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Contents

Articles

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

EDITORIAL SCHEDULE FOR 2023

ISSUE	THEMES	EVENTS
September 2023 (# 93)	- 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	
December 2023 (# 94)	- 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	AUCBM's 26th Arab International Cement Conference and Exhibition (AICCE26) Riyadh, Saudi Arabia 7 – 9th January 2024

Deadlines for receiving articles, press releases, or advert materials for 2023 issues are as follows:

September issue: **31st August 2023**
December (bonus) issue: **5th December 2023**

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Algeria

Algeria's construction industry: +2,4% in 2023

Besides energy, the other key sectors of the Algerian economy are construction, machinery and building materials. Following a period of fluctuating oil prices and the adverse impact of the Covid-19 pandemic, the current increase in hydrocarbon prices has brought clear signs of recovery.

According to the recent GlobalData report, Algeria's construction industry is expected to grow by 2.4% in 2023. Building production will be driven by major ongoing projects in the residential, transport and renewable energy infrastructure sectors.

In its 2023 budget, the government approved investments totalling 545 billion Algerian dinars ($3.7 billion) in housing, urban planning and urban development, 364.3 billion DZD ($2.4 billion) in public works and transport, 193.9 billion DZD ($1.3 billion) in electricity, gas and new energy projects, and 67.6 billion DZD ($453.6 million) in industrial development.

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Egypt

Suez Cement invests US$16m in alternative fuels upgrades since 2010

Heidelberg Materials subsidiary Suez Cement has invested US$16m in upgrading its operations towards increased alternative fuel (AF) use since 2010. The producer uses AF in the burners and kilns of all three of its cement plants, at Helwan, Kattameya and Suez. Meanwhile, Suez Cement has invested US$60m in dust control measures over the same period. Other on-going investments include US$25m in the construction of a waste heat recovery (WHR) plant at the Helwan cement plant. The company is committed to reaching a 24% reduction in its CO_2 emissions between 2019 and 2030.

Global Cement

Iraq

Attock Cement preparing to approve sale of grinding plant in Iraq

Pakistan-based Attock Cement has scheduled an extraordinary general meeting in late May 2023 to approve the sale of a cement grinding plant at Khor Al-Zubair in Basra for around US$23m. It is preparing to sell a 60% share in the unit to a joint venture comprising Abdul Lateef Mohsin Al Geetan, an Iraqi national, and Lamassu Babylon General Trading Company, an organisation based in Dubai, UAE.

Global Cement

Najmat Al Samawa Company for Cement Manufacturing to expand clinker capacity

Najmat Al Samawa Company for Cement Manufacturing (NASCCM) plans to build a new 1.82Mt/yr clinker line at its Samawa cement plant. When commissioned, the new line will more than double the plant's clinker capacity to 3Mt/yr. The expanded plant will secure a supply of clinker for the producer's Basra grinding plant.

NASCCM is a joint venture of Al Shumookh Group and Pakistan-based Lucky Cement.

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Oman

Huaxin Cement completes acquisition of stake in Oman Cement

China-based Huaxin Cement completed its acquisition of a 60% stake in Oman Cement on 5 April 2023. That the group completed the transaction via a Abra Holdings, a wholly-owned subsidiary incorporated in Mauritius. In a submission to the Hong Kong Exchange, Huaxin Cement stated the estimated purchase price for the stake as US$193m.

Abra Holdings submitted an offer to acquire a 15% stake in Oman Cement, which is not seeking competing offers.

Oman Cement operates the 4.2Mt/yr Rusayl cement plant in Muscat Governorate. The producer was in talks with possible contractors for an upgrade to the plant's existing production lines and the construction of a new 10,000t/day Line 4 in March 2023.

Global Cement

Qatar

Qatar National Cement Company signs software deal with SAP and Mannai ICT

Qatar National Cement Company (QNCC) has signed a partnership agreement with SAP and Mannai ICT. The deal is intended to help the cement producer use cloud computing products such as Google Cloud to manage its data. It will also use S/4HANA, a resource planning product, and SAP Success Factors, an employee management product.

Essa Mohammed Ali A M Kaldari, QNCC's Chief Executive Officer, said "In undertaking this end-to-end digital transformation, our aim is to modernise and streamline our systems, increase efficiencies, and enhance the services we deliver to our customers and employees." He added, "After implementation, our operations will be more agile and scalable, enabling us to capitalise on future opportunities in the market and region."

Alaa Jaber, the managing director for SAP Qatar and Fast Growth Markets, said, "Through this digital transformation, QNCC is aligning itself with Qatar's 2030 National Vision and supporting its sustainability plans. It is also ensuring its future success by increasing its visibility over all operations, enabling it to react in an agile way to changes in the market and expected rise in demand for its products. Moreover, QNCC will be able to make decisions informed by real-time insights and data analytics."

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Saudi Arabia

City Cement achieves advanced level in Future Factories Program

The Ministry of Industry and Mineral Resources has congratulated City Cement on achieving the advanced level assessment as part of the Future Factories Program. The program uses the SIRI methodology (Smart Industries Readiness Index), which represents the global index adopted by the country to measure how industrial plants are adopting digital developments, such as interconnectivity and software-based automation, with assessments conducted by accredited evaluators. The government is promoting the initiative to raise industrial efficiency, reduce costs and create jobs.

Global Cement

Riyadh Cement orders airslide analyser from SpectraFlow Analytics

Riyadh Cement has ordered an airslide analyser from Switzerland-based SpectraFlow Analytics for its white cement production line. The contract also includes raw mix proportioning software. The product is an online analyser able to measure raw materials in airslides. The vendor says that by using its analyser, and a site-specific raw mix proportioning strategy, the variation in the local raw materials can be balanced out to increase consistency of the raw meal and kiln feed quality. Also the variable MgO, Na_2O, K_2O, Cl and SO_3 content is optimally monitored.

Global Cement

Sinoma International Engineering wins Southern Province Cement Jizan cement plant contract

China-based Sinoma International Engineering has won an engineering, procurement and construction (EPC) contract to build Southern Province Cement's upcoming Jizan cement plant. The plant will have a capacity of 1.83Mt/yr. Commissioning is scheduled to follow 27 months after the start of construction. Sinoma International Engineering's contract covers installation of the entire line, from limestone crushing to cement bagging. The value of the work is US$300m.

Fellow CNBM subsidiary Sinoma Overseas Development previously won a US$220m contract with Yamama Cement for transferal of its Riyadh cement plant's new Line 7 from its old plant to its new location.

Global Cement

UAE

Lafarge Emirates Cement starts building waste heat recovery plant at Fujairah cement plant

Holcim subsidiary Lafarge Emirates Cement (LEC) has begun construction of a 10MW waste heat recovery (WHR) plant at its 3.2Mt/yr Fujairah cement plant. Supplier Engie Solutions says that it expects to commission the installation later in 2023. The equipment is based on a closed-loop organic Rankine cycle and will eliminate 29,000t/yr of CO_2 - 28% of the Fujairah cement plant's energy-related CO_2 emissions.

FLSmidth has, per 1 June 2023, acquired the American company Morse Rubber

Based in Iowa, Morse Rubber manufactures and markets specialised, heavy-duty rubber products for mineral processing, among others. Morse Rubber was formed more than three decades ago and has 23 employees. All employees will be transferred to FLSmidth as part of the acquisition.

This acquisition fully supports FLSmidth Mining's CORE´26 strategy, which includes targeting service growth through strategic investments and prioritisation. As the global market leader in large grinding mills, FLSmidth has a clear ambition of strengthening its service offerings around these products, especially for mill liners where FLSmidth has been capacity constrained in some regions.

The Morse Rubber competences will be adding advanced molding capabilities for rubber and composite mill liners, as well as screen media and various rubber and rubber ceramic wear components, to the existing FLSmidth service offerings. With this FLSmidth's mill liner capacity will be significantly increased, enabling a stronger service offering to FLSmidth's North American and Latin American customers.

"We have a clear ambition of improving our capture rate for mill liners on our own installed based. This requires more capacity, and the acquisition of Morse Rubber should be seen in this light. With this acquisition we will be able to offer cost and quality competitive mill liners combined with local presence, local production, and proximity to our North American and Latin American customers," says Joshua Meyer, Service Line President of FLSmidth.

The terms of this transaction have not been disclosed. The transaction does not impact financial guidance for 2023.

On 14 June 2023 FLSmidth and KOCH Solutions have signed an Asset Purchase & Transfer Agreement involving material handling technology that is part of the Non-Core Activities segment.

As part of FLSmidth's pure play Mining strategy focusing on core technologies and services, the Non-Core Activities segment was established in October 2022 with its activities and products to be fully exited either by way of divestment or wind-down of the order backlog. Since the establishment of the Non-Core Activities segment, FLSmidth has through execution, re-scoping and contract terminations decreased the order backlog from around DKK 3.6bn at end Q3 2022 to around DKK 2.1bn at end Q1 2023. At the same time FLSmidth has been exploring potential divestment opportunities to accelerate the exit of the Non-Core Activities segment.

The transaction is expected to be completed in Q3 2023, subject to customary regulatory approvals from relevant authorities. Assuming completion of the transaction, it is now expected that the total loss for the Non-Core Activities segment over the exit period will be around DKK 1.0bn (previously DKK 1.2bn). Further, it is expected that the Non-Core Activities segment now will be exited around end of 2024 (previously towards end of 2025).

KOCH Solutions will acquire a mix of intellectual property, order backlog, employees and facilities from FLSmidth's Non-Core Activities segment.

This includes:

- Intellectual property: port/terminal equipment, stockyard systems, pipe conveyors and various continuous surface mining equipment from both legacy FLSmidth and Mining Technologies (ex-TK) portfolios
- Order backlog: products and service orders totalling around DKK 400 million
- Project execution service: KOCH Solutions will assist with continued execution of select order backlog retained by FLSmidth
- Facilities: Purchase and lease of certain facilities in Germany and Australia

As part of the transaction, a number of FLSmidth employees will transfer to KOCH Solutions. The exact number will not be known until completion of the transaction.

The parties have agreed on a positive enterprise value, however the purchase price has not been disclosed. The transaction does not impact financial guidance for 2023.

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. FLSmidth works within fully validated Science-Based Targets, our commitment to keep global warming below 1.5°C and to becoming carbon neutral in our own operations by 2030.

Panariagroup acquires Gresart

The Italian ceramic group is expanding its presence in Portugal, a market where Gres Panaria Portugal has been operating for years with two production sites in Aveiro and Ilhavo.

On 6 April, Panariagroup, one of the world's largest manufacturers of high-end ceramic floor and wall tiles, announced the complete acquisition of the Portuguese company Gresart, founded in 1981 in Oliveira do Barro in the industrial district of Aveiro.

The acquisition follows on from the Italian group's longstanding presence in the region through its Gres Panaria Portugal business unit, which operates the two production sites of Margres and Love Tiles.

The operation further expands Panariagroup's production capacity and commercial and distribution presence in Portugal and strengthens Gres Panaria Portugal's position as the leading ceramic tile producer in the Portuguese market.

With this latest acquisition, the third after Maronagres (now Margres) in 2002 and Novagres (now Love Tiles) in 2005, Gres Panaria Portugal reaches a total ceramic tile production capacity of approximately 10 million sqm, while expanding its geographical presence and entering further market segments that are key to the Group's competitive growth.

From an industrial perspective, the acquisition of Gresart will allow the Group to immediately increase its production capacity of both porcelain and monoporosa tiles, the latter being a product segment where Portuguese brands – and Love Tiles in particular – have gained a high level of expertise and recognition.

The Gresart plant has specific lines for the production of large-size surfaces equipped with dedicated kilns and presses and a state-of-the-art grinding line. With its covered factory area of 60,000 sqm on a total site of 200,000 sqm, the acquisition of Gresart will enable the group to immediately expand its existing production capacity and provide a more effective response to the growing needs of the market.

At a commercial level, the integration of the Gresart brand expands the wealth and variety of the Group's portfolio, adding a new range of products that stand apart from the existing Magres and Love Tiles premium lines. It also enables the group to expand its distribution channels to serve large European retailers, a segment in which Gresart has longstanding experience.

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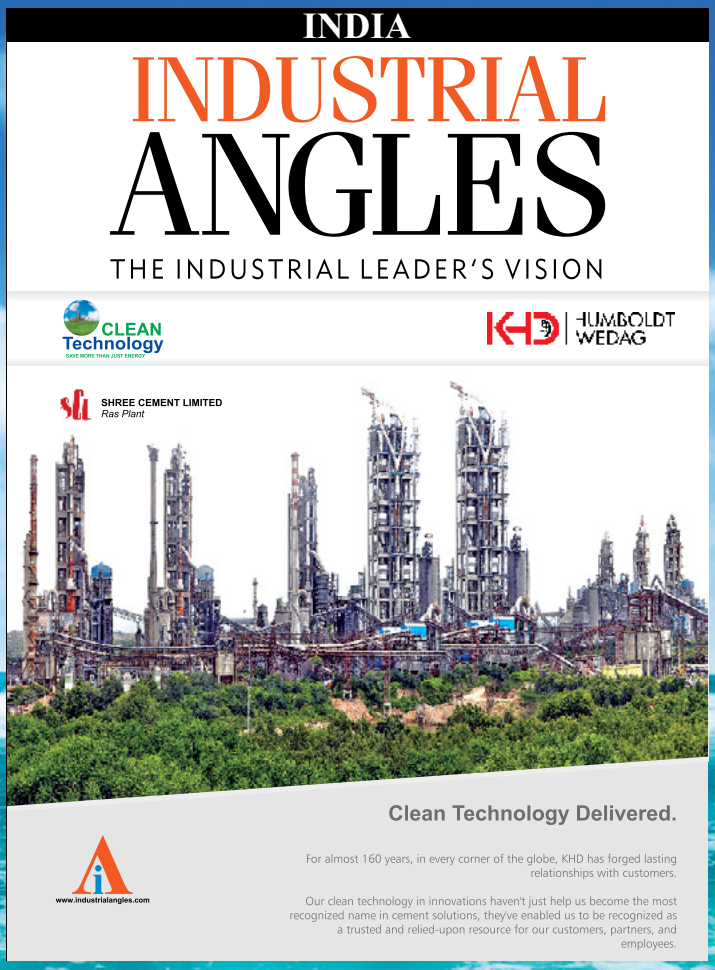
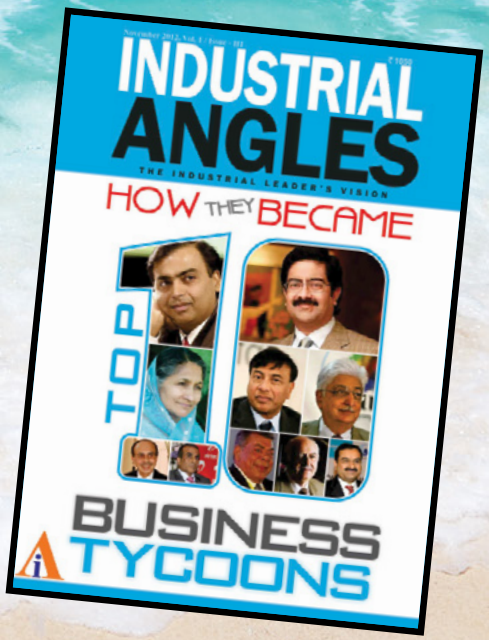




Case study: A comprehensive approach to bag filter problem solving

Failed filter bags can lead to major baghouse failures and plant shutdowns as well as a loss in productivity. Proper inspection and elimination of root causes are essential when aiming to implement the best solutions and prevent problems from recurring. Maxtech Industries shares its experience of troubleshooting and fitting a filter bag replacement at a recent project in India.

