accurate control of bulk condition and feed rates warrant the individual design of key operating sections of an efficient plant.

TEST THE BEST!

COMPARE US WITH ALL THE OTHER CEMENT-JOURNALS



www.cementinternational.com

DURAG Video Analysis System including thermography information to optimise the main burner flame.

By: Klaus Czirr, DURAG GmbH, Germany & Abbad Cheik, DURAG ME, UAE

Using of alternative fuels for the complex sinter process

Clinker production requires total control of the energy input. Accurate process control and optimised heat energy input is the based for an optimised sintering process.

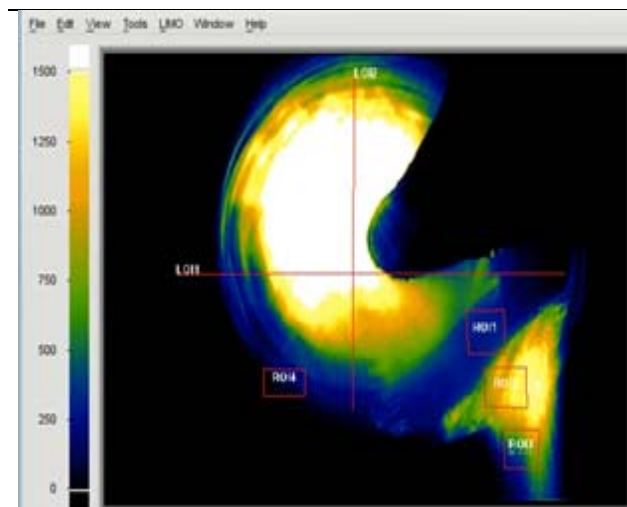
Since the ration of energy costs versus total production expenses is very high, secondary fuels are applied to a great degree. Secondary fuels often have fluctuating heat values, which can influence the relatively complex thermal and chemical conversation of the raw material in a negative way. Insufficient heat will cause an increase of unconverted lime in the clinker. Too much heat will shorten the lifetime of the refractory bricks in the kiln, may damage the kiln shell, diminish the product quality and cause an increase in the overall process costs.

In the actual cement plant design with high efficient grate cooler, tertiary air and 60% or more fuels at the calciner and app. 40% at the main burner, the alternative fuels are also often used at the main burner.



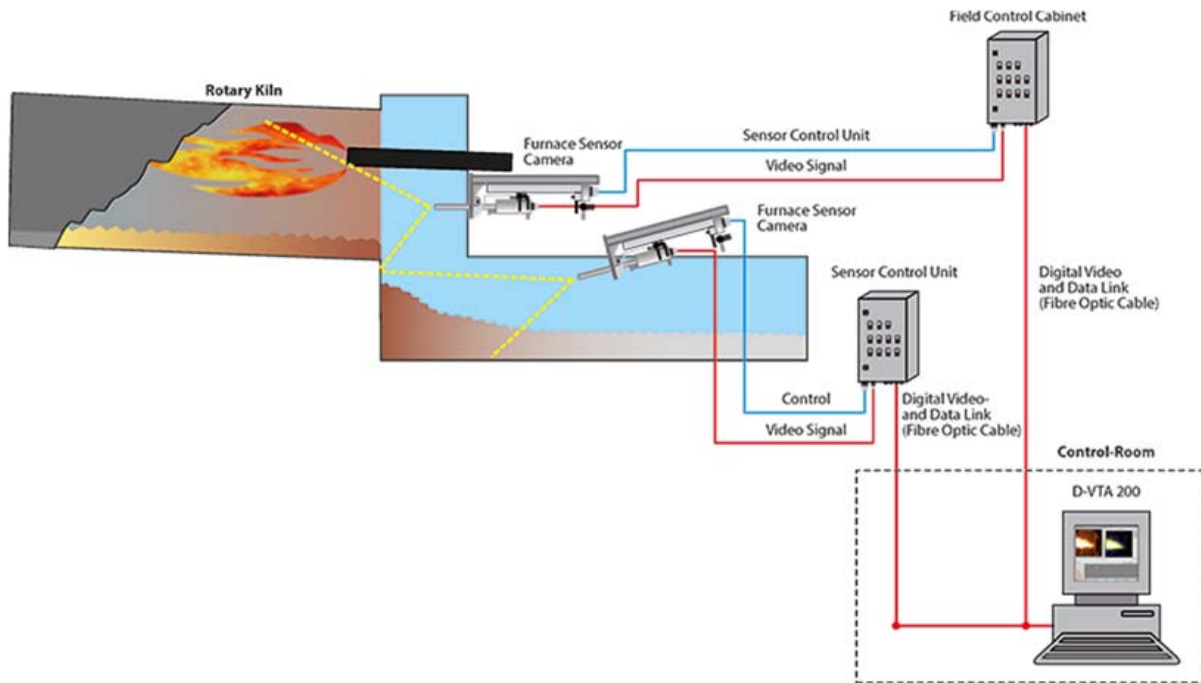
Kiln main burner for using four different fuels simultaneously.

Video and Thermography System at kiln and clinker cooler



The DURAG GmbH provide a Video and Thermography System that meets the following requirements:

- Real time live color video of the flame and the sintering zone at the kiln outlet.
- Detection of flame form and position and irregularities of the main burner.
- Clinker bed formation at the grate cooler to detect “Snowman” and “Red River” occurrence.

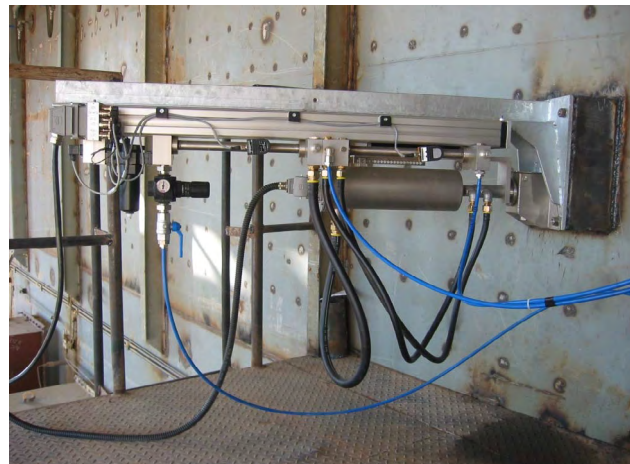


- Detection of burner nozzle position and condition.
- Temperature measurement at the sintering zone, flame and clinker bed.
- Temperature distribution with spatial resolution.

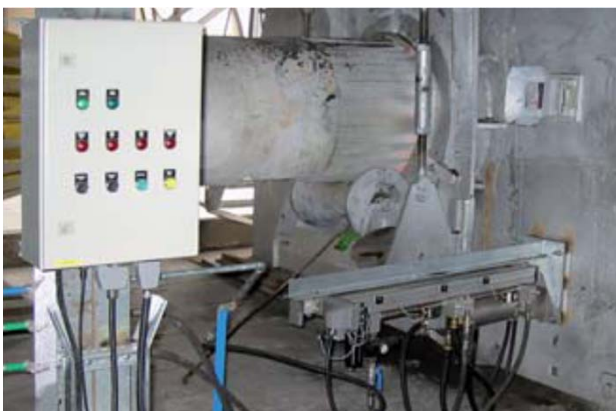
The intelligent Video and Thermography System consists of industrial air-purged and water-cooled Furnace Sensor, Automatic Pneumatic Retraction Unit, Sensor Control Cabinet and 19" PC based Control Unit with Thermography and Analysis Software for the Cement Application.

The Sensor Control Unit includes an industrial PLC which controls the Retraction Unit and will automatically retract the Furnace Sensor in case of cooling media falls.

Video monitors and the system PC are installed normally in the process control room.

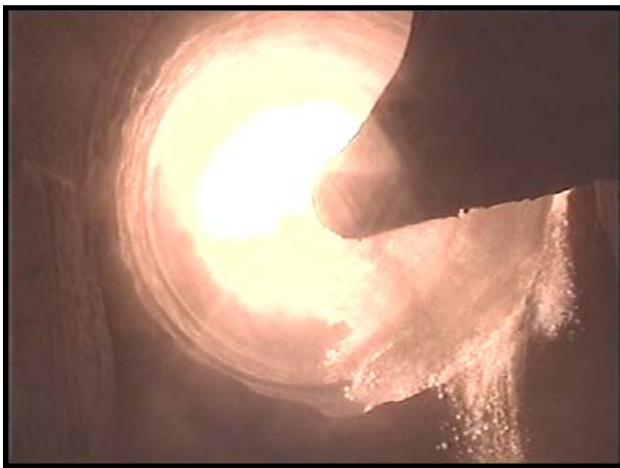


Installation side of clinker cooler

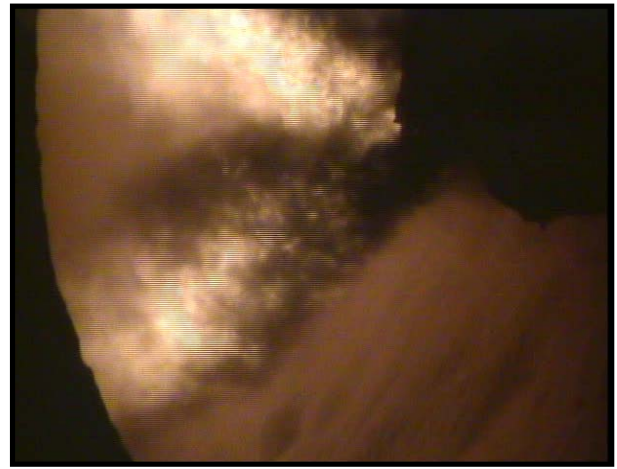


Installation Kiln hood axial to main burner

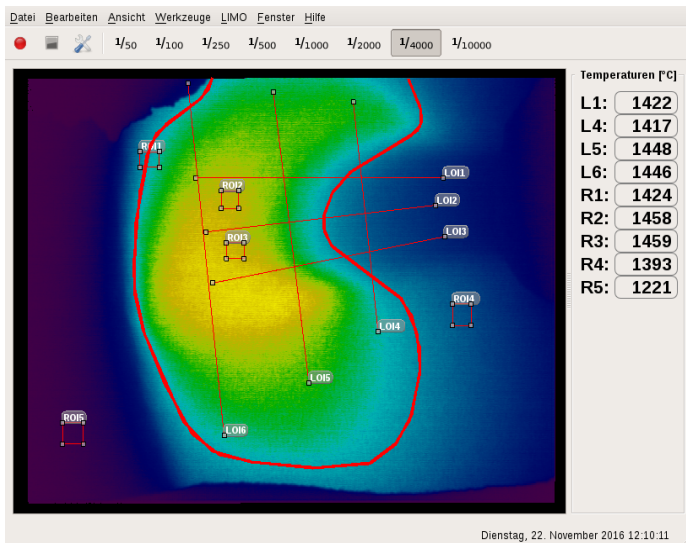
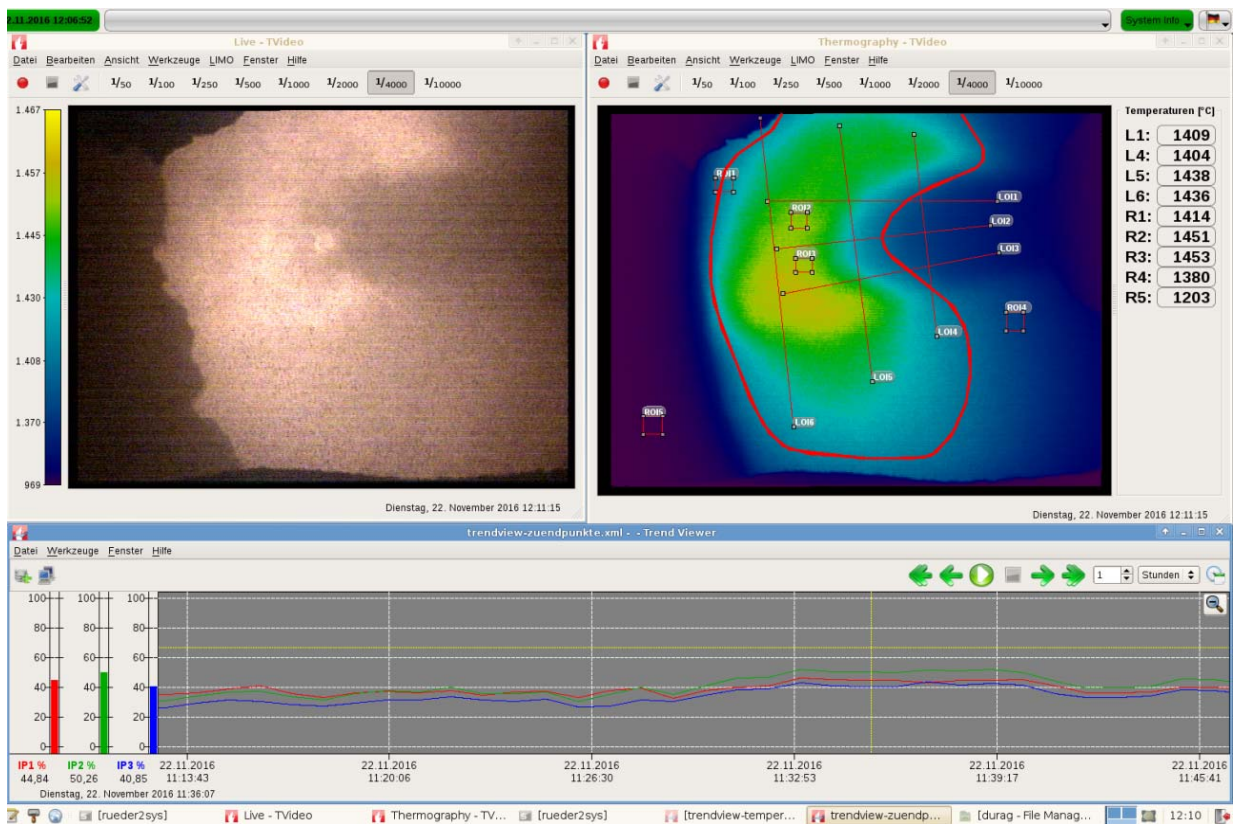




