CEMENT & BUILDING MATERIALS REVIEW

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ARAB UNION FOR CEMENT AND BUILDING MATERIALS

Cement and Building Materials Review

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- *The Magazine editorial staff welcome the contribution of experts to enrich the contents of the magazine .*
- *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 .*

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EDITORIAL SCHEDULE FOR 2022

ISSUE	THEMES	EVENTS
June 2022	- Bagging and packing - Loading/unloading and storage systems - Conveying solutions - Feeding technology - Belt bucket elevators - Materials handling in cement plants, quarries, terminals and ports - Domes, silos and transport - Wear protection - Gears, drives and lubrication - Fire protection systems - Maintenance procedures - Refractories - Quarry rehabilitation - Silo cleanout - Filters, dedusting	
September 2022	- Coolers - Fans - Air cannons - Occupational health and safety - Comminution - Vertical roller mills - Increasing cement mill output - Crushing - Grinding & grinding aids - Waste heat recovery - Thermal imaging - Thermal recycling - Methods for treating and utilizing bypass dusts - Explosion protection in alternative fuel storage silos - Alternative fuels handling systems - Production and use of Solid Recovered -Fuels	**AUCBM's 25th Arab International Cement Conference and Exhibition (AICCE25)** **Riyadh, Kingdom of Saudi Arabia** **2022**

December 2022	- White cement manufacturing - Blended cements - Multi-component cements - Slag cements - Green cement production - Cement blends / mixes - Cement additive - Cement composition - Cement chemistry - Zero carbon cement - Producing low-carbon clinker - Raw material for cement additive - Supply chain management - Energy-efficient cement production - Quality assurance and process control in cement plants - Cement Production cost saving	

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June issue: **30th May 2022**
September (bonus) issue: **31st August 2022**
December issue: **5th December 2022**

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ALGERIA

Algeria exports 5Mt of cement in 2021

Saoura Ciment has begun sulphate-resistant cement production at its Saoura cement. The country exported 5Mt of cement in 2021 with a value of US$200m. Local cement production exceeded 40Mt in 2021 and a rise in exports is expected in 2022. Groupe des Ciments d'Algérie (GICA) operates half of the country's cement production plants.

Global Cement

Algerian cement truckers protest loading law change

Some cement truck drivers have launched protests against a change in the law which limits their vehicles' loads below the previous maximum weight. The protests include refusals to depart and the establishment of roadblocks. The actions have prevented the export of some Algerian clinker. Lafarge Algérie said that it raised drivers' pay per tonne of goods following the law change. The company stated that the new level of pay ensures that transporters will not lose out as a result.

Algeria is targeting cement and clinker exports of 10Mt in 2022.

Global Cement

Lafarge Algeria exports 2.6Mt of cement in 2021

Lafarge Algeria says it exported 2.6Mt of cement in 2021, more than double the 1.18Mt it exported in 2020. It aims to export over 3Mt in 2022. The subsidiary of Holcim also announced that it will carry out two new large simultaneous shipments from the port of Oran, one of 35,000t of cement in bulk, and the other of 30,000t of white cement in big bags. Both shipments will be exported to the Americas.

Global Cement

EGYPT

Egyptian cement exports surge by 151% in 2021

A report from the Export Council for Building Materials, Refractory and Metallurgy Industries (ECBM) has revealed that Egyptian cement exports rose by 151% year-on-year in 2021. The value of cement exports was US$456m in 2021 compared to US$182m in 2020. Local producers have focused exports on African markets.

Global Cement

Lafarge Egypt targets 20 percent reduction in emission reductions

Lafarge Egypt, part of Holcim Group, has set a target of 20 percent reduction in carbon emissions by 2030 aligned with parent company's commitment to Science Based Targets initiative (SBTi) Business Ambition for 1.5°C.

Lafarge Egypt CEO Solomon Baumgartner-Aviles said the company will contribute to achieving Holcim's SBTi goals by lowering CO_2 emissions by more than 20 percent compared to baseline for 2018.

Lafarge Egypt operates one of the largest cement plants in the MENA region in Ain Sokhna with an annual capacity of 9.5 metric tonnes. The company's annual ready-mix concrete production capacity stands at 2 million cubic metres while its bag manufacturing capacity is 200 million bags.

In September, Holcim had announced that SBTi has approved Holcim's commitment to reduce scope 1 and scope 2 GHG emissions 21 percent per tonne of cementitious materials by 2030 from 2018 base year. With this target, Holcim also commits to reduce Scope 1 GHG emissions 17.5 percent per tonne of cementitious material and scope 2 GHG emissions 65 percent per tonne of cementitious materials within the same timeframe.

Baumgartner-Aviles noted that Holcim is the first global building materials company to sign the pledge with intermediate targets, validated by SBTi.

Zawya

EGY Crete to establish concrete products plant in Beni Suef

Capriole subsidiary EGY Crete plans to establish a concrete products plant in Beni Suef Province by 2024. The plant will produce paving slabs, among other products.

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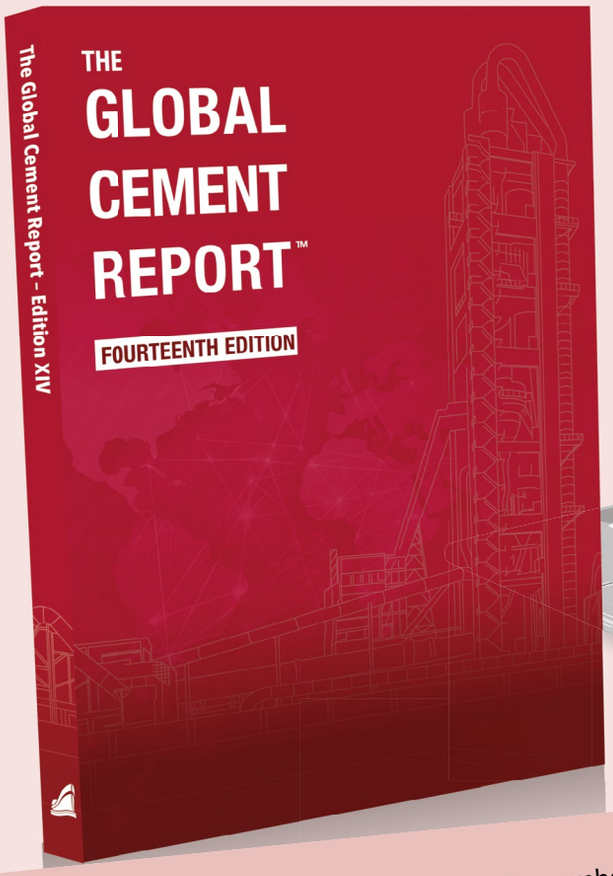

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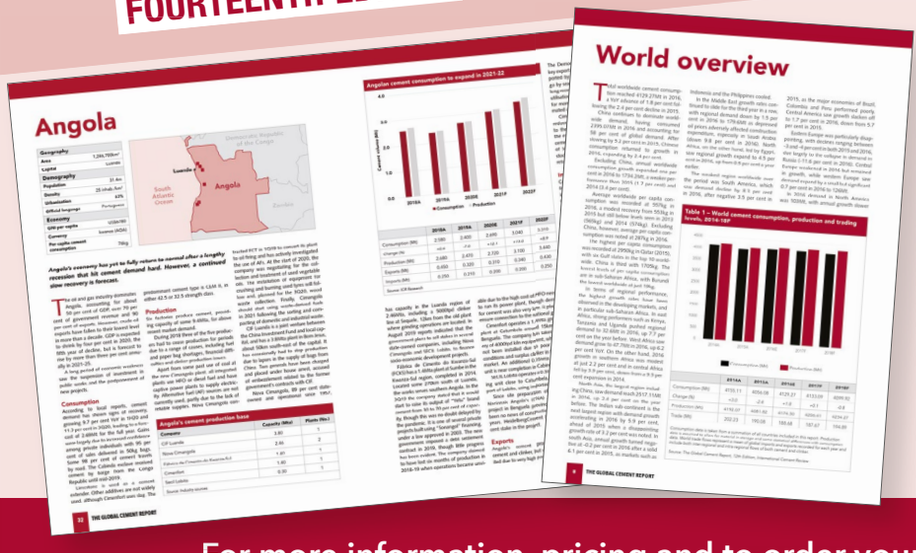

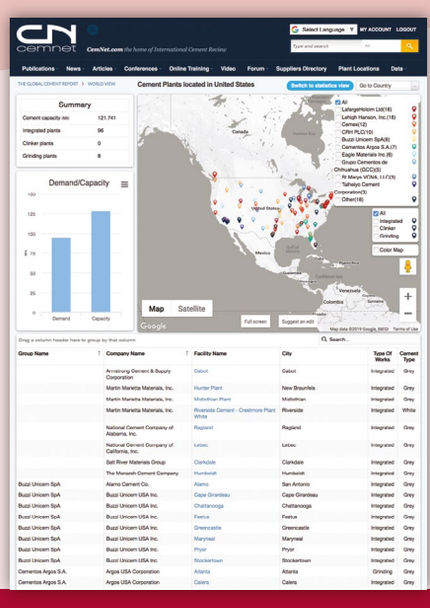

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MOROCCO

Ciments du Maroc to commission new Nador grinding plant in July 2022

Ciments du Maroc plans to commission its 0.7Mt/yr grinding plant at Nador in July 2022. The production unit, belonging to the subsidiary of Germany-based HeidelbergCement, is located around 18 km outside of Nador. The project has a budget of around US$36m and it intended to support development in northern and eastern regions of the country. Construction of the plant started in 2020.

Global Cement

OMAN

Oman Cement launches tender for the construction of the fourth production line

Oman Cement Company (OCC) launched a tender for the construction of its fourth cement production line in Oman and to upgrade its third line.

The fourth line will have a capacity of 10,000 tons of clinker per day. The daily capacity of the third line will also be upgraded from 4,000 to 5,000 tons per day.

Thus, OCC will add 11,000 tons per day to its current production levels as part of its plans to develop the production of cement in Oman to meet the demand in local markets and to achieve self-sufficiency of high-quality cement.

"This tender has been floated for local companies operating in the Sultanate of Oman as part of OCC's interest in enhancing the added value of its projects and enriching the local markets. This targeted expansion will be the biggest of its kind in Oman's cement industry to achieve self-sufficiency by 2023," said Eng. Salem Abdullah Al Hajri, CEO of OCC.

CW Group

German University of Technology in Oman prints world's largest 3D printed building

The German University of Technology in Oman (GUTech) has 3D printed a 190m2 house in Halban, Al Batinah South governorate, using conventional concrete. The structure is the world's largest 3D printed building. GUTech applied Denmark-based Cobod's D.fab product to print the building using Mexico-based Cemex's concrete in five days.

Global Cement

SAUDI ARABIA

Saudi cement output remains stable in 2021

Cement output rose slightly to 53.7Mt in 2021 from 534Mt in 2020. Clinker output increased by 12% year-on-year to 55.1Mt from 49.2Mt. Cement exports fell by 32% to 1.44Mt from 2.13Mt but clinker exports grew by 50% to 6.73Mt from 4.50Mt. Saudi Cement remained the country's largest clinker export but exports from Yanbu Cement and Arabian Cement grew sharply.

Global Cement

Al Jouf Cement signs ecology agreement

Al Jouf Cement has signed a cooperation agreement with the National Center for the Development of Vegetation Cover and Combating Desertification to rehabilitate vegetation cover. The arrangement is intended to reduce desertification and restore biodiversity in natural environments in line with the country's 2030 vision.

Global Cement

Arabian Cement delays completion of new cement mills project at the Rabigh plant

The contractor, China National Building Materials, was not able to send experts to Saudi Arabia.

CW Group

Qassim Cement planning new mill and solar unit at Buraydah plant

Qassim Cement has entered into a preliminary agreement with China-based Chengdu Design & Research Institute of Building Materials Industry (CDI) for the engineering, supply and construction of a cement mill at its integrated Buraydah plant. The new mill will have a production capacity of 300t/hr. The project is budgeted at around US$40m and it has an implementation period of 15 months.

The cement company also plans to appoint a consultant to define the scope of work and identify contractors to build a 30MW solar unit near the Buraydah plant. It said that the company would not incur any capital or

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operational expenditure as the payment would be based on actual consumption. The solar unit project is part of the country's Saudi Vision 2030 strategic framework to reduce dependence on oil.

Global Cement

Umm Al-Qura Cement receives prospecting license for limestone

A prospecting license for limestone in Taif was issued by the Saudi Ministry of Industry and Mineral Resources to Umm Al-Qura Cement.

The license term will extend until December 18, 2022. In addition, the license, which will span an area of 23.77 kilometers, was issued in accordance with the Kingdom's New Mining Investment Law.

The Saudi cement producer said it will undertake the necessary exploratory studies on the new quarry during the statutory period to ensure the availability of the required raw materials, the statement added.

CW Group

Qanbar Ready Mix runs trial with CarbonCure technology in Saudi Arabia

Qanbar Ready Mix has run its first trial mix of concrete using Canada-based CarbonCure's CO_2 utilisation technology. The Eastern Province-based ready-mixed concrete producer conducted a full-scale plant trial in late December 2021 in Ras Al Khair Industrial City. Concrete supplied from Qanbar Ready Mix's batching plants will be used to supply projects at the King Salman International Complex for Maritime Industries and Services.

Global Cement

UAE

Apex Holding signs $830 million sale and purchase deal with RAK cement company

APEX Holding, a subsidiary of International Holding Company (IHC), and a diversified operating holding company investing across multi sectors, announced that it has reached a sale and purchase deal agreement with Ras Al Khaimah Cement Investment.

Through this agreement, Ras Al Khaimah Cement Investment will acquire the entire shares of IHC and Chimera Investments in Apex Holding, over the issuance of bonds mandatorily convertible into shares in Apex Holding and approve the issuance of mandatory convertible bonds with a total value of AED3.05 billion ($830 million) to IHC and Chimera Investments, in exchange for their entire stake in the company.

A diversified operating holding company, Apex has investments across sectors including F&B catering, facility management, construction; industrials; IT and data analytics.

Meanwhile, the annual general meeting of Ras Al Khaimah Cement Investment approved the company name change from Ras Al Khaimah Cement Company (RAKCIC) to Apex Investment.

LinkedIn

Cemex supplies concrete for Khalifa Port

Cemex has supplied 400,000m3 of advanced semi-dry heavy-duty concrete to Abu Dhabi Ports Group's Khalifa Port. Cemex said that the concrete's composition maximises its lifespan, increasing sustainability.

Global Cement

Orascom acquires Orascom Trading

Orascom Construction, a UAE-based engineering and construction contractor, has acquired Orascom Trading, an Egypt based provider of heavy machinery equipment, including equipment for the global cement sector.

Global Cement

Shree Global to acquire remaining 40% stake in Union Cement Norcem

Shree Global has agreed to acquire a further 40% stake in Union Cement Norcem for US$3.95m. The deal will increase Shree Global's stake in the company to 100%. It is expected to complete the transaction by the end of June 2022. Union Cement Norcem markets and sells oil well cement, while Shree Global's parent company, India-based Shree Cement, operates a 4.8Mt/yr cement plant at Ras Khaimah.

Global Cement

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Lindner's Urraco 75DK part of the World's Largest Energy from Waste Facility in Dubai

Dubai (United Arab Emirates), December 2021. Austrian recycling pioneer Lindner has been chosen by the Swiss waste-to-energy technology firm Hitachi Zosen Inova, its joint venture partner, the BESIX Group, and the Dubai Municipality for bulk shredding at the world's largest energy-from-waste plant. The facility is currently being built in Warsan, Dubai.

As part of Dubai's sustainability strategy, the Dubai Municipality aims to minimise the volume of municipal waste disposed of in landfills, thereby investing into renewable energy facilities. The new plant in Warsan will be the biggest of its kind worldwide and treat 5,555 tonnes of non-recyclable municipal solid waste from the Dubai area per day, converting 1,825 million tonnes into renewable energy annually. The produced electricity will be fed into the local grid as baseload energy and power around 120,000 homes.

Lindner welcomes the opportunity to be part of such a sustainable and quality-oriented project. Hitachi Zosen Inova stated that the Urraco 75DK has proven to fulfil all quality requirements with an exceptional price- performance ratio. In addition, the many positive user testimonials spoke in Lindner's favour.

The world's largest energy from waste facility is currently being built in Dubai. In line with Dubai's sustainability strategy, it will transform 5,555 tonnes of non-recyclables into renewable energy annually.

Copyright: Dubai Waste Management Center

The quality and performance of the mobile shredder Urraco 75DK convinced Hitachi Zosen Inova, its joint venture partner, the BESIX Group, and the Dubai Municipality.

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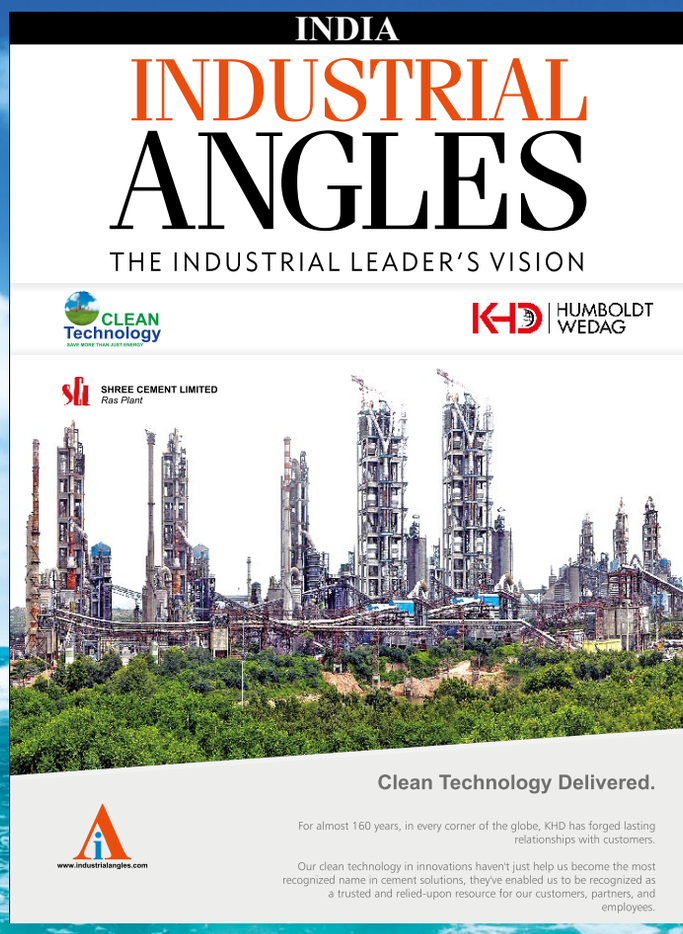

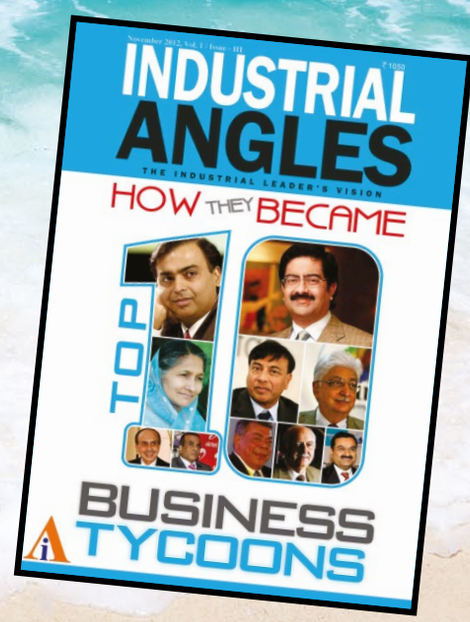

Construction work for the plant, which will go into operation in 2024, is already in full swing.

Copyright: Hitachi Zosen Inova

About the Urraco 75DK, mobile shredder (https://www.lindner.com/urraco75)
Compactness in its strongest form: Solidly constructed, the Lindner Urraco 75DK shreds even difficult materials with its 1500 mm long twin-shaft cutting system. Thanks to the extremely robust welded cutting system, a wide range of input materials can be shredded. Furthermore, pre-configured programs allow perfect adaptation to the input material. In addition, it provides automatic detection of non-shreddables. Optionally, the mobile shredder can be equipped with an FE-metal separator, a dust suppression system, a fire extinguishing system for the machine room, and a shaft hardfacing.

About Lindner, Spittal an der Drau/Austria (www.lindner.com):
The Lindner family business has been offering innovative, tried-and-tested shredding solutions for decades. At its production facilities in Spittal/Drau and Feistritz/Drau in Austria, Lindner manufactures machines and system components that are exported to almost one hundred countries. In addition to stationary and mobile

shredders for waste processing, the portfolio also includes complete systems for plastics recycling, SRF and waste wood processing. The shredders can be used among other things for municipal solid waste, commercial and industrial waste, waste wood, plastics, packaging material, paper and light scrap.

