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27th Arab International Cement & Building Materials Conference and Exhibition

26-28 November 2024

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SPA & Conference
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المؤتمر والمعرض العربي الدولي السابع والعشرون لصناعة الإسمنت ومواد البناء

28-26 نوفمبر/ تشرين الثاني 2024

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Contents

Articles

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 2024

ISSUE	THEMES	EVENTS
September 2024 (# 97)	- White cement manufacturing - Blended cements - Multi-component cements - Slag cements - Green cement production - Cement blends / mixes - Cement additive - Cement composition - Cement chemistry - Zero carbon cement - Producing low-carbon clinker - Raw material for cement additive - Supply chain management - Energy-efficient cement production - Quality assurance and process control in cement plants - Cement Production cost saving	**27th Arab International Cement Conference & Exhibition (AICCE27)** **Tunis, Tunisia** **26-28 November 2024**
December 2024 (# 98)	- Coolers - Fans - Air cannons - Occupational health and safety - Comminution - Vertical roller mills - Roller presses - Increasing cement mill output - Crushing - Grinding & grinding aids - Waste heat recovery - Thermal imaging - Thermal recycling - Methods for treating and utilizing bypass dusts - Explosion protection in alternative fuel storage silos - Alternative fuels handling systems - Production and use of Solid Recovered -Fuels	

Deadlines for receiving articles, press releases, or advert materials for 2024 issues are as follows:

September (Bonus) issue: **20th September 2024**
December issue: **5th December 2024**

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FLSmidth establishes a new business line dedicated to pumps, cyclones and valves (PCV). Pat Turner appointed new President for the PCV Business Line

To support our CORE'26 Mining strategy and to fuel our long-term growth ambitions, we have established a dedicated business line for PCV, effective 1 February 2024. At the same time the responsibility for PCV will be elevated to Group Executive Management.

FLSmidth has a long-standing history within PCV and today holds a strong market position, especially with our core KREBS pumps portfolio. While this business has achieved good growth over the years, we have clear ambitions to strengthen our market position even further with PCV. Realising our full potential within PCV requires dedicated management attention, investments and an independent organisational setup.

To lead the new PCV Business Line, Pat Turner is appointed President. Pat has a long history at FLSmidth, having first joined the company in 1982. This includes having previously led the PCV business and significantly accelerated its growth. He also led the purchase of the millMAX pump line in 1999. In addition, Pat held various senior positions including leading the Mining Global Product Lines and President for our North American Region, the latter of which he held until 2022, where he left to pursue an opportunity outside FLSmidth.

"When we launched our CORE'26 strategy in early 2023, we called out PCV as a key strategic focus area. While our PCV business has delivered strong growth in recent years, it still holds significant untapped potential. Combined with what we believe are the best pumps in the market, I am fully convinced that we will deliver – or perhaps even exceed – our own ambitions for PCV in the long-term. And we could not ask for a better leader behind the steering wheel than Pat Turner, who has a deep understanding of the PCV business and market, and who I happily welcome back to FLSmidth", comments Mikko Keto, Group CEO at FLSmidth.

Pat Turner comments: "I am very excited to return FLSmidth and to help unlock our full potential within PCV. Energy efficiency and productivity are two of the most important factors driving the mining industry, and I firmly believe that our market-leading PCV technologies offer a unique value proposition to our customers."

About FLSmidth

FLSmidth is a full flowsheet technology and service supplier to the global mining and cement industries. We enable our customers to improve performance, lower operating costs and reduce environmental impact. MissionZero is our sustainability ambition towards zero emissions in mining and cement by 2030. We work within fully validated Science-Based Targets, have a clear commitment to reducing the sustainability footprint of the global mining and cement industries and aim to become carbon neutral in our own operations by 2030.

Expert in material transformation technologies announces rebranding on 13 May 2024

Climate-neutral circular economy: Schenck Process becomes Qlar

The German-headquartered Schenck Process is taking the lead in climate-neutral material transformation processes. Guided by its aspiration "the future is cirQlar", Schenck Process will rebrand to Qlar on 13 May 2024, extending its focus on digitally enabled and sustainable solutions. The company will continue to serve all existing target industries, including chemicals, high-performance materials, cement, steel, infrastructure, transport and energy. The Schenck Process brand, with its existing portfolio, will remain as a product brand under the roof of Qlar that will drive future innovative solutions in the green and circular economy.

Following Schenck Process' refocus on its core expertise in weighing, feeding, conveying, milling and grinding in 2023, the company is taking its next step on 13 May: "With the rebranding to Qlar, we at Schenck Process are opening a new chapter for a circular future. With the new branding, we are linking ourselves to the circular economy, and focusing our attention even more on future challenges in digitalisation and green transformation," explains Dr Jörg Ulrich, CEO of Schenck Process.

The company, which has more than 1,100 employees across Europe, UK, China, India, Japan and Indonesia, will continue to strengthen its established and valued products, with an even greater focus on precise, sustainable process technologies and digital solutions in line with its Qlar mission.

"Schenck Process, with its clear focus on material transformation, is already on a highly promising journey to shape a sustainable future by driving smarter material processing in the circular economy. We are contributing to the 'zero waste' goal of our global customers and effectively supporting them in reducing their carbon footprint, and our rebrand to Qlar reinforces our commitment to the goal of sustainable transformation. We are emphasizing that we will be a driving factor in emerging sectors such as batteries, green steel, green cement and recycling in the future", says Ulrich, adding: "With our new branding we feel even more energized to serve all our customers in existing as well as new green and circular applications with well-known Schenck Process and Qlar solutions."

This rebrand does not apply to Schenck Process Food and Performance Materials (FPM) in the USA, which is owned by Coperion.

Further information can be found online **here**

About Schenck Process

Schenck Process is a global provider of sustainable products, integrated solutions, and services in mission-critical applications for bulk materials. Headquartered in Darmstadt, Germany, the group has more than 1,100 employees with a presence in over 12 countries focused on markets alongside chemicals and performance materials, and infrastructure and energy as well as alternative fuels.

The product range includes solutions for industrial weighing, feeding, conveying, milling and grinding, and related digital applications of the CONiQ product family.

Schenck Process will be renamed Qlar on 13 May 2024.

Flowability of Cement Powder

Shehab. M.El-Aryan, ASEC Technical Center

Abstract

Flowability of cement, defined as the ease with which cement flows once it has been set in motion (Strohman 2004). This paper explains many of problems that can affect this property, and the reasons that may lead to lack of flowability of cement powder. This research proposes an action plan to address the causes of low flowability, and the possibility of improving this property based on the application of the proposed action plan. The solutions presented here can provide guidance for addressing this property in different plants.

Keywords

Flowability; Pack-set; Silo-set; Warehouse-Set; Cement.

1. Introduction

There is no single measure of cement flowability, but various empirical tests that provide information on particular aspects are widely used. The most important is the pack-set index test, in which Portland cement is placed into a flask and then consolidated on a vibrating table by a vibration force controlled by time and energy (volts). The consolidated bed is measured for relative strength by turning the flask to a horizontal position and rotating in 180° increments until the bed collapses from the bottom of the flask. The number of half turns is a relative indication of the force required to overcome the consolidation and is designated the pack-set index, or P.S.I. The subsidence of the resulting pat provides an indication of the mechanical force needed to overcome the consolidation of Portland cement (C1565 Technical Committee 2022).

This research identifies different types of factors that affect the flowability of cement powder; and how improve this property.

2. The main reasons for lack of flowability of Cement Powder

A large number of plants are affected by cement flow problems. These problems can be classified as follows:

2.1. Pack-set is a condition of hydraulic cement, exhibited in varying degrees, following silo storage or transport in bulk railcars or trucks, that causes the cement to resist flowing until considerable mechanical effort has been applied (C1565 Technical Committee 2022). Pack set may be caused by interlocking particles, mechanical compaction, or electrostatic attraction between particles (225R Committee 1999).

2.2. Silo-set, which is the partial hydration of cement stored for a time and exposed to atmospheric moisture (defined also as Warehouse set), or formation of flow-inhibiting complex sulfate phase like syngenite (Chatterjee 2018).

3. Methods for estimating the flowability of cement

3.1. ASTM C-1565 covers the determination of the pack-set index, which defined as the numerical indication of the degree of pack set a particular cement exhibits when subjected to the procedures of this test method.

This method is intended to help manufacturers determine the relative pack-set tendency of their cement(s). The test establishes a pack-set index which, when properly correlated with field performance, is useful in predicting or preventing field unloading difficulties. The test is an aid to routine control during cement production and is not suitable for specification purposes.

In general, field performance of cement flowability is satisfactory when the pack-set index as determined on freshly ground cement averages 0 to 15 and is unsatisfactory when the index exceeds 25. Any prediction of field performance of cement flowability measuring 16 to 25 is tenable (gray region). These are general ranges and the field performance of individual cements may not necessarily fall within these ranges. Additional conditions, after the cement has left the control of the manufacturing facility, can affect the apparent pack set index as well.

The pack-set index of field cement can be evaluated in terms of the pack-set index ranges of that cement as determined when freshly-ground. This comparison can aid the manufacturer in producing cement that offers the best field performance for pack-set properties.

Silo storage of cement may result in a greater amount of consolidation than this method is designed to induce, and the resulting forces required to overcome that consolidation are not measured by this test method (C1565 Technical Committee 2022).

3.2. On the other hand; If cement transferred into a silo is very hot, and if the exterior walls of the silo are cool, water transfer can occur from the hot silo interior to the cooler exterior, forming syngenite, and creating the phenomenon known as “silo set.” Syngenite ($CaSO_4 \cdot K_2SO_4 \cdot H_2O$) is a needle-like crystalline substance that can hinder cement flowability significantly (Bhatty and Miller 2004).

Syngenite can be detected by X-Ray Diffraction XRD (Struble, Graf and Bhatty 2004). Differential Scanning Calorimetry (DSC) is also helpful in discovering and quantifying the syngenite in cement as shown in Fig (1). This material is formed by the transfer of water from gypsum to potassium sulfate, often occurring in cement silos (Bhatty and Miller 2004).

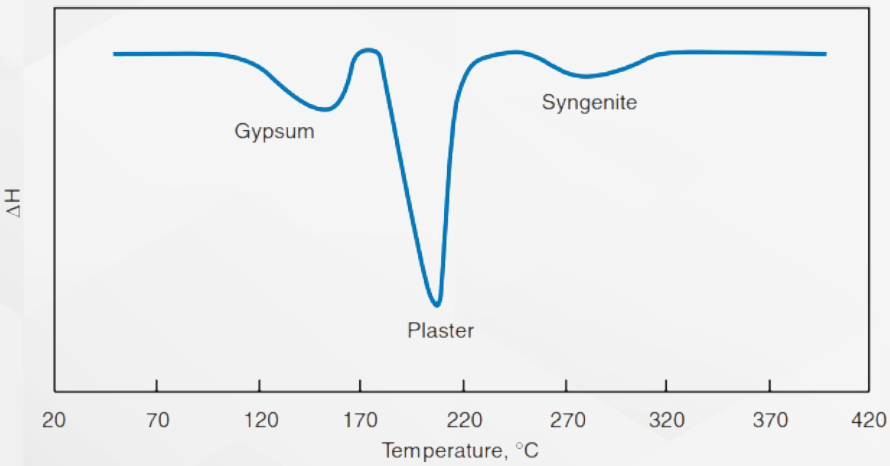

Fig (1): DSC plot showing gypsum, plaster, and syngenite in a finished ground cement.

4. Ways to overcome Pack set/Silo set phenomenon

4.1. The first phenomenon could be treated by using an appropriate amount of processing additions complying with ASTM C 465 (C465 Technical Committee 2022); during the finish grinding process can typically eliminate the occurrence of the phenomena. Most often, a relatively small amount of mechanical effort will overcome the resistance to flow.

The generally accepted explanation of pack set is that the surfaces created during grinding of Portland cement clinker have areas with unsatisfied electrical forces. The active surfaces cause inter particle attraction resulting in agglomeration and pack set (225R Committee 1999).

The grinding aids have strongly adsorbed by the ground particles, so that surface energy requirements are satisfied and no bond remain to attract other particles and cause agglomeration.

By elimination of the surface energy forces which normally cause interparticle attraction, grinding aids improve cement flowability after grinding. The grinding aids are added either with the mill feed or injected directly into the mill (Duda 1976).

4.2. The mechanism of pack set is different from that of Silo set, which, as mentioned previously, is a loss of flowability caused by partial hydration of cement.

Hard lumps are evidence of reaction with moisture. This condition is often referred to as warehouse set. If the lumps are screened out, the remaining cement is normally satisfactory for use. Measures for minimizing the likelihood of warehouse set of packaged cement include the following:

- Use stock on a first-in, first-out basis.
- Keep storage areas dry.
- Store bags on pallets above ground.
- Store bags under a cover that will protect them from moisture.

Soft lumps may occur in the lower bags in a high stack simply from the pressure of the bags above. Rolling the bags a few times normally breaks up these lumps. Measures for minimizing the formation of hard lumps during bulk storage and during transit include the following:

- Periodically inspect the loading hatches of bulk carriers for watertightness.
- Keep loading hatches closed when not in use.
- Compressed-air transit systems should have water traps and, in areas of extremely high humidity, the air lines should be equipped with air dryer.

  Storage bins should be inspected periodically for possible water leaks (that is, roof, hatch covers, and welded seams).

Warehouse set of a different type can occur with fresh cement in storage at the manufacturing plant. This type of warehouse set, more appropriately called partial hydration, is characterized by soft lumps (lumps that break under light finger pressure) and reduced flowability. This condition can develop within a few days after production and is caused by chemical reaction of cement components during storage.

Once the flow has been started and the rigidity of the bulk material broken, however, the potential for reoccurrence of the flow problems is practically nil. The tendency of cements to undergo prehydration depends on several factors, including chemical composition, storage temperature, grinding temperature, and the moisture available during grinding. The effect of storage on the quality of cement is generally negligible, but it can cause false setting and a slight loss in strength development (225R Committee 1999).

5. Conclusion

The author explained the reasons that lead to pack set/silo set phenomenon and how to detect it. Then, based on the above, proposals were made to overcome it.

These proposals focused on using appropriate grinding aids as well as maintaining appropriate operating and storage environment

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Bucket elevators:
game-changing bucket redesign delivers major efficiency, safety and sustainability benefits

Claus Weyhofen, BEUMER Group, Germany

Claus Weyhofen explains how BEUMER Group's determination to reduce backfall in lifting operations led them to reassess and optimise the design of the elevator bucket, resulting in a far more efficient machine that delivers major benefits for the global cement industry.

Bucket elevators are the work-horses of the cement industry. They are used to vertically convey bulk materials ranging from powders like fly ash, alumina, raw meal, and cements with up to 5000 Blaine fines, to coarse materials like gravel, cement clinker and re-circuit materials for roller press and vertical roller mill grinding. Using a belt or chain mechanism, these high capacity, heavy duty machines rely on a combination of centrifugal and gravimetric forces to eject the bulk material out of each bucket when it reaches the desired height.

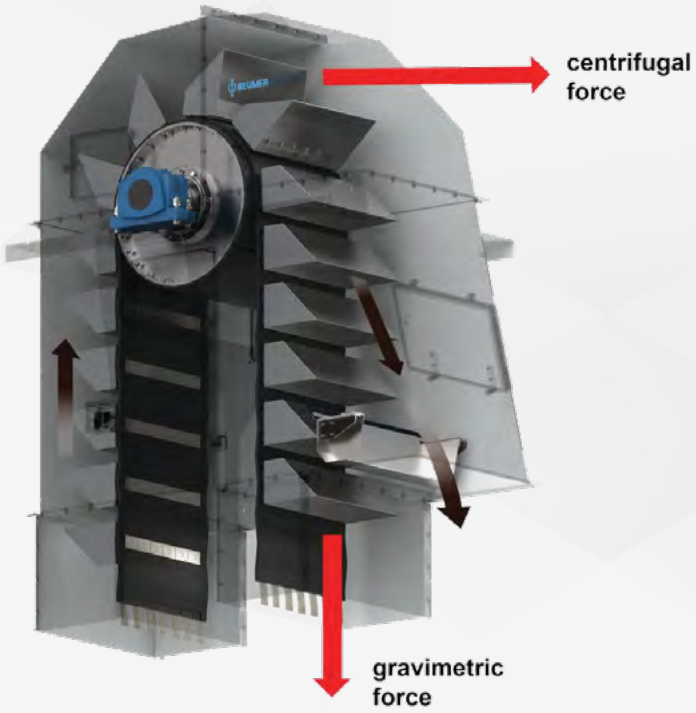

Figure 1: Bucket elevator design, using centrifugal and gravimetric forces, has not changed for decades. BEUMER Group has now optimised the design of the elevator bucket.