Rushabh Sakhpara
Director - Technical, Maxtech Industries, India

Maxtech Industries LLP supplies filter bags and provides baghouse maintenance services across India as well as any location abroad. The company is an authorized filter bag manufacturer for Gore® filter bags for the Indian subcontinent and selects the best products from the range of product qualities available for each application depending on customer requirements. A number of Maxtech's recent case studies underline the type of bag failures that the company deals with and how it selects the most appropriate solutions.

Case study, India

A cement plant located in western India was facing issues with elevated levels of dust emissions, high differential pressure (DP) and frequent bag failures within a year of installing an entire set of new bags and new cages by a domestic supplier. In response, Maxtech was called in to conduct an inspection and provide a solution to these problems.

The inspection revealed a plethora of problems in the baghouse caused or aggravated by the bag failures. Firstly, due to the large amount of dust accumulation (up to 4-8m) inside the broken bags, the load on the tubesheet increased. Hence, the tubesheet was observed to be bent out of shape and was bulging, with a water level deviation of 30-60mm in all the chambers. In one of the modules, this resulted in the tubesheet falling during operation, leading to the isolation of that module. The plant also had issues with false air entry and water ingress, leading to an increased flow rate.

The inspection also revealed that the PTFE membrane of the newly-installed bags was of poor quality and had poor lamination. The flow rate was 1,250,000m^3/h, which is air-to-cloth ratio (ACR) in mill-off condition of 1.07m/m. Combined with the poor quality of the PTFE membrane and the high ACR, this led to elevated DP levels of 220-240mmwg, and sometimes even as high as 280mmwg. The plant was not able to reduce the DP even with forced to continuously clean of the bags with high pulse pressure of 6kg/cm^2 resulting in high wear and tear of the fibreglass bags and consequently led to multiple bag failures.

Assessing available options

These findings were presented to the cement producer who then decided to change all the bags and and cages and carry out the necessary changes in the baghouse. Maxtech proposed all the filter media options available in the industry, including glass with conventional PTFE membrane, glass with WL Gore Low Drag PTFE membrane, P84 felt and PTFE felt with PTFE membrane. After carefully studying all these solutions, the plant decided to proceed with the Gore Low Drag option as it provided the lowest total cost of ownership and the highest filtration efficiency, ie, stable and lower emissions.

Defining installation activities

A pre-installation meeting was held to define all the activities that needed to be carried out. Some of the activities are listed below:

- the repair and replacement of tube sheets where required
- ensuring straight pulse pipes with centered holes
- provision of a separate compressor with lower capacity for compressed air power savings and to ensure low-pressure pulsing of bags
- addressing false air in-leakages
- conducting a computational fluid dynamics (CFD) study and implementing changes as per the report to equalise flow in all modules

Project execution during shutdown

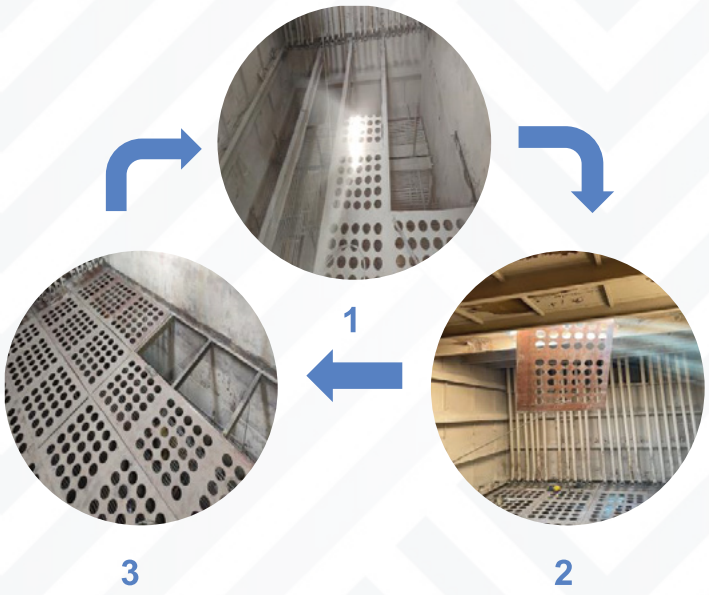
Removal of one-year-old bags and cages and pulse pipes

The plant dismantled all the pulse pipes, followed by the removal of the old bags and cages started.

Tubesheet level checking, repair, and replacement

The tubesheet levels of all 10 modules were inspected by Maxtech engineers and a team from the cement plant. It was found that the tube sheets of all ten chambers had level variations ranging from 5-90mm.

It was decided to replace the tube sheets of the three chambers with new ones, 8mm thick, and repair the others.



Tubesheet replacement

Bottom grid removal

False air leakage identification and isolation

As the plant was facing challenges with the in-filtration of false air and water ingress, this caused an elevation in the flow rate, leading to a volume of 1,180,000m^3/h in raw mill online (RM ON) with an air change rate (ACR) of 1.01m/min with nine operational modules and one isolated module (due to tubesheet failure).

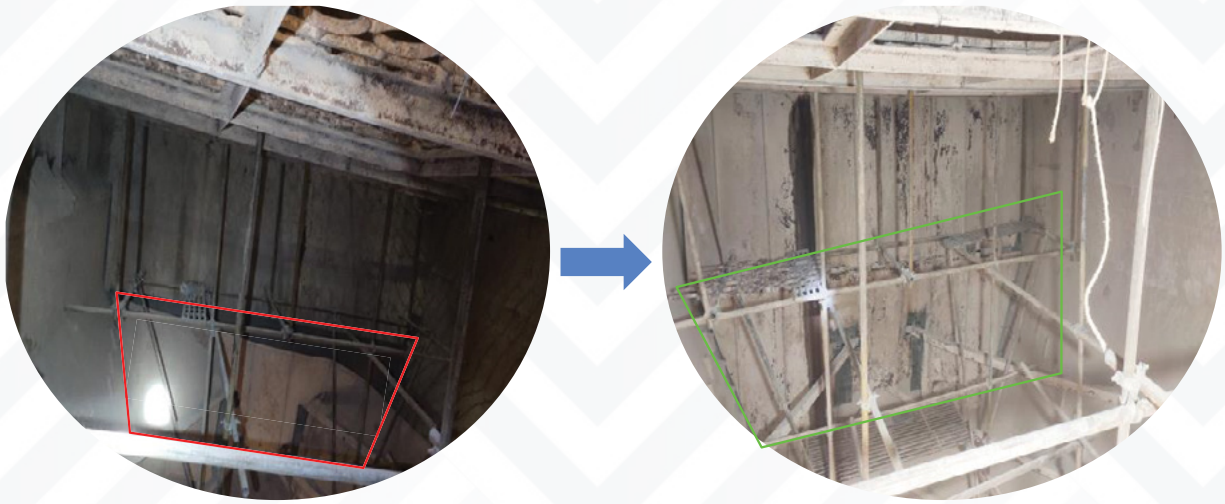
A collaborative evaluation was performed by Maxtech and the cement plant team, which led to the identification of the sources of false air leakages. These leaks were effectively sealed through welding processes during the shutdown.

Baffle plate inspection and repair work

Maxtech and the plant team conducted an inspection of the baffle plates of the 10 modules, where they discovered holes and a few baffle plates that were detached from their original positions. Furthermore, in one of the baffle plates, the bottom piece was missing. During the shutdown, the team effectively isolated the holes in the baffle plates and reattached the fallen plate by welding.

CFD study implementation

As per Maxtech's suggestion, the plant's technical cell conducted a CFD analysis of the baghouse system and implemented a number of modifications. The necessary fabrication work was carried out in the inlet duct to reduce the flow deviation from ±19 to ±6 percent.



Baffle plate repair

Supervision of installation of bags and cages

Maxtech dispatched a team of five service engineers with varying experience to facilitate a seamless installation process of the bags and cages, and all supervision activities. The entire baghouse modification job was completed in 33 working days.

Pulse pipe inspection & alignment

Pulse pipes are essential in bag filter systems and help keep the filter bags clean. Proper alignment and spacing of the pulse pipes are crucial for optimal performance and to prevent damage to the filter bags. Upon inspection, it was noted that the purging pipes were bent and misaligned from the tubesheet holes. Maxtech and the plant team realigned the pulse pipes to center them with the tubesheet holes and replaced any bent or damaged pipes with new ones.

Leak detection test, precoating, and bag cleaning settings optimization

A leak test was performed using fluorescent pink powder. Maxtech recommends using proper quality (minimum 30% active ingredient) powder to ensure the detection of all leakages. The outcome of the leak test indicated the absence of any leaks and commencing plant operations was deemed suitable. After that, precoating using limestone powder was carried out to ensure that there was a dust layer on the bag surface to protect the bags from oil during kiln firing.

Maxtech collaborated with the plant team to optimize the bag cleaning parameters, resulting in reduced bag cleaning frequency and a gentler cleaning process.

Results

Operating data before and after the implementation of the WL Gore Low Drag PTFE membrane is shown in Table 1. Overall, the following was achieved:

- Average ΔP across the bags was reduced by 35.35 percent.
- Power consumption required to produce 1tph of clinker decreased by 29.33 percent.
- Pulsing pressure decreased to 3kg/cm^2, representing a 50 per cent reduction

Other Benefits

The project resulted in the following benefits:

- By ensuring that the bags were properly aligned to prevent any contact between bags and metal surfaces, the overall lifespan of the bags was extended.
- Emissions dropped from visible to less than 10 mg/Nm3
- Reduced maintenance and plant shutdowns
- Enhanced production rate

Achieving a low DP

Gore Low Drag filter bags are not only mechanically robust but also have one key differentiator that sets them apart: superior filtration efficiency and cleanability.

Gore is the inventor of the PTFE membrane and has developed proprietary trade knowledge that enables its PTFE membrane to have higher filtration efficiency and ease of cleaning compared to other membranes. This results in a cleaner fabric, lower differential pressure in operation, and longer bag life. This is why Gore's operating DP is always the lowest compared to other options and makes its Low Drag filter bags the ideal choice for any baghouse.

Table 1: results – reduction of 2.2kWh/t of clinker led to a reduction of >INR280m per year in power costs. The additional investment for Gore bags over generic bags was recovered in < 1-year

Parameter	Before Gore (2022)	After Gore (Feb 2023)	Change (%)	Effect
Average ΔP across bags (mmwg)	113	72.6	35.55%	Reduction
Average kWh/t of clinker (Feb 2023)	7.5	5.3	29.33%	Reduction
Pulse pressure (kg/cm^2)	6	3	50%	Reduction
Average emissions (mg/Nm^3)	Visible	<10	Drastic reduction	

Table 1

A generalized framework for storing and discharging of alternative fuels for a sustainable cement manufacturing

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Abstract
Storing and discharging of bulk materials can be a great challenge and each process expert from cement manufacturing is aware of the typical problems associated with the operation of efficient silo and bunker systems. With the rise of alternative fuels (AF) within the cement clinkering process and the associated introduction of new problematic bulk materials with highly volatile characteristics, classical storage designs and discharge techniques are no longer adequate. This article provides an overview of typical problems of AF storage and feeding associated with their particular properties and introduces some best practice procedures.

Keywords: Alternative fuels, bulk material storage, time consolidation, discharge systems

1. Alternative Fuels

Alternative fuels (AFs) have become one of the primary energy sources for the clinkering process within cement manufacturing during the last three decades. In most cases those substitutive fuels are mainly derived from waste streams which can differ immensely throughout different regions of the world and are also quite often not constant over time, as mentioned in [1]. In European markets the most commonly used AFs are derived either from industrial and/or municipal plastic waste (often referred to be as Refused Derived Fuel – RDF) or used tires (Tire Derived Fuel – TDF), while in other regions of the globe those fuels derived from renewable resources, such as biomass and or wood are more common. Whatever the exact nature of those materials will be, there is one major aspect, which needs to be considered for each AF handling installation: the problematic nature of some bulk material characteristics of almost each AF material stream and its impact on the selection of the associated handling equipment and machinery.

It shall be noted, that the fundamental difference of AF materials, if compared to other material streams in a cement plant, is not the actual difference in typical properties, such as density ρ [kg/m³], humidity h [%] or particle size distribution (PSD), but the actual volatile nature of the material composition. Even if recent advancements in the standardisation and quality control of AF has led to more homogeneous material streams, the reality in cement plants worldwide show a different picture. A fuel mix originating from different suppliers and complex preparation procedures for a great variety of waste streams will always lead to a situation, where operators cannot fully influence the quality of material within their AF burning installation. Of course, most cement producers have also introduced sampling procedures for their AF logistic chains; however, real-life experience shows that even the most excessive quality control procedure cannot avoid inequalities of the received fuels. Figure 1 provides a detailed overview of a typical AF material flow for Residue Derived Fuel (RDF) received in cement plants.

Here three different fuel categories, as defined by [2], are distinguished: (i). main burner fuel (fine and high in calorific value), (ii). Calciner fuel (medium particle sizes and calorific value) and (iii). Pre-combustion chamber fuels (coarse and lower calorific value). As it can be seen, even if for each fuel categories associated quality control measures are in place, there is still a fundamental amount of material that was initially classified wrongly according to their particle size. Furthermore, all three material categories contain a non-negligible amount of foreign particles (e.g. ferrous and non-ferrous metallic pieces, hard plastics and mineral fractions).