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PARADYŻ
CERAMIKA

Ceramika Paradyż partners with SACMI to build «Europe's most modern line»

At the heart of the order - for a technologically innovative project co-funded by the EU - lies the Continua+ PCR 3000, the most powerful compactor in SACMI's range for the production of slabs and tiles of varying size and thickness

Ceramika Paradyż is a family-run business and one of Poland's leading ceramic tile producers, with a share of the national market bordering on 25%. The company is mainly involved in technology and innovation for the interior design field. For 32 years it has been a leading designer, creating and delivering unique, innovative, high quality products for customers in nearly 50 countries.

As part of a technological innovation project co-funded by the European Union, Ceramika Paradyż has just started up a brand new demo line for the manufacture of large ceramic tiles and slabs, including products with through-body veining.

The heart of the line is the PCR 3000. The most powerful compactor in the SACMI Continua+ family, it can produce - with outstanding versatility and performance - differently sized slabs as thick as 3 cm. Through-body veining is a key aspect of this machine, as it lets manufacturers perfectly coordinate the colored powders deposited upstream from the compactor with any digital decoration on the unfired slab.

Previously unavailable on the Polish market, this technology was rewarded with a European tender in which Paradyż participated as part of a plan to expand its product portfolio, to which 7 new collections were recently added in partnership with key international fashion and design players.

"This technology has led to the establishment of Europe's most advanced line", explained Piotr Tokarski, president of Ceramika Paradyż. "It allows us to produce tiles ranging in size from 60x60 cm to 120x280 and even as large as 180x320 cm, as thin as 6 mm or as thick as 3 cm. Moreover, some formats offer through-the-body decoration". In short, not just slabs but an entire product family that can be produced in a coordinated manner via a multi-format approach, all thanks to the unique characteristics of SACMI Continua+.

"The company has focused on development ever since its founding, constantly adapting the product portfolio to meet fast-changing market needs", adds Adam Tępiński, co-owner of Ceramika Paradyż. This project, Tępiński points out, "is a milestone not just for the development of our company but the ceramic industry as a whole".

Overall the project is valued at over 125 million PLN. Of that, over 50 million PLN was granted to Ceramika Paradyż by the European Regional Development Fund as part of the Intelligent Development Operational Program 2014-2020, co-financed by the EU. The project is also part of the "Fast track" tender for large companies and consortia run by the National Research and Development Center.

Together with the Continua+, the project includes a full array of technological solutions, from compaction to end-of-line. More specifically, alongside the PCR 3000, SACMI has supplied the dryer, the kiln, the handling systems and the glazing and sorting lines.

The order also includes SACMI's DHD1408 digital decorator; featuring a host of innovative systems, this unit allows perfect coordination with in-body decoration to make products with through-body veining. Moreover, farsighted management has ensured highly effective coordination between the various departments, allowing the project to be completed with installation of SACMI-BMR grinding and finishing lines.

In conclusion, the last few days saw the satisfying completion of the first start-up tests, so a photo of the team from the Ceramika Paradyż Production Department is a must...

Laminam acquires Best Surface from Barbieri & Tarozzi Group

Laminam continues its international growth and expansion strategy with the acquisition of its first plant in Spain. Equipped with SUPERA® slab technology from SITI B&T Group, the factory joins the company's existing facilities in Italy and Russia.

Laminam, a global leader in the production of ceramic slabs partly owned by Alpha Private Equity, and the Barbieri & Tarozzi Group have announced a deal in which Laminam will acquire a 100% stake in Best Surface. The agreement was announced on 22 December and the transaction is expected to close in the first quarter of 2022.

Best Surface was set up by the Barbieri & Tarozzi Group in 2018 but does not fall within the scope of consolidation of SITI B&T Group S.p.A. Located in the heart of the Spanish ceramic district of Castellón de la Plana, it produces large-size slabs under the Idylium brand name and is the exclusive licensee of the Automobili Lamborghini Surfaces brand.

The facility uses SUPERA® technology developed by SITI B&T Group and has rapidly established a strong competitive position with an annual turnover of around €20 million. It is renowned for its high-quality products with an outstanding level of design.

Laminam will post consolidated sales estimated at more than €170 million in 2021 and is forging ahead with its growth trajectory built on quality and sustainability, while at the same time stepping up the pace of its expansion and internationalisation process. Best Surface is its first plant in Spain and joins its existing production facilities in Fiorano Modenese and Borgo Val di Taro in Italy and Vorsino in Russia. The acquisition follows on from the more than €50 million investments currently nearing completion to double the production capacity of its plants. The operation also further consolidates the technological partnership between Laminam and Barbieri & Tarozzi Group.

https://www.ceramicworldweb.it/

Minerali Industriali group completes acquisition of Manfredini & Schianchi

On lease since July 2021, the Sassuolo-based company has now been fully incorporated into Green Tech Engineering, part of the Minerali Industriali group, thereby consolidating its offering in the field of raw material processing equipment.

On 14 February 2022, Green Tech Engineering (GTE), a subsidiary of Minerali Industriali Engineering (part of the Minerali Industriali Group of Novara), completed the acquisition of Manfredini & Schianchi and Manfredini & Schianchi Green Tech, companies that had been leased since July 2021.

The operation will enable GTE, which specialises in the design of industrial plants for the processing of hard raw materials, to extend its range of operations to include plants for the treatment of soft raw materials (clays, kaolin, limestone, salt) and for the dry grinding of ceramic bodies.

Founded in 1962 in Sassuolo, Manfredini & Schianchi has developed cutting-edge technologies for raw materials processing and has become a market leader in the field of dry treatment, a more environmentally-friendly process that reduces energy consumption and operating costs. The company has recently patented the Fusion process, a major technological breakthrough that has been further enhanced by the synergies created within Green Tech Engineering.

The Novara-based group's management sees the acquisition of Manfredini & Schianchi as a strategic opportunity to expand its business and offer customers a broad portfolio of products and production processes optimised for the treatment of both hard and soft raw materials.

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Brick Lining Improvements in Rotary Kilns– Part 1

By: Greg Palmer and James Millard, Palmer Technologies, Australia

Abstract

This paper is Part 1 of 4 and discusses factors limiting refractory brick life in rotary kilns to one year or less. In rotary kilns refractory brick life at tyres and burning zone/transitions zones are the key areas limiting longer run-times. The issues of mechanical kiln brick failures haven't improved significantly since the introduction of magnesia spinel bricks in the 1980's [1]. We apply engineering analysis to stress induced failure of refractory bricks, evaluate current practices, and discuss paths to improved maintenance outcomes.

Index Terms— Brick failure, ovality, quality, refractory brick, refractory maintenance, rotary kilns.

I. INTRODUCTION

The reliability of refractory linings in the cement and lime industries is of key importance for controlling maintenance cycles and costs. Presently, the major maintenance event for these industries is typically performed on an annual cycle or less, with brick lining service life of the rotary kilns acting as the limiting component preventing increases in campaign length. It has been reported that refractory related repairs are the largest single cause of cement kiln downtime, typically resulting it 20% lost kiln production [1]. To move to extended campaigns of 18 to 24 months requires not only improvement in average brick life, but also an improved understanding of failure mechanisms to prevent an increase in the risk of an unscheduled stoppage.

We have been working with a cement company for a number of years and been involved in shifting their shutdown to a two-year cycle. Achieving extending campaigns has provided additional benefits beyond the reduction in refractory consumed per ton, such as the amortisation of the fixed costs of maintenance cycles over the longer campaign duration, and a reduction in total downtime.

The performance of rotary kiln bricks is determined by a combination of process conditions, kiln shell condition, brick quality and installation practices. Shifting refractory maintenance to an engineering driven approach, where the refractory quality and process effects on refractory performance form the basis of decision making, has proven in other industries to deliver dramatic reduction of refractory consumption.

Such changes were made by the steelmaking industry in Japan by focusing on wear mechanisms in "real" furnaces and studying the effect of service conditions on wear rates [3]. Refractory manufacturers had to design and operate their processes with less variability; including consideration of influences of raw materials, manufacturing conditions and processing atmosphere on the variability of products [4]. It was this combined effort that saw enabled significant cost reductions and lower refractory wear rates. Similar advancements in the petroleum industry have been brought forward by the American Petroleum Institute, which has driven progress in material selection guidelines and the Quality Control and Inspection Standard.

This series of papers discusses the key issues that undercut attempts to realise extended kiln campaigns, and the engineering approach required to systematically identify problems and solving them through analysis, best practice, and design.

In this paper we will cover the diagnosis, analysis, and mitigation of mechanical brick failure. The next entry will focus on the impact of quality, both in bricks and the lining installation. Later parts will delve into key chemical attack mechanisms, and models for geometrical and statistical analysis of bricklaying, distortion, and stability. The problems in each of these domains are present roadblocks which must be understood and overcome to extend campaign durations to 24 months.

II. MECHANICAL BRICK FAILURE

The most significant sources of stress in kiln brick linings are the thermomechanical hoop stress that result from bringing a clench lining up to temperature, and the ovality induced stress in the hoop direction that results from changes to the kilns cross-sectional shape.

These stress contributions are additive and joint analysis of these dynamics in a specific kiln are required to understand the source of problems and evaluate solutions.

The typical failure mode of an over-stressed lining presents as capping of the brick on the unrestrained intrados face, and spalling as shown in Figure 1. These failures present as a sudden loss of thickness, rather than a predictable or gradual brick wear. Consequently, plant owners often must adopt conservative maintenance practices to account for increased uncertainty in lining service life. Such a loss of thickness, even for one brick, can increase brick consumption, increase refractory maintenance frequency and lead to a kiln stoppages.

To understand the development of stresses in brick linings the material properties of each brick type must be characterised experimentally. Typical published elastic

Figure 1: Brick "capping" due to shell ovality (BZ/upper transition – Tyre 2 spinel bricks)

modulii ranges from 20 GPa to 80GPa [5][6][7] and depend not only on the composition, but also the microstructure of the bricks. Since magnesia (basic) materials were introduced in rotary kilns in the 1940's to improve chemical stability, resistance to stress induced damage has been a major determining factor in improving refractory service life. Due to the high modulus and low toughness of magnesia bricks, industry pursued enhancements to elasticity in the form of chromite-spinel inclusions and adopted alternatives such as dolomite in parallel. These brick types saw several decades of use, though chromium contamination, and moisture and sulphur attack on dolomite were persistent problems. After successful trials in the 1970's chromium free magnesia-spinel bricks saw increasing use, becoming dominant by the late 1980's due to comparable mechanical properties, chemical robustness, and falling costs. Modern brick formulations now often focus on minor microstructural adjustments to improve durability in the face of ovality and thermal stresses, though fundamentally still use the same elasticity enhancement approach as magnesia-chrome.

III. KILN OVALITY BRICK STRESS

The kiln ovality is a change in the cross-sectional shape of the kiln due to gravity forces which induces stress in areas of tightening curvature. Ovality occurs due to the reaction load from the kiln supports being highly localised at the kiln tyre. Localised support in the axial direction results in a bending moment over the support which imposes a large elliptical deformation flattening the top of the kiln and increasing the curvature of the sides. This is superimposed with the deformation from the circumferential localisation of support from the trunnion rollers where they contact the tyre on the lower sides of the kiln.

Kiln shell ovality (ω) is defined as the difference between the nominal shell circle and an ellipse and is typically expressed as a relative magnitude, $\omega = 2(a - b)/d$ where a and b are the major and minor axes and d is the nominal kiln diameter as discussed by Switalski [5]. Within this elliptical deformation paradigm, the circumference is assumed to be preserved, and local curvature is defined as $c = a^2/b$.

Kiln ovality is measured in practice by devices such as the Holderbank's shell-tester or the TomTom ovality sensor. Both are three contact-point systems that are fixed to the shell and measure local change in Menger curvature of the shell as the kiln is rotated. The measurement process is typically repeated at three points on the shell 120 degrees apart. The output results are typically presented as either cartesian or polar plot showing the raw data from the device.

TomTom results are reported as raw strain gauge elongation values with the minima and maxima of each curve used to calculate the maximum change in curva-

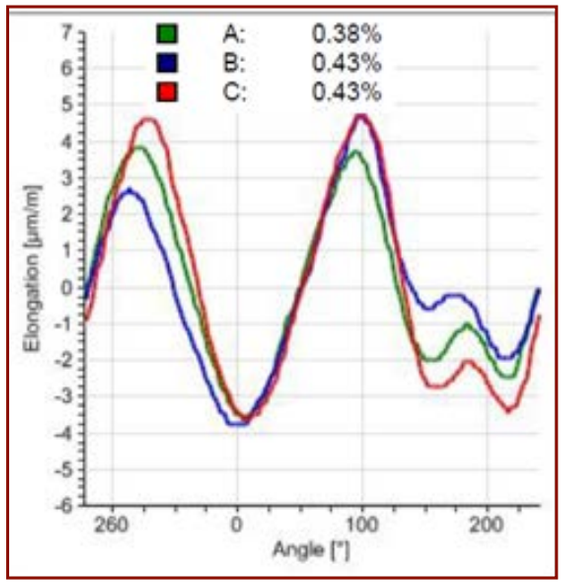

Figure 2: TomTom raw elongation data cartesian plot

ture and thus relative ovality under the assumption of an overall elliptical distortion, see Figure 2.

Routinely, the relative size of the kiln distortion has been highly magnified, as shown in Figure 3, for display purposes. Notably the kiln shell distortion is not entirely elliptical as typical models assume, though it is dominated by an elliptical component.

It is important for plant owners to know that raw data, when polar plotted as in Figure 3, does not represent the kiln shell shape under ovality distortion. Instead the data must be treated as the change in relative curvature and be mathematically integrated to attain an estimate of the ovality component of kiln shell distortion as show in Figure 4.

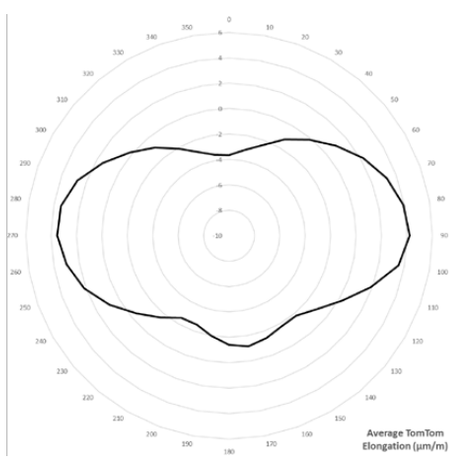

Figure 3: Polar plot of average TomTom raw elongation data for above case

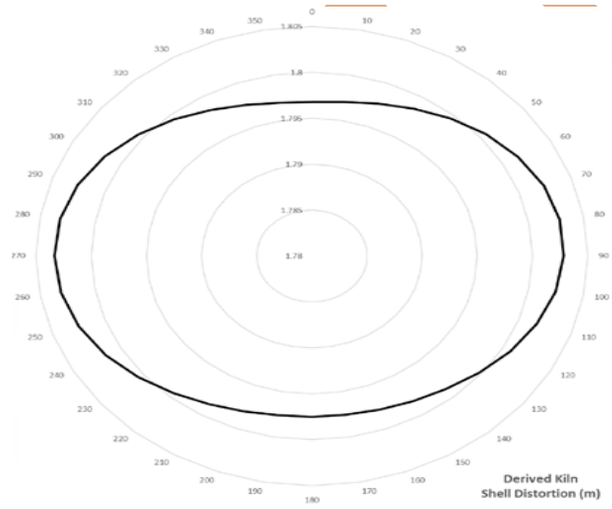

Figure 4: Derived actual kiln shell distortion (x70 magnified) for above case

The actual instantaneous distorted shape of the kiln can be determined by adding the static distortion, which rotates with the kiln shell, to the ovality distortion which remain fixed with respect to the kiln supports. The raw data can also be used to calculate a local curvature estimate an approximate linear-elastic stress profile in the brickwork.

The calculation of peak compressive strain in the brickwork due to ovality is a function of kiln diameter, brick lining thickness, and ovality. This can be combined with thermal strains for computation of the total stress in the lining. Figure 5 shows the brick stress, in the no joint slip condition excluding joint offsets and brick plasticity, induced by just ovality versus kiln diameter for a 200mm thick magnesia spinel lining with a combined brick/joint modulus of 30GPa. It shows the high sensitivity of brick stress to ovality and thus the importance to maintaining tyre clearance and low ovality, particularly for basic bricks.

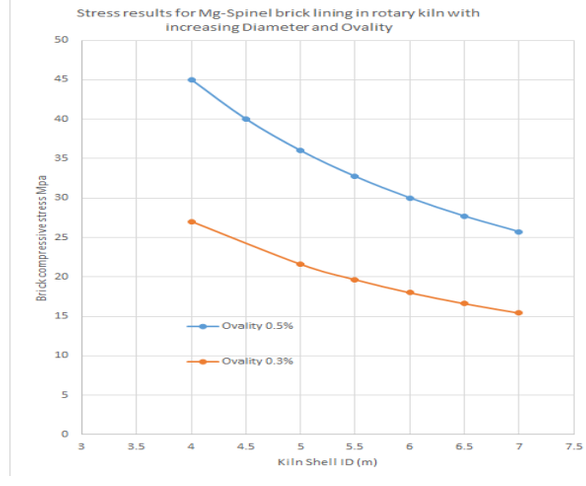

Figure 5: Refractory brick stress in rotary kiln with increasing diameter and ovality (cold state)

The effect of ovality on brick life was discussed by Ono and Kozuka [18] who reported the impact of ovality stress on the rate of brick loss and found a rough, but significant, correlation for brick thickness loss with increasing ovality. The data we have collected is in agreement and supports the conclusion that the ovality has a significant impact on brick life. This is mainly due to the peak stress induced by the flex in the kiln shell at the 3 and 9 o'clock positions and slightly less between the trunnions. To avoid or limit brick damage at kiln tyres means both thermal induced hoop stress and ovality must be managed and the threshold at which damage is induced varies with factors such as brick material properties, operating temperature, and mortaring practices.

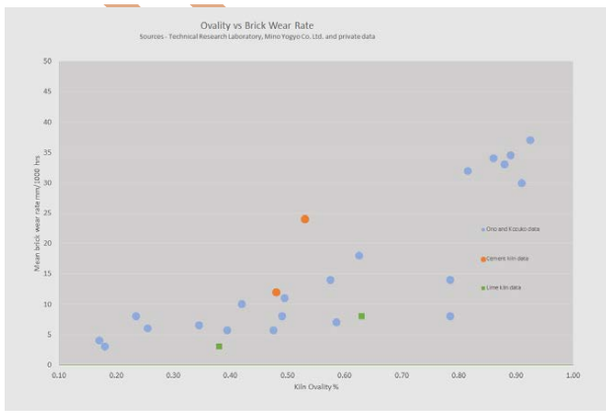

Figure 6: Kiln ovality as function of kiln diameter and refractory brick wear rate (mm/1000 operating hrs)

IV. THERMOMECHANICAL BRICK STRESS

The thermal contribution to stresses results from variation in the expansion of each component of the kiln, due to differences in both temperature and expansion coefficients. When heated to operating conditions the thermal expansion of the intrados face of the refractory brick typically exceeds the thermal expansion of the steel kiln shell resulting in compressive stress in the brick, and a matched tension in the shell. The stress in each can be resolved by linear elastic analysis utilising the elastic modulus of each material, a zero-tension brick surface contact model, and the geometry of the kiln bricks, shell, and any mortar that is used. This stress decreases with available strain relief, including the contact surface roughness and temporal accumulation of primary/secondary creep.

Under the zero tension contact model only areas of negative strain, typically the front of the brick, are considered to be in contact, with the remainder being held apart by the higher thermal expansion of the contacting areas of the brick.

In the case of a magnesia spinel lining, neglecting strain relief, using 200mm bricks with a modulus of 35GPa and linear expansion of $1.2x10^{-5}$ and heating to 550°C the peak brick hoop stress is calculated at 50MPa, with contact limited to the top 55mm of the brick. This shows that significant hoop stresses are generated by thermal expansion of the basic brick lining when constrained by the kiln shell which must be resolved.

V. MODELLING OF BRICK STRESS

To determine the load on the brickwork the elastic stretching of the kiln shell and the elastic compression the bricks must be jointly analysed in a linear elastic model. The contact faces of the brickwork are restricted to imparting compressive stresses only, i.e. the No Tensile Resistance condition, with tension developing instead in the shell as it restrains the thermally expanded brickwork. Both ovality and thermo-mechanical load distributions are not centred, i.e. are eccentric, on the mating faces of the brick with a string bias to higher compressive forces towards the intrados face. These uneven distributions prevent the direct use of uniaxial cold compressive strength in predicting failure, instead requiring a more complex criterion.

The research on failure criteria suitable for civil brick arches is directly applicable to the brittle materials and observed load distributions in kiln brick linings. The NTR-PB and NTR-EP-LAD failure models of eccentrically loaded masonry and describes the maximum loadbearing capacity of arched brickwork. [10]. The "perfectly-brittle" NTR-PB model is useful as a conservative failure criterion with a factor of safety as required, whereas the NTR-EP-LAD model has additional parameters which can be selected to provide a better fit to the average outcome. These models predict the reduction in effective ultimate strength as load distributions are moved further from the centre of the brick mating face. In addition to compensation for eccentric loads, kilns with insufficient axial expansion may develop significant axial compression and require the use of biaxial compressive failure criteria.