Cement Application. Main burner axial view

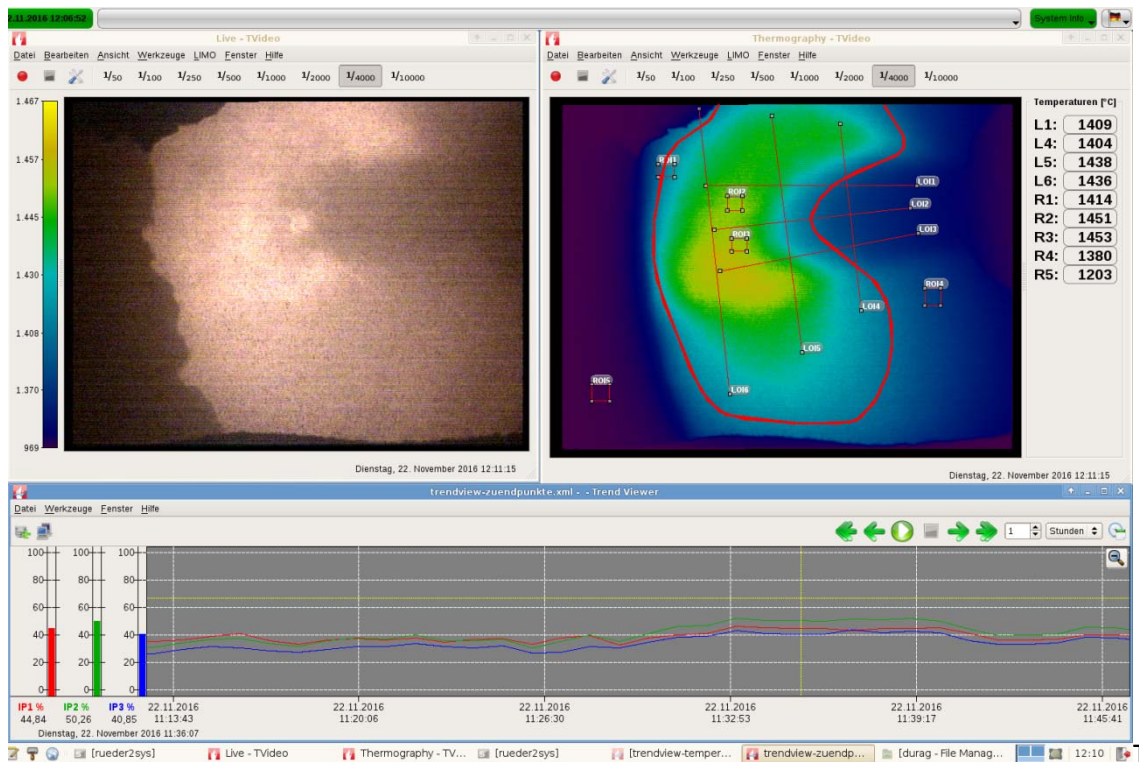


Cement Application: Main burner side view



The Video system:

The video system gives you a colored real-time video image of the sintering zone and of the clinker cooler. These “films” are permanently shown on the video monitors in the control room, to police the flame form and position, the burner nozzle position and condition and the clinker bed situation.



The Thermography system:

- Analyzing of thermal patterns to reveal anomalies.

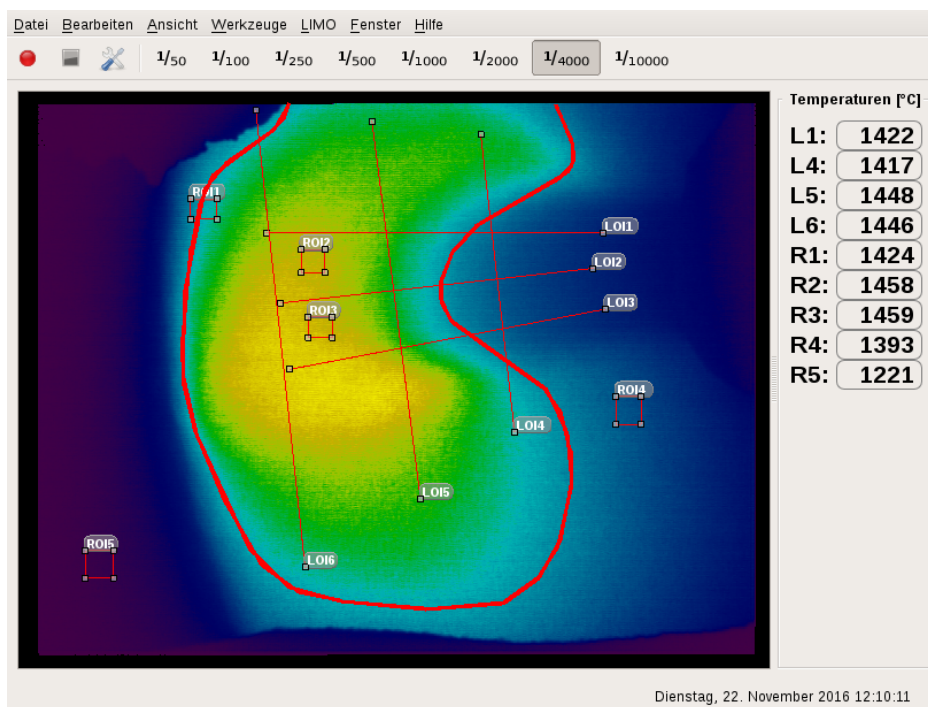
The DURAG Thermography System is an optical pyrometer, based on video data processing. In addition to the Video System it uses false color imaging to provide methods for:

All data provided by the Thermography System such as analytical data and temperatures are available for the control system via standard interfaces.

- Determining the spatial temperature distribution out of the field of view of the sensors Video System (thermal image)
- Measuring the temperature within freely definable areas. (ROI = Region of Interest) and on user definable lines (LOI = Lines of Interest)

What can be done?

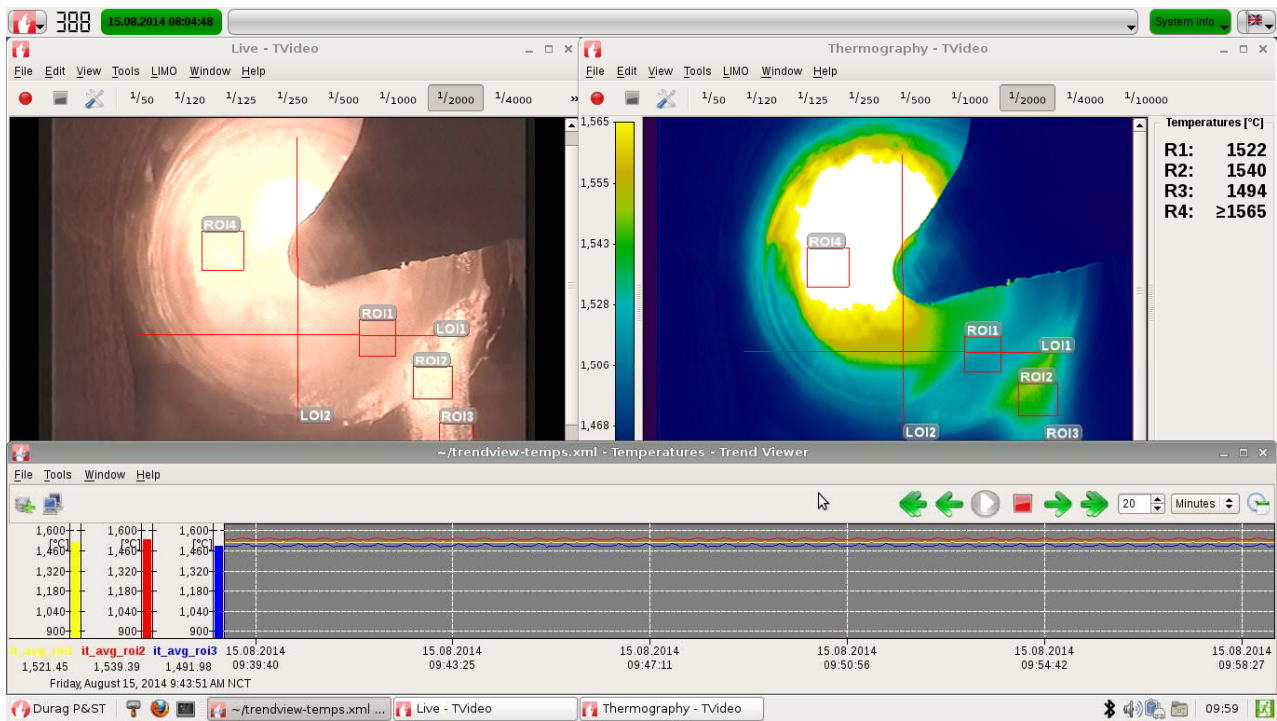
Process control systems, as well as expert systems for optimization task and last but not least the kiln operator need reliable online data from the sintering process to control the production of the clinker in the kiln and optimize the combustion process as well as the cooling process at the clinker cooler.



The DURAG Furnace Sensor is an instrument to gather this reliable online information, which can not be measured with any of the standard process instrumentation.

What are the benefits for you?

The optical online analysis of the sintering process provides a number of qualitative assessments such as clinker size, flame



conditions, turbidity and kiln dust level as well as “snowman” and “red river” conditions in the clinker cooler entry. The Video System enables the operator to evaluate the current process conditions. Especially when using alternative fuels, the calorific values might change unexpectedly and subsequently, the sintering process and the quality of the clinker are significantly influenced. The thermal online analysis of the sintering process with the Thermography System provides explicit data and information from the sintering process. These data are the real-time basis for the automatic process control and for the operator to take objective appraisals concerning the process and the product quality.

These data are the fundament, to take active control of:

- The amount and composition of fuels for the main burner.
- The amount of raw material and the rotational speed of the kiln.
- The amount and distribution of cooling air in the clinker cooler
- Predictive maintenance

Where can you install the system?

To guarantee the largest possible observation space, the sensors with their optical systems are inserted directly into the high temperature areas at

the kiln hood and at the clinker cooler.

Classical installations are in the oven door at the kiln hood and at the side wall of the cooler housing. For the installation at the cooler housing a sensor with a 45° optical elbow objective is used. To resist the high temperature and dusty environment conditions in this area, the sensors are water cooled and the optical lens systems are air purged. For online visualization of the process in the sintering zone and in the clinker cooler, one video monitor for each sensor and a PC with a graphic monitor for the Thermography and temperature measuring is needed in the control room.





To meet the requirements for the burner optimization for alternative fuels a side installation of the Furnace Sensor is mandatory.

Upshot!

The production of cement clinker by means of the burning process in a rotary kiln is from the point of view of automation control, a multivariable, non-linear system. Due to the fact, that the sintering process is critical to the quality of the clinker, accurate control of the energy input into the process is required. With the specific output data from DURAG D-VTA 200 System for Cement, such as the Flame and Clinker Temperature at a specific position, the flame shape and flame temperature distribution, the ignition points are available to assist the process control system and the kiln operator (based upon his skills and operating experiences), to control and optimize the clinker production process.



DURAG GROUP
SMART SOLUTIONS FOR COMBUSTION AND ENVIRONMENT

Environmental Monitoring

- Opacity and Dust Monitors
 - Volume Flow Measuring Systems
 - Filter Monitors
 - Total Mercury Analyzers for Stack Emissions
 - Environmental and Process Data Management System
 - Visibility Monitors
 - Air Flow Monitors
- www.durag.com

Klaus Czirr, Product Manager, DURAG GmbH, Hamburg Germany.

Email: Klaus.Czirr@durag.com

Abbad Cheik, General Manager, DURAG ME, Dubai UAE.

Email: Abbad.Cheik@durag.com

Key Challenges for Industrial Fans and Blowers in the Cement Industry

By: Frauke Kretzer and Axel Jahn, POLLRICH GmbH, Germany

Processing cement is a very demanding process for all components, particularly for the industrial fans and blowers. High dust loads and abrasive and caking media set a constant strain on all parts of the fans. Furthermore, cement plants are mostly located in regions where sophisticated maintenance and repair is scarcely manageable. Therefore, robustness, low-maintenance and longevity of all parts of the industrial fans are key features in the cement manufacturing process.