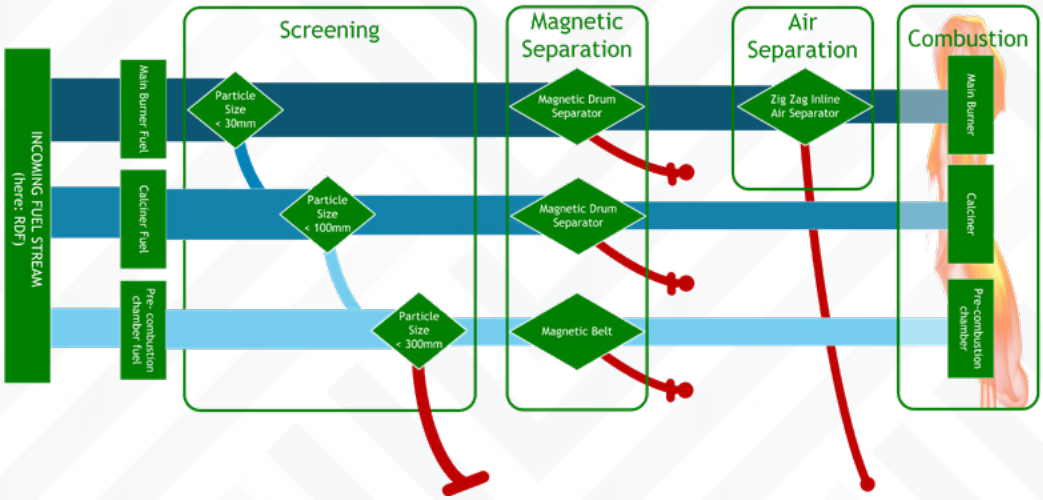


Figure 1- Typical flow and classification of alternative fuels and mass balances

Thus, it is obvious, that classical storing concepts and design methodologies from classical bulk materials cannot be applied directly to AF storage. In fact, there are numerous examples for installations built for substitutive fuels, which suffer enormously from design failures, which can be traced back to the fact that the same engineering criteria were used as for more cooperative bulk materials. Typical problems which can be observed in practical applications, are (a). bridging material, (b). reduced storage capacities, (c). failures and damages of the discharge organs (e.g. broken or clogged screws or conveyors, etc. All of these scenarios lead to an enormous downtime per year, since usually a problem with the storage site or a damage of the associated discharge conveyor would require a manual discharge of the material inside, which is very time consuming and therefore quite costly for the plant operator. Due to the fact, that a whole AF feeding installation, as schematically shown in Figure 2, is typically fed by a single storing device, such a situation would also require the usage of classical fossil fuels, since the AF feeding installation is no longer operational. Therefore, from a design perspective it can be reasonable to split the overall storage capacity into two or smaller silo systems.

Figure 2 - Schematic overview of an AF handling installation

2. Design Criteria

One of the major aspects of an AF feeding installation within a cement plant is the implementation of a proper logistic strategy of the used material streams, which do often require a certain storage as an essential part of the installation. Since in most cases the material stream is mainly transported by trucks, it is often essential to guarantee a proper buffer in order to maintain the feeding on weekend and/or holiday seasons. Therefore the minimum storage size v_{min} [m³] to be considered for an AF installation can be derived from the actual number of days n where the feeding shall be maintained from the buffer, the maximum feed rate (massflow) $\dot{m}_{max}$ [t/h] of the installation and the minimum bulk density of the fuel ρ_{min} [t/m³] using the following relationship:

$$v_{min} = \frac{24 \cdot n \cdot \dot{m}_{max}}{\rho_{min}} \qquad (I)$$

So in case a typical weekend (2 days) would be the longest time period which shall be covered from the storage, the installation can be operated with a maximum massflow of 2 t/h and the smallest possible bulk density was determined to 0.1 t/m³, the necessary minimum storage size would be 960 m³ (app. 1000 m³). In cases trucks can be also received during the weekend, the storage size would be smaller and in case longer periods shall be covered by the storage, it needs to be much bigger.

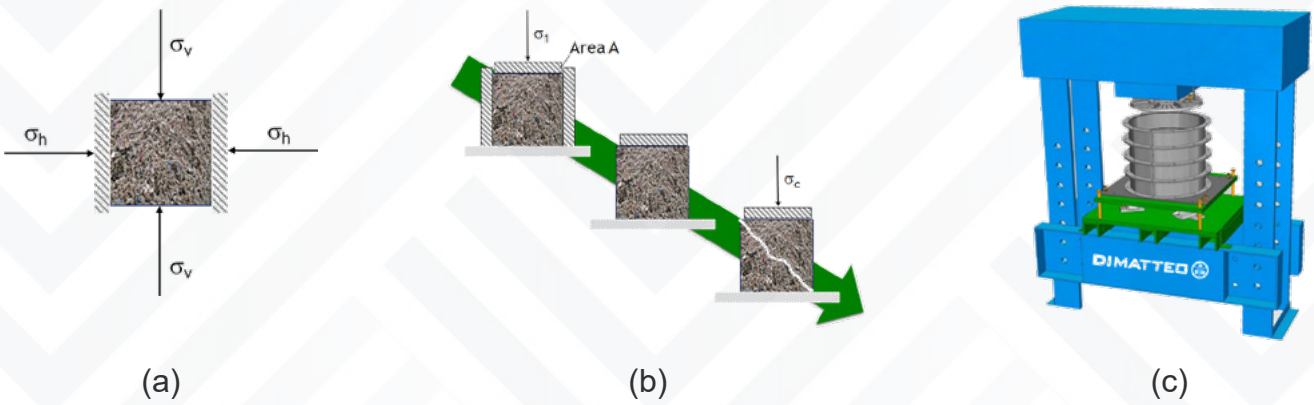
Due to their inherited characteristics, the storage of AFs in a cement plant is fundamentally different from other typical bulk material streams, such as clinker, cement or raw materials. Therefore it is important to have a sound understanding regarding the physical and chemical effects of storing for each fuel. Besides that all aspects regarding possible safety issues need to be considered in detail, especially if the actual AF is classified to be able to build potentially explosive atmospheres within the storage area.

If bulk materials are stored it would be essential, that its flowing properties are not affected by the actual time it remains within the storage and/or in which type of piles/storage geometries it is stored. However, it is well known that all kind of bulk materials undergo a typical consolidation effect once they are not continuously moved and/or activated. Some bulk solids increase in strength if they are stored for a period of time at rest under a compressive stress. This effect is typically called time consolidation. As shown in [3], the effect is a consequence of the increase of interparticle adhesive forces with time based on different mechanisms. If AF particles are moved relative to each other, these adhesive forces diminish and can build up again during further storage

at rest. As shown in Figure 3 – (a), each AF element within a storage is influenced by a positive normal stress in vertical direction ($\sigma_v > 0$) in vertical direction. As a consequence a certain horizontal stress σ_h is exerted on the element. A typical measure in order to characterise this effects is the stress ratio K, which is defined as the quotient of the horizontal and vertical stress elements, as shown in Equation 1.

$$K = \frac{\sigma_h}{\sigma_v} \approx \{0.3 \dots 0.6\} \qquad (II)$$

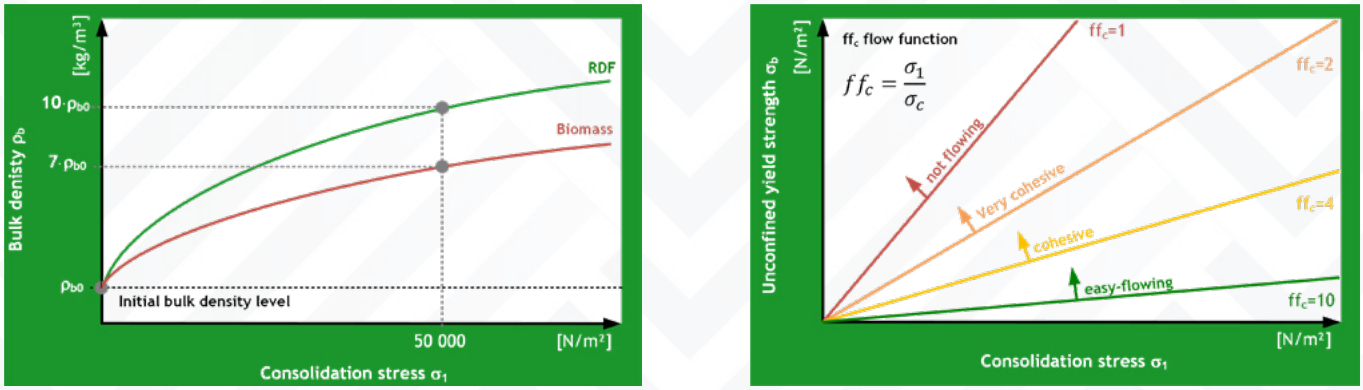
As shown in [4], the flowability of a bulk material can be determined by means of an uniaxial compression test, where a cylindrical container with the cross-section A is filled with the fuel (e.g. RDF) and then loaded by a uniaxial vertical stress σ_1. As a consequence the volume of the material will be reduced due to compaction and consolidation. After a certain time the container will be removed and in a third step the material alone will again be loaded with a slowly increasing stress component. At one specific stress, the material pile will “break”. This stress is defined to be the unconfined yield strength. The different steps are illustrated in Figure 3 – (b).



(a) (b) (c)

Figure 3- Stresses in bulk material elements within a storage – (a): Vertical and horizontal stress on a bulk material element; (b): Three stages of the uniaxial compression test; (c): DI MATTEO test equipment for measuring consolidation effects

DI MATTEO developed adequate testing equipment in order to characterise the flowability properties of alternative fuels, as shown in Figure 3 – (c), and for each project the typical characteristics of the materials are determined within the company's test centre in Germany. In Figure 4 some typical results are illustrated in qualitative measure, where on the left side (Fig. 4 – (a)) the variation of the bulk density for different consolidation stresses during storing are shown. The actual consolidation effect can be easily seen and for RDF and biomass the bulk densities can increase up to ten, respectively seven, times the initial bulk density. As defined by [3], the ratio of the consolidation stress σ1 and the unconfined yield strength σc is often interpreted as a flow function ff_c, as shown in Figure 4 – (b). Based on this function it is possible to differentiate different classes of the flowability of the bulk material.



(a) (b)

Figure 4- Stresses in bulk material elements within a storage – (a): Vertical and horizontal stress on a bulk material element; (b): Three stages of the uniaxial compression test; (c): DI MATTEO test equipment for measuring consolidation effects

As a logical consequence from the consolidation effects and especially the negative influences on the flowability of the material over time, it is highly recommended to design all storages according to a First-In-First-Out (FIFO) principle (see also [5]).

3. Storage systems and associated discharge and reclaiming systems

Of course it is generally possible to use all classical types of storages as also used for classical bulk materials and besides the specific needs of the AF materials, as they were introduced above, the typical requirements are also quite similar, such as

I. high availability
II. low maintenance and operational costs
III. flexibility regarding the bulk material specifications
IV. homogenisation properties
V. low investment
VI. ideally a defined volume outflow per time unit.

Classical storage elements can be typically distinguished in circular and rectangular shaped storages. In this context it shall be mentioned, that the usage of typical circular shaped silos is quite limited for alternative fuels. Typically storage sizes of more than 1200-1500m³ are not recommendable due to the necessity to realise a quite big height of the silo, which would lead to a quick variation of the flow function towards values <2 over time due to the immense consolidation stress. However, silos within the defined capacity range (see Figure 5 - (a)) are quite efficient storage possibilities. Nevertheless, for bigger storages rectangular shaped storage halls, as shown in Figure 5 – (b), are the more reasonable choice, because due to its shape general rectangular footprint the actual material height can be limited to 5-10m and the necessary storage capacity can be easily designed by adapting the width and length of the storage buffer. Typically, also more than a single storage can be realised in order to provide redundancy.

(a)

(b)

Figure 5- Typical shapes of storages: (a) – Classical circular shaped silo; (b) – Rectangular storage hall

In order to show both storage types, the following sections provide the descriptions of two example applications and associate the necessary discharge systems.

3.1 Rectangular Storage Halls

As mentioned above, the capacity of a circular silo is always limited, therefore for large storages a rectangular storage hall is the method of choice. Here it is easily possible to realise also storage capacities above 2000m³. However, due to the rectangular geometry of such storage halls, it is not possible to utilise classical discharge elements, such as discharge screws. Therefore DI MATTEO offers also discharge systems for rectangular storages, such as the typical reclaimer (ODM-Loading and Unloading conveyor (LUC)), the ODM-MovingFLOOR and the ODM-PushFLOOR.

The major difference of these dischargers can be found in the organisation of material within the storage and in what order the material will be discharged afterwards. Figure 6 shows the two fundamental procedures for discharging material from a stock. If a certain material flow to a storage is realised, the actual order of the how the material is stocked is usually derived from the fact that most storages need to be fed from the top. Therefore, the material, which will be stored first, will be located near the bottom of the associated storage. Once this material shall be discharged, there are two different possibilities for a discharge system: (i). the material, which lies on the bottom of the storage, shall be discharged first, e.g. by a moving floor. Such a procedure is called a First In-First Out principle (FIFO) and is often considered to be the preferred solution, due to the aforementioned time consolidation effects. (ii). It is also possible to scratch material from the top of a stockpile to a possible outlet, such as done with a typical reclaimer. In that sense, the material is discharged according to a Last In-First Out procedure (LIFO), which often leads to highly compacted material at the bottom of the storage.

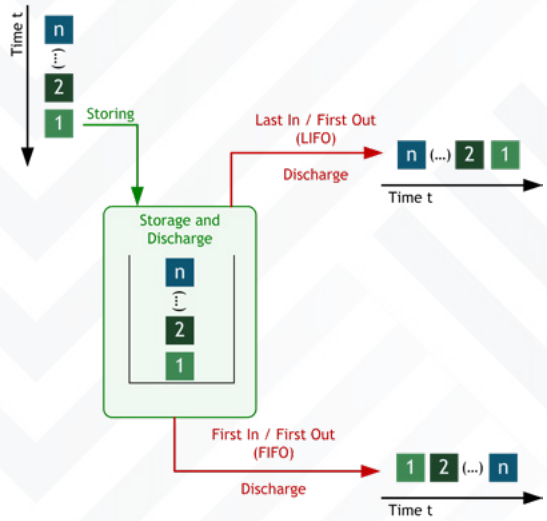


Figure 6 - Illustration of the First In-First Out (FIFO) and Last In /First Out (LIFO) discharge operations

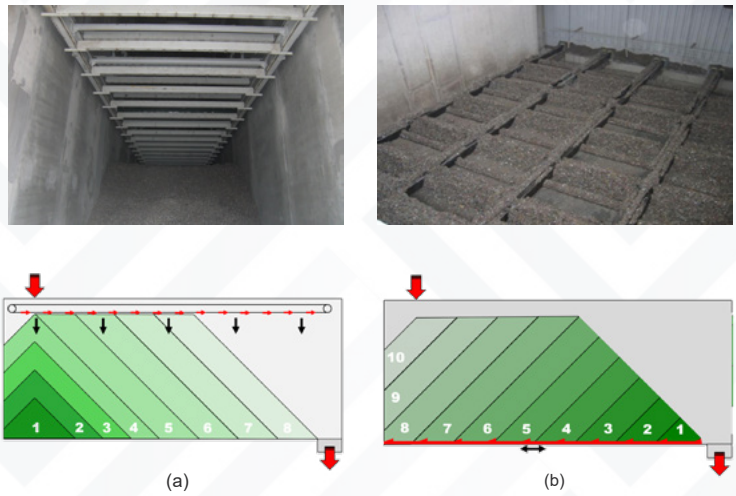


Figure 7 - Typical discharge systems for rectangular storage halls and illustration of the material flow: (a) – ODM-LUC with LIFO principle; (b) – ODM-PushFLOOR with FIFO principle

3.2 Circular silo

In almost each feeding line it is also necessary to include a gravimetric dosing device, such as the ODM-WeighTUBE® (see [6]), in order to guarantee a precise dosing of the AF to the burning process. For this reason, DI MATTEO expanded its ODM-WeighTUBE® family in order to provide also a possible setup, where two or more dosing units are directly placed below a circular shaped silo, as shown in Figure 8 – (a). Thus it is possible to feed directly multiple dosing lines from a single storage silo without any further pieces of equipment. A homogenous discharge from the silo is guaranteed by means of the inclusion of an ODM-RotoEX discharge system. The ODM-RotoEX is fitted with one or several rotating, robust sweeping arms, which undercut the material stack and discharge the material reliably and continuously. Even sticky, poor-flowing materials can be brought to an opening without any problems in a first-in-first-out manner. The RotoEX silo discharge system avoids the creation of sedentary zones and material caking during discharge in order to guarantee a continuous material flow to the dosing units. Such an installation is very cost effective and typically quite robust against any changes of the material properties.

