



# CEMENT & BUILDING MATERIALS REVIEW

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## 25<sup>th</sup> Arab International Cement & Building Materials Conference and Exhibition

**(AICCE25)**

Riyadh, Saudi Arabia

**2022**

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الرياض، المملكة العربية السعودية

Arab Union for Cement & Building Materials  
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## CONTRIBUTIONS

- *The Magazine editorial staff welcome the contribution of experts to enrich the contents of the magazine .*
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AUCBM's *Quarterly Cement and Building Materials Review (CBMR)*

**EDITORIAL SCHEDULE FOR 2022**

ISSUE	THEMES	EVENTS
March 2022	<ul style="list-style-type: none"> <li>- Pyroprocessing</li> <li>- Process control and optimization</li> <li>- Cement Process Engineering</li> <li>- Cement kilns</li> <li>- (Pre-)processing hazardous waste</li> <li>- Flue gas treatment</li> <li>- Digital transformation</li> <li>- Digitalization in cement industry</li> <li>- Burners and burning processes</li> <li>- Upgrading projects</li> <li>- Modernization and automation</li> <li>- Gas analysis</li> <li>- Testing and analysis</li> <li>- Laboratory equipment</li> </ul>	
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Deadlines for receiving articles, press releases, or advert materials for 2022 issues are as follows:

March issue: **28<sup>th</sup> February 2022**

June issue: **30<sup>th</sup> May 2022**

September issue: **31<sup>st</sup> August 2022**

December issue: **5<sup>th</sup> December 2022**



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## ALGERIA

### **GICA Group exports expected to reach 2Mt in 2021**

Groupe des Ciments d'Algérie (GICA) expects that its cement exports should reach 2Mt by the end of 2021. The cement producer started exporting in 2018 with a total of 0.27Mt and has increased this since then. It renewed its desire for a new port to support its Chlef plant in the west of the country to further boost exports.

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### **Lafarge Algeria/Port of Djendjen: Installation of a Ship Loader**

The cement manufacturer Lafarge Algeria announced the signing of an agreement for “the installation and operation of the first ship loader in Algeria”. This equipment was installed at the port of Djendjen in the wilaya of Jijel and made available to all economic operators active in the production and export of Clinker.

The availability of this type of installation at the port level will allow Lafarge Algeria and the other operators to “increase the rate of loading of the vessels and thus avoid the additional costs of fixed assets (demurrage)”; the “optimization of the operation of the docks”; to “preserve the quality of the product, which depreciates on contact with water”; to “also preserve the environment by avoiding product losses and dust emissions”; and to “preserve water bodies”.

Through these investments, Lafarge Algeria confirms “its ambition to accelerate its export program, which is fully in line with the strategy dictated by the country’s high authorities consisting of ensuring commercial outlets for national products, and the diversification of external revenues excluding hydrocarbons”.

**[themaghrebtimes.com](http://themaghrebtimes.com)**

### **Saoura Ciment launches sulphate-resistant cement production**

Saoura Ciment has begun sulphate-resistant cement production at its Saoura cement plant near Béchar. The Groupe des Ciments d'Algérie (GICA) subsidiary made the move as part of efforts to diversify its production. It plans to supply the product to public works projects in the region, where its resistance to high soil salinity will prove useful. The cement will be available from all four of the plant’s commercial outlets in and around Bechér.

In August 2021, Saoura Ciment produced 180,000t of cement. It exported 25,000t to Mali, Mauritania and Niger during the month.

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### **BMSD Chaux Algeria commissions lime plant**

BMSD Chaux Algeria has commissioned a 100,000t/yr lime plant. Italy-based QualiCal supplied the plant. It is powered by natural gas and relies on CogiTech bulkmaterial handling equipment, Mathios Refractories’ refractories, Laife steel structures and Sysware and Tecnoelettra automation systems.

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## EGYPT

### **Cement factories in Egypt to operate with natural gas instead of coal**

Cement companies in Egypt are seeking to return to operating with natural gas fuels instead of coal, after nearly seven years of the government’s decision to compel companies to use a mixture of fuels from coal and waste.

The continuous pumping of natural gas, and the rise in coal prices, will be guarantors of a stable return for cement factories in Egypt to rely on natural gas.



The Export Council for Building Materials has prepared technical studies on the economic feasibility of cement factories returning to work with natural gas in light of rising coal prices to record levels, in addition to the high cost of shipping and import, and the abundance of local natural gas.

The Egyptian Cabinet issued a decision to reduce the price of natural gas for industry to \$4.5 per million thermal units in March last year.

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#### **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.

The company will contribute to achieving Holcim's SBTi goals by lowering CO<sub>2</sub> 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 meters 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 ton 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 ton of cementitious material and scope 2 GHG emissions 65 percent per ton of cementitious materials within the same timeframe.

[Zawya](#)

#### **MISR Cement Group announces strategy to overcome industry's challenges**

MISR Cement Group, previously known as Misr Cement - Qena Group, celebrates a breakthrough in the group's history, unveiling the group's new identity. Capitalizing on its exceptional heritage, the group's companies are now united under one competent management, adopting a new strategy of supremacy.

MISR Cement Group embraces 4 key strategic directions, including: operational excellence, growth for leadership, positively impact the environment and building internal capabilities. Dedicated to serving the construction and cement sectors in Egypt and the region, the group recites a new chapter of its unceasing achievements.

MISR Cement Group is a prominent group of cement and building materials manufacturing companies in Egypt, comprised of Misr Cement Qena, Misr Cement Minya, and Misr Cement Beton.

Misr Cement Qena was founded in 1997, with an annual production capacity of 2 million ton of cement, to manufacture an array of cement-based products and byproducts. The company holds a major shareholding amounted to 60% in Misr Cement Minya's capital (formerly Minya Portland Cement) – with an annual production capacity of 2 million ton of cement and 99.9% in Misr Cement Beton's capital (formerly ASECO Ready Mix) – with an annual capacity of 500 Kilo ton of the ready-mix Concert through 9 production facilities.

[LinkedIn](#)

#### **Suez Cement to invest US\$20m in waste heat recovery system**

Suez Cement is planning to invest US\$20m on an 18MW waste heat recovery unit at its integrated Helwan plant. The subsidiary of Germany-based HeidelbergCement started the project in mid-2021 and expects to complete it by the end of 2022.

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## IRAQ

### **Iraqi cement producers complain about cut to fuel subsidies**

The Cement Producers Association in Iraq (CPAI) has complained about a government decision to reduce subsidies on fuel for the industry. It has warned that the cut could risk plants closing and cement prices rising. The Ministry of Oil raised the price of fuel sold to cement manufacturers to US\$0.17/l in September 2021 from US\$0.10/l litre previously. This followed a rise earlier in 2021. CPAI has warned of ‘enormous losses’ in the sector and has lobbied the government to reverse the decision. It added that producers would have to decide whether to stop production and lay off workers or raises cement prices by at least US\$10/t. The subsidised fuel price for cement manufacturers was originally approved in exchange for an agreement to cap the price of cement.

**Global Cement**

## LIBYA

### **Libya to build a new 1-million-ton cement plant**

The Minister of Industry and Minerals of Libya laid the foundation stone on September 9<sup>th</sup> for the establishment of a cement factory located on the road linking the cities of Tobruk and Jaghboub.

The cement plant will be established by the National Mining Corporation and Al-Shahba Cement Company, which signed an agreement to establish the factory in the Al-Shahba area, south of Tobruk, with a production capacity of 1 million tons annually.

**CW Group**

### **Chinese companies discuss setting up cement plants with Libyan government**

The Minister of Industry and Minerals has met with a delegation of officials from Chinese companies working in the mining and cement industry. The Chinese delegates reportedly expressed their desire to build cement plants in several regions within the country.

**Global Cement**

### **National Mining Corporation to establish building materials complex including a cement plant at Bani Walid**

The National Mining Corporation and Abraj Al-Ghad Company have contracted AstroPlan, FLSmidth and Grenzebach for the construction of a five-factory building materials production complex at Bani Walid. The 16,300ha complex will include a new cement plant.

**Global Cement**

## MOROCCO

### **LafargeHolcim Maroc to launch Agadir-Souss cement plant before 2022**

LafargeHolcim Maroc is on schedule to commission its new 1.6Mt/yr Agadir-Souss cement plant in Souss-Massa region before 2022. The plant will rely on artificial intelligence (AI) in its cement production process. The total cost of the project is US\$335m.

**Global Cement**

## OMAN

### **Oman Cement Company announces investment in Rusayl cement plant's new line**

Oman Cement Company will spend US\$300m on the new 10,000t/day Line 4 as part of the upcoming upgrade and expansion of its Rusayl cement plant in Muscat governorate. The Switzerland-based PEG Resources will carry out the work; the new line will help Oman to achieve cement self-sufficiency by 2024.

Oman Cement Company also plans to upgrade its 4.2Mt/yr Rusayl cement plant; the Company's plans consist of a 25% capacity expansion of Line 3 of the plant to 5000t/day from 4000t/day and the construction of a new 10,000t/day Line 4. Lines 1 and 2 will subsequently shut down. Thus, the upgrade will increase the plant's nominal clinker capacity to 15,000t/day from 8700t/day.

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- **Data services:** statistical and data research tools offering industry practitioners a wealth of cement supply and demand data





### **Oman Cement Company launches the new Al Burj Cement**

Oman Cement Company (OCC) has started commercial distribution of the Al Burj Cement, one of its high-quality cement products, in a move that comes as part of the company's efforts to promote the industrial sector in the Sultanate.

OCC said that it strives to develop cement products that achieve the sustainability of manufacturing operations by conducting more research and innovating new products. The production of this new type of cement is considered to be a significant contribution by OCC to achieve self-sufficiency of cement products in the Sultanate and to keep abreast with the requirements of urban development in the country, in addition to optimizing the usage of natural resources.

Al Burj Cement is distinguished from other types of cement by its physical properties such as high smoothness and less porosity, which makes it more resistant to salts and elements harmful to concrete.

The product is also environmentally friendly as it contributes to rationalizing the usage of raw materials during the manufacturing process. Al Burj Cement also meets the European Specifications No: "EN197 BS/EN 42.5N".

**CW Group**

### **Raysut Cement to start operations of its new Duqm grinding unit in 4Q2021**

Oman's cement manufacturer Raysut Cement Company (RCC) announced that its grinding unit in Duqm will be on stream in the fourth quarter of 2021.

"Duqm plant will add another 1 million tons to our capacity, helping us cater to Oman and other regional markets with increased supplies, where construction activity is poised to pick up in post-pandemic resurgence," said Group CEO of RCC.

The Duqm plant will raise RCC's annual group output to 7.4 million tons. The company said the Duqm plant

is a milestone project for the company to scale up its output to 22 million tons in the near future.

As part of developing the Duqm plant, RCC had signed a land lease and port of terminal services agreement with Port of Duqm Company.

**CW Group**

## **SAUDI ARABIA**

### **Saudi Arabia issues 12 new cement export licenses**

Saudi Arabia's Ministry of Commerce issued 35 licenses to export cement and iron since the beginning of 2021 up to November 14, up from 21 licenses last year.

The licenses have been split between 12 cement export licenses and 23 iron licenses since the beginning of the year, while the ministry is currently studying 3 more requests.

The ministry grants licenses to export cement and iron after meeting specific conditions and requirements, according to regulatory controls established by a mixed ministerial committee made up of several ministries.

The head of the National Committee for Cement Companies of the Federation of Saudi Chambers, Bader Jawhar, predicted that the volume of cement demand would reach 53-55 million tons by the end of this year and that demand would continue next year increasing by about 4 percent.

**CW Group**

### **Yanbu Cement completes production line upgrade**

Yanbu Cement has completed an upgrade project to Line 4 at its integrated plant. It previously, in April 2021, reported delays to the work due to difficulty obtaining spare parts. The cement producer says that the cost of the project remains unchanged.

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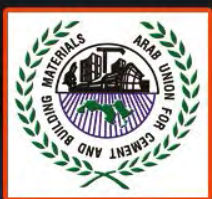
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## *Chart and FLSmidth to collaborate on carbon capture that targets over 90% removal of CO<sub>2</sub> emissions from cement production*

FLSmidth has signed an agreement with Chart Industries, Inc. (“Chart”) to implement advanced carbon capture technology to significantly reduce CO<sub>2</sub> emissions from cement production. Cement production represents 7-8% of the global CO<sub>2</sub> emission – carbon capture technologies are essential to reduce that number and meet the targets of the Paris Agreement.

The new collaboration between FLSmidth and Chart joins the two companies’ efforts to adapt and commercialize Chart’s Cryogenic Carbon Capture™ (CCC) for customers in the cement industry. CCC is an advanced post-combustion technology developed by Sustainable Energy Solutions (SES), a Chart company. CCC utilizes equipment manufactured by Chart and its affiliates to capture CO<sub>2</sub> from exhaust gas at very high rates and produce it as a high-purity liquid ready for storage and use.

Working with Chart, FLSmidth will use its global reach and process knowledge to accelerate the commercialization of CCC and optimize the design of the technology for the cement industry. The ambition is to reduce over 90% of carbon emissions from industrial sources at half the cost and energy of current carbon capture processes.

Carbon capture technology is a cornerstone in FLSmidth’s MissionZero sustainability ambition of providing the solutions needed to move the cement industry towards zero CO<sub>2</sub> emission by 2030.

Carsten Riisberg Lund, Cement President for FLSmidth said: “The cement industry is pursuing all options to reduce its environmental footprint, and carbon capture is a necessary technology to achieve this goal. Through this agreement with Chart, we lay the foundation for the scale-up and deployment of the CCC tech-

nology with our customers. The technology developed by Chart is expected to become the most competitive at scale. We look forward to extending Chart’s CCC technology into the cement industry through our global presence and engineering capabilities. This agreement is a significant leap forward in our joint efforts to enable our customers to reduce their environmental footprint.”

Jill Evanko, CEO and President of Chart said: “We are delighted that FLSmidth has entered into this important agreement with Chart to advance our carbon capture technology in the cement industry. FLSmidth’s strong reputation and knowledge of the global cement industry will facilitate our growth and place Chart at the heart of the cement industry’s efforts to reach Net Zero.”

### About Chart Industries, Inc.

Chart Industries, Inc. is a leading independent global manufacturer of highly engineered equipment servicing multiple applications in the energy and industrial gas markets. The company’s unique product portfolio is used in every phase of the liquid gas supply chain, including upfront engineering, service and repair. Being at the forefront of the clean energy transition, Chart is a leading provider of technology, equipment and services related to liquefied natural gas, hydrogen, biogas and CO<sub>2</sub> Capture amongst other applications. Chart is committed to excellence in environmental, social and corporate governance (ESG) issues both for its company as well as its customers. With over 25 global locations from the United States to Asia, Australia, India, Europe and South America, the company maintains accountability and transparency to its team members, suppliers, customers and communities. To learn more, visit:

[www.chartindustries.com](http://www.chartindustries.com).





## *FLSmidth and Carbon8 Systems sign technology partnership to accelerate carbon capture in global cement industry*

FLSmidth, the international supplier of sustainable solutions and services to the cement industry, has signed a global commercial partnership with UK-based Carbon8 Systems (C8S) to accelerate the cement industry's Net Zero ambitions.

Carbon capture is essential to achieve a sustainable global cement industry – which currently accounts for 7-8% of global carbon emissions - and deliver on FLSmidth's MissionZero pledge to enable zero emission production by 2030.

Working with the UK's C8S, FLSmidth will use its global network to extend the reach of C8S' carbon capture and utilisation (CCU) solution. C8S' technology, already deployed at a VICAT cement plant in France, takes CO<sub>2</sub> directly from process gasses and combine it with bypass dust from the production to manufacture a lightweight aggregate which can be used in construction.

Carsten Riisberg Lund, Cement President for FLSmidth said: "The cement industry is pursuing every possible solution to reduce its environmental footprint. Carbon capture and utilisation is one such technology, with a massive potential, that has reached commercial maturity in recent years."

"The combination of C8S' advanced carbonation technology and our extensive process knowledge will make a significant contribution to the cement industry's Net Zero ambitions."

"FLSmidth will work closely with C8S to accelerate the implementation of its technology and we will draw upon our in-depth know-how, our products and our global presence. This agreement is a significant leap forward in our joint efforts to deliver on the sustainability ambitions for the global cement industry."

John Pilkington, CEO of C8S said: "We are delighted that FLSmidth has entered into a commercial partnership with Carbon8 Systems. FLSmidth's strong reputation in the global cement industry, combined with their international presence, will facilitate our growth and

place C8S at the heart of the cement industry's efforts to reach Net Zero."

The partnership is in effect as of October 2021.

FLSmidth provides sustainable productivity to the global mining and cement industries. We deliver market-leading engineering, equipment and service solutions that enable our customers to improve performance, drive down costs and reduce environmental impact. Our operations span the globe and we are close to 10,700 employees, present in more than 60 countries. In 2020, FLSmidth generated revenue of DKK 16.4 billion. MissionZero is our sustainability ambition towards zero emissions in mining and cement by 2030.

[www.flsmidth.com/MissionZero](http://www.flsmidth.com/MissionZero)

### Carbon8 Systems

C8S's advanced carbonation technology is a process which happens naturally in the atmospheric conditions. If left in the open, compounds such as calcium or magnesium oxides, hydroxides, or silicates will react with the carbon dioxide. However, this process is extremely slow - taking place over tens of years. C8S's technology accelerates this process in a controlled way and in doing so, has created one of the worlds few economically viable forms of carbonation and carbon capture and utilisation (C CU). Accelerated Carbonation Technology (ACT) mineralises and stabilises these industrial by-products or residues to produce a granular solid. C8S's expertise around the carbonation process means that it is able to control the physical characteristics of the end-product. The end-product has various valuable applications, such as aggregates for construction, or agricultural fertiliser. For maximum efficacy, the most reactive residues need to be high in calcium or magnesium oxide, hydroxide, or silicates.

The company's patented CCU solution is known as the CO<sub>2</sub> ntainner system; a modular, containerised solution (carbon capture in a box), it is similar in size to a shipping container so can be easily transported by HGV to site.

[www.c8s.co.uk](http://www.c8s.co.uk)

## ***NEW SIWERTELL SHIP UNLOADER ORDERED TO DOUBLE CEMENT HANDLING CAPACITY IN KUWAITI PORT***

Bruks Siwertell has won a new order from returning customer, Kuwait Portland Cement Co, for an ST 490-M Siwertell ship unloader, equipped with a new side tilt motion for enhanced through-ship efficiency. It will join another cement handling Siwertell ship unloader in Shuaiba Port, Kuwait City, Kuwait, which has been securing environment-friendly material handling for the operator for over two decades.

“Kuwait Portland Cement has benefited from 20 years of experience using our Siwertell screw-type technology,” says Peter Göransson, Sales Manager, Bruks Siwertell. “It knows what our unloaders deliver; time and again the technology has proven its capabilities, demonstrating reliability, efficiency, and environmental protection in terms of emissions and noise.

“In fact, the main reason why the operator returned for a second unit is the outstanding operational performance of its original delivery,” continues Göransson. “Our ongoing service support, along with Bruks Siwertell’s through-life commitment to maintenance and spare parts were other major deciding factors.”

The new unloader will deliver even higher levels of performance and through-ship efficiency to Kuwait Portland Cement. “It features a new side tilt motion, which offers an enhanced reach into the corners of the cargo hold as well as under the hatch coamings,” he adds. “As a result, less material is left for the clean-up phase, which reduces vessel turnaround times, raising the utilization rate of the jetty and therefore profitability.

“Also, all Siwertell unloaders offer a layer-by-layer unloading process, which minimizes the chance of airborne emissions from avalanches in the cargo hold. The side tilt function adds to this capability,” Göransson notes.

“The new unloader is part of the operator’s long-term vision. It has been designed as a fully assembled, heavy-lift mode delivery, but will actually be transported in break bulk,” he explains. “This enables it to be relocated, fully assembled, to a new location should the customer wish to do so in the future, minimizing any transition downtime.”

Planned for delivery to the port in mid-2023, the rail-mounted unit will handle various cement types and deliver a continuous material handling capacity of 800t/h, discharging vessels up 50,000 dwt. It will be installed on an existing jetty next to the operator’s older ST 490-F, rail-mounted Siwertell unloader.

Both the current and new unloader will be equipped with a total capacity regulating system, maximizing the use of each unit, but ensuring that they do not overfill the downstream conveying system. They can also directly discharge to bulk trucks via a truck loading arrangement underneath the ship unloader’s gantry.

“The new unloader is equipped with two out-loading units,” says Göransson. “This is a great asset, delivering increased redundancy and ensuring that any demurrage costs are kept to a minimum if there is an issue with the downstream conveying system.”