Centrifugal fans (single and double-side suction) are widely used in the cement industry. They have to work under harshest conditions with high temperatures and high dust loads. Wear protection, gas tightness and a low danger of caking are essential factors for industrial fans in the cement production process. To produce first-class cement, the fans must be designed to avoid imbalances caused by caking on and wearing.

Fan Design

The main focus of industrial fans in the cements industry lies on wear protection and prevention of caking. Imbalances caused by caking dust can cause many problems, such as complete bearing failure on fan and drive as well as severe vibration with heavy impact onto the entire construction and even into the foundation. To avoid such problems, the fans must be designed according to the latest standards to ensure longevity, low maintenance requirements and energy efficiency. Specially designed blade geometries with an eye on the different repose angles of the various dusts particles help to reduce caking-on. At Pollrich, R&D work continually on prolonging the lifetime of

fans for the harshest condition.

Wear protection

Especially the clinker cooling fans need a sophisticated wear protection. Due to the highly abrasive properties of the clinker material, they are extremely susceptible to heavy wear. The round, sharp-edged clinker particles in different sizes can cause serious abrasive damage on the rotor blades and other components of the fan. Poorly wear protected clinker cooling fans don't stand a chance in these harsh environments (see pic 1).

A proper wear protection is ensured by a special tungsten-carbide coating. Carbide mixtures and matrix according to the average dust particle size require both a huge experience on existing installation and latest CFD simulation. With state-of-the-art wear protection, the lifetime and performance range of the fans can be increased considerably (see pic. 2).

Experience in industrial fans

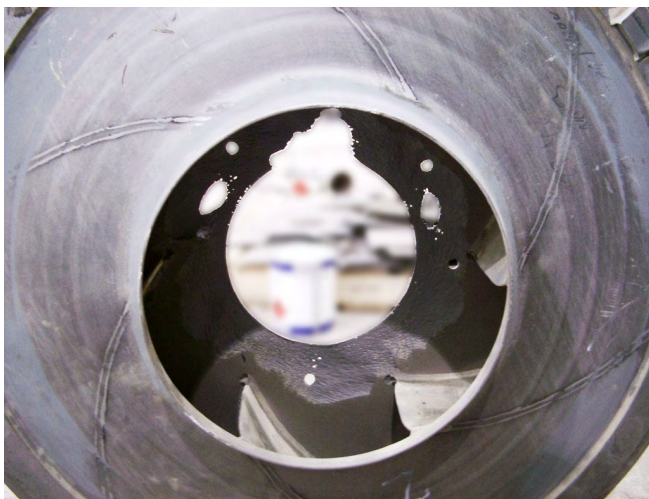
An optimal aerodynamic construction and an ideal balancing of the impeller is also important to ensure a perfect performance of the fan. Pollrich focus not only on wear protection, but also on torsion-resistant substructures. Only a well synchronised system of rotor, bearing and substructure minimizes the vibrations on all parts.

Pollrich, as an industrial fan expert, has a proven expertise with the high demands in the cement industry and is contracted in a lot of high-profile projects in the Middle East. Early 2018, they finished a contract

FANS & BLOWERS

for approx. 100 fans for a huge cement plant in Saudi Arabia, shortly after a large-scale assignment for a big project plant in Qatar. The company has experience in fans for demanding applications for more than 100

years. They offer not only tailor-made fans and spare-or wear-parts, but also services, maintenance and supervision, whenever needed.



Pic 1: A poorly wear protected clinker cooling fan after only two weeks of operation.



Pic 2: New, state-of-the-art wear protection helps to increase the lifetime and performance range of the fans.



CONVEYOR & ELEVATOR BELTS STEEL CORD & TEXTILE

ISO 9001



21055 Gorla Minore (Italy)
Via A. Colombo, 144

Phone +39 0331 36.51.35
Fax +39 0331 36.52.15

www.sig.it
E-mail: sig@sig.it

CEMENT INDUSTRY DIGITALIZATION



By: Osama Aly Ahmed, Engineering Consultant, Egypt

Introduction:

Whereas 5 years ago, most people had not heard words like digitalization or Internet of things, these words are now buzzwords that seem to be a must – being used in each and any publication.

Whenever there is a mobile device involved or a display for the user is built in, the product is labeled as an example of digitalization or IoT.

At the same time, competition is increasing continuously, forcing companies to become more efficient and putting increased pressure on high-cost regions.

Let us start digitalization journey to discover the image of cement industry in the future

The following approach will help guide the long journey from initial concept to successful project implementation

Remember the time when everybody bought clothes at clothes stores; nobody thought about ordering clothes on-line. Today e-commerce is the most valued generating sales channel in fashion business.

Future Trends:

The present and future of our society are being determined by the following five mega trends:

Demographic changes and an increase of the working population;

Climate change and extreme meteorological phenomena / Urban development requirements / Globalization;

Our digital transformation strategy for the cement industry relies on 5 + 5 +12 + 3 elements; Digitalization addresses not only manufacturing processes, services, and products but also business models, workforce training and education.

We define digital transformation as the use of the best available technologies for companies to adopt their full potential with a view to increasing efficiency and flexibility and obtaining better strategic position in the market.

5 Value holders defining ecosystem in cement industry



Raw materials

A scenario could be that quarries and their mineral reserves would provide information about the suitability of their conditions or emit signals to the contrary.

Production process would be adapted according to information transmitted in real time by cluster to all value chain nodes which provide information about mineral reserves.

Alternative raw materials help reduce CO₂ in concrete.

Suppliers

A scenario will enable suppliers of material, services, products, and fuels as well as alternative raw materials to use them in the manufacture of all kinds of cements. They would be able to have real time connections to their customers, and cement manufacturers would be able to fulfill their requirements without delay.

They would also be able to monitor the production process for the cement concerned and to know the consumption predictions, and even the existence of finish products, thereby being able to detect, in time, the need to replace their supplies and any potential quality problems affecting them.

Production and Maintenance:

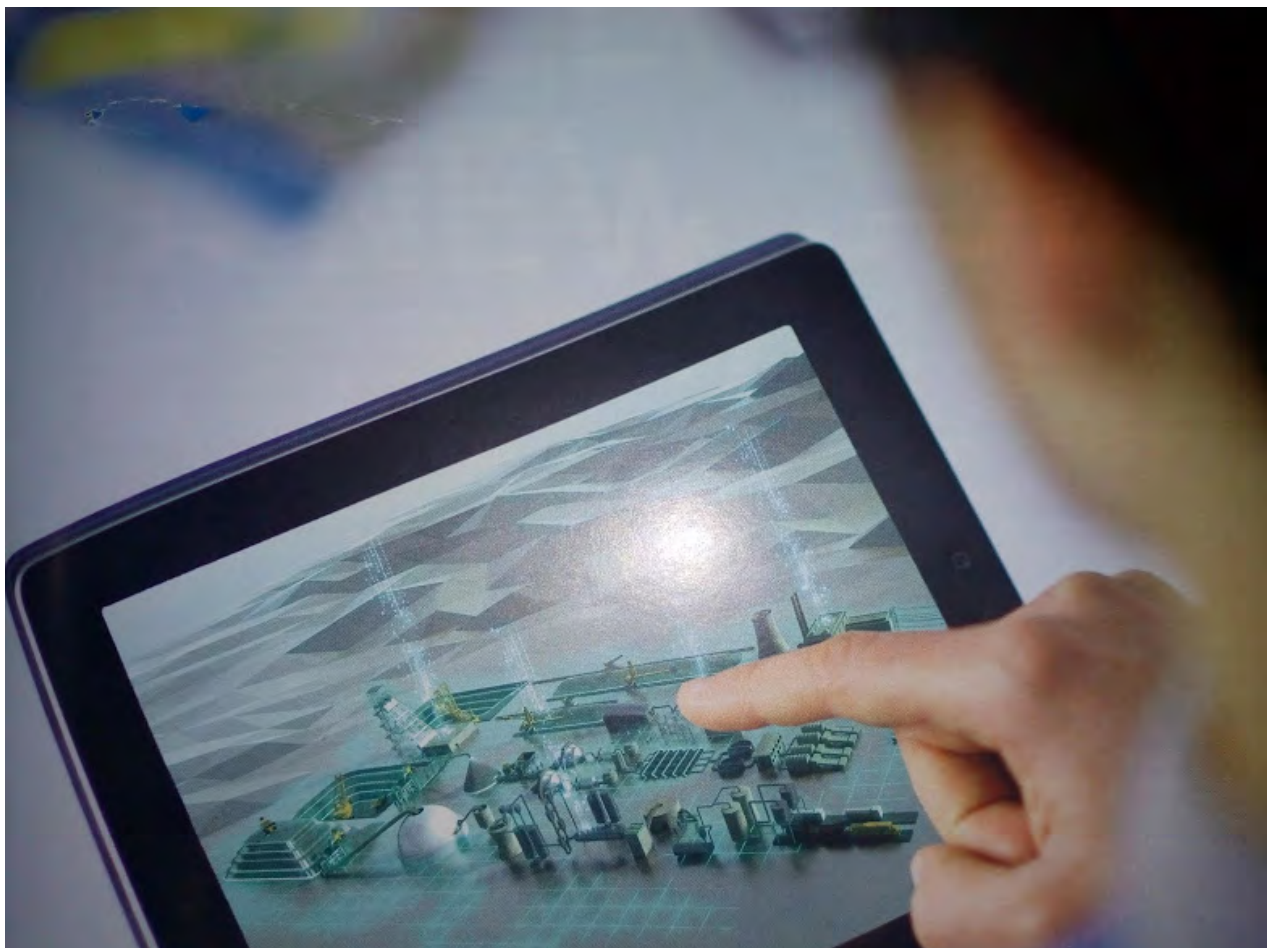
The new digitalization technology will allow for the centralization of specialist maintenance by remote control. Reactive maintenance will give a way to graph analysis of reliability and fault prediction and will reduce stoppage times increase task efficiency.

Logistics:

Logistics can be self-organized and more flexible as they are based on real-time information about shipment orders. As a result, there will be better distribution of skills and assignment of functions, higher filling rates, and an increase in the precision of the shipments. They will also to improve route planning or additional material ordering.

Customers:

Customers will be able to access supply and request information in real time. Direct and open communications between end-consumers, other customers, cement producers and distributors will permit better planning as well the completion of orders with the specified requirements.



Pillars of digitalization:

While only holistically integrated industry, 4.0 strategies will enable companies to realize their full potential, and investment in each of these pillars will give companies both an increase in efficiency and flexibility, and a better strategic position.

Cement industry 4.0 rests on five pillars which, when combined, will enable companies to fully harness the gains achieved in IT and telecommunications technology. These five pillars consist of the following:

Smart equipment

This refers to fixed assets in manufacturing process. Automation of the process and smart equipment are the cornerstones of cement industry 4.0. The growth of the internet of things offers a huge range of possibilities, the limit of which has yet to be found.

The shop floor of the future will be centered on intelligent manufacturing assets that are autonomous, flexible, able to interact with their surroundings through sensors, able to adapt to unexpected situations, and able to communicate both with each other and with human operators. All resources in production plant – both human and machine – will be connected through the IoT, marking a new level of socio- technical interaction. Going one step further, the products themselves will be intelligent – managing their own production process and giving instructions to machines regarding next steps or special customization features.

All of these steps should be under scalable production control, which has already been implemented in cement automation in all modern cement plants.

Networking and connectivity

These are based upon decentralized information and communications technologies systems that cover every aspect of production, from the habitat for an ecosystem to incorporate new applications and equipment and can create virtual visions of production.

Connectivity will be complete in the value cluster for each plant and will cover all the aspects of the

operations performed there: from reception logistics to dispatch logistics, including product engineering and manufacturing. The role of such a system is to bridge the gap between the physical and digital worlds, hence its name: cyber- physical system.

Block chain technology can be used to guarantee the traceability of processes and products, which in turn will lead to an increase in quality and a reduction in the cost of verifications.

Value chain integration

This takes place with the integration of IT systems, including those from customers and suppliers across the value chain. Changes in demand and supply will be automatically and directly fed into the production system and will therefore enable companies to react quickly and more efficiently to unpredictable volatilities. This will make companies significantly leaner and will enable them to move away from traditional, static productions models.

Smart products

Providing the equipment with data about the next step to take, specifications, and requirements, etc., they can interact with customers and provide extra services and benefits, in addition to their immediate functions.

Data analytics

For example, operators can manage the production and logistics of the complete mine to port. Supply chain is customized to key performance indicators and drill down to individual segments according to the needs of each user.

A web-based dash-boarding system consolidates data generated by the MES Manufacturing execution system in a standardized and simplified way, guiding the analysis of managers and supporting activities of process coordinators.

Digitalization portfolio elements

It is not possible to implement all of these listed elements

- 1- Process automation
- 2- Systematic energy saving
- 3- Process control
- 4- Information security
- 5- Information structure
- 6- Smart technology for equipment
- 7- Diagnostic
- 8- Intelligent manufacturing
- 9- Simulation
- 10- Data analytics
- 11- Plant life cycle engineering
- 12- Autonomous operation

Pilot projects can help address many issues. Although not every project should succeed, they can all help to learn the approach that works best for the company.