The basic design of the bucket elevator has not changed for decades – but it is far from perfect. Efficiency is an ongoing challenge, with many operations experiencing backfall levels higher than 20%. BEUMER Group has undertaken a detailed study of the performance characteristics of bucket elevators to identify key areas for improvement. The outcomes have informed a total redesign of the bucket itself, as well as the fixing and tipping points (as seen in Figure 1). This article explains the research findings and how they affect bucket elevator design. It also spells out the significant benefits that are now available to the global cement industry by implementing the new-design bucket elevators.

Backfall challenges

Backfall of bulk material, though wasteful, has become an accepted part of lifting operations. Backfall is caused by an improper ratio between the centrifugal and gravimetric forces, or by bulk material (and/or mixtures of the same) whose flow behaviours make a proper discharge extremely difficult. Instead of ejecting cleanly from the bucket into the bucket elevator head outlet, material falls behind the adjustable sealing blade and accumulates in the boot of the elevator.

An average backfall of 8% to 10% is still considered to be normal for most kinds of applications. However, there are applications for bucket elevators in milling circuits behind a roller press or vertical roller mill where discharge behaviour is even worse, often exceeding 20% backfall. In other words, bucket elevators are currently only around 70% to 90% efficient.

Backfall material needs to be recovered, which involves scooping it out of the bucket elevator boot and lifting it back to the top of the elevator: effectively performing the same task twice. This raises several issues.

Crucially, backfall recovery increases energy consumption because the same material is effectively being lifted twice. For example, if a bucket elevator lifts 100 tonnes and 25% of this quantity needs to be recovered as backfall, the energy bill is going to be 25% higher than it needs to be. Bearing in mind that approximately 95% of the power consumption of a bucket elevator is expended in lifting up bulk materials, there are clear efficiency, cost and sustainability benefits if that material is lifted and discharged cleanly the first time.

Working harder to lift the same amount of material can impact on operational safety and efficiency as well. Worn shaft casings and increased motor current are inevitable consequences of lifting heavy loads repeatedly, and ultimately lead to problems with conveying capacity. Inefficient material discharge also creates a lot of wear and tear to the descending bucket elevator casing as well as to the buckets themselves, which means they need replacing more frequently. This not only affects production by increasing downtime while repairs are made, it also requires more resources: including steel, which has a high carbon footprint.

For an industry that is under increasing pressure to be more efficient and more sustainable, the current levels of backfall are no longer acceptable at either an operational or an environmental level. So, can bucket elevator design be improved to dramatically reduce backfall levels?

Bucket testing

There are three key influencers on bucket elevator performance:

- bulk material (density and grain size)
- angle velocity of bucket (speed at circumference)
- bucket shape (dimension and fixation)

Adapting an influencer changes the ratio between gravimetric and centrifugal forces to affect the behaviour of the bucket elevator. It is therefore necessary to establish the optimum combination of forces that allow the material time to discharge effectively with minimal or no backfall at typical speeds of 1.5 to slightly more than 2m/sec. Equipment manufacturers have no control over the first of these parameters, as material specification is dictated by the application. However, the angle velocity and shape of the bucket can be investigated to determine how much these affect backfall.

BEUMER Group used digital DEM (Discreet Element Method) techniques to map and understand the behaviour of our existing bucket elevator design and its effect on the discharge for different materials, ranging from coarse clinker to finest cements. The theoretical results were subsequently verified by conducting discharge tests at their research and development facility in Beckum, Germany (see Figure 2). These tests comprised manual weighing and filling of the bucket, compacting to replicate the effects of vibration, and collection and weighing of the ejected material and backfill material.

The aim was to optimise the discharge parabola so material passes over the discharge lip and into the outlet without falling into the boot, and without hitting the casing, the bucket below or the head casing front wall.

The results have led to a significant alteration in the 30-year-old design of our established belt and chain bucket elevators.

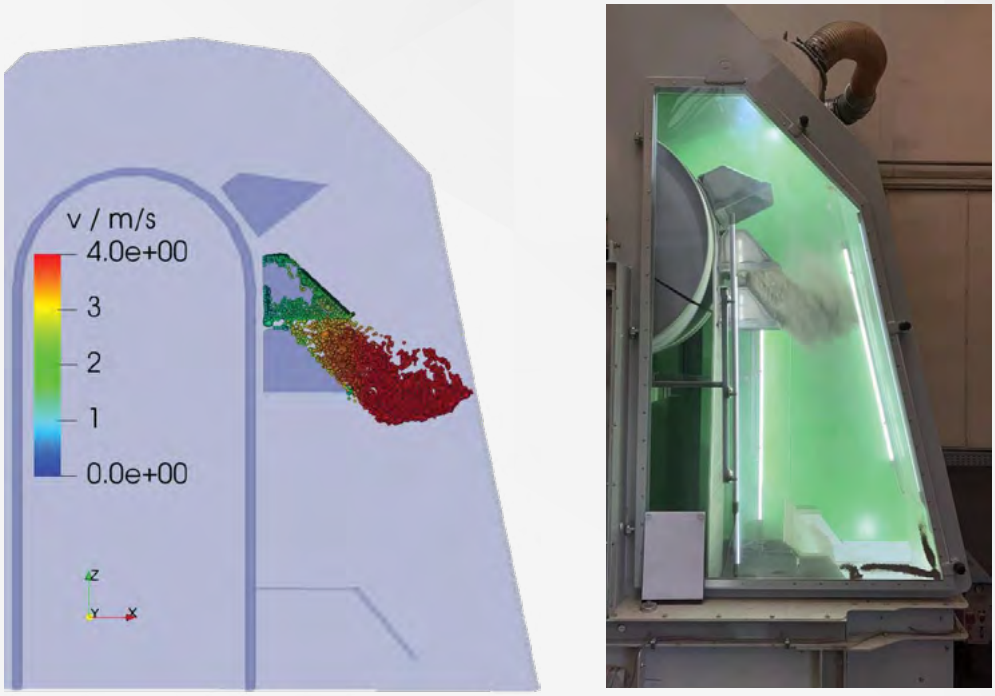

Figure 2: Digital DEM mapping (left) and field test of the bucket elevator in Beckum, Germany (right).

Design optimisation

The new design uses the same drum diameter as before, but is able to run at slightly higher speeds. As a result, the new design can operate reliably at certain speed ranges, for example between 1.64 to 2.06 m/sec. This higher velocity range allows the optimum speed for a particular bulk material to be applied and can be adjusted even after installation, improving discharge and minimising backfall.

Further changes have been made to the bucket profile and to where the bucket attaches to the belt or chain (see Figure 3). Testing showed that moving the fixing point for the new buckets further down allows earlier activation of the centrifugal forces, activating the ejecting process of bulk material at an earlier point, which again increases discharge efficiency.

Figure 3: The new bucket design with a lower fixing point

Backfall of coarse materials such as clinker, gypsum and gravel under testing was so low as to be not measurable – even when the buckets were overloaded.

Benefits

The new bucket design and lower fixing point on belt and chain bucket elevators delivers several benefits for cement producers.

- Up to 98% efficiency by optimising discharge at the elevator head.
- Reduction in energy consumption due to reduction in backfall.
- Improved discharge efficiency, with various speed range options enabling centrifugal forces to be matched to bulk material properties.
- Reduced OPEX, through a combination of less wear and tear on equipment, less rework and therefore lower energy bills.
- Up to 25% weight saving on tall bucket elevators (e.g. kiln or silo feed), thanks to smaller buckets and housings.
- Lower carbon footprint, not only through lower energy consumption but also due to less steel being required for bucket elevator production.

Taken together, these benefits mean that the new design delivers the highest efficiency for bucket elevators in the market.

Customer applications

The new design bucket elevators are already delivering benefits in real cement industry applications involving both light and dense materials.

A European customer had been experiencing problems for more than a decade with a bucket elevator associated with a roller press at their cement mill. Their BEUMER Bucket Elevator was originally installed in 2003 to lift clinker flakes at a rate of 750 t/hr. It had been retrofitted by a market competitor in 2013 in an attempt to reduce backfall issues experienced since installation, but without success. Recirculation of backfall material continued to cause premature wearing of the shaft casings to such an extent that the plates needed replacing regularly.

The worn shaft casings were of particular concern because, in bucket elevators, they generally not only function as enclosures, but also as a load-bearing structure. There is a risk of static failure if they become too worn.

In order to help this customer, BEUMER obtained a material sample and tested the discharge behaviour in Beckum with the third-party bucket design. Reproducing the poor discharge behaviour enabled the solution. By redesigning the buckets, BEUMER succeeded in reducing the backfall from 15% to 3%. These results were so compelling that the customer ordered a retrofit to the new bucket design immediately.

Conclusion

The cement industry faces many pressures in balancing global demand for its products with continuing calls for more sustainable ways of operating. Just because we have always done things a certain way does not mean there is no room for improvement. The bucket elevator is a prime example. BEUMER Group hopes that the results of the extensive study into the behaviour of materials during discharge and the subsequent improvements to bucket elevator design will support cement producers in finding new ways to be more efficient and sustainable while remaining competitive.

Magotteaux's Sustainability Commitments and Impact on the Cement Industry with the 4th Generation Separator – Magoclass XP4i

Willy Sonnet, Magotteaux East Mediterranean Ltd, Cyprus

Introduction:

At the recent Arab Union Conference, we proudly presented our groundbreaking 4th generation separator, the Magoclass XP4i. However, before delving into its innovative features, it's essential to highlight Magotteaux's overarching commitment to sustainability. Our goal is to ensure future generations inherit a cleaner, healthier planet.

Sustainability Initiatives:

Magotteaux's approach to sustainability is comprehensive and multifaceted, focusing on climate action, responsible consumption, and a purpose-driven mission. Our sustainability efforts are encapsulated in our purpose statement: "We contribute responsibly to global human development through recycling and better use of natural resources."

Our 3 Key Pillars of Sustainability:

1. **Certification:**

- Magotteaux operates 22 production units across 12 countries, with three joint ventures in South Africa and China.
- All our plants are certified under various international standards:
  - ISO 90001 for Quality Management
  - ISO 14001 for Environmental Management
  - ISO 45001 for Occupational Health and Safety
  - ISO 50001 for Energy Management (in selected locations)
- These certifications ensure our commitment to maintaining high standards in quality, environmental protection, and employee safety.

2. **Communication and Reporting:**

- We collaborate with ECOVADIS, a globally recognized assessment platform, to evaluate and improve our sustainability practices.
- ECOVADIS operates in 160 countries, engaging with over 75,000 companies.
- Magotteaux achieved a bronze medal in sustainability from ECOVADIS in 2021, with ongoing assessments to enhance our performance.
- ECOVADIS evaluates companies on 21 criteria grouped into four themes: Environment, Labor & Human Rights, Ethics, and Sustainable Procurement. This comprehensive approach helps us identify areas for improvement and track our progress over time.

3. **ESG Commitment:**

- Magotteaux has implemented sustainable energy solutions worldwide. For example:
  - In Thailand, we installed solar panels and a state-of-the-art floating solar system, generating 3,200 MWh/year of green energy and reducing CO_2 emissions by 1,500 tons annually.
  - In India, we changed our electricity provider to one that predominantly uses solar and wind power.
  - In Canada, at our Magog facility, we utilize hydro-power and are undertaking projects to reduce natural gas consumption through heat exchangers.
  - In Spain, all electricity consumed in our facilities comes from certified green sources, validated by origin certificates.
- These efforts demonstrate Magotteaux's dedication to adopting sustainable energy practices and reducing our environmental impact.

Innovation in Product Development: Magotteaux is at the forefront of the industry in developing long-lasting, efficient products that contribute to responsible consumption. Our innovations, such as the Xcc Hammers, Xcc Cooler Plates, and Expand wear parts for vertical mills, significantly improve product lifespan. These advancements reduce the frequency of replacements and lower the overall carbon footprint.

One notable example is the Expand wear parts for vertical mills, which more than double the lifespan compared to standard alternatives. By extending the lifespan of these parts, we significantly reduce the need for frequent replacements, thereby decreasing energy consumption and associated CO_2 emissions.

Magoclass 4th Gen Separator XP4i

The XP4i represents a significant advancement in energy savings and efficiency. Its design and technology provide substantial benefits:

- **Energy Savings:** Depending on the cement quality, the XP4i can reduce energy consumption by 10-30%, translating into significant cost savings and reduced CO_2 emissions. For example, a one million ton per year cement mill consuming 30-32 million kWh annually can save up to 6.4 million kWh/year, reducing CO_2 emissions by approximately 3,200 tons.
- **Improved Product Quality:** The high-efficiency separation ensures superior cement fineness, meeting the highest industry standards.
- **Compact Design:** The separator integrates seamlessly into existing installations without requiring additional civil works. Its fan is integrated into the bottom of the separator, eliminating the need for an external fan and related connecting ducts.
- **Advanced Cycloning Effect:** This innovation eliminates the need for external fans and process filters, further enhancing energy efficiency. The air is recirculated through a double casing, ensuring maximum efficiency and minimal energy loss.
- **High Efficiency Separation:** Utilizing a cage type system and internal cycloning effect, the XP4i achieves a 99.9% efficiency, eliminating the need for additional process filters.

Case Studies and Proven Results:

- In Oman, replacing two 1st generation separators with the XP4i resulted in a 19% increase in production and a 20.2% reduction in energy consumption. This case study exemplifies the significant impact of our technology on operational efficiency and sustainability.
- Installations across the region, including Kuwait, Turkey, Oman, Cyprus, and the UAE, showcase the effectiveness and reliability of the XP4i. For instance, in the UAE, the XP4i was installed in a quarry application to remove filler from sand, demonstrating its versatility and adaptability.

Our recent success with the supply of six separators to Cemex in Croatia further proves Magotteaux's deep know-how in grinding processes and our commitment to delivering cutting-edge solutions to our clients.

Conclusion: Magotteaux's dedication to sustainability and innovation is evident in our advanced products and global initiatives. The Magoclass 4th Gen Separator XP4i is a testament to our commitment to improving efficiency and reducing environmental impact in the cement industry. As we continue to lead in sustainable practices, we look forward to collaborating with industry partners to create a cleaner, more efficient future.

Fuel flexibility reaches new heights (and new carbon lows) at Mannok Cement

FLSmidth Cement

During the final commissioning of the FUELFLEX® Pyrolyzer at the Mannok Cement plant in Ireland in 2022, the ambitious cement manufacturer was keen to embark on the next steps of its Vision 2030 project to reduce its carbon footprint.

"The FUELFLEX enables us to burn up to 100% alternative fuels in the calciner while also bringing NOx emissions right down. It's been a game-changer for our plant," explains Damian Reilly, Mannok Cement. "The next obvious step for us was to upgrade our coal dosing system so that we can reduce the amount of coal going into the preheater to an absolute minimum without sacrificing flexibility. We were happy to continue working with FLSmidth Cement on these proj ects, knowing we share similar goals."

Coal – a necessary ingredient (for now)

Traditionally, coal feeders have operated with a minimum quantity of 1 tph of coal. This is low relative to the quantity of alternative fuels being fired, but still higher than many plants would like at a time where every carbon saving counts. However, eliminating coal from cement production entirely is not on the cards right now.

"The ambition to remove coal from the pyroprocess was what drove us to develop a more flexible coal feeder," says Peter Norek, Global Product Manager Feeding and Dosing Technologies, FLSmidth Cement. "Even with the ability to fire 100% alternative fuels, most plants still require the 'fallback' of coal for when SRF supplies are low, or at start-up. The Pfister® FEEDflex is basically an upgrade to the proven and widely used Pfister® DRW Rotor Weighfeeder, with the advantage of a much lower minimum feed rate – down to as little as 60 kg/h – with no change to the maximum feed rate. The achievable feed range of 1:100 means that plants can significantly reduce their coal usage, without hamstringing their operation if greater quantities of fuel are required."

The FEEDflex has been available for 5 years and was part of Mannok Cement's plans for the plant since the early stages of the FUELFLEX development in 2019. The plant was already operating two SRF lines to the calciner using Pfister TRW-S feeders, but the minimum coal feed quantity was not yet a limitation, as it became when the FUELFLEX came into operation. Now one SRF line feeds via the FUELFLEX and one directly into the calciner. Before the FEEDflex upgrade, their existing coal feeders were fixed at a minimum feed rate of 1 tph. However, with the new SRF capacity in the calciner, the plant wanted to reduce this to 0.16 tph.