Like its predecessor, the new unloader is also designed to operate in Kuwait’s extreme climate. To accommodate predicted temperature rises in the region, the latest unit can withstand ambient summertime temperatures of up to 55 degrees Celsius.

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## RAK PORCELAIN INVESTS IN SPECIAL SACMI KILN FOR BONE CHINA

The new solution will be installed at company's headquarters at Ras Al Khaimah, in the United Arab Emirates, where 28 million pieces of top quality tableware items are produced every year. The main advantages guaranteed by the new solution, which is equipped with latest generation radiant burners, include better quality firing and optimization of running and maintenance costs.

RAK Porcelain (RAK Ceramics Group) has invested in a new Sacmi TKA 240-75,6 roller kiln, part of the complete range of kilns which the SACMI Group, through its well-known brands, designs and develops specifically for the firing of tableware items.

In particular, the solution supplied has been designed for the firing of bone china, which requires specific firing atmospheres due to the raw materials it is made up of that give these products special functional and aesthetic characteristics.

The model supplied to the customer, up and running within the end of 2021, at the company's main base in Ras Al Khaimah, United Arab Emirates, will be used for both biscuit and glost firing. If required, the solution can also be dedicated to firing decorated pieces or items made with different bodies.

Specialized in the production and sale of excellent quality porcelain tableware destined for the HORECA sector, RAK Porcelain manufactures 28 million pieces per year of porcelain tableware and accessories. Versatility, accurate control, optimization of costs, are the key factors for the company which chose this Sacmi product in its new configuration with REKO radiant tube burners, the best choice in terms of reducing operating and maintenance costs.

Thanks to the high number of latest generation burners along the 75.6m kiln the distinguishing features of the solution supplied are maximum flexibility and minimized (among the lowest on the market) energy consumption. Furthermore, the precision of the control and regulating system in the burner area ensures the best possible set-up of the firing curves guaranteeing even heat distribution in all areas and top quality of the fired product.

The kiln is also equipped with a filtration system to prevent deposits from forming or soiling of the product.

With this supply, SACMI strengthens its historic partnership with the RAK Ceramics Group and, in particular, with RAK Porcelain which, through its various divisions located in Europe and the United States - in addition to the HQ in the UAE - sells its products in more than 165 countries over 5 continents.

[www.sacmi.com](http://www.sacmi.com)

## Grupo Halcón acquires Cicogres

Grupo Halcón has acquired the industrial assets, brand and catalogue of Cicogres, a Castellón-based ceramic tile producer with more than 30 years of operations and 5 modern production lines with a capacity of 10 million sqm/year. The company's current workforce has also been retained.

This transaction reinforces Grupo Halcón's leadership in the global ceramic tile industry, increasing production to a total of approximately 50 million sqm across 21 production lines. These include the two new lines, both with a capacity of 4 million sqm/year, installed by Grupo Halcón as part of its 45 million euro investment plan launched for 2021. The first was started up in the spring and expanded the group's production capacity for large and polished tiles, while the second is scheduled to come on stream in late autumn.

According to Grupo Halcón's CEO Francois Brendel, the acquisition of Cicogres reflects the group's intention to supplement organic growth investments with accretive acquisitions.

## **Gruppo Romani acquires Ceramica Verde 1999**

Gruppo Romani (Casalgrande, Reggio Emilia) has announced the acquisition of a 100% stake in Ceramica Verde 1999 - Campogalliano Ceramiche. This strategic deal is part of a broader export-focused growth project that aims to expand the group's product range by acquiring complementary lines to those offered by its Serenissima, Cir, Cercom and Cerasarda brands and its subsidiary ISLA Tiles.

Thanks to its determination and creativity coupled with a strong focus on design and technological research, Ceramica Verde 1999 has succeeded in communicating the value of Italian-made tiles throughout the world. The Fiorano Modenese-based company has grown steadily during its twenty years in business and expects to post a turnover in excess of €15 million in 2021.

Ceramica Verde 1999, acquired by Gruppo Romani's subsidiary RGP srl (an effective formula that has already been tested with the acquisition of Isla Tiles through the subsidiary NGT), will continue to operate independently in the market through a new sales network that will be able to exploit the Group's synergies.

A world leader in the production and marketing of ceramic tiles, Gruppo Romani produces around 8 million square metres per year at its three production facilities in Rubiera, Roteglia and Olbia.

## **Victoria PLC acquires Graniser**

Victoria PLC is continuing to expand its ceramic tile business and operations. In addition to its existing facilities in Italy and Spain, on 10 November the UK-based flooring producer signed an agreement to acquire Turkish company Graniser, a mid-market ceramic tile manufacturer based in Izmir.

Established in 1997, Graniser has been owned 75% by the Austrian investment company Bancroft Group and 25% by the European Bank of Reconstruction and Development since 2012.

The acquisition is a strategic operation that will bring major commercial and manufacturing synergies for the group.

The factory is equipped with cutting-edge technology and a cogeneration power plant and has an annual production capacity of 20.8 million square metres (not fully utilised), bringing the group's total capacity to almost 73 million square metres. Planned investments in technology will allow for a significant increase in output volumes in a low-cost manufacturing environment (energy, labour and raw materials). Graniser and Victoria Ceramics will both benefit from exposure to each other's commercial markets. Graniser will provide further export potential to the Middle East for Victoria, while Victoria's ceramic tiles division will open high-growth European DIY markets for Graniser.

Graniser will continue to operate an independent brand with its own management team, reporting within the Group's ceramics management structure.

The ZKG logo consists of the letters 'ZKG' in a bold, white, sans-serif font, with a stylized white 'G' that has a curved top. The logo is set against a blue square background.

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**CLAUDIUS PETERS**

## ***Newest ETA developments making your clinker production more competitive.***

By: Claudius Peters Projects GmbH, Germany

*Cement producers around the world face pressures to reduce costs, while also improving the environmental sustainability of operations. Balancing the two is no easy task. Which is where the latest generation of ETA cooler from Claudius Peters comes into play.*

As a cement producer today, you face an array of challenges to the day-to-day running of your plant and the success of your business. In many markets, overcapacity drives fierce competition: cost control is therefore always at the top of your priority list. But this must never come at the expense of quality or the safety of your equipment nor your workers. At the operational level, this is focusing attention and investment on improving the overall efficiency and reliability of equipment.



*ETA Cooler. Plant: Shanshui Pingyin Line #2, Clinker Capacity: 6500 t/d, in operation since April 2020.*

This was recognised back in 2015 by McKinsey, which wrote that there were “two prevailing models [of business success in the cement industry] cost leadership and premium selling”.<sup>1</sup> The cost leadership model – as the name implies – is based on harnessing the lowest possible cost base to maximise value, including “operational excellence [where] the largest areas for cost improvement are usually thermal and electrical energy consumption, labour, maintenance and logistics.” Even within the premium selling model, however, where the focus is more on building trusted brands to leverage premium prices, “cement companies must make cost awareness a fundamental part of their business”.

It is no exaggeration then to say that, as a cement producer, cost is king.

Overshadowing all of this is the spectre of climate change. It is now well known that cement production is accounting for about 7% of manmade CO<sub>2</sub> emissions each year. This simple fact has placed the industry at the heart of climate action, raising new risks. Investors around the world are increasingly making climate sustainability an important factor in their decision making, while public pressure is likely to drive further tightening of environmental regulation over the next decade.

Reducing the environmental impact of cement production may therefore soon be as vital to the financial viability of a company as controlling the cost base.



*View into an ETA cooler including the autogenous layer.*

As a long-standing equipment supplier to the cement industry, we recognise these challenges – and also understand that there is no single silver bullet. Rather solutions will come from a broad spectrum of smaller changes and improvements made along the production line – from raw mill to final grinding and dispatch. And that most of this work will be done at existing production lines, rather than at greenfield developments. But as McKinsey noted, there will also be common themes, one of the most important of which will be a focus on improving energy efficiency.

More often than not, it is the mills (for electrical energy) and the kiln (for thermal energy) that make the most headlines here. In contrast, the clinker cooler can sometimes appear to play second fiddle – but every part

has a role to play in improving the overall efficiency of the process. And the cooler is no exception.

### **Listening to our customers: improving electrical efficiency**

This was the philosophy that drove development of the latest generation cooler here at Claudius Peters. We recognized the need of our customers, notably Anhui Conch in China, to develop a cooler with lower electrical energy consumption, while maintaining the performance of previous iterations of ETA cooler, such as high thermal overall efficiency, low wear, and long service life.

“In the past, we have worked hard at optimising the thermal overall electrical of the ETA cooler – to the point where our technology is a leader in the market. But the electrical energy consumption remained higher than, for example, traditional grate coolers,” said Kurt Herrmann, Managing Director Global Sales at Claudius Peters Group. “The number one goal for further development of the ETA cooler was therefore to improve electrical efficiency.”

State-of-the-art finite element analysis was undertaken to optimise the design of the aerated lanes that are at the heart of the ETA concept. Each aerated lane comprises a rectangular frame, supported on rollers, with aeration pockets containing sieved pebbles on which the clinker lies. The layer of pebbles (also known as the autogenous layer) protects the air inlet from heat and wear – the key behind the ETA cooler’s reliability and long service life.

The further developed ETA cooler maintains this concept – but optimises it by reducing the height of the autogenous layer by 57%. The narrower autogenous layer maintains the excellent heat and wear protection performance of previous generations of ETA cooler but also brings a major improvement in electrical efficiency. So, how does it do this?

“The reduction in the height of the autogenous layer results in lower pressure drop over the lanes,” explained Andre Vos, Senior Sales Manager at Claudius Peters. “And the lower the pressure drop, the lower the electrical power consumption of the cooling fans. As a rule of thumb, we expect a 15%- 20% reduction in electrical energy consumption.” This is a significant achievement, as Herrmann continued. “With the further developed ETA, we have reached levels of electrical efficiency that are within the range of the traditional grate cooler but without the challenges, such as grate plate failure and material fall-through. This is what our customers have been asking us for!”

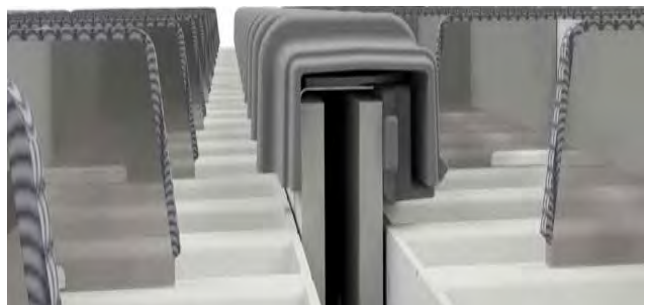
Indeed, the benefits are already being enjoyed by our customers with 27 ETA coolers ordered to date since the new developments have been introduced at locations

worldwide. 13 of these are already in operation. At one such installation, at Shanshui Pingyin Cement, the energy efficiency was improved to a steady recuperation temperature level of 1150°C and a mid-air temperature level of 440°C utilized for waste heat recovery while maintaining a clinker outlet temperature far below 100°C. While operating with an area grate load of 45 tpd/m<sup>2</sup> the power consumption of the cooling air fans was reduced by 0.7 kWh/t compared to the earlier ETA cooler generation.

### **But there’s more: benefits beyond electrical efficiency**

The changes of the aerated lanes also bring several other benefits. For example, there is an increase in the aerated surface area, which helps to eliminate dead zones in the cooler and optimise cooler performance.

We were also able to redesign the lanes, standardising the parts and reducing the overall weight. The amount of pebbles required has almost halved. Looking at the total flame-of-period for a cooler replacement this can be defined as a detail but it illustrates the commitment of Claudius Peters to push for improvements in its technology. As a result, manufacturing, assembly and installation times are lower with the new ETA cooler than they were with previous iterations, which means we can deliver the benefits of the ETA cooler in a greater variability and within shorter timeframes than before.



*Schematic representation of the ETA cooler lanes (left: sectional view lane of previous ETA generation; right: sectional view of newest ETA generation).*

One specific example is the design of the longitudinal sealing system. Whereas the previous design requires precise installation, the latest sealing system is “fool proof”, according to Vos. “To guarantee a seal between the moving parts, we have used a spring design. We have also cut the length of the seal by half to make it much easier to handle. And parts have been standardised, so fewer spare parts are needed, which again helps to reduce costs.”

There have also been improvements in the design of the modular lower part of the cooler. “The new design now includes side walls, making conventional side wall construction obsolete,” continued Vos. “For the customer,



this again means that the time needed on site for cooler conversion is shorter and the job is much simpler than before. With other improvements to the roller design to enable quick mounting/disassembly, the new moduls are now so easy to install, we use it for new plants, as well as conversions.”

The new moduls, called lane units, come in two- or three-lane widths and can be flexibly combined for any cooler width up to twelve lanes.

The updated ETA cooler is also digital-ready and equipped with CP Smart Devices that give the customer the ability to send data to our experts in Buxtehude, Germany without permitting external access to their primary networks. This enables us to offer remote support in a safely and responsible manner to customers in terms of cooler operation and optimisation to make sure the cooler is providing the best possible performance.

#### And what about the environment?



*Schematic representation of the new sealing system.*

While costs remain the main operational headache, the talk of the cement industry – at conferences and in the pages of trade journals – is now all about environmental sustainability with several major producers pledging to rapidly reduce the carbon intensity of their cement.

For example, members of the Global Cement and Concrete Association (GCCA), which include 40 of the world’s leading cement and concrete companies, recently committed to driving down the CO<sub>2</sub> footprint of concrete with an aspiration to deliver carbon-neutral concrete by 2050.<sup>2</sup> As the GCCA’s members are primarily cement producers, and cement production is the most significant contributor to the CO<sub>2</sub> footprint of concrete, this will inevitably require substantial reductions in the CO<sub>2</sub> emissions from the cement-making process. Meanwhile, global players have gone a step further and committed to operating its first net-zero cement production facility by 2030.<sup>3</sup>

Improving the energy efficiency of cement production is a critical part of this push to zero emissions: it is one of the four main strategies identified by the International Energy Agency in its technology roadmap for a low-carbon transition in the cement industry, alongside switching to alternative fuels, reducing the clinker content in cement, and deploying emerging technologies, such as carbon capture.<sup>4</sup>

With its potential to improve electrical consumption, the ETA cooler fits perfectly within the green imperative. “There is a real push for green solutions coming at the top level of the cement industry and at producers around the world,” concluded Herrmann. “Showing how a project – be that to the cooler or to any other part of the cement plant – will improve the plant’s environmental performance is therefore becoming an increasingly important part of justifying the expenditure and gaining planning approval, not only in regions where environmental regulation has traditionally been tight, such as the EU, but also in China and important emerging markets, such as Vietnam. By improving electrical energy consumption, the ETA cooler is ready to support the industry in reducing its indirect CO<sub>2</sub> emissions and meet its climate ambitions.”

#### Conclusion: cost and climate

The ETA cooler is a response to the industry’s needs and the challenges faced, every day, at cement plants around the world. By addressing both financial and environmental sustainability, it represents an investment in the future.

“The cooler market is constantly evolving and now, more than ever, we must be responsive to the needs of and challenges facing our customers,” concluded Herrmann. “As a result, we are never standing still but always working to improve. Part of this is a constant dialogue with our customers to make sure we offer solutions that support their success and make their lives easier. It’s something I think we’ve achieved with the ETA cooler. But we’re not resting on our laurels: we’re already working on our next development, our next project, our next improvement. So stay tuned!”

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## Refractory Rescue

By: SILICON Refractory Anchoring Systems B.V, The Netherlands

Wouter Garot, SILICON, describes how moveable anchoring systems could benefit the refractory industry by reducing installation and repair work and offer improved corrosion resistance for refractory materials. Over a billion tons of cement are made per year, and cement kilns are at the heart of this production process. Continual demands made in the cement industry for greater productivity and lower maintenance costs have pushed the industry to the limits of the conventional technologies existing on the market today. SILICON has recognised many of these limits and it has become the company's mission to transform the refractory industry through the use of superior anchoring systems.

### Moveable Anchors

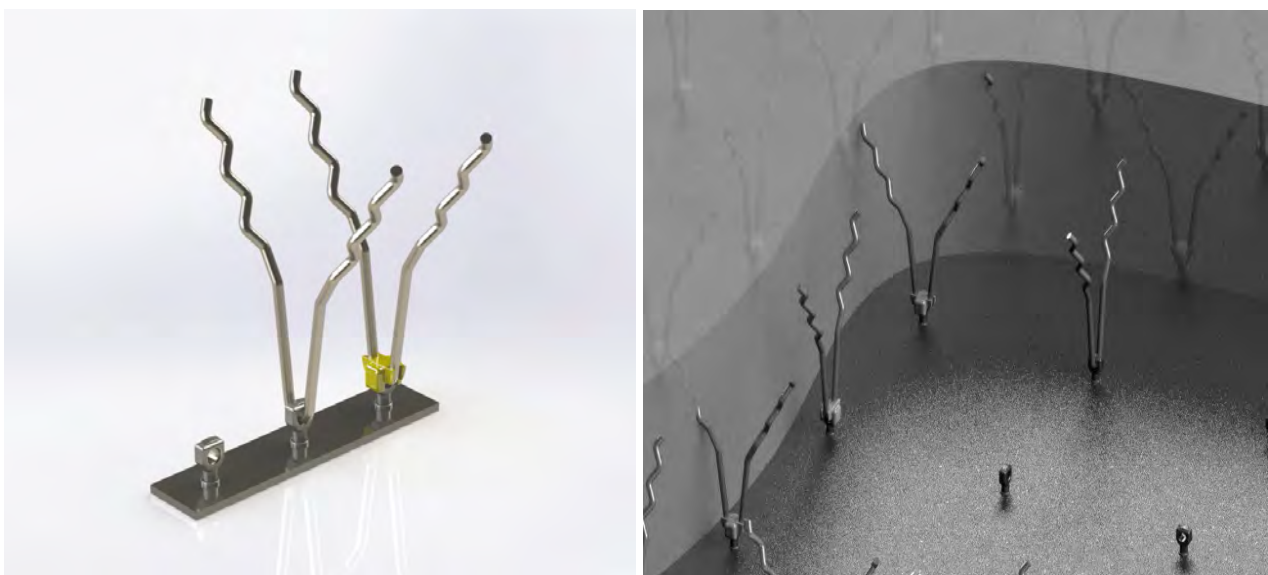
One of the company's most popular types of anchors used in the

cement industry are the 'moveable anchors' mainly used in rotary kilns where stress occurs due to refractory movement. These conventional anchors are commonly fastened to an omega shaped bracket by manual electrode welding and are tack welded so that they break 'free' during operation and 'float' within the omega bracket. This allows the anchor to move with the refractory material as it undergoes variable loads, thereby greatly reducing stresses on the refractory material.