(a) (b)

Figure 8- Combination of storage and dosing units; (a) – Two ODM-WeighTUBEs® directly mounted below a circular silo; (b) – ODM-RotoEX silo discharge system for a robust homogenous discharge

4. Conclusion

The design and selection of adequate storage systems for alternative fuels are important tasks which are often underestimated during the conceptual stages of feeding projects. This article provided some main considerations regarding the time consolidation effects which lead to a variation of AF material properties during the storage time and derived some typical criteria for the selection of storage systems and their associated discharge and reclaiming elements. Based on two examples best-case scenarios were developed by DI MATTEO during the last decades, where within this article two examples are shown: one for a circular silo with integrated ODM-WeighTUBE for gravimetric dosing and a second one for rectangular shaped storage halls with ODM-MovingFLOOR/ODM-PushFLOOR systems. However, the design is always subject to the material properties, the exact plant layout and the demands of the plant in terms of logistics, etc. Therefore DI MATTEO offers tailor-made solutions for all cases.

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Dr. Dominik Aufderheide worked as the Head of the Automation and Research department at the DI MATTEO Group, Germany for many years. In 2020 he became a full professor for Industrial Metrology at the South Westphalia University of Applied Sciences. He holds a PhD in Electrical Engineering from the University of Bolton in the UK. He has been an active researcher in the field of process technology, automation and sensor technology for more than a decade and participates actively in the development of new technologies within the field of co-processing of alternative fuels within the cement industry.

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

ELEMET LE: new developments to meet the increasing technological request for bucket elevator belts.

By: S.I.G. SPA, Italy

Introduction

The market of rubber belts has deeply changed during the years. New applications rising has made compulsory the development of manufacturing technologies to meet more and more detailed client's requests.

Particullary, rubber elevator belt has not only required much more attention but it has been in need of the most important improvements.

Aim of this article is to analyze all these topics and to introduce our ELEMET LE as well, an excellent and competitive product of SIG Società Italiana Gomma, manufactured in its workshop close to Milan, Italy

Bucket elevator belts and related problems

Rubber elevator belts are very simple systems, especially if compared to traditional conveyor systems. As a matter of fact they are composed by two vertical pulleys rounded by a suspended rubber belt on which buckets for material handling are placed at a regular distance.

Despite this manufacturing semplicity, the operation is usually difficult, mainly in cement plants. This stumbling-block is due to some causes that have forced manufacturers to develop more and more performing as well as long lasting products that could allow to reach a compromise between the various application exigencies.

Therefore, here below, it is useful to focus on a deep analysis of all the technical causes and its related difficulties that you are likely to be faced.

- **Difference in height and increasing throughput**

Nowadays, because of increasing height of silos as preheating towers, for rubber elevator belts it has become compulsory to overcome very important distances, most of times higher than 100 meters. Moreover the calcination ovens require nowadays bigger material quantities in the past. Both these last two requirements proportionally influence the tensile strength values measured inside the carcass of the rubber elevator belt, making the belt class easily over 2000 KN/m.

- **Elongation**

These significant heights are in contrast with the exigence of keeping very short take up travels because of evident geometrical needs connected to buckets loading. If in the past textile rubber elevator belts were installed also in cement plants, today it is always more frequent to use bucket elevators equipped with steel cords that have a reduced elongation.

- **High temperatures**

Usually, material temperature is higher than the one of the surrounding environment; moreover being the elevator a closed area, the inside elevator air easily reaches the thermal balance with the conveyed material creating a “stove effect”. This last phenomenon is much more dangerous for the rubber belt than in traditional throughed rubber conveyor belts, where hot material only partially and discontinuously is in contact with the rubber. Today it is really common to find applications where working temperature reaches continuous values of 120 – 130°C with short time peaks even higher.

Rubber compound made of synthetic polymers as SBR are used with necessary protections and crosslinking so that they can easily be used for horizontal applications, also withstanding temperatures rising until continuous 150°C. On the countrary, this is not more possible in rubber elevator belts due to an extremely fast rubber degradation causing a performances worsening.

Pratical experience teaches that heat resistance rubber compound made of SBR polymers can be used only for bucket elevators operating up to a maximum peak temperature of 100°C whereas for higher values it is necessary to choose other more extreme and expensive solutions that pay back with much longer life time anyway.

Always in comparison with common throughed rubber conveyor belts for which big thicknesses of rubber covers are adopted to better protect the interior carcass, this practice is impossible for rubber elevator belts. As a matter of fact, big thicknesses would make extremely instable the tightening of the bolts fastening the buckets with the risk of ovalisation of the holes, loss of the buckets themselves, damage of the belt or even of the whole system in the event of accident.

- **Joining method**

The rubber elevator belts are jointed with mechanical clamping devices made by aluminium or steel angles bars specifically shaped.

These joint type is an extremely critical aspect for rubber belt operation and its own life time because it has an unavoidable interaction with the belt itself: as a matter of fact, steel fabric cords are bended for 90° due to traction. Moreover an important number of cords is cut to let the joint tightening by means of special bolts, but causing an increased overweight to remaining cables.

For these reasons, it is not uncommon to find damaged bucket elevator belts near the joint, especially when the clamping device is not suitable for the belt type. Therefore, the OEM has to carefully evaluate the most suitable method of joining to avoid an early damage to this delicate area. In details, clamp conformity must be developed taking into account the applied tension to any single cord proportionally to its section. This aspect is for sure critic for belt class higher than 2000 N/mm for which it is required to adopt belts with bigger steel cord diameter.

- **Buckets support**

After the rubber belt, the buckets are the most important equipment since they are used for material lifting. Once the production ends, rubber elevator belts are punched according to a specific drawing to let buckets fasten to the belt through suitable bolts. This punching operation takes to a reduction of the useful belt width for the calculation of the real applied tensions.

Buckets are charged using specific chutes or alternatively they are filled dredging the elevator basement; mainly in this second case the effort on fastening bolts is really difficult. Hence it turns out to be extremely crucial that the belt could offer enough resistance to ensure that bolts could correctly stay tight and not be removed and teared from the belt.

The contact point between buckets and belt must be subject to high attentions due to different causes. The hot material inside the buckets along with the hot air inside the elevator system transmits to the belt a huge amount of heat that contributes to the rubber degradation. Moreover, especially when materials in big size is handled, the accumulation of varius pebbles between buckets and the belt can be another element of drastic belt life time reduction. For both these reasons, between buckets and the belt it is used to put isolating items as rubber strips in high heat resistant quality. The usage of these protective elements has shown a significant increasing of the belt life time.

ELEMET LE – the most suitable solution for cement plants bucket elevator belts.

For decades involved in the supply of first equipments and spare parts for bucket elevators, SIG gained a very deep knowledge that allowed to develop a product named as ELEMET LE which has all the necessary properties to obtain the best compromise between the above mentioned exigences and capable also to sort out any problem rising from the use of rubber belts for vertical material handling.

Our ELEMET LE is currently offering satisfying performances under all points of view and several bucket elevators are now in operation in various cement plant around the globe. Its success is obvious, above all if we consider that it has firstly replaced fabric elevator belts and now also the belts with single longitudinal steel cords ones that were the unbeated main players in the field.

Analysing the constructive differences between traditional bucket elevator belts with only longitudinal steel wires and ELEMET LE, it is possible to immediately figure out the technological advantages of the last one.

Between ELEMET LE and other steel bucket elevator belts, the substantial difference can be observed in the particular conformation of the steel web carcass conformation. As a matter of fact, the innovation and excellent performances of ELEMET LE are due to its carcass equipped with a double steel cord weft and a warp made by strong resistance and low elongation wires in selected diameters, according to the tensile strength, to minimize any breaking risks in the joint area

Moreover, ELEMET LE is also characterized by an high bolts fastening strength thanks to the double steel cord transversal weft placed on independent steps but not interlaced with longitudinal wires to give stiffness, tear resistance and transversal stability to the belt.

A similar carcass construction avoids that the tensions on the longitudinal wires could transfer to the transversal side obtaining in this way a compact structure without possible damages due to mutual friction of the steel cords.

As for the delicate relation between rubber and steel, ELEMET LE are made with brassed steel that guarantees a better long lasting rubber adhesion at high temperatures, compared with common traditional galvanised steel.

This important feature gives much more freedom in setting up a suitable adhesion rubber with the steel allowing us to obtain better synergies with special polymers used for the covers.

These polymers can contrast the fast ageing caused by high temperatures but keeping unchanged the superficial hardness, avoiding cracking, grooves and bachelization which are typical phenomena of unsuitable rubbers for this specific use.

If requested by end user, SIG is able to supply the belt in measure and punched thanks to latest technologies that can guarantee dimensional minimal tolerances on sizes and position of the holes.

For less severe applications with low – medium tensile strength up to 1600 KN/m and with elevation usually lower than 70m, it is possible to supply the classic ELEMET differing from its older brother “LE” for having thinner, more elastic and at higher elongation steel wires.

Conclusion

This article firstly has attempted analysing in the most possible exhaustive way the potential problems connected to the application of rubber belts for bucket elevators

Secondly, this article has been aimed for giving a practical solution how SIG has been able to introduce in the market a new competitive but also efficient and effective product, very appreciated in the cement field.

In conclusion, we can sum up ELEMET LE advantages and features as follows:

- A stiff steel carcass with warp and double weft to guarantee bolts support and function stability;
- Resistant structure with longitudinal steel cord wires with reduced diameter to obtain low elongation, easy alignment and high flexibility in bending for better joint performance;
- Brassed wires to ensure long lasting rubber adhesion values
- Special polymers used for the rubber covers to maximize temperature resistance on long term.
- Breaking load from 800 to 3500 KN/m and widths suitable for all exhigences, from 300 to over 1600 mm;
- Optimized covers thicknesses to ensure the best compromise between carcass protection, wear and prolonged tightening of bolts;
- Belt punching with latest technologies and extremely tight tolerances.

Sustainable alternatives for wear treatment in concrete manufacturing

By: CASTOLIN EUTECTIC

Concrete production businesses can now substantially reduce equipment downtime and related costs in the mixing and final production stages, thanks to the latest wearfacing technologies.

Martin Kirchgassner Vice President and Chief Technology Officer of Castolin Eutectic explains how this approach is integral to the company's philosophy of "Pioneering Industrial Sustainability", since if critical equipment functions optimally, it consumes less energy. Therefore, concrete plants can both improve energy efficiency and reduce their CO_2 footprint.

By the very nature of their function and operation, concrete mixers and concrete-handling accessories are continually subjected to a highly erosive, abrasive and mobile mixture of cement, sand, aggregates and water. Its capacity for intensive wear, tear and damage is huge. Until it is replaced, a wearing component's energy efficiency and operational performance may be lowered. This can lead to higher fuel consumption and in some cases higher material costs. It may also affect the quality of the concrete and increase the risk of its rejection.

The industry is under increasing pressure to deliver an uninterrupted flow of ready-mix concrete, produced with a consistent, homogeneous quality and with ever faster mixing cycles. This is especially true for precast and prestressed concrete. The rising cost of energy and raw materials is another driver of efficiency, as is the growing demand for sustainable use of resources and reduction of carbon emissions.

Protecting equipment and components from wear helps toward meeting all these demands. It not only extends their life but maintains their original shape and dimensions, so they perform optimally and energy-efficiently. Wearfacing treatments can be applied during the equipment's original manufacture and preparation. Alternatively, they can be added as part of a repair and restoration process which gives the component a second life and a better-protected future.

Concrete mixers

To understand the role of wear protection in concrete mixing, it is useful to first look at the anatomy and functioning of today's concrete mixers. Fundamentally, they have a drum or pan in which the ingredients of concrete are stirred and homogenised with the aid of mixing tools. These consist of mixing arms to which are attached paddles for mixing and scrapers to stop the concrete from sticking to the drum or pan's surface.

The arms are mounted on a rotating shaft which produces the necessary movement for stirring. More rarely, there are mixers in which the pan, rather than the mixing tools, revolves around a vertical axis. In older-style concrete mixers it was common for the drum to rotate around a horizontal axis, with the effect of mixing the contents by lifting and dropping them.

Concrete mixers can be divided into horizontal axis mixers (otherwise known as horizontal shaft or horizontal drive) and vertical axis/shaft/drive mixers. Within these, there are further divisions.

Most horizontal shaft mixers have two shafts, although single-shaft versions can be found occasionally. The twin-shaft machines offer high-intensity mixing with short cycles. They are typically used for high-strength, roller-compacted and self-consolidating concrete. Batch sizes tend to be between 2 and 6 cubic metres.

Vertical shaft mixers can be divided into pan types (sometimes known as ring-pan or turbine mixers) and planetary types (also known as counter-current mixers). Both kinds mix quickly and efficiently and are well suited to stiff as well as loose mixtures. The benefits of these machines include easy cleaning between batches. One of their differences from horizontal shaft mixers is that they discharge concrete via an opening in the bottom of the pan, rather than by pouring it from the top of a tilted drum.

Typical vertical shaft mixer applications include precast and prestressed concrete. The more efficient mixing action of the planetary types adds an advantage when consistency is most critical – in coloured and self-consolidating concrete mixes, for example. Batch size for vertical shaft mixers is normally small – between 0.75 and 3 cubic metres – and they are often used where multiple discharge points are needed.

Mixer liners

Development of concrete mixer shielding is an area in which Castolin Eutectic has many years of expertise. An obvious place to start is by covering the inner surface of the mixer's pan or drum with a protective lining.

For this, Castolin Eutectic has developed Castodur Diamond Plates (CDP®). These can be easily cut, shaped and fitted to protect any surface in any mixer design. In tests, CDP plates have been shown to give up to five times longer service life when compared with previous solutions. Those include heat-treated steel, polyurethane and cast iron.

CDP provides high protection while concrete is being mixed and also, importantly, during cleaning and maintenance. In addition, the plates are highly resistant to chipping. Other advantages include their low weight, which makes mixer transport easier.

CDP's composite structure is made by arc-welding, vacuum-fusing or laser-powder-coating abrasion-erosion-resistant alloys onto an easily weldable steel plate. A highly controlled, high-tech production process, based on advanced material science, ensures premium quality and consistent properties across the entire surface.

The hardness of the material is typically two or three times higher than that of the most abrasive media used in industrial processes. Its durability owes much to the presence of ultra-hard phases – with a hardness value (HV) of 1,500 to 3,000 – anchored in a robust matrix.