Linear elastic analysis must be adjusted to account for a phenomenon known as "takeup" in the early contact stage of clench linings. In this phase the stress-strain response is highly nonlinear when transitioning between an initial lower modulus associated with asperity contact and the higher elastic modulus of the brick material, as shown in Figure 7. When un-mortared brick joints are analysed this effectively requires the use of a strain offset in the linear model of the brick lining, the use of more complex non-linear modelling. The parameters describing the phenomena are specific to each brick material, surface finish and must be determined experimentally.

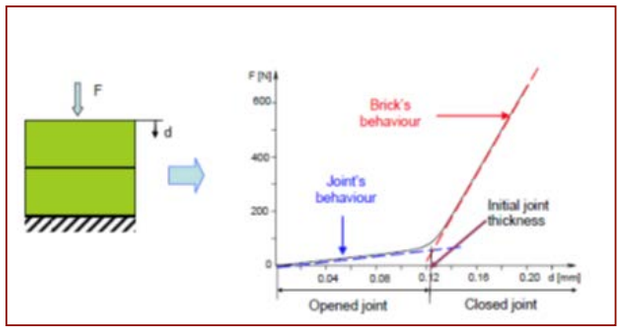

Figure 7: Typical compressive behaviour of two brick laid in direct contact [10]

The complexity of thermomechanical stress analysis increases significantly with the onset of plastic behaviour at higher temperatures. This is typically restricted to alumina bricks which display plasticity as early as 800°C and will significantly affect outcomes by typical operating temperatures of 1000°C or higher. The effect of this plastic behaviour can be seen in [11]. Figure 8 which is a view of alumina brick at a kiln inlet showing gaps between bricks after the kiln was stopped for maintenance. The magnitude of the gaps formed is the result of the long service life and high plasticity of alumina bricks in the kiln inlet area.

Figure 8: View of alumina bricks at kiln inlet showing gaps between bricks (1st inspection after installation state)

Time dependant plastic behaviour, i.e. creep, becomes significant at elevated temperatures and stresses even for highly refractory basic materials, see Figure 9 and Figure 10. Evaluating this behaviour requires the inclusion of a time axis over which plastic strain is integrated, as thermal strain gradually builds and ovality strain oscillates. This ensures nonlinearity is temporal only, while ensuring the stress evaluation at each time-point linear. The accumulated plastic strain can be applied as an offset in the linear elastic model, combining with the takeup offset to reduce the final stress.

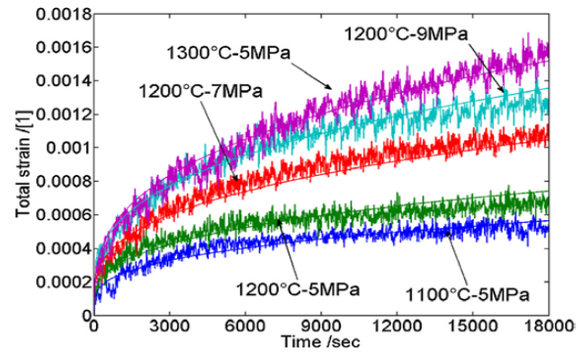

Figure 9: Magnesia Chrome Brick Primary Creep [12]

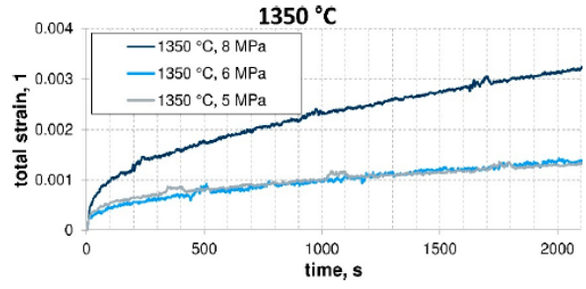

Figure 10: Magnesia brick compressive creep measurements [13]

VI. MITIGATION OF BRICK STRESS AND PATHS TO IMPROVEMENT

Mitigations of stress induced brick capping are already the norm in industry practices, namely routine maintenance that controls ovality to acceptable level, trials of tougher brick materials, and the introduction of mortared joints in areas of high stress. However, to achieve extended campaigns of up to two years, these practices must be refined based on stress analysis specific to the affected kiln rather than applying a one size fits all approach.

For the impact of ovality to be managed, measurement must be reliable and accurate. Methods which estimate ovality via correlation to tyre migration can be effectively used to inform shimming adjustments, however they significantly under-predict ovality induced by axial bending moments. The measurement of ovality can also be hampered by the presence of cracks or other non- uniformities in shell stiffness which potentially concentrate changes in curvature outside the spans measured by 3-point devices resulting maintenance blind spots.

The use of mortared joints serves to increase the overall flexibility of the lining, and more evenly distributing

hoop stress over the contacting brick faces. Typical refractory mortars have elastic modulus on the order of 500 MPa, two orders of magnitude less than the brickwork, and once thickness is accounted for the results is a near halving of combined lining modulus, with a proportional reduction in stress.

However, if misapplied, mortar can introduce new failure modes. The mismatch in modulus between mortar and brick material results in significant biaxial tensile stress on the mortared brick face, increasing with the thickness of the mortar joint. This leaves the selection of mortar material and joint thickness as a balancing act between hoop compressive stress reduction, while avoiding the creation of tensile stresses to which the bricks are significantly more sensitive.

While improved materials selection provided industry advancement until the 1990's, this initial success has given way to diminishing returns as minor variations are slowly evaluated through trial and error. Without an understanding of interactions within the brick stress system and engineering investigations, promising materials can be overlooked, and unsuitable materials needlessly trialled. To improve on this industry must make use of quantitative stress analysis and focus on how brick material properties, including the pyroplastic properties, affects maintenance outcomes. It is imperative that materials be described in terms of mechanical behaviour and creep behaviour, rather than traditional datasheets which only define a material grade and strength.

For the cement industry to transition to extended campaign lengths of 24 months, the rotary kiln brickwork is the key area where service life improvements are necessary. To achieved this, preventing mechanical brick failure is a core challenge that must be overcome. We note this well- defined and long-standing challenge has seen little progress in recent decades, and that the quantitative analysis of brick stresses and material behaviour provide the necessary route forward. In our next paper we discuss the impact of both brick and installation quality on arch stability and the practices that are best suited to mitigating risk and controlling quality outcomes.

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ON LINE THERMAL ENERGY MONITORING OF CEMENT ROTARY KILN- A TOOL FOR ENERGY SAVING

By Eng. Mohan Gurumurthy ERCOM Consulting Engineers Pvt. Ltd. Chennai. India

Introduction

The energy cost in cement manufacturing constitute about 40 to 50 % of the total cost of production of which thermal energy alone constitute about 35 to 40%. While the tariff of electrical energy is more or less fixed for a definite period until the tariff is revised, the cost of fuel fluctuates quite often resulting in substantial changes in the cost of production. The cement manufacturers are pushed to explore various avenues to keep the cost of production of clinker under control and competitive. Obviously such measures are to be carried out on a daily basis to identify areas where the thermal energy is wasted , remedial actions to be taken followed by action taken status on a day to day basis. This article analyses the ways and means of identifying such potential areas of thermal energy saving on an hourly basis without human involvement.

Objective of the software

1. To enable process Engineers calculate Heat Balance Instantaneously
2. To present thermal performance of pyro-processing section of cement plant
3. To help management in focusing on areas requiring improvements for better performance
4. To make the cumbersome and complicated heat balance of a rotary cement kiln accessible to non- process personnel also, enabling them to carry out heat balance of a kiln in a matter of 10-15 minutes

Salient features of the software

1. The software is easy to install and does not need any external support
2. No special training is required for using the software as meaningful help menus are provided wherever necessary
3. Application instructions are built in each format and the user has to simply follow the instructions
4. The software is user friendly and does not require special computer skills
5. Critical design parameters are password protected to deny access to un-authorised persons
6. Critical parameters that are entered are checked for validity and if abnormal values are entered, the same is rejected with a warning.
7. Almost all practical conditions are taken into account and made highly flexible.
8. In the complete Heat Balance calculation, no assumptions are made and entire calculation is based on user's input . Thus the result of Heat Balance is realistic.
9. Program can be used when a very detailed process measurements are carried out or even when limited process measurements are made.
10. When measurements like shell temperatures are not taken, provision to run with old data is given for a quick analysis.
11. The program can be run on line also capturing variable parameters from DCS and the instantaneous heat balance is displayed on hourly, shit wise and daily average of heat consumption.
12. Design parameters also can be varied. e.g. number of cooler fans and compartment sizes etc.
13. This helps in understanding the effect of modification on the performance of process well in advance be fore actual change in the design is made.

14 . A wide range of alternative fuels are considered. Totally 7 types are fuels are in the program to enable user to select . The Ultimate analysis of these fuels is pre-loaded as per normal values. The user can change these values as per the actual fuel analysis. This not only helps to calculate with alter native fuels but also helps in studying the effect of different alternative fuels even before they are practically used enabling management to take an economically suitable decision

15 . Thermal performance data related to pyro system like cooler efficiency, degree of calcination etc., are also calculated

16 . Data on false air entry into preheaters is indicated to focus the attention on the loss due to false air infil tration

17 . The program arrives at the fuel consumption from the calculation using various field measurements en tered by the user. A comparison of fuel consumption calculated and fuel consumption recorded helps to locate if any error in fuel metering exists.

18 . If the fuel measurement is correct and still the difference between measured and calculated fuel values exists indicating a possible error in process measurements, then related field measurements need to be repeated.

19 . Very detailed reports are generated by the software. In all 9 types reports can be generated.

20 . Reports can be either viewed on the monitor or can be printed

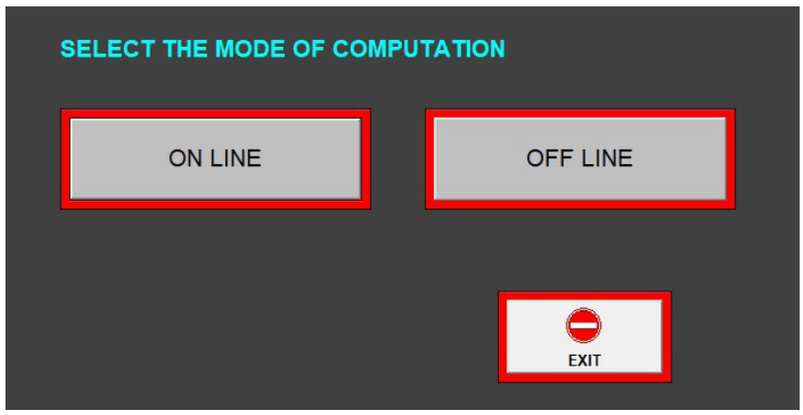
21 . These reports generated are saved separately for future reference

Benefits for Process/Energy engineers

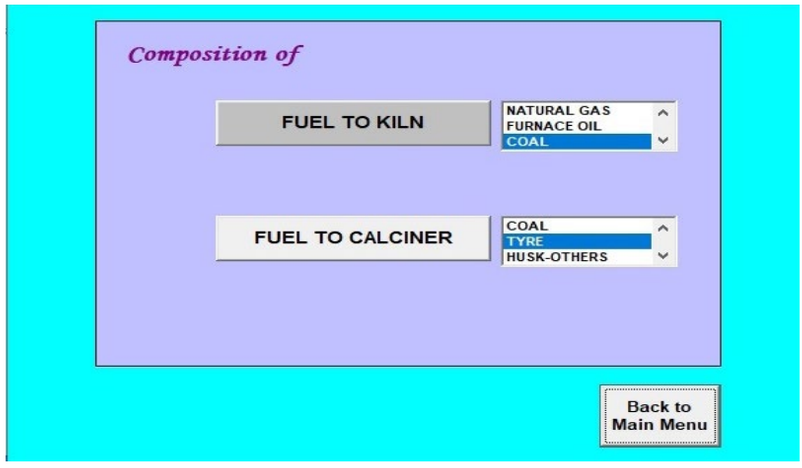
1. This is a handy tool for process/energy engineers for day to day analysis
2. This helps to determine the performance of entire pyro-processing system without need of any lengthy, time consuming calculations
3. Reports generated will be handy for presentation in meetings and analysis
4. A quick Heat Balance is always possible with the data available in hand.
5. Inter-departmental differences in the matters like accuracy of the fuel measurement, false air entry in the pre-heater etc. can be minimised as the software will precisely pin the area of discrepancy/defect.
6. This software gives a quick insight into the performance of the system and allows for a focused attention on the areas requiring improvement

Benefits for Management

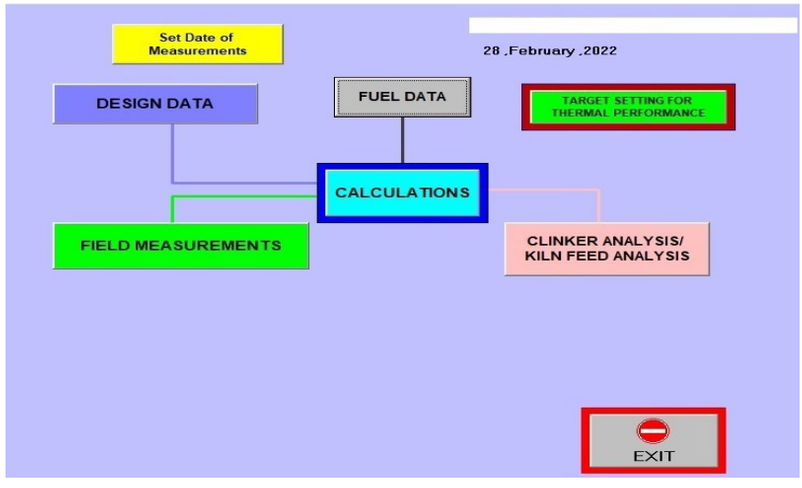
1. The effects of proposed changes in design parameters like changing a cooler fan or changing the compartment size can be studied without actually modifying the system
2. Enables to take an economically attractive decision in the area of using alternative fuels without actually using in the plant
3. Top management also can obtain the performance details with a very little time and effort
4. Data on simple but critical parameters like false air entry are available with a click of a button.
5. As it takes about 5-10 minutes only for carrying out the heat balance, the management can monitor with the concerned department on a weekly basis and losses can be arrested reaping the benefits instantaneously.
6. There is provision in the program to arrive at cost effective fuel combination in kiln and Calciner based on actual heat consumption in kiln and calciner and different fuel costs .
7. The program is tailor made for the particular pyro section.



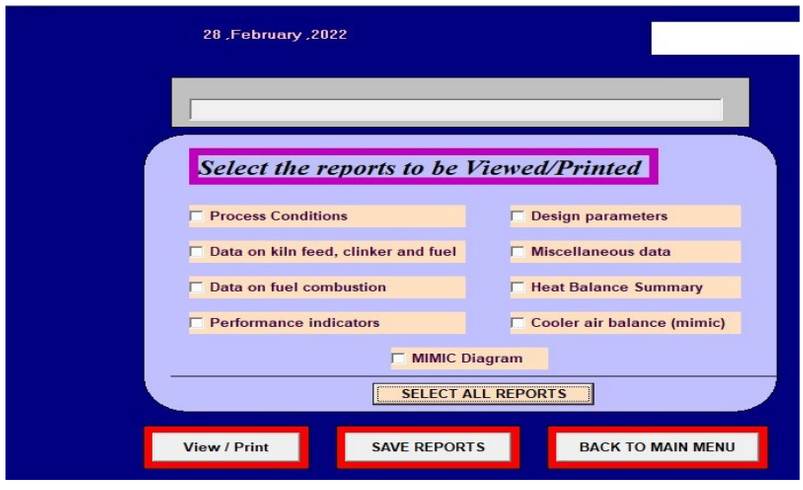
Selection of ON Line Off Line mode



Selection of fuel for Kiln and Calciner

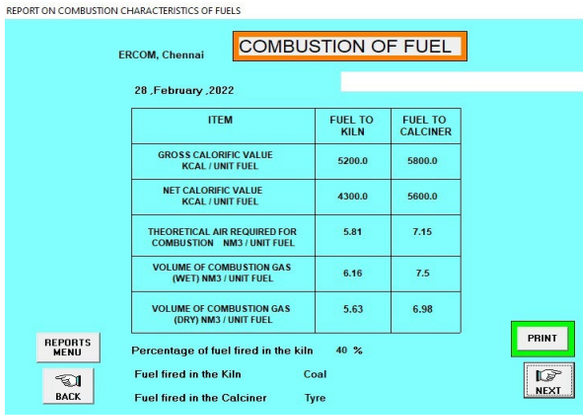


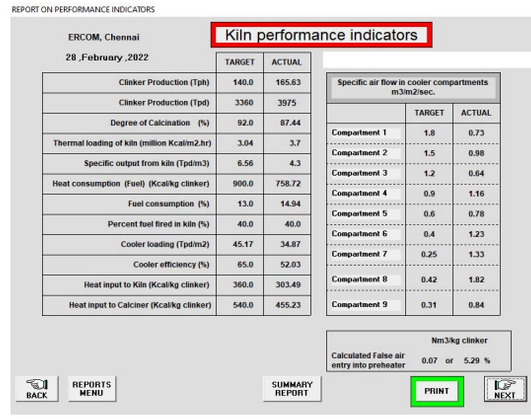
Data entry and Reports Generation

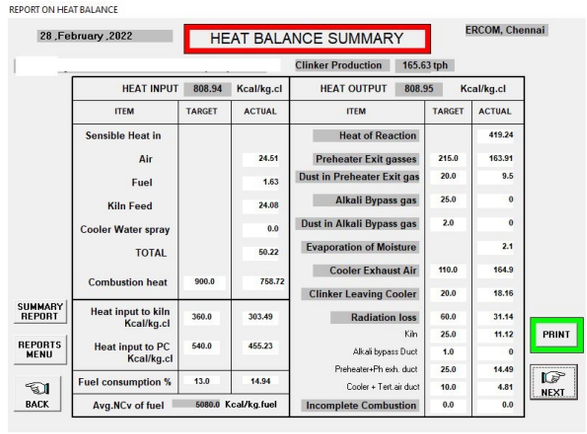


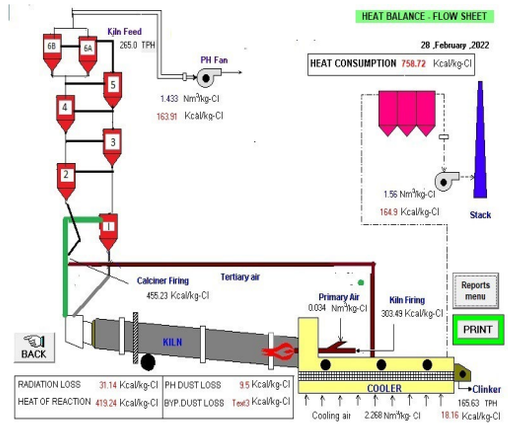
Selection of various reports

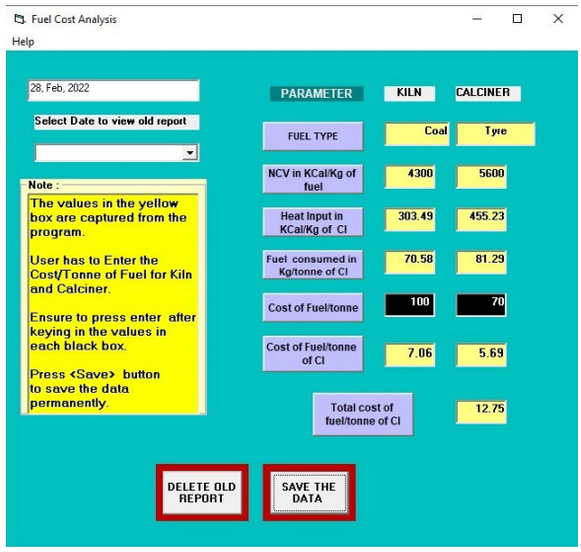
Few live screen shots are displayed below in fol on various operating conditions and dates:Fuel cost/Ton of clinker at actual heat consumption lowing pages: These screen shots are indicative and taken



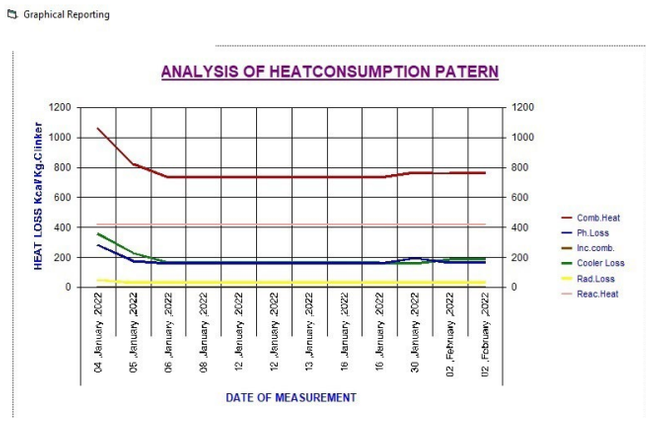








Trend curve of past fuel consumption



Conclusion:

Normally, the heat balance is done using MS Excel which is laborious, time consuming and can be done only by experienced process engineers. This software works on windows and MS Office and user friendly. Any non-technical person also can use the program.