"This has been a multi-way project," explains Damian. "On the one hand, we're bringing in a new feeder upgrade to reduce the quantity of coal. On the other, we've optimised our TRW-S feeders to increase their SRF capacity and make the most of the FUELFLEX. And then the third part of the project is the ECS/ProcessExpert® advanced process control software, which has been remarkable."

Reducing coal feed

The FEEDflex technology consists of newly designed air distribution in the DRW Rotor Weighfeeder by replacing and adding parts, which allows significantly lower rotor rpm without leading in pulsations. The upgrade can be easily carried out in just one day during regular maintenance shutdown.

SRF optimisation

"We've been using Pfister feeders since the 1980s and they have always served us well," says Damian. "The TRW-S SRF feeders were commissioned in 2014 and we've steadily increased their use over the last few years and especially since the FUELFLEX went into operation. They are easy to maintain and haven't given us any trouble."

As the plant was operating at close to 100% capacity on both SRF feeders, Mannok came to FLSmidth Cement for advice on how to increase their capacity. In June 2021, during a Pfister service, the FLSmidth Cement site team investigated the options. It proved possible to update a few control system parameters to achieve the necessary results; the pneumatic and mechanical transport were already capable of handling the additional SRF feed.

"As a result of this work, we're now operating at a steady 10 tph through one of the SRF feeders and the feed rate of the second feeder is controlled by the ECS/ProcessExpert® system according to the temperature in the calciner," explains Damian. "We're averaging 17 or 18 tph of SRF, and if there's a blockage in the line, the coal feeder kicks in, and we don't need to stop the plant. It's seamless."

With the optimised TRW-S SRF feeders and the new Pfister FEEDflex, the plant is saving more than 1 tph of coal in addition to what was achievable by implementation of the FUELFLEX alone – a considerable achievement.

"It may not seem like a large sum, but the road to net zero is going to be full of these incremental improvements," says Damian. "Every little bit helps. The FEEDflex has been in operation since the winter shutdown in early 2023 and you'd hardly know it was there – it's so easy."

Advanced process control

Mannok was already operating an older version of ECS/ProcessExpert system on its kiln line and seeing the benefits there, particularly in optimising fuel consumption. After the FUELFLEX project was complete, the FEEDflex upgrade and ECS/ProcessExpert upgrade were rolled out to calciner operations at the same time, effectively minimising coal consumption. The fired fuels are prioritised so that SRF is automatically used as control fuel, but coal seamlessly supplements SRF if there are limitations in the available feed for any reason. More recently, Mannok introduced ECS/ProcessExpert software to the raw mill and cement mill to increase efficiency in those processes.

“ECS/ProcessExpert advanced control software is the one big thing that’s going to make a difference long-term to cement production,” says Damian. “It’s the first time I’ve witnessed AI outperforming humans. Even your best operators couldn’t be so quick to increase or reduce the SRF feed depending on calciner conditions. We’re seeing true optimisation and I think the potential of this tool is only going to increase. We’re expanding our use of it across the plant, including on the kiln and mills. The cement mill has seen an increase in tonnage across all cement types.”

Vision 2030

Mannok is committed to reducing carbon emissions by 33% compared to 2020 levels by 2030. Alongside their alternative fuel investments for the calciner, they have also been making plans to reduce fossil fuel use in the kiln.

“In early 2024 we will be adding a satellite burner to the kiln so we can feed in SRF and reduce fossil fuel use,” says Damian. “This will be fed by a new Pfister TRW-S feeder and will also involve putting in a new docking station for receiving SRF. The following winter we hope to replace the existing kiln burner with a JETFLEX® burner, which will further increase our fuel flexibility. In the long term, we’ll also be looking at the potential for waste heat recovery and additional energy efficiency projects. These investments are made purely on the basis of their ability to help us reduce our carbon footprint and meet our Vision 2030 goals, though we can’t deny they often also bring a cost benefit. We’re very committed to being a pioneer in low-carbon cement production and we couldn’t do it without FLSmidth Cement.”

“It is great to look back at how Mannok and FLSmidth Cement have essentially eliminated the use of calciner coal and ammonia water for de-NOx by a close collaborative team effort combining several new technologies and process optimizations. We look forward to the next steps in 2024 and the years ahead.” says Lars Skaarup Jensen, R&D Specialist and project manager Green Innovation, FLSmidth Cement.

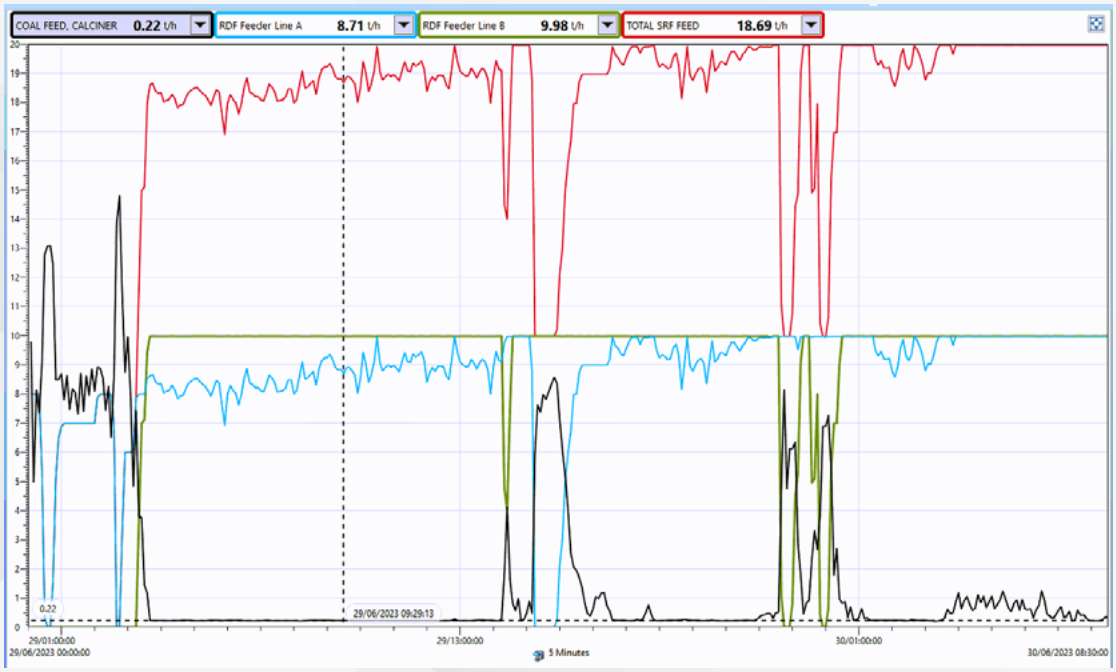

Figure 1. The chart illustrates how the three Pfister feeders act in conjunction with PXP control. The coal is minimised but kicks in when the SRF feeders reach their maximum – and when a SRF feed line blocks. Initially the FUELFLEX is not operated. Then SRF feed to it is ramped up to 10 tph with SRF line A to the calciner controlling the bottom stage temperature. Each time an SRF line blocks the coal replaces it – and when SRF feed reaches the 20 tph limit coal feed supplements to control the calciner temperature. Otherwise, the coal is maintained at the 0.2 tph minimum.

Waste Heat Recovery .. A Global Solution for Decarbonization

Effective Waste Heat Recovery (WHR) solutions can recover 20%-50% of energy needs for energy-intensive industries.

Korra Energi

Egypt's cement industry takes a step towards sustainability as Korra Energi, an Egyptian Joint Stock Company specializing in sustainable energy solutions, secures a contract to establish the country's first Waste Heat Recovery (WHR) power plant. The move aligns with global decarbonization efforts and aims to reduce the industry's reliance on natural gas for power generation.

Despite vast amounts of waste heat being a significant untapped resource in the Middle east, Gulf & Africa, the high initial cost has hindered widespread adoption of Waste Heat Recovery (WHR) technologies for a while. However, WHR is gaining momentum as a sustainable climate change solution. Successful real-world implementations are paving the way for broader acceptance where WHR captures unused heat from industrial processes, transform it into valuable resources and significantly reduce greenhouse gas emissions.

Waste heat recovery (WHR) is emerging as a game-changer for heat-intensive industries. Recent studies show that industrial heat contributes to 10 percent of all GHG emissions. This makes WHR a win-win situation for both factories and the environment. Particularly for the cement industry, a significant contributor to global CO_2 emissions (currently accounting for 7-8%) and the third-largest industrial energy consumer, WHR presents a potential savior.

This technology can significantly reduce factories' reliance on the grid with an average of 30%, leading to substantial cost savings. WHR offers a viable solution to conserve energy and combat CO_2 emissions by around 30,000 Ton a year. The cement sector, in particular, stands to benefit from WHR technology, which also aligns with the global direction of reducing natural gas consumption in power generation plants and the net-zero goals. Additionally, implementing a WHR plant does not negatively impact cement production.

Since each industry has unique needs, customized processes are crucial for optimal, feasible project outcomes. The sensitivity analysis is crucial in deciding the most suitable technology for implementing WHR in industries. Korra Energi assesses factors like factory waste heat output, water availability, and suitable space for plant setup and piping through on-site surveys and operational analysis to recommend the most effective waste heat management solution.

For generating electricity from waste heat, three main WHR systems exist: Steam Rankine Cycle (SRC), Organic Rankine Cycle (ORC), and Kalina Cycle. The critical differentiator among these systems is the working fluid they employ.

SRC utilizes water as the working fluid and generates electricity using waste heat boilers (WHRB) or Heat Recovery Steam Generators (HRSG). Depending on the specific needs of the factory, the SRC system can be cooled by either air or water. This decision is typically made after a thorough analysis during the planning stages.

Organic Rankine Cycle (ORC) is a revolutionary process that utilizes waste heat from industrial processes to generate clean and efficient electricity or mechanical power. Together, Korra Energi, the official representative of Turboden in Egypt, introduces game-changing ORC technology. This system deploys organic fluids instead of water, ensuring efficient energy recovery without consuming scarce water resources. Given the precious and limited water resources in the Middle East, this aspect is particularly crucial.

Adding to ORC's many benefits, it offers impressive management efficiency. They operate automatically, requiring minimal human intervention during normal operation or shutdowns, and eliminate the need for frequent major overhauls. Their self-adjusting design ensures smooth operation even with fluctuating exhaust gas temperatures and flows. Moreover, ORC systems outperform steam turbines in terms of partial load efficiency, maintaining functionality as low as 10% of nominal load. This efficiency extends to the heat source, as ORC systems effectively utilize medium-to-low temperature heat, achieving an impressive energy availability exceeding 98%. Furthermore, they offer exceptional flexibility with a wide operational range, seamlessly adapting from 10% to 110% of nominal load.

This translates directly to cost savings and environmental benefits when applied to Waste Heat Recovery (WHR) solutions. The implementation of WHR solutions not only increases energy efficiency but also contributes to the cement industry's sustainability targets. By calculating the levelized cost of electricity (LCOE) over 20 years, WHR emerges as a reliable and cost-effective source of electric power. With net-zero policies driving the development of ORC-based projects, WHR can be combined with other renewable energy sources to further reduce reliance on fossil fuels.

Korra Energi's project showcases its commitment to sustainable solutions and underscores its expertise in non-conventional energy applications through customized systems optimized for each project. With over 25 years of experience, Korra Energi has a proven track record of providing energy-efficient solutions across various industries, contributing to resource conservation and CO_2 emissions reduction.

Korra Energi's groundbreaking project involves the installation of a 20MW (100GWh) WHR facility within the Egyptian cement industry. By recovering exhaust gases and utilizing them to generate power, the plant will provide approximately 30 percent of the electricity needed for the cement plant's two production lines, resulting in a reduction of carbon emissions by around 40,000 tons per annum. The Waste Heat Recovery plant contract includes the design, construction, and testing of WHR boilers, a steam turbine generator set, auxiliary equipment, and control systems.

As the world faces the urgent need to conserve resources and minimize the impact of GHG emissions, waste heat recovery technologies like WHR offer a promising pathway to a cleaner and more efficient future. Through collaborative efforts, businesses, future generations, and the planet can benefit from sustainable energy solutions that drive economic growth while preserving the environment.

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CO_2 REDUCTION STRATEGY

1 JAMCEM PADS

Our unique plant assessment tool to identify energy reduction opportunities

2 ELECTRICAL ENERGY AUDIT

Identifying the gap between current and benchmark power consumption

3 ALTERNATIVE FUEL ASSESSMENT

Identifying the scope and strategy for AFs

4 PRODUCT STRATEGY

Development of cements to reduce clinker content

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DALOG: Pioneering Condition Monitoring Solutions

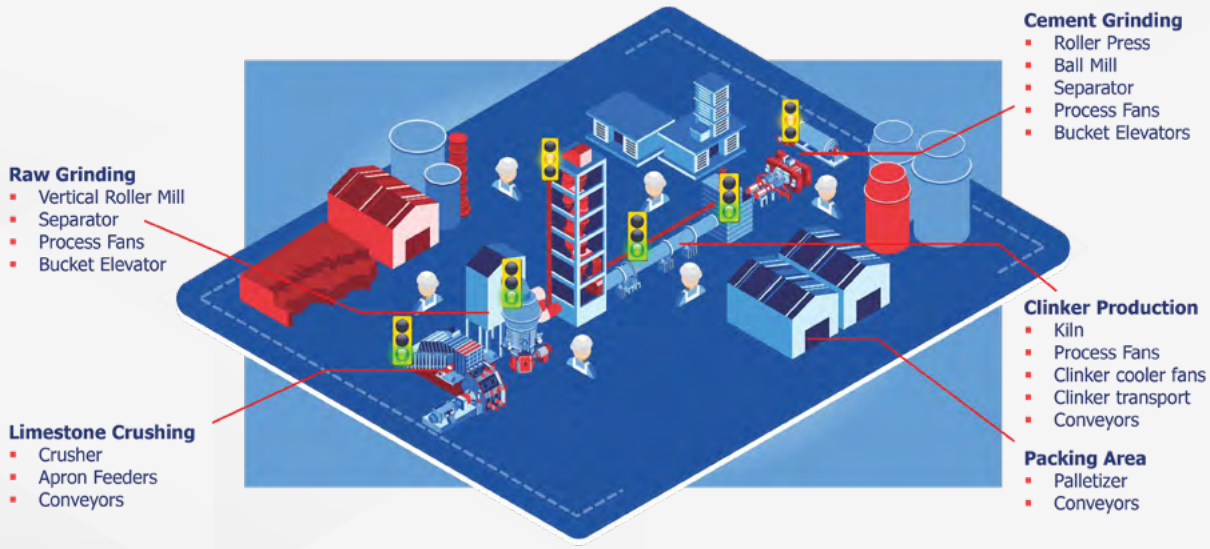
DALOG Diagnosesysteme GmbH, Germany

DALOG®: Pioneering Condition Monitoring Solutions

DALOG Diagnosesysteme GmbH, an independent family-owned enterprise since 1998, specializes in innovative condition monitoring systems that enhance equipment effectiveness. Headquartered in Neusaess, Germany, and provides service over 80 countries, DALOG's commitment to technological advancement has established them as a leader in IoT 4.0 industrial applications.

Company Overview

DALOG's expertise is reflected in their extensive portfolio, which includes hardware, software, and diagnostic tools specifically designed for real-time monitoring and analysis. Their solutions are crucial in various sectors, including cement production, where they improve reliability and reduce downtime through proactive monitoring of critical machinery components such as bearings, gearboxes, and kilns (see picture 1).