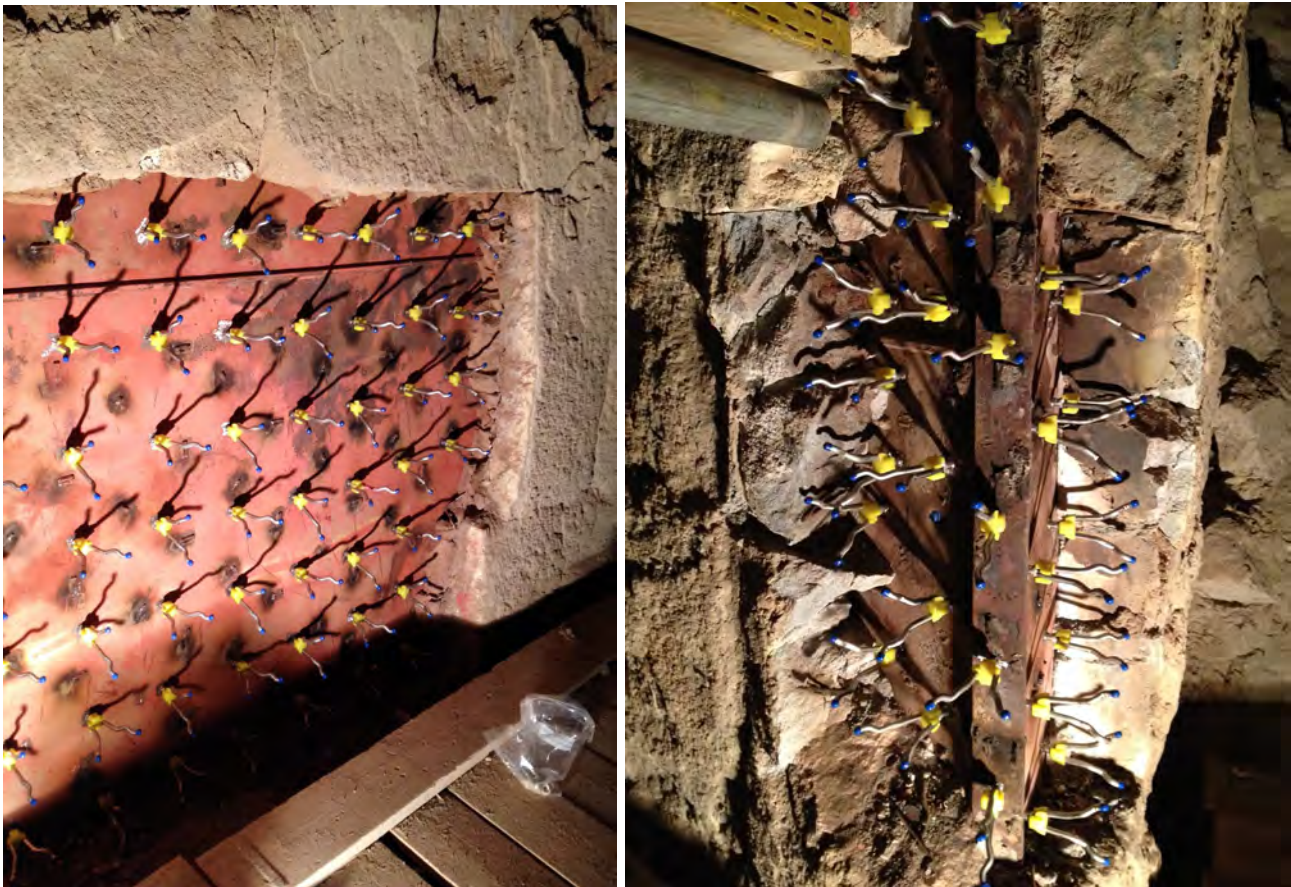
The SpeedBolt® was developed to facilitate the installation of moveable anchors for dynamic refractory linings in the cement industry and other applications where rigid anchoring systems are to be avoided. It also offers a solution to lessen the vast number of hours that usually go into the installation and repair

work of anchoring systems in cyclones, rotary kilns, klinker coolers, calciners, ducting and more, whilst also offering corrosion resistance.

The design of the new SpeedBolt Heavy Bullhorn anchor is based on a standard SILICON Heavy Bullhorn anchor. It is adapted to easily place the anchor through the eye of the SpeedBolt and lock it in place using the SpeedClip. This adaptation enables a faster installation time. A solid holding power for heavy refractory is achieved with the anchor's corrugated legs. The strongly corrugated wave will hold the refractory through any movement it may make, allowing the refractory lining to be flexible and tough. The moveable anchors are available in many different metal alloys in  $\varnothing 8$ ,  $\varnothing 10$  and  $\varnothing 12$  mm.



### SpeedBolt examples



### Installed SpeedBolt system

#### How it works

The SpeedBolt anchor is welded onto a casing; the shank is  $\varnothing 16$  mm which ensures a solid weld base for the heavy refractory load – the Bullhorn anchor is placed through the SpeedBolt eye. Finally, the plastic SpeedClip is put in place by hand or with a hammer to securely position the anchor. The clip melts at temperatures above  $220^{\circ}\text{C}$  ( $428^{\circ}\text{F}$ ) giving the Bullhorn anchor freedom to move. The SpeedBolt can be installed on flat and curved surfaces, side-hand, overhead and downwards. The SpeedBolt anchor does not need replacement when the Bullhorn anchor needs to be replaced in the next turnaround. It is made of stainless steel and will resist corrosion at the shell side for several turnarounds. This eliminates the need to weld a new SpeedBolt each time, thereby saving extra time in the installation of the new anchors, which then only need to be clipped in the SpeedBolt eye again as before.

#### Dual lining

A dual lining version has also been developed where improved insulation is required. In the case of a dual lining system, a threaded stud or shoulder stud is first welded onto the casing. The SpeedBolt is screwed on top after the back-up layer is installed.

#### Problem solving

The single point fastening method, using a stud, allows

for a safe and damage-free repetitive expansion and contraction of the refractory material. Through examination of samples exposed to repeated thermal cycling, it was observed that using this system, small cracks formed and created small ‘islands’ where expansion and contraction could take place quite freely.



The single point fastening method, using a stud, allows for a safe and damage-free repetitive expansion and contraction of the refractory material.



**The burner lasts 2 – 3 times longer with SILICON's system.**



**SILICON headquarters.**

The SpeedCell® 2G and 3G is SILICON's solution for the cement industry, burner tubes and heavier concrete applications. It maintains all the benefits of earlier models but adds extra strength and holding power to installations due to its increased thickness. The com-

pany's anchors are always screwed onto a shoulder stud, of which the length is precalculated so that the top of the anchor is aligned with the lining height. The lowest lining height it can be used with is 19 mm and the maximum height is 150 mm. M8 shoulder studs of

various dimensions can be ordered to allow the application of the anchor models with different refractory lining thicknesses. The stud's shoulder ensures that the SpeedCell stays intact and at the appropriate height. Small-medium grain refractory material is generally best suited for the system.

### Applications

In cement plants, SpeedCell can be used in the regions where severe abrasion tends to make the refractory wear extremely quickly. Multi-layer refractory solutions can also be offered, using the SpeedCell systems. It is also possible to install the systems as a refractory anchoring solution on internal walls of small diameter pipes. In these cases, the length of application is limited to what is reachable by the studwelder.

### In-house engineering

SILICON engineers can provide advice and support regarding refractory anchoring needs. The company's research and experience has given it the tools to ad-

vice customers on the best solutions for them. CEMEX, HeidelbergCement, Holcim and others are some of the company's customers.

### About the author

Wouter Garot, CEO of SILICON used his expertise in Materials Science and his experience in applying special high temperature alloys to develop anchoring systems that were custom-made to suit specific evolving industrial process requirements. He established SILICON to bring his products to European and ultimately international markets.

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# Efficiency at its Best

## *Dust-, spillage- and maintenance-free Skirtings supplied from Kamp-Lintfort, Germany conquer the World of Mining*

*By: Thorsten Koth, Sales & Distribution Manager, ScrapeTec Trading GmbH, Germany*

Companies whose daily operations include extraction, processing, crushing and screening of materials are familiar with the problems at the transfer points in conveying systems, such as nuisance dust generation, disruptive material spillage, costly belt wear, maintenance work that impedes operation and constant cleaning required. Even conventional chute skirtings or conveyor belt skirtings do not help to overcome these problems.



The AirScrape side sealing uses physical laws that generate this extraordinary result

For more than 5 years already, ScrapeTec from Kamp-Lintfort, Germany with its specific products has been providing effective solutions to all these problems. ScrapeTec products as e.g. AirScrape, DustScrape and TailScrape are applied individually or in combination and serve as side skirtings or belt skirtings, for example. They are used by large and small companies - in many countries around the world. Also in Chile and Peru.

### **AirScrape®. Dust-free – world-wide.**

ScrapeTec Trading GmbH started with the AirScrape as its first product. Wilfried Dünnwald, company founder and developer has put his experience as a mining engineer into this innovation. Developing this sealing system, his prime target was a maximum dust reduction at transfer points of bulk material handling systems. The principle is simple and ingenious. The AirScrape includes special skirtings at the transfer point which hover freely above the conveyor belt and use the air flow resulting from belt movement. They are mounted laterally with an air gap of approx. 1-2 mm to the belt at the transfer point. Lamellas integrated in the

AirScrape provide a so-called “Venturi effect” which results in an air suction from the outside to the inside. Dust or other fine material can thus not escape to the outside. This particular dust-reducing feature of AirScrape is esteemed worldwide wherever this special system is installed as belt skirting for transfer points.

### **Conveyor Belt Skirtings for Transfer Points as a Basis for Further Developments**

The experience gained from the use of AirScrape has led to the development of further products supplementing the ScrapeTec Trading GmbH portfolio. All solutions relate to the transfer points of conveyor systems. Take, for example, the DustScrape. This dust protection device with its sturdy filter cloth is installed in front of the transfer point in the direction of belt run and catches coarse dust and particles. It has a self-cleaning function. The DustScrape spans the conveyor belt on its entire width and ensures optimum dust reduction in this position. In the rear area of the transfer, the TailScrape is applied. Like AirScrape, the TailScrape works according to the Venturi concept and without contact to the belt. Owing

to its blade structure, it matches the contour of the belt trough precisely and serves as a customized rear belt sealing. Together, the AirScrape, DustScrape and TailScrape ensure dust reduction in perfection. Here, it becomes apparent that the original idea during development of the AirScrape, namely a maximum dust reduction at transfer points, has been innovatively thought through in subsequent products.

### **International Operation**

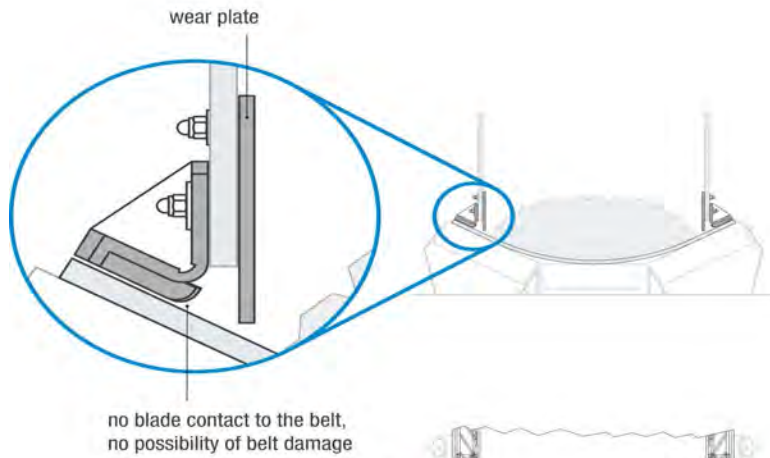
“Our drawing card is clearly the AirScrape”, says Thorsten Koth, Sales & Distribution Manager of ScrapeTec Trading GmbH. “But customers quickly recognize the synergy effects when the three dust reduction specialists work together. In this industry, it takes a little longer for innovations to be recognized and used.” Thorsten Koth serves clients from around the world who have learnt about AirScrape via trade journals, platforms or competitors. “Many interested people have seen the AirScrape on Youtube and have quickly recognized the advantages. Then they want more information or even on-site consulting. With the power of digital communications, companies find us from every corner of the world. With con-

ference formats like Teams, we can present the whole system ourselves and do consultations. But we also have distributors in some countries for consulting. Or sometimes we travel ourselves.“

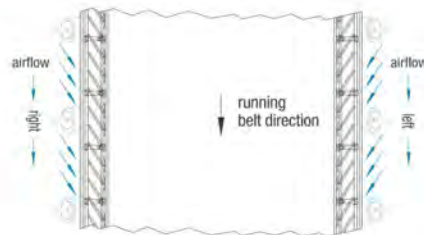
Thorsten Koth is very proud to have new clients in Chile and Peru. CODELCO, Chile’s largest copper producers, now also apply the AirScrape product. Other major players, for example in Spain, are also part of the customer base. It is important for Thorsten Koth to emphasize that small and medium-sized enterprises in particular also benefit from skirting solutions as the AirScrape. “Without making a large investment, immense costs can be saved in operation. This simply increases the profit.”

**Minimum Investment – Maximum Cost Savings**

“Of course, I cannot present new clients with a cost-benefit calculation of our customers. No one would appreciate a look behind the scenes. But the calculation is quite simple: you take the acquisition costs for the AirScrape-equipment. There are no assembly costs; this can simply be solved in-house. These costs are then compared with other costs: Maintenance work, cleaning work, repair costs and new acquisition costs for worn belts and skirtings. With the application of our skirting solutions, the costs for the items mentioned are reduced considerably. We hear from our new



The condition for the effective operation of the AirScrape is the correct installation



clients in Peru that the belt sealings applied before had to be replaced due to wear every fortnight and that each replacement resulted in a standstill of 3 hours. So 26 weeks times 3 hours a year: 78 hours! And every company knows what every hour of downtime costs. According to a rough calculation of the Peruvians, the AirScrape thus already paid off after only one months. And now it has been in service for 17 months already. For me, a simple and clear calculation." says Thorsten Koth, Head of Sales. Owing to the contact-free and thus frictionless mode of operation of skirtings like AirScrape and TailSrape, the costly purchase of new belts necessary because of common sealing-friction damage is avoided. SrapeTec recommend their interested custom-

ers to simply record the costs for a fiscal year which resulted from dust load (also the costs due to sickness-related absences), material spills, cleaning and exchange of skirtings and belts. This provides a good starting point to realize the economic benefits of the ScrapeTec skirting solutions. “That is the best argument. After all, numbers are understood across all borders,” Thorsten Koth knows from practical experience.

More information about ScrapeTec Trading GmbH and the various sealing solutions for conveyor transfer points is available on the website: [www.scrapetec-trading.com](http://www.scrapetec-trading.com) or by phone: +49 2842 932 92 93



.The installed AirScrape



The clean belt edge shows the effect of the .AirScrape



## *VPVision Release 7: The new outlook towards Energy Management of Factory Utilities*



VPVision is the complete real-time energy monitoring solution for all utilities within your company. Real-time energy monitoring is key to energy savings. VPVision is your guiding hand to target energy savings and to improve the performance of your factory. In this newest release 7, the VPVision software has gotten a complete make-over.

The modern design offers better navigation, improved stability, and increased performance. The software is more intuitive and self-explanatory, making a user manual almost redundant. Release 7 features many upgrades, including:

- Save time by remote access. VPVision is now cloud enabled. So, prevent costly on-site visits and perform remote audits and system checks. Furthermore, updating is just a matter of minutes, as updates can be done automatically over the air.
- Quick navigation with linked widgets. No need to build complex dashboard and prevent a data-overload. With the new linked widgets functionality, you can keep dashboard clean and simple for daily use, whereby more details can be accessed via the widgets.
- The right dashboard for the right job. Each factory, and each compressed air system is different. VPVision's improved page builder makes it even easier to create custom pages with the right KPI's /



graphs / overviews / alarms and more. This combined with user profiles, ensures you can build the right dashboards for the right job.

With these new features, VPVision release 7 brings monitoring of your utilities to the next level. Interested what VPVision can do for you? Book your free demo appointment by sending an email to: [sales@vpinstruments.com](mailto:sales@vpinstruments.com).

### **VPVision**

VPVision is the complete real time energy monitoring solution for all utilities within your company. Get real-time data on your usage and see the patterns on your supply and demand side. Take factual and well-founded decisions on your costs and investments.

Reveal the true costs of all utilities, including compressed air, technical gases, steam, vacuum, natural gas, electricity, wastewater, heating fuels etc. VPVision enables you to view data on any platform, from PC to smartphone. It will help your organization raise the energy awareness among your staff. It will be your guiding hand to target energy savings for individuals, teams or at company-wide level.

With VPVision you can:

- Quantify energy savings activities
- Reduce leaks and optimize maintenance
- Monitor and optimize your control systems
- Size and select the right equipment
- Detect issues immediately with alarm and email messages
- Allocate costs towards your machines/ production lines / departments.

### **About VPInstruments**

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

For more information, please contact:

Cynthia Kuiper

VPInstruments

Email: [info@vpinstruments.com](mailto:info@vpinstruments.com)

Visit our website: <https://www.vpinstruments.com>

## ***Cygnus 1 Intrinsically Safe – your trusty partner in hazardous situations***

Did you know? The Cygnus 1 Intrinsically Safe ultrasonic thickness gauge is the only one of its kind in the world certified to Class 1, Div 1 (“Zone 0”) for ATEX, IECEx and CSA-US.

As well as being intrinsically safe, Cygnus 1 is extremely rugged and specifically designed for measuring metal thickness to determine wastage or corrosion in Zone 0, Zone 1 hazardous and potentially explosive environments. Boasting a highly durable, shock-proof and splash-proof (IP65 rated) construction, this heavy-duty unit is supplied ready to use, and offers up to 12 hours continuous testing before recharge is necessary, with no plant shutdown or hot work permit required.



The virtually indestructible exterior houses a remarkable set of components, viewed via a bright LED display with polarised filter, in either metric or imperial measurement to suit the user’s preference. These features include an echo strength indicator to aid measurement, measurement self-verification to ensure maximum accuracy, stable calibration linear accuracy, no zero adjustment and sound velocity settings. The gauge can also be used with a range of varied frequency probes or a right-angle probe – more practical for reaching areas with restricted access.

This impressive array of features makes Cygnus 1 suitable for use in a multitude of challenging industries and applications including:

- Petrochemical and chemical processing plants
- Dry, dusty environments where ignition could occur, e.g. grain processing plants
- Oil and gas production and processing facilities
- Inside storage tanks on land or at sea
- Fuel depots
- Mining
- Hazardous goods vessels

Relieving the pressure in key industries using the Cygnus Multiple-Echo technique

Cygnus Instruments pioneered the Multiple-Echo technique. This technique has long since been the



industry standard for through-coating measurement of material thickness and is required by classification societies for ultrasonic thickness measurements. Like all Cygnus gauges, Cygnus 1 employs the Multiple-Echo technique to read through coatings and only gives accurate remaining metal thickness, guaranteeing crucial savings in time and money as it eliminates the need to remove and reapply coatings. What’s more, it avoids the risk of exposing the material under test to further corrosion.

This has proved significant in the oil & gas and marine industries as pipelines and marine structures, found both on land and underwater, are usually coated and can suffer from internal corrosion, leading to costly leaks and emergency repair work. This can easily be prevented with routine thickness gauging checks.

For more information, please contact:  
Hanna McGuinness, Marketing Assistant  
Cygnus Instruments Ltd  
Email: [hanna@cygnus-instruments.com](mailto:hanna@cygnus-instruments.com)

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## ***EEW Schwedt Plant Turns to Asynchronous Technology and Flywheel Energy Storage from Recycling Pioneer Lindner***

Schwedt (Germany), November 2021. Nestled at the edge of the Lower Oder Valley National Park, the Schwedt power plant, which belongs to the EEW Energy from Waste Group, supplies the local paper industry with electricity and process steam. In line with circular economy principles, the plant recovers paper mill, commercial and industry waste. To optimally prepare the waste for the fluidised bed boiler, the company relies on quality from Lindner.

Kraftwerk Schwedt GmbH & Co. KG has specialised in recovering energy from waste since 2010. Highly calorific SRF is produced from specially processed municipal solid, commercial and industrial waste. The power plant, in turn, generates electricity, heating and process steam which is used to supply Germany's third- largest paper mill, whose waste is also used for energy recovery. Specifically, the Schwedt power plant generates 175,000 megawatt hours of electricity and 602,000 megawatt hours of process steam annually.

The high demands placed on calorific value and throughput require powerful and energy-efficient recycling machines. Therefore, in spring 2020, the Schwedt power plant decided to replace a stationary shredder that had synchronous technology and gearbox with Lindner's Polaris 2200 and its tried-and-tested asynchronous technology, countershaft drive and flywheel energy storage. The Polaris performed much better, offered improved technical availability, mainly due to its drive concept, and led the company to replace another two shredders in 2021 with Lindner's Polaris 2200.

According to an independent report by the University of Leoben (2017), a shredder drive system with an asynchronous motor is more efficient than a drive system with a synchronous motor and produces up to double the output per machine depending on the input material. The drive system with the belt-driven asynchronous technology ensures optimum utilisation of the shredder's capacity, which in turn leads to lower production costs (€/t).

At the Schwedt power plant, a total of three Polaris 2200 shredders have been reliably and efficiently shredding 33 metric tons of waste per hour in three-shift operation over 5.5 days a week since 2021. This corresponds to 600 – 700 metric tons per machine every week. 'We chose Lindner's shredders based on the recommendation of another Lindner client and were not disappointed. The Polaris 2200 has an efficient cutting system and, after one year in full operation, has achieved a 30% higher productivity than machines with synchronous technology in the past,' says Steffen Künkel, Production Manager of Postprocessing at the Schwedt power plant.