Challenges:

The very first step in Cement industry 4.0 is to simply ensure that the data should be engineered, stored, visualized and analyzed is available to the user. The availability of the data then leads to the question of where data should be stored. Do the necessary sensors exist and can they communicate their values to the network?

There is a general agreement that the greatest challenge to the digitalization is the issue of security. The good news is this issue of security has a solution is readily available today.

Other challenges are:

Lack of budget for equipment, personnel and training;
Lack of existing expertise and the lack of understanding the value of technology.

These are all issues that can be dealt with by defining a clear strategy, starting slowly and building up expertise, experience and confidence.

At last, it seems that any successful company in the market will take care of these elements:

- 1- Digital marketing & Social media
- 2- Sustainability and social responsibility
- 3- The Brand Name

Conclusion

The big themes of this article were Social Media, Mobility, Analytics and the Cloud and their impact on the smart, connected buildings community. Each of these is already having a significant impact on our definition and understanding of a smart building and its meaning in the context of smart cities. It is clear that this goes well beyond the realm of energy efficiency and energy management, despite their high importance. It is also related to operational efficiency, occupant satisfaction and productivity. However, building owners are seeking an improvement in installer messaging when being presented to so many energy saving tools and practices by so many different suppliers.

Finally, industry should seek greater collaboration with suppliers, customers and other stakeholders to drive development towards industry 4. The digitalization process must begin with the management of the product life cycle with a view to firstly increasing productivity and secondly to opening up wide range of business opportunities. It is not an immediate process as there will be adaption and implementation difficulties, but a brilliant future lies ahead for it.

References:

Web Sites of the following companies
Siemens Cement 4.0
FLSmidth Digital transformation
ThyssenKrupp industry 4.0
Axians industrial applications
World Cement Magazine

Eng. Osama Aly Ahmed
Engineering Consultant
cemgate@gmail.com
+201064170712

Chemical Admixtures in Cement Introduction

**By: Tariq M. Awad, Senior Chemist,
Badoosh Plant Expansion, Iraq**

Introduction

Many countries seek to develop cement through chemical additives. This led to the production of special quality of cement with specification of fast hardening and early resistance without taking into account the effects on concrete. From this standpoint, it is important to explain what chemical additives in the cement and its effects.

Chemical additives

Chemicals are added to clinker, cement or cement paste in certain proportions. This addition is either before the clinker grinding process or with the cement during the mixing process. This is to improve the specific property during hardening phase, although chemical additives improve a particular property, they have a negative effect on other properties.

Specific effects

1. Type
2. Quantity
3. Chemical composition of cement
4. time to add chemicals to the mixture
5. duration of the mixture

Types of chemical additives

According to the British specifications BS-5075, the additives are classified into five groups.

- 1) Accelerate hardening
- 2) Slow down hardening
- 3) Water-reducing
- 4) Acceleration and water reducing
- 5) Slow-down and water reducing

Whilst, under US standards ASTM, there are many types of additional

1. Water-reducing (C494 A type) which are used between 5 - 30 C0
2. Accelerate hardening (C494 C type)
3. Slow down hardening (C494 B type)
4. Slow-down and water-reducing (C494 D type) which are used when temperature is more than 30 C0
5. Acceleration and water-reducing (C494 E type) which are used when temperature is less than 30 C0

Accelerated additives for hardening

These materials accelerate the initial reaction between cement and water, thus accelerating the hardening of the concrete and giving early resistance.

Chemical Composition of accelerated additives for hardening

- 1- Inorganic compounds: they are water soluble salts such as calcium chloride (CaCl₂), Barium chloride (BaCl₂) and (calcium and potassium carbonate)
- 2- organic compounds such as tri ethanol amine, naphthalene formaldehyde sulphide or is known by the brand

name Sekament and Edekirt B -2

Use of accelerated additives for hardening

It can be used in the process of pouring concrete in cold climates for fast hardening. The main role is the acceleration of reaction between the water and the complex C3S. This is due to its effect on the gel layer of calcium silicate hydrate which formed around cement granules. This, in turn, changes the shape of calcium carbonate crystals from the hydration reactions of cement.

Conditions required when using chemical additives

1. the benefit of using chemical additives is proportional to the cost ratios
2. Avoid additions of calcium chlorides or any substance containing chlorides to reinforced concrete
3. Relevance and effectiveness of chemical additives in the same concrete mix. It is important that there is sufficient information to indicate the extent of their overlap and ensure their compatibility
4. Provide enough information on how to use it if you use more than two items
5. The behavior and effect of chemical additives with normal Portland cement differs from sulphate resistant cement, it is important to have sufficient information on the proper performance of the use of chemical additives with cement
6. Chemical additives used must be stored in sealed drums and contain information about the trade name, production date and shelf life as well as the properties of the additives and their conformity with the standard specification.

Chemical additives commercially available

- 1 – Sekament
- 2 – Edekirt B 2

Sekament

It can be used as a high –density plasticizer with double effect to produce concrete with high fluidity and flow, it is also used as a factor to reduce the water ratio and improve the early and final strength of the cement, sekament will be used in foundation, columns and coarse surfaces, sekament works to reduce the water content to 20 % and increases the resistance by 100% after 16 hours.

Edekirt B2

It is a liquid substance of a specified weigh of 1.12 g/cm³, added with concrete and Portland cement to increase the speed of freezing and to reach early resistance to the effect of concrete, snow and cold weather, it also reduces the percentage of water added to cement, which increases the early resistance of cement.

1 kg per 50 kg of cement is added and the increase of the addition causes a slight increase in the early resistance of the cement. There are guidelines for designing mixtures in the factory using the same aggregates and cement under the same ambient conditions to determine appropriate mixing ratios

Effect of accelerated additives for hardening on the concrete

- 1- Concrete abrasion by sulphate
- 2- Concrete after a year or more will be susceptible to stretch and cracking
- 3- Do not use these additives in the hot weather, especially in the summer, where the temperature rises to 50 degrees Celsius because the rapid sclerosis lead to the expansion and cracking.

References

1. Dr. Kamal A. Rasheed “Chemistry Book”, 1999 – National Center for Construction Laboratories, Baghdad.
2. Hassan Al-Osh, 2008 – Vocational Training Center for Cement Industry, Syria.
3. <https://m.specialties.bayt.com>
4. <https://sites.google.com>

Fast and perfect sample preparation for spectroscopy!



Vibrating Cup Mill
PULVERISETTE 9

The FRITSCH Vibrating Cup Mill PULVERISETTE 9 offers many practical advantages in all areas in which hard, brittle and fibrous material must be ground extremely quick down to analytical fineness. She is indispensable for fast sample preparation, for example in spectroscopy preparation, ore and geology laboratories, mining and metallurgy, ceramics industry, agriculture and environment, infrared and Xray fluorescence analysis.

The PULVERISETTE 9 is very powerful, especially quiet, simple to operate, quick to clean and has a well-conceived drive concept and the grinding set is safe and easy to tension.

For perfect, loss-free grinding results in extremely short grinding time!

Your advantages with the Vibrating Cup Mill PULVERISETTE 9

- High power with well-conceived drive concept
- Extra-fast grinding with up to 1500 rpm
- Grinding sets in 5 different materials and 3 different sizes from 50 ml to 250 ml volume are available – for each application the suitable one
- Especially safe hood locking
- Complete soundproof lining



Especially ergonomic handling

Easy working

No similar mill offers a more convenient operation: The working position is ergonomically optimised; the ease of cleaning is without match. The grinding sets are especially light and are equipped with heat insulated handles, and do not have to be placed directly on the vibrating plate in the centre of the mill. The grinding set is simply placed on the guide rail, an anti-rotation lock enables easy movement to the final position and the safety switch checks the firm position. This protects your back and saves energy and time. The grinding set is tensioned in seconds using a well-thought out one-hand lever.

Simply clever!

Especially well-arranged and intelligent

The setting of the grinding time precisely the second, the pause periods and rotational speed as well as the programming and storage of grinding cycles is done via the self-explanatory multilingual menu navigation on the LCD display. A special detector automatically recognizes when you use a grinding set made of agate and reduces the rotational speed independently.

NEW: Pellet Press

The manually-operated hydraulic FRITSCH Pellet Press, the ground samples can be fast and easy prepared as pellets with a smooth and homogeneous surface for spectral analyses such as X-ray fluorescence analysis or infrared spectroscopy for elementary analysis.



Pellet Press for the preparation of pellets

Test the FRITSCH Vibrating Cup Mill PULVERISETTE 9

Send us your most difficult samples – we will conduct an individual sample grinding. Compare it yourself!

Up-dated information on the FRITSCH Vibrating Cup Mills at www.fritschinternational.com/disk-mills

contact: FRITSCH GmbH • Milling and Sizing

Selina Krieger

Industriestrasse 8 • 55743 Idar-Oberstein • Germany

Phone: +49 67 84 70 155 • E-Mail: krieger@fritsch.de

www.fritsch-international.com



Tel: +44 (0)1527 406800
 Fax: +44 (0)1527 406810
 Email: sales@hycontrol.com
 Website: www.hycontrol.com

SILO PROTECTION CANNOT GET ANY EASIER!
Upgraded system is the next step in silo pressure safety

For immediate release

Redditch, Worcestershire: Two years after introducing the ground-breaking SHIELD silo protection system, silo pressure safety experts Hycontrol Ltd are proud to announce the launch of the SHIELD Lite SPS, which protects powder storage silos from the dangers caused by excessive pressure during tanker deliveries. Utilising purpose-designed, state-of-the-art pressure monitoring and control equipment, SHIELD Lite meets and exceeds best engineering practice and current guidance from the Mineral Products Association. The new, compact panel is designed for simple operation and to be easily understood, giving users a range of new monitoring and diagnostic tools and indicating when the system is suffering from blocked filtration or is being endangered by poor delivery driver behaviour.

Powder storage silos are commonplace in many industries but are at risk of over-pressurisation during tanker deliveries. The root causes of this are invariably either driver error resulting in uncontrolled air pressure being discharged during the fill procedure, or a failure of the filter venting unit. Pressures from as little as 1 or 2 psi are enough to rupture a silo or blow its filter unit off the top. This poses serious risks, which is why a comprehensive, failsafe safety and control system is vital.

SHIELD Lite incorporates essential high-accuracy pressure safety components into a modular design that can be adjusted to suit site requirements. Maintenance is simplified and the long-term cost of ownership is significantly lower than any other system on the market. Along with many new features, SHIELD incorporates Hycontrol’s pioneering Ground Level Testing, in which a single key-turn enacts a full-function test of all the crucial safety components, dramatically reducing the need for working at height. Importantly the system is also completely failsafe, a vital feature that’s often overlooked. “Building on the success of the first SHIELD system has allowed us to develop new tools for site personnel to improve safety,” said Hycontrol Managing Director, Nigel Allen. “We have insisted for many years that simplicity is the key to safety, and now with developments like ratio alarms, filter blockage warnings and tanker driver



delivery behaviour diagnostics, we can effectively remove the risk of human error completely. Hycontrol has led the silo protection field for more than a decade through both innovation and product performance. The purpose of developing SHIELD Lite is to make sure that every single pressurised powder delivery into every single silo is completely safe. We anticipate that customers in the ready-mix and concrete sectors will be impressed by both what this new system can do and the price we are able to offer it at.”

He adds: “We are determined that safety for staff, contractors and drivers should be the number one priority across all industries. With SHIELD Lite, Hycontrol is showing that true, failsafe silo safety is not only achievable, but with the right equipment it’s easy, too. We understand that human errors in maintenance and testing are inevitable. Our philosophy is to accept this, and to provide a system that monitors and safely alerts you when these errors occur. As we say – safe silos are tested every time.”

About Hycontrol: Hycontrol has been at the forefront of level control and silo protection technology for over thirty-five years. Hycontrol is acknowledged as a global knowledge leader in silo pressure safety. The company creates systems that are safer by design, in order to reduce risk, create a safer working environment and provide the best-engineered solution - without compromise.

www.hycontrol.com / www.siloprotection.com / sales@hycontrol.com / 01527 406800



Hycontrol Limited, Larchwood House, Orchard Street, Redditch, Worcestershire B98 7DP UK
 VAT Registration No: 3891933 04 Company registered in England No: 1755684



ЦЕМЕНТ

и его применение

CEMENT AND ITS APPLICATIONS
INDUSTRIAL JOURNAL
SINCE 1901

News

Markets analysis

Science,
technology,
production

Solid partners

Effective
advertising



The journal for producers and consumers of cement and other binders, as well as for construction companies and equipment producers

The Russian-language periodical professional publication devoted to the production of cement and other binders, concretes, dry mixes and their applications, as well as to research and design.

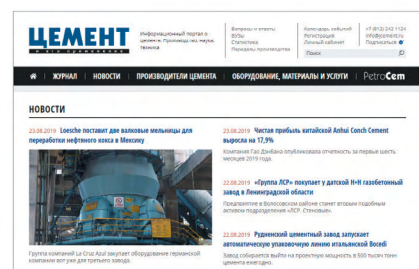
A conspicuous place in the journal materials is given to the problems of plant development, capital movement, economic problems facing the cement industries of Russia and other countries.