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Start-up Elara Digital GmbH develops a new virtual assistant for the manufacturing facilities

All the know-how in your pocket

By: BEUMER Group, Germany

Unplanned machine breakdowns cost time and money. Elara Digital GmbH now offers the right solutions for reduced downtimes and increased machine availability. Relevant information such as work orders, checklists, machine documentation or guides for trouble shooting can be created in an easy and intuitive way and can be accessed at any time: a knowledge data base for maintenance teams. BEUMER Group supported the project of the founders and managing directors Akram Alraai and Dominik Adamowski with start-up financing.

"Numerous discussions with customers from the manufacturing sector have shown that unplanned machine breakdowns always represent a big problem and can last up to three hours on average," says Akram Alraai who, in collaboration with Dominik Adamowski, founded the Elara Digital GmbH in Berlin. Adamowski mentions a typical example with a well-known German sports manufacturer: "Because a Profibus component failed, the systems stood still for two hours. The calculated loss amounted to approx. 40,000 Euro." In order to support the companies in reducing these costs considerably and in increasing the machine availability, the two company founders developed a new solution - a cloud-based software application, which starts with the improvement of the trouble shooting process: getting an overview, orchestrating communication and, in cases of emergency, local access to relevant information. Elara Digital closes the gap between the maintenance director and the workshop employees. The founders emphasise that their application reduces complexity and provides transparency by equipping the employees in the workshop with a simple mobile application: the factory know-how in your pocket.

A strong partner at your side

The two founders received extensive support also from the Berlin-based, autonomous company builder Beam, a spin-off of BEUMER Group. "We try to solve unique problems in logistics together with the start-up teams," explains Managing Director Robert Bach. "My task is to find young entrepreneurs with business ideas that are relevant to us. We want to create three start-ups per year and transform them each into a separate company under the umbrella of Beam - like the Elara Digital GmbH." The aim of BEUMER Group is to open new business areas in logistics together with these companies.

Akram Alraai reports of the beginnings: "BEUMER Group brought us together with more than 30 companies, allowing us to interview them on machine breakdowns and maintenance subjects." His co-founder Dominik Adamowski and he were surprised how painful trouble shooting processes can often be. But what happens exactly? Presuming, the user is operating the BEUMER stretch hood® high-capacity packaging system. Suddenly the system stops during the shift. An indicator light starts flashing and the error code xfDE45 appears on the display." The operator either takes care of the problem or calls a service technician. But no matter who of the two carries out the task, both of them will have to face questions: "Where is the manual for this machine? Where are the checklists and the spare parts lists? Who has carried out the last inspection? What does xfDE45 actually mean? Is there a trouble shooting guide for the current problem?"

Pen and paper slow down digitalisation

It can sometimes take a long time for the employee to have all the information ready. In their discussions with the companies, Akram Alraai and Dominik Adamowski were able to identify some of the main causes of these time wasters: "Often predictive maintenance is missing," says Adamowski. This means: The technicians repair defective components and replace the bad ones only if really necessary or at fixed intervals, but not at intervals based on empirical values." This usually requires auxiliary means such as Internet of Things or big-data analysis. The implementation is too complex and time-consuming for many companies. Often, work orders, trouble shooting guides or checklists are handwritten and filled in laboriously.

There is not only the risk of mistakes due to unreadable handwriting, but these documents also have to be scanned in order to be filed digitally. "Companies would like to have a system for easy order processing in maintenance," describes Alraai. "Electronic maintenance schedules or checklists should not be put on paper first, but directly into the system."

During the discussions, the two founders also learned how the maintenance topic has changed especially in the Covid pandemic. In order to adhere to the distance rules, many companies switched to shift operation. The result: the personnel cover is thinner in each shift and therefore less employees are available for quick repairs.

Moving towards more efficiency

"We have started here," says Akram Alraai. „Our software allows to create digital work and maintenance orders in easy and fast way and to directly assign them to the right employee." He can start working directly with his smartphone: He scans the QR code at the machine or system and can immediately access all relevant data required for example for inspection or trouble shooting. "In order to find the required document even faster, he can call it up via voice command," says Adamowski. In case of unexpected problems in production, employees often refer to trouble shooting guides and if these are not available, it is possible to upload pictures and videos. This makes it easier to diagnose the problem and then solve it. The software records all possible malfunctions and communicates them," describes Adamowski. "Thus the employee has the entire know-how on his smartphone."

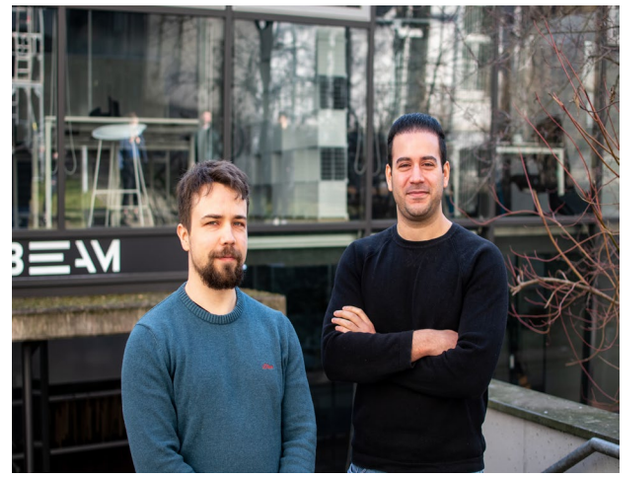
The web application permits the maintenance director to have an overview on all machines and employees in operation. On the display, he can also call up all important figures to determine the activities in the workshop. Reports and protocols can be generated and exported in different languages via the app with the help of artificial intelligence. Thus they can be easily transferred to existing systems.

Shared knowledge is more knowledge

Headword Knowledge Sharing Economy: "On our platform we want to make the manufacture's digital information, such as manuals or tutorials, accessible to our customers," says Adamowski. "At this regard, we offer an interface through which their documents can be uploaded. Machine operators can also upload and share their reports on faults and how to fix them." This way, the knowledge database is continuously filled with practically applicable know-how. Data security plays a very important role: the data are anonymised, protected and stored on servers in Germany. Thus, every user can access checklists, manuals or guides and benefit from a large pool of knowledge and expertise.

With the start-up, BEUMER Group can successfully pursue its goal of bringing digital solutions into the corporate group. The system provider can now provide its customers with even better support, strengthening its position as partner on the market. The two company founders Akram Alraai and Dominik Adamowski have calculated that users need up to 1.5 hours less for trouble shooting than without virtual assistant. This can save them up to 30,000 euros on average. And Elara Digital? "We benefit from the cooperation with BEUMER Group in the form of generous start-up financing, an extensive network of experts and customers, and a great deal of know-how," Akram Alraai says happily. "We are now part of the BEUMER family."

Social Media: Unplanned machine breakdowns cost time and money. Elara Digital GmbH now offers the right solutions for reduced downtimes and increased machine availability. Relevant information, like work orders, checklists, machine documentation or guides for trouble shooting can be created in easy and intuitive way and can be accessed at any time. BEUMER Group supported the project of the founders and managing directors Akram Alraai and Dominik Adamowski with start-up financing.



Picture 1: The target of Akram Alraai (right) and Dominik Adamowski with their start-up: service technicians should have all the important information at their fingertips via smartphone in case of a machine failure and thus be able to minimise downtimes.

Picture 2: The team of the two company founders

The BEUMER Group is an international leader in the manufacture of intralogistics systems for conveying, loading, palletising, packaging, sortation, and distribution. With 4,500 employees worldwide, the BEUMER Group has annual sales of about EUR 960 million. BEUMER Group and its subsidiaries and sales agen-

Picture 3: Managing Director Robert Bach. "My job is to find young entrepreneurs with business ideas that are relevant to us".

cies provide their customers with high-quality system solutions and an extensive customer support network around the globe and across a wide range of industries, including bulk materials and piece goods, food/non-food, construction, mail order, mail and airport baggage handling. For further information visit:
www.beumer.com.

Picture 4: Start-ups enable BEUMER Group to successfully pursue its goal of bringing digital solutions into the corporate group.

Picture 5: The founder receives extensive support from the Berlin-based, autonomous company builder Beam, a spin-off of BEUMER Group.

Data standardisation: turbocharging green innovation in cement

By: FLSMIDTH A/S, Denmark

Data standardisation has unlocked the digital revolution in other industries. It's time for the cement industry to harness that power for change. At this year's Optimisation conference, hosted by World Cement, our Chief Digital Officer, Mikko Tepponen and Head of Digital Development, Anders Noe Dam delivered a call for data standardisation in cement.

As we move through the third decade of the 21st Century, the challenges facing the cement industry are very different from those that caused headaches at the start of the millennium. The sustainability imperative is now at the heart of a global effort to mitigate the extent and impact of climate change; an effort that is touching all aspects of business and society. Meanwhile, demand for cement is plateauing. The age of large-scale volume growth is firmly in the past.

As a result, traditional levers employed to keep costs down will be, at best, of limited use – and at worse, ineffective. Instead, new optimisation and efficiency strategies, empowered by innovative digital technologies, will be central to achieving the next level of both profitability and sustainability.

To see the benefits of these new approaches to the challenges of today, you need only look at the auto industry, where leading manufacturers and their supply chains have already gone a long way in implementing the principles of Industry 4.0. Underpinning this effort has been a strong collaborative effort to set common standards for data.

This data standardisation enables not only major manufacturers and their suppliers to innovate but opens innovation up to a much broader range of players, including start-ups and research organisations. The path taken is clear: standardisation has led to interoperability which has led to exponential innovation. The results include improved safety, lower fuel consumption – and rapid advances in the field of autonomous cars.

No global language for cement

In contrast, the cement industry lags behind when it comes to data standardisation – and is therefore missing important opportunities to benefit from new and emerging technologies. This goes right down to the basics of how we name things, what data types are collected, and what units are used. As a simple example: is pressure being measured in bar, psi or pascals? And are the data being collected in decimal or hexadecimal formats?

"We believe that data standardisation is the first step in jumpstarting a new digital revolution in the cement industry, unlocking improved financial performance and meeting our commitments to sustainability."

CHIEF DIGITAL OFFICER, MIKKO TEPPONEN FLSmidth

There are some signs of change. Organisations, such as NAMUR and VDMA, already produce standards that could provide inspiration. Many companies in the cement industry – both OEMs like FLSmidth and the bigger corporate cement producers – are also already doing

their own blueprinting and benchmarking to improve products and services. At an industry level, the World Cement Association started its own benchmarking and performance-improvement product called PEGASUS in 2020.

Signs of progress being made in this area provide encouragement. But it is limited. Much more of the industry will need to embrace the need to standardise, if we are to accelerate and reap the benefits that it offers.

Standardisation is the future

This is not to say that we do not recognise the challenges and the questions raised by this call to data standardisation. Who will decide the standards? Will they benefit you, specifically, or just give away competitive advantage? In an industry that remains relatively fragmented and regionalised – and without a history of collaboration between players – the challenge of bringing people together is not to be underestimated.

As an OEM with a long history of serving the industry with tailor-made solutions, standardisation is a challenge for us too. But we believe it is essential. It is essential to meet our own MissionZero sustainability agenda and to enable a transformation of the industry.

We also believe that standardisation is going to come – whether the industry accepts that or not. There is increasing public pressure for transparency to show how sustainability targets are being met. Take, for example, the EU Taxonomy Regulations on Sustainable Activities, which establishes a standard framework for assessing whether an economic activity qualifies as environmentally sustainable.

The goal of the taxonomy is to enable investors to see past any corporate greenwashing and target their investment toward sustainable economic activities. To enable this, the sustainability metrics reported by companies will have to be standardised at an industry level so that apples can be compared with apples. It will bring a level of accountability and transparency to sustainability that has not been seen before.

A final point to note is that – unlike car manufacturers, which each have millions of cars feeding data back – the cement industry has a limited number of plants. To gain the quantity of data and insight needed to empower a similar digital transformation as seen in the auto industry, will need to pool our data resources. And that means standardisation.

A challenge – but a bigger opportunity

Data standardisation is no doubt a challenge. But it is a much greater opportunity. Imagine, for a moment, a world where data is standardised, stored on the Cloud and made available for collaborative innovation across a wide range of industry partners. We would see parallel innovation that was easy to benchmark across the industry, and so we would be quickly able to understand the benefits such innovation could bring to our individual operations.

Ultimately, we would see a huge acceleration of the implementation of optimisation products and services. And we could go further and imagine marketplaces developing for such services. App stores for the cement industry, where you download what you need, where updates are managed remotely and automatically, where new solutions are made available, and where user ratings, linked to defined benchmarks, aid better decision making.

This may feel like fantasy more than fiction. But the vision is already becoming a reality in the mining industry with the launch of Oren, a marketplace for digital mining services, last year. Its aim is to facilitate the finding, understanding and purchase by mining companies of the most relevant digital solutions and services, thereby helping the industry to navigate its path into Industry 4.0.

A call to action

We believe standardisation offers remarkable advantages. We also believe it is inevitable, as regulations tighten, and society requires greater accountability from its industrial companies. The question is this: as an industry, do we want to be in the driver's seat of this change and be a part of defining how our industry moved forward? If we do, the time to act is now.

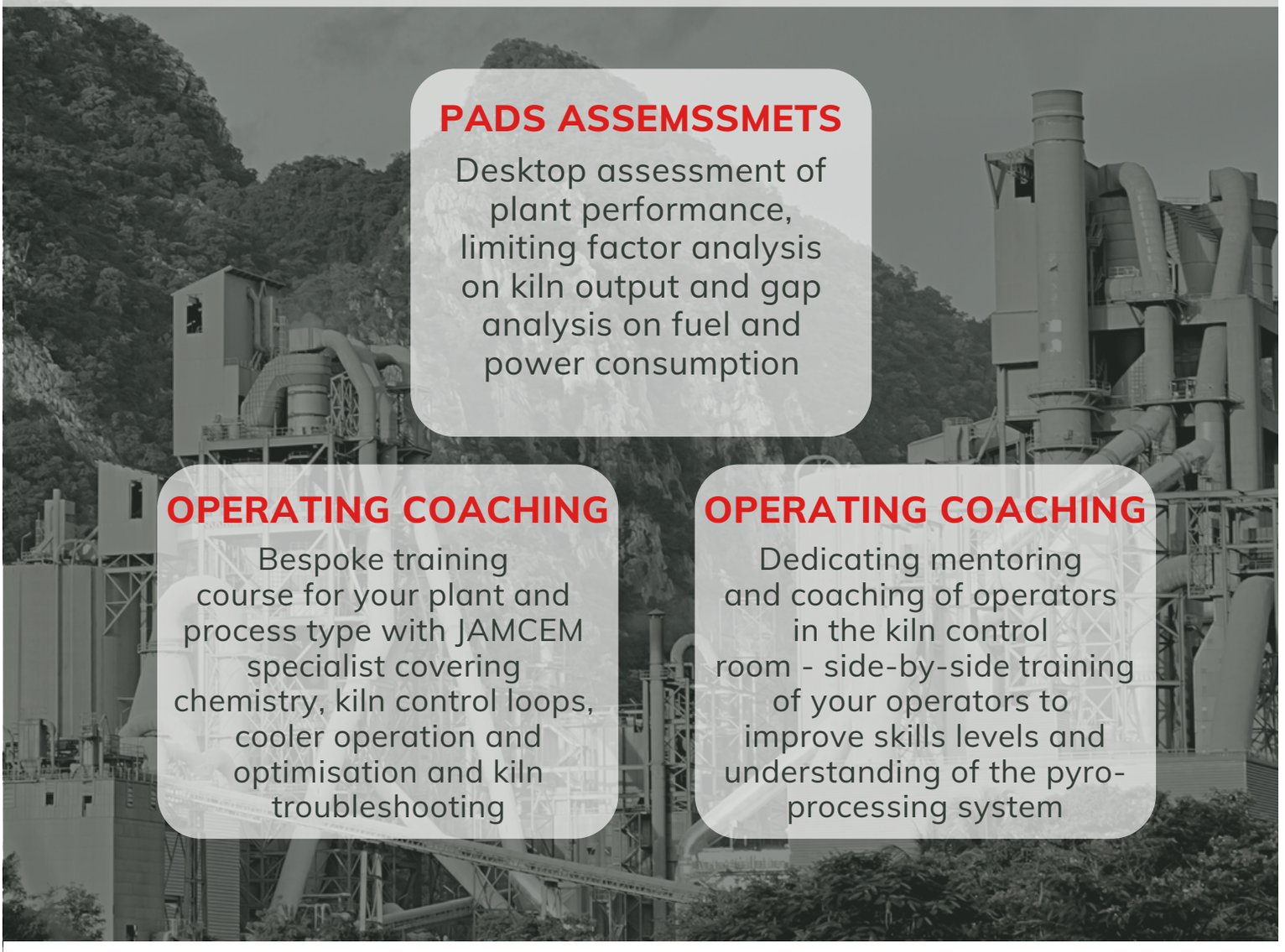
Learning from examples: NAMUR and the VDMA

- NAMUR – the User Association of Automation Technology in Process Industries – produces standards that include neutral and functional descriptions to support the integration of machine control into overall control systems.
- VDMA brings OEMs and users together to define standards for equipment, including digital blueprints that standardise the interface to the machine and use standard protocols, such as OPC-UA, for communication between machine control and overall control systems.

JAMCEM CONSULTING

KILN OPERATIONS OPTIMISATION

Kiln operators have one of the most important jobs on a cement plant and one where their actions can have a real-time impact on the profit and loss of the plant. They affect the kiln output, fuel and power consumption, clinker quality, plant emissions and the life of the refractory. But cement plant owners rarely invest in training, development and coaching of their operators to improve profits – JAMCEM can provide these services with its systems and kiln master burner services



PADS ASSEMSSMETS

Desktop assessment of plant performance, limiting factor analysis on kiln output and gap analysis on fuel and power consumption

OPERATING COACHING

Bespoke training course for your plant and process type with JAMCEM specialist covering chemistry, kiln control loops, cooler operation and optimisation and kiln troubleshooting

OPERATING COACHING

Dedicating mentoring and coaching of operators in the kiln control room - side-by-side training of your operators to improve skills levels and understanding of the pyro-processing system

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Shutdown planning strategy

Mark Mutter – Managing Director and Steve Lock – Senior Reliability Engineer

Introduction

The planning of the annual repair on a cement plant should in our opinion be treated just like any other major project that is undertaken. The annual spend on the shutdown will often be a great deal more than many of the capital projects that are on-going at the plant and is often more than 50% of the annual maintenance budget. In addition, the shutdown itself is much more complex, with work spread over many different areas of the plant, requiring the use of significant external labour, with tasks that are interdependent and which will determine the overall length of the stop for the critical path work. Within this article we have explained some of the key features that should be incorporated into the shutdown planning strategy.

Timescale

The planning of the subsequent shutdown should start once the shutdown in the current year has been completed. During the shutdown, not only should the work be completed to return equipment back to condition to allow it to run for another year, but the plant personnel should take advantage of the equipment being stopped to internally inspect equipment which would normally be inaccessible. The condition of the equipment can then be compared to internally inspect equipment to evaluate major works for the following year.

Whilst it might seem excessive to spend a whole year planning the shutdown, it will allow the work to be planned in a methodical manner – work can always be added or removed through the year but starting early allows the plant to identify the longest jobs; the proposed length of the stop can then be communicated well in advance to the production department so that the date and duration of the stop can be agreed. This communication at an early stage is critical as the production/sales department may suggest that the stop has to be completed in a certain number of days to meet demand, which may also influence decisions that are taken in the shutdown planning as to what can be done, how much time is available, whether certain jobs are on day-working only or 24 hour working etc.

Starting the planning process early will also give more time to develop the key elements related to the external labour/contractors who work on the various shutdown jobs.

Inspections

Whilst the shutdown provides valuable information into the internal condition of the equipment, regular inspections should be carried out on the equipment whilst it is operating during the year. These inspections – when recorded in the plant Maintenance Management System (MMS) – will build up a history of the equipment/part and then a judgement can be made on whether the part needs to be changed. In this way the replacement strategy can be moved from a time-basis to a condition basis.

The continued inspections will also allow the plant to either add or remove jobs from the shutdown plan throughout the year as required. It is also important to use other methods of non-invasive inspections such as vibration analysis and in particular oil analysis in advance of the stop to give as much feedback on equipment condition.