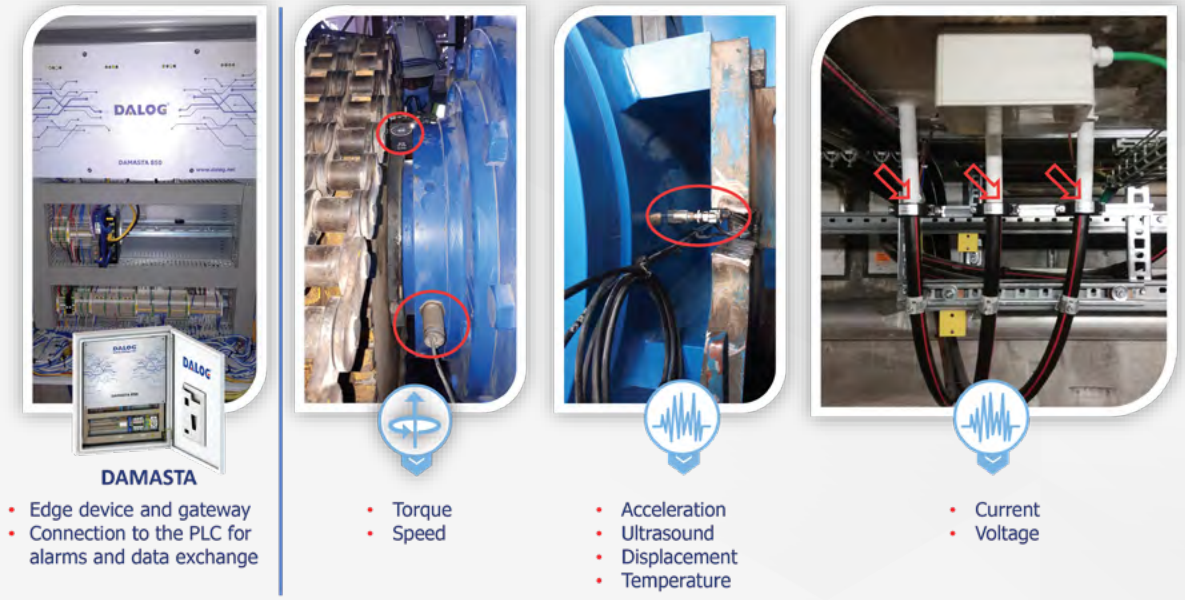


Picture 1: overview of machines covered by DALOG Condition Monitoring Solutions for a cement plant

Product and Technology Portfolio

The DALOG products are designed to bring maintenance teams from the basics of connectivity and sensors to any stage of the IoT 4.0 maturity model (see picture 5). Their systems provide not only vibration analysis and ultrasound capabilities (see picture 2) but also incorporate thermography and lubrication technology to offer a full spectrum of diagnostic solutions. These technologies enable proactive maintenance strategies, crucial for preventing unplanned downtime and enhancing machine longevity.

DALOG's innovation extends to the application of AI in their systems, promoting real-time self-optimization and predictive maintenance capabilities. This approach not only boosts the efficiency of operations but also supports sustainable practices by reducing resource usage associated with premature part replacement and unnecessary maintenance.

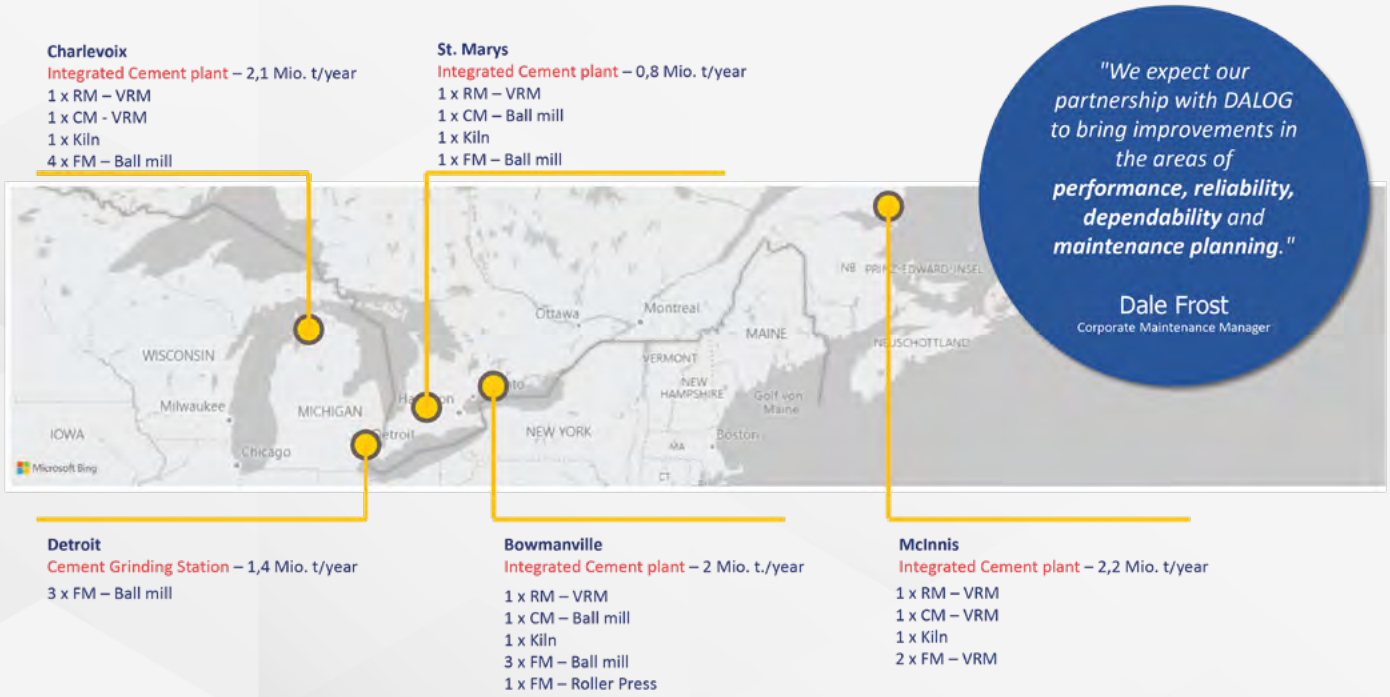


Picture 2: excerpt of DALOG Sensor Portfolio

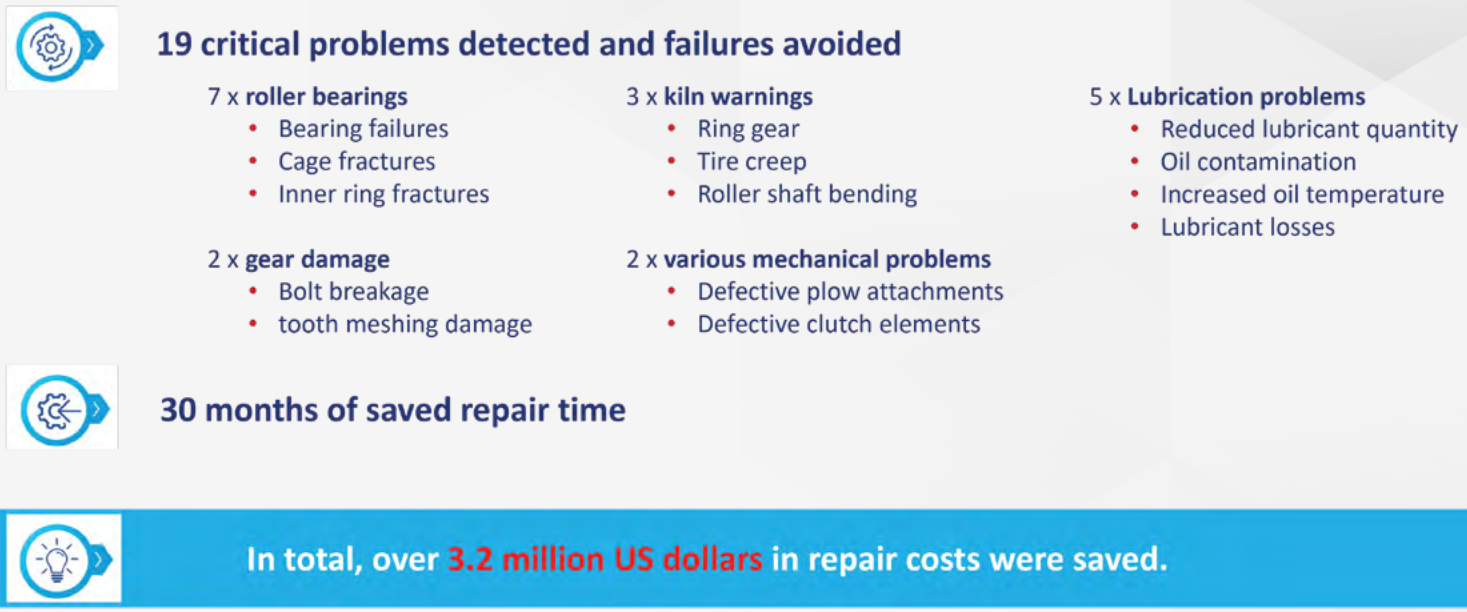
Case Studies and Impact

The practical application of DALOG's technologies can be best observed in their work with VCNA St. Marys Cement. Here, DALOG's systems have been instrumental in decreasing downtime and maintenance costs, which resulted in savings of over $3.2 million within a year. Such case studies highlight the adaptability and effectiveness of DALOG's solutions across different platforms and conditions (see picture 3 and 4).

Further success stories include applications in various other industrial environments where DALOG's solutions have consistently led to improved machine reliability and operational efficiency, showcasing the versatility and scalability of their systems.



Picture 3: overview of in-scope plants and machines



Picture 4: Proven results on savings

Future Directions and Strategic Goals

DALOG continues to lead innovation in the field of condition monitoring with plans to expand their AI capabilities and further integrate machine learning into their systems. The focus remains on enhancing the predictive accuracy of their tools to offer even more precise maintenance scheduling and fault detection (see picture 5).

DALOG is poised to set new standards in industrial maintenance, moving towards complete automation in condition monitoring that promises not only to reduce operational costs but also to enhance safety and reliability across industries.

Nicolas DAVID

CEO

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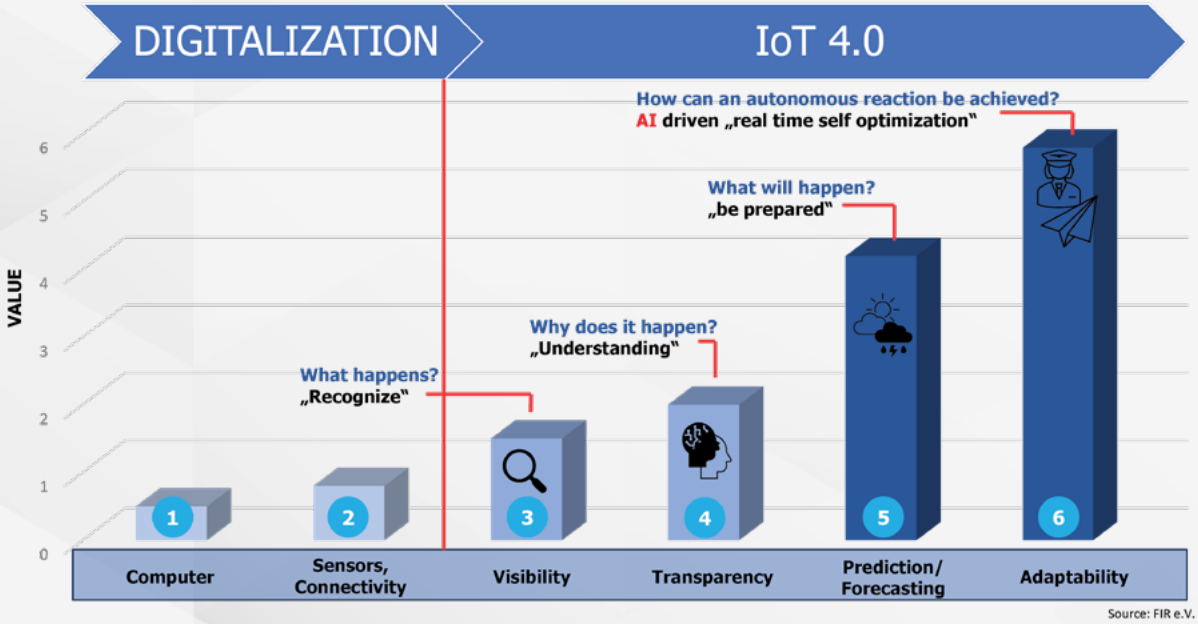


Picture 5: The IoT Maturity Model

Sustainable digitalisation in bulk goods logistics

Reiner Bachthaler, Axians Industrial Applications & Services GmbH

The building materials industry is faced with a constantly growing demand to optimise not only its efficiency, but also the sustainability of its processes. The environmental balance and the carbon footprint are crucial: customers demand that this is comprehensible and transparent. Both large corporations and small and medium-sized companies are therefore increasingly focussing on sustainability in their own production and logistics. Digitalisation and sustainability issues first found their way into the area of highly processed products such as cement and readymix or lime, but are now also relevant for the sand and gravel industry.

At first glance, it seems obvious to focus efforts to improve sustainability on the production process of building materials. However, it is often underestimated, that the automation and digitalisation of logistics processes not only offer enormous potential for increasing efficiency, but also for reducing the carbon footprint.

The question therefore arises: How can efficient and sustainable digitalisation in bulk goods logistics be approached with the involvement of all parties (customer, supplier, freight forwarder, recipient)? What are the most important use cases and what needs to be considered?

Optimizing the entire supply chain

Currently, the process chain for typical logistics processes such as ordering, order and transport planning and delivery is often organised decentrally and assigned to the respective supply plants. There is usually no cross-plant planning and optimisation. In addition, there is often a break between different, non-integrated partial solutions along the process chain.

Today's challenges:

- Orders are often placed by email and not online.
- Orders are not optimally allocated to the most suitable supply plants; there is a lack of transparency regarding better alternatives.
- No load balancing between different plants (where do we expect long waiting times, which plant might run out of stock for certain materials, etc.)
- Non-optimised transports lead to longer distances and higher fuel consumption.
- In the case of asphalt and readymix, there is a risk that deliveries will not arrive on time and the material cannot be used or the quality on the construction site is inadequate.

Optimisation Potential:

- **Online Order Taking:**

  With an order creation via an online Customer Portal (e.g. Axians VAS Cloud Logistics), error rates can be reduced and email traffic minimised. By saving an average of three emails per order alone, the CO_2 savings from 10,000 orders per month add up to more than 100 kg per year.

- **Optimised planning and distribution:**

  Optimised distribution of orders to the most suitable plants, combined with a transport optimisation system, reduces waiting times at the plant and transport routes to the recipient. This allows the driver to react immediately to last-minute changes to the planned transport and optimise the route. These measures reduce fuel consumption and significantly improve the CO_2 balance.

- **Reduction of errors and delays:**

  Improved planning and real-time information can minimise incorrect or late deliveries, resulting in improved and more sustainable customer services.

Reduction of manual effort and waiting times

A non-optimised logistics workflow is often characterised by manual, error-prone processes, media disruptions and waiting times. There is great potential to increase efficiency and automation with a powerful logistics solution, particularly in the plant logistics (e.g. Axians VAS Yard Management), and thus also to improve the sustainability of the processes.

Today, truck drivers often arrive at the loading plant without prior planning, do not always have complete information about their delivery and do not have a specified loading time, which results in a manual, time-consuming check-in process at the plant. In such an environment, waiting times and traffic jams are no longer the exception, but often the rule.

Manual efforts and waiting times in the factory can be significantly reduced if the respective process step can be operated efficiently and the required data can be accessed immediately and online.

Here are some typical examples:

Centralised pre-planning of deliveries:

By centrally pre-planning and announcing deliveries and providing information to the truck driver, deliveries can be better controlled and carried out more efficiently. The information for loading and delivery is already known before the truck arrives at the plant and is available in the central cloud-based planning system, for the driver (on his driver app) and in the plant logistics system. The time-consuming search for and assignment of the correct delivery data is no longer necessary, reducing inefficient waiting times of the trucks.

Automated check-in and check-out process for trucks:

With self-service terminals, connected online to a plant logistics system such as Axians VAS Yard Management, the check-in process at the plant entrance can be completed in just a few seconds. The truck is quickly recognised either via cameras or other convenient registration methods (e.g. QR code, TAN entry, RF/ID cards) and the delivery data is correctly assigned. The truck driver receives information about the intended loading point online at the terminal. The loading and check-out process at the factory exit can also be automated and thus significantly shortened. As a result, the truck will spend less time (and fuel) at the plant and thereby reduce its carbon footprint.

Mobile Loading Terminals

One example of this is the use of mobile wheel loader or forklift terminals, which immediately provide the operator with the correct data interactively. This prevents incorrect communication and the printing of loading documents as well as time-consuming reworking in the event of corrections.

These examples give an insight into the wide range of logistics applications, offering a potential for increasing sustainability, as successful decarbonisation begins in the depths of the processes.