The journal comes out once in two months and includes news, analytical materials and detailed abstracts of all the articles in English.

«Cement and its Applications» is the only initiator and organizer of international cement conferences PetroCem. PetroCem 2018 which was held on April, 2018 in Saint-Petersburg, Russia – gathered more than 520 participants from 36 countries and representing more than 320 companies.

Jcement.ru web-based information portal on cement. Production, technologies, science. Always up-to-date news and data on cement producers, technologies, equipment suppliers and key-players. Journal, interviews, statistics, events, Q&A and other relevant materials.

Cement and its Applications, Journal
22 A Zvenigorodskaja Str. No 438
St. Petersburg, 191119, Russia
Tel. +7 (812) 242-11-24
E-mail: info@jcement.ru
Web: www.jcement.ru
www.petrocem.ru



Welcome to PetroCem conference, April 2020, St.Petersburg, Russia

One VPStudio software for all VPFlowScopes

VPInstruments released VPStudio 2.4 software. VPStudio 2.4 is compatible with all VPFlowScope flow meters. VPStudio 2 software can now be used for our entire product line: VPFlowScope M, VPFlowScope Probe, DP, In-line flow meters and the VPFlowTerminal.

Use VPStudio software for configuration of your flow meter, download data log sessions and export them to CSV.

Auto detection

Connect your device meter via USB, or via the USB to RS485 converter, and it will be connected automatically. No more hassle with configuration, just



plug-in and go!

Universal interface

The configuration interface is greatly simplified and identical for all flow meters. The VPStudio 2 interface is more intuitive and easy to understand.

Get organized

Data log files are retrieved from your flow meter and safely stored in the Projects database module within VPStudio 2. This way your data log files are better protected, more organized and available even when your flow meter is not connected.

VPFlowScope 3-in-1 flow meters

The VPFlowScope product line provides a complete

solution for compressed air flow measurement. It covers the entire compressed air system, from supply to demand side. Thanks to the built-in pressure sensor and temperature sensor, the VPFlowScope is a powerful tool to detect what is really going on in your system. Detect excessive consumption, pressure losses, and temperature issues at the same time. Use the VPFlowScope for compressor performance measurement, cost allocation and condition monitoring of pneumatic machines. Thanks to the bi-directional sensitivity, the VPFlowScope is the only tool on the market to measure in compressed air ring networks.

About VPInstruments

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.

For more information, contact:

VPInstruments

Joyce van Eijk - joyce.van.eijk@vpinstruments.com

Buitenwatersloot 335, 2614 GS Delft

Tel. +31 (0)15 213 1580

Internet: www.vpinstruments.com



www. **UAECement**.com

Become a member of UAECEMENT.COM ...



RELIABLE COMPANIES

UAE CEMENT TYPES

CEMENT ARTICLES

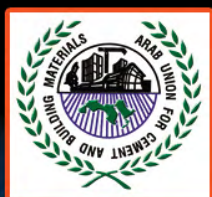
UAE CEMENT FACTORIES

ARAB CEMENT FACTORIES

UAE CEMENT NEWS

INTERNATIONAL CEMENT CONFERENCES

Our Partners :



www.aucbm.org



www.simankhabar.ir



www.cmtevents.com

UAE CEMENT PORTAL WEB SITE

www.UAECEMENT.com

info@uaecement.com

With Prime, the smart factory is now reality

From incoming raw materials to the compilation of a finished product picking list, the Prime software platform developed by System Ceramics allows for complete digitalisation of ceramic manufacturing.



The need for customised production, smaller batch sizes and a shorter time to market are just a few of the latest challenges faced by today's manufacturing industry. Complete digitisation of processes, the use of shared resources and efficient data management are key elements for sustainable development of the new industrial paradigm.

Prime, the System Ceramics software platform developed and built in-house by a dedicated department, has allowed for complete digitalisation of the ceramic manufacturing process. It is an example of a true Industry 4.0 application: from raw materials processing through to the finished product, Prime is capable of handling the entire production process using advanced IT systems that exploit modern concepts to considerably reduce costs and at the same time improve business processes for industrial standardisation.

Using a single latest-generation graphic interface and 3D technologies, the production plant is represented as a single dynamic whole, allowing for complete management of the entire production cycle.

Prime is a Manufacturing Operations Management (MOM) solution that offers a complete overview of the production processes of entire factories with the aim of constantly improving operating performance.

The system controls the entire production cycle, from incoming raw materials to the compilation of a finished product picking list.

Prime dialogues with the plants and machines inside the factory and then processes data to provide a detailed analysis of the process.

This important software platform has already been installed in a number of ceramic factories in Italy and abroad which have decided to make use of an advanced system integrator, a solution that performs detailed production analyses in order to obtain strategically important information for optimising all stages of the production cycle.

This marks a major step forward for the ceramics industry and one in which System Ceramics is always playing a pioneering role.





SIMAN NEWS
Iran Cement News Agency



www.simankhabar.ir
پایگاه خبری تحلیلی صنعت سیمان ایران

IRAN Cement Industry Capabilities and Equipments Production in SimanKhabar.ir

SK Automatic Big Bag Filling Station With Lifting System



For Export



SK Cement Packing Plant



For more information please contact us :



Tel : +98 21 6642 89 14
Fax: +98 21 6691 53 29
info@simankhabar.ir



Granicer 6000: new binder for dry grit applications

Granicer is the Zschimmer & Schwarz Ceramco's product line for grit and microsphere application, launched in 2009.

The products, originally used for wet application – airless and disc – has been a great success so the offer has been rapidly extended: from traditional glaze application methods – as the disk or airless simple protection – to high weight application for full field polishing.

The constant search and the daily technical customer support as made it possible to significantly diversify the articles of the range according to client's production needs. The high suspending power, the perfect lubrication and the easy product application has been since the beginning the distinctive characters of a collection that until now solves most of the problems that can occur during glazing and decoration steps. In 2019, after ten years, the range has been further extended.

Zschimmer & Schwarz Ceramco launches today the new GRANICER 6000, a water-soluble and water-based vehicle for dry grit application. This ready-to-use

product, that can be applied as such or diluted in water, creates a homogeneous surface of high powder glue thanks to the presence of specific resins in the formula.

The analogical application is particularly suitable for high weight grit application for full field lapping and it also performs an excellent application for full field digital decoration.

GRANICER 6000 allows to substantially reduce the use of water, to decrease the drying time, avoiding possible flatness problems of the final ceramic tiles. The optimal product combustion also removes any kind of odors making GRANICER a very efficiency technical product with no environmental impact.

For more information:

www.zschimmer-schwarz-ceramco.it/en

**Since 1908...
Taking the best
from the past to
build the future.**

Providing reliable and innovative solutions for our customers is our mission since 1908.

▲
Pipe conveyor
cement plant
Lenght 1200
Curve 90%

www.bedeschi.com



NAVIGATE TOWARDS SUCCESS

The cement industry knowledge your competitive advantage needs:

- **News:** daily newsletter delivered to 23,000 recipients, including CEOs, equipment manufacturers, consultants, and engineers in 160+ countries
- **Proprietary intelligence:** interviews with cement industry thought leaders and experts, including CEOs, executives, analysts and consultants
- **Market research:** high-quality research reports, including detailed market studies, competitive assessments, cement trade flows, and export opportunity assessments. Custom research available upon request
- **Data services:** statistical and data research tools offering industry practitioners a wealth of cement supply and demand data



DIARY DATES

CEMENT

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>

Alternative Fuels & Raw Materials Africa 2019 (AFARM Africa)

Date : 05 - 06 December 2019

Venue: Capital Hotel & SPA, Addis Ababa, Ethiopia

Email: sales@gmiforum.com

Slag & AshTrade Africa 2019

Date : 05 - 06 December 2019

Venue: Addis Ababa, Ethiopia

Email: sales@gmiforum.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

<http://cem-boards.com>

CW Group's Cement Strategy, Finance and Trade Summit Americas 2020

Date : 30 - 31 January 2020

Venue: Miami, USA

Email: sales@gmiforum.com

Slag & AshTrade 2020

Date : 12 - 13 February 2020

Venue: Puerto Vallarta, Mexico

Email: sales@gmiforum.com

Alternative Fuels & Raw Materials Americas 2020

Date : 12 - 13 February 2020

Venue: Puerto Vallarta, Mexico

Email: sales@gmiforum.com

14th Global CemFuels 2020

Date : 19 - 20 February 2020

Venue: Paphos, 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

<http://cemfuels.com>

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,
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,
Paphos, 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

26-27 May 2020,
Munich, Germany
cemprocess.com

The third Global CemProcess Conference and Exhibition on Cement Industry 4.0, process optimisation, de-bottlenecking, production maximisation and troubleshooting in the cement industry will take place in Munich, Germany, in May 2020, with top-level technical information and world-class networking - including a field trip to the Burglengenfeld cement plant. *If you would like to maximise cement production while decreasing costs, then you should attend!*



DIARY DATES

CEMENT

Slag & Ash Trade Asia 2020

Date : 11 - 12 March 2020

Venue: Ho Chi Minh, Vietnam

Email: sales@gmiforum.com

Alternative Fuels & Raw Materials Asia 2020

Date : 11 - 12 March 2020

Venue: Ho Chi Minh, Vietnam

Email: sales@gmiforum.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

<http://gyp-supply.com>

11th International PetroCem Conference

Date : April 2020

Venue: St. Petersburg, Russia

Tel: +7(812)764-5612

Fax: +7(812)712-3683

E-mail: info@jccement.ru

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

<http://globalslag.com>

3rd Global CemProcess 2020

Date : 26 - 27 May 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

<http://cemprocess.com>

XXII INTERNATIONAL CONSTRUCTION FORUM

Cement. Concrete. Dry mixtures

Date : 11 - 13 November 2020

Venue: Expocentre, Moscow, Russia

Email: info@alitinform.ru

Tel.: +7 812 335 09 92

For more information, please **visit: www.infocem.info**

TRAINING

VDZ Crash Course for Young Engineers

Date : 2 -6 December 2019

Venue: VDZ's premises in Duesseldorf, Germany

For more information please visit: **www.vdz-online.de/en/training**



CEMENTTECH 2020

21st China International Cement Industry Exhibition

March 25-27, 2020




ANHUI, CHINA



Partial List of Previous Exhibition delegations:



Organizer

-  China Building Materials Federation
-  China Cement Association
-  CCPIT Building Materials Sub Council

Contact details:

Joanna Long
 Tel: 8610-88083329
 Fax: 8610-88084171
 Joannalong@ccpitbm.org

www.cementtech.org

DIARY DATES

GENERAL

European Chlor-Alkali Industry Summit

Date : 04 - 05 December 2019

Venue: London, UK

For further information, please contact:

Marcin Janecki

Tel: +48 61 646 7047

Email: mjanecki@acieu.net

www.wplgroup.com

ICEST 2019

Date : 04 - 05 December 2019

Venue: Luxor, Egypt

Tel / WhatsApp: **00201128930300**

Email: icest@egyptfuturefoundation.org

Accounting, Financial Statements Analysis & Financial Communication Training Seminar

Date : 09 - 13 December 2019

Venue: Dubai, UAE

Tel: +2711 202 5046

WhatsApp: +27 67 274 6447

Email: registrations@acaeglobal.com

For more information, please visit: www.acaeglobal.com

Evidence Based Policy Development and Implementation

Date : 09 - 13 December 2019

Venue: Cape Town, South Africa

Tel: +2711 202 5046

WhatsApp: +27 67 274 6447

Email: registrations@acaeglobal.com

For more information, please visit: **www.acaeglobal.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

Biobased Coatings APAC 2020

Date : 15 - 16 January 2020

Venue: Bangkok, Thailand

For more information, please contact:

Neha Desadla

Tel : +91 2048523143

Email: ndesadla@acieu.net

XXII INTERNATIONAL CONSTRUCTION FORUM

CEMENT - CONCRETE DRY MIXTURES

NOVEMBER 11-13, 2020. EXPOCENTRE, MOSCOW.