CDP plates are available with different alloys and thicknesses, designed for specific wear scenarios. The three main categories are CDP Welded Plates, CDP Powder Plates and Laser Cladded Plates.

The plates provide an effective way of protecting both small and large surfaces. Retrofitting them is straightforward, with attachment by screws, rivets or spot welding. They are simple to cut to any shape, using standard methods such as plasma arc, water jet or laser, and are also easy to join. Alternatively, Castolin Eutectic can supply CDP panels pre-cut and formed to the mixer's specifications.

Precise dimensions for the plates can be measured on site by Castolin Eutectic specialist engineers or taken from templates. A 3D measuring arm may be used to ensure accuracy. The engineers will return every six to nine months to check for wear and to plan for possible changes at the next liner replacement. To maintain the best possible fit and function, given that mixers change shape over their life, new measurements should be taken each time.

Mixing tools

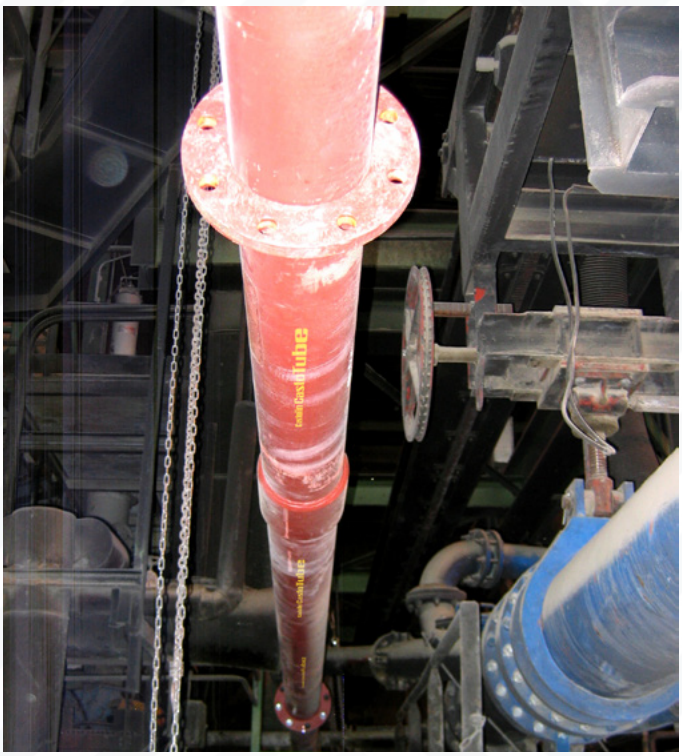
The mixing arms, paddles and scrapers in a concrete mixer are all considered to be replaceable parts. Also present in some are arm protectors, designed as an additional protective measure for vulnerable surfaces on the arms.

Castolin Eutectic's wear-resistant solution for paddle, scraper and arm protector surfaces is Castodur Diamond Carbide (CDC®). Components protected by CDC's complex coating structure last up to six times longer than parts dependent on previous resistant technologies.

In tests comparing the durability of CDC-coated parts with that of mono-material replacement parts made from alternative hard materials, their life expectancy was six times better than standard hardened plates, four times better than polyurethane and three times better than Ni-Hard® cast iron.

The CDC coating is created using CDP plates, whose composition and properties have already been described above in relation to mixer liners. For extra wearfacing protection, tungsten carbide – with a hardness of 2,500 HV – is applied to the leading edges. The carbides have been specially chosen for resistance to impacts during mixer maintenance operations.

Individual parts can be repaired again and again using the same wear-resistant alloy in electrode form. Like CDP plates, CDC coatings are available with different alloys and thicknesses designed to combat specific types of wear. The full catalogue contains around 300 CDC parts, each of which is supplied with fixing systems. They are compatible with more than 20 mixer brands.



Pipework

Concrete ingredients and the resulting mixed concrete may be transported via a system of rigid, small-diameter pipes, with elbows for changes in direction. Their inner surface is, unsurprisingly, prone to erosive and abrasive wear.

The answer from Castolin Eutectic is CastoTubes. These easy-to-weld mild steel tubes are protected internally by a welded coating of TeroMatec 4666 alloy, which is extremely wear-resistant. It gives the same level of wear resistance as Castolin Eutectic's CDP 4666 plates but avoids the difficulty and expense of having to form plates into tubes.

Inner diameters from 82 to 300 mm are available. Spiral welding has been used to minimise any distortion. The tubes are seamless, with perfectly round cross-sections and no linear weld joints. They are highly cost-effective, light to handle, and quick and easy to connect.

In laboratory abrasion wear tests, the resistance of CastoTubes has proved superior to that of mild steel, heat-treated, 400HB hardened plate and chrome carbide tube products.

Like CDP, TeroMatec 4666 is typically two or three times harder than the most abrasive industrial media, thanks to a structure with multiple ultra-hard phases anchored in a tough matrix. Importantly, controlled cooling during manufacture results in dense dispersal and strong orientation of those hard phases. This gives much greater wear resistance compared to conventional weld coatings.

Along with standard CastoTubes, which resist abrasion and erosion up to 500ºC, Castolin Eutectic can supply alternative alloys and base tube compositions on request. These may be needed to cope with high-temperature erosion, for instance.

Tube sections up to a maximum of 3 metres are available. They can be joined by simple welding or mechanical methods. The tubes can be delivered with integral or slip-on flanges, or with other flange joint types or custom connections on request. Within the wide range of internal diameters, the precise wearfacing thickness can be varied to achieve a closely mating joint and avoid turbulent flow.

CastoTubes arrive ready to assemble, with Y-joints and elbows in place if required. Castolin Eutectic fabricates elbows in advance by cutting the tubes into wedges and reassembling them according to the customer's specified pipework geometry.

Final production

Castolin Eutectic also offers a range of wear-resistant solutions for various equipment involved in forming concrete into the required shapes for construction.

A good example is in the extruder elements for hollow-core slab production. As well as increasing the service life of the forming sleeves by up to eight times, Castolin Eutectic's technology maintains their original geometry. Any shrinkage of these sleeves through wear decreases the size of the air cavity, which increases the amount of concrete used and the weight of the final product.

Other Castolin Eutectic solutions can be found in concrete spreaders. These extend component service life by four to six times compared to 400HB steel in floor spreading equipment and by two to three times compared to CrC hard alloys in auger-type applications. In the case of drawer table plates, Castolin Eutectic can double or quadruple service life compared to heat-treated steel components.

Whatever the wear-related challenge in concrete mixing, transport or final production, Castolin Eutectic has the answer. A network of 700 technicians and specialists is ready to provide on-site wear detection, analysis and advice, before recommending the ideal solution. Repairs and wear protection can be applied either at the customer's own site or in Castolin Eutectic's specialized workshops.

How to guarantee the maintenance of the cement production flow in 5 points?

By: STANDARD INDUSTRIE, France

Cement manufacturers can use several methods to prevent and eliminate material build-up and improve their flow throughout the cement production process.

Standard Industrie International, a specialist in handling and cleaning equipment for the bulk industry, has been working with major cement groups on this issue for many years. The experts of this French company, which has an international presence, explain here how accumulations and blockages can be treated in different areas of the cement plant, thus improving productivity and plant safety.

1. Eliminate accumulations in the preheating tower and the snowman effect in the clinker cooler.

These problems are frequent and must be avoided to guarantee a stable and regular clinker production.

In this context, Standard Industrie International provides its customers with a complete range of AIRCHOC® air cannons. This includes both preheating towers and coolers. The AIRCHOC® head design is made of cast steel with an iridescent zinc coating specially dedicated to resist high temperature environments.

A sequenced air blaster firing schedule will guarantee the elimination of clogging risks and ensure constant production without stoppages.

AIRCHOC air cannons on smoke box in cement plant

CUCTOMER CASE: LOMA NEGRA, Zapala plant (part of the Brazilian group INTERCEMENT) in Argentina

This cement plant equipped its tower of preheating with 11 AIRCHOC® air cannons in order to eliminate the concretions and to avoid the manual ringing.

They will be installed in the riser duct during the next kiln shutdown programed in August 2022 in addition to the 18 AIRCHOC® acquired (12 air cannons in July 2018 and 6 air cannons in May 2019) installed in the kiln inlet, smoke chamber and cylcones. This site, which has a 760 t/d 1970 KHD production furnace, uses 80% gas and 20% fuel oil. The AIRCHOC® air cannons are very effective on this type of installation.

2. Avoid the accumulation of material in the smoke box and avoid the slowing down of the gas speed.

This area is key and keeping it free of build-up facilitates gas circulation. Here is an example of an installation of 5 MACSYS® in wireless version.

The MACSYS® is a specific type of air cannon which has several heads connected to the same tank. For this application, all twenty heads are equipped with anti-vibration compensating sleeves. Each sleeve is then connected to the smoke box by a network of tubes. At the end of each fixed tube termination are deflectors, each with its own particularities depending on the cleaning job required.

Jérémie FRELIEZ, Head of the design office at Standard Industrie International, comments on the particularities of this installation:

“The objective is to easily reach the corners to improve cleaning by positioning five MACSYS® on four different levels. The wireless solution has enabled us to make significant savings on the cost of cables and cable trays.

It takes an average of 2 to 3 minutes to fill the two hundred liter tank at six bar, which allows for short firing rates. The direct result is an improvement in the quality of the cement as well as the production rate. Following this installation and its efficiency, the customer also equipped the cooler.

The MACSYS® Wireless is driven by the same control panel which allows to manage up to one hundred and twenty-eight AIRCHOC® air cannons.”

3. Prevent concretions in material storage silos.

Clogging of material in silos results in a loss of productivity but also an increased risk for maintenance personnel. In addition, if a blockage breaks loose, it can cause damage by falling out. The production flow can be interrupted.

AIRCHOC® air cannons are installed on silos to stop existing blockages, to prevent new ones from forming and, consequently, to reduce or eliminate cleaning interventions. This is particularly the case for limestone, pozzolan, clay and lime hoppers, and at the end of the process for clinker, cement and ash recovery silos.

MACSYS 4 heads + flexible tubes

4. Limit the risks of fouling related to the use of alternative fuels throughout the cement production process.

Today, the vast majority of cement plants have increased the use of alternative fuels, biomass and various wastes to feed their kilns. The cost of these fuels, which are cheaper than the “raw materials”, their abundance on the local market, the reduction of CO_2 emissions, the preservation of resources, and the high thermal efficiency of these fuels, have made fossil fuels obsolete.

Today, the use of alternative fuels has pushed Standard Industrie to adapt and offer different air cannon systems to solve these new clogging problems. Standard Industrie provides a technical response adapted to the evolution of technologies. Burning only coal or burning various alternative fuels are very different processes.

Benoît PLUCHON, Export Sales Manager at Standard Industrie International, shares his experience:

“Our experts have observed over the past 15 years that the use of alternative fuels changes the nature of fouling. Indeed, the sulfur content is generally higher than before, when his customers burned 100% fossil fuels. We studied the process stability and operation of the cement kiln, including the build-up of material in the cyclones or other areas of the process, and concluded that the usual clogs are stickier and stronger with the use of alternative fuels.”

In order to maintain the efficiency of the air cannon installation and to avoid producing “Christmas tree installations” (a large quantity of cannons installed in the preheating tower), Standard Industrie optimized the efficiency of its air cannon to have more impact on clogging.

David FREGEZ, Product Manager at Standard Industrie International for over 15 years, explains:

“For more than 5 years now, Standard Industrie has been suggesting to its customers to change their mind about the size of mechanical devices. Previously, for a process that burns a very large majority of fossil fuels, the technical study and the offer were proposed with an AIRCHOC® with an outlet diameter of 100mm (4”). In making a comparison, we found that using such a diameter was less effective when our customers were using a mix of fossil and alternative fuels. The impact force generated was not sufficient and the increased firing sequence was not really effective over time. Moreover, it involved additional maintenance with additional costs and loss of valuable time. The gradual switch to 150mm (6”) heads are known to be very effective and economical.”

5. Clean the cement storage silos

Cement storage in large concrete silos is not immune to clogging. Some plants choose to install cleaning systems such as AIRCHOC® air cannons and others choose to manually clean their silos periodically, when the extractions are blocked and the product is stuck on the walls.

Cyril PARISOT, Manager of the “Cleaning Services” department at Standard Industrie International, explains:

“Different methods exist, such as fluidization nozzles, vibrators, rope access or explosions, but these are not the most effective or safest solutions.

The GIRONET, on the other hand, is the safest cleaning solution on the market to obtain a very satisfactory result. It is a machine that must be positioned on top of the silo. An articulated arm slides inside and the motor, controlled from the outside, drives a series of tools to clean the entire storage unit. Customers who choose this method regain near original storage capacity.

Standard Industrie International’s intervention team restores the full capacity of the silo without human intervention inside, and what is important is that this eliminates any risk of accident. The GIRONET exists in an ATEX version, but apart from this latest evolution, it is the equipment that has undergone the fewest changes in our company, as it has proven itself after numerous performances. Our teams intervene 10 months of the year for the maintenance of the storage units or to troubleshoot in case of complete blockage”.

CUSTOMER CASE: CALCIA Beaucaire in France

Because of humidity, the cement silo clogged and created a bridge, so extraction was no longer possible. Only an intervention of STANDARD INDUSTRIE Team made the silo operational and safe, without operators in the silo.

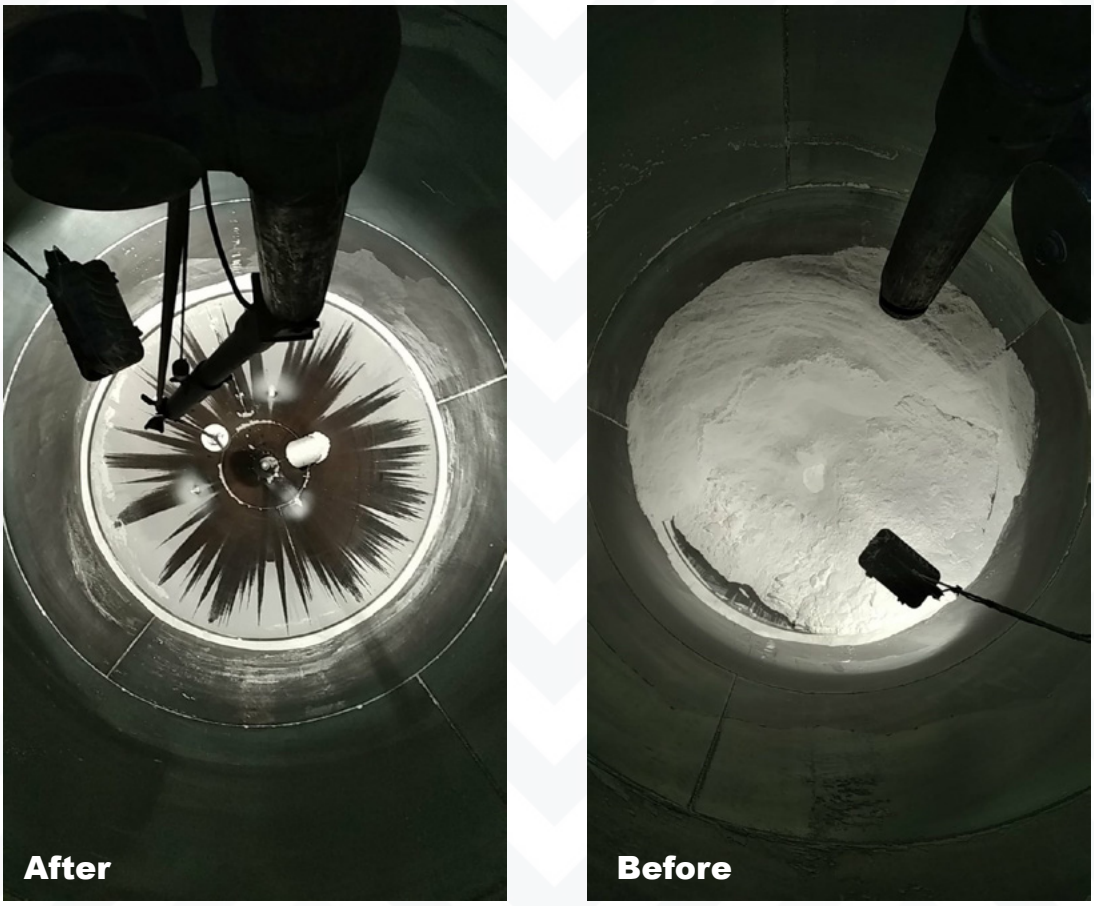
How does this type of intervention work?