Paperless logistics workflow

The current situation in bulk goods logistics is often characterised by numerous paper-based processes, often coupled with media disruptions. Here are some typical examples:

- Printout of order lists and delivery plans
- Printout of pre-delivery notes and loading tickets
- Multiple printouts of delivery notes after loading at the factory exit
- Copy of the paper-based delivery note after manual sign-off by the recipient
- Paper-based creation and copying of trip reports (by the truck driver)

The result is a poor CO_2 balance for these logistics processes. A printout of 4 pages per delivery alone emits around 2.5 tonnes of CO_2 for 120,000 deliveries per year. The overall potential for improved sustainability through a digital, paperless workflow in all areas is certainly much higher!

So how to achieve a paperless workflow in bulk goods logistics:

- Online orders: Orders are created online by the customer or the dispatcher - without paper printouts - in a centralised, cloud-based logistics workflow system (e.g. Axians VAS Cloud Logistics).
- Digital delivery plans: Delivery plans are transferred online to carriers (either access to the same system or transfer via web API to the carrier's planning system).
- Electronic delivery documents: Information about the planned and assigned deliveries is transferred online to a driver app, that enables check-in at the loading plant, automated loading and the generation of electronic delivery notes without printouts. The documents are stored electronically in the app (e.g. Axians VAS Driver App)
- Digital Proof of Delivery: The recipient signs for receipt of the goods in the app, and the delivery note is automatically transmitted electronically to the recipient, the customer and the supplier's ERP system.
- Electronic trip reports: Trip reports are generated electronically in the driver app and transferred online to the ERP system for evaluation and invoicing via VAS Cloud Logistics, for example.

The Result: The described paperless workflow massively improves the sustainability and carbon footprint of logistics processes in the bulk goods industry, saves costs, avoids media disruptions and increases transparency for everyone involved!

Conclusion

Digitalisation in bulk goods logistics offers immense opportunities to significantly improve the carbon footprint and increase process efficiency at the same time. By optimising supply chains, reducing manual effort and waiting times and implementing a paperless workflow, suppliers can not only act in a more environmentally friendly way, but also achieve considerable cost savings. Sustainable digitalisation is therefore not only a contribution to climate protection, but also an economic advantage in the competitiveness of companies.

To turn your individual digitalisation project into a success story, it's important to choose a competent and experienced partner such as Axians IAS, in order to find your best-fit project setup for sustainable digitalisation.

About the author:

Reiner Bachthaler has his roots in industrial software-based automatization projects and a longterm experience in Software Product Management. He is a Senior Product Manager at Axians IAS.

Axians Industrial Applications & Services GmbH – your IT partner for smart logistic solutions in the bulk goods industry

Stack big bags safely and save up to 70% space

Looking for ways to save storage space in your warehouse or factory? Stack your bulk goods in big bags / FIBCs safely with our Indus Neva.

Looking for ways to save storage space in your warehouse or factory? Safely stack your storage in big bags on top of each other with our Indus Neva pallet system. Held together by the stacking tubes in each corner of the bottom deck, the Neva system is very steady. The system keeps the jumbo bags perfectly balanced, up to 7 meters or 6 tons.

The Neva offers a very efficient and safe support for big bags /FIBC's. Stacking big bags increases the capacity to a maximum of 4 times 1,500 kg. Easy and quick to assemble and disassemble. The system is also known as big bag stacking rack, big bag container, big bag storage rack or big back storage system.

Storage space savings in numbers

The maximum stack height is 7 meters high and 6 tons in weight. By using the Indus Neva pallet system, the following space can be saved compared to a 100×100 big bag:

- Stacked 2 high: 40.50%
- Stacked 3 high: 60.33%
- Stacked 4 high: 70.25%

Takes up very little space when temporarily empty

Besides the fact that the Neva can be easily stacked, the lightweight product takes up very little space when temporarily not in use. The bottom parts can be stacked and up to 44 poles can be placed in the bottom part through recesses in the bottom deck. Therefore, a Neva never takes up unnecessary space in your company hall or during transport. Ideal during a seasonal dip in the production process.

Other advantages of the Neva

The Neva also helps you to easily fill and empty big bags, optimize your goods flow and supply, and minimize safety risks with our certified products. In addition, the product can be tailored to your situation, due to the wide range of options that the Neva offers. We will of course be happy to advise you on this.

POETH Z- or C-conveyor ideal when height is limited

With the Z conveyor in the C design, an elevation step can be achieved relatively easily. The conveyor is also suitable for very watery products.

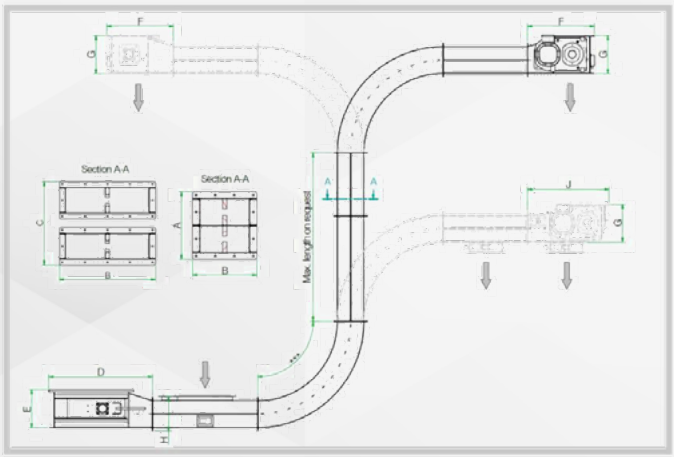
It is often the case that an additional screening stage or metal detection stage needs to be incorporated into an existing situation. However, there is not enough height. With the Z conveyor in the C design, an elevation step can be achieved relatively easily. The conveyor is also suitable for very watery products.

Application

The Incline flight conveyor is designed for handling a variety of dry, free flowing bulk materials (also suitable for fine powders) either horizontally, on an incline or a combination of both.

Operation

The plastic flights are carried by a chain, all contained in a standard trough. Bulk Materials flow smoothly and gently. All materials are carried “en masse” without tumbling, thereby keeping material agitation and friction to a minimum. Particle degradation and separation are also minimized.



Type	*Cap. m³/h.	**Weight kg	A	B	C	D	E	F	G	H	J
FS2020	20	100+50/m'	-	240	370	720	375	540	375	390	740
FS3030	60	250+100/m'	400	380	-	1230	450	790	450	410	965
FS4030	82	300+110/m'	400	480	-	1230	450	790	450	410	965
FS4040	94	420+145/m'	450	480	-	1230	550	865	515	460	1130
FS5040	120	460+140/m'	450	580	-	1230	550	865	515	460	1130
FS6040	145	500+155/m'	-	680	690	1230	550	865	515	460	1130
FS6050	195	600+175/m'	-	680	745	1410	730	980	690	595	1720
FS8050	265	1320+200/m'	-	880	745	1628	800	1165	690	750	1165

* Max. theoretical capacity by horizontal transport and 0,5 m/sec (± 80% trough filling).
** Excluding drive equipment and optional extras.
*** Bend sections 15°, 30°, 45°, 60°, 75° and 90°.
Note: Motorpower requirements and max. length will

Construction

- standard intermediate sections.
- Bend sections 15°,30°,45°,60°,75° and 90°
- Sprocket-idler return system.
- All-steel chain
- Replaceable plastic flights.
- Drive equipment.
- (By-pass) Inlet.
- Discharge outlet.
- Efficient and simply designed.
- Totally enclosed.

Benefits

- Gentle material handling.
- Custom-built to suit individual requirements.
- Up to 150 ton/h.

Optional extras

- Stainless steel construction.
- Abrasion resistant bottoms or bolted side liner packages.
- By-pass inlet.
- Discharge gates.
- Overflow indicator.

Sinfimasa helps choose optimal vertical conveying for your application

Operating temperature, granularity, and other characteristics determine what the best option is for a bulk solids elevator. This item describes different types of bucket elevators: chain or belt.

Chain or Belt Bucket Elevator

Typically, in the industry and handling of bulk solid products, belt-anchored bucket elevators are used for vertical material lifting due to their higher performance in terms of load capacity and lifting speed. However, a chain bucket elevator emerges as a robust and reliable solution for lifting materials under certain specific conditions. Comparing them with the former, we observe significant differences that influence the implementation decision according to the needs of each project.

Heavy-Duty applications

Chain bucket elevators stand out for their ability to handle bulk materials of large size, high density, abrasiveness, and under high-temperature conditions. This type of elevator uses robust chains as a means of support and traction for the buckets, which gives it superior resistance to wear and slippage. This feature makes them ideal for applications where materials such as minerals, coal, and chemicals need to be transported vertically.

A key advantage of chain bucket elevators is their ability to operate efficiently with materials exceeding 50mm in granularity and temperatures exceeding 100°C, limits that generally pose a challenge for belt elevators.

However, it is important to consider that these elevators have a lower lifting speed.

Efficiency and Versatility

On the other hand, belt bucket elevators are characterized by their suitability for handling fine, light, non-abrasive materials at low temperatures. The use of belts, whether made of synthetic materials or metal with a steel core, allows for smoother operation and with a higher lifting speed, which translates into lower energy consumption. Also, contrary to what one might think, belt elevators require less maintenance than chain ones.

Customized design

The choice between chain and belt bucket elevators is therefore not a matter of preference, but a detailed assessment of the specific characteristics of the material to be conveyed and the operating conditions of the environment. Factors such as temperature, granularity, density, abrasiveness and requirements for speed and conveying capacity must be carefully analyzed to determine the most suitable solution. Below you will find a summary in the form of a checklist to help you make the right choice.

Chain Bucket Elevator

- Suitable for temperatures above 100°C.
- Ideal for products with a granularity above 50mm.
- Preferred for high-density and heavy materials.
- Suitable for abrasive materials.
- Lower lifting speed.

Belt-type Bucket Elevator

- Ideal for temperatures up to 100°C.
- Recommended for environments with ATEX certification requirements.
- Suitable for products with a granularity less than 50mm, in certain cases.
- Optimal for light and low-density materials.
- Higher load capacity.
- Higher lifting speed.

At Sinfimasa, we are committed to advising you at every step of this process, offering customized solutions that perfectly fit the particular needs of your project. The key is to select the appropriate technology that aligns with the specific needs of your operation, thus ensuring an uninterrupted, efficient, and cost-effective workflow.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One device, many possibilities - Speed monitoring made easy

The new EDW speed monitoring device from Kiepe impresses with its many new options for your conveyor belt.

The industrial division of Kiepe Electric specializes in the control and monitoring of conveyor belt systems.

Our newly developed speed monitoring device EDW 600 offers more efficiency and flexibility for conveyor belt systems. It replaces six different variants of EDOs and JMNCs, and offers:

- Overspeed and underspeed detection up to 6000 rpm
- Multi-supply voltage
- Suitable for 2-wire and 3-wire encoders
- Uncomplicated manual setting directly on the device
- Temperature range from -40°C to +70°C

Wire mesh vibration dampers as an alternative to the standard

Almost everyone is familiar with vibration dampers made of elastomers. When conditions get tougher, rubber-based vibration isolators reach their limits.

Production in a multi-phase process, partly by hand

The basis or the main element of every vibration damper is the damping pad made of stainless-steel wire. This is produced in a multi-stage process. First and foremost is the knitting of several stainless-steel wires into a stocking. This stocking is then rolled to create a mat. While these processes are automated, the next step is manual. The existing mat is pulled over a mandrel and brought into its mostly cylindrical shape. At the end of production, this blank is pressed and spot-welded to create an elastic molded part. This is used as a damping pad.

Design parameters

An element is characterized by the same values that describe the corresponding geometric shape. For the cylindrical cushion, the outer diameter, inner diameter and height are required as a basis. For a rectangular cushioning element, the width, length and height. Other shapes can be adapted based on the geometry. The volume or density can be deduced from the respective mass of an element. The weight or density is imperative as these parameters determine how soft or hard the vibration damper will end up being.

Standard machine feet for pressure/tension

Shapes and types of wire mesh

As already mentioned above, the standard shapes are the cylinder or the rectangle. These can be manufactured either over the entire surface or with a through hole. In this way, they can be very well adapted to the relevant application and the connection to it. Cushions with an integrated heel are ideal for this purpose, which can be easily screwed into a profile.

In addition to damping pads with heels, there are also elements with a central collar that can be integrated into a profile frame, for example. This provides additional radial stability in the damping system and prevents the cushion from slipping. A possible rigid connection with the profile frame, which leads to the transmission of vibrations, can thus be prevented.

Furthermore there are also pillows in special shapes, which are more expensive to produce. These can be elements with different drafts on both sides. Dampening cushions with several holes, heels or steps can also be produced. Standard materials are 1.4301 and 1.4404.

How a wire mesh works

The function of a damping pad is based on the internal friction of the knitted wires. During the vibration-induced movement, the stainless-steel wires inside the cushion rub against each other. The energy introduced into the cushion is converted into heat and ”pumped” out of the element through the existing channels between the wires.

Advantages of a metal damper

A first big advantage of the vibration damper made of knitted wire mesh is the material itself. The stainless-steel does not show any instability at low or high temperatures. Damping pads made of 1.4301 can be used without restrictions up to temperatures of 300°C. Above this range, use at higher temperatures is also possible by using 1.4404 or 1.4841.

Damping cushions are dimensionally stable in the dynamic load range of up to five times the static load and return to their original shape under normal loads. In this way, temporary force peaks can be well compensated. It is precisely these force peaks that can throw a system out of balance and thus cause the machine to be in an unintended position. A semi-parabolic force-displacement curve with high stiffness in the upper load range ensures that your machine is stable.

While temperature resistance has already been discussed above, stainless-steels offer protection against corrosion as well as bases and acids. Their compact design offers the opportunity to install them in the smallest of spaces and to integrate them into the existing system.

The long service life of up to 15 years means that the oscillating elements do not have to be replaced every year. In this way, downtimes and, if necessary, even production losses can be prevented. Continuous loading with up to 10^7 load changes does not pose any problems for the cushion. A possible settling behavior does not occur at this point.

Drawbacks of metal dampers

These are certainly many good aspects that speak in favor of using this niche product. On the other hand, it must not be concealed that there are also areas where these elements are unsuitable. In the case of structure-borne noise, elements made of stainless steel do not provide much insulation. In the area of the lower static load limit, the energy absorption of the elements is much lower than that of the competition.

Furthermore, it is the case that the manufacturing costs for a vibration damper of this type are comparatively high due to the manufacturing process, which includes several manufacturing steps, some of which are done by hand. Equipping machines that only have a short service life with this type of vibration damper should therefore be carefully considered. Nevertheless - on the long term, knitted wire meshes pay for themselves after a few years.

Mounting of vibration devices without welds or screws

Flexible mounting of vibration devices: vacuum instead of welding

In bulk material handling, vibrators support the material flow by loosening caking, preventing bridging and preventing product jams. Vacuum holders are suitable for flexibly attaching vibrators exactly where they are needed.

In the field of vibration technology, technicians, engineers and maintenance engineers in production plants, plant and mechanical engineering are faced with the question of where and, above all, how a vibrator or impactor can be attached to the respective structure in the most effective and favourable way. A fixed connection in the form of a screw connection on a profile or a weld-on plate has the disadvantage that it is no longer possible to simply move it if necessary. This is because the entire bracket, including the screw connection, would always have to be moved. If the vibrator is mounted with a weld-on profile, any subsequent conversion will be relatively time-consuming and costly. Any welding also impairs the surface quality of the containers and poses a risk, particularly in ATEX zones.