Scope of work

Starting the shutdown planning early allows sufficient time for clear and concise scopes of work to be developed by the plant engineering teams to be sent to the various external contractors. This will also allow contractors to visit the site, fully understand the required scope and ensure that there is limited opportunity for change-orders and increased costs to be added once the work is underway. Finally, it will also give the Procurement Department sufficient time to complete like-for-like comparisons of the offers and get the best deal for the business.

As mentioned, the scope needs to be clear for the contractors in the Request for Quotation. Phrases such as "if required", "inspect if necessary", "replace if necessary" etc must be avoided; all of these are an invitation to the contractor to include extra time and resources in their offer. We would also suggest that inspections should as far as possible be completed before the stop as opposed to during the stop and should be completed by the company as opposed to an external contractor. Finally, there should be no request for the contractor to include "supplemental" hours to cover unforeseen work in their bids – there is no doubt that these hours will be used if they are included in the offer.

One of the ways that the quality of the scope of work can be improved is to build up a database of how long each job takes. This is normally done by monitoring the time taken for jobs to be completed in the shutdown and then recording the time of the job in the MMS. Then, when the next scope of work is written, the plant can specify the time that the job is expected to take – or at least to use this information to compare the technical offers from the contractors.

One final and extremely important aspect of starting the planning early is to ensure that the best contractors can be reserved as early as possible; this is particularly relevant in countries where there are multiple cement plants that are all planning their shutdowns at a similar time or in countries where resources are limited and contractors cover other industries as well as the cement industry.

Supervision

One key element of the shutdown that requires additional resources from the cement plant is that of supervision of contractors, issuing of work permits (which can delay the start of a job, and which can have an impact all the way through the shutdown if related to the critical path work), safety briefings and on-going safety visits around the plant. One method of filling this resource gap is to consider bringing in resources from other sites (if there are any within the company) or bringing back former employees of the company who have recently retired. These additional resources can be used on non-key tasks and allow the employees of the plant to complete the required key tasks such as issuing permits.

Kiln start-up and Shutdown review

When it comes towards the end of the shutdown, the plant needs to ready itself for the start-up of the kiln. The plant should have a formal "Pre-start checklist", covering all items that need to be in place to ensure that the kiln can start up smoothly – repeated failed start-ups can damage refractory the kiln and can have consequences throughout the whole campaign. It is also essential to have the right people on site for the start-up from all different disciplines – mechanical, electrical and process control and production. Any issues that need to be corrected in the start-up can be quickly corrected as opposed to having to call out the resource in the middle of the night as the plant is trying to start-up.

The shutdown isn't over once the kiln is started and production is resumed; a key element of the shutdown is the post shutdown review – similar to the post capital review that would be expected after a major project. The review should cover aspects such as the cost of the stop, over-runs in the jobs, equipment condition once stopped, what went well and what didn't in terms of resources and planning and the performance of contractors.

The shutdown review must include any difficulties and challenges that were experienced when starting up the plant so that these can be avoided in the future – difficulties in restarting the kiln are still part of the shutdown.

The review should also include all departments from the plant including Production and Procurement. In the case of Production, they will have completed their inspections in the kiln, cooler and mills and will be able to feed back their information for the plant to run efficiently and their requirements for the future – especially when there may be a long lead time for parts such as vortex finders or specialist grate plates.

Conclusion

The annual shutdown should be considered to be just one element of the continual improvement of the reliability of a cement plant. Therefore the process of planning the major repair is a continual process through the year as opposed to something to plan a few months before the event. Continual planning and preparation will lead to not only a more efficient but also a more cost effective shutdown.

Article based on the "EU ETS & Cement – Enter the Phase IV" report to be published by CemBR in February 2022. This article appeared in the Global Cement portal.

EU ETS Phase IV: How the overall free allowances for part 1 of phase IV compare with Phase III? What might the cost of carbon be to the industry?

By: Cement Business Research CemBR, UK

CO_2 reduction initiatives have been in the forefront of most of the major cement manufacturers for several years. This is natural, as our industry is responsible for 7-8% of global emissions. Indeed, it is one of the most CO_2-intensive industries in the world. It has rightly attracted a lot of attention.

Currently, the only meaningful carbon reduction framework is the EU ETS (and recently the UK ETS). In January 2021 the EU ETS entered its Phase IV. The combination of the onset of Phase IV and the increased level of CO_2 pricing is beginning to influence a large part of cement manufacturers' strategies.

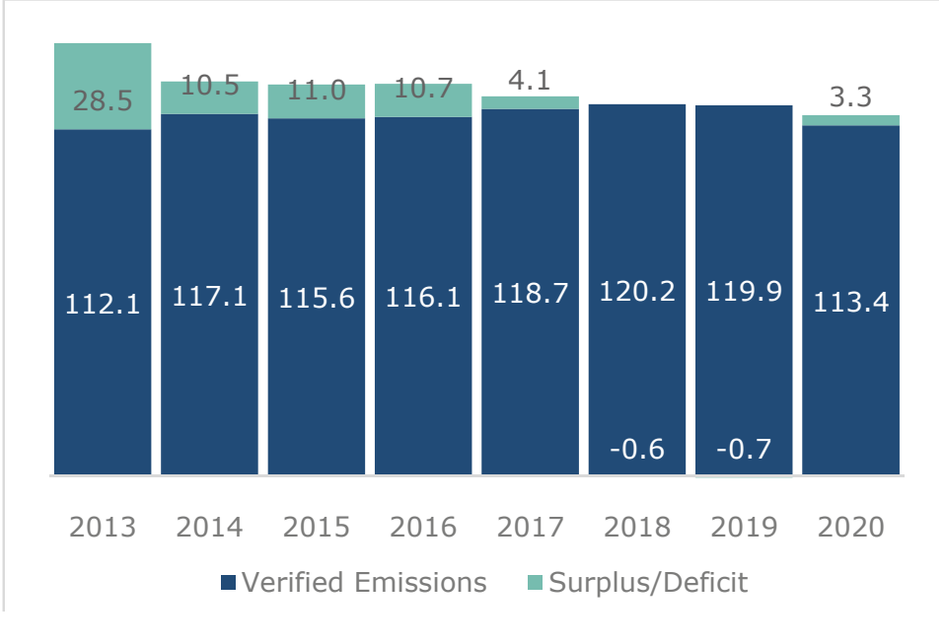
CemBR published its first report on carbon and cement in October 2019. It is now working on the follow up to the original report. The EU ETS & Cement – Enter the Phase IV report is scheduled to be published in February 2022.

This article is the first of three that CemBR will publish to provide data, insights and analysis based on the report. It concerns the changes to free allowances and the resultant implications for the entire European cement industry. The second and third articles will look at implications for individual markets within the EU ETS and at the forthcoming Carbon Border Adjustment Mechanism (CBAM).

What happened in Phase III?

The increasingly stringent requirements of the EU ETS system have started to show their effect already from Phase III, when in two instances (2018 and 2019) the bloc produced more carbon than they received in free allowances (Figure 1). The Covid-19 pandemic caused clinker production to fall in 2020, allowing the system to return to a surplus during that year.

Figure 1: EU ETS Emissions (Mt of CO_2) – 2013 - 2020

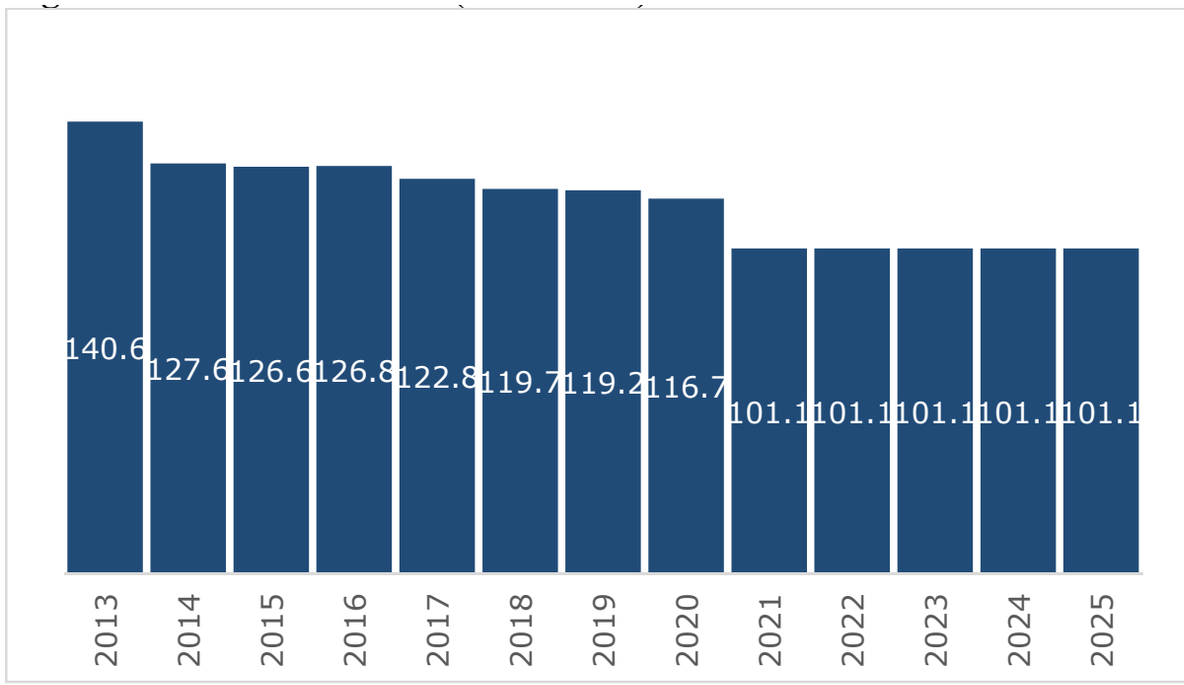


Source: CemBR Research and Analysis

In 2021 all clinker plants within the EU ETS (and UK ETS) received carbon allowances that are in total 13% lower than 2020. These allowances will only change between 2022 and 2025 if there is an adjustment in accordance to the Phase IV rules. There is no benchmark reduction until 2025.

For the period between 2021 and 2025 the total carbon free allowances for the operational clinker plants in Europe (and the UK) are in the order of 101.1 Mt. At the same time, CO_2 prices were Euro53.70/t on average in 2021 and Euro80/t at the beginning of 2022 (UK ETS prices are slightly different).

Figure 2: Free Allowances (Mt of CO_2) - 2013 - 2025



Source: CemBR Research and Analysis

What does this mean for the industry?

If European cement manufacturers choose to curtail production to a level that no further CO_2 purchases are required would mean that in 2021 the industry would have produced around 125.7 Mt of clinker. The same volumes would have to be produced in 2022. This production would have led to a clinker capacity utilisation rate of 63.2%.

However, clinker production in 2020 was 140.7Mt. This resulted in a clinker capacity utilisation rate of around 70%. So, to avoid purchasing any further carbon credits, the industry would have to drop utilisation rates from 70% to 63%. This would not be distributed uniformly across all countries and all plants in Europe. The report provides details on a plant-by-plant basis examining the differences between all operational plants in Europe.

Costs and impact of Phase IV

Realistically, one cannot expect the industry to reduce clinker utilisation rates by such a large margin between 2020 and 2021/2022. Unless the industry accelerates closures of several plants. So, another, perhaps more realistic scenario would be that the industry continues to produce at 2020 levels. In this case, there is a significant cost

Table 1: CO_2 costs under Phase IV in 2021 and 2022		
Indicator	**2021**	**2022**
Production at 70% Utilisation Rate (Mt)	**145.3**	**145.3**
CO_2 Permit Price (Euro/t)	**53.7**	**80.0**
CO_2 Cost for Production 70% Utilisation Rate (Millions of Euro)	**870**	**1,290**
Source: CemBR Research and Analysis		

associated with purchasing further carbon credits.
NB: This assumes that there will be no adjustments when the 2020/2021 re-evaluations take place. This is not an unrealistic assumption as the industry has already adjusted its 2021 allowances using the 2019/2020 production figures. The report details all the 2021 adjustments within the EU ETS.

Under this scenario, and in order to recover these costs the industry as a whole would have to increase cement prices on the total volumes of sales. Some of the countries would have to implement price increases in some cases above Euro10/t of cement in 2022 compared to 2020.

There are two fundamental observations here. The first is that these price increases only recover the carbon costs, but do not maintain the industry margins. In other words, the industry would need a higher price increase to be able to maintain margins (everything else being equal). Secondly, the carbon costs and the potential price increases will be different both between countries and between plants. A detailed analysis on required price increases by country is presented in the report.

Every plant in Europe will have to define its own strategy regarding carbon costs, but some plants are better positioned than others in terms of free carbon allowances and their ability to produce clinker at higher levels. The sum of the plants' strategies will then define the country picture as we move further into Phase IV.

The report was published in February 2022, it contains 170 pages and addresses 31 countries and 201 operational cement plants.

https://cembrgroup.com/product/eu-ets-cement-enter-the-phase-iv/

Topic sustainability in the cement industry thanks to AirScrape

Once the dust settles: Cement plants develop sustainable concepts with Scrapetec innovations

Downtime, cleaning costs, maintenance, wear and tear of materials or health risks for employees - the cost factors relating to the transfer points to conveyor systems are not unknown, but usually go unnoticed. Whether in mining, in the production of gypsum products or cement. As a result of the cooperation with ScrapeTec, cement plants in Germany have now increasingly discovered the special sustainable effect of the new conveyor skirting for chutes. Manufacturer ScrapeTec does a kind of persuasion with this innovation.

In the first step, usually 1-2 transfer points on the customer's system are equipped with the new non-contact side-sealing. Then comes the work on the fly. The AirScrape side sealing is usually convincing at first glance, because of the clean working method without dust, spill and maintenance compared to conventionally equipped transfer points. And after 3 months at the latest, the investment has already paid for itself because of the eliminated cleaning and maintenance costs.

In this way, system operators can be convinced that sustainable work can also be implemented easily and efficiently on conveyor systems - thanks to the innovative solutions from ScrapeTec, which, in addition to the AirScrape conveyor skirting, offer even more products for the transfer point in order to work more sustainably.

For more information:
Scrapetec Trading GmbH
www.scrapetec-trading.com

"BULKINSPECTOR" ensures process safety

Precise measurement of the (skeletal) density of bulk materials and other solids to determine the correct parameters for production or further processing still represents a challenge for personnel and technology. At the same time, the degree of precision in determining this data often affects the profitability of the process, especially with small quantities and expensive materials, since too much rejects already entail high costs when processing starts.

German company SIEBTECHNIK TEMA has now addressed this problem with the development of a unique gas pycnometer that fully automatically measures the volume and mass of a solid with highest precision. The innovative "BULKINSPECTOR" provides the kind of safety in process preparation that is needed for trouble-free production and further processing.

In addition to its high precision, the "BULKINSPECTOR" is primarily characterised by the fact that it measures both the mass and volume of the solid fully automatically. Unlike older pycnometers, the sample is inserted into the measuring cell by means of a sample-handling device instead of old-fashioned manual filling. Using a sample magazine, even various substances can be analysed in a very short time and without any human intervention.

After calculating the density from the parameters volume and mass in the "BULKINSPECTOR", the handling device removes the respective measuring cup and transports it to the integrated emptying device, where the cup is cleaned using compressed air. After that, it is ready to receive the next sample. Since the volumes of the measuring cups and the samples must match each other for precise measurement, the fully automatic gas pycnometer works with a selection of different measuring cups with predefined volumes, which are kept in parking positions inside the device.

The interior of the insulated system housing is covered with Peltier elements and can be heated or cooled as required to keep the temperature of the material constant for the measurement. In addition to the integration of further technical features, such as a sophisticated automatic calibration facility, the SIEBTECHNIK TEMA engineers paid particular attention to reproducible measured data with low standard deviation when designing the "BULKINSPECTOR", both with regard to the mechanical measuring structure and the selection of the sensors.

Operation of the device is also state-of-the-art and is carried out via a supplied tablet on which an app integrates the user into the settings of the "BULKINSPECTOR" by means of a user-friendly interface. This interface can be used, for example, to make the basic settings of the device, to set individual recipes for different samples or to manage measurement protocols and output them via WLAN. In addition, the control system supports the division into password-protected operator levels and the on-demand request for required spare and wear parts directly from the manufacturer.

The new "BULKINSPECTOR" from SIEBTECHNIK TEMA represents the latest state of the art technology in the field of solid density measurement, which is probably soon to become the global standard.

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

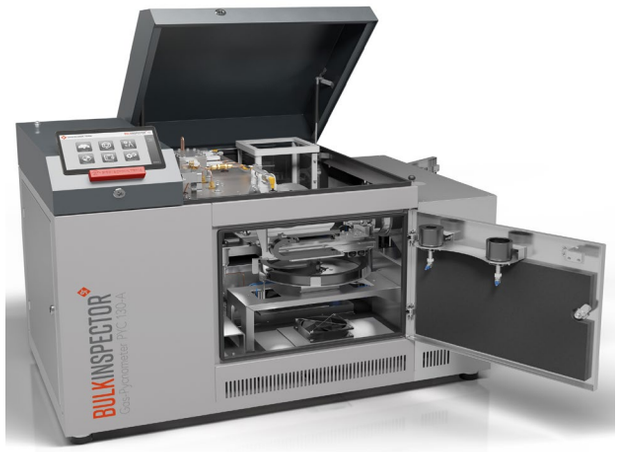


Fig. 1: The "BULKINSPECTOR" enables automated, precise measurement of the skeletal density of bulk materials for the first time.

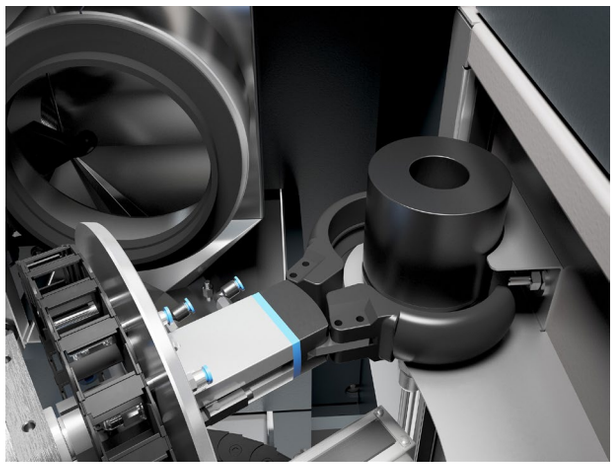


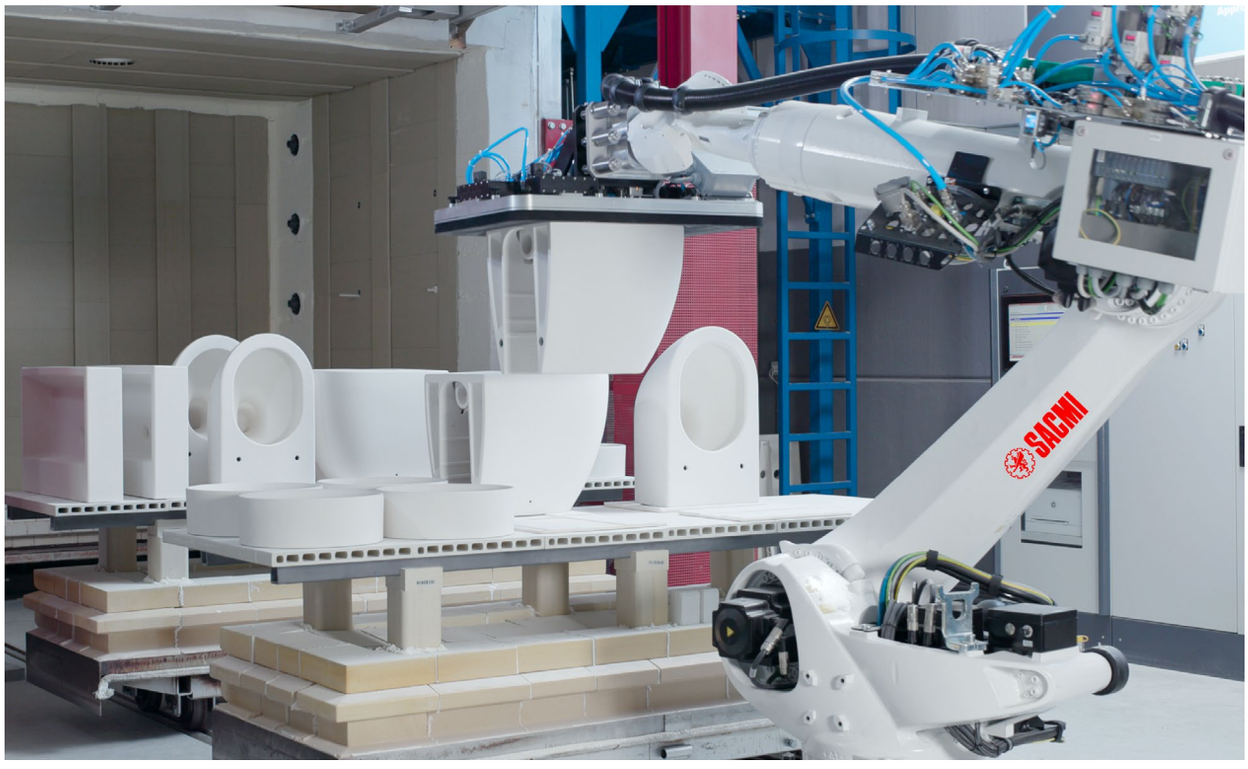
Fig. 2: An integrated sample-handling device replaces the manual filling of the measuring cups.