In case the plant faces reduced collection capacity, the use of the pneumatic GIRONET, proposed by Standard Industrie International, will help to clean the silos and allow to get the whole storage capacity back.

The articulated arm of the GIRONET which rotates at 360° eliminates the rat holing problems. This solution meets stringent safety standards: It avoids having any human presence inside silos. The GIRONET intervention will enable to increase the capacity of collection in order to avoid supply disruptions. The GIRONET is effective on any type of blockage, product or storage unit. It can be used without stopping production.

Also, declogging with the POWERNET will solve bridging problems through safe breaking down of the clogged material to help it flow more freely. The POWERNET is used before the GIRONET when the storage unit is completely blocked. Idea of the POWERNET is to create a chimney through which the GIRONET will be use to sag down the build-ups.

The environment, safety and profitability are at the heart of every industry; there are many short- and medium-term alternatives on the market. Standard Industrie International, which is deeply involved in the cement industry, has chosen to offer the largest international groups quality products that combine advanced technology with a response adapted to productivity issues.



Silo cleaning

Calcined clays

By: Mark Mutter – JAMCEM Consulting Limited

Introduction

The use of Secondary Cementitious Materials (SCMs) is not new in cement as a route to reduce clinker content – materials such as fly ash, slag, limestone and natural pozzolans have been used in cement manufacture for many years. Calcined clays (which are also a form of synthetic pozzolans) are another method of reducing the clinker content in cement. They have the potential to significantly reduce the CO_2 footprint per tonne of cement by clinker replacement, because the fuel required for the calcination of the clay is much lower than that required to produce clinker as well as a reduction in the CO_2 from the limestone used in the clinker production. In addition to this, the cost of production of calcined clays is lower than that of clinker.

When used in cements, pozzolans are alumino-silicate materials that, when finely divided and in the presence of water, react chemically with calcium hydroxide, which is released upon the hydration of the clinker minerals. Natural pozzolans - which are generally formed because of volcanic activity – have been through a thermal process which results in the reaction to form the reactive alumino-silicates. To produce calcined clays, the material must be heated to a specific temperature for the reaction of the alumino-silicates to occur, giving the clays their pozzolanic properties.

Despite these benefits, the uptake of calcined clay has been relatively slow – in some part because some cement standards did not permit the inclusion of this material in cement and because production of calcined clay normally requires the installation of new equipment which requires capital expenditure. The aim of this article is to cover some of the basic aspects of calcined clay manufacture for cement manufacturers who are considering using this route to reduce their overall CO_2 emissions.

Types of clay

It must be said that not all clay types can be calcined to develop cementitious properties for use in cement. The clay species that are suitable for calcined clay production are kaolinite, illite and montmorillonite. As shown in figure 1, the optimum temperature range for the calcination (or dihydroxylation) of each clay species is different and therefore it is essential to complete laboratory trials to identify the species present in the clay as well as its' optimum calcination temperature. Figure 1 also shows the recrystallization temperatures for each of the different clay types – this is the temperature range which must be avoided, as once the material recrystallizes, the cementitious properties of the clay are destroyed.

Testing of clays

As mentioned, prior to proceeding to any kind of industrial trial and manufacture of clay, it is necessary to identify the correct calcination trial temperature for the specific material. Initial tests on the material would include the LOI, XRF and XRD, chemical composition, quartz content, moisture and fineness.

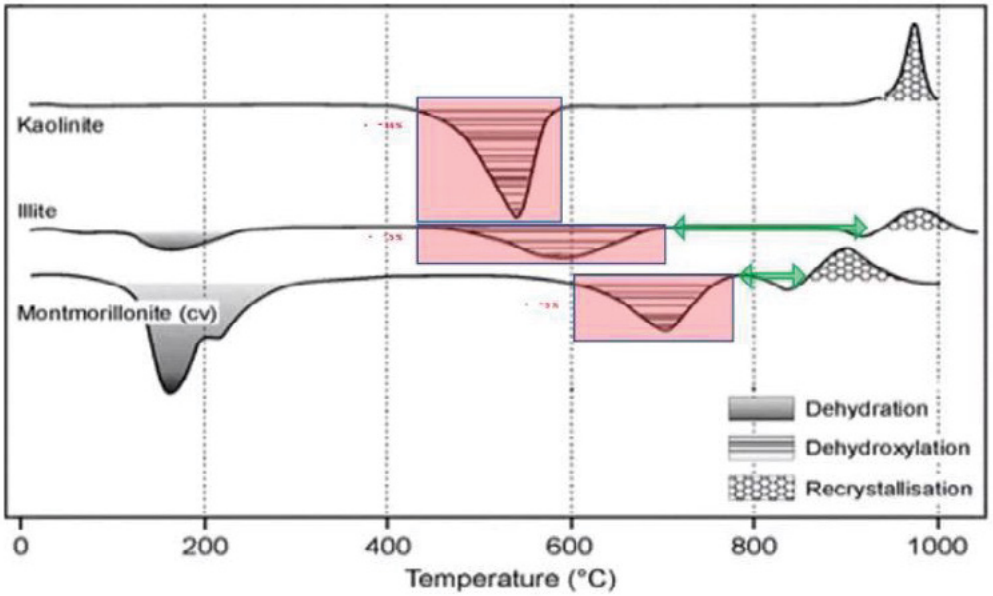


Figure 1: Activation and recrystallization ranges of clay types

Once the chemical and physical evaluation of the clay has been completed, trials are undertaken to assess the correct temperature range for the calcination of the clay. This is normally completed by specialist companies who will calcine the clay in muffle furnaces at various temperatures and for different durations. The product from these tests can then be tested via two main methods – the Strength Activity Index (SAI) test and the modified Chapelle test, as follows:

- Strength Activity Index – the purpose of this test is to assess how well a blended cement of clinker and calcined clay compares to an OPC made of just clinker and gypsum. The ratio of the strengths gives the strength activity index – so if the trial mix has a 28-day strength 10% higher than the OPC cement, the strength activity index would be 110. The mix in that is used in the test is always 75% clinker and 25% SCM (excluding gypsum content).

- Modified Chapelle Test – this test measures the reacted quantity of calcium hydroxide with the calcined clay and acts as a guide to the pozzolanic properties of the clay i.e., the more calcium hydroxide reacted with the calcined clay, the higher the pozzolanic properties.

The issue with both tests is the time that they take. Clearly the SAI relies on 28-day strength testing and even the modified Chapelle test requires 16 hours to be completed. However, despite this, these tests are critical in gaining the required knowledge relating to the ideal temperature range for calcination as well as the maximum temperature above which the cementitious properties will be destroyed. Other tests are available but take longer than the modified Chapelle test.

Technologies in use

There are two leading technologies currently being used for the manufacture of calcined clay - the flash calciner and the long dry kiln. In general terms, the use of a flash calciner would be the preference for a new installation. The long dry rotary kiln method is more suited to when there are existing, unused assets available that can be converted to the production of calcined clay.

The flash calciner is similar to the precalciner used in clinker plant, although in this case there is a separate combustion chamber for the fuel prior to the hot gases being used for the calcination. The use of the combustion chamber allows for tight temperature control in the calciner; the exit gases can also be used for clay drying in the selected mill for clay size reduction. The combustion chamber could be with either a simple hot gas generator for conventional fuels or a fluid bed system for biomass or alternative fuels. Currently available systems are sized for up to 1000tpd.

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The use of an existing pyro-processing system offers a quicker route to market and also means that that the drying and calcining can be done in the kiln as opposed to separate pieces of equipment. The main challenge with using an existing kiln – for example a long dry kiln – is being able to control the calcination temperature such that the material is calcined without exceeding the deactivation temperature. As the heat required is less than for clinker production, the burner will have to operate at a lower flowrate which may make the flame unstable. In addition, higher flame temperatures are not required and therefore a higher secondary air volume is required to cool the flame which could again lead to a more unstable flame or even the flame detaching from the burner – particularly a problem when using natural gas and electrostatic precipitators. One possible solution would be using water in the flame to reduce flame temperature.

The other issue with industrial trials on existing equipment is the time that it takes to evaluate the material that is produced i.e., the modified Chapelle test taking 16 hours to deliver results and the quantity of material that is produced between sample preparation and results. On small systems this could be less than 100 tonnes but on larger systems this could be 100s of tonnes of material. Like with any trial, there needs to be frequent testing and very detailed data-logging so that the quality of product from the trial can be associated with the operating condition at the time.

Quality and standards

Clearly the aim of producing calcined clay is for the cement to perform as closely as possible to a conventional cement at a certain addition rate. There is no reason to target low levels of addition to cement – for example 10% - as limestone could just as easily do the same job with no CO_2 creation and at a lower cost.

For a calcined clay/clinker blend to be seriously considered, the strength activity index would have to be at least above 85; below 75 would suggest that the effect is worse than simple dilution of the cement with a material that has no cementitious properties. Some calcined clay/clinker blends have resulted in strength activity index results of over 100 and up to 120, which means that not only is the environmental impact gained but a better final cement is produced compared to a conventional OPC.

Some concerns have been raised about the colour of the cement produced from calcined clays – with the clays often having a red appearance as raw materials and therefore producing a material that is reddish-brown compared to the grey colour of clinker-based cements. However, equipment suppliers have developed various methods to control or modify the colour of the final product – either by water quenching the product, using a reducing atmosphere or by using inorganic colour modifiers.

As mentioned in the introduction, the inclusion of calcined clays in cement has been hindered due to the prescriptive nature of the cement standards, which are very often composition-based standards. However, in the EU the standards have recently been expanded to create a new category of cements – CEM II C-M Composite Cement Standard, which allows up to 50% calcined clay with 50% clinker (excluding gypsum content). As many countries around the world mirror the EU standards, it can be expected that this new classification will be adapted elsewhere in the world.

Conclusion

Calcined clays offer one of the few currently available routes to the reduction of CO_2 emissions from the cement industry that can be relatively quickly implemented. As described in this article, there are clear steps to identify the type of clay, its calcination temperature range and how well it will perform in a cement.

One of the major barriers to the use of calcined clay i.e., the cement standards, has now been removed with the introduction of CEM II C-M and therefore we would expect more and more manufacturers to include calcined clay as part of their strategy for CO_2 reduction.

The Multifill BE-25 gross bagging scale; the universal talent

The Multifill BE-25 gross bagging scale is a modular system for different packaging materials and different products. All types of open/valved bags as well as buckets and cartons can be filled with the Multifill BE25. Different products with different flow properties can be fed by different dosing systems, such as dosing flap, dosing screw or vibrating chute.

The interchangeable nozzle system allows different filling nozzles to be mounted on the scale for filling open-mouth or valve bags. The bayonet quick-change flange as well as the corresponding pneumatic and electric couplings allow a quick and easy nozzle change.

The scale is easy and simple to clean due to the simple and adaptable design of the systems. This is particularly important for products that must not be mixed or that require reliable cleaning for hygienic reasons.

Basic principle Multifill BE-25 gross weigher

- Basic frame (same for valve and open-mouth bag spouts).
- Compact control with touch panel
- Highest possible accuracy according to calibration law
- Capacities up to 160 bags / hour
- Pneumatic bag clamp
- Different dosing systems such as rotary flap inlet for free flowing products, screw inlet for powdery products, vibratory trough inlet for lumpy products
- Interchangeable spouts for mounting the different bag spouts
- Dust extraction system

Optional components

- Bag inflator
- Adjustable bag chair with and without compressor
- Wheel set for mobile use
- Integrated or side-mounted sealing system with two sealing bars and sealing regulator
- Bag conveyor belt with height adjustable sewing machine for bag closing

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Safe and clean bagging of ultra-light powders in FIBCs

The VeloVac-XL vacuum system from Greif-Velox offers virtually dust-free and compact bagging of ultra-light powders thanks to an innovative technology: a completely closed vacuum chamber.

Until now, ultra-light powders such as carbon black or pyrogenic silica were particularly difficult to bag safely and compactly in FIBCs (”BigBags”) due to their nature. Maschinenfabrik Greif-Velox now offers a unique solution with the vacuum technology of the VeloVac XL: It ensures clean, fast and compact bagging, which minimises logistics and transport costs as well as product loss and increases work safety. At the same time, the use of the larger containers ensures economic and ecological advantages.

Innovative vacuum technology

The VeloVac-XL vacuum system from Greif-Velox offers virtually dust-free and compact bagging of ultra-light powders thanks to an innovative technology: The powders with particle sizes of less than 200 micrometres and a bulk density of 10 to 450 grams per litre are filled in a completely closed vacuum chamber. In contrast to pump packer systems, an atmospheric vacuum is generated in this chamber, which sucks the product directly into the FIBC without any losses. Any dust that escapes is automatically extracted and fed directly back into the bagging process.

Work safety, storage and logistics costs

Thanks to this particularly low-dust and clean bagging process, users save high costs for the often very costly cleaning of the plant environment. At the same time, employees are effectively protected from toxic or carcinogenic dust. Due to the up to 400 percent compaction of the bags compared to conventional pump packer systems, three quarters of the costs for storage and logistics are saved.

Cost and time savings

Time and costs can also be minimised by using FIBCs: Compared to bagging in 7.5-kilogram valve bags, users can fill up to 66 times the quantity into an FIBC at once with the gripper Velox VeloVac XL. For end customers, handling also becomes easier and more efficient: Larger bags can be processed and emptied more quickly; in addition, the cost savings for the packaging material are up to 30 percent. In addition, the VeloVac XL is characterised by its high performance: Four to ten FIBCs can be filled per hour, depending on the design of the product infeed and the product properties - in all desired bag sizes with a filling weight of up to 500 kilograms.