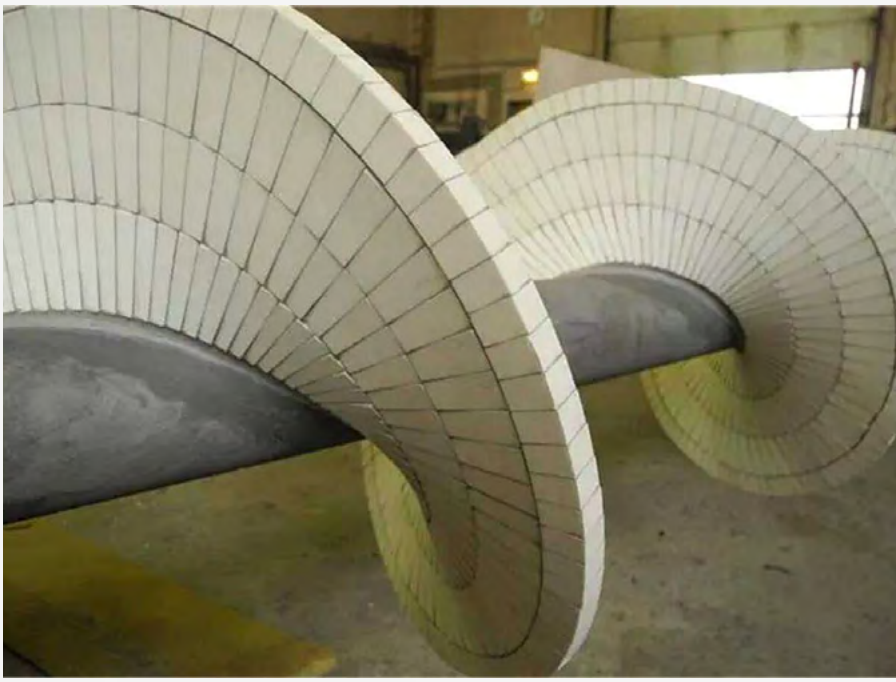
Fastening without welding and screws

The VAC series vacuum mounts from NetterVibration are used for the uncomplicated, quick attachment of vibrators of various types and sizes to smooth, usually also rough and curved surfaces. The brackets are used where there are no conventional mounting options for vibrators, or where these are unsuitable or uneconomical. This solution is also ideal when frequent repositioning is required, such as when bridging bulk materials in hopper and silo outlets at different points. Furthermore, legal or operational regulations require the use of vacuum holders in potentially explosive areas (Atex zones) where welding and screwing are not permitted. The exclusivity and effectiveness of the VAC are reflected in the simple fastening without welding or screw connections. Wish and reality are combined here in the temporary attachment of vibrators to structures without affecting their material and contents. The flexible use of vibrators therefore enables favourable, temporary use of vibrators on systems, containers and silos in several production areas where production processes require it. In addition to flexible use on stationary silos and containers as a replacement for the tried-and-tested hammer blow for collapsing bulk material bridges, this vibration tool is also particularly suitable for transport and exchangeable containers made of metal and plastic to promote their problem-free emptying.

KALOCER protects screw conveyor from abrasion

KALOCER was a proven solution for wear protection. As it can be produced in very thin shapes, the screw conveyor could be lined with precisely shaped parts for all-round edge protection.

At the largest copper mine in Europe, ore is transported for processing by means of a screw conveyor. The high silicon content in the rock causes serious abrasive wear to the spiral vanes and edges, which leads to frequent repairs bringing high costs and process downtime.



Thanks to good experiences they have had up to now with the wear-proof KALOCER material in outflow hoppers, hydrocyclones and chutes, the company decided to line the screw conveyor vanes and edges with similar KALOCER oxide ceramic. The key improvement over the previously unprotected conveyor is the all-round edge protection, since this is where the worst wear occurs, to the extent that the functionality of the conveyor itself is impaired.

One other essential benefit of KALOCER is the capability to manufacture it into very thin shaped forms. This meant the screw conveyor vanes and edges could be lined with accurately shaped pieces, which were also optimised for weight. The shaped pieces were bedded in KALFIX plastic mortar. Apart from the excellent wear resistance, KALOCER material also has a smooth surface, which prevents the system from getting blocked up with conveyed materials.

The operator of the copper mine has been highly satisfied with the new wear protection, since the screw conveyors will last for much longer and function more reliably. Costs resulting from unplanned downtime will also be reduced.

Early fire detection with IR system – Double certified

Due to the immense increase in fire damage in industry, insurers are increasing their requirements: they demand certified fire protection for production facilities.


Foto: T&B electronic GmbH

Companies can often only obtain fire insurance for their production if they install certified fire protection solutions.

Fire protection with a seal of approval is therefore not a luxury, but often makes the difference between survival and insolvency.

As with all insurance policies, the same applies here: Maximum possible prevention is a prerequisite for a high damage class. This is because maximising prevention also makes claims less likely. Fortunately, this coincides with the goal of every company to keep operations running without interruption.

This means that people are not put in danger by fire or explosion, material assets are pre-served and the environment is not unnecessarily polluted.

With its new system for the early detection of potential fire risks based on an infrared camera, T&B electronic GmbH from Alfeld in Lower Saxony remains true to its principle of always realising the safest fire prevention.

The system fulfils today's enormously increased requirements for fire protection in plants. T&B now offers a doubly certified product for the early detection of fire risks. The camera is not only certified by VdS Schadenverhütung GmbH, but also in accordance with the European directive for fire alarm systems EN 54-10.

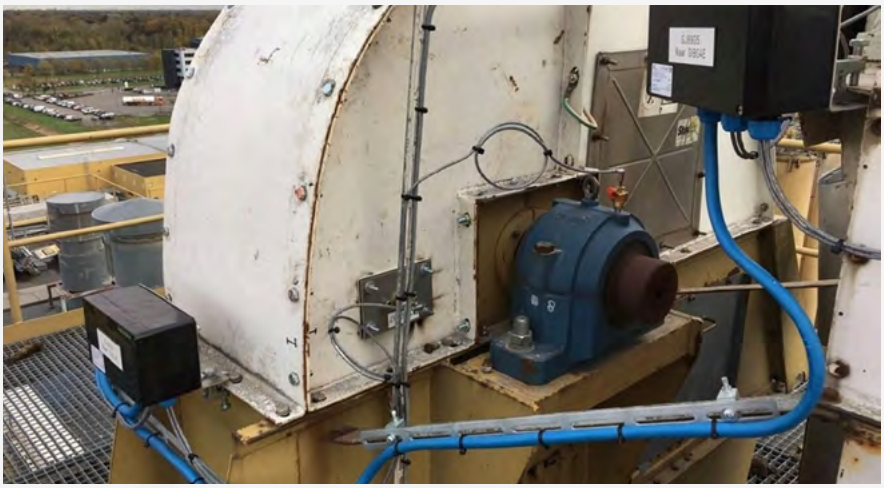
It is therefore suitable for realising standard-compliant systems for fire prevention in plants. Depending on the operator's requirements, it is possible to control an extinguishing system and connect to fire alarm systems or fire brigade control centres.

For effective fire prevention, T&B electronic combines the infrared cameras with its extinguishing systems, which are also VdS-certified. In this way, the VdS specialist installer from Alfeld realises comprehensive fire protection in accordance with the applicable regulations. Both are becoming increasingly important in industry for adequate insurance cover.

Elevators and risk of explosion – Prevention is the better cure

Muller Beltex is a service supplier of high-quality components for elevators. We help you to secure the mechanical side of your elevator.

An important next step in this process is monitoring to make sure continuity is guaranteed. Considering an elevator is an enclosed system, knowing what is going on inside the elevator is a must. After all, prevention is the better cure. Both preventive and curative measures must be taken to ensure full and safe monitoring. To guarantee this, Muller Beltex offers a total solution with “fail safe” products it has developed and engineered itself along with external components to be able to supply a complete elevator in conformity with the latest ATEX directives.



Muller Beltex’ monitoring systems oversee the entire production process thus ensuring a sustainable, problem-free bulk processing and optimum reliability.

Product overview

- Belt misalignment monitoring
- Bearing temperature monitoring
- Speed monitoring
- Junction boxes, controllers, indicators & transmitters
- Level instruments
- Data acquisition & SCADA systems
- Explosion vent panels & flameless vents

Rotary paddle level switch for overfill and dry run protection

The terms ‘functional safety’ and ‘safety integrity level (SIL)’ have occurred more frequently since the publication of the international standard IEC 61508/IEC61511.

SIL2 for rotating paddle series

Particularly in systems with hazard-causing processes, such as in chemical plants, the consideration of functional safety has become indispensable. On this basis safety-related practices, design principles and error considerations must be met in order to minimize the risk of a dangerous failure.

Risk mitigation in accordance with SIL2

The UWT engineers focused on this topic and designed the rotating paddle switch Rotonivo® RN 6000 series according to the normative requirements of functional safety to ensure safety functions in a risk mitigation in accordance with SIL2. Typical safety functions are overfill and dry run protection.

Full, demand or empty

Depending on the requirements, the Rotonivo® rotary paddle switch is used as a full, demand or empty detector in storage silos or process vessels and is suitable for use in almost all solids. With its simple electromechanical measuring principle it can also be adapted for extreme process conditions. A motor driven shaft causes the vane to rotate. Once the material level reaches the vane, thereby preventing further rotation, this creates a torque, which is converted via a switch to an electric signal. Once the vane is free again of the material, the output signal is reset and the motor driven shaft rotates again.

First rotating paddle limit switch with SIL2 worldwide

As part of the functional safety issue, the electronics of the rotating paddle series Rotonivo® RN 6000 have been redesigned. This has been configured so that any failure of electrical components lead to a safe switching state of the output signal and thus a hazard by the system is avoided.

With the innovative SIL2 compliant Rotonivo® RN 6000 series operators of safety-related systems have a sensor system in accordance with their specified safety integrity level and the perfect content level measurement component in their safety circuit. Despite it is the only rotating paddle limit switch with SIL2 worldwide.

Loading scale VW500; developed for modern silo logistics system

Loading systems for trucks and container filling. Extremely accurate: it can achieve measurements accurate to within +/-20 kg for total loads of 25.000 kg

The VW500 bulk loading weigher has been developed for a modern silo logistics system. This type of system is necessary to ensure the scale is extremely accurate – it can achieve measurements accurate to within +/-20 kg for total loads of 25.000 kg for standard products such as granulate, sugar or other products. The risk of overloading trucks is eliminated, and the system allows for precision loading of the individual vehicle chambers. The system is certified by MID 2014/32/EU.

In future, it will no longer be necessary to weight the truck for a second time. The procedure can be saved electronically, and order processing can be performed automatically if the system is connected to a database or software system such as SAP or WMS. All weighing data will be stored in a backup memory for at least 3 months. Depending on the customer's wishes, request or performance, the system can be integrated into existing silo systems.

The application possibilities of the VW-500 loading scale are manifold: Freely movable, manually movable or with a motorized pallet truck. This achieves a maximum of flexibility. The scale has a stand-alone control system with integrated weighing electronics that can be calibrated and a Siemens S7 PLC. It can be completely operated via the touch panel. The silo connection can be made in different ways.

There is the option of a pressing device that presses firmly against the silo outlet or alternatively a pipe system that slides around the silo outlet pipe without a fixed connection. A positioning accuracy of at least 50mm should not be a problem.

The scale has a dosing system for coarse and fine flow. The capacity of such systems is usually designed with 500kg nominal bulk size. The scale outlet must be dimensioned accordingly large in order to empty the scale quickly. All weights are recorded in a verifiable manner. The secondary hopper, with which the product can be taken up from the scale very quickly and discharged in a metered manner, is equipped with a level indicator.

There are two discharge systems: a telescopic tube variant and a discharge flange system. For the telescopic tube variant, a ceiling opening of at least 500 mm diameter is required. In the case of the outlet flange system, a pipe with flange and seal is lowered onto the on-site outlet flange. The outlet must be controlled by the customer and must be connected via the central plug-in connection. The overall height can be reduced accordingly.

Advantages of Loading Scale VW500:

- Highest possible accuracy
- Capacities up to 180 t/h
- Integrated telescopic loader for self-loading (option)
- No risk of overloading
- Partial quantities can be selected in one order
- Links to superior databases like WMS
- Truck identification system to eliminates the risk of confusion
- Capacity: 50-120 Tons/h

New product family of modular extraction and filtration systems

The new ULT 400.1 product series ensures energy-efficient and quiet operation with high flexibility and modularity - removing a wide range of emissions

The all-new ULT 400.1 is a system series of energy efficient, modular, and extremely low-noise extraction and filtration solutions from air technology vendor ULT.

The product family includes various extraction systems for the removal of laser fume (LAS 400.1), soldering fume (LRA 400.1), odors, gases, and vapors (ACD 400.1), as well as dust and smoke (ASD 400.1). At least two specialized filter configurations are available for each area of application. The modularly designed devices can be used both mobile and stationary in a wide variety of manufacturing and machining processes.

The specially developed – and currently unique in the world – filter inflow concept achieves a very high absorption capacity of the filter. Users can look forward to a long filter service life and therefore significant cost savings, as energy consumption as well as maintenance and spare parts costs are sustainably reduced.

The new ULT 400.1 device series features an innovative EC double blower (electronically commutated motor), with which volume flows of up to 600 m³/h can be achieved while simultaneously maintaining a high negative pressure of up to a maximum of 9,800 Pa. The effective sound insulation enables a low noise level (<60 dB) at full power. Due to its compact construction with dimensions of 652x600x852-1,140 mm (WxDxH), the system series only requires a small amount of floor space.

The filtration concept consists of a particle pre-filter, HEPA H-14 fine dust filter and gas or sorption filter (activated carbon) for subsequent separation of any odors or vapors that may arise.

Simple and intuitive operation, low-contamination filter changes based on “Save Change Technology”, as well as customization options through additional fan types and variable suction adapters round off the diverse user benefits of the new ULT 400.1 device series.

Zero plastic in ceramic product packaging

All true

The ceramic industry is increasingly committed to optimizing production processes and to reducing environmental impact. Cartonstrap certainly features among System Ceramics' solutions to these goals: a real "game-changer" solution in standard package coupling and gluing processes. A cutting-edge technique that offers greater protection for the tiles, optimizes production and contributes significantly to environmental sustainability, eliminating the use of plastic from the packaging process.

The Cartonstrap revolution

Cartonstrap is System Ceramics' innovative solution designed for going beyond traditional gluing and coupling approaches, offering a more advanced and efficient solution. The fundamentally innovative feature of CartonStrap is that of replacing plastic with cardboard in the corners that protect the tiles.

100% positive environmental impact

Cartonstrap has an extremely high ecological value. The adoption of this approach, in fact, allows for savings of 2 million meters of plastic strapping per year, practically eliminating the use of this material in the coupling processes. This not only reduces the use of non-renewable resources, but also limits the production of plastic waste. Cartonstrap also processes recycled cardboard, further reducing its environmental impact.

Optimization of production

Another distinctive feature of this machine is its ability to optimize the production process. Cartonstrap, in fact:

- is synonymous with high speed and autonomy, two qualities that lead to a reduction in the input of the operator and stoppage times;
- makes it possible to lower production costs thanks to the elimination of the interlayer, no longer necessary with cardboard corners.

Precision, stability and safety

Cartonstrap cuts the cardboard corners automatically to size and applies them with precision. A process that guarantees greater rigidity, and therefore, stability, to packages during palletizing. In addition, it offers the possibility to easily and safely separate the boxes from one another, contributing to the safety of those involved in the application of the ceramic product.

Reduction of damage during transport

Another of CartonStrap's tangible benefits is its ability to significantly reduce the breakage of pieces during transportation. The protection provided by the joined cardboard corners, in fact, prevents any damage that could occur during handling and distribution of the ceramic products. This results in greater customer satisfaction and in a reduction of costs associated with the management of complaints about defective products.

Innovation for a sustainable future

Cartonstrap di System Ceramics è l'innovazione pronta a ridefinire il modo in cui l'industria ceramica gestisce l'imballaggio delle piastrelle. Le sue capacità di ottimizzare la produzione, azzerare l'uso della plastica e aumentare la protezione del prodotto durante il trasporto la rendono una soluzione vincente su più fronti. Nel perseguire l'obiettivo di una produzione ceramica più efficiente e sostenibile, Cartonstrap costituisce un passo audace verso un futuro migliore.

Cartonstrap by System Ceramics is the innovation ready to redefine the way the ceramic industry manages tile packaging. Its ability to optimize production, eliminate the use of plastic and increase protection of the product during transport make it a winning solution on several fronts. In pursuing the adjective of a more efficient and sustainable ceramic production, Cartonstrap is a bold step towards a better future.