Not only is the Polaris 2200 extremely efficient but its heart, the rotor, is also highly accessible. This makes maintenance work quicker and provides easy access to the screen. Regular maintenance work is an important quality criterion and affects the homogeneous particle size and the consistently high throughput. At the Schwedt power plant, maintenance is planned so that it is only carried out on one of the three processing lines at a time. When one shredder is being maintained, the other two lines share the shredding load between them – the additional waste stream can be shredded seamlessly on the two Polaris 2200s that remain in operation. The countershaft drive system harnesses the flywheel energy storage, which significantly reduces the acyclical power required by the electric motor and

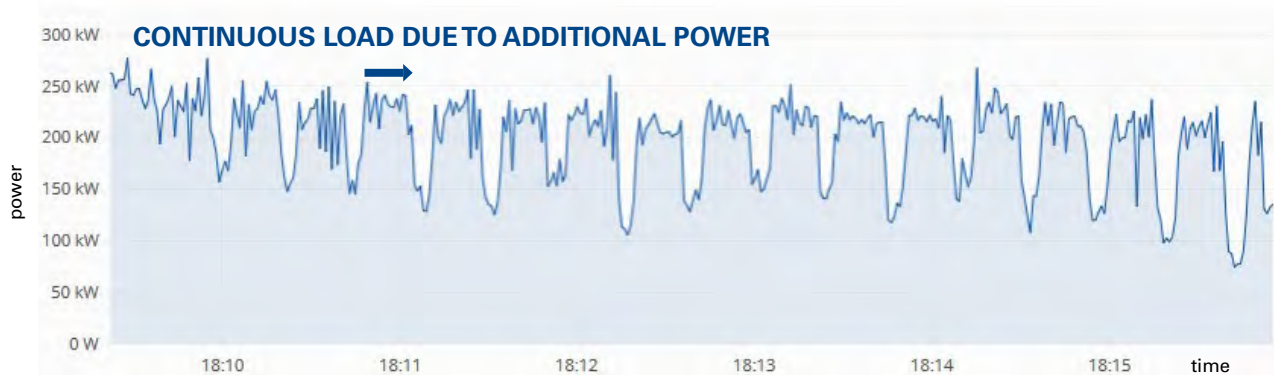


Abb. 1: Power input Lindner Polaris 2800 – asynchronous motor and double belt

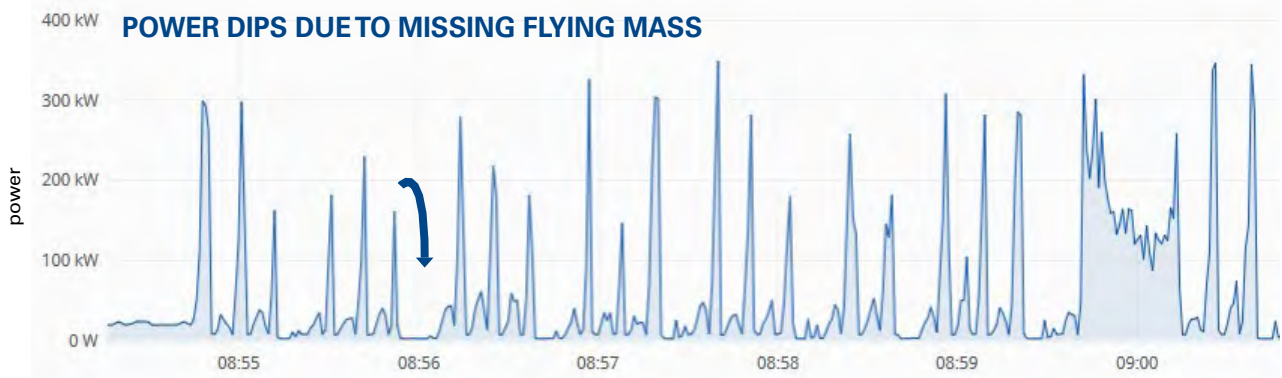


Abb. 2: Power input – synchronous motor and gear box.

also provides the additional power reserves required during peaks.

Generally speaking, the Polaris can be used for a variety of applications. Although the material delivered to the Schwedt power plant is predominantly free of FE parts, the input material might still contain unwanted and difficult-to-shred objects. The robust shear cutting system is, however, resistant to non-shreddables, which in turn positively affects the throughput. In terms of output material, the Polaris can achieve three-dimensional particle sizes from 40 to 120 mm in a single pass. For the Schwedt power plant’s fluidised bed kiln, it produces a particle size of 80 mm. Commercial, industrial and waste wood used to fire calciners in cement plants is also shredded to the same size. That’s another popu-

lar application of Lindner’s Polaris series.

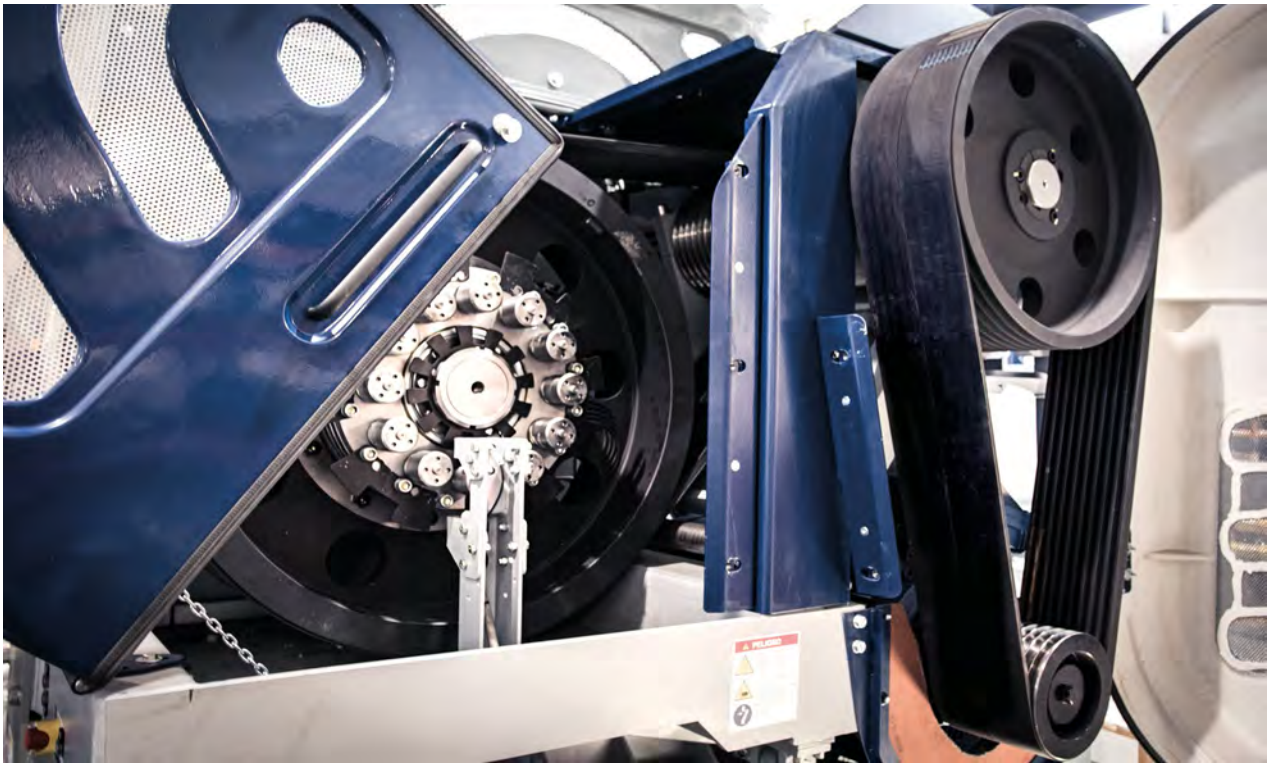
‘We enjoy working with Lindner, especially with the project department as power plant standards need to be incorporated at the design and documentation stage. Also the dismantling of the old machines, the installation of Lindner’s shredders and commissioning were flawless,’ says a delighted Künkel.

**Literature Review**

University of Leoben (2017). Independent report on the performance of different drive systems for shredding machines.



Three Polaris 2200 machines prepare the waste for energy recovery at the power plant. Copyright Lindner Recyclingtech



**Countershaft drive**

with ABB asynchronous motor, reduction gearing and flywheel energy storage for high reliability, maximum energy efficiency and continuous power

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Detailed view of the perfectly sized output material (80 mm) for the fluidised bed kiln. The 450 m long pipe conveyor transports the material to the fluidised bed kiln where it is incinerated to recover energy.

Copyright Lindner Recyclingtech

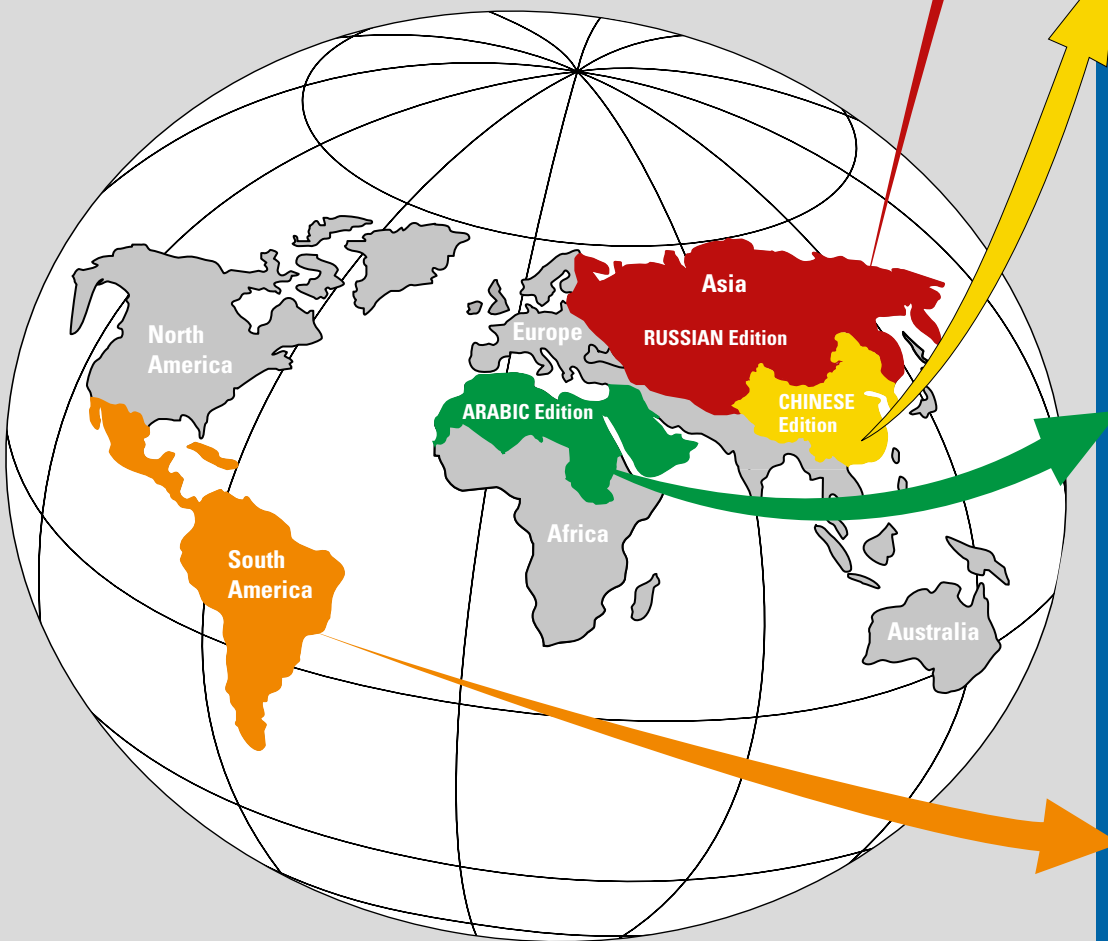
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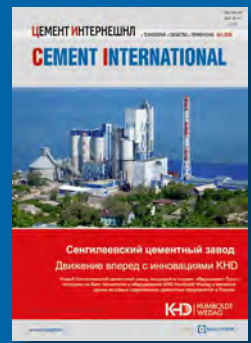
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The Schwedt power plant, which belongs to the EEW Energy from Waste Group, generates energy from waste.

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**About EEW Energy from Waste GmbH, Schwedt/Germany**  
**(<https://www.eew-energyfromwaste.com/de/standorte/schwedt/>):**

EEW Energy from Waste GmbH is a leader in recovering energy from waste and converting it into electricity and heat. The company employs 1250 people at 17 locations in Germany and neighbouring countries. To protect the environment, climate and resources, EEW replaces fossil fuels such as coal, oil and natural gas with energy generated from waste.

**About Lindner, Spittal an der Drau/Austria ([www.lindner.com](http://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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## ***SACMI ROBOTGLAZE, 5TH SUPPLY FOR DURAVIT EGYPT***

Reliability and Performance; key features of the new investment to further ambitious plant improvement plans at the Egyptian branch of multi-national sanitaryware manufacturer Duravit.

Duravit Egypt has taken the latest step in its plant improvement plans with SACMI technology. The company has recently installed a fifth GA2000 robot, part of the SACMI RobotGlaze series renowned throughout the world for its superior reliability and performance levels.

A long-standing partner of SACMI at its various factories around the world, Duravit made this latest investment as part of an ongoing expansion plan at its Egyptian plant, leading manufacturer in North Africa.

As with the previous supplies, this robot is a latest-generation model equipped with the most advanced solu-

tions to guarantee the best performances in terms of quality and sustainability. Among these is the glaze flow-rate control system which ensures even glaze application with zero wastage.

Process repeatability and quality are the most well-known and successful characteristics of this type of robot with which SACMI is contributing to the advance of the international sanitaryware industry towards the new frontiers of automation and 4.0 production control.

The robot supplied to Duravit Egypt, which can be programmed off-line and equipped with self-learning software, facilitates improved management of the production mix thus increasing line efficiency and reducing the time-to-market of the new products.

[www.sacmi.com](http://www.sacmi.com)



## ***SACMI Continua+ 2120. 'Small' and fast for the most popular sizes on the market***

The 60x60 cm size is currently the world's most popular ceramic tile. It's a large tile but not quite a slab, a term that by convention is used for products measuring 120x120 cm or more. And it's in this mid-size range – above all in the 60x60 size and its submultiples – that the world's suppliers of ceramic forming technology face some of their greatest challenges.

These are the reasons why Sacmi has decided to fur-

ther expand its Continua+ range, which already counts more than 100 lines sold worldwide since its launch. Just a few months after presenting the PCR 2180, the machine with the highest productivity on the market with an output of over 21,000 m<sup>2</sup>/day of slabs and submultiples, Sacmi is now launching the brand new PCR 2120, the smallest, most compact and versatile machine in its category. As Sacmi's Forming Product Unit director Gianluca Pederzini put it, this solution is

## New Products and Media

capable of “breaking down the last barrier separating slabs and standard size tiles”.

### The highest levels of productivity

The PCR 2120 can produce slabs with thicknesses of up to 20 mm, a potentially infinite length and a maximum width of 120 cm after firing (the equivalent of two 60x60 cm cavities).

Considering a 1 cm thickness and sizes of 60x60 cm, 120x120 cm and submultiples, productivity stands at 16,000 m<sup>2</sup>/day, the highest in this category.

The PCR 2120 also delivers outstanding compactness and lower operating expenses, and depending on the product to be made it can incorporate from 1 to 5 powder feeders. Downstream from the compactor, each version features a TPV cutting machine that enables manufacturers to create all the required sub-sizes in a coordinated, automated manner.

“While bringing together all the characteristics of the other machines in the Continua+ family such as flexible size changeovers, low scrap levels and the lowest consumption on the market, the new PCR 2120 responds to manufacturers’ needs to keep productivity high even when dealing with smaller average batch sizes, frequent size changeovers and the need to develop products with greater added value such as dry decoration,” observes Alberto Tassoni, Sacmi’s Forming Product Manager (Tiles Business Unit).

According to Pederzini, this is because it combines all the productivity, cost and space-saving advantages of a traditional pressing solution with the versatility of Con-

tinua+ in terms of size changeover management.

### Unrivalled performance

The new PCR 2120 stands out for four key characteristics:

- excellent performance on different sizes (80x80 cm and 90x90 cm, with productivities ranging from 10,600 m<sup>2</sup> to 12,000 m<sup>2</sup>);
- potentially infinite slab length;
- rapid changeovers (always under 30 minutes);
- superior quality without any falloff in productivity, especially in the case of decorated products, thanks to the continuous process with controlled de-airing.

### Consumption and sustainability

The machine offers two advantages in terms of sustainability. Continua+ 2120 keeps production scrap levels below 3% at all times. Moreover, this waste is fully recyclable, regardless of the product size, so it is much lower than on alternative solutions. Importantly, about 2% consists of powders that can be fed directly into the production cycle without any reprocessing costs. The remainder can be sent back to the mills, ensuring zero waste along the entire production line.

Specific consumption is also the lowest in the category at just 0.06 kWh per m<sup>2</sup> for an installed power of 80 kW.

Like previous solutions, the Continua+ 2120 uses just 120 litres of hydraulic oil, more than 95% less than on a discontinuous press, and brings more than proportional savings in terms of the energy needed to control the cooling circuit.



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## ***Ultra-large thin slabs: Laminam chooses the SACMI twin channel kiln***

***Key player selects SACMI technology thanks to its quality and repeatability in ceramic slab firing processes. The investment decision stemmed from the broad scope for customization. The kiln is set to become fully operational, at Borgo Taro in the Apennine hills near Parma, by the end of November.***

A leading player on the thin floor/furnishing slab market, Laminam has invested in a SACMI FBN twin channel roller kiln, a solution specifically designed to fire new large and very large products.

This latest model, already successfully delivered and installed at the Borgo Taro plant in the Apennine hills near Parma, is 170.1 meters long and has an inlet clearance of 2,350 mm. It will be used to manufacture various sizes, from 1840x3260mm to 1650x3260, from 1230x3260 a 1030x3040 mm. In practice, slabs with a broad range of decoration and glazing solutions, as wide as 1800 mm.

“This solution”, explains Giuseppe Miselli, SACMI Tiles Sales Manager for Italy, “has been designed and customized to optimize management of variously decorated products of varying thicknesses. In other words, a range of high-added-value products that demand dedicated technical solutions. We’ve also worked extensively with the customer to ensure sustainability, from energy recovery to filtration systems”.

From a customization perspective, the new SACMI twin channel kiln has been integrat

ed with a large pre-heating area with multiple drafts, a solution that allows for better

control of the high residual moisture content (water, glues, glazes) in the decorations. The twin channel kiln supplied to Laminam also incorporates new modulated air-gas solutions. These act as a ‘dynamic buffer’ between firing and cooling, and can be used for both heating and cooling to ensure optimal tension control. Last but not least, a carefully calculated roller center-to-center makes the kiln perfect for handling very thin products.

The new kiln also features next-gen SACMI NNG050 high-speed burners, which have the dual advantage of optimizing both quality and consumption. With this order, SACMI’s focus on sustainability takes the form of systems that recover the hot air from the burners and the hot air in the cooling chimney; the retrieved heat is used to power the 7-tier dryer (also supplied by SACMI).

Both dryer and kiln are equipped with inverter-equipped fans to optimize consumption control. Through its Filtering, Energy & Environment Division, SACMI has also supplied the kiln fume treatment (sleeve filter) system, complete with a conveying and dosing system.

Already up and running, the kiln was inaugurated in November, alongside the new dryer.

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PULL'n'CATCH® is a new air suction and filtering system, part of GreenBlow® line, capable of eliminating dust and processing residues.

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The GreenBlow® line is now complete as it provides in one package: air blowing, suction and filtering suitable for different sectors (ceramic, glass, marble, stone, etc ...) and can be integrated into existing systems.

### **PULL'n'CATCH® - MAIN SYSTEM FEATURES:**

#### **MODULARITY**

The system allows stand-alone installation, i.e. Ex novo, of all components or you can retrofit existing systems (GreenBlow fan + Air knife) by purchasing only the missing parts. It can

be independent or connected to the centralized aspiration system already present in the company.

#### **REDUCED COSTS**

The PULL'n'CATCH® system is also economically very competitive considering above all the energy savings due to the use of high efficiency IE3 and IE4 small size motors with a maximum consumption of 2.2kw (for each blower).

#### **SMALL FOOTPRINT**

The space occupied on the line is very small (about 800mm) and does not require plants dedicated.

#### **LIMITED NOISE**

The whole system is designed to contain noise as much as possible, managing to avoid the obligation to use PPE even in the immediate vicinity.

For more information, please contact:

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## **OIL WELL CEMENT PRICES TO SLOWLY REBOUND IN 2021**

According to CW Research's World Oil Well Cement Market Forecast 2026, oil well cement (OWC) prices saw a severe decrease in premium over OPC in 2016 as a consequence of the oil price crash, but are expected to recover in key markets, including the United States, Russia and Brazil, as oil prices rebound.

Oil well cement has been traditionally traded at a premium to OPC. However, with the decline in drilling activity in 2015/2016 due to oil price crash, OWC prices were barely higher than OPC. Just as the market was recovering in the succeeding years, the onset of the pandemic once again resulted in OWC premiums showing a sharp contraction.