Fig. 3: The measuring cups are also cleaned automatically.

Fig. 4: Automatic density measurement directly from a downpipe is highly effective and only possible using the "BULKINSPECTOR".

Fig. 5: The control of the SIEBTECHNIK TEMA system was designed to be particularly intuitive.

SACMI RobotLoad: the latest milestone in sanitaryware automation



The latest generation solution designed to control operations usually still reliant on manual handling and operator experience. Producing important results both for operator safety and product quality.

Technological developments have led to increased automation throughout most production stages of the sanitaryware industry, from casting to glazing, to piece handling. Among the first to introduce robotics into the sector, back in the nineties, SACMI today is pleased to present RobotLoad, a technology which can be applied to those operations which even today, despite widespread adoption of automatic systems, are still carried out entirely or mainly by hand.

Developed at SACMI's R&D centre in Imola, RobotLoad is the automatic solution for loading and unloading sanitaryware in and out of kiln cars. Still today these operations are usually performed manually by workers who have to handle heavy pieces at high temperatures with all the consequent risks for the health & safety of the operator and for the quality of the product, that can be damaged due to frequent manual handling.

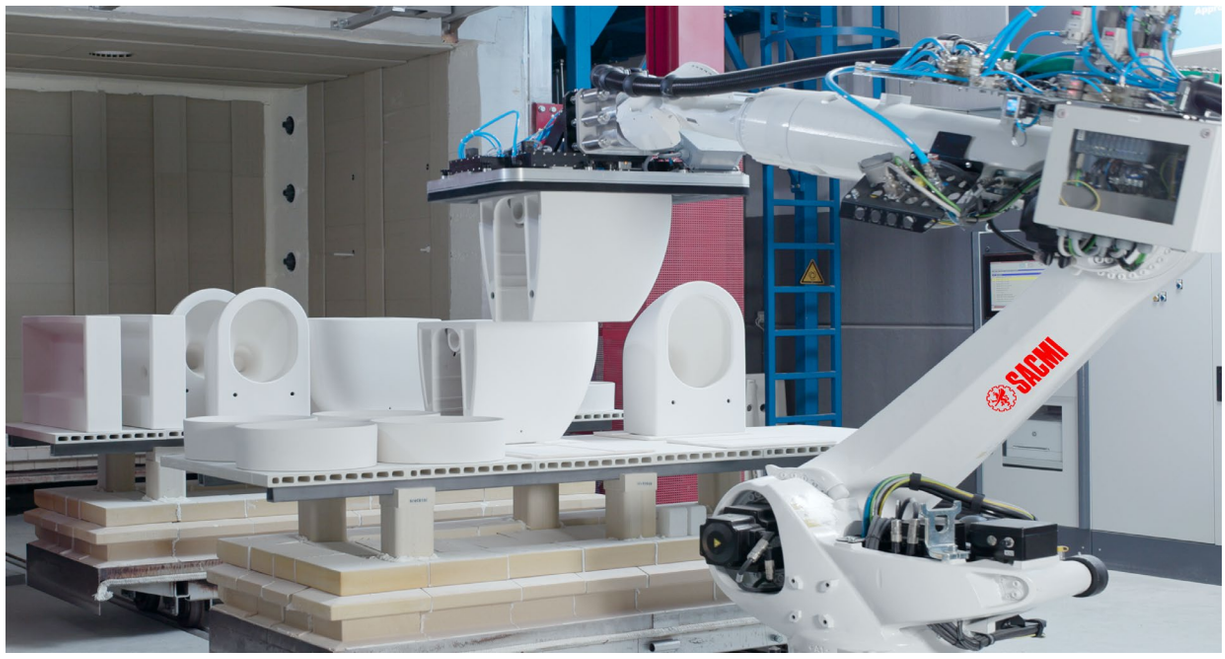
RobotLoad therefore introduces smart automation of all kiln car loading and unloading operations using newly designed technologies and tools. Thanks to special vision systems, RobotLoad is able to recognize the positions and models of the sanitaryware pieces to be handled, thus optimizing operations. The actual piece handling operation is then carried out by a universal "suction" tool, installed on the side of the robot, which is extremely versatile and suitable for handling many different piece models and sizes.

A further activity developed by SACMI's R&D centre involves the handling of supports (ceramic plates and expanded polystyrene sheets). Automatic control has been applied to these operations too, whilst maintaining versatility according to the type of kiln (tunnel, shuttle, roller) to be loaded/unloaded and with personalized solutions based on the specific set-up of the customer's production plant.

In addition to the mechanical parts and tools, RobotLoad is also provided with innovative software, the result of years of research by the SACMI Sanitaryware team, such as "Smart Positioning Software" and the "Smart Vision System". The first of these serves to optimize the positioning of pieces on board the car, which was previously carried out only by hand and was reliant on operator experience. The second system is used for on-board control of the position of the sanitaryware pieces and their model so as to optimize the robot missions for unloading and pick-up under different conditions.

www.sacmi.com

ROBOTCLEAN: FINISHING AUTOMATION FOR A CLEAN AND HEALTHY WORKPLACE PLUS BETTER QUALITY



The solution for compliance with health & safety standards through full automation of the finishing stages to ensure excellent appearance and perceived quality of the finished product at the same time.

A clean and healthy workplace is an essential requirement of the modern sanitaryware industry. Furthermore, recent health & safety standards consider crystalline silica dust among the agents carrying a "risk of carcinogenic exposure".

This is why SACMI has developed RobotClean, a solution ensuring the complete safety of all those operations commonly referred to as "sanitaryware white finishing" which are currently usually performed manually meaning the operator has to work in contact with potentially harmful substances. This has meant that, up to now, companies have needed to provide special protective gear for the operators and make continuous checks on the efficiency of the suction systems.

Specially developed to faithfully reproduce the operations carried out by hand by the worker, RobotClean's tools make possible integrated control of compensation of the forces applied to the piece, with various solutions and programs carefully designed to ensure finishing of different pieces and their different parts (exterior, interior, rim and underim of WC bowls etc.).

Equipped with special abrasive elements as well as blowing and suction parts to keep the work area clean at all times – in addition to suitable filters to avoid any contamination of the surrounding environment – these tools make it possible to check the final quality of finishing with absolute precision and accuracy. This is a vital factor, in addition to the safety considerations, as concerns perceived quality of the finished product given the importance of finishing in determining the final appearance.

As with the full range of SACMI robotized solutions for sanitaryware, the distinguishing feature is the configurability of the solution, conceived to handle all the different production requirements of the sector, from the varying casting technologies to the type of mould used. These solutions make versatility a priority – a single robot can handle the complete range of finishing operations on any kind of article – but different finishing robots can also be provided positioned one after the other to maximize production capacity eliminating all tool changeover operations.

Fast and intuitive, the RobotClean technology includes dedicated programming software, which can be used to simulate in detail the various movements and operations of the robot optimizing performance. These operations can be carried out off line, without affecting normal operations of the plant.

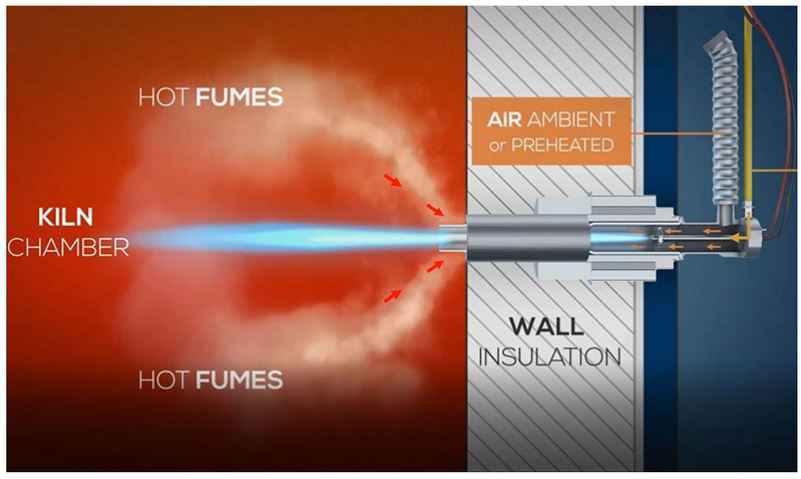
www.sacmi.com

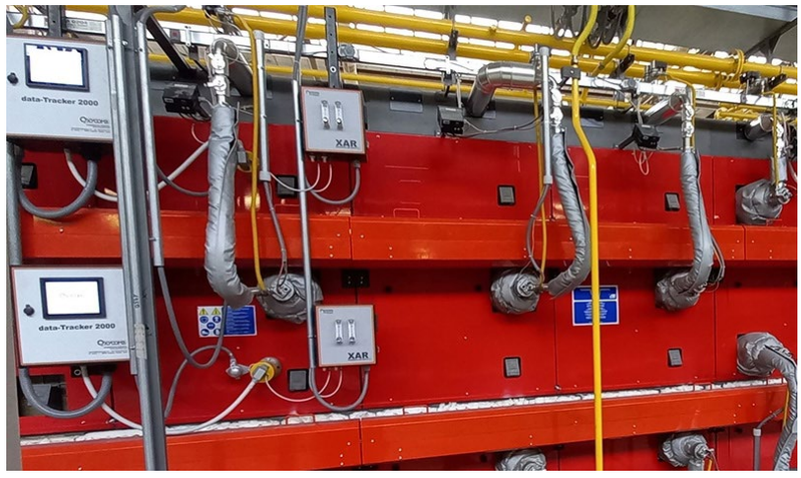
SITI B&T to develop hydrogen-powered kilns within three years

The group's research efforts ahead of the energy transition aim to improve kiln efficiency, combining significant immediate energy savings with the replacement of fossil fuels by 2024

SITI B&T Group is stepping up its research efforts with a focus on new hydrogen-based technologies to help ceramic producers embrace the energy transition.

After making all its kilns hydrogen ready, in 2021 SITI B&T took a further step forward with the launch of a research project to develop kilns powered by a mixture of traditional fuels and hydrogen. The company's ambitious goal is to develop eco-friendly carbon-free firing technology within the next three years so as to further reduce the use of fossil fuels and cut atmospheric emissions.





In the meantime, soaring natural gas prices have made it vital for ceramic producers to reduce their energy consumption in the shortest possible time. For this purpose, SITI B&T offers highly energy efficient solutions such as its Titanium kilns which guarantee a more than 30% reduction in fuel consumption.

These performance levels are demonstrated by the experience of one of Europe's largest ceramic tile manufacturers, which has reported a drastic reduction in consumption and annual savings of more than €700,000 after replacing a conventional kiln with a double-channel Titanium kiln. More than 100 Titanium kilns have been installed since their launch, more than half of which are in Europe and the rest in other major world markets, primarily Brazil, Russia, Central America and Asia.

To immediately improve the efficiency of kilns currently in operation, including a number of very old models, customers can choose SITI B&T's range of Vulcan burners capable of reducing natural gas consumption by between 8% and 10%.

ЦЕМЕНТ
и его применение

CEMENT AND ITS APPLICATIONS
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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
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Tel. +7 (812) 242-11-24
E-mail: info@jcement.ru
Web: www.jcement.ru
www.petrocem.ru

Ceramic World Review updates the rankings of the world's top ceramic tile groups

Mohawk Industries, Lamosa and SCG lead the rankings. All leading groups are confirming growth forecasts this year, while 2021 rankings will see some changes in positioning due to the major acquisitions completed recently.

Ceramic World Review, in collaboration with MECS, has published the new rankings of the world's largest tile producers, ranked by output volumes to 31/12/2020, as communicated by the companies themselves (or, in a few cases, obtained from public sources or estimated).

The exceptional nature of the Covid year is reflected in the ranking. Almost all groups reported a decline in production volumes due to the plant stoppages that occurred for various lengths of time during the lockdowns in the first half of the year; this contraction was partially offset by the powerful recovery in the second half of the year, with production lines operating at maximum capacity in response to a buoyant market. The fall in production was therefore not uniform and led to changes in the positions of numerous companies (and the temporary exit of others).

Mohawk Industries, Inc. remained firmly at the top of the rankings despite the stoppages in several plants, while the Mexican Lamosa Group rose up to second place, although output decreased from 166 to 148 million sqm, climbing over Thai SCG Ceramics whose production also fell from 166 to 145 million sqm.
As said, the fall in production was not uniform but ranged from -1.5% for companies such as the Spanish STN (78.1 million sqm) and the Polish group Cersanit (53.5 million sqm) to more than -10% for the worst-hit Mexican and Brazilian groups. Only a small number of companies maintained or increased their production levels compared to 2019. Among these, Pamesa (the biggest European tile manufacturer, with an output of 82 million sqm), the UK group Victoria Plc (which continued to grow by acquisitions closing the year 2020 with an output of 42 million sqm), and the Indian producer Somany, which increased its capacity by 18% and production by 14%.

As demonstrated by the revenue trend, the decline in production was not accompanied by a similar drop in sales. Many companies cleared out their warehouses to meet demand, in some cases encountering issues of insufficient inventory due to prolonged lockdowns; in others, managing to maintain similar or higher levels of sales to the previous year.

As for the year 2021, all groups have maintained their growth forecasts in terms of production and sales, as anticipated in many half year reports. For example, the Global Ceramics division of Mohawk Industries, which closed the first half of 2021 with earnings of +23%; the Lamosa Group at +65%; Rak Ceramics at +41.8%; and Portobello at +70.7%.

For sure, we can expect to see biggest changes in positioning in the new 2021 rankings, which will be the result of major acquisitions by four big players this year:

- Lamosa, which will increase its production capacity to 225 million sqm with the acquisition of Roca's tile division;
- Pamesa, which has gained an additional capacity of 36 million sqm/year by acquiring the Azuliber Group;
- Victoria PLC, which acquired Colli and Santa Maria in April and has not ruled out the possibility of making further acquisitions during the current financial year;
- Grupo Halcon, whose production capacity has increased from 32 to 50 million sqm in 2021 due to the acquisition of Cicogres and the expansion of its production lines.

EU ETS & Cement – Enter the Phase IV

The European cement industry is facing heightened carbon costs to 2025 and beyond due to the EU ETS Phase IV. Several strategic questions must be addressed by the industry to maintain its profitability going forward.

According to an extensive report on the hitherto performance of the European cement industry and the impact of the Phase IV of the EU ETS (started 1st of January 2021), the industry may be facing some significant costs related to carbon emissions.

The report analysed the performance of each individual clinker producing plant in the scheme (including the UK) and has compared the end of Phase III with the beginning of Phase IV. It has also detailed the level of free allowances for part 1 of Phase IV and undertaken several analytical scenarios. The key findings of the report are as follows:

- The European cement industry has reduced its carbon emissions per tonne of clinker by a mere 0.4% CAGR to the end of Phase III
- Part 1 (2021 – 2025) of Phase IV allowances for the whole scheme (incl. the UK) are around 13% lower than the 2020 level
- Part 1 of Phase IV allowances remain unchanged for the 2021 – 2025 period, unless changes are introduced via its Adjustments system
- If the European cement industry continues to operate at the end of Phase III level, the resultant carbon related costs will be more than € 1.3 billion in 2022
- Not all member countries are in the same position vis-à-vis Phase IV. There are some that look comfortable whereas others appear exposed.
- Not all plants are in the same position vis-à-vis Phase IV, even within the same market. There is a wide range of vulnerability with regards to carbon among the 201 operational clinker producing plants.

About the report:
The report provides data, analysis, and insights that will shine a light on the carbon situation of every single member country of the EU ETS and every single plant within the scheme. Indicatively it includes:
EU ETS to the end of Phase III Phase IV – details and data Carbon pricing and CBAM
Country by country data and analysis Plant by plant data and analysis
The report will be published in February 2022. It contains more than 150 pages, and it addresses 31 countries and 201 operational plants.
https://cembrgroup.com/product/eu-ets-cement-enter-the-phase-iv/

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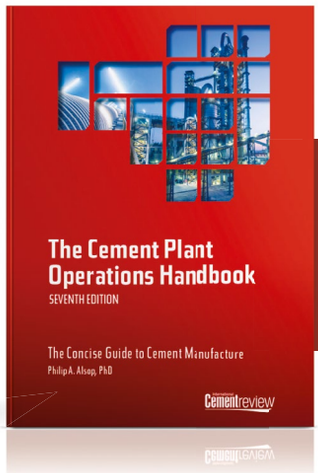

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Fax: +44 1372 743838
Email: rob@propubs.com
www.em-Boards.com

INTERCEM Shipping Americas 2022
Date : 26 - 27 April 2022
Venue: InterContinental Chicago Magnificent Mile, USA
For more information, please visit:
Tel: +44 20 8669 5222
Website: www.intercem.com

4th Edition of the Italian Concrete Days
Date : 28 - 30 April 2022
Venue: Piacenza Expo, Italy
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www.gic-expo.it

64th IEEE-IAS/PCA Cement Industry Technical Conference
Date : 01 - 05 May 2022
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Global CemProducer Conference & Exhibition on cement trade & technology
Date : 11 - 12 May 2022
Venue: Munich, Germany
For more information, please contact:
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Tel.: +44 1372 743837
Fax: +44 1372 743838
Email: rob@propubs.com
https://www.globalcement.com/conferences/cem-producer/introduction

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CBI – Cement Business and Industry Brazil and LatAm & Alternative Fuels and Raw Materials 2022
Date : TBA 2022
Venue: São Paulo, Brazil
For more information, please contact:
Email: sales@gmiforum.com / aga@gmiforum.com
Website: https://www.gmiforum.com

Slag & AshTrade Europe 2022
Date : 18 - 19 May 2022
Venue: Cologne, Germany
For more information, please contact:
Email: communication@gmiforum.com
Website: www.gmiforum.com

Cemtech Live Webinar: Bulk Material Handling for Cement Plants and Terminals
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Virtual Global CemQC 3

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Virtual Global CemProducer 5

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18 October 2022

Virtual Global CemEnergy 3

Conventional fuels for cement and lime

24 May 2022

20th Global Gypsum/ 15th Insulation Conference

2-3 November 2022, Estoril/Lisbon

Virtual Global CemCCUS

Carbon capture, use and storage for cement and lime

14 June 2022

3rd Global FutureCem Conference

16-17 November 2022, Brussels

Virtual Global CemPower 2

Electrical generation and efficiency

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Virtual Middle Eastern Cement 3

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Virtual European Cement 2

Market trends and technology in Europe

6 December 2022

15th Global CemFuels Conference

14-15 September 2022, Lisbon

Virtual Global Ash 3

Ash for cement and concrete

13 December 2022

Virtual African Cement 2

Market trends and technology in Africa

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Check website for latest details

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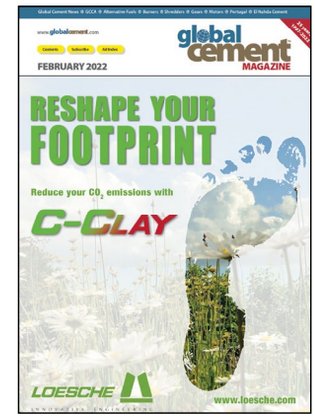

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PetroCem 2022
Date : 24 - 26 April 2022
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Venue: Piacenza Expo, Italy
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Date : 01 - 05 May 2022
Venue: Las Vegas, Nevada, USA
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CBI – Cement Business and Industry Brazil and LatAm & Alternative Fuels and Raw Materials 2022
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Website: https://www.gmiforum.com

Slag & AshTrade Europe 2022
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Venue: Cologne, Germany
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Virtual Global CemEnergy 3
Date : 24th May 2022
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www.CementEnergy.com

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Virtual Global CemCCUS (carbon caption/use/storage for cement)
Date : 14th June 2022
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Virtual Middle Eastern Cement 3
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Cemtech Live Webinar: Clinker Reduction
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15th Global CemFuels Conference & Exhibition on alternative fuels for cement and lime 2022
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Tel.: +44 1372 743837
Fax: +44 1372 743838
Email: rob@propubs.com
website: https://www.cemfuels.com/

2nd Virtual African Cement Conference
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Email: rob@propubs.com
www.AfricanCement.com

Powtech 2022
Date : 27 - 29 September 2022
Venue: Nürnberg, Germany
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Virtual Global CemQC 3
Date : 04th October 2022
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Cemtech Live Webinar: Quality Control
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4th Virtual Global Concrete Seminar - Concrete trends & technology
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Date : 14- 15 October 2022
Venue: Bangkok, Thailand
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Virtual Global CemProducer 5: Refractories, wear, lubrication & cement plant maintenance
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16th TURKCIMENTO International Technical Seminar & Exhibition
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Turkish Cement Manufactures' Association
Email: info@turkcimento.org.tr / tekniks@turkcimento.org.tr
www.turkcimento.org.tr

CEMENT

Cemtech Live Webinar: Alternative Fuels
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20th Global Gypsum/ 15th Insulation Conference
Date : 02 - 03 November 2022
Venue: Estoril / Lisbon, Portugal
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3rd Future Cement Conference and Exhibition 2022
Date : 16 - 17 November 2022
Venue: Pullman Brussels Centre Midi Hotel, Brussels, Belgium
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Email: rob@propubs.com

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Date : March 2023
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Website: www.argusmedia.com

5th Global CemBoards Conference and Exhibition
Date : Spring 2023
Venue: Hotel Pullman Brussels Centre Midi, Place Victor Horta 1, 1060 Brussels, Belgium
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Fax: +44 1372 743838
Email: rob@propubs.com

07th American Drymix Mortar Conference - adm-mc7
Date : 08th June 2023
Venue: Toronto, Ontario, Canada
Email: info@drymix.info
Website: www.drymix.info

XXIV INTERNATIONAL CONSTRUCTION FORUM

CEMENT · CONCRETE DRY MIXTURES

NOVEMBER 29- DECEMBER 1, 2022. EXPOCENTRE, MOSCOW.