XXII INTERNATIONAL CONSTRUCTION EXHIBITION
«Cement. Concrete. Dry mixtures»

More than **6000**
exhibition visitors

BlockRead

International Conference
«Precast Housing: Production, Design,
Construction»

450 members
of the business
program

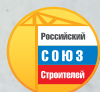
MixBuild

International Scientific and Technical
Conference «Modern Technologies of Dry
Mixtures in Construction»

150 exhibits

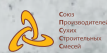
80 reports

18 countries



organizers

venue



info@alitinform.ru // www.infocem.info // +7 812 335 09 92



DIARY DATES

GENERAL

Energy Storage 2020

Date : 15 - 16 January 2020

Venue: Berlin, Germany

For more information, please contact:

Mr. Mohammad Ahsan

Tel: +44 203 141 0606

Email: mahsan@acieu.net / mahsan@acieu.co.uk

8th Edition of the Future of Polyolefins

Date : 22 - 23 January 2020

Venue: Brussels, Belgium

For more information please Contact:

Mr. Mohammad Ahsan:

Tel: +44 0203 141 0606

Email: mahsan@acieu.co.uk

http:// https://www.wplgroup.com/aci/cfpe8-agenda_mkt/

7th Maximizing Propylene Yields 2020

Date : 22 - 23 January 2020

Venue: Barcelona, Spain

Tel: + 44 (0)203 141 0607

Fax: + 44 (0)207 593 0071

Email: mlampropoulou@acieu.net

www.acieu.net

Ghana International Trade Show 2020

Date : 30 January - 01 February 2020

Venue: Accra International Conference Center (AICC),
Ghana

Tel: +971 4 3964906

Mob.: + 971 50 5352675

Email: melanie@growexh.net

Web: www.growexh.net

The European Biopolymer Summit

Date : 12 - 13 February 2020

Venue: Zaragoza, Spain

For more information, please contact:

Mr. Mohammad Ahsan

Email: mahsan@acieu.co.uk

Tel: +44 2031410606

www.wplgroup.com

5th Edition of Future of Surfactants Summit

Date : 12 - 13 February 2020

Venue: Berlin, Germany

Tel: +44 (0) 20 3141 0626

Email: samc@acieu.net

Solids 2020

Date : 01 - 02 April 2020

Venue: Dortmund, Germany

For more information, please visit:

www.easyfairs.com

4th Weimar Gypsum Conference

Date : 01 - 02 April 2020

Venue: Weimar, Germany

For more information, please visit:

www.uni-weimar.de

10th European Algae Industry Summit

Date : 29 - 30 April 2020

Venue: Reykjavik, Iceland

Tel : +44 0203 141 0627

Email : dpavlyk@acieu.net

Hillhead 2020

Date : 23 - 25 June 2020

Venue: Hillhead Quarry, Buxton, Derbyshire, UK

For more information, please visit:

www.hillhead.com



عالم الإسمنت ومواد البناء

تصدر عن : الاتحاد العربي للإسمنت ومواد البناء العدد 77 سبتمبر / أيلول 2019

Subscribe today



A unique source
of information
for the latest
developments in
technology

Subscribe online at:
www.worldcement.com/subscribe

**WORLD
CEMENT®**

ADVERTISERS: September Edition # 77, 2019

ALIT, group of companies CEMENT. CONCRETE. DRY MIXTURES	75	www.infocem.info
Allan Smith Engineering Pvt. Ltd	9	www.smithengg.in
Al-Moasron L.T.D	IBC	www.almoasron.com
Arab Swiss Engineering Company "ASEC"	OFC	www.asec-engineering.com
BEDESCHI	68	www.bedeschi.com
CCPIT Building Materials Sub Council CEMENTTECH 2020 21 st China International Cement Industry Exhibition	73	www.cementtech.org
CEMENT INTERNATIONAL	45	www.cementinternational.com
CemWeek	69	www.Cemweek.com
Christian Pfeiffer	13	www.christianpfeiffer.com
Claudius Peters Projects GmbH	17	www.claudiuspeters.com
DISAB	7	www.disab.com
DURAG Group	51	www.durag.com
Evonik Fibres GmbH	23	www.P84.com
GEBR. PFEIFFER SE	5 AR	www.gebr-pfeiffer.com
Global Cement Global Cement Events 2020	71	www.GlobalCement.com
HAYER & BOECKER	11	www.haverboecker.com
International Cement Review	5	www.CemNet.com
JAMCEM Consulting	15	www.jamcem.com
LTD PetroCem	63	www.jcement.ru / www.petrocem.ru
SIG SPA	53	www.sig.it
Siman News – Iran Cement News Agency	67	www.simankhabar.ir
UAE Cement Portal Website	65	www.uaacement.com
VDZ	8 AR	www.vdz-online.de/en
World Cement	OBC	www.worldcement.com
ZKG INTERNATIONAL APP.	35	www.app.zkg.de



عالم الإسمنت ومواد البناء

مؤتمرات ومعارض

منتجات جديدة

موضوعات تقنية

أخبار عالمية

الملف العربي

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

المساهمات

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

توجه كافة طلبات الإعلان بإسم رئيس التحرير

الإعلان

الإشتراكات السنوية

150 دولار أمريكي

65 دولار أمريكي

الشركات والمؤسسات

الجامعات ومراكز البحوث

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

Website : www.aucbm.net

المكتويات

أخبار عربية
أخبار عالمية
منتجات جديدة

إعداد: Dominik Aufderheide & Dr.-Ing. Luigi Di Matteo
ألمانيا – Di Matteo ، DI MATTEO Group

الموضوعات:

- **HEXADUR®** في صناعة الإسمنت - 25 عاماً من العمل مع أسطوانات الطحن عالية الضغط المحمية **HEXADUR®**
إعداد: Jörg Oligmüller, Kaushik Ghosh & Andreas Packeisen ، Köppern Entwicklungs-GmbH – ألمانيا

- المضافات الكيميائية في الإسمنت
إعداد: طارق محمود عواد، كيميائي أقدم / معمل سمنت بادوش التوسيع – العراق

- التقاط العديد من الفوائد صعبة المنال للاستخراج المتجانس من قواديس التخزين
إعداد: Lyn Bates ، Ajax Equipment – المملكة المتحدة

- خدمات شركة هولدركيم **Holderchem**
إعداد: شركة هولدركيم – لبنان

- نظام تحليل الفيديو **DURAG** الشامل لمعلومات التصوير الحراري من أجل تحسين لهب الموقد الرئيسي
إعداد: Klaus Czirr ، DURAG GmbH – ألمانيا /
إعداد: Abbad Cheik ، DURAG ME – الإمارات العربية المتحدة

- نظام جديد لتصنيع صفائح الإسمنت الليفي المموج / المسطح لإكساء وتسقيف المباني
إعداد: VIDMAR – إسبانيا

- التحديات الرئيسية للمراوح وأنظمة النفخ الصناعية في صناعة الإسمنت
إعداد: Frauke Kretzer ، POLLRICH GmbH – ألمانيا

- مجموع آثار ظروف المعالجة وإضافة أكسيد المغنسيوم على الخواص الفيزيائية الميكانيكية ومقاومة ملاط الإسمنت البورتلاندي
إعداد: الدكتور إبراهيم القطان، قسم علوم البيئة والتنمية الصناعية ، جامعة بني سويف – مصر

- مزايا نظام إدارة الفرن **KGD BOGIFLEX®** من شركة **CMD**
إعداد: CMD Gears – فرنسا

مؤتمرات ومعارض

- مسألة المميزات – حول الاستخدام الفعال لأنواع الوقود البديل بنوعيات متفاوتة

المراسلات

توجه كافة المراسلات باسم رئيس التحرير / الاتحاد العربي للاسمنت ومواد البناء
الجمهورية العربية السورية - دمشق - ص . ب 9015
هاتف : 611 85 98 - 611 54 12 (11 963 +)
فاكس : 612 17 31 (11 963 +)

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

Website : www.aucbm.net



مجلة عالم الإسمنت ومواد البناء

جدول موضوعات المجلة لعدد ديسمبر / كانون الأول 2019

الموضوعات
* أنظمة التشحيم
* الصيانة في مصانع الإسمنت
- الصيانة المتمركزة حول الوثوقية
- منظومات الصيانة المحوسبة
* تقنيات الإصلاح واللحام
* إدارة قطع الغيار
* الطواحين العمودية
* الكسارات
* المبردات
* تكنولوجيا الحراقات
* الحرايات وفحص الحرايات

آخر موعد لاستلام المقالات أو النصوص الصحفية أو الإعلانات لهذا العدد هو: 6 ديسمبر / كانون أول

الإعلانات

(بالدولار الأمريكي)

الإعلان في عدد واحد	الإعلان في عددين	الإعلان في ثلاثة أعداد	الإعلان في أربعة أعداد
1,200	*	*	*
900	*	*	*
700	900	1,200	1,300
400	500	600	700
250	300	350	400
250	300	350	400

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

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)



GEBR. PFEIFFER

في كمبوديا، قدرات كبيرة



مجهزه بوفر تعويضي مضاعف النشاط. بعد أكثر من عام، أكبر طاحونه للأسمنت في جنوب شرق آسيا تستمر في إثبات كفاءة تكنولوجيا الـ MVR

في "توك مياس، كمبوديا"، طاحونة أسمنت Gebr. Pfeiffer MVR المزودة بـ MultiDrive® ثابت السرعة المصمم بدقة للتطبيق. إتاحيه قصوي لنظام الطحن مع سلامة التشغيل المعتاده من معدات Gebr. Pfeiffer كما يوجد أيضا طاحونتان في نفس المصنع للفحم و الخام. نحول الأفكار إلي واقع ملموس.

Pfeiffer. Passion for grinding.

اسم العميل: CMIC (شركات شيب مونج إينسي للأسمنت)

هل تريد معرفه المزيد عن طواحين Gebr. Pfeiffer و إمكانيتها؟
sales@gebr-pfeiffer.com

www.gebr-pfeiffer.com

powered by

**MULTI
DRIVE**



أخبار صناعة الإسمنت العربية

الإمارات العربية المتحدة

الإنتاج خلال الربع الأول من عام 2019 قبل أن تشرع مؤخراً في تسويق منتجها .

وبلغت قيمة إنجاز مشروع شركة الإسمنت سيقوس 51 مليار دج في ظرف 31 شهراً ، ويأتي التسويق كخطوة أساسية لتلبية احتياجات ولاية أم البواقي وباقي ولايات الجزائر من مادة الإسمنت الرمادي . وتصل القدرة الإنتاجية لهذا المصنع 2.2 مليون طن سنوياً .

المصدر: <http://errayaonline.net>

المملكة العربية السعودية

«وزارة التجارة»: 33.8 مليون طن إجمالي الصادرات السعودية

من الإسمنت والحديد في نحو عامين

كشفت وزارة التجارة والاستثمار، عن أن إجمالي الصادرات السعودية من الإسمنت والحديد بلغ 33.8 مليون طن منذ إقرار ضوابط تصدير الحديد والإسمنت من لجنة التمويل الوزارية في العام 2017 . وقالت إن إجمالي الكميات المصدرة منذ بدء السماح بالتصدير حتى الآن بلغ 8.86 مليون طن للحديد ونحو 25 مليون طن للإسمنت .

وكانت لجنة التمويل الوزارية المشكلة من وزارات التجارة والاستثمار ، والمالية ، والطاقة والصناعة والثروة المعدنية، والبيئة والمياه والزراعة ، قد قررت في العام 2017 إيقاف الرسوم على تصدير الحديد سنتين وتخفيض رسوم تصدير الإسمنت 50 % ، وذلك بغرض تشجيع المنتجين المحليين والصناعات الوطنية بما يمكنها من المنافسة .

وقامت السعودية اعتباراً من 1 فبراير / شباط 2018 بإلغاء رسوم تصدير الإسمنت للخارج ، وبلغ عدد تراخيص تصدير الإسمنت 53 رخصة .

المصدر: www.argaam.com

المواصفات السعودية: علامة الجودة الزامية على منتجات

الإسمنت اعتباراً من 9 سبتمبر / أيلول

شدت الهيئة السعودية للمواصفات والمقاييس والجودة على مصنعي وموردي الإسمنت ، الالتزام بعلامة الجودة على تلك المنتجات اعتباراً من 9 سبتمبر / أيلول 2019 .

تعاون بين مصنعي إسمنت العين والوطنية

أبرم مصنع إسمنت العين، التابع لشركة أركان لمواد البناء اتفاقية مع مصنع إسمنت الوطنية ، الذي يعد أكبر مصنع لطحن الإسمنت في الإمارات .

وتمثل هذه الاتفاقية مساراً تعاونياً بين أكبر جهتين منتجتين للإسمنت وحبيبات خبث الحديد في أبوظبي . وإلى جانب بند شراء إنتاج الكنكر طويل الأمد ، ستتمكن الاتفاقية الشركتين من خفض تكاليف الإنتاج والخدمات اللوجستية وتحسين حصتهما في السوق والأداء في تسليم المنتجات مما سيسهم في تعزيز تجربة عملائهما .

كما تسهم الاتفاقية في خفض المخاطر التي قد تحول دون تأمين مصنع الإسمنت الوطني لاحتياجاته من مادة الكنكر . وتمتلك الشركتان قدرة إنتاج إجمالية تبلغ 3.1 ملايين طن من الكنكر و6.6 ملايين طن من الإسمنت سنوياً .

المصدر: www.albayan.ae

إسمنت الفجيرة تتخارج من «صحار» مقابل 60 مليون دولار

قالت شركة صناعات إسمنت الفجيرة إنها تخارجت من مصنع إسمنت صحار بسبب تدني أسعار الإسمنت ، مشيرة إلى أن قيمة صفقة التخارج بلغت 60 مليون دولار (220.4 مليون درهم) . وأوضحت الشركة أن الطرف الآخر في عملية التخارج هو شركة ريسوت للإسمنت .

وكانت شركة ريسوت للإسمنت قد وقعت على اتفاقية شراء مصنع «إسمنت صحار» بقيمة 60 مليون دولار . كما استثمرت شركة إسمنت الفجيرة 13.6 مليون درهم في عام 2016 لتأسيس شركة إسمنت صحار بعُمان، وهي تمثل 20 % من رأس المال المدفوع .