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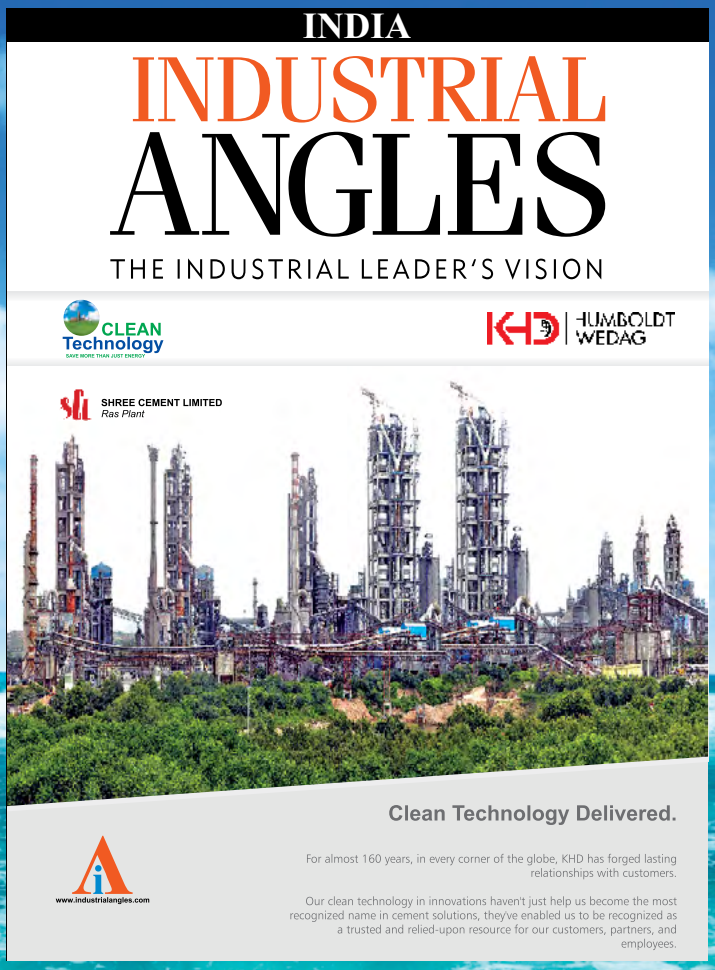
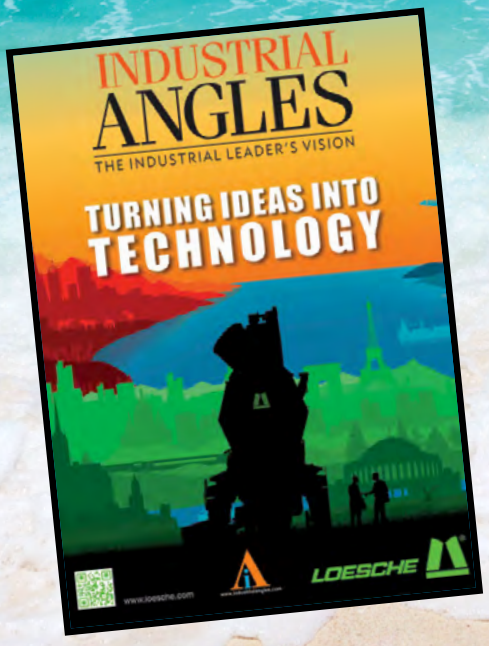
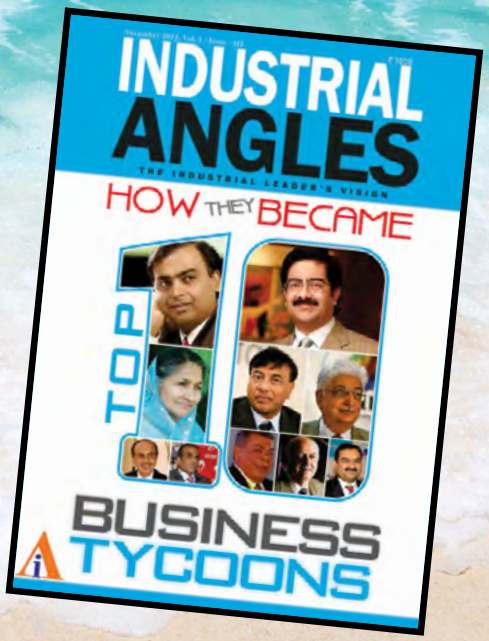
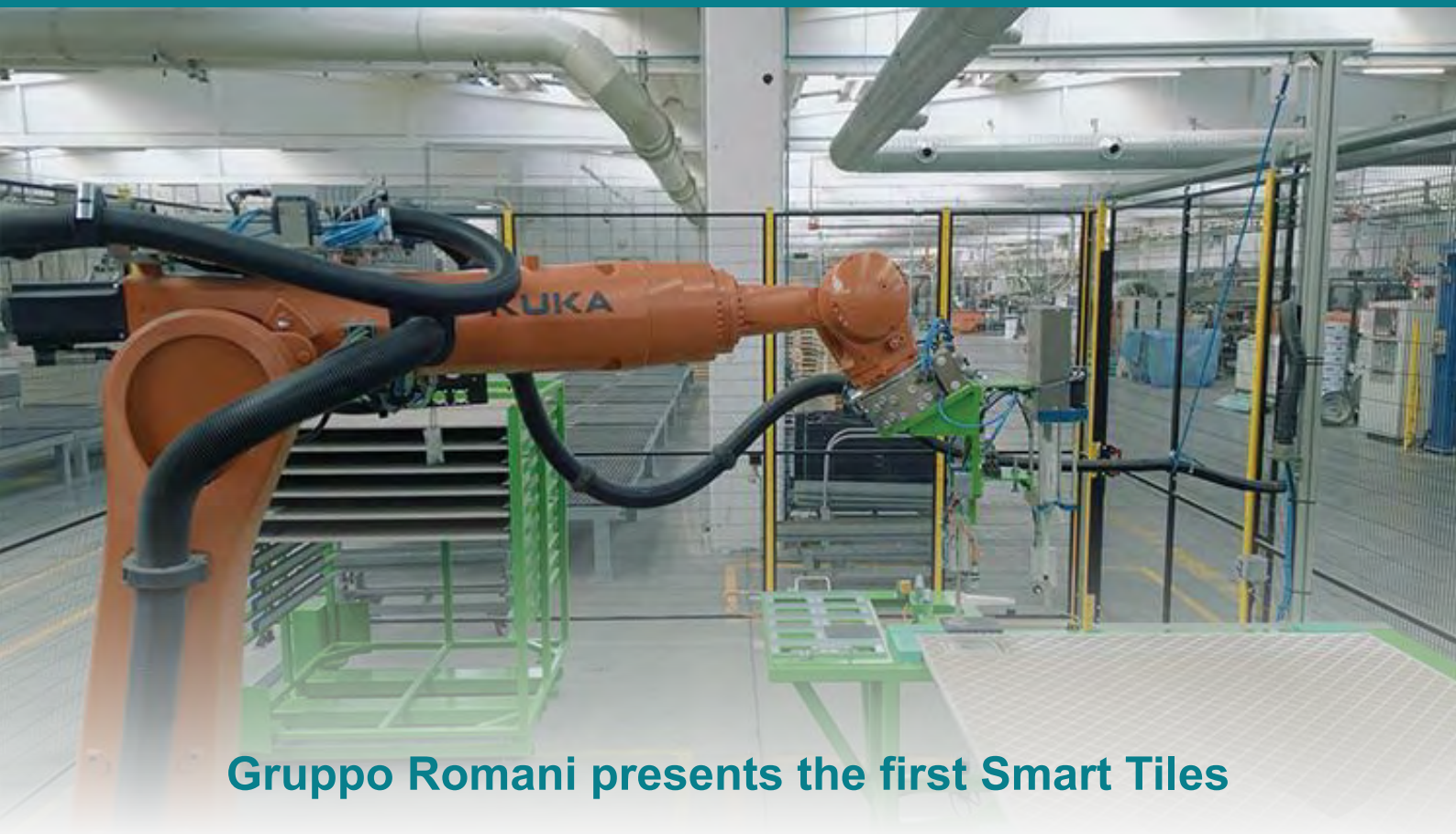








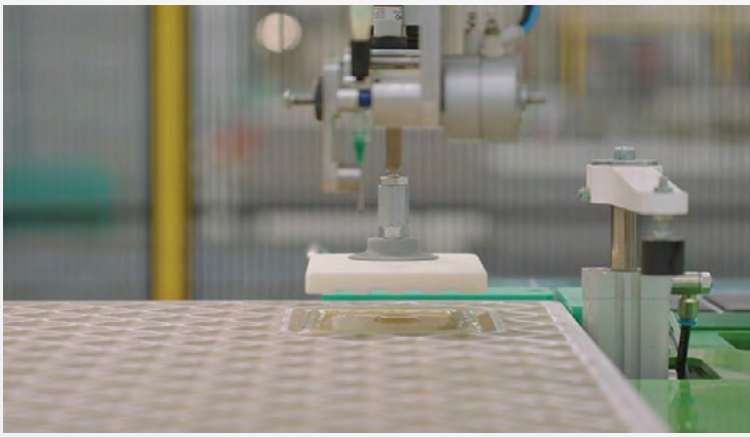
Gruppo Romani presents the first Smart Tiles

The Italian ceramic group is launching innovative smart ceramic tiles capable of monitoring their own condition and their surroundings and communicating with the latest home automation systems.

Advances in technology and process innovation are shaping the future of home automation. The deployment of active ceramic tiles for monitoring building structures is transforming traditional materials into smart, self-aware components capable of monitoring their own condition and their surroundings.

This breakthrough is spearheaded by Gruppo Romani, a leading Italian ceramic tile manufacturer, with the introduction of its innovative Smart Tiles designed to interface seamlessly with the latest home automation systems. The result of more than four years of research and an investment of around €10 million, the project has received financing from the Italian Ministry of Economic Development (MISE) in recognition of its focus on research and sustainable development. The project has been carried out with the contribution of technical partners including Sacmi, Iprel, CNR, Trebax and Studio-IOT.

Gruppo Romani's idea of transforming ceramic tiles into smart, active components for monitoring building structures points the way to the future of both ventilated facades and raised floors.



A special housing on the reverse side of these ceramic tiles accommodates a microchip with MEMS (micro electromechanical system) sensors capable of sending the recorded data to cloud storage. As well as guaranteeing the technical characteristics specified in standard UNI EN 14411 and the aesthetic quality for which Gruppo Romani is renowned, the sensorised tile allows for integrated monitoring of programmed parameters. For example, in the case of ventilated wall applications the sensors are capable of measuring temperature, humidity, dew point, shock or deformation caused by seismic events. Another kind of sensor installed in floating floors can detect overloads, track human movement, activate perimeter alarms and communicate with the lighting system to activate lights in the event of footfall.

“Today we are witnessing the 5.0 revolution,” explains Gruppo Romani Chairman Giorgio Romani. “This invention is driving our group to explore new fields of application for ceramic tiles. To date we have focused primarily on ventilated facades for residential and commercial buildings. The innovative characteristic of transmitting information on the most important structural and environmental parameters can open up interesting possibilities in terms of building safety and represents a valuable and currently unique solution.”

Gruppo Romani has filed two industrial patent applications for its Smart Tiles in Italy and Europe. They will be produced in a 120x120 cm size, on demand and customised to the specific needs of clients.

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12-13

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18-19

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16-17

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Cemtech Europe 2024 Conference & Exhibition will take place at the Hilton Warsaw City Hotel, Poland on 29th September – 2nd October 2024.

This year, Cemtech will return to Poland, home to one of the largest cement industries in Europe with an annual consumption level approaching 20Mt. Its dynamic industry is in the process of a new phase of modernisation, as well as being at the forefront of carbon capture, with pioneering projects underway at multiple sites led by global leaders including Holcim, Heidelberg Materials and Cemex.

Under the guiding theme "Decarbonising the cement industry through manufacturing excellence", this year's event will bring together state-of-the-art cement technology providers with cement producers from across the European cement industry and beyond.

Cemtech Europe's agenda will address the dominant themes driving decarbonisation in the cement sector, including carbon management (policy, regulatory developments, carbon trading), carbon mitigation and low-carbon technologies. The latest innovations around alternative fuels, low clinker cements, carbon capture, utilisation and storage, and digitalisation will all be presented and reviewed. Delegates will also hear from technology specialists presenting best practice case studies from across the entire manufacturing process.

Cemtech Europe is organised by International Cement Review and supported by the Polish Cement Association (SPC).

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- Gala Dinner and entertainment

Venue & accommodation

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Delegate fees

Super early-bird rate by 24 June 2024
EUR 975 / USD 1045 / GBP 830

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Full rate from 1 September 2024
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Book three or more delegates and save 10%.

Delegate fee includes all conference documentation, meals, receptions and Gala Dinner.

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Further details can be found on the website where you can book online, explore discount offers and view the latest programme.

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Diary dates

November 2024

6-8

9th International VDZ Congress

Düsseldorf, Germany

For more information, please contact:
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Tel. + 49 211 45 78-342

13-14

22nd Global Gypsum Conference, Exhibition & Awards

Royal Orchid Sheraton Hotel, Bangkok, Thailand

For more information, please contact:
Dr. Robert McCaffrey
Tel.: +44 1372 743837
Fax: +44 1372 743838

19-21

INTERCEM Americas 2024

Houston, USA

For more information, please contact:
Ms. Lola Carragher
Commercial Sales Manager

December 2024

17-19

XXVI International Construction Forum
"Cement. Concrete. Dry Mixtures"

Moscow, Expocenter, Russia

For more information, please contact:
Ms. Svetlana Chudinovskikh, Exhibition Manager
Tel.: +7 812 3806572 (ext.211)

February 2025

5-6

5th Global FutureCem Conference and Exhibition on cement industry decarbonisation

Crowne Plaza Florya, Istanbul, Türkiye

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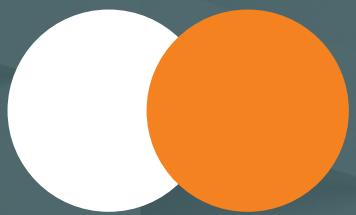

The exposition was visited by 2800 specialists, the last time such a number of people registered at the Forum was before the pandemic.

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EnviroTech 2025

Athens, Greece

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Hamburg, Germany

For more information, please contact:

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Training

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07th October 2024

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01st July 2024
07th October 2024

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(6-Week Online Training)

01st July 2024
07th October 2024

Calcined Clay Cement
(3-Week Online Training)

01st July 2024
21st October 2024

Decarbonising Cement Manufacture
(6-Week Online Training)

08th July 2024
14th October 2024

Cement Factory Maintenance
(6-Week Online Training)

08th July 2024
14th October 2024

Cement Kiln Pyroprocessing
(6-Week Online Training)

08th July 2024
14th October 2024

Cement Kiln Refractories
(6-Week Online Training)

08th July 2024

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17th July 2024
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June 2024

25-28

Ceramics China

38th China International Exhibition for Ceramics Technology, Equipment and Product

Poly World Trade Center Expo, Guangzhou, China

September 2024

24-27

TECNA 2024

The International Exhibition of Technologies and Supplies for Surface

Rimini Expo Centre, Italy

April 2025

18-22

2025 Uniceramics Expo

Foshan Tanzhou International Convention and Exhibition Center, China

For more information, please contact:
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General

June 2024

25-27

Big 5 Construct Egypt

Egypt international exhibition center (EIEC), Cairo

July 2024

17-18

3rd Annual Slope Engineering Summit

Singapore

For more information, please contact:
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Tel.: +603 2775 0067

September 2024

18-20

Energy360 Conference 2024

Hotel Arsenaal, Delft, the Netherlands

For more information, please contact:
VPInstruments
Joyce van Ruijven

September 2024

24-27

InnoTrans 2024

The future of mobility: International Trade Fair for Transport Technology

Berlin, Germany

October 2024

9-10

SOLIDS Dortmund 2024

Berlin Exhibition Grounds, Germany

15-19

FAKUMA: International Trade Fair for Plastics Processing

Messe Friedrichshafen, Germany

November 2024

19

Drymix Mortars in the Middle East – The 17th Annual MEDMA Conference

UAE

December 2024

11-14

bauma CONEXPO INDIA (bCI) 2024

India Expo Centre (IEML), Greater Noida – Delhi NCR, Uttar Pradesh

For more information, please contact:
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April 2025

7-10

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For more information, please contact:

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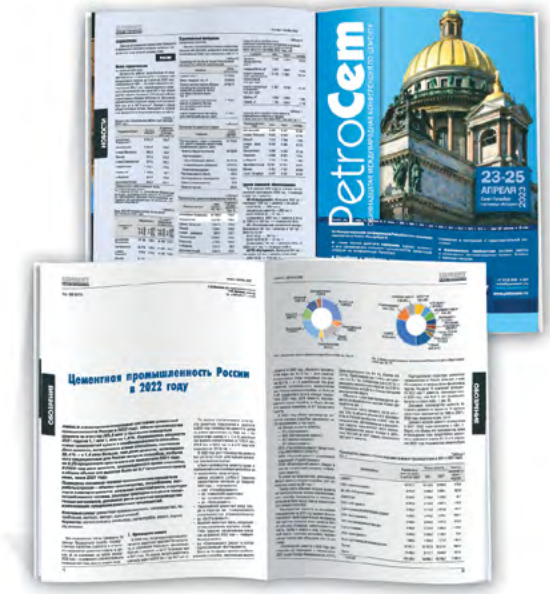