Automation levels

The modular design of the VeloVac XL is also flexible, depending on customer requirements: various automation levels are available. With the first, manual level, the chamber can be reached via a mobile lifting platform; the highest automation level as Full-Line guarantees fully automatic handling. Only the hooking in and closing of the FIBC has to be carried out by an operator, so that less than a third of an FTE (full-time equivalent) is required for the same output quantity compared to the manual variant.

Electromobility and renewable energies

The particularly efficient bagging of ultra-light powders by the VeloVac XL from Greif-Velox also significantly advances two important future industries: electromobility and the field of renewable energies. This is because high-quality carbon black (industrial carbon black) is an important component of lithium-ion batteries and other electricity storage applications. Pyrogenic silicon dioxide, also known as fumed silica, is an important material for the construction and expansion of powerful wind turbines, for example.

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Stable two meter high big bags with a filler and shaker station in one

Jansen&Heuning made a smart modification to an existing big bag filling station, thus creating fully filled, stable big bags of 2 meters high.

Most big bags are slightly over meters high. But how do you ensure a good big bag filling process and stable big bags when they are almost 2 metres high? With this question, HSR Packaging from Ede (NL) came to Jansen&Heuning. We started working on a smart modification of the existing big bag filling station: a big bag fill- and shake station in one.

The problem: unstable, poorly filled big bags

The big bags at HSR Verpakkingen are almost 2 meters high and are filled with various recycling products. The client noticed that big bags could not be filled fully with the old big bag filling station, because the contents were loosely added to the big bags. In addition, they noticed that the filled big bags did not stand very stable on the pallets, which is necessary with big bags of almost 2 meters high.

The solution: bigbag shaking and filling station in one

Jansen&Heuning designed a modification of the existing big bag filling stations by adding a big bag shaking system. This filling and shaking station lifts the big bags during the filling process and then drops them back down. This way, the recycling products are constantly being pushed down, allowing more space for more filling.

The result

- Each big bag can now fit 40 kg more material;
- Big bags are more stable on the pallets, making them safer to transport.

“Very satisfied with the solution of Jansen&Heuning”

HSR Verpakkingen is very satisfied with the new installation. “We use the big bag shaker every day. The system is easy to use and very low-maintenance. Thanks to the adjustments in the filling station, we now use 2-metre high big bags that fit exactly into a container. Thanks to the shaker system, 40 kg more content fits into big bags, and we have achieved an optimal filling process.”

“In addition, big bags are now a lot more stable than before and they stay nicely on a pallet, even though they are almost 2 meters high. We are very satisfied with this smart solution from Jansen&Heuning.”

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Which bulk material conveyor for which situation?

Chain and screw conveyors versus belt conveyors. Sinfimasa manufactures chain and screw conveyors specifically for each customer and project.

There are several alternatives for conveying bulk materials. The most important of these are screw conveyors, belt conveyors and chain conveyors. Conveyors for bulk material should always be tailored to the situation: the movement path and the characteristics of the specific bulk material. Which type of conveyor is best for each situation?

At Sinfimasa, we always say that the most important factor determining the choice of conveyor type is the product to be transported. Before the engineer defines the system, the properties of the product and conditions must be characterised. To mention are: the bulk density, grain size, abrasiveness, corrosivity, the temperature at which it will be transported, the power required, the degree of clumping, hygroscopicity, etc... Depending on the product and the configuration of the process or plant, one device will be better than another, although in many cases several types can be used.

Chain and screw conveyors versus belt conveyors

The main advantage of chain and screw conveyors is that they can be fully enclosed, in a hermetically sealable casing or tube. This prevents exposure of the bulk material to the open environment, and avoids contamination of the surroundings. Moving parts are also shielded, reducing the risk of accidents.

Another advantage of chain and screw conveyors over belt conveyors is that they can operate at higher temperatures, as both the chains and the flights are made of steel. With a belt conveyor, the belt is usually made of rubber.

With chain conveyors and screw conveyors, a higher head (60º, sometimes even vertical) can be achieved than with belts. And using a chain conveyor, horizontal and near-vertical transport can be combined.

Furthermore screw conveyors and chain conveyors can be fitted quite easily with multiple discharge openings.

Sinfimasa manufactures chain and screw conveyors specifically for each customer and project. Depending on the needs of the plant and the product to be transported, we study the feasibility of the project thanks to the experience of more than 40 years of designing and manufacturing this equipment.

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Precision move conveyor for precise timing from Dorner

Dorner engineers conveyor systems with precise timing for cobot applications.

In the past, the orders we have received have often called for particularly simple solutions to problems on the one hand and answers to complex challenges on the other.

In this context, the topic of cobots plays an increasingly important role. The market for individual robots that work together with humans will experience enormous growth worldwide by 2030.

Dorner, for example, is developing conveyor systems, such as the Precision Move conveyors for precise timing, for collaborating robots that serve to automate and optimize monotonous tasks.

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4B Nylathane - Next Generation Industrial Elevator Buckets

4B's Nylathane buckets offer the opportunity to replace traditional steel and ductile iron elevator buckets with a similarly durable but lighter weight option

Industrial elevator bucket designs have not changed significantly since the 1950s. However, the introduction of Nylathane, by 4B Group, brings a new technology to the industry. Nylathane is a unique polymer that combines Nylon 6 with an elastomer. It has the durability of nylon with the slick release surfaces associated with polyurethane. This combination makes it ideal for bucket elevators in the cement industry where impact tolerance and discharge efficiency of sticky or powdery products are required to minimize downtime and maintain production efficiency. Prior to its use in elevator buckets, Nylathane has been field proven in even more demanding applications such as track pads for tractors.

Iron or steel elevator buckets can be prone to deformation or breakage due to impact from foreign objects or operational issues. Once deformed their capacity and efficiency is diminished. Deformed elevator buckets pose a risk to further damaging the bucket elevator system as they move through the system. Heavy iron or steel elevator buckets are difficult to manage when being repaired or replaced. Their weight is also a drain on system efficiency due to the amount of energy required to move the heavy bucket assembly. Should a bucket become detached from the elevator belt or chain, it is unforgiving in the collateral damage that it can cause to the system. Some metals in certain applications are prone to become brittle over time. Sticky powders have a tendency to collect in metal elevator buckets, reducing their capacity and clogging vent/drainage holes. Nylathane elevator buckets alleviate these problematic issues.

The characteristic advantages of Nylathane buckets are:

- Up to 75% lighter than steel or iron
- Outstanding wear resistance
- Superior impact strength
- Self-cleaning surfaces
- Static Dissipative (<108 Ohms)
- Non-sparking & non-corroding

The practical advantages of Nylathane buckets are:

- Resists impact and retains original shape while metal buckets deform and lose efficiency
- Reduced weight, thereby reducing overall Amp load
- Lighter buckets means less wear and tear on other components
- Lighter buckets are easier and safer to install and handle
- Lighter weight and better impact absorption means that Nylathane buckets are less likely to pull through the belt or chain than heavier steel buckets
- Compatible with both belt and chain elevators
- Ideal for handling wet or sticky materials
- Static dissipative for use with combustible dust

For bucket elevators conveying sticky products, such as slag, the flexibility and low coefficient of friction of NylathaneTM help prevent product build up and loss in capacity.

In one case study performed by 4B Group in the potash industry, the Nylathane buckets exhibited better impact resistance due to their flexibility than solid abrasion resistant (AR) steel buckets. Deposits of salt based marine evaporate minerals occur naturally throughout the world. These minerals are high in potassium, calcium and magnesium along with other valuable trace elements. Often deep mined, they are used in the agricultural industry and industrial applications. The mineral is very hard, abrasive and hygroscopic making it difficult to handle efficiently. Once mined the mineral is crushed, graded, blended and stored, often utilizing expensive wear resistant steels in the process. Initially the user installed solid abrasion resistant (AR) steel elevator buckets which were expensive, and due to their rigidity and the aggressive hygroscopic nature of the mineral, caused loss of production along with frequent and expensive downtime. Industrial injection moulded nylon elevator buckets were tried and although they improved the discharge of the material from the buckets they wore out in a few months. The Nylathane buckets deformed or flexed rather than exhibiting brittle micro-breaks in the material. 4B Group also added AR steel wear lips to the Nylathane buckets for additional wear resistance, thereby delivering a hybrid elevator bucket with the best characteristics for the application. The 4B engineers devised a best of both worlds scenario by using the unique benefits of Nylathane affording better impact resistance due to flexibility (rather than brittle breaks on a micro level) and self-cleaning properties due to the low coefficient of friction of buckets. This in addition to the abrasion resistant steel wearband, originally developed for the glass cullet industry, gave excellent wear and impact resistance.

The results were:

- Improved tonnage through the plant
- Extended belt life
- Extended bucket life
- Reduction in downtime
- Reduction in planned maintenance
- Savings on electricity costs
- Improved manual handling
- Better health and safety compliance

In another industrial application, moving glass cullet, the replacement of heavy steel buckets with the lighter Nylathane buckets provided a nearly 80% reduction in startup current. Saving both energy and electrical component costs. The installation was also quicker and safer with the lighter Nylathane buckets taking just one day to install compared to the usual three days with the steel.

The customer had been using 3mm to 4mm thick fabricated steel buckets supported by a steel fixing plate fitted with M16 bolts. The total unloaded steel bucket weight was 20kg and they were experiencing belt breakages and long downtime due to the constant repairs and maintenance required on the elevator.

4B replaced the heavy fabricated steel elevator buckets with lighter Nylathane elevator buckets weighing just 3kg. The original steel buckets weighed 3.25 tons in total whereas the Nylathane buckets only weighted 0.48 tons. Weighing nearly 2.8 tons lighter than the original bucket system was a huge improvement. The system was more reliable with fewer breakages and less downtime.

This new Nylathane substitution gave the customer:

- Extended belt life
- Reduction in downtime
- Reduction in planned maintenance
- Savings on electricity costs
- Better health and safety compliance

Nylathane buckets from 4B Group are available in the traditional industrial styles of AA, AC and MF.

bulksolids-portal

Chain conveyors for transport and elevation of solid recovered fuel

Sinfimasa designed three chain conveyors for the transport of SRF. Sectorization of two fire zones was important, so one of the conveyors was equipped with firewall slide gates.

Solid Recovered Fuel (SRF) is a fuel prepared from non-hazardous waste, and used for energy recovery in incineration and co-incineration plants. It consists of small fractions of waste with a high calorific value. This makes it also suitable for use in cement kiln installations.

Our client is a non-hazardous waste valorisation plant, and needed to build a conveying line to deliver different types of SRF into storage boxes after shredding, separation and classification process. The required output was 150 m^3/h.

Transport in 3 steps

To solve this need, Sinfimasa designed three chain conveyors; the first one would transport the SRF at a horizontal distance of about 10m and would elevate it to a height of 8m. The second conveyor is positioned horizontally over a distance of 4.7 m. An important function of this conveyor is to ensure the sectorization of two fire zones, so it was equipped with firewall slide gates.

A third conveyor was designed and manufactured to distribute the fuel between the storage boxes, so it was equipped with three intermediate chutes and a last discharge point that is always open. The length of this chain conveyor is 17 meters.

The first chain was designed with a first horizontal section of 2.5 meters, a curve at an angle of 54° and a distance of 8.2 meters to reach the required height of 8 m, a second curve and a last horizontal section of 2 meters in length.

Reliable and durable

To ensure reliability and reduce maintenance costs the three conveyors were designed and manufactured with double forged chain with a section of 900 mm wide x 550 mm high. For the horizontal conveyors orthogonal geared motors of 2.2 kW were used, and 7.5 kW for the conveyor with lifting function. All motors are equipped with frequency converters to regulate the speed of the equipment according to the bulk density of the material.

Special care for curved sections

Special guides were installed to prevent the chain from lifting in the curved sections, as well as drive and return wheels made of wear-resistant steel. The firewall-type guillotine slides were equipped with a fast pneumatic actuator. The three conveyors were also equipped with rotation and jam detectors to monitor correct operation, as well as different inspection points, registers and inspection windows to facilitate maintenance.

No landfill

The plant currently recovers more than 50,000 tons of waste in this plant, thus avoiding dumping and the associated environmental impacts.

bulksolids-portal

Explosion prevention in new spheres

inside the cockpit of CO.Pilot

The topic of “explosion safety” is omnipresent for plant operators and OEM´s when it comes to handling or transporting combustible dusts.

Despite the widespread assumption that an increased risk of explosion only exists for gases, enormous forces can also be released by explosive dust- / air mixtures.

To help minimise the risk of explosions when handing combustible dusts, it is important to understand the requirements for an explosion and the respective dust safety characteristics, which are described below. The following picture shows the fire triangle and the explosion pentagon which must be taken into account.

The following conditions must exist for an explosion to occur within a production facility or machine.

If any one of the aforementioned prerequisites is eliminated, explosion prevention has intrinsically been practised. However, if this is not possible at all times and in all operating states, explosion hazards will still be present. In this case, it is necessary to divide any potentially explosive atmospheres into zones and systematically apply safety measures.

Drying processes in particular are used in many industries to produce material, for easier storage, more efficient transport and a longer shelf life. However, the combination of moisture extraction and high temperatures creates an increased risk of both, fires and explosions.

If fires and/or explosions occur in drying plants, which are usually very large, the situation is not only extremely dangerous for the machines and the business, but especially for the employees on site.

Operators of spray dryers must combat a particular type of ignition source – namely smouldering nests that can lead to spontaneous combustion if the material undergoes excessive caking. Caking occurs due to sub-optimal drying of the material and its initially high moisture content. The caked material is then insulated against the surrounding air by a build-up of moist material. The high temperatures ensure that the caked material is continuously heated until a biological reaction takes place involving protein, carbohydrate and water – known as the Maillard reaction. The Maillard reaction generates additional heat that cannot be dissipated due to the insulating layer of caked material. This process continues to accelerate until spontaneous combustion finally occurs.

Caking of this kind can build up both on the nozzles and the inner wall of the spray dryers. If the nozzle malfunctions, droplets may fall down into the fluid bed and cause further clumping. If a smouldering nest is able to form, this can ignite the explosive atmosphere inside the dryer or the downstream machinery.

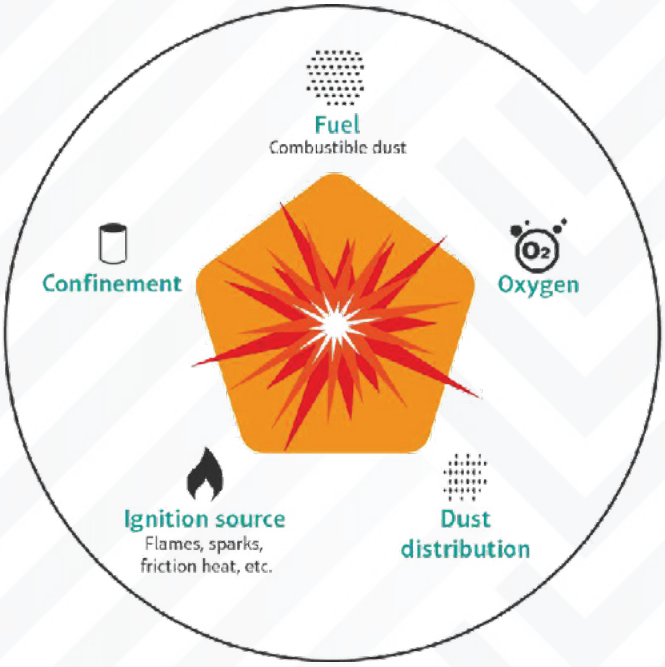
How can such conditions, which are frequently encountered in practice, be prevented?