المصدر: www.mubasher.info

الجزائر

مصنع الإسمنت سيقوس في أم البواقي تبدأ في تسويق منتجها

عبر البلاد

شرعت شركة الإسمنت سيقوس بولاية أم البواقي في تسويق منتجها المتمثل في الإسمنت الرمادي عبر البلاد ، حيث دخلت الشركة حيز

سلطنة عُمان

إسمنت ريسوت تتفق على استثمار مهم في الصومال

ذُكر أن شركة ريسوت للإسمنت العمانية قد اتفقت مع مجموعة شركات إم إس جي المحدودة على تأسيس وحدة طحن للإسمنت في مدينة بربرة الصومالية المطلّة على البحر الأحمر .

وقالت الشركة العُمانية في بيان لها إن تكلفة المشروع تبلغ نحو 40 مليون دولار، على أن تبلغ الطاقة الإنتاجية للمشروع نحو مليون طن من الإسمنت سنوياً . وأفادت «ريسوت» بأن نصيبها من رأس المال يبلغ ما يقارب 55 %، في حين يبلغ نصيب مجموعة «إم إس جي» 45 % .

وتعد «ريسوت» أكبر شركة منتجة للإسمنت بسلطنة عمان، ولديها أعمال في عُمان واليمن وشرقي أفريقيا والبلدان المطلّة على المحيط الهندي .

المصدر: <https://almawqepost.net>

بنك نزوى وريسوت للإسمنت توقعان اتفاقية تمويل بقيمة 19.5 مليون ريال

وقع بنك نزوى اتفاقية مع شركة ريسوت للإسمنت لتقديم حلول تمويلية بمبلغ 19.5 مليون ريال عُماني . وقد قام البنك بتصميم هذا التسهيل المصرفي لتلبية متطلبات شركة ريسوت للإسمنت من خلال تمويل طويل الأجل بقيمة 12 مليون ريال عُماني، وتسهيلات رأس المال العامل بمبلغ 3 ملايين ريال عُماني لمقر الشركة في صلالة، و4.5 مليون ريال عُماني لبناء وتوسعة مصنع صحار للإسمنت .

المصدر: <https://www.argaam.com>

مصنع جديد في الدقم بنحو 30 مليون دولار

وافق مجلس إدارة شركة ريسوت للإسمنت على بناء وحدة طحن إسمنت في الدقم . وسيتم إنشاء المصنع بطاقة إنتاجية تبلغ مليون طن من الإسمنت سنوياً . وتبلغ تكلفة المشروع حوالي 30 مليون دولار أمريكي ، على أن يبدأ العمل فيه بتاريخ 19 سبتمبر / أيلول 2019 .

المصدر: www.atheer.om

دولة الكويت

إسمنت الكويت تطلب تزويدها بالنفايات لتحويلها إلى وقود

طلبت شركة إسمنت الكويت من رئيس المجلس البلدي عرض مبادرة الشركة على لجنة البيئة ، بخصوص استخدام نفايات البلدية الصلبة كوقود بديل في أفران إنتاج الكلنكر بمصنعها بمنطقة الشعبية الصناعية الشرقية ، كجزء من حل مشكلة تزايد النفايات سنوياً، والتخلص الآمن من النفايات، واستفادة الدولة من المحارق القائمة لدى الشركة . حيث أن الشركة هي الوحيدة التي تملك أفراناً حديثة تستطيع حرق كميات كبيرة من نفايات البلدية الصلبة بشكل علمي يتناسب مع مواصفات المتطلبات البيئية من منظور فني ، وبأحدث وسائل التكنولوجيا الحديثة .

المصدر: <https://alqabas.com>

وأوضحت الهيئة أن رسالتها تقوم على الارتقاء بمواصفات وجود المنتجات والخدمات لتعزيز حماية المستهلك، والتنافسية للاقتصاد الوطني، لافتة إلى أن الرؤية المستقبلية للجودة 2020 تهدف إلى أن تكون المملكة بمنتجاتها وخدماتها، معياراً عالمياً للجودة والإتقان .

المصدر: <https://www.elfagr.com>

«إسمنت نجران» تجدد رخصة تصدير الكلنكر من وزارة التجارة

أعلنت شركة إسمنت نجران تسلم الرخصة المجددة لتصدير الكلنكر الصادرة من وزارة التجارة والاستثمار ، وتبلغ صلاحية الرخصة سنة من تاريخ صدورها .

المصدر: www.argaam.com

الجمهورية العربية السورية

معمل إسمنت حماة يحاول الاستفادة من طاقته الحرارية المهذورة

أعلنت الشركة السورية لصنع الإسمنت ومواد البناء في حماة عن إطلاق مشروع للاستفادة من الطاقة الحرارية المهذورة بمبردات الكلنكر في تسخين «تجفيف» مادة البوزولانا اللازمة لصناعة الإسمنت البورتلاندي العادي والإسمنت البوزولاني.

وتقوم فكرة المشروع على إيجاد بديل عن الحراقات لمبرد الكلنكر في المعمل رقم 3 الذي يعمل على مادتي الغاز والفيول وتكاليف صيانتها العالية التي تشكل من 5 إلى 10 % من سعر الطن الواحد لمادة الإسمنت البورتلاندي العادي والبوزولاني.

وستتم الاستفادة من الطاقة المهذورة لمبرد الكلنكر التي تصل درجة حرارته عند إطلاقه في الهواء الخارجي عبر فوهة التصريف إلى مروحة السحب إلى 200 درجة مئوية من خلال نقل الغاز الساخن لمبرد الكلنكر عبر أنابيب من خارج المرشح الكهربائي إلى مدخل مجفف البوزولانا الذي يبعد مسافة قد تصل إلى 250 متراً .

وقد قامت الشركة بتوفير مادة الوقود اللازمة لتشغيل حراقات الشويير من خلال الاستفادة من الطاقة الحرارية داخل مبرد الكلنكر في المعمل رقم 3 وذلك بتركيب مبادل حراري على الجدران الداخلية لمبرد الكلنكر والقيام بتجربة «البلوتوث» في نفس إشارة عمل منظومة الكلنكر إلى المعالج الرئيسي في صالة التحكم المركزي بدلاً من الكابلات ، ما وفر مبالغ مالية كبيرة تقدر بعشرات الملايين شهرياً .

جمهورية العراق

60 مليون دولار لإعادة تأهيل معمل سمنت الكوفة

كشفت لجنة العمل والشؤون الاجتماعية عن وجود تخصيص مالي يصل إلى 60 مليون دولار لإعادة تأهيل معمل إسمنت الكوفة في محافظة النجف الأشرف ، علماً بأن الحكومة متوجهة نحو إعادة تفعيل جميع المصانع المعطلة منذ 2003 .

وباشرت معاونية السمنت الجنوبية التابعة لشركة السمنت العراقية في وزارة الصناعة والمعادن أعمال الصيانة والتأهيل لمعمل إسمنت الكوفة ضمن الخطة التي وضعتها لتحقيق أعلى طاقة إنتاجية للمعمل وبأقل التكاليف .

المصدر: <https://aldaae.com>

جمهورية مصر العربية

تعتزم ضخ 30 مليون يورو، حيث وافقت الشركة منذ فترة على منح إسمنت سيناء قرض بمبلغ 200 مليون جنيه، وتم استلام أول جزء منه في أبريل 2019 بمبلغ 50 مليون جنيه ، فضلاً عن حصة فيكا في زيادة رأس مال الأخيرة .

المصدر: www.dostor.org

المملكة المغربية

شركة دانماركية تشيد مصنع إسمنت نواحي الجديدة
أعلنت شركة «FLSmidth» الدانماركية عن فوزها بعقد تشييد مصنع للإسمنت لفائدة شركة مغربية بقيمة 50 مليون دولار أميركي، ما يعادل 477 مليون درهم ، حيث تم توقيع عقد مع الشركة العامة للأشغال بالمغرب «SGTM» وشركة «TAKCIM» التابعة لها لبناء مصنع إسمنت بطاقة تصل إلى 3600 طن يومياً ، ضمن النفوذ الترابي للجماعة القروية ولاد بوغانم بإقليم مدينة الجديدة ، وسيتم بدء تشغيل هذا المصنع بالكامل في الربع الثالث من سنة 2022 .

ويشمل المشروع أحدث المعدات والتكنولوجيات لتزويد شركة تقسيم بمصنع إسمنت فعال للغاية ، وسيلبي المعايير الدولية الصارمة لضمان إنتاجية مستدامة . ويشمل نطاق العقد أشغال الهندسة، وتوريد مجموعة من المعدات للتعبئة والتكسير والتحميل، والإشراف وتدريب القوى العاملة المحلية .

المصدر: www.hespress.com

«العربية للإسمنت» توقع اتفاقية لشراء 300 ألف طن فحم بترول

أعلنت شركة العربية للإسمنت عن توقيع اتفاقية مع الشركة المصرية للتكرير لشراء فحم بترول محلي بكميات تصل إلى 300 ألف طن سنوياً . وقالت العربية للإسمنت الشركة المصرية للتكرير البترول بدأت التوريد اعتباراً من شهر يوليو / تموز ، مشيرة إلى أن هذا الاتفاق سيمكن الشركة من خفض تكاليف الإنتاج وتطوير الأداء التشغيلي . ونوهت العربية للإسمنت بكونها أول شركة للإسمنت في مصر تقوم بإنشاء طاحونة فحم، كما أنها أول شركة تقيم محطة لتوليد الطاقة الشمسية داخل مصنعها .

وأبرمت شركة السويس للإسمنت في وقت سابق اتفاقية مماثلة مع الشركة المصرية للتكرير لشراء فحم بترول بكميات تصل إلى 200 ألف طن سنوياً .

المصدر: www.almalnews.com

إسمنت سيناء تبدأ تنفيذ خطة رفع كفاءة الإنتاج واللوجستيات

كشفت شركة إسمنت سيناء عن أنها بدأت في تنفيذ خطتها التي تهدف إلى رفع كفاءة الإنتاج وكفاءة اللوجستيات ، بما يضمن وصول المنتج للعملاء بأعلى جودة وأقل سعر ممكن .

وأضافت إسمنت سيناء أن شركة فيكا الشريك الحاكم في ملكيتها

Improve your plant performance

We conduct technical and energy reviews using our proven assessment methods based on state-of-the-art technology and research. For your specific needs we develop tailor-made solutions drawing on our broad experience and comprehensive expertise in cement manufacturing.

We can support you with:

- Independent expert assessment of the entire manufacturing process
- Comparison of your plant against the VDZ database and BAT values
- Identification of optimisation measures for your processes and product quality
- In-depth energy efficiency analyses and identification of saving potentials
- Recommendation of mechanical improvement measures for your plant
- Development of innovative solutions for emissions reduction

vdz.

Interested? Contact us!

Phone: +49-211-45 78-254
Email: ubt@vdz-online.de
Tannenstrasse 2
40476 Duesseldorf, Germany
<https://www.vdz-online.de/en>

نشاطات عربية

مؤتمرات ولقاءات

بريد الكتروني: aidmoroc7@gmail.com
aidmoroc@yahoo.com

موقع الكتروني: www.aidmo.org/roc

ورشة العمل العربية حول (التوجهات الحديثة وأساليب قياس وتقييم الأداء بالمنظمات لتطوير الإدارة بالشركات والمؤسسات الصناعية لتواكب متطلبات الجودة الشاملة في ظل التنمية المستدامة)

التاريخ: 22 - 25 ديسمبر / كانون أول 2019

الجهة المنظمة: المنظمة العربية للتنمية الصناعية

والتعدين - المكتب الإقليمي

للحصول على كافة التفاصيل يرجى التواصل مع:

السيد شريف بن عرفة الأنصاري - المكلف بتسيير أعمال المكتب الإقليمي بالقاهرة

فاكس: (+202) 23803880

هاتف: (+202) 23807565 / (+202) 23583990

بريد الكتروني: aidmoroc7@gmail.com

aidmoroc@yahoo.com

موقع الكتروني: www.aidmo.org/roc

الملتقى الثاني حول دور المناطق الصناعية والمناطق الحرة في جذب الاستثمار الصناعي وتنمية الصادرات

التاريخ: 04 - 06 ديسمبر / كانون أول 2019

الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتعدين

للحصول على كافة التفاصيل يرجى التواصل عبر:

البريد الإلكتروني: aidmo@aidmo.org
aidmoroc@yahoo.com

موقع الكتروني: www.aidmo.org/fzi2019

ورشة العمل العربية حول (الأساليب الإحصائية في ضبط الجودة للمؤسسات والشركات الصناعية)

التاريخ: 08 - 11 ديسمبر / كانون أول 2019

الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتعدين - المكتب الإقليمي

للحصول على كافة التفاصيل يرجى التواصل مع:

السيد شريف بن عرفة الأنصاري - المكلف بتسيير أعمال المكتب الإقليمي بالقاهرة

فاكس: (+202) 23803880

هاتف: (+202) 23807565 / 23583990

دورات تدريبية

دورات تدريبية عربية

تنمية المهارات الإدارية للمدراء الجدد وبناء القدرات القيادية
المكان: إسطنبول، تركيا / القاهرة، جمهورية مصر العربية

التاريخ: 15 - 19 ديسمبر / كانون أول 2019

الجهة المنظمة: الدار العربية للتنمية الإدارية

للحصول على كافة التفاصيل يرجى التواصل مع وحدة البرامج التدريبية - أ/ هويدا بوحليقة

موبايل واتس اب: 00201023990901

بريد الكتروني: Hrhowida@gmail.com

www.Ahadhr.org

المضافات الكيميائية في الاسمنت

Chemical admixtures in cement

إعداد: طارق محمود عواد، كيميائي أقدم / معمل سمنت بادوش التوسيع – العراق

المقدمة :

تسعى كثير من الدول في تطوير صناعة الإسمنت من خلال الإضافات الكيميائية لإنتاج نوعية خاصة من الإسمنت والذي تتجه رغبة المستهلك في بلدنا في الحصول على نوعية إسمنت بمواصفة ذات تصلب سريع ومقاومة مبكرة دون الأخذ بنظر الاعتبار التأثيرات على الخرسانة . ومن هذا المنطلق نبين ماهي المضافات الكيميائية في الإسمنت وتأثيراتها .