مجلة عالم الإسمنت ومواد البناء

جدول موضوعات المجلة لعام 2024

العدد	الموضوعات	المناسبات
سبتمبر/أيلول 2024 (العدد رقم 97)	* تصنيع الإسمنت الأبيض * الإسمنت المخلوط * الإسمنت متعدد المكونات * إسمنت الخبث * إنتاج الإسمنت الأخضر * خلائط الإسمنت * مضافات الإسمنت * مكونات الإسمنت * كيمياء الإسمنت * الإسمنت الخالي من الكربون * إنتاج الكلنكر منخفض الكربون * المواد الخام لمضافات الإسمنت * إدارة الإمدادات * إنتاج الإسمنت بطاقة منخفضة * توكيد الجودة ومراقبة العمليات في مصانع الإسمنت * توفير تكلفة إنتاج الإسمنت	المؤتمر والمعرض العربي الدولي السابع والعشرون لصناعة الإسمنت ومواد البناء تونس | الجمهورية التونسية 28-26 نوفمبر/تشرين الثاني 2024
ديسمبر/كانون أول 2024 (العدد رقم 98)	* المبردات * المراوح * مدافع الهواء * الصحة والسلامة المهنية * تكنولوجيا الطحن * الطواحين العمودية * زيادة إنتاج مطحنة الإسمنت * التكسير * مساعدات الطحن والطحن * استعادة الحرارة المفقودة * التصوير الحراري * إعادة التدوير الحراري * طرق معالجة واستخدام غبار الممر الجانبي * الحماية من الانفجار في صوامع تخزين الوقود البديل * أنظمة مناولة الوقود البديل * إنتاج واستخدام الوقود الصلب المستعاد	

آخر موعد لاستلام المقالات أو النصوص الصحفية أو الإعلانات لأعداد عام 2024:

1. عدد سبتمبر / أيلول (عدد خاص) : **20 سبتمبر / أيلول** 2024
2. عدد ديسمبر / كانون أول : **5 ديسمبر / كانون أول** 2024

الإعلانات

(بالدولار الأمريكي)

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

أبعاد الإعلان: A4
أبعاد الإعلان على الغلاف الخارجي: ارتفاع 20 سم وعرض 20 سم
الدقة : 300dpi
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الإمارات العربية المتحدة

عرض استحواذ على 31.6 % من رأسمال «رأس الخيمة للإسمنت»

أعلنت شركة رأس الخيمة لصناعة الإسمنت الأبيض والمواد الإنشائية تلقيها إخطاراً من أحد كبار مساهمي الشركة – "ألتراتك سيمنت ميدل إيست إنفستمنتس ليمتد" – بنيتها تقديم عرض استحواذ جزئي لما يعادل 31.6% من أسهم رأس مال الشركة.

وسيعرض الأمر على مجلس الإدارة، على أن يتم الالتزام لاحقاً بالإجراءات المطلوبة وفقاً لقواعد الاندماج والاستحواذ للشركات المساهمة العامة.

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الجزائر

الجزائر ثاني أكبر دولة مصدرة لمادة الكلنكر في العالم

باتت الجزائر ثاني أكبر مصدر لمادة الكلنكر في العالم في عام 2023، بقيمة صادرات فاقت 438 مليون دولار.

وتأتي الجزائر في المركز الثاني كأكبر مصدر للكلنكر في العالم في عام 2023 بعد فيتنام، وبقيمة صادرات تزيد عن 438.84 مليون دولار. وتحولت الجزائر في غضون سنوات قليلة إلى واحدة من أهم الدول العالمية المصدرة لهذه المادة.

علاوة على ذلك، تشير بيانات وزارة التجارة إلى ارتفاع الإنتاج الوطني للإسمنت ليصل إلى 39 مليون طن عام 2022، من 18 مصنعاً منتشرة في جميع أنحاء البلاد. وهذا الإنتاج الزائد يتجاوز بكثير الطلب المحلي المقدر بـ 21 مليون طن.

وفي إطار سياسة جديدة تهدف إلى تكييف الإنتاج الوطني مع المعايير البيئية، تصر وزارة التجارة وترويج الصادرات على ضرورة التوجه إلى "الإسمنت الأخضر" للتصدير، من أجل تجنب الحواجز الجمركية الجديدة، لا سيما تلك التي يفرضها الاتحاد الأوروبي. وتهدف عملية إعادة التوجيه هذه إلى تلبية المعايير البيئية الصارمة، وخاصة فيما يتعلق بالحد من انبعاثات الكربون، من أجل تجنب الضرائب المرتبطة بها.

ومن الجدير بالذكر أن "الإسمنت الأخضر" لديه القدرة على تقليل انبعاثات الكربون بنسبة 40 إلى 50%.

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المملكة العربية السعودية

شركة إسمنت ينبع توقع مشروع نظام تخطيط الموارد السحابي Oracle Cloud ERP Fusion "تيسير"

في ظل إستراتيجية شركة إسمنت ينبع للتحول الرقمي، وقعت شركة إسمنت ينبع اتفاقية المرحلة الثانية لمشروع نظام تخطيط الموارد السحابي «تيسير» مع شركة ماستك.

وأفاد الرئيس التنفيذي لشركة إسمنت ينبع أن مشروع «تيسير» هو إحدى المبادرات لتطوير العمليات الرقمية في الشركة واستخدام الذكاء الاصطناعي لتحسين كفاءة العمليات ورفع جودة المنتجات وتعزيز تنافسيها على المستويين المحلي والعالمي، مضيفاً أن الشركة تواكب كل المبتكرات التقنية لتحقيق هذه الأهداف.

وتُعد شركة إسمنت ينبع من أوائل الشركات التي عملت على أتمتة عملياتها، والآن تستكمل مشوارها في المرحلة الثانية لنظام تخطيط الموارد السحابي Oracle Cloud ERP Fusion الذي يشمل أتمتة العمليات المالية والتصنيع وخدمات الموردين والمبيعات، إضافة إلى تطبيق نظام مبتكر ومتكامل لإدارة وأتمتة عمليات المناولة والتسليم. بينما شملت المرحلة الأولى أتمتة عمليات إدارة رأس المال البشري وإدارة الأداء وعمليات الصيانة والتي تكللت بالنجاح والحمدلله، وهذا المشروع يوائم أهداف الشركة للتحول السحابي في جميع القطاعات.

إسمنت ينبع: إنتاج الإسمنت صديق البيئة مرشح للارتفاع إلى 5 آلاف طن يومياً

بدأت شركة إسمنت ينبع العام الماضي في الإنتاج الفعلي للإسمنت الأخضر صديق البيئة، بطاقة إنتاجية تقدر بألف طن في اليوم، وذلك بعد دراسات وتجارب بناء على طلب من نيوم في 2022. وهذا الإنتاج من الإسمنت الصديق للبيئة هو الوحيد في السعودية، ويتوقع أن يرتفع الإنتاج إلى 5 آلاف طن في اليوم بحسب الطلب خلال الفترة المقبلة.

ويُستخدم منتج الإسمنت الأخضر في مشاريع رؤية 2030 ومن أهمها مشاريع نيوم، وذا لاين، وأوكساجون، ونيتروجينا، والبحر الأحمر، ومطار جيزان الجديد، حيث تحرص تلك المشاريع على أن تكون منتجات البناء فيها صديقة للبيئة، وهو ما زاد من تنافسية المصنعين.

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الجمهورية العربية السورية

ارتفاع إنتاجية إسمنت عدرا إلى 143%

تمكنت شركة إسمنت عدرا منذ بداية العام وحتى 22 أبريل / نيسان، من إنتاج أكثر من 176 ألف طن من الكلنكر، بالإضافة إلى 168 ألف طن تقريباً من الإسمنت، محققة زيادة بالكمية عن الفترة المماثلة من العام الماضي بلغت 143%. وتم خلال الفترة المذكورة تسليم أكثر من 182 ألف طن من الإسمنت للمؤسسة العامة لتجارة مواد البناء "عمران".

ومن الجدير بالذكر أن الشركة قامت بعدد من الإنجازات الفنية منذ عام 2020، تضمنت تركيب قبانات أرضية في مقالع الشركة لضبط الكميات والاستهلاك من المواد الأساسية الداخلة في العملية الإنتاجية (الحجر الكلسي- البازلت– الغضار)، وتوريد وتركيب وتشغيل نظام تحكم حديث /PLC/ لكسارات الشركة (كسارة الحجر الكلسي- كسارة البازلت- كسارة الغضار) مع نظام تسجيل المعطيات والأرشفة للبيانات بشكل كامل، وإعادة تأهيل وتطوير مطحنة المواد الأولية الثالثة، وذلك بتركيب قبانات تغذية جديدة لضبط نسب المواد الأولية التي ستشكل الخلطة الأساسية الداخلة إلى الأفران وكذلك استبدال البطانة القديمة لهذه المطحنة ببطانة بتصميم جديد من شركة ماغوتو واستبدال الفارزة القديمة بفارزة جديدة من الجيل الثالث.

كما تم تفعيل وتشغيل نظام حديث لتغذية كل من الأفران الثلاثة في الشركة مع نظام تسجيل المعطيات، والأرشفة للبيانات بشكل دقيق ومستمر مما سهل على مشغلي هذه الأفران سهولة التحكم وضبط كميات الفيول والهواء اللازمة للاحتراق، مما أدى إلى انخفاض استهلاك الفيول وكذلك الآجر نتيجة التشغيل الصحيح والمستمر، والعمل على رفع الطاقة الإنتاجية للفرنين الأول والثاني ما أمكن بكل الطرق والوسائل المتاحة وذلك بعد الانتهاء من أعمال إعادة التأهيل لهما، إضافة لإعادة تأهيل الفرن الثالث.

كما تم استبدال مبرد الكلنكر القديم للخط الثالث بمبرد من الطراز الحديث مع كل ملحقاته والنواقل المعدنية حتى سيلوات التخزين، وكذلك استبدال سيكلونات تصفية الغبار التابعة له بسيكلونات بتصميم جديد مع تركيب محطة كهرباء جديدة بالكامل لتغذية كافة المعدات في هذا الخط، إضافة لاستبدال خط طحن الإسمنت الأول وذلك بتركيب جسم مطحنة جديد بالكامل بما فيها من بلايط وقواطع وكرات طحن من الطراز الحديث، وكذلك تركيب فارزة من الجيل الرابع الجديد من صنع شركة ماغوتو، إضافة لتركيب ناقل دلوي جديد لتغذية مكنة تعبئة الأكياس الثانية وكذلك تركيب دارتين جديدتين لتعبئة الإسمنت الفرط على خطي المكنتين الأولى والثالثة.

ومن ضمن الأعمال المنجزة في معمل عدرا تركيب كاميرات مراقبة حرارية على مخرج الأفران الثلاثة وفي مبرد الكلنكر الثالث وتركيب ماسح حراري جديد للقياس الآني واللحظي لحرارة الجسم للفرنين الثاني والثالث، وتركيب كاميرات لمراقبة عمل الآلات والمعدات أثناء عملها في الخطوط الإنتاجية الثلاثة، الأمر الذي أدى إلى سهولة المراقبة والتحكم من قبل المشغلين وكذلك الكشف المبكر عن الأعطال والتوقفات قبل تفاقمها، مما أدى إلى التقليل من حجم هذه الأعمال، وزمن التوقف في خطوط الإنتاج، وبالتالي تخفيض التكاليف، وتركيب دارة للتحكم PLC للحفاظ على ضغط الفيول بشكل مستقر ضمن الحدود المطلوبة لعمل للأفران الثلاثة، مع إجراء صيانة للفلاتر الأساسية في الشركة وبعض التعديلات بداخلها من خلال تركيب قواطع ومخمدات وفواصل للغبار مما أدى إلى رفع كفاءتها، وبالتالي انعدام الغبار الصادر من مداخن الخطوط الإنتاجية الثلاثة.

وتم إنشاء دائرة معلوماتية في الشركة لربط كامل بيانات الخطوط الإنتاجية وجميع الدوائر مع بعضها البعض بشكل مستمر، وتخفيض حصة طن الإسمنت من الكهرباء من 240 كيلو واط ساعي /طن تقريباً إلى 180 كيلو واط ساعي /طن تقريباً، أي تم تخفيض حصة الطن حوالى 60 كيلو واط ساعي /طن (وفر كهرباء)، وتخفيض حصة طن الكلنكر من الفيول من 137 كغ /طن تقريباً إلى 118 كغ/ طن، أي تم تخفيض حصة الطن حوالى 19 كغ لكل طن (وفر فيول).

كما تم تصنيع رأس فرن حديث بتكلفة 10% من قيمة شرائه من الشركة الصانعة، والتي تقدر ب 800 ألف يورو وتركيبه بنجاح في الفرن الثالث، مع تركيب أجهزة تحليل غازات للأفران الثلاثة مما أدى إلى زيادة في وفر الفيول وفي استقرار عملها.

العراق

العراق ينتج نحو مليوني طن من السمنت خلال الربع الأول من العام

أعلنت الشركة العامة للسمنت العراقية، عن زيادة في حجم الإنتاج المتحقق خلال الأشهر الثلاثة الأولى من العام الحالي، إذ وصلت إلى 22% مقارنة بالربع الأول من العام الفائت، وأنتجت الشركة نحو 2 مليون طن من السمنت خلال الفترة المذكورة.

حيث تم تحقيق إنتاج بلغ (2) مليون و(356) ألف و(975) طن في الفترة المذكورة ولكافة معاملها المنتشرة في مختلف المحافظات، حيث وصلت بعض معامل الشركة إلى الطاقات التصميمية فيما تقترب باقي المعامل الأخرى المنتجة من تحقيق هذه الطاقات. وتنتج معامل الشركة (السمنت العادي، السمنت المقاوم، السمنت الكلسي، السمنت السوبر، والسمنت غير النمطي الخاص بآبار النفط) والذي يمتاز بجودته العالية ومطابقته للمُواصفات المحلية والدولية كما أن هذهِ المعامل حاصلة على شهادات الجودة من خِلال الفحوصات المختبرية الدورية والفحوصات الميدانية في مشاريع شاخصة داخل وخارج البلد.

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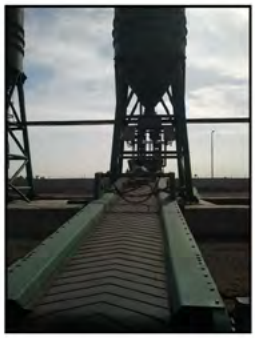

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تحت مظلة "ريجينيرا" سيمكس توقع إتفاقية لتشغيل مصنع لتدوير المخلفات بمحافظة الغربية

وقعت شركة سيمكس إتفاقية مع محافظة الغربية لتشغيل أول مصنع تحت مظلة ريجينيرا في مصر. ويستقبل المصنع أكثر من 800 طن من المخلفات البلدية الصلبة يومياً، ومن خلال هذه الإتفاقية، ستقوم سيمكس بمعالجة المخلفات لتحويلها لوقود بديل بالإضافة إلى إنتاج السماد - مما يضمن توجيه الحد الأدنى من المخلفات المتبقية للمدافن الصحية.

تعمل هذه الإتفاقية على دعم الاقتصاد الدوارمع توفير ما يقرب من 5,000 طن من ثاني أكسيد الكربون سنوياً وتقليل توليد غاز الميثان من خلال تجنب دفن المخلفات. ويعد غاز الميثان ذا تأثير قوى على الاحتباس الحراري أكثر 80 مرة من انبعاثات ثاني أكسيد الكربون خلال العشرين سنة الأولى.

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وأكد رئيس مجلس إدارة مؤسسة الإسمنت أن مؤسسة الإسمنت وبالتعاون مع قيادة وزارة الصناعة، عملت على حل الإشكاليات لعودة المصنع للعمل بوتيرة عالية وفق خطط تضمن استمرارية واستدامة العملية الإنتاجية، وتطوير آليات العملية التسويقية بما يتناسب وجودة منتجات مصانع الإسمنت الحكومية.

ولفت إلى أن المؤسسة بدأت السير في تنفيذ خطط تطويرية وفق رؤى حديثة في المجالين الإداري والمالي للقضاء على الاختلالات التي كانت تؤدي الى توقف العمل وتخلق مصاعب أمام العملية الإنتاجية والتسويقية.

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