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DIARY DATES

TRAINING

Storage and Discharge of Powders and Bulk Solids
Date : 14 June 2022
Venue: Duesseldorf, Germany
Online: 4 - 8 April 2022
The course will run online over 5 sessions from 9am to 12pm each day. Each session needs to be attended to complete the course.

On campus: 26 - 27 April 2022; 9am - 5pm

Practical workshop: 28 April 2022 - open to delegates from the online course and attendees on campus

Course Fee
Online: £675 per delegate.
On campus: £825 per delegate (this fee includes all refreshments and lunch through the day as well as an evening meal on the first night of the course)

Practical workshop: £435 per delegate

For more information, please visit: https: **//www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/sdop#**

Wear of Refractory Materials
Date : 14 June 2022
Venue: Duesseldorf, Germany
Email: training@vdz-online.de
For more information, please visit:
https://www.vdz-online.de

Installation of Refractory Materials
Date : 15 - 16 June 2022
Venue: Duesseldorf, Germany
Email: training@vdz-online.de
For more information, please visit:
https://www.vdz-online.de

Online Course - Firing Alternative Fuels: Opportunities, impacts on process, optimisation and limitations
Date : 05 - 08 September 2022
Venue: Your device
Email: training@vdz-online.de
For more information, please visit:
https://www.vdz-online.de

CERAMIC

CERAMIC

CEVISAMA – International Ceramics & Bathroom Experience
Date : 13 - 17 June 2022
Venue: Valencia Fair, Spain
For more information, please visit:
https://cevisama.feriavalencia.com

Uniceramics Expo 2022
Date : 20 - 24 July 2022
Venue: Foshan, China
Tel: +86 18566021320
For more information, please visit:
uniceramicsexpo.com

27th Tecna 2022
Date : 27 - 30 September 2022
Venue: Rimini Expo Centre, Italy
Tel: +39 0541 744111

Fax: +39 0541 744200
Email: segreteria@tecnargilla.it
https://en.tecnaexpo.com/

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Firing Alternative Fuels: Opportunities, impacts on process, optimisation and limitations
28 – 31 March 2022
5 – 8 September 2022

In-class Training

Crash Course Process Control
14 – 16 February 2022

Energy Balances and Efficiency
7 – 10 March 2022

Wear of Refractory Materials
14 June 2022

Installation of Refractory Materials
15 – 16 June 2022

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training@vdz-online.de

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Germany

DIARY DATES

GENERAL

IFAT 2022
World's Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management
Date : 30 May - 03 June 2022
Venue: Munich, Germany
For more information, please contact:
Messe München GmbH
Tel.: +49 89 94920720
Fax: +49 89 94920729
Email: info@messe-muenchen.de
www.ifat.de/en/

Hillhead 2022
Date : 21 - 23 June 2022
Venue: Hillhead Quarry, Buxton, Derbyshire, UK
For more information, please contact:
Email: hillhead@qmj.co.uk
www.hillhead.com

Slope Engineering Summit
Date : 22 - 23 June 2022
Venue: Kuala Lumpur, Malaysia
For more information, please contact:
John Karras
Tel.: +603 2775 0067
Email: johnk@trueventus.com

10th Annual Modular & Prefabrication Construction
Date : 27 - 28 July 2022
Venue: Marriott Hotel, Singapore
For more information, please contact:
John Karras
Tel.: +603 2775 0067
Email: johnk@trueventus.com

World Cities 2022
Date : 31 July - 03 August 2022
Venue: Sands Expo & Convention Centre, Singapore
For more information, please contact organizers at:
Email: info@worldcities.com.sg
Website: www.worldcitiessummit.com.sg

ACHEMA 2022
Date : 22 - 26 August 2022
Venue: Frankfurt, Germany
For more information, please visit:
www.achema.de

5th International Drilling Congress and Exhibition of Turkey
Date : 27 - 28 October 2022
Venue: Izmir, Turkey
For more information, please visit:
www.sondaj.org.tr

European Coatings Show
Date : 28 - 30 March 2023
Venue: Nürnberg, Germany
For more information, please visit:
https://www.european-coatings-show.com/

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interpack Düsseldorf
Date : 04 - 10 May 2023
Venue: Düsseldorf Trade Fair Centre, Germany
For more information, please visit:
www.interpack.com

عالم الإسمنت ومواد البناء

تصدرعن : الاتحاد العربي للإسمنت ومواد البناء العدد 87 مارس / آذار 2022

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- منتجات جديدة
- مؤتمرات ومعارض

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For more information, please contact

Eng. Ahmad Al-Rousan, AUCBM Secretary General

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Email: aucbm@scs-net.org / aucbm1977@gmail.com
Please visit our website http://www.aucbm.net


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

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Website : www.aucbm.net

المحتويات

المراسلات

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

مجلة عالم الإسمنت ومواد البناء

جدول موضوعات المجلة لعام 2022

العدد	الموضوعات	المناسبات
يونيو/حزيران 2022	* التعبئة والتغليف * أنظمة التحميل / التفريغ والتخزين * حلول النقل * تكنولوجيا التغذية * سيور الرافعات الدلوية * مناولة المواد في مصانع الإسمنت والمحاجر والمحطات والموانئ * القباب والصوامع والنقل * الحماية من التآكل * التروس والمحركات والتزييت * أنظمة الحماية من الحريق * إجراءات الصيانة * الحراريات * تأهيل المحاجر * تنظيف الصوامع * المرشحات وإزالة الغبار	
سبتمبر/أيلول 2022	* المبردات * المراوح * مدافع الهواء * الصحة والسلامة المهنية * تكنولوجيا الطحن * الطواحين العمودية * زيادة إنتاج مطحنة الإسمنت * التكسير * مساعدات الطحن والطحن * استعادة الحرارة المفقودة * التصوير الحراري * إعادة التدوير الحراري * طرق معالجة واستخدام غبار الممر الجانبي * الحماية من الانفجار في صوامع تخزين الوقود البديل * أنظمة مناولة الوقود البديل * إنتاج واستخدام الوقود الصلب المستعاد	المؤتمر والمعرض العربي الدولي الخامس والعشرون لصناعة الإسمنت: الرياض / المملكة العربية السعودية 2022
ديسمبر/كانون أول 2022	* تصنيع الإسمنت الأبيض * الإسمنت المخلوط * الإسمنت متعدد المكونات * إسمنت الخبث * إنتاج الإسمنت الأخضر * خلائط الإسمنت * مضافات الإسمنت * مكونات الإسمنت * كيمياء الإسمنت * الإسمنت الخالي من الكربون	

	* إنتاج الكلنكر منخفض الكربون * المواد الخام لمضافات الإسمنت * إدارة الإمدادات * إنتاج الإسمنت بطاقة منخفضة * توكيد الجودة ومراقبة العمليات في مصانع الإسمنت * توفير تكلفة إنتاج الإسمنت	

آخر موعد لاستلام المقالات أو النصوص الصحفية أو الإعلانات لأعداد عام 2022 هو على النحو التالي :

1. عدد يونيو / حزيران : **30 مايو / أيار** 2022
2. عدد سبتمبر / أيلول (عدد خاص) : **31 أغسطس / آب** 2022
3. عدد ديسمبر / كانون أول : **5 ديسمبر / كانون أول** 2022

الإعلانات

(بالدولار الأمريكي)

	الإعلان في عدد واحد	الإعلان في عددين	الإعلان في ثلاثة أعداد	الإعلان في أربعة أعداد
غلاف خارجي ملون (يمين أو يسار) A4	**1,250**	*	*	*
غلاف داخلي ملون (يمين أو يسار) A4	**950**	*	*	*
صفحة داخلية ملونة A4	**750**	**950**	**1,250**	**1,350**
نصف صفحة داخلية ملونة A4	**450**	**550**	**650**	**750**
ربع صفحة داخلية ملونة A4	**300**	**350**	**400**	**450**
صفحة أسود وأبيض	**300**	**350**	**400**	**450**

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

إعلان على موقع الاتحاد WWW.AUCBM.NET

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الإمارات العربية المتحدة

"أبيكس القابضة" توافق على صفقة البيع والشراء من "رأس الخيمة للاستثمار"

وافقت شركة أبيكس القابضة - التابعة للشركة العالمية القابضة والتي تستثمر في قطاعات متعددة - على صفقة بيع وشراء من شركة إسمنت رأس الخيمة للاستثمار والذي تمت الموافقة عليها من قبل أعضاء مجلس إدارتها .

وأوضحت الشركة ، أنه من خلال هذه الاتفاقية ، ستحصل شركة إسمنت رأس الخيمة للاستثمار على كامل أسهم الشركة العالمية القابضة وشيميرا للاستثمار في شركة أبيكس القابضة . وأشارت إلى الموافقة على تغيير اسم الشركة من إسمنت رأس الخيمة للاستثمار إلى شركة أبيكس للاستثمار .

جدير بالذكر أن شركة أبيكس القابضة هي شركة قابضة متنوعة الأنشطة عبر الاستثمار في قطاعات متعددة بما في ذلك خدمات التموين، وإدارة المرافق ، والبناء ؛ الصناعات ؛ تكنولوجيا المعلومات وتحليل البيانات . ولدى الشركة قاعدة كبيرة من العملاء كالشركات التجارية والصناعية وقطاع الضيافة ، مع قدرتها على التوسع في مجالات أخرى في قطاع الخدمات عند الحاجة . وتطبق الشركة أعلى معايير التكنولوجيا والسلامة والنظافة العامة ، وباستخدام أحدث أساليب الخدمات والتكنولوجيا المدعومة تقنياً ، مدعومة بخبرة واسعة في جميع مجالاتها .

المصدر: www.alroeya.com

أوراسكوم للانشاءات توافق على استحواذ 3 شركات بمبلغ 35 مليون دولار

استحوذت شركة Orascom Construction Plc على 100 % من إجمالي رأس مال الشركتين Orascom Trading and National Equipment and Orascom Free Zones – Onsi Sawiris & Partners (مشروع مشترك) . وقالت الشركة إن عملية الاستحواذ تصل إلى 35 مليون دولار ، متضمنة اتفاقية البيع والشراء وغيرها من المستندات القانونية المطلوبة .

المصدر: future-news.net

الجزائر

صادرات الإسمنت الجزائري في 2021

شهد عام 2021 تصدير 6 ملايين طن من مختلف أنواع الإسمنت الجزائري نحو وجهات في القارات الأربع (أفريقيا وأوروبا وأمريكا وآسيا) بعائدات مالية تقدر بـ220 مليون دولار .

ويتوقع أن يحقق قطاع الإسمنت في الجزائر صادرات في 2022 تصل 10 مليون طن ، وهو رقم غير مسبوق ، في حين ينتظر أن تبلغ الصادرات ما بين 350 إلى 400 مليون دولار ، خصوصاً في ظل وجود مؤشرات قوية لارتفاع أسعار الإسمنت في السوق الدولية .

المصدر: www.echoroukonline.com

"الساورة للاسمنت" تعتزم دخول أسواق دول غرب أفريقيا في 2022

تعتزم شركة "الساورة للإسمنت" تصدير منتجاتها المختلفة نحو دول غرب أفريقيا سنة 2022 ، ويُرتقب أن تصدر الشركة في ذات السنة مختلف أنواع منتجاتها من الإسمنت انطلاقاً من مؤسسة "بن زيرق" نحو دول غرب أفريقيا .

ويتبع للشركة مصنع للإسمنت يقع بمنطقة "بن زيرق" على مساحة تفوق 100 هكتار . وتطلبت هذه المنشأة الصناعية التي دخلت حيز الإنتاج الفعلي في 2020 بقدرة مليون طن من الإسمنت استثماراً عمومياً بأكثر من 34 مليار دينار جزائري ما بين إنجاز وتجهيز .

وشرعت "الساورة للإسمنت" في سبتمبر / أيلول الماضي في صناعة منتوج جديد يتمثل في الإسمنت المقاوم للكبريتات ضمن مساعيها الرامية لتنويع منتوجاتها .

المصدر: nn-algeria.dz

لافارج الجزائر تصدر 2.5 مليون طن من الإسمنت في 2021

تمكنت مؤسسة الإسمنت لافارج الجزائر التابعة للمجمع السويسري هولسيم ، ولأول مرة ، من تجاوز عتبة مليوني طن من صادرات الإسمنت والكلنكر .

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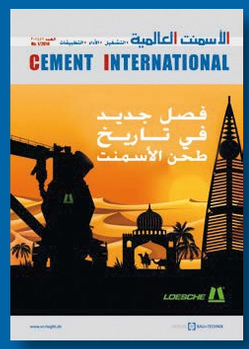

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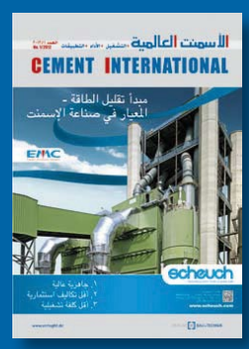

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وأكدت المؤسسة أنها حققت الكمية في أقل من 5 سنوات منذ بداية تصدير الإسمنت انطلاقاً من الجزائر ، حيث سجل عام 2021 تطوراً فاق 100 بالمائة ، مقارنة بالسنة السابقة التي بلغت نسبة الصادرات خلالها 1.2 مليون طن .

المصدر: www.elbilad.net

المملكة العربية السعودية

لأول مرة .. صادرات شركات الإسمنت تتخطى 8 مليون طن

كشف تقرير بيانات سوق الإسمنت السعودي عن تحقيق الشركات السعودية مستوى قياسي جديد من الصادرات (إسمنت وكلنكر) وصل لـ 8.2 مليون طن خلال العام 2021 بارتفاع 23 % عن العام السابق وذلك بفضل تحسن الطلب الخارجي خاصة بدول الخليج العربي السوق الأساسية لصادرات الإسمنت السعودي .

وحافظ الطلب المحلي على الإسمنت على تحسنه في العام 2021 بارتفاع 1.2 % مقارنة عن العام 2020 وذلك بإجمالي مبيعات إسمنت منتج محلي بلغ 51.9 مليون طن ارتفاعاً من نحو 51 مليون طن في العام 2020 .

وارتفع إجمالي إنتاج الشركات خلال العام 2021 إلى 53.7 مليون طن مقابل 53.4 مليون طن العام السابق بارتفاع 0.5 %. وواصل إجمالي مخزونات الكلنكر انخفاضه خلال العام 2021 ليسجل بنهاية العام نحو 35 مليون طن مقابل نحو 37 مليون طن بنهاية العام 2020 وذلك بفضل التحسن النسبي للطلب المحلي لجزء فيما كان الجزء الأكبر كنتيجة للارتفاع القوي للصادرات .

وتظهر بالبيانات أن من إجمالي 17 شركة عاملة في السوق السعودي 9 شركات منها تقوم بالتصدير ، 3 منها فقط تستحوذ على 75 % من إجمالي الصادرات وهي إسمنت السعودية ، وإسمنت ينبع وإسمنت العربية .

واستحوذت "إسمنت السعودية" على 36 % من إجمالي صادرات الإسمنت خلال العام 2021 بإجمالي كمية تقدر بنحو 3 مليون طن ، تليها "شركة إسمنت ينبع" بحصة 20 % من اجمالي الصادرات وبكمية 1.6 مليون طن . وجاءت إسمنت العربية كثالث أكبر الشركات المصدرة بإجمالي كمية 1.57 مليون طن تمثل 19 % من اجمالي صادرات السوق ، وحلت شركة إسمنت الصفوة في المركز الرابع بكمية صادرات تقدر بنحو مليون طن تشكل 12 % من اجمالي الصادرات ، ثم إسمنت المنطقة الشمالية بكمية 367 ألف طن بحصة 4 % وإسمنت الجنوب بكمية 214 ألف طن تشكل 3 % من إجمالي الصادرات .

المصدر: maaal.com

شركة إسمنت الجوف توقع اتفاقية تعاون بيئي

وقعت "شركة إسمنت الجوف" اتفاقية تعاون مع المركز الوطني لتنمية الغطاء النباتي ومكافحة التصحر ، تضمنت إعادة تأهيل الغطاء النباتي للحد من التصحر واستعادة التنوع الأحيائي في البيئات الطبيعية تماشياً مع رؤية المملكة 2030 .

المصدر: موقع الشركة

الإسمنت العربية تتوقع تأخر التشغيل التجاري لمشروع الطواحين الجديدة في مصنعها برابغ حتى الربع الرابع 2022

توقعت شركة الإسمنت العربية التشغيل التجاري لمشروع إنشاء طواحين إسمنت جديدة في مصنعها برابغ ، في الربع الرابع لعام 2022 ، بدلاً من الربع الرابع 2021 ، مؤكدة أن نسبة الإنجاز المتحقق في المشروع بلغت 99.53 % .

وقالت الشركة إنه نظراً لعدم تمكن المقاول من الحضور إلى المملكة لاستئناف العمل بالمشروع حتى تاريخه لذلك فإن التاريخ المتوقع للانتهاء من المشروع حسب إفادة المقاول شركة الصين الوطنية لمواد البناء CNBM هو الربع الثالث من العام 2022 وذلك في حال حصلت الشركة على موافقة الجهات الحكومية المعنية في الصين على سفر فريق المشروع.

وبناءً عليه سيكون التاريخ المتوقع للتشغيل التجاري هو الربع الرابع لعام 2022 ، حيث يدرس أن المقاول خيار تكليف إحدى الشركات المؤهلة لاستكمال باقي أعمال المشروع بعد الحصول على موافقة الإسمنت الإسمنت العربية.

وكانت إسمنت العربية قد وقعت في أبريل / نيسان 2015 عقداً مع شركة "CNBM" الصينية لهندسة وتوريد وإنشاء طواحين الإسمنت بكامل معداتها الميكانيكية والكهربائية لخطها الجديد برابغ ، وكذلك التصميم والإشراف على الأعمال المدنية والهياكل المعدنية والتركيبات الميكانيكية والكهربائية واختبارات بدء التشغيل ، بتكلفة قدرها 362 مليون ريال.

وتوقعت الشركة في سبتمبر 2019 الانتهاء من مشروع طواحين الإسمنت بمصنع الشركة برابغ في الربع الأول 2020 ، وبدء التشغيل التجاري خلال الربع الثاني لعام 2020 ، ولكن لنفس الأسباب الواردة أعلاه توقعت الشركة في نوفمبر / تشرين الثاني الماضي الانتهاء من المشروع والتشغيل التجاري للمشروع في الربع الثالث 2021 ، ثم توقعت في أبريل/ نيسان الماضي الانتهاء من المشروع والتشغيل التجاري للمشروع في الربع الرابع 2021 .

المصدر: www.argaam.com

إسمنت القصيم تدخل في اتفاقية مبدئية لإنشاء طاحونة

أعلنت شركة إسمنت القصيم الدخول في اتفاقية مبدئية مع شركة (CDI) الصينية لهندسة وتوريد وإنشاء طاحونة إسمنت بكامل معداتها الميكانيكية والكهربائية في مصنعها في بريدة بطاقة 300 طن/ ساعة بغرض الإحلال .

وتشمل الاتفاقية التصميم والإشراف على الأعمال المدنية والتركيبات واختبارات بدء التشغيل ، بتكلفة قدرها 152 مليون ريال ، ومدة تنفيذ 15 شهراً .

المصدر: www.alarabiya.net

إسمنت أم القرى تحصل على رخصة كشف عن خام الحجر الجيري في السعودية

كشفت شركة إسمنت أم القرى عن صدور رخصة كشف عن خام الحجر الجيري من وزارة الصناعة والثروة المعدنية السعودية . وتنتهي الرخصة في 18 ديسمبر / كانون الأول 2022 ، وتبلغ المساحة التي تشملها نحو 23.77 كم .

وستقوم الشركة بعمل الدراسات الاستكشافية اللازمة على المحجر الجديد خلال المدة النظامية للتأكد من توافر المواد الخام المطلوبة .