المضافات الكيميائية

هي مواد كيميائية تضاف إلى الكلنكر أو الإسمنت أو العجينة الإسمنتية بنسب معينة وتضاف إما قبل عملية طحن الكلنكر أو مع الإسمنت خلال عملية الخلط لتحسين خاصية معينة خلال مرحلة التصلب .

إن الإضافات الكيميائية تؤدي إلى تحسين خاصية معينة ولكن في الوقت يكون تأثيرها سلبياً على خواص أخرى .

تعتمد التأثيرات النوعية للمضافات الكيميائية على عدد من المتغيرات

- 1 - نوع المضاف
- 2 - كمية المضاف
- 3 - التركيب الكيميائي للسمنت
- 4 - وقت إضافة المضافات الكيميائية إلى الخليط
- 5 - مدة الخلط

أصناف المضافات الكيميائية

بموجب المواصفة البريطانية BS-5075 تصنف إلى خمسة مجاميع

- 1 - المضافات المعجلة للتصلب
- 2 - المضافات المبطنة للتصلب
- 3 - المضافات المقللة للماء
- 4 - المضافات المقللة للماء والمعجلة
- 5 - المضافات المقللة للماء والمبطنة

أما بموجب المواصفة الأمريكية ASTM هناك عدة أصناف

1. مضافات مقللة للماء بالصنف C494 A وتستخدم عندما تكون درجة الحرارة بين 5 - 30 درجة مئوية
- المضافات المعجلة للتصلب بالصنف C494 C
- المضافات المبطنة للتصلب بالصنف C494 B
- المضافات المقللة للماء والمبطنة C494 D وتستخدم عندما تكون درجة الحرارة أعلى من 30 درجة مئوية
- المضافات المقللة للماء والمعجلة C494 E وتستخدم عند درجة حرارة أقل من 5 درجة مئوية

المضافات المعجلة للتصلب

هي المواد التي تؤدي إلى زيادة سرعة التفاعل الابتدائي بين الإسمنت والماء وبذلك تعجل تصلب الخرسانة وتعطي مقاومة مبكرة .

التركيب الكيميائي للمضافات المعجلة للتصلب

- 1 - مركبات لا عضوية: عبارة عن أملاح سريعة الذوبان في الماء مثل كلوريد الكالسيوم $CaCl_2$ وكلوريد الباريوم $BaCl_2$ (وقد تم التحذير من استعمالها بسبب تأثير الكلوريدات على الخرسانة) وكربونات (الكالسيوم والبوتاسيوم)
- 2 - مركبات عضوية مثل ثلاثي أيثانول أمين . نفتالين فورمالديهايد سلفونات أو ما يعرف بالاسم التجاري بـ (سيكامنت) ، وأديكريت بي 2

استخدام المضافات المعجلة للتصلب

تستخدم عند القيام بعملية صب الخرسانة في الأجواء الباردة للحصول على تصلب سريع حيث أن دوره الرئيسي يعمل على تسريع تفاعل الماء مع المعقد C_3S ويعزى إلى تأثيره على الطبقة الهلامية من سليكات الكالسيوم المائية والمشكلة حول حبيبات الإسمنت التي تعمل على تغيير شكل بلورات الكالسيوم المائية من تفاعلات إمالة الإسمنت .

الشروط المطلوبة عند استخدام المضافات الكيميائية

- 1 - أن تتناسب الفائدة من استخدام المضافات الكيميائية مع نسبة التكاليف
- 2 - يجب عدم إضافة كلوريد الكالسيوم أو المضافات التي أساسها من الكلوريدات إلى الخرسانة المسلحة
- 3 - يجب التأكد من مدى ملاءمة وفاعلية أي من المضافات الكيميائية في نفس الخلطة الخرسانية فيلزم أن تتواجد معلومات كافية لبيان مدى تداخلها والتأكد من توافقها
- 4 - عند استخدام نوعين أو أكثر من المضافات في نفس الخلطة فيلزم أن تتواجد معلومات كافية عن كيفية الاستخدام
- 5 - يختلف سلوك وتأثير المضافات الكيميائية مع الإسمنت البورتلاندي الاعتيادي عن الإسمنت المقاوم للكبريتات لذا يجب أن تتوفر معلومات كافية عن مدى الأداء السليم لاستخدام المضافات الكيميائية مع أنواع الإسمنت
- 6 - يلزم عند توريد المضافات الكيميائية أن تكون معبأة داخل برميل أو أوعية محكمة الغلق ومطبوع عليها الاسم التجاري وتاريخ الإنتاج ومدة الصلاحية وكذلك شهادة بخواص الإضافات الموردة ومطابقتها للمواصفات القياسية ذات الصلة .

أنواع المضافات الكيميائية الموجودة في الأسواق

1. سيكامنت
2. أديكريت بي 2

1 - سيكامنت :

يستعمل كسائل ملدن عالي له تأثير مزدوج لإنتاج خرسانة ذات سيولة وانسيابية عالية وكعامل لخفض نسبة الماء وتحسين القوة المبكرة والنهائية للإسمنت ويستعمل في الأساسات والأعمدة والحوائط والأسطح النعانية الخشنة ، وعند استعماله كعامل مخفض للماء يعمل على خفض نسبة الماء إلى 20 % ويعمل على زيادة المقاومة بنسبة 100 % بعد 16 ساعة .

2 - أديكريت بي 2 :

وهو عبارة عن مادة سائلة ذات وزن نوعي 1.12 جم /سم³ يضاف مع الخرسانة والمونة من الإسمنت البورتلاندي لزيادة سرعة التجمد والوصول إلى مقاومة مبكرة للخرسانة ومقاومة لتأثير الثلوج والأجواء الباردة ويعمل أيضاً على تقليل نسبة الماء المضاف إلى الإسمنت وبالتالي تزيد من المقاومة المبكرة للإسمنت .

وتضاف 1 كجم لكل 50 كجم من الإسمنت وتسبب الزيادة من الإضافة زيادة طفيفة من المقاومة المبكرة للإسمنت وهناك نصائح إرشادية بعمل تصميم للخلطة بالموقع الذي يستعمل من نفس الركام والإسمنت وتحت نفس الظروف الجوية المحيطة لتحديد نسب الخلط المناسبة .

تأثيرات المضافات المعجلة للتصلب على خواص الخرسانة

- 1 - تآكل الخرسانة بفعل الكبريتات بتأثير المضافات المعجلة للتصلب .
- 2 - الخرسانة تكون بمرور سنة أو أكثر معرضة للتمدد ويؤدي إلى حدوث تشقق .
- 3 - توصي بعدم استخدام هذه النوعيات في الأجواء الحارة خاصة في فصل الصيف التي ترتفع فيه درجة الحرارة إلى 50 درجة تقريباً وذلك لأن التصلب السريع يؤدي إلى التمدد وتحدث إلى تشققات خطيرة .

المصادر :References

- 1- د.كمال أحمد رشيد ،(1999) « كتاب الكيمياء » المركز القومي للمختبرات الإنشائية ، بغداد.
- 2- حسان العش ، (2008) ،مركز التدريب المهني لصناعة الإسمنت ، سوريا.
- 3 - <https://m.specialties.bayt.com>
- 4 - <https://sites.Google.com>

المبكرة والمتأخرة. في مثل هذه الظروف، فإن إضافة محسنات الجودة من Batimix يمكن أن تخفف من الخسائر في نقاط القوة الإنضغاطية المبكرة والمتأخرة.

بالإضافة إلى الطحن الأفضل، فإن استبدال الكلينكر بالحجر الجيري من المرجح أن يؤدي إلى خصائص عملانية وإنسيابية أفضل.

إن مساحة السطح المحدد بلين (Blaine) أو نعومة منتج الإسمنت النهائي هو العامل الرئيس المؤثر على تطور القوة المبكرة. يتم إنتاج الإسمنت السريع التصلب مع بلين أعلى من ٢٥٠٠ كغ/م^٢. لتحقيق نعومة عالية، يوصى باستخدام مساعدات الطحن Batimix ذات التركيب الأميني، لأن لها أيضا تأثير مفيد على عملية الترتيب. الإسمنت لديه شحنة موجبة في حين ان شحنة الرمل والحصى هي سلبية. جزيئات الماء هي ثنائية القطب. تعمل منشطات السطح (Surfactants) على إلغاء الشحنات المعاكسة، مما يقلل من الطاقة الحرة.

يمكن استخدام إضافات الإسمنت Batimix لزيادة أو تقليل زمن الشك الصحيح، وبالتالي مناسبة بشكل خاص لتوسيع استخدام المواد الإسمنتية التكميلية. ومن الجدير بالملاحظة إنه في بعض الظروف، قد تؤدي الجرعات المختلفة لنفس نوعية إضافات الإسمنت إلى انخفاض أو زيادة في التحديد لزمن الشك، مما يبرز أهمية تحديد المنتج والجرعة المناسبين لتلبية.

إن مستشاري المبيعات لدينا

crm@holderchem.net , sales@holderchem.net
مستعدون لمساعدة العملاء في التجارب المخبرية والميدانية لإيجاد الحلول المناسبة لإحتياجات تصنيع الإسمنت الخاصة بهم.

Street 35, Sector 2, Yarzé – Baabda, 193
Lebanon

Mailing Address: PO Box 40206 Baabda,
Lebanon

Tel: +961 5 923986 / 924799

Fax: +961 5 921118

Website: www.holderchem.net

تقدم شركة هولدركيم Holderchem منتجات وخدمات لزيادة إنتاجية مصانع الإسمنت، وتحسين خصائص منتجات الإسمنت والخرسانة. تزود هولدركيم Holderchem إضافات الإسمنت تحت العلامة التجارية Batimix.

كما تقوم Holderchem بتزويد شركات الإسمنت بمواد مضافة خاصة بالإسمنت لتطبيقات محددة، بما في ذلك حابسات الهواء entrainers-air المستخدمة في إنتاج إسمنت البناء، مخفضات المياه water reducers لخفض الطلب على الإسمنت بهدف إتساق الخرسانة أو المؤونة، أو لتحسين قابليتها للعمل لنسب W/C معينة، معدلات الضبط setmodifiers (مبطئات retarders و مسرعات accelerators)، لتمكين الضبط الصحيح لزمن شك الإسمنت، مخفضات نفاذية الماء لتعديل إمتصاص الرطوبة المثلي، ومخفضات الكروم السداسي، المتوفرة على شكل مسحوق أو سائل، والتي تقدم حتى في جرعات أو كميات منخفضة، وإنخفاض كبير ودائم في الكروم السداسي التكافؤ.

إن خفض إستهلاك الطاقة هو الهدف الرئيسي في مجال تكنولوجيا مطاحن الإسمنت. من خلال زيادة معدل الإنتاج بنفس مستويات إستهلاك الطاقة، يتم خفض الطاقة لكل طن من الإسمنت المنتج. إن آلية تحقيق أعلى إنتاجية في مطاحن الإسمنت يتم تفسيرها من خلال عملية فيزيوكيميائية. من خلال تقليل حجم الكلينكر، تزداد الطاقة الحرة للسطح، مما يقلل من كفاءة المطحنة. مع إمتصاص مساعدات الطحن Batimix يتم تقليل شحنة سطح الجزيئات والطاقة المطلوبة لتفتيتها. بالإضافة إلى ذلك تسبب إضافات الإسمنت تغييراً في القوى الإلكترونية-ستاتيكية مما يقلل من الجاذبية بين الجسيمات (Van Der Waals forces) وبالتالي يزيد من التناثر. يتم تحقيق إنسيابية أفضل للمسحوق مع مساعدات الطحن، والحد من الإسداد أثناء التخزين والتعبئة أو التفريغ من شاحنات النقل السائبة والصوامع.

الخَبَث (Slag) هو أكثر صعوبة من ناحية تصغير حجمه من الكلينكر. وهكذا فإن الطاقة اللازمة للإسمنت الخبث إلى درجة نعومة معينة هي أعلى من الكلينكر. كل من الخبث والكلينكر أصعب من الحجر الجيري (Limestone)، وبالتالي فإن هذا الأخير يتطلب طاقة أقل بكثير. ومع ذلك من المرجح أن يؤثر إنخفاض عامل الكلينكر بالحجر الجيري على قوة الإنضغاط