“Over the forecast period we expect significant shale activity in North America, Argentina and Saudi Arabia to be the primary driver for OWC consumption. We expect oil well cement prices to be strengthened as the global economy rebounds from the economic carnage inflicted by the pandemic over the coming years”, states Carolina Pereira, CW Group’s Manager, Advisory & Research.

### **OWC prices in the United States to rise over the next five years**

OWC price premium in United States is expected to recover in 2021, rising above 2011 and 2016 levels. Prices fell approximately 10 percent between 2011 and 2016, but are estimated to recover in 2021 and continue to rise further over the forecast period.

The outlook for drilling activity in North America, of which the U.S. accounts for more than 75 percent of demand, is positive for the next five years due to an expected increase in oil prices as well as in shale drilling activity.

### **Middle East oil producers to ramp up activity**

The Middle East and North Africa region is expected to see improvement in the number of wells drilled in the 2021-2026 period, mainly driven by shale well drilling that started in Saudi Arabia in 2018, as well as the development of Iran’s onshore well drilling.

The region’s current oil well cement demand for high grade API OWC is mainly driven by Saudi Arabia, Kuwait, Iran and Iraq.

### **New well drilling and extender use to drive oil well cement demand by 2026**

The outlook for oil well drilling is expected to be positive in short term and to increase moderately over the next five years. After a decline in 2020, oil well cement demand is expected to see a recovery in 2021.

In spite of this expected increase, drilling activity in 2026 is estimated to still register well counts significantly below the peak year of 2014. North America is expected to be the main driver for this global well count growth, since it accounts for close to 80 percent of the global well drilling in 2021.

The World Oil Well Cement Market Forecast 2026 provides an in-depth, data-centric market assessment of the global API-certified oil well cement industry. The report includes a comprehensive bottom-up outlook, driven by indicators such as crude oil pricing, which provide an understanding of future drilling activity in terms of linear drilling distance and depth. The study breaks down oil well drilling activity and oil well cement demand by type of well (onshore, offshore, shale and geothermal applications), as well as by type of oil well cement (API oil well cement classes A, G, H and others). Use of extenders such as fly ash in oil well cementing is also considered and quantified.

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

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

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

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

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



## **GLOBAL CEMENT MARKET REMAINS RESILIENT WITH DEMAND SET TO INCREASE IN 2021**

World cement consumption is expected to rise by 2 percent in 2021, following a better-than-expected performance in the extremely challenging macro-economic environment of 2020, according to CW Research's 1H2021 update of the Global Cement Volume Forecast Report (GCVFR).

2020 was a year of historical economic recession; however, in terms of cement demand, it has proved to be more resilient in comparison to the 1H2020 and 2H2020 updates of the GCVFR. In the 1H2020 update, it was estimated that global cement consumption would decrease by over 9 percent, while in the 2H2020 update of the report global cement consumption was only expected to decrease by almost 3 percent.

“At the global level, cement consumption in 2020 decreased by less than 1 percent. This figure was largely aided by China’s robust level of cement consumption, which partially offset the decline in global cement demand. Excluding China, global demand declined by more than 2 percent, as India, the world second largest consumer saw a double-digit decline in cement consumption due to the pandemic,” states Prashant Singh, Associate Director at CW Group.

### **Cement demand growth prospects by 2025 remain positive**

Global cement consumption is projected to increase at a CAGR of almost 2 percent from 2020 to 2025. Looking at the global ex-China picture, however, growth prospects are significantly more positive at a CAGR of almost 4 percent over the five-year period.

CW Research has slightly improved its outlook for 2025, on account of healthier prospects for the long-term economic recovery from the coronavirus pandemic and growth in crude oil prices, as vac-

inations advance across the globe. Stimulus packages enacted by governments of major economies including the U.S., the European Union, and China with a focus on infrastructure investment, are predicted to support cement demand growth over the next years.

### **Consumption in Western Europe and Asia ex-China decrease in 2020**

While China’s cement consumption slightly increased last year, demand in Western Europe and Asia ex-China decreased by almost 5 and over 6 percent, respectively, year-on-year.

Stronger-than-expected growth in Eastern Europe and CIS and Latin America, along with moderate growth in the North America and the Middle East, helped to somewhat mitigate the consumption decline in Asia ex-China which led to global ex-China cement consumption to fall by more than 2 percent in 2020.

### **Demand to rise boosted by Asia ex-China and Middle East cement consumption**

In 2021, CW Research expects to see a quick recovery in Asia ex-China and the Middle East regions, with consumption expected to rebound to 5 percent growth and to almost 4 percent year-on-year in 2021, respectively.

North and Latin America despite extremely challenging scenarios also managed to show growth in the cement sector in 2020, which is expected to further strengthen in 2021. This is expected more so for North America than is the case for South America where the cement sector is expected to witness a strong boost from the US construction industry.

The CW Group’s Global Cement Volume Forecast Report (GCVFR) is a twice-yearly update on projections for cement volumes on a national, regional and global level. The forecast provides global and regional outlooks, as well as detailed perspectives on 57 of the world’s most important countries’ cement consumption, production, net trade and cement production capacity. The five-year outlook presented in this benchmark study enables industry professionals to shape their perspective on markets and business priorities.



## World construction set to see strong growth through to 2025



The world construction market has been seeing a strong recovery in 2021, with growth reaching the record level of €8,807 billion (+6.4% on 2020), higher even than pre-pandemic figures. According to Cresme Ricerche, which presented its latest forecasts during the ACIMAC members' meeting on 10 September, the growth trend is expected to continue strongly in 2022 (+3.5%) and then drop back to levels more in line with those of the last decade, fluctuating at around +3%.

“All the indicators are pointing to an expansion phase for the construction industry, which is the main driver of the current and future economic recovery,” said Antonio Mura, technical director of Cresme Ricerche and head of Simco, the information platform that monitors the scenarios in 150 countries (99% of the world's GDP) on a quarterly basis and cross-references 160 different statistical sources to make five-year projections.

According to the survey, the monetary and fiscal stimuli introduced by national and international institutions and the huge amounts of savings accumulated by households during the lockdown year have already boosted the growth rates of construction investments, which are well above GDP trends in almost all world markets with the sole exceptions of Japan, Germany and the USA.

Taking a more detailed look at the figures for the global construction industry, Cresme notes that in 2021 the residential sector accounts for €3,209 billion, that is 36.4% of the total €8,807 billion, and is expected to grow by €200 billion by 2025. At a global level, non-residential construction accounts for 31% of the total (€2,651 billion) and public works the remaining €2,947 billion (33%),

### Trends in different areas and countries

In terms of macro-areas, Oceania is the region with the strongest projected recovery in construction output in 2021 (+7.6%, after -3.6% in 2020). This is followed by Asia, where Cresme forecasts an increase in investment of +7.4% (after -3.2% in 2020, with China and India as the key drivers), North America (+6.3%), South America and Africa with +5.7%. In Latin America, however, the growth rate is insufficient to make up the ground lost in the previous year, when construction fell by 13.5%. Trailing in last place is Europe with +4.1%, compensating for the 4.8% losses of 2020.

Extending the analysis to individual countries, China is leading the rankings. According to Cresme, the Chinese construction market is estimated at €2,730 billion in 2021 (30% of the global market) and is expected to grow at an annual rate of 3.1% through to 2025.

Next come the US market (€1,241.1 billion; 14.1% of the total), which will grow by 1.5% per year, Japan and Germany, which account for 5.4% and 4.4% of total world construction respectively. Among the major world markets, Japan is the only case expected to see a 2.1% annual decline through to 2025, while Germany should remain stable at an average annual growth rate of 0.2%.

The Cresme forecasts for Italy, which ranks tenth in terms of construction market size (€186.2 billion and 2.1% of the world total), are for an average annual growth of 3.6%.

### Sustainability and building renovation

In this context, a macro-trend that is closely linked to the real estate sector, is sustainability, which in turn will drive demand for new, renewable, durable and insulating materials and above all will push western markets towards renovation of existing properties and away from investments in new buildings. Italy stands out for its record level of investments in renovation projects, which are expected to account for 77% of all building investments this year compared to an average of around 50% in Europe as a whole and less than 9% in China.

# DIARY DATES

## DIARY DATES

### CEMENT

#### Cemtech Live Webinar

##### Cement Plant Maintenance and Asset Reliability

Date: Wednesday, 12 January 2022

Time: 14:00 UK

Free registration:

[https://us02web.zoom.us/webinar/register/WN\\_ug-doTNoFSZGNmMqIVd4mVA](https://us02web.zoom.us/webinar/register/WN_ug-doTNoFSZGNmMqIVd4mVA)

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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#### INTERCEM Shipping Forum Madrid 2022

Date : 24 - 25 January 2022

Venue: Madrid, Spain

For more information, please visit:

**Website:** [www.intercem.com](http://www.intercem.com)

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#### Virtual Global Concrete 3

Date : 01<sup>st</sup> February 2022

Venue: your device

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

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#### Cemtech Live Webinar: Digitalisation

Date : 02<sup>nd</sup> February 2022

Venue: Your device

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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#### Argus Russian Coal 2022. CIS and Global Markets

Date : 18<sup>th</sup> February 2022

Venue: Moscow, Russia and online

**Tel:** +7 495 933 7571

**Email:** [moscowconferences@argusmedia.com](mailto:moscowconferences@argusmedia.com)

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#### CemTech 2022 Virtual Middle East & Africa 2022

Date : 21 - 23 February 2022

Venue: Online

For more information, please contact:

**Email:** [info@cemtech.com](mailto:info@cemtech.com)

[www.Cemtech.com](http://www.Cemtech.com)

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#### Virtual Asian Cement 2

Date : 01<sup>st</sup> March 2022

Venue: your device

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

---

#### Cemtech Live Webinar: Grinding & Crushing

Date : 02<sup>nd</sup> March 2022

Venue: Your device

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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#### 17<sup>th</sup> NCB International Conference

Date : 08 - 11 March 2022

Venue: Air Force Auditorium, Subroto Park, New Delhi, India

For more information, please visit:

<https://www.ncbindia.com/17seminar.php>

---

#### CBI – Cement Business & Industry Africa 2022

Date : 16 - 17 March 2022

Venue: Johannesburg, South Africa

For more information, please contact:

Mr. Ali Assad, Business Development Executive

**Tel.:** +40-754-023-330

**Email:** [sales@gmiforum.com](mailto:sales@gmiforum.com) / [mk@gmiforum.com](mailto:mk@gmiforum.com)

**Website:** <https://www.gmiforum.com>

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#### 6<sup>th</sup> Mortar Convention

Date : 22 - 24 March 2022

Venue: Your device

**Email:** [info@drymix.info](mailto:info@drymix.info)

**Website:** [www.drymix.info](http://www.drymix.info)

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#### 16<sup>th</sup> TURKCIMENTO International Technical Seminar & Exhibition

Date : 22 - 25 March 2022

Venue: Antalya, Turkey

For more information, please contact:

Turkish Cement Manufactures' Association

**Email:** [info@turkcimento.org.tr](mailto:info@turkcimento.org.tr) / [tekniks@turkcimento.org.tr](mailto:tekniks@turkcimento.org.tr)

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Virtual (*free*) and  
in-person events  
in 2022 from:



Details and registration

**Virtual Global Slag 4**

Global slag trends  
**18 January 2022**

**Virtual African Cement 2**

Market trends and technology in Africa  
**6 September 2022**

**Virtual Global Concrete 3**

Global concrete business  
**1 February 2022**

**15th Global CemFuels Conference**  
**September 2022, Lisbon**

**Virtual Global CemFuels 4**

Alternative fuels for cement  
**15 February 2022**

**Virtual Global CemQC 3**

Quality control for clinker and cement  
**4 October 2022**

**Virtual Asian Cement 2**

Market trends and technology in Asia  
**1 March 2022**

**20th Global Gypsum/  
15th Insulation Conference**  
**October 2022, Estoril/Lisbon**

**Virtual American Cement 2**

Market trends and technology in the Americas  
**30-31 March 2022**

**3rd Global FutureCem Conference**  
**November 2022, Vienna**

**1st Global CemProducer Conference**  
**11-12 May 2022, Munich**

**Virtual Global CemProducer 5**

Cement production optimisation  
**1 November 2022**

**Virtual Global CemEnergy 3**

Conventional fuels for cement and lime  
**24 May 2022**

**Virtual Global CemPower 2**

Electrical generation and efficiency  
**29 November 2022**

**Virtual Global CemCCUS**

Carbon capture, use and storage for  
cement and lime  
**14 June 2022**

**Virtual European Cement 2**

Market trends and technology in Europe  
**6 December 2022**

**Virtual Middle Eastern Cement 3**

Market trends and technology in the Middle East  
Co-organised by AUCBM  
**5 July 2022**

**Virtual Global Ash 3**

Ash for cement and concrete  
**13 December 2022**

Check website for  
latest details

[www.GlobalCement.com](http://www.GlobalCement.com)



INTERNATIONAL CEMENT CONFERENCE

# Cemtech

PRODUCTION EXPERTISE - MANAGEMENT SKILLS

## 2022 Live Webinar Series

### Cemtech Live Webinars

Cemtech's popular monthly webinar series will run throughout 2022 with a full schedule of events designed to keep you up-to-date on the latest industry developments and technology advances.

Each session is dedicated to exploring a key area of cement manufacturing technology with the support of leading industry technology suppliers and sector specialists.

The live presentations and question & answer sessions offer the perfect way to engage and extend your knowledge of the key topics and themes relating to production best practice.

The concise format makes the webinar easy to fit into your own work schedule, and live presentation offers the chance to engage directly with speakers during our dynamic question and answer sessions.

**Added value:** all registrants receive a copy of the webinar slides along with a recording of the event and certificate of attendance.

Registration is free of charge, visit: [www.CemNet.com](http://www.CemNet.com) for the next available webinar.

If you wish to present at a Cemtech Live Webinar, please send your title and abstract to [info@CemNet.com](mailto:info@CemNet.com)

### Webinar Schedule

JAN 12	Maintenance
FEB 02	Digitalisation
MAR 02	Grinding & Crushing
APR 06	Bulk Materials Handling
MAY 04	Emissions Reduction
JUN 08	Process Optimisation
JUL 06	Clinker Reduction
SEP 07	Decarbonisation
OCT 05	Quality Control
NOV 02	Alternative Fuels
DEC 07	The Digital Plant

**Virtual American Cement 2**

Date : 30 - 31 March 2022  
 Venue: your device  
 For more information, please contact:  
 Dr. Robert McCaffrey  
**Tel.: +44 1372 743837**  
**Fax: +44 1372 743838**  
**Email: rob@propubs.com**

**Cemtech Live Webinar: Bulk Materials Handling**

Date : 06<sup>th</sup> April 2022  
 Venue: Your device  
 For more information, please visit:  
[www.CemNet.com](http://www.CemNet.com)

**PetroCem 2022**

Date : 24 - 26 April 2022  
 Venue: Hotel Astoria, St Petersburg, Russia  
 For more information, please visit:  
<https://petrocem.ru/en/>

**CBI – Cement Business and Industry Brazil and LatAm & Alternative Fuels and Raw Materials 2022**

Date : 27 - 28 April 2022  
 Venue: São Paulo, Brazil  
 For more information, please contact:  
**Email: sales@gmiforum.com / mk@gmiforum.com**  
**Website: https://www.gmiforum.com**

**admmc7**

Date : 28 April 2022  
 Venue: King Edward (Omni) Hotel in Toronto, Ontario, Canada  
**Email: info@drymix.info**  
**Website: www.drymix.info**

**4<sup>th</sup> Edition of the Italian Concrete Days**

Date : 28 - 30 April 2022  
 Venue: Piacenza Expo, Italy  
 For more information, please visit [www.gic-expo.it](http://www.gic-expo.it)

**64<sup>th</sup> IEEE-IAS/PCA Cement Industry Technical Conference**

Date : 01 - 05 May 2022  
 Venue: Las Vegas, Nevada, USA  
 For more information, please visit:  
<http://cementconference.org>

**Cemtech Live Webinar: Emissions Reduction**

Date : 04<sup>th</sup> May 2022  
 Venue: Your device  
 For more information, please visit:  
[www.CemNet.com](http://www.CemNet.com)

**1<sup>st</sup> Global CemProducer Conference**

Date : 11 - 12 May 2022

Venue: Munich, Germany  
 For more information, please contact:  
 Dr. Robert McCaffrey  
**Tel.: +44 1372 743837**  
**Fax: +44 1372 743838**  
**Email: rob@propubs.com**

**Virtual Global CemEnergy 3**

Date : 24<sup>th</sup> May 2022  
 Venue: your device  
 For more information, please contact:  
 Dr. Robert McCaffrey  
**Tel.: +44 1372 743837**  
**Fax: +44 1372 743838**  
**Email: rob@propubs.com**

**Cemtech Live Webinar: Process Optimisation**

Date : 08<sup>th</sup> June 2022  
 Venue: Your device  
 For more information, please visit:  
[www.CemNet.com](http://www.CemNet.com)

**Virtual Global CemCCUS (carbon capture/use/storage for cement)**

Date : 14<sup>th</sup> June 2022  
 Venue: your device  
 For more information, please contact:  
 Dr. Robert McCaffrey  
**Tel.: +44 1372 743837**  
**Fax: +44 1372 743838**  
**Email: rob@propubs.com**

**Virtual Middle Eastern Cement 3**

Date : 05<sup>th</sup> July 2022  
 Venue: your device  
 For more information, please contact:  
 Dr. Robert McCaffrey  
**Tel.: +44 1372 743837**  
**Fax: +44 1372 743838**  
**Email: rob@propubs.com**

**Cemtech Live Webinar: Clinker Reduction**

Date : 06<sup>th</sup> July 2022  
 Venue: Your device  
 For more information, please visit:  
[www.CemNet.com](http://www.CemNet.com)

**4<sup>th</sup> Cement Conference 2022**

Date : 26 - 27 July 2022  
 Venue: Cham Palace, Damascus, Syria  
 For more information, please contact:  
**E-mail: info@cementtechco.net**  
**Mobile/WhatsApp: +963969019984**  
**Website: www.cementtechco.net**

## DIARY DATES

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### **Powtech 2022**

Date : 30 August - 01 September 2022

Venue: Nürnberg, Germany

For more information, please visit:

[www.powtech.de/en](http://www.powtech.de/en)

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### **Virtual African Cement 2**

Date : 06<sup>th</sup> September 2022

Venue: your device

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

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### **Cemtech Live Webinar: Decarbonisation**

Date : 07<sup>th</sup> September 2022

Venue: Your device

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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### **16<sup>th</sup> Global CemFuels Conference and Exhibition on alternative fuels for the cement and lime industry**

Date : 21 - 22 September 2022

Venue: Bangkok, Thailand

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

**website:** <https://www.cemfuels.com/>

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### **Virtual Global CemQC 3**

Date : 04<sup>th</sup> October 2022

Venue: your device

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

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### **Cemtech Live Webinar: Quality Control**

Date : 05<sup>th</sup> October 2022

Venue: Your device

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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### **Slag & AshTrade Asia 2022**

Date : 14 - 15 October 2022

Venue: Bangkok, Thailand

For more information, please contact:

**Mr. Ali Assad, Business Development Executive**

**Tel.:** +40-754-023-330

**Email:** [sales@gmiforum.com](mailto:sales@gmiforum.com) / [mk@gmiforum.com](mailto:mk@gmiforum.com)

**Website:** <https://www.gmiforum.com>

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### **3<sup>rd</sup> Global FutureCem Conference**

Date : 18 - 19 October 2022

Venue: Vienna, Austria

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

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### **Virtual Global CemProducer 5**

Date : 01<sup>st</sup> November 2022

Venue: your Device

For more information, please contact:

Dr. Robert McCaffrey

**Tel.:** +44 1372 743837

**Fax:** +44 1372 743838

**Email:** [rob@propubs.com](mailto:rob@propubs.com)

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### **Cemtech Live Webinar: Alternative Fuels**

Date : 02<sup>nd</sup> November 2022

Venue: Your device

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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### **XXIV International Construction Forum | Cement Concrete - Dry Mixtures**

Date : 29<sup>th</sup> November – 01<sup>st</sup> December 2022

Venue: Expocentre, Moscow, Russia

For more information, please contact:

**Email:** [info@alitinform.ru](mailto:info@alitinform.ru)

**Tel.:** +7 812 3350992

**http://www.infocem.info**

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### **Cemtech Live Webinar: The Digital Plant**

Date : 07<sup>th</sup> December 2022

Venue: Your device

For more information, please visit:

[www.CemNet.com](http://www.CemNet.com)

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### **7<sup>th</sup> Alternative Fuels Symposium**

Date : 2022

Venue: Germany

**Tel.:** +49 0 203 34 65 16 0

**Fax:** +49 0 203 34 65 16 50

**Email:** [workshop@lechtenberg-partner.de](mailto:workshop@lechtenberg-partner.de)

**Website:** [www.lechtenberg-partner.de](http://www.lechtenberg-partner.de)

---

XXIV INTERNATIONAL CONSTRUCTION FORUM

# CEMENT - CONCRETE DRY MIXTURES

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



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

More than **6000**  
exhibition visitors

**BlockRead**

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

**450** members  
of the business  
program

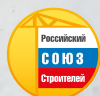
**MixBuild**

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

**150** exhibits

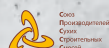
**80** reports

**18** countries



organizers

venue



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



# DIARY DATES

## DIARY DATES

### TRAINING

#### **Crash Course Process Control**

Date : 14 - 16 February 2022

Venue: Düsseldorf, Germany

**Email: [training@vdz-online.de](mailto:training@vdz-online.de)**

For more information, please visit:

**<https://www.vdz-online.de>**

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#### **Energy Balances and Efficiency**

Date : 07 - 10 March 2022

Venue: Düsseldorf, Germany

**Email: [training@vdz-online.de](mailto:training@vdz-online.de)**

For more information, please visit:

**<https://www.vdz-online.de>**

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#### **Online Course - Firing Alternative Fuels: Opportunities, impacts on process, optimisation and limitations**

Date : 28 - 31 March 2022

Venue: Your device

**Email: [training@vdz-online.de](mailto:training@vdz-online.de)**

For more information, please visit:

**<https://www.vdz-online.de>**

---

#### **Wear of Refractory Materials**

Date : 14 June 2022

Venue: Düsseldorf, Germany

**Email: [training@vdz-online.de](mailto:training@vdz-online.de)**

For more information, please visit:

**<https://www.vdz-online.de>**

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#### **Installation of Refractory Materials**

Date : 15 - 16 June 2022

Venue: Düsseldorf, Germany

**Email: [training@vdz-online.de](mailto:training@vdz-online.de)**

For more information, please visit:

**<https://www.vdz-online.de>**

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#### **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](mailto:training@vdz-online.de)**

For more information, please visit:

**<https://www.vdz-online.de>**

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Evolving the well-established

# Training Programme 2022

## Online Courses

**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

## E-Learning

**More than 75 hours of self-paced online  
training with high-quality content, from  
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[www.vdz-online.de/en/training](http://www.vdz-online.de/en/training)  
[training@vdz-online.de](mailto:training@vdz-online.de)

Follow us on **LinkedIn**

VDZ  
Toulouser Allee 71  
40476 Duesseldorf  
Germany

# DIARY DATES

## DIARY DATES

### **CERAMIC**

#### **CEVISAMA – International Ceramics & Bathroom Experience**

Date : 07 - 11 February 2022

Venue: Valencia Fair, Spain

For more information, please visit:

<https://cevisama.feriavalencia.com>

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#### **27<sup>th</sup> Tecna 2022**

Date : 27 - 30 September 2022

Venue: Rimini Expo Centre, Italy

**Tel: +39 0541 744111**

**Fax: +39 0541 744200**

**Email: [segreteria@tecnargilla.it](mailto:segreteria@tecnargilla.it)**

**<https://en.tecnaexpo.com/>**

---

### **GENERAL**

#### **17<sup>th</sup> Edition SteelFab 2022**

Machinery, Technology, Equipment

Date : 10 - 13 January 2022

Venue: Expo Center Sharjah, UAE

For more information, please contact:

**Tel.: +971 6 5770000**

**Email: [steel@expo-centre.ae](mailto:steel@expo-centre.ae)**

**Website: [www.steelfabme.com](http://www.steelfabme.com)**

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#### **Above Ground Atmospheric Storage Tank Management - Virtual Summit**

Date : 24 - 25 January 2022

Venue: Your device

For more information, please contact:

John Karras

**Tel.: +603 2775 0067**

**Email: [johnk@trueventus.com](mailto:johnk@trueventus.com)**

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#### **SOLIDS & RECYCLING-TECHNIK Dortmund 2022**

Date : 16 - 17 February 2022

Venue: Dortmund, Germany

For more information, please visit:

**[www.solids-dortmund.de](http://www.solids-dortmund.de)**

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#### **Egypt Projects**

##### **5<sup>th</sup> International Exhibition for Construction & Building Materials**

Date : 17 - 19 March 2022

Venue: Egypt International Exhibition Center - EIEC, Cairo Governorate, Egypt

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# DIARY DATES

## DIARY DATES

For more information, please contact:

Mr. Amr Hassan

**Tel.:** +20226774263

**Fax:** +20226774252

**Mobile:** +201009069609

**Email:** [amr@arabiangerman.com](mailto:amr@arabiangerman.com)

**Website:** [www.Egypt-projects.com](http://www.Egypt-projects.com)

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### 27<sup>th</sup> International Mining Congress and Exhibition (IMCET 2022)

Date : 22 - 25 March 2022

Venue: Antalya, Turkey

**Tel.:** (+90 546) 4251072

**Fax:** (+90 312) 4175290

For more information, please contact:

**E-mail:** [imcet@maden.org.tr](mailto:imcet@maden.org.tr) /

[madenmuhodasi@maden.org.tr](mailto:madenmuhodasi@maden.org.tr)

**Website:** [www.imcet.org.tr](http://www.imcet.org.tr)

---

### 4<sup>th</sup> Annual Customer Experience

Date : 29 - 30 March 2022

Venue: JW Marriott Hotel Kuala Lumpur, Malaysia

For more information, please contact:

John Karras

**Tel.:** +603 2775 0067

**Email:** [johnk@trueventus.com](mailto:johnk@trueventus.com)

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### 2<sup>nd</sup> Annual Chief Data Scientist

Date : 29 - 30 March 2022

Venue: JW Marriott Hotel Kuala Lumpur, Malaysia

For more information, please contact:

John Karras

**Tel.:** +603 2775 0067

**Email:** [johnk@trueventus.com](mailto:johnk@trueventus.com)

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### 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](mailto:info@messe-muenchen.de)

[www.ifat.de/en/](http://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](mailto:hillhead@qmj.co.uk)

[www.hillhead.com](http://www.hillhead.com)

---

### World Cities 2022

Date : 21 July - 03 August 2022

Venue: Sands Expo & Convention Centre, Singapore

For more information, please contact organizers at:

**Email:** [info@worldcities.com.sg](mailto:info@worldcities.com.sg)

**Website:** [www.worldcitiessummit.com.sg](http://www.worldcitiessummit.com.sg)

---

### 10<sup>th</sup> 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](mailto:johnk@trueventus.com)

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### ACHEMA 2022

Date : 22 - 26 August 2022

Venue: Frankfurt, Germany

For more information, please visit:

[www.achema.de](http://www.achema.de)

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### 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](http://www.interpack.com)



# عالم الإسمنت ومواد البناء

تصدر عن : الاتحاد العربي للإسمنت ومواد البناء العدد 86 ديسمبر / كانون الأول 2021

- أخبار عربية
- أخبار عالمية
- مقالات تقنية
- منتجات جديدة
- مؤتمرات ومعارض

# CEMENT & BUILDING MATERIALS REVIEW



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  - *New Products*
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*A quarterly bilingual publication that is widely spread in the Arab region.*

*For more information, please contact*

*Eng. Ahmad Al-Rousan, AUCBM Secretary General*

*Arab Union for Cement and Building Materials (AUCBM)*

*Email: [aucbm@scs-net.org](mailto:aucbm@scs-net.org) & [aucbm1977@gmail.com](mailto:aucbm1977@gmail.com)*

*Please visit our website <http://www.aucbm.net>*





# عالم الإسمنت ومواد البناء

مؤتمرات ومعارض

منتجات جديدة

موضوعات تقنية

أخبار عالمية

الملف العربي

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

## المساهمات

● ترحب هيئة تحرير المجلة بمساهمة السادة المهتمين والمتخصصين بهدف إثراء المادة التحريرية .

● الآراء الموجودة بالمجلة لا تعبر بالضرورة عن رأي الاتحاد أو المجلة وإنما عن الرأي الخاص ب كاتبها ولا يتحمل الاتحاد أية مسؤولية قانونية تجاه ذلك .

توجه كافة طلبات الإعلان باسم رئيس التحرير

الإعلان

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65 دولار أمريكي

الشركات والمؤسسات ●

الجامعات ومراكز البحوث ●

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Website : [www.aucbm.net](http://www.aucbm.net)

# المكتويات

أخبار عربية  
أخبار عالمية  
منتجات جديدة

الموضوعات:

- أحدث مبردات ETA التي ترفع قدرة المنافسة في إنتاج الكلنكر  
إعداد: Claudius Peters Projects GmbH – ألمانيا
- الكفاءة في أفضل حالاتها - الحواف الخالية من الغبار والانسكاب والصيانة من  
Kamp-Lintfortتغزو عالم التعدين  
إعداد: ScrapeTec Trading GmbH / Thorsten Koth – ألمانيا
- إنقاذ الحراريات  
إعداد: محمد راشد / SILICON Refractory Anchoring Systems B.V – هولندا
- كيفية اختيار قارئة تناسب كلاً من القدرة المنقولة وقطر عمود التدوير  
إعداد: مهندس أقدم نمير عبدالغني محمود / معمل سمنت بادوش الجديد – العراق

مؤتمرات ومعارض

## المراسلات

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

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Website : [www.aucbm.net](http://www.aucbm.net)





مجلة عالم الإسمنت ومواد البناء

**جدول موضوعات المجلة لعام 2022**

المناسبات	الموضوعات	العدد
	<ul style="list-style-type: none"> <li>* المعالجة الحرارية</li> <li>* التحكم في العمليات والتحسين نحو الأمثل</li> <li>* هندسة عمليات الإسمنت</li> <li>* أفران الإسمنت</li> <li>* معالجة النفايات الخطرة ومراحل ما قبل معالجتها</li> <li>* معالجة غازات المداخن</li> <li>* التحول الرقمي</li> <li>* الرقمنة في صناعة الإسمنت</li> <li>* الحراقات وعمليات الحرق</li> <li>* تطوير المشاريع</li> <li>* التحديث والأتمتة</li> <li>* تحليل الغازات</li> <li>* الاختبار والتحليل</li> <li>* معدات المختبرات</li> </ul>	مارس/أذار 2022
	<ul style="list-style-type: none"> <li>* التعبئة والتغليف</li> <li>* أنظمة التحميل / التفريغ والتخزين</li> <li>* حلول النقل</li> <li>* تكنولوجيا التغذية</li> <li>* سيور الرافعات الدلوية</li> <li>* مناولة المواد في مصانع الإسمنت والمحاجر والمحطات والموانئ</li> <li>* القباب والصوامع والنقل</li> <li>* الحماية من التآكل</li> <li>* التروس والمحركات والتزييت</li> <li>* أنظمة الحماية من الحريق</li> <li>* إجراءات الصيانة</li> <li>* الحرايات</li> <li>* تأهيل المحاجر</li> <li>* تنظيف الصوامع</li> <li>* المرشحات وإزالة الغبار</li> </ul>	يونيو/حزيران 2022
	<ul style="list-style-type: none"> <li>* المبردات</li> <li>* المراوح</li> <li>* مدافع الهواء</li> <li>* الصحة والسلامة المهنية</li> <li>* تكنولوجيا الطحن</li> <li>* الطواحين العمودية</li> <li>* زيادة إنتاج مطحنة الإسمنت</li> <li>* التكسير</li> <li>* مساعدات الطحن والطحن</li> <li>* استعادة الحرارة المفقودة</li> <li>* التصوير الحراري</li> <li>* إعادة التدوير الحراري</li> </ul>	سبتمبر/أيلول 2022

	* طرق معالجة واستخدام غبار الممر الجانبي * الحماية من الانفجار في صوامع تخزين الوقود البديل * أنظمة مناولة الوقود البديل * إنتاج واستخدام الوقود الصلب المستعاد	
	* تصنيع الإسمنت الأبيض * الإسمنت المخلوط * الإسمنت متعدد المكونات * إسمنت الخبث * إنتاج الإسمنت الأخضر * خلانات 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	ديسمبر/كانون أول 2022

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

1. عدد مارس / آذار : 28 فبراير / شباط 2022
2. عدد يونيو / حزيران : 30 مايو / أيار 2022
3. عدد سبتمبر / أيلول : 31 أغسطس / آب 2022
4. 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	
1,250	*	*	*	غلاف خارجي ملون (يمين أو يسار) A4
950	*	*	*	غلاف داخلي ملون (يمين أو يسار) A4
750	950	1,250	1,350	صفحة داخلية ملونة A4
450	550	650	750	نصف صفحة داخلية ملونة A4
300	350	400	450	ربع صفحة داخلية ملونة A4
300	350	400	450	صفحة أسود وأبيض

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

[WWW.AUCBM.NET](http://WWW.AUCBM.NET) إعلان على موقع الاتحاد

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



# أخبار عربية

## أخبار عربية

### الجزائر

وتبلغ طاقة هذا المصنع الأول من نوعه بولاية بشار والذي دخل مرحلة الإنتاج الفعلية مطلع سنة 2020 ، واحد (1) مليون طن من الإسمنت/ سنوياً ، حيث تمكنت شركة "الساورة للإسمنت" في نهاية أغسطس / آب من إنتاج 180 ألف طن من الإسمنت ، منها 25 ألف طن تم تصديرها إلى بعض الدول المجاورة من بينها مالي والنيجر وموريتانيا .

ويستفيد هذا المصنع من توفر مواد الخام الأولية في منطقة بن زيرق ، فضلا عن قربه من الطريق الوطني رقم (6) وخط السكة الحديدية بشار- وهران ، حسب بطاقته التقنية .

المصدر: [www.radioalgerie.dz](http://www.radioalgerie.dz)

### صادرات مجمع جيكا تبلغ 2 مليون طن في سنة 2021

توقع المجمع الصناعي للإسمنت الجزائر "جيكا" أن تبلغ الصادرات نحو مختلف الأسواق الخارجية 2 مليون طن في نهاية السنة الجارية . كما نوه المجمع إلى ضرورة إنشاء ميناء بمنطقة غرب البلاد من أجل تنشيط أكبر للصادرات حيث هناك حاجة إلى سفن تتراوح طاقة حمولتها بين 45000 و50000 طن . وقد استطاع مجمع جيكا التسويق إلى عديد أسواق القارة الأفريقية وتمكن حتى من دخول أمريكا اللاتينية وأوروبا .

المصدر: [khabarpress.dz](http://khabarpress.dz)

### المملكة العربية السعودية

**"التجارة" السعودية تصدر 35 رخصة لتصدير الإسمنت والحديد منذ بداية 2021**

كشفت وزارة التجارة السعودية عن إصدار 35 رخصة لتصدير الإسمنت والحديد منذ بداية 2021 حتى الآن ، مقابل 21 ترخيصاً خلال العام الماضي .

شملت الرخص 12 ترخيصاً لتصدير الإسمنت و23 ترخيصاً للحديد منذ بداية العام الجاري ، فيما تدرس الوزارة حالياً 3 طلبات مقدمة في هذا الشأن .

وتمنح الوزارة تراخيص تصدير الإسمنت والحديد بعد استيفاء شروط ومتطلبات محددة ، وفق ضوابط تنظيمية وضعتها لجنة وزارية مشتركة مكونة من عدة وزارات .

وتوقع رئيس اللجنة الوطنية لشركات الإسمنت في اتحاد الغرف السعودية ، الدكتور بدر جوهر ، وصول حجم الطلب على الإسمنت إلى 53-55 مليون طن بنهاية العام الجاري ، على أن يستمر النمو في الطلب في العام المقبل في حدود 4 % .

### شركة لافارج توفر أول محمل للسفن في الجزائر

قامت شركة لافارج الجزائر بتوقيع اتفاقية مع ميناء جنجن خاصة بتركيب وتشغيل أول محمل للسفن في الجزائر . وسيتم تركيب هذه المعدات ، بسعة تحميل رمزية تبلغ 750 طن/ساعة ، في ميناء جنجن وإتاحتها لجميع المشغلين الاقتصاديين النشطين في إنتاج وتصدير الكنكر .

وسيشكل تشغيل محمل السفينة خطوة مهمة في تصنيع لوجستيات لتصدير الكنكر من خلال السماح للجزائر بتصدير أكثر من 10 ملايين طن من الكنكر، مما يجعل الشركة لاعباً رئيسياً في سوق البحر الأبيض المتوسط وأفريقيا . وأكدت لافارج الجزائر طموحها لتسريع برنامجها التصديري من خلال هذه الاستثمارات .

المصدر: [www.elitihadcom.dz](http://www.elitihadcom.dz)

### الساورة للإسمنت تشرع في إنتاج الإسمنت المقاوم للكبريتات

شرعت شركة "الساورة للإسمنت" في تصنيع مادة جديدة تتمثل في الإسمنت المقاوم للكبريتات . وجاءت هذه الخطوة بفضل الجهود المبذولة من هذه الشركة التابعة للمجمع الصناعي للإسمنت الجزائر "جيكا" ، فضلاً عن توفر المادة الأولية التي تدخل في صناعة هذا المنتج محلياً .



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## أخبار عربية

## سلطنة عُمان

## شركة إسمنت عمان تطور إسمنت "البرج"

طورت شركة إسمنت عُمان إسمنت "البرج" ، أحد منتجاتها الإسمنتية عالية الجودة ، وذلك في إطار جهود الشركة لتطوير منتجات إسمنتية تحقق الاستدامة لعمليات التصنيع من خلال إجراء المزيد من البحوث وابتكار منتجات تتواءم مع متطلبات عمليات التشييد والبناء في البلاد وتتلاءم مع التطورات الحديثة في عملية البناء .

ويتميز إسمنت "البرج" عن أنواع الإسمنت الأخرى بخواص فيزيائية كالنعومة العالية والمسامية الأقل ، مما يجعل مقاومته أكبر للأملاح والعناصر الضارة بالخرسانة ، ويعد هذا المنتج صديقاً للبيئة ، حيث يساهم في ترشيد استهلاك المواد الأولية أثناء عملية التصنيع ، مما يحافظ على مخزون الموارد الطبيعية . كما أنه مطابق للمواصفات المعتمدة من المديرية العامة للمواصفات والمقاييس بوزارة التجارة والصناعة وترويج الاستثمار ، والمواصفات الأوروبية رقم EN197 BS/EN 42.5N .

المصدر: [alroya.om](http://alroya.om)

## شركة إسمنت عمان تضيف خط إنتاج جديد يحقق الاكتفاء الذاتي من الإسمنت في السلطنة

أعلنت شركة إسمنت عُمان عن إنشاء خط جديد لإنتاج الإسمنت بسعة إنتاجية تبلغ عشرة آلاف طن في اليوم ، وزيادة السعة الإنتاجية للخط الثالث من 4,000 طن إلى 5,000 طن في اليوم ليرتفع إنتاجها إلى 15,000 ألف طن يومياً .

ويُعد هذا المشروع الأكبر من نوعه في السلطنة في مجال صناعة الإسمنت ، حيث سيعمل على زيادة فعالية كلفة الإنتاج ويرفع الميزة التنافسية لشركة إسمنت عُمان وتعزيز نجاحها في الأسواق المحلية والدولية .

وتأتي هذه الخطوة 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 . وتبلغ التكلفة التقديرية الأولية لخط الإنتاج الجديد 300 مليون دولار ، وسيعمل على تحقيق الاكتفاء الذاتي من الإسمنت في السلطنة بحلول عام 2024 ، دون الحاجة إلى الاستيراد من الخارج .

وأكد أن حجم الصادرات من الإسمنت منذ بداية العام حتى سبتمبر 2021 بلغ 1.1 مليون طن مقابل 1.5 مليون طن خلال الفترة المماثلة من العام الماضي ، أي بانخفاض 28 % ، كما بلغ حجم صادرات الكلنكر خلال الفترة 5.6 مليون طن مقابل 2.8 مليون طن خلال الفترة المماثلة من العام الماضي ، أي بارتفاع 100 % .

المصدر: [alarabinews.com](http://alarabinews.com)

## "إسمنت ينبع" تعلن تشغيل خط الإنتاج الرابع بعد تحديثه

أعلنت شركة "إسمنت ينبع" ، تشغيل خط الإنتاج الرابع بعد إيقافه بغرض التحديث . وبينت أن سبب التأخر عن التاريخ المعلن سابقاً يتمثل في التأخر في وصول قطع الغيار وتحسين عمليات التشغيل لخط الإنتاج 4 .