المصدر: sonaa-alyoum.com

قنبر للخرسانة الجاهزة تجري تجارياً على خلطة الخرسانة الخضراء

قامت شركة قنبر دويداغ للخرسانة الجاهزة الواقع مقرها في المنطقة الشرقية بإجراء أول تجربة لخلطة خرسانة محقونة بثاني أكسيد الكربون باستخدام تكنولوجيا مبتكرة من شركة كربون كيور الكندية . حيث أجرت الشركة التجربة على مستوى المصنع بأكمله للخرسانة الجاهزة التي يتم حقنها بثاني أكسيد الكربون في مدينة رأس الخير الصناعية .

وقال رئيس مجلس إدارة الشركة: "نحن نستخدم تكنولوجيا جديدة تعرف باسم كربون كيور وتتميز ببساطتها ، حيث نقوم بحقن ثاني أكسيد الكربون في شكله السائل في خلطة الخرسانة . هذه المادة تترابط مع الخلطة وتوفر بعض الخصائص الإضافية . وقد أثبتت هذه التكنولوجيا نجاحها في أمريكا الشمالية وأوروبا وأماكن أخرى من العالم" ، مؤكداً أن كمية انبعاثات الكربون التي سيتم توفيرها بسبب هذه العملية يعد هائلاً .

وأوضح "تساهم تكنولوجيا كربون كيور بتوفير نحو 25 كلغ لكل متر مكعب يتم إنتاجه . وبحسبة بسيطة، وإذا افترضنا إننا ننتج مليون متر مكعب من الخرسانة في السنة ، فإن هذا يعني توفير انبعاثات كربونية تساوي نحو 25 ألف طن . ويمكننا تحقيق هذا الهدف عن طريقتين. الأولى، باستخدام الكربون كمصدر طبيعي ، وكمادة مضافة للخرسانة ، فإننا نحقق وفراً في انبعاثات الكربون . إن حقن ثاني أكسيد الكربون في الخلطة يساعد على تعزيز خصائصها وتقويتها ، ومن ثم نستخدمها باعتبارها المحتوى الإسمنتي."

"أما الطريقة الثانية لتوفير الانبعاثات هي خفض المحتوى الإسمنتي . وكما نعرف فإن إنتاج الإسمنت هو الذي يتضمن كميات هائلة من الانبعاثات الكربونية ."

توفر تكنولوجيا كربون كيور لصناعة الخرسانة ثاني أكسيد كربون معاداً تدويره إلى خرسانة طازجة لخفض انبعاثاته بدون المساس بالجودة أو الأداء . وما أن تتم عملية الحقن ، فإن ثاني أكسيد الكربون يخضع لتفاعل كيميائي ويتحول إلى معدن - كربونات الكالسيوم - وتندمج بشكل دائم ، مما يساعد على تحسين قوة ومتانة الخرسانة . وهذا يتيح لموردي الخرسانة تعزيز تصميمات خلاطاتهم الخرسانية وخفض المحتوى الإسمنتي بأمان ، ومن ثم الاستفادة من المزايا الاقتصادية والمناخية ، حسب ما تقول كربون كيور.

وقد اشتملت الخلطة الخضراء التي استخدمتها قنبر للخرسانة الجاهزة في تجربتها على 135 كلغ/متر مكعب من المواد الإسمنتية ، بما في ذلك إسمنت بورتلاند العادي (250 كلغ/متر مربع) ، ورماد متطاير (110 كلغ/متر مكعب)، وميكروسيليكا ويتم خلطهم مع ثاني أكسيد كربون بمحتوى إسمنتي 0.1 بالمائة في محطة خلط مركزية . ويتم مزج المواد الإسمنتية مع الماء (135 كلغ/لكل متر مكعب) ، وركاء، وخلطات إضافية ، بما في ذلك مثبطات الخرسانة ، وسوبر الملدنات (2 كلغ لكل متر مكعب

لكل مادة)، ويتم الحصول على قوة انضغاط تبلغ 32 باسكال في 28 يوماً . وقد تولت الشركة العربية للمختبرات والتربة باختبار المنتج ، سواءً الذي تم صبه في وقتها أو الخرسانة الصلبة ، وفق توصيلات كربون كيور.

المصدر: www.gulfconstructionmagazine.com

العراق

جمعية مصنعي الإسمنت في العراق: متجهون إلى تصدير مادة الإسمنت للخارج

تتجه جمعية مصنعي الإسمنت في العراق إلى تصدير منتجها من مادة الإسمنت بعدما حققت الاكتفاء الذاتي من هذه المادة وسد حاجة السوق المحلية ، بعد أن بلغت الطاقة الإنتاجية المتحققة ونسبة المبيعات للعام 2021 هو 31,691,296 طن لمعامل الإسمنت في العراق بقطاعيها العام والخاص .

صرح بذلك المهندس ناصر ادريس مهدي المدني رئيس جمعية مصنعي الإسمنت في العراق بأنه ضمن خطة جمعية مصنعي الإسمنت التسويقية ومنافسة المنتج الإقليمي ، فقد تمكنت مصانع الإسمنت المنضوية في الجمعية ، من تحقيق طفرة إنتاجية ونسبة مبيعات في العام الماضي 2021 ضمن الخطة الإنتاجية والتسويقية الخاصة وتعد هذه الطفرة رقم قياسي لم تصله معامل الإسمنت في العراق من القطاعين العام والخاص خلال فترة أكثر من سبعة عقود .

وأشار إلى أن مادة الإسمنت من المرجح أن تكون في صدارة المنتجات الممكن تصديرها الى الدول الخارج بعد أن تمكنت جمعية مصنعي الإسمنت من سد حاجة السوق المحلية منها .

المصدر: موقع الجمعية

سلطنة عُمان

إسمنت عُمان تطرح تطرح مناقصة هي الأكبر من نوعها في سلطنة عمان

أعلنت شركة إسمنت عمان عن طرح مناقصة إنشاء الخط الرابع من خطوط إنتاجها للإسمنت في السلطنة، بطاقة عشرة آلاف طن في اليوم من الكلنكر ، وترقية خط الإنتاج الثالث من 4000 طن في اليوم من الكلنكر إلى 5000 طن في اليوم لتضيف 11 ألف طن في اليوم إلى إنتاجها الحالي .

وقال المهندس سالم بن عبد الله الحجري الرئيس التنفيذي لشركة إسمنت عمان بأن التوسعة المستهدفة وفق المناقصة ستكون الأكبر من نوعها في السلطنة في مجال صناعة الإسمنت . وأضاف بأن طرح هذه المناقصة يأتي في إطار الجهود التي تبذلها الشركة لتعزيز الاكتفاء الذاتي من الإسمنت في السلطنة، والحد من الاستيراد، حيث تستورد السلطنة ما يربو على 50 بالمائة من احتياجاتها من الإسمنت . وأضاف الحجري أن خط الإنتاج الجديد سيحقق الاكتفاء الذاتي من الإسمنت في السلطنة بحلول عام 2023 ، دون الحاجة إلى الاستيراد من الخارج .

وقال إن شركة إسمنت عُمان تهدف من خط الإنتاج الجديد توفير منتجات الإسمنت بأسعار أقل من أسعار الإسمنت المستورد، كما سيتيح فرصاً تجارية لتوفير المواد الأولية المحلية كمدخلات إنتاج للإسمنت من الشركات الصغيرة والمتوسطة في السلطنة مثل مواد الجبس وخام الحديد والمواد الأخرى المتعلقة بالصناعات المحلية .

وقال بأن المناقصة لخط الإنتاج الجديد ستكون وفقاً لمعايير عالية وأحدث تكنولوجيا متاحة لصناعة الإسمنت في العالم ، مثل تكنولوجيا التحكم الذاتي في إدارة عمليات التشغيل والصناعة .

المصدر: shuoon.om

"جيوتك" تدشّن مبنى ثلاثي الأبعاد بمساحة 190 متر مربع

بأحدث ما توصلت إليه التكنولوجيا في البناء ، احتفلت الجامعة الألمانية للتكنولوجيا في السلطنة بتدشين أول مبنى مطبوع بتقنية ثلاثي الأبعاد (3D) .

ويأتي هذا التدشين بعد توقيع اتفاقية تعاون بين الجامعة الألمانية للتكنولوجيا منتصف العام الماضي مع شركة كوبود الدنماركية لتصنيع طابعة ثلاثية الأبعاد للبناء والإنشاءات وشحنها إلى السلطنة لأول مرة .

ويصاحب التدشين افتتاح مركز تقنيات ومعايير البناء والذي سيكون مركزاً رائداً في منطقة الشرق الأوسط في تطوير المعايير والتقنيات والآليات المستدامة والمناسبة لبيئة المنطقة .

ويشتمل المركز على بحوث علمية وصناعية في مجال البناء والإنشاءات وتطوير الابتكار والتطبيقات الصناعية ، بالإضافة إلى برامج أكاديمية للدراسات الجامعية والدراسات العليا ودورات تدريبية مهنية تخصصية ، بما في ذلك ، مؤتمرات وورشات عمل وحلقات نقاش .

المصدر: alsahwa.om

جمهورية مصر العربية

بدء تشغيل مصنع إسمنت النهضة بكامل طاقته الإنتاجية في قنا

أعلنت شركة النهضة للصناعات "إسمنت النهضة" عن تشغيل مصنع إسمنت النهضة بقنا بكامل طاقته ، وذلك بعد انتهاء فترة الصيانة اللازمة وتذليل كافة العقبات وصولاً إلى كامل الطاقة الإنتاجية من الكلنكر والإسمنت .

وجددت شركة النهضة للصناعات التزامها تجاه المجتمع والعاملين والعملاء والموردين والمقاولين بمواصلة الجهد لتقديم أعلى جودة للإسمنت .

صادرات الإسمنت ترتفع إلى 456 مليون دولار العام الماضي

ارتفعت صادرات الإسمنت بنحو 151 % خلال العام الماضي 2021 لتسجل 456 مليون دولار ، مقابل 182 مليوناً خلال 2020 ، بحسب تقرير للمجلس التصديري لمواد البناء والحراريات والصناعات المعدنية.

وارتفعت صادرات قطاع مواد البناء إلى 6.538 مليار دولار العام الماضي 2021 ، مقابل 6.25 مليار دولار خلال 2020 بنسبة زيادة بلغت 5 % . ويستهدف المجلس التصديري لمواد البناء والحراريات والصناعات المعدنية زيادة صادرات القطاع بنسب بين 12 و15 % خلال العام الحالي 2022 .

المصدر: malnews.com

لافارج مصر تنتهي من خفض استهلاك الطاقة بنسبة 10 % وترفع نسبة الوقود البديل لـ 20 %

أعلنت شركة لافارج مصر، عضو مجموعة هولسيم ، نجاحها في خفض استهلاك الطاقة بنسبة 10 % خلال العام الماضي 2021 ، لتصل بنسبة الوقود البديل المستخدم لديها المشتق من النفايات والمنتجات الثانوية لنحو 20 % .

وأشار الرئيس التنفيذي للشركة إلى حرصها على تنويع مصادر الطاقة لديها في ظل سعيها للوصول بنسبة الوقود البديل المستخدم لديها لنحو 50 % خلال الفترة المقبلة ، لتعزيز اتفاقية صافي صفر انبعاثات كربونية (Zero Net) بالإضافة إلى الشراكة بين مجموعة هولسيم مع SBTi التي تطلع إلى ما بعد عام 2030 ، بوضع الأهداف المناخية في قطاع الإسمنت بحلول عام 2050 .

كما لفت إلى اهتمامها بتنفيذ خططها نحو تنمية الاقتصاد الأخضر بما يتماشى مع الأهداف المناخية الأكثر طموحًا لعام 2030 ، كما تتطلع الشركة لتبادل خبراتها العالمية في صناعة أفضل أنواع الإسمنت الذي يطابق معايير الحفاظ على البيئة ، وذلك في إطار استضافة مصر لمؤتمر كوب 27 للمناخ ، الذي يُعقد في نهاية العام في شرم الشيخ .

المصدر: amwalalghad.com

"إيجي كريت" تعتزم افتتاح مصنع للمنتجات الإسمنتية و"الإنترلوك" ببني سويف 2024

أعلنت شركة "إيجي كريت" التابعة لمجموعة "كابريول" عن اعتزامها التوسع في صعيد مصر عبر افتتاح مصنع للمنتجات الإسمنتية و"الإنترلوك" في محافظة بني سويف عام 2024 .

كما تعتزم "إيجي كريت" إدخال منتجات "إنترلوك" لأول مرة في مصر ، وهي أحدث منتج عبارة عن بلاطات كبيرة الحجم أشبه بالسراميك تصل مقاساتها إلى «40*40» و«60*60» ، وستقوم الشركة بإدخال الألوان المتداخلة لـ «الإنترلوك» .

المصدر: invest-gate.me

المملكة المغربية

"إسمنت المغرب" تشغل مصنع الناظور

أعلنت شركة "إسمنت المغرب" عن تشغيل المركز الجديد لطحن الإسمنت في مدينة الناظور بحلول شهر يوليو / تموز القادم .

وذكرت الشركة أن الطاقة الإنتاجية للمركز ستناهز 700 ألف طن من الإسمنت سنوياً . ويقع المركز الجديد في جماعة أولاد ستوت ، على بعد 18 كيلومتراً من مدينة الناظور .

المصدر: www.hespress.com

نشاطات عربية

ورشة العمل العربية حول (نموذج التميز الأوروبي EFQMMODEL2020 ونموذج التميز الأمريكي MBNQA كمدخل لتطبيق إدارة الجودة الشاملة)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 16 - 18 مايو / أيار 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (آليات بناء الإمكانيات التكنولوجية في المؤسسات والشركات الصناعية في العالم العربي وآثارها على تنافسية المشروعات الصناعية القائمة والجديدة)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 23 - 25 مايو / أيار 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (تقييم الارتياب في القياس طبقاً لمتطلبات المواصفة القياسية 2017: ISO/IEC17025)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 06 - 08 يونيو / حزيران 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
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الملتقى الثالث للمناطق الصناعية ودورها في جذب الاستثمار وتنمية الصادرات
المكان: طنجة ، المملكة المغربية
التاريخ: 08 – 10 يونيو / حزيران 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
الموقع الإلكتروني: www.aidsmo.org

ورشة العمل العربية حول (كيفية تطبيق السياسات الصناعية الخضراء في المؤسسات والشركات الصناعية في العالم العربي ودورها في تحقيق التنمية الصناعية المستدامة)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 20 - 22 يونيو / حزيران 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (كيفية قياس وتحليل الاهتزازات للمعدات والآلات في الشركات والمؤسسات الصناعية)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 27 - 29 يونيو / حزيران 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351

نشاطات عربية

نشاطات عربية

هاتف: 0020223583990 / 0020223807565
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (المهارات العلمية الحديثة في كيفية إدارة المنشآت والمؤسسات الصناعية في العالم العربي في ظل الفرص والتحديات العالمية الجديدة)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 25 - 27 يوليو / تموز 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223583990 / 0020223807565
فاكس: 0020223803880
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موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (دور التدقيق الداخلي في النهوض بمستوى المختبرات وكيفية إعداد المدققين الداخليين لهيئات والشركات الصناعية طبقاً للإصدار الجديد ISO/IEC17025 : 2017)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 15 - 17 أغسطس / آب 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223583990 / 0020223807565
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
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ورشة العمل العربية حول (مهارات إدارة المخاطر المالية في الاستثمارات والمشروعات الصناعية في العالم العربي في ظل الفرص والتحديات العالمية الجديدة)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 22 - 24 أغسطس / آب 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223583990 / 0020223807565
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (الأساليب الإحصائية للتحكم وتحسين جودة العمليات SPC)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 12 - 14 سبتمبر / أيلول 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223583990 / 0020223807565
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (إعادة تدوير المخلفات "الصلبة / السائلة / الغازية" ومعالجة النفايات الصناعية واستخدام التكنولوجيا الأنظف في الصناعة)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 26 - 28 سبتمبر / أيلول 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223583990 / 0020223807565
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

نشاطات عربية

نشاطات عربية

ورشة العمل العربية حول (نظام تحليل مصادر الخطر ونقاط التحكم الحرجة "الهاسب" HACCP)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 03 - 05 أكتوبر / تشرين الأول 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (الأساليب والتقنيات العلمية الحديثة للمعايرة الكهربائية والإلكترونية في المؤسسات والشركات الصناعية في العالم العربي)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 17 - 19 أكتوبر / تشرين الأول 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (الممارسات التصنيعية الجيدة GMP)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 07 - 09 نوفمبر / تشرين الثاني 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (كيفية إدارة وترشيد تكلفة التشغيل بالشركات والمؤسسات الصناعية من منظور التطبيق الفعال لمفاهيم الجودة الشاملة وعلاقتها بتكلفة الجودة - QualityCoasting)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 14 - 16 نوفمبر / تشرين الثاني 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

ورشة العمل العربية حول (كيفية تطبيق نظام إدارة السلامة والصحة المهنية فى المشروعات الصناعية فى العالم العربى وفقاً لمتطلبات المواصفة القياسية الدولية 2018: ISO 45001)
المكان: القاهرة ، جمهورية مصر العربية أو عن طريق الانترنت
التاريخ: 21 - 23 نوفمبر / تشرين الثاني 2022
الجهة المنظمة: المنظمة العربية للتنمية الصناعية والتقييس والتعدين
جوال: 00201001521351
هاتف: 0020223807565 / 0020223583990
فاكس: 0020223803880
بريد إلكتروني: roc@aidsmo.org
موقع إلكتروني: www.aidsmo.org/roc

دورات تدريبية عربية

عقود التجارة الإلكترونية ومنازعاتها
المكان: اسطنبول ، الجمهورية التركية
التاريخ: 08 - 12 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

التخطيط الاستراتيجي وإعداد الخطط التشغيلية
المكان: اسطنبول ، الجمهورية التركية
التاريخ: 15 - 19 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

الجذور الفكرية للتغيير في الإدارة
المكان: اسطنبول ، الجمهورية التركية
التاريخ: 15 - 19 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

التدقيق المبني على المخاطر
المكان: اسطنبول ، الجمهورية التركية
التاريخ: 15 - 19 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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إدارة منظومات العمل الذكية
المكان: اسطنبول ، الجمهورية التركية
التاريخ: 15 - 19 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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الاتصالات الإدارية وإعداد وصياغة التقارير والمراسلات والمذكرات
المكان: اسطنبول ، الجمهورية التركية
التاريخ: 15 - 19 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

الأرشيف الإلكتروني: نظم تأمين وحفظ واسترجاع الملفات والوثائق إلكترونياً
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 26 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

تخطيط العلاقات العامة ودورها في تحقيق التميز الإداري
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 26 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

إدارة الجلسات التحكيمية وفن صياغة اتفاق وحكم التحكيم
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 26 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية

دورات تدريبية عربية

للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

التحليل المالي المتقدم باستخدام الحاسب الآلي
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 26 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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البرنامج المتكامل لإعداد القادة
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 31 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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إدارة الجودة الشاملة والتميز المؤسسي
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 31 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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استخدام الأساليب الإحصائية في الرقابة على جودة الخدمات
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 31 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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إدارة المشروعات والجودة الشاملة
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 22 - 31 مايو / أيار 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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الأساليب الابتكارية لتجنب الفاقد والهدر في الشركات
المكان: اسطنبول ، تركيا
التاريخ: 29 مايو / أيار - 02 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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مهارات ربط المسار الوظيفي بالمسار التدريبي
المكان: اسطنبول ، تركيا
التاريخ: 29 مايو / أيار - 02 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
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إدارة المبيعات ومهارات التعامل مع العملاء
المكان: اسطنبول ، تركيا
التاريخ: 29 مايو / أيار - 02 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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تحويل الأفكار الإبداعية إلى خطط عمل
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 05 - 09 يونيو / حزيران 2022

دورات تدريبية عربية

الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

الاتجاهات المعاصرة في صياغة وتنفيذ العقود الإدارية
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 05 - 09 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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الضوابط والمعايير الدولية للأرشفة الإلكترونية
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 19 - 23 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

تطوير وإعادة هيكلة نظم وآليات التدريب
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 19 - 28 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
جوال واتساب وفايبر: 00201091780140
بريد إلكتروني: Training@iadmena.com

المهارات المتكاملة في العلاقات العامة والمراسم والبروتوكول والاتيكيت
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 19 - 28 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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تطوير أداء الإدارات الوسطى
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 26 - 30 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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إدارة الأصول والخصوم
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 26 - 30 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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الأبعاد المتكاملة في إدارة المخازن ومراقبة المخزون
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 26 - 30 يونيو / حزيران 2022
الجهة المنظمة: معهد التنمية الإدارية
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التميز الإداري والإبداع المؤسسي
المكان: القاهرة ، جمهورية مصر العربية
التاريخ: 26 يونيو / حزيران - 05 يوليو / تموز 2022
الجهة المنظمة: معهد التنمية الإدارية
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:
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