وكانت "إسمنت ينبع" قد أعلنت تحديث الخط الرابع وإيقافه ابتداءً من 15 فبراير / شباط 2021 .

المصدر: [www.argaam.com](http://www.argaam.com)

## العراق

## رفع سعر المحروقات يثير تحفظ مصنعي الإسمنت

أعربت جمعية مصنعي الإسمنت في العراق عن تحفظها بعد زيادة أسعار الوقود المدعومة في مصانعها بنسبة 66 % ، محذرة من أن الإجراء قد يؤدي إلى ارتفاع أسعار منتجاتها أو إغلاق بعض المنشآت .

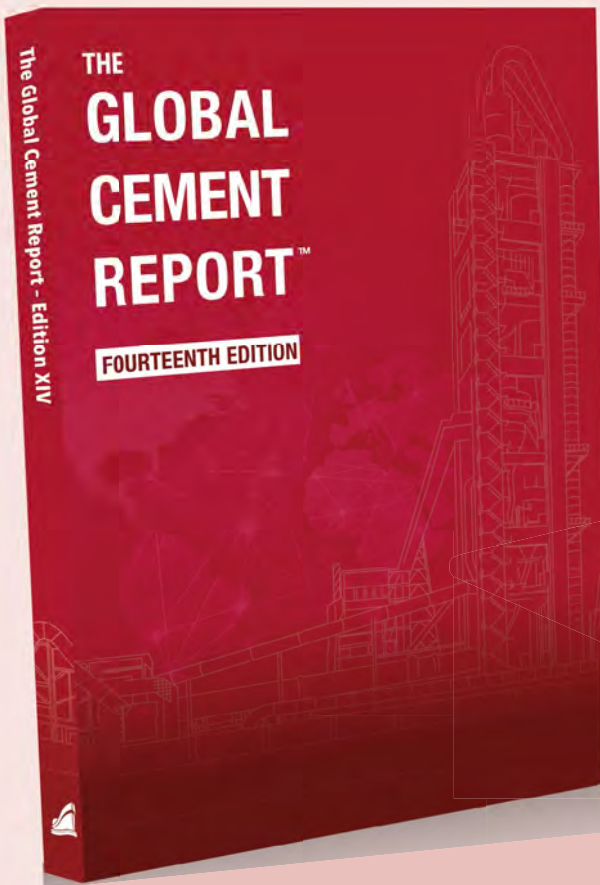
وقد رفعت وزارة النفط العراقية أسعار النفط الأسود المستخدم في مصانع الإسمنت من مائة ألف دينار للطن إلى 250 ألف دينار (170 دولاراً أمريكياً) للطن الواحد . وأثار هذا الإجراء تحفظ شركات الإسمنت . وحذرت الجمعية في بيان من "خسائر فادحة" للقطاع قدرها "ملايين الدولارات" ، داعية السلطات إلى التراجع عن قرارها .

وقالت إن هذا القرار يضعها أمام مفترق طرق بين إغلاق المصانع وتهديد تجربة الاستثمار في العراق أو زيادة أسعار البيع على المواطنين بما لا يقل عن 10 دولارات للطن الواحد بسبب رفع سعر النفط الأسود .

المصدر: [arabic.rt.com](http://arabic.rt.com)

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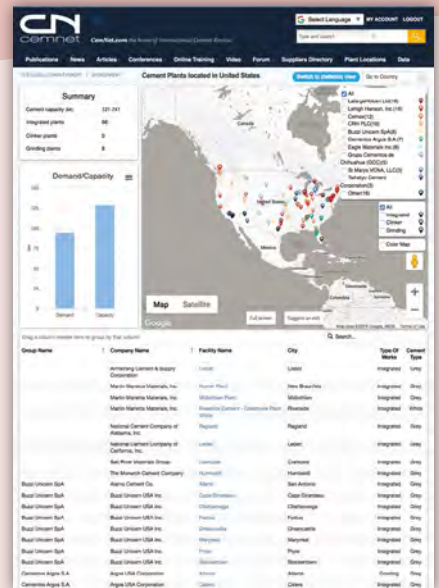
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## أخبار عربية

**تفعيل مشروع إنشاء مجمع صناعي لصناعة الإسمنت بين مدينتي مزدة وبني وليد**

ناقش وزير النفط والغاز مع وزير الصناعة والمعادن ، وبحضور المؤسسة الوطنية للتعدين وشركة أبراج الغد لصناعة الإسمنت ، تفعيل مشروع إنشاء مجمع صناعي لصناعة الإسمنت في مدينتي مزدة وبني وليد.

وسيتم العمل على دعم المشروع من خلال إمداد خط غاز يبلغ طوله (84) كم ، ويتضمن المجمع ثمانية مصانع ؛ أولها مصنع للإسمنت البورتلاندي العادي ، بطاقة إنتاجية تبلغ (2) مليون طن سنوياً ، والثاني مصنع الإسمنت البورتلاندي الأبيض بطاقة إنتاجية تبلغ (1.3) مليون طن ، أما المصنع الثالث خاص بالإسمنت المقاوم للكبريتات والأملاح بطاقة إنتاجية تبلغ (400) ألف طن سنوياً ، فيما يختص المصنع الرابع بالصوف الصخري عوازل الصوت والحرارة بطاقة إنتاجية (35) ألف طن سنوياً ، ويعمل المصنع الخامس على الجبس السائب بطاقة إنتاجية تبلغ (250) ألف طن سنوياً ، بينما يعمل المصنع السادس على القوالب المستعملة في مواد البناء 1.7 مليون طن سنوياً . فيما يعمل المصنعان الأخيران على ألواح الجبس للأسقف المعلقة بطاقة إنتاجية تبلغ (12) مليون متر مربع سنوياً ، ومصنع مواد البناء بجميع أنواعها .

المصدر: [www.libyaakhbar.com](http://www.libyaakhbar.com)

**جمهورية مصر العربية****من الفحم للغاز الطبيعي.. مصانع الإسمنت في مصر تواجه حقبة جديدة**

ذكر مصدر اقتصادي في جمهورية مصر العربية أن استمرارية ضخ الغاز الطبيعي ، ومواصلة ارتفاع أسعار الفحم ، سيكونان العاملين الضامنين لعودة مستقرة لمصانع الإسمنت في مصر للاعتماد على الغاز الطبيعي .

وأشار المصدر إلى سعي شركات الإسمنت العاملة في مصر للعودة للعمل بوقود الغاز الطبيعي مرة أخرى بدلاً من الفحم بعد مرور نحو 7 سنوات على قرار الحكومة إلزام الشركات باستخدام مزيج وقود من الفحم والمخلفات .

وقد قام المجلس التصديري لمواد البناء بإعداد دراسات فنية بالجدوى الاقتصادية من عودة مصانع الإسمنت للعمل بالغاز الطبيعي في ظل ارتفاع أسعار الفحم لمستويات قياسية بجانب ارتفاع تكلفة الشحن والاستيراد ووفرة الغاز الطبيعي المحلي.

وسيعمل خط الإنتاج الجديد وفقاً لمعايير عالية وأحدث تكنولوجيا متاحة لصناعة الإسمنت في العالم ، مثل تكنولوجيا التحكم الذاتي في إدارة عمليات التشغيل وضبط الجودة من خلال مختبرات مزودة بمعدات فحص عالية الدقة .

والجدير بالذكر أن شركة إسمنت عُمان تعتبر من الشركات الرائدة إقليمياً في إنتاج نوع إسمنت آبار النفط الذي يستخدم في عمليات حفر آبار النفط ، وهي حاصلة على شهادة معتمدة من معهد البترول الأمريكي لإنتاج وتسويق هذا النوع من الإسمنت الذي يتم تصديره إلى عدد من الدول في العالم .

المصدر: <http://nabdoman.om>

**ريسوت للإسمنت تبدأ تشغيل مصنعها الجديد بالدقم بحلول الربع الرابع من عام 2021**

أعلنت شركة ريسوت للإسمنت أكبر شركة لتصنيع الإسمنت في سلطنة عُمان أن وحدة الطحن الخاصة بها في الدقم سلطنة عُمان بتكلفة 30 مليون دولار أمريكي ستبدأ عمليات التشغيل في الربع الأخير من عام 2021 .

المصدر: [nabd.com](http://nabd.com)

**ليبيا****وضع حجر أساس مصنع للإسمنت جنوب طبرق، بطاقة مليون طن سنوياً**

وضع وزير الصناعة والمعادن حجر الأساس لإنشاء مصنع للإسمنت يقع على الطريق الرابط بين مدينتي طبرق والجغبوب . حيث وقّعت المؤسسة الوطنية للتعدين ، وشركة الشهباء لصناعة الإسمنت، اتفاقية تقضي بإنشاء مصنع بمنطقة الشعبة جنوب مدينة طبرق بطاقة إنتاجية تقدر بمليون طن سنوياً .

المصدر: <http://alwasat.ly>

**شركات صينية تبتدئ رغبتها في إنشاء مصانع للإسمنت داخل ليبيا**

استقبل وزير الصناعة والمعادن وفداً من مسؤولي الشركات الصينية العاملة في مجال التعدين وصناعة الإسمنت . حيث أبدت تلك الشركات رغبتها في العمل الاستثماري في ليبيا وإنشاء مصانع للإسمنت في عدة مناطق داخل ليبيا .

المصدر: [almarsad.co](http://almarsad.co)



## أخبار عربية

وسيستخدم النظام الجديد أحدث التقنيات لضمان عملية إنتاج صديقة للبيئة وموفرة للطاقة وتقليل انبعاثات ثاني أكسيد الكربون الناتجة عن الإمداد بالكهرباء .

وتسمح وحدة استعادة الحرارة المهدرة بإنتاج الطاقة باستخدام الحرارة الزائدة من خطوط الإنتاج ، وهو نظام قادر على توليد ما يصل إلى 18 ميجاوات من الطاقة .

وكان مجلس الوزراء قد أصدر قراراً بخفض سعر الغاز الطبيعي للصناعة لـ 4.5 دولار لكل مليون وحدة حرارية ، في مارس /آذار العام الماضي أثناء جائحة كوفيد-19 .

**المصدر: [www.alarabiya.net](http://www.alarabiya.net)**

### مجموعة مصر للإسمنت تكشف هويتها الجديدة

وبدأت مجموعة شركات السويس للإسمنت المشروع في منتصف عام 2021 ، ومن المتوقع استكماله بحلول نهاية عام 2022 .

وأعلنت مجموعة شركات السويس للإسمنت عن أهداف الاستدامة الخاصة بها في عام 2016 ، بعد إطلاق خطة التنمية المستدامة لعام 2030 ورؤية مصر 2030 . وتركز الأهداف على إيجاد حلول مبتكرة لتقليل الأثر البيئي للشركة ، وبالتالي جعل الأعمال أكثر استدامة وكفاءة .

**المصدر: [www.gomhuriaonline.com](http://www.gomhuriaonline.com)**

### **المملكة المغربية**

#### مصنع جديد لشركة "لافارج هولسيم المغرب" بجهة سوس ماسة

كشفت شركة "لافارج هولسيم المغرب" عن مصنعها الجديد بجهة سوس- ماسة . وستصل القدرة الانتاجية السنوية لهذا المصنع إلى 1.6 مليون طن من الإسمنت ، حيث سيستخدم تقنيات الأتمتة والذكاء الاصطناعي ، كحلول مبتكرة تضمن إنتاج إسمنت أكثر أمناً ونجاعة واستدامة .

ومن حيث الطاقة الخضراء ، وعلى غرار باقي مصانع المجموعة بالمغرب ، سيتم تزويد مصنع الإسمنت "أكادير سوس ماسة" ابتداءً من سنة 2023 بالكهرباء المولدة بالطاقة الريحية ، فضلاً عن استخدام الوقود البديل وسيخصص 15 في المائة من الاستثمار لحماية البيئة .

وتتواجد "لافارج هولسيم المغرب" في المملكة منذ سنة 1928 ، وهي مملوكة بأغلبية لمشروع مشترك بين مجموعة "لافارج هولسيم" ، والمدى وصندوق الاستثمار الإفريقي ، المتواجد مقره بالدار البيضاء .

**المصدر: [www.mapagadir.ma](http://www.mapagadir.ma)**

تحتفل مجموعة مصر للإسمنت (مجموعة شركات مصر للإسمنت - قنا) بطفرة مشهودة في تاريخ المجموعة ، إذ كشفت النقاب عن تطوير هويتها المؤسسية من خلال توحيد إدارة شركات المجموعة تحت إدارة واحدة ، مع وضع استراتيجية جديدة للتميز قائمة على أربعة محاور رئيسية ، وهي تعزيز القدرات الإنتاجية ، النمو من أجل الريادة ، التأثير الإيجابي في البيئة وبناء الإمكانات الداخلية ، وذلك اعتماداً على تاريخ شركات المجموعة العريق لتضع أساس راسخ تنطلق منه لخدمة سوق الإسمنت والإنشاءات في مصر والمنطقة .

تعد مجموعة مصر للإسمنت مجموعة شركات رائدة في صناعة الإسمنت ومواد البناء في مصر ، وتتكون المجموعة من شركة مصر للإسمنت قنا وشركة مصر للإسمنت المنيا وشركة مصر للإسمنت بيتون .

وتأسست شركة مصر للإسمنت قنا عام 1977 وتصل طاقتها الانتاجية السنوية إلى 2 مليون طن من الإسمنت بمختلف أنواعه . وتمتلك شركة مصر للإسمنت قنا حصة 60 % من رأس مال شركة مصر للإسمنت المنيا (إسمنت بورتلاند المنيا سابقاً) التي تقدر طاقتها الإنتاجية السنوية 202 مليون طن من الإسمنت ، كما تمتلك شركة مصر للإسمنت قنا حصة حاكمية من رأس مال شركة مصر للإسمنت بيتون (أسيكو للخرسانة الجاهزة سابقاً) بنسبة 99.9 % ، وذلك بطاقة إنتاج 500 ألف متر مكعب من الخرسانة الجاهزة من خلال 9 محطات للخرسانة .

**المصدر: <https://alalameyoum.co/32283>**

#### السويس للإسمنت تستثمر نحو 20 مليون دولار أمريكي في وحدة استعادة الحرارة المهدرة

أعلنت مجموعة شركات السويس للإسمنت ، التابعة لمجموعة هايدلبرج سمينت ، عن استثمار نحو 20 مليون دولار أمريكي لبناء نظام في مصنع حلوان لجمع الحرارة المهدرة المتولدة في الفرن وتحويلها إلى طاقة كهربائية .



# نشاطات عربية

## نشاطات عربية

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](http://www.aidsmo.org)

## دورات تدريبية عربية

تخطيط وتنفيذ وتقييم أعمال الشراء  
المكان: شرم الشيخ ، جمهورية مصر العربية  
التاريخ: 02 - 06 يناير / كانون الثاني 2022  
الجهة المنظمة: معهد التنمية الإدارية  
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بريد إلكتروني: [Training@iadmena.com](mailto:Training@iadmena.com)

أساسيات أمن المعلومات  
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الجهة المنظمة: معهد التنمية الإدارية  
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إعداد وتأهيل القادة في المؤسسات الحكومية  
المكان: اسطنبول ، تركيا  
التاريخ: 09 - 13 يناير / كانون الثاني 2022  
الجهة المنظمة: معهد التنمية الإدارية  
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:  
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بريد إلكتروني: [Training@iadmena.com](mailto:Training@iadmena.com)

الإحلال الوظيفي وتصميم خطط التعاقب  
المكان: القاهرة ، جمهورية مصر العربية  
التاريخ: 16 - 20 يناير / كانون الثاني 2022  
الجهة المنظمة: معهد التنمية الإدارية  
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## نشاطات عربية

### المحاسبة الإدارية وتخفيض التكاليف

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### التوجهات الحديثة في مواجهة اختراق نظم المعلومات

المكان: القاهرة ، جمهورية مصر العربية  
التاريخ: 16 - 20 يناير / كانون الثاني 2022  
الجهة المنظمة: معهد التنمية الإدارية  
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:  
جوال واتساب وفايبر: 00201091780140  
بريد إلكتروني: [Training@iadmena.com](mailto:Training@iadmena.com)

### الجوانب القانونية في التحقيقات الإدارية وتوقيع الجزاءات

المكان: القاهرة ، جمهورية مصر العربية  
التاريخ: 06 - 10 فبراير / شباط 2022  
الجهة المنظمة: معهد التنمية الإدارية  
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جوال واتساب وفايبر: 00201091780140  
بريد إلكتروني: [Training@iadmena.com](mailto:Training@iadmena.com)

### قياس الأداء الفردي والمؤسسي

المكان: القاهرة ، جمهورية مصر العربية  
التاريخ: 06 - 10 فبراير / شباط 2022  
الجهة المنظمة: معهد التنمية الإدارية  
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:  
جوال واتساب وفايبر: 00201091780140  
بريد إلكتروني: [Training@iadmena.com](mailto:Training@iadmena.com)

### إدارة التغيير والتطوير التنظيمي

المكان: القاهرة ، جمهورية مصر العربية  
التاريخ: 13 - 17 فبراير / شباط 2022  
الجهة المنظمة: معهد التنمية الإدارية  
للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:  
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بريد إلكتروني: [Training@iadmena.com](mailto:Training@iadmena.com)

## نشاطات عربية

### التوقيع الإلكتروني وحجته في الإثبات ( قضاءً وتحكيمياً )

المكان: اسطنبول ، تركيا

التاريخ: 20 - 24 فبراير / شباط 2022

الجهة المنظمة: معهد التنمية الإدارية

للحصول على كافة التفاصيل يرجى التواصل مع إدارة التدريب:

جوال واتساب وفايبر: 00201091780140

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### الأرشفة الإلكترونية

المكان: اسطنبول ، تركيا

التاريخ: 20 فبراير / شباط - 01 مارس / آذار 2022

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المكان: اسطنبول ، تركيا

التاريخ: 20 فبراير / شباط - 01 مارس / آذار 2022

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### تنمية مهارات العاملين بالخدمات المساعدة

المكان: اسطنبول ، تركيا

التاريخ: 20 فبراير / شباط - 01 مارس / آذار 2022

الجهة المنظمة: معهد التنمية الإدارية

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# إنقاذ الحراريات

ترجمة : محمد راشد / SILICON Refractory Anchoring Systems B.V – هولندا

فاوتر جاروت من شركة سيليكون يشرح فوائد أنظمة التثبيت المتحركة في صناعة الحراريات من خلال تخفيض وقت التركيب والصيانة وتحسين مقاومة الصدا للمواد الحرارية .

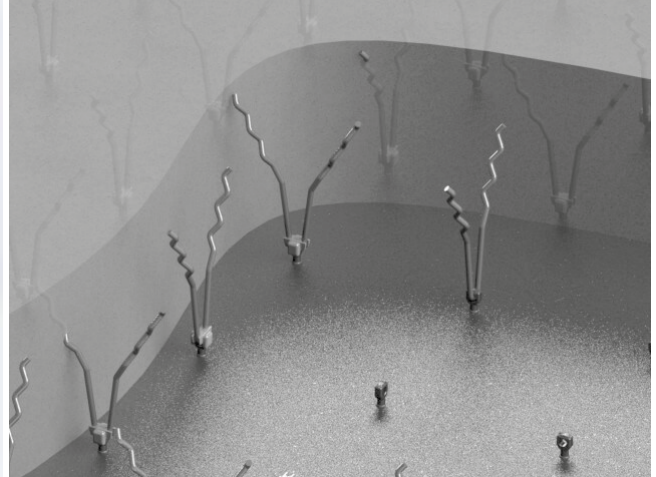
في كل عام يتم تصنيع أكثر من مليار طن من الإسمنت ، وتعد أفران الإسمنت هي قلب هذه العملية الإنتاجية، ومع المطالب المستمرة لزيادة الإنتاجية وخفض تكاليف الصيانة فقد وصلت التقنيات التقليدية في السوق اليوم إلى حدودها القصوى وقد استوعبت شركة سيليكون هذه الحدود جيداً ووضعت على عاتقها مهمة تطوير صناعة الحراريات من خلال استخدام أنظمتها الرائدة في التثبيت .

## أنظمة التثبيت (الجنشات) المتحركة

واحد من أكثر أنواع أنظمة التثبيت شيوعاً في صناعة الإسمنت هو نظام التثبيت المتحرك أو الجنش المتحرك والذي يستخدم بشكل رئيسي في الفرن الدوار حيث تظهر الإجهادات نتيجة حركة الحراريات .

أنظمة التثبيت أو الجنشات التقليدية عادة ما يتم تركيبها على قطاع أوميجا من خلال اللحام الكهربائي العادي ، ويتم لحامها أو تثبيتها حتى تتحرر أثناء عملية التشغيل أو "تطفو" خلال القطاع الأوميجا .

وهذا يسمح للجنش (نظام التثبيت) أن يتحرك مع المواد الحرارية عندما تتعرض للأحمال المختلفة وبالتالي تقليل الإجهادات بشكل كبير على المواد الحرارية .



أمثلة عن نظام السبيد بولت

ولهذا تم تطوير المسمار السريع أو السبيد بولت® SpeedBolt

لتسهيل عملية تركيب أنظمة التثبيت (الجنشات) المتحركة واستخدامها في تبطين الحراريات الديناميكية أو التي تتعرض للحركة في صناعة الإسمنت وكذلك في تطبيقات أخرى عندما ينصح بتجنب الأنظمة أو الجنشات الثابتة .

كما يقدم حلاً أيضاً لتخفيض ساعات العمل الهائلة والتي عادة ما تستهلك في تركيب وإصلاح أنظمة التثبيت في السيكلونات أو ما يعرف بالأعاصير وكذلك في الأفران الدوارة ، مبردات الكلنكر ، وحدات التكلينس ، مجاري الهواء والكثير من الوحدات الأخرى بجانب مقاومتها للصدا .



نظام السبيد بولت بعد تركيبه

## التصميم الجديد للجنش الثقيل في السبيد بولت SpeedBolt®

أو ما يسمى (بقرني الثور) مبني على التصميم الأصلي للجنش الثقيل الخاص بشركة سيليكون حيث يتكون نظام التثبيت من ثلاثة أجزاء هم المسامير الأساسية والجنش الثقيل (قرني الثور) والقفل البلاستيكي (سبيد كليب) وقد تم تعديل الجنش الثقيل ليتم تركيبه بسهولة في فتحة المسامير الأساسية ثم تثبيته في مكانه باستخدام السبيد كليب .

هذا التعديل يتيح وقت تركيب أسرع وتحقيق قوة تثبيت أكبر من خلال التموجات الموجودة في طرفي الجنش وهذا التموج القوي يقوم بتثبيت الحراريات أثناء أي حركة قد تحدث لها كما يسمح للتبطين الحراري أن يكون مرناً وصلباً في نفس الوقت وهذه الأنظمة أو الجنشات المتحركة متاحة بعدة سبائك معدنية وبأقطار 8 مم و10 مم وكذلك 12 مم .

## كيفية العمل

يتم لحام المسامير (الجنش) السريع SpeedBolt® على الهيكل المعدني الخارجي والقاعدة أو الساق بقطر 16 مم تضمن لحاماً قوياً متجانساً يتحمل الأحمال الثقيلة للحراريات والجزء الثقيل أو قرني الثور يتم تركيبه على قاعدة المسامير في الفتحة المخصصة لذلك .

وأخيراً يأتي دور القفل البلاستيكي (سبيد كليب) والذي يركب يدوياً أو باستخدام المطرقة ليضمن تثبيت الجنش في مكانه وهذا القفل ينصهر عند درجة حرارة تتجاوز 220 درجة مئوية (428 فهرنهايت) ليعطي الجنش الثقيل (قرني الثور) حرية الحركة ويمكن تثبيت المسامير السريع (سبيد بولت) على الأسطح المستوية وكذلك المنحنية ، الجانبية ، العلوية والسفلية أيضاً .

الجدير بالذكر أن قاعدة المسامير لا تحتاج الى التغيير مع كل صيانة دورية ويمكن تغيير الجنش الثقيل (قرني الثور) فقط مع كل صيانة وهذا لأنها مصنوعة من الاستانلس ستيل المقاوم للصدأ الذي قد يظهر على جوانب هياكل الأفران وبهذا فإنها تقاوم هذا الصدأ لعدة دورات صيانة وقد ساهم ذلك في الحد من الاحتياج للحام مسامير جديدة عند عمل كل صيانة موفراً للوقت الإضافي اللازم لتركيب هذه المسامير الجديدة وكل ما نحتاجه هو تركيب جنشات جديدة على القاعدة الملحومة مسبقاً بسهولة ويسر .

## التبطين المزدوج

تم عمل تصميم آخر ليوكب نظام التبطين المزدوج ذا الطبقتين وذلك عند الحاجة لتحسين العزل الحراري وفي هذه الحالة يتم لحام مسامير ملولبة (مقلوظ) أو كتف معدني أولاً على الهيكل المعدني الخارجي ثم يتم تربيط المسامير السريع (سبيد بولت) عليه مباشرة بعد تثبيت طبقة العزل الإضافية .

## حل للمشكلة

وجود نقطة تربيط أو تثبيت واحدة باستخدام المسامير يسمح بتكرار عملية التمدد والانكماش للمواد الحرارية بأمان ودون حدوث أي أضرار، وبفحص عينات تعرضت بالفعل لعدة دورات حرارية بعد استخدام هذا النظام تلاحظ وجود شقوق صغيرة قد تكونت وشكلت "جزراً" أو مساحات منفصلة وبهذا تتم عملية التمدد والانكماش بكل حرية ودون أي مشكلات .



ماسورة الحرق تصمد من 2 - 3 مرات أطول باستخدام أنظمة سيليكون



وجود نقطة تربيط أو تثبيت واحدة باستخدام المسامير يسمح بتكرار عملية التمدد والانكماش للمواد الحرارية بأمان ودون حدوث أي أضرار



## المقر الرئيسي لشركة سيليكون

سبيد سيل أيضاً بجيليه الثاني والثالث SpeedCell® 2G and 3G هو حل شركة سيليكون الذي تقدمه لصناعة الإسمنت ، أنابيب الحرق وتطبيقات الخرسانة الثقيلة حيث يحافظ على كل المميزات للأنظمة الأخرى ولكن يضيف أيضاً ميزة أخرى في قوة التركيب والتثبيت وهذا يرجع لزيادة السمك .

منتجات الشركة من أنظمة تركيب وجنشات عادة ما يتم تربيطها على المسمار أو الكتف المعدني والذي تم حساب طول مسبقاً بحيث يكون رأس الجنش في نفس مستوى التثبيت الحراري وأقل ارتفاع للتبطين يمكن استخدامه هو 19 مم وأكبر ارتفاع هو 150 مم والمسامير أو الأكتاف المعدنية M8 بمختلف أبعادها يمكن أن تصنع حسب الطلب بما يتماشى مع التطبيقات المختلفة للتبطين والعزل الحراري مع اختلاف ارتفاعاته وكتف المسمار يضمن أن (السبيد سيل) سيبقى سليماً وبارتفاع مناسب وتكون المواد الحرارية ذات الحبيبات الصغيرة والمتوسطة هي الاختيار الأمثل لهذا النظام .

## التطبيقات

في مصانع الإسمنت يمكن أن يستخدم سبيد سيل Speed Cell في الأماكن التي يكون فيها التآكل الشديد سبباً في ضعف المواد الحرارية سريعاً ولهذا فإن التثبيت الحراري متعدد الطبقات يمكن أن يكون حلاً باستخدام نظام السبيد سيل أيضاً . كما يمكن استخدام هذا النظام كحل لمشكلة الحوائط الداخلية الخاصة بالأنابيب ذات الأقطار الصغيرة وفي هذه الحالات يكون ارتفاع ما يتم تثبيته هو الحد الأقصى لما تم التمكن من لحامه .

## فريق الهندسة الداخلية

مهندسو شركة سيليكون يستطيعون إمدادكم بالنصائح والدعم اللازم في كل ما يخص أنظمة التثبيت أو الجنشات الحرارية ، والأبحاث التي تقوم بها الشركة مع خبرتها الطويلة هي الأدوات التي تمكنها من تقديم أفضل الحلول للعملاء مثل سيمكس وهايدلبرج وهولسيم والكثير من العملاء الآخرين .

## عن المؤلف

قأوتر جاروت هو الرئيس التنفيذي لشركة سيليكون والذي استغل خبرته في علم المواد إلى جانب خبراته في استخدام السبائك المعدنية الخاصة المقاومة للحرارة في تطوير أنظمة تثبيت صنعت خصيصاً لتواكب متطلبات التطور في عمليات التصنيع في كل صناعة ، وعلى ضوء ما سبق فقد أسس شركة سيليكون ليقدّم منتجاته للسوق الأوروبي ومن ثم إلى الأسواق العالمية .

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**SILICON**

## كيفية اختيار قارئة تناسب كلا "من القدرة المنقولة وقطر عمود التدوير

إعداد م. ر. مهندسين / نمير عبد الغني محمود / معمل سمنت بادوش الجديد

تعتبر القارنات (couplings) من الأجزاء المهمة في مجال الهندسة التطبيقية ولها استخدامات واسعة ، فهي تستخدم في توصيل نهايات الأعمدة الدوارة بعضها ببعض لنقل عزوم اللي (torque) فيعتبر أحدهما قائداً والآخر منقاداً . وهي على أنواع عديدة منها الجسيئة وتستخدم في الحالات التي تكون فيها نهايتا العمودين متقابلتين تماماً ، أما القارنات المرنة فإنها تسمح بوجود اختلافات ضئيلة في محاذاة الأعمدة سواء كانت هذه الاختلافات زاوية أو محورية . ينصب اهتمامنا في صناعة الإسمنت على القارنات المرنة لما فيها من ميزات معادلة التغيرات في المحمل (bearing) أو التغيرات في عزم اللي والأحمال الصدمية والاهتزازات . والقارنات المرنة في وسطها وصلات مرنة مصنوعة من مادة المطاط أو الجلد أو صلب النوابض . وقد اهتمت في هذه المقالة بنوع القارنة ذات البراغي (bushed pin flexible coupling) والموضح في الصورة أدناه ، لكثرة هذا النوع في معامل الإسمنت وعدم معرفة كادر الصيانة كيفية اختيار قارنة تناسب كلاً من القدرة المنقولة وقطر عمود التدوير .

من المهم في البداية معرفة نوع معدن عمود التدوير ومعدن القارنة بالإضافة إلى معدن كل من براغي الربط وقطع الحشر (keys) لربط جزء القارنة مع عمود التدوير .



من أجل المحافظة على أقل جهد على الوصلات المرنة (rubber bushes) بحيث لا يتجاوز  $1 \text{ N/mm}^2$  من الضروري زيادة مقدار كل من

قطر براغي الربط والقطر المحيطي الذي تتوزع عليه تلك البراغي على جسم القارنة .

وفيما يلي مثال يوضح كيفية حساب الأقطار لتناسب مع القدرة المنقولة للآلة:

- مطلوب تصميم قارنة مرنة لربط عمود تدوير محرك كهربائي إلى عمود تدوير مضخة . قدرة المحرك الكهربائي (20kw) يدور بسرعة

(720rpm) ، العزم الابتدائي

يساوي 1.5 من العزم عند

الدوران ، مع وجود المعطيات التالية :

1- معدن عمود التدوير 40C8

مع معامل أمان  $F.O.S=2$  ،

2- معدن قطع الحشر (keys)

30C8 مع معامل أمان

$F.O.S=2$  ،

3- معدن القارنة حديد زهر

رمادي FG200 مع معامل

أمان  $F.O.S=6$

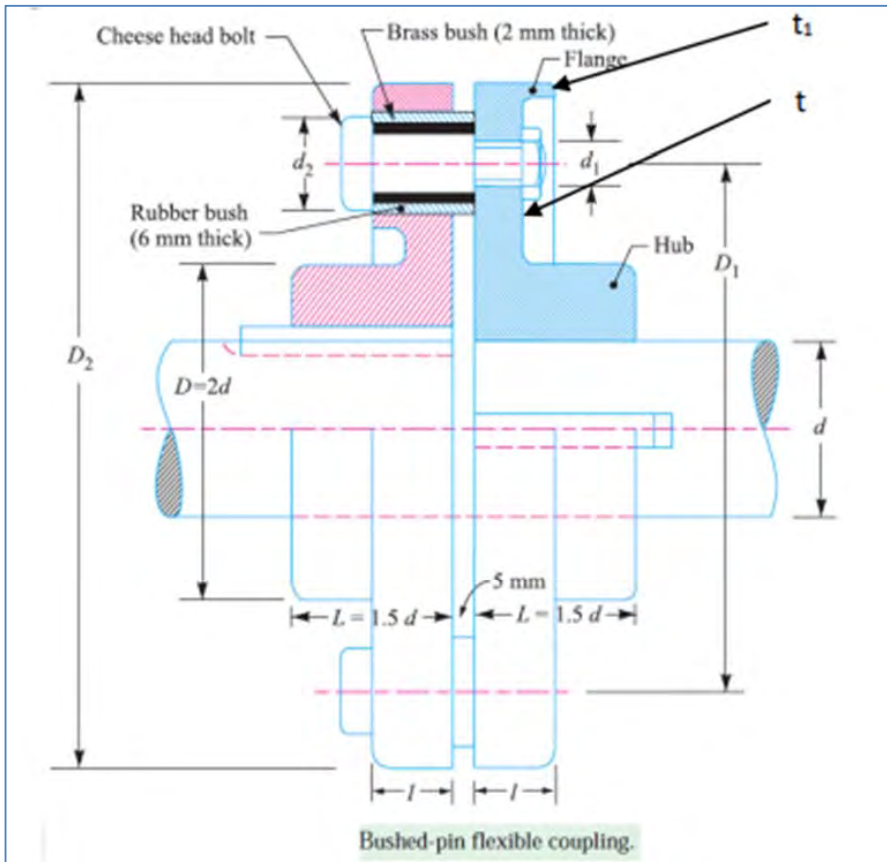
4- عدد البراغي الرابطة = 6 مع

أعلى جهد قص مسموح به

$= 35 \text{ N/mm}^2$  ، ويجب أن

يكون الجهد المتولد

(induced stress) أقل



من الجهد المسموح (allowable) مع فرضية أن مقاومة خضوع القص هي نصف مقاومة خضوع الشد للمعدن .

وفيما يلي قائمة برموز الاجهادات المتولدة والمقاسة لقطع القارنة المختلفة:

- مقاومة خضوع القص للمعدن =  $S_{ys}$
- مقاومة خضوع الشد للمعدن =  $S_{yt}$
- مقاومة خضوع التحطم للمطاط =  $S_{yc}$
- أعلى جهد قص متولد مسموح للمعدن =  $\tau$
- أعلى جهد شد متولد مسموح للمعدن =  $\sigma_t$
- أعلى جهد تحطم متولد مسموح للمطاط =  $\sigma_c$
- أعلى مقاومة قص للمعدن =  $S_{su}$
- أعلى مقاومة شد للمعدن =  $S_{tu}$

**ملاحظة:** لمعدن القارنة FG200 نستخدم قيمة  $S_{tu}$  في حساب جهد القص المسموح  $\tau$  لأن المعدن المذكور ليس فيه مقاومة خضوع محددة ، بينما لمعدني 40C8,30C8 نستخدم على  $S_{yt}$  و  $S_{ys}$  .

لمعدن 40C8 ( $S_{yt}=380N/mm^2$ ) ولمعدن 30C8 ( $S_{yt}=400N/mm^2$ ) أما معدن FG200 ( $S_{yt}=200N/mm^2$ )

**الخطوة 1- حساب الاجهادات المسموحة ، أولاً لعمود التدوير**  $\tau = S_{ys}/F.O.S = 0.5 S_{yt}/F.O.S = 95N/mm^2$

**ثانياً لقطع الحشر ،**  $\tau = S_{ys}/F.O.S = 0.5 S_{yt}/F.O.S = 100N/mm^2$

$\sigma_c = S_{yc}/F.O.S = 1.5 S_{yt}/F.O.S = 300N/mm^2$

**ثالثاً للبراغي**  $\sigma_t = S_{yt}/F.O.S = 400/2 = 200N/mm^2$  ،  $\tau = 35N/mm^2$

**رابعاً للقارنة**  $\tau = S_{su}/F.O.S = 0.5 S_{tu}/F.O.S = 0.5(200)/6 = 16.67N/mm^2$

**الخطوة 2- قطر عمود التدوير** يحسب من  $M_t = (60)(1000)(kw)(1.5)/2\pi n = 397887N.m$  ، وكذلك معادلة

جهد القص  $\tau = 16M_t/\pi d^3$  وبعد التعويض لقيم  $M_t, \tau$  نستخرج قيمة القطر  $d = 27.73mm = 30mm$

**الخطوة 3- أبعاد القارنة:** بعد استخراج قيمة قطر عمود التدوير (الشافت) نستخرج بعدها جميع أبعاد القارنة :

$D=2d=60mm$  ،  $L=1.5d=45mm$  ،  $D_1=4d=120mm$  ،  $t=0.5d=15mm$  ،  $t_1=0.25d=7.5mm$  or

(8mm) ، عنق القارنة (hub) يعامل كأسطوانة مجوفة يخضع لعزم تدوير وله معامل جساءة (J) ،

$$J = \pi [(60)^4 / (32)^4] / 32 = 1192823mm^4$$

وهذا أقل من الجهد  $R=D/2=30mm$  ، Torsional shear stress in flange ( $\tau$ )= $M_t.r/J=10.01N/mm^2$

المسموح به لمعدن القارنة والذي هو  $16.67N/mm^2$  وكذلك جهد القص المتولد في منطقة ارتباط القارنة مع عنقها



هو :  $\tau = 2Mt/\pi D^2 t = 4.7N/mm^2$  وهو كذلك أقل من الجهد المسموح به لمعدن القارنة ، إذن الجهد في القارنة آمن .

الخطوة 4- أقطار أجزاء البرغي : عدد البراغي  $N=6$  كما هو مفروض ،  $d1=0.5d/vN=6.12mm$  or  $7mm$  ، جهد القص في كل برغي يتمثل بالمعادلة:  $\tau = 8Mt/\pi(d1)^2.D1.N = 27.72N/mm^2$  ، إذن جهد القص أقل من أقصى جهد مسموح به وهو  $35N/mm^2$  ، إذن البرغي آمن من ناحية جهد القص .

الخطوة 5- جهد تركيز الضغط على الوصلات المرنة (المطاطية) بين جزئي القارنة هو  $1 N/mm^2$  إذن  $(Db)^2 = 2Mt/D1.N$  ،  $Db=33.5mm$  or  $35mm$  حيث  $L=Db=35mm$

الخطوة 6- جهد الانحناء على البرغي : القوة المماسية المؤثرة على كل برغي هي  $P$  وسيكون العزم معرفاً بالمعادلة  $Mt=P.D1.N/2$  ، إذن  $P=2Mt/D1.N=1105 N$  ، أعلى عزم انحناء يتمثل بالمعادلة  $Mb=P\{5+(35/2)\}=(1105)*(22.5)N.mm$

لذا فإن جهد الانحناء على كل برغي  $\sigma b=32Mb.N/\pi(d1)^3$  وبتعويض القيم نحصل على  $d1=10.82$  ويقرب إلى  $12mm$  ، نلاحظ أن من معادلة جهد القص حصلنا على القطر  $7mm$  وكان آمناً ، ولكن القطر الناتج من معادلة جهد الانحناء هو  $12mm$  وهو غير آمن ليقاوم جهد الانحناء لذا سنختار قطر سن البرغي  $12mm$  لربط جزئي القارنة ليكون آمناً من الناحيتين .

الخطوة 7- ابعاد قطع الحشر : من الجداول وبمعرفة قطر عمود التدوير  $30mm$  فإن الأبعاد هي  $8 \times 7$  أما الطول فهو  $45mm$  حيث أن  $h=7$  &  $b=8$  وبعدها نقوم باختبار هذه القيم التي حصلنا عليها بتعويضها في معادلات إجهادات القص  $\tau$  والتحطم  $\sigma c$  وكالتالي :

وقيمته أقل من الجهد المسموح به لقطع الحشر  $\tau = 2Mt/d.b.L = 2*397887/30*8*35 = 94.7N/mm^2$  وهي  $100N/mm^2$  وأما معادلة جهد التحطم  $\sigma c = 4Mt/d.h.L = 4*397887/30*7*35 = 216.5N/mm^2$  وقيمه أيضاً أقل من جهد التحطم المسموح به لقطع الحشر وهي  $300N/mm^2$  ، من النتائج يظهر أن الجهد المتولد القصي أو التحطمي لمعدن قطع الحشر هو ضمن المسموح به وأن قطع الحشر (keys) آمنة .

مما سبق تبين لنا كيف نختار قارنة بحجم وأبعاد تناسب قطر عمود التدوير والقدرة المنقولة .



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