Everything starts with the human factor, i.e. properly trained personnel for the respective processes. Optimal process control is also required to avoid caking. But without precise and reliable information/measurements, this is virtually impossible, even for specialists. Nowadays, humidity and one of the by-products of spontaneous combustion at early stages – carbon monoxide (CO) – are used as indicators to ensure a smooth and thus safe process. However, the fact that combined measurement systems cannot clearly distinguish between these two indicators is problematic and can result in inaccurate measurements.

The REMBE CO.Pilot makes exactly this symbiosis possible.

Via a permanent comparison of recorded data with a database of stored reference gases that serve as ”fingerprints” of the selected gases, it is possible to perform a one-time check in real time and thus permanently verify the measurement accuracy. At the same time, the real-time fingerprint analysis eliminates the cross-sensitivity to other gases in the measurement spectrum that is common in commercial gas analysers.

To ensure a reliable measurement of the operating status, samples are sucked in from all of the dryer’s relevant supply and exhaust air ducts under very high vacuum. REMBE calculates the delta CO value on the basis of the absolute values measured at the individual measuring points. This value is the mathematical difference between the CO content of the extract air and the CO content of the supply air. Thus, only events that actually occur in the respective process are detected. External factors that may disturb the process can thus be ignored.



A proprietary evaluation algorithm (RFA REMBE Flow Algorithm) enables the measured supply and exhaust air values to be compared in real time. As a result, the REMBE CO.Pilot is the first system on the market that makes it possible to adjust the individual alarm limits and gas run times for the individual measuring points in the dryer’s various air throughputs without any delays. The ratios of the different supply air channels and the flexible operating hours are balanced via the software and calculated accordingly in the PLC.

Thus, if an increased carbon monoxide concentration is detected due to spontaneous combustion during the process, countermeasures can be initiated immediately.

But what does this mean in detail?

This special sampling process eliminates the need for costly and error-prone gas treatment, thus ensuring that the CO.Pilot is less susceptible to faults and requires less maintenance. Furthermore, this measurement method can make recurring calibrations unnecessary. Due to the precise measurement technology and the reproducible results, false alarms and downtimes can also be avoided. And in combination with moisture measurements, the entire drying process can be optimally controlled, significantly increasing the energy efficiency of the system.

bulksolids-portal

Certified detectors for fire prevention at solids

For the detection of sparks and embers as well as for the prevention of fire spreading, T&B electronic presents the detectors suitable for these risks.

In order to prevent fires and explosions in filters, conveyors, silos, coolers, mills, pellet mills or dryers comprehensively and reliably, individually customized solutions are required. Each of the fire risks in the different plant areas can only be controlled with the most suitable detector.

FSM multichannel detector

For plant areas in which both sparks and embers can form, T&B electronic GmbH is presenting its FSM multichannel detector at the trade fair in Dortmund. This detector, certified by VdS Schadenverhütung GmbH, detects both sparks and embers. Previously, a specific detector was required for each.

If this combination detector is used in areas where sparks and embers are present, the cost of installation and maintenance is reduced - with the same functionality and safety.

Hot particles

Plant operators can invest this saving in fire protection for downstream processes into which hot particles can be introduced. The FST-It hot particle detector from T&B electronic is suitable for this purpose, as it can detect even moderately hot foreign bodies in production areas from a temperature of 150°C.

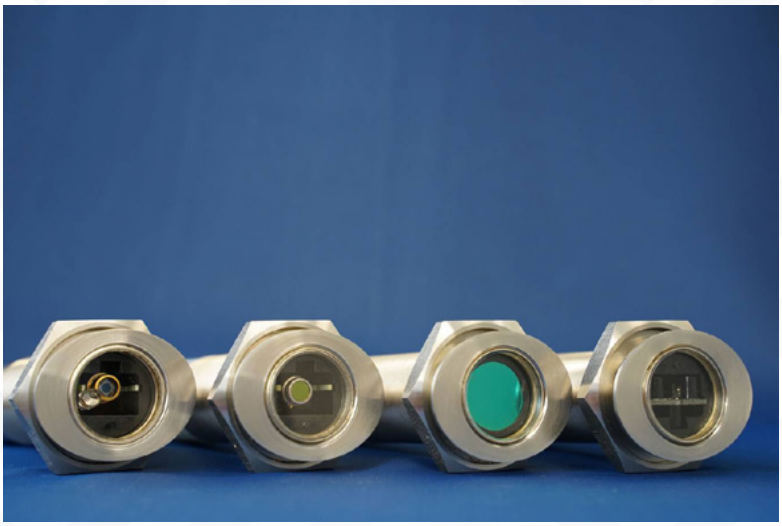
Useful applications are, for example, packaging in pellet production, discharge from coolers or entry into silo systems.

Recycling plants

Another application is in recycling plants: Here, pre-damaged lithium-ion batteries can initially only develop an increased temperature, but can later ignite. This poses the risk of fire spreading, for example from the crusher to downstream production or storage areas. Thanks to early detection of this fire hazard with the FST-It, plant operators can take preventive measures at an early stage.

T&B electronic GmbH will present its detectors and holistic protection concepts for the bulk solids industry at SOLIDS / Recycling-Technik 2023 in hall 7, booth U08.

bulksolids-portal



T&B electronic GmbH offers its customers a portfolio of different detector types – the right one for every process application

Grecon IEM intelligent automatic extinguishing system

The new intelligent automatic extinguishing system GreCon IEM makes existing spark extinguishing systems from Fagus-GreCon even more intelligent and reliable

Sensor technology integrated into the automatic extinguishing system improves the operational safety of the systems through integrated early wear detection.

Automatic early wear detection

The smallest leaks are automatically detected and reported to the control centre. The system operator is proactively informed about the upcoming replacement of wear parts and can systematically plan the replacement. If temperatures approach the freezing point, the integrated temperature monitoring activates the heating cartridge and thus ensures the smooth operation of the system even in outdoor areas. The risk of unplanned downtimes is reduced and system availability increases.

Maintenance based on wear data

Advances in sensor technology also allow maintenance intervals to be individually determined on the basis of wear data. These dynamic maintenance intervals not only extend the maintenance intervals in the context of predictive maintenance, but also increase the service life of the spare parts monitored in this way. In this way, the two goals of ”reduction of unwanted downtimes” and ”optimal utilisation of components”, which until today have often been perceived as conflicting, can be harmonised through powerful sensor technology.

Sustainable use

In order to be able to integrate the more sustainable use of resources associated with the application of dynamic maintenance intervals into the production process even better than before, it is essential that dynamic maintenance intervals are taken into account in the corresponding regulations. This is a topic that will increasingly occupy us in the future.

Preventive solutions by Fagus-GreCon

For more than 40 years, spark extinguishing systems from Fagus-GreCon have been protecting industrial production plants from dust fires and explosions that can cause damage worth millions within a few minutes and threaten livelihoods. In order to protect themselves against this and to avoid production downtimes, production companies from various industries rely on preventive fire protection solutions from Fagus-GreCon.

Increasingly important for productivity increase

The increasing connectivity of preventive fire protection systems and production facilities in the future opens up ever new potential for increasing productivity. By integrating spark extinguishing systems into the structure of complex early warning systems, for example, indications of anomalies in the production process can be provided at an early stage. As a result, measures can be initiated in good time to help prevent production or safety-related malfunctions.

bulksolids-portal

Loading telescopes - loading shuttle truck loader

Loading telescopes from SSB Wägetechnik GmbH for loading dusty or powdery products are equipped with all necessary options.

In order to load bulk materials, such as dusty or powdery products quickly and with low dust on trucks and railroad wagons, our loading telescope offers all necessary options.

User-friendly docking and easy, manual operation by the driver are given here. The product is protected during filling, a significant time saving is achieved during maneuvering and positioning, and waiting times are effectively shortened.

Another advantage of our loading telescope: Vehicles of different heights can be loaded, i.e. it can be adjusted in height and swiveled.

For the loading of railroad wagons or trucks, different versions are available, depending on the product.

bulksolids-portal

Butterfly hoppers: new patented mass flow solution of SCE

Butterfly hoppers are the new patented mass flow solution inside the square silos of SCE. Mass flow avoids a range of problems and wastage of your product.

Storing your product is one thing, but moving it from a silo to a machine process is another. That's where these hoppers come in. They're tailor-made for each product to make sure the transfer runs smoothly.

More and more industries are choosing the SCE butterfly hoppers. Butterfly hoppers are the new patented mass flow solution inside the square silos of SCE.

Hoppers are crucial part of a mass flow silo and thus designed with the greatest care for your product. We will ensure a perfect transfer from the silo to the machine process. Every product requires its own type of hopper, which are always completely tailor-made.

bulksolids-portal

KALDETECT wear protection monitoring

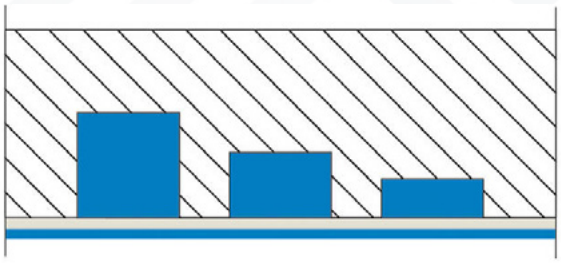
For critical applications, Kalenborn markets systems that indicate the possible wear of protective linings, thereby informing the operator in time to take necessary action.

This applies to pneumatic conveyor systems, for example, where measures must be taken to prevent the release of toxic or environmentally harmful substances.

KALDETECT electrical

The exterior of the wear protection lining is equipped with a low-voltage measuring conductor. If the wear protection layer inside the piping wears through due to abrasion at any point, the conductor will be interrupted there. This triggers an alarm and – in combination with suitable evaluation logic – indicates the affected section of piping or automatically shuts the plant down. Wear protection monitoring is available for all materials and even for combined linings.

KALDETECT electric is a good prerequisite for the smooth replacement of the wear protection lining in green pipes.



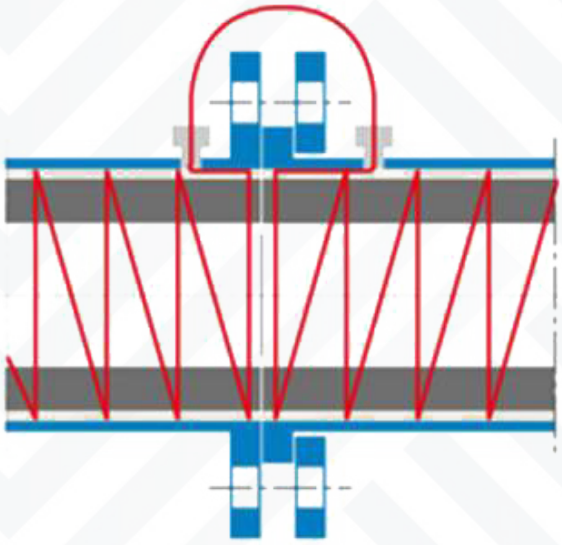
KALDETECT mechanical

Support structure and wear protection lining are fitted with a removable pin installed in a threaded hole. Upon removal, the length of the pin indicates the thickness and condition of the protective lining.

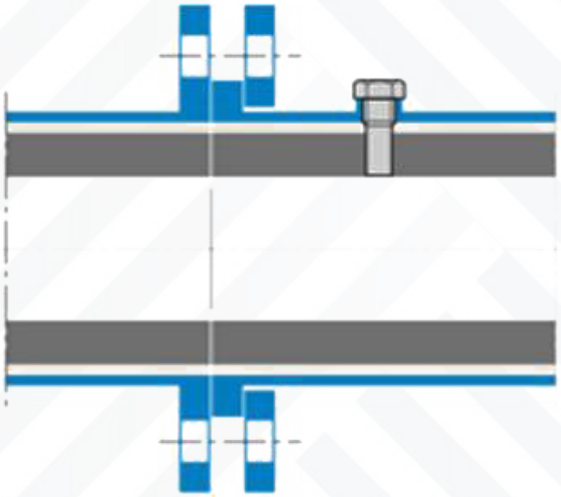
KALDETECT visual ..

..is a wear protection monitoring system for industrial plant components which are lined with either the oxide ceramic KALOCER or the hard compound KALCRET. Indicator stones of different heights are integrated in the lining. With increasing wear, the indicator stones become visible one after the other and provide information about the remaining wear intensity and the condition of the protective lining.

bulksolids-portal



KALDETECT electrical



KALDETECT mechanical

How to effectively protect machinery in quarries from wear and tear

Wear-resistant materials KALMETALL, KALCAST and KALEN have proven to be the ideal solution to protect machinery in quarries from wear and tear.

Wear protection in quarries:

Excavators, loaders and dump trucks are very important machines when working in mines and quarries. Due to their intensive use, they are exposed to high loads, which is why they need to be protected with particularly resistant materials. To effectively protect our customer's machines against abrasion and thus extend their service life, we recommend the use of our wear-resistant materials KALMETALL, KALCAST and KALEN. They have proven to be the ideal solution.

How do you protect loaders in quarries?

Loader buckets in quarries are also exposed to high loads. We have found that the best possible solution for wear protection is to line them with the hard-cast metallic material KALCAST. This material is obtained by melting iron with varying amounts of chromium, nickel and carbon additives. Depending on the various quantities of the alloys, we can pre-determine the optimum balance between impact and wear resistance for the loaders.

Linings to protect dump trucks:

To protect the dump trucks and extend their service life, we decided to use special linings made of welded hard surfacing KALMETALL. In our customer's mines and quarries, however, raw materials are also extracted which stick to the trough of the tippers. For this application, linings with the technical sliding plastic KALEN are used, which ensures the safe material flow of the transported goods without caking

bulksolids-portal

A proven method for protecting excavator buckets:

The metals used in excavators buckets must not only be abrasion-resistant but also withstand heavy impacts. To further protect our customer's equipment, we used KALMETALL liners. We adapted the welded hard surfacing material to be as abrasion-resistant as possible on the one hand and to provide the best impact resistance on the other in order to significantly extend the life of the excavator buckets.

Preventing wear of conveyors for abrasive bulk goods

To prevent abrasive wear, it is necessary to use abrasion-resistant industrial coatings with good resistance to the (hardest and sharpest) particles in the bulk material being transported.

The simplest solution is to apply a hard coating or lining to the surface of the parts of the conveyor in contact with the product. This protective coating should have a greater hardness than the particles causing the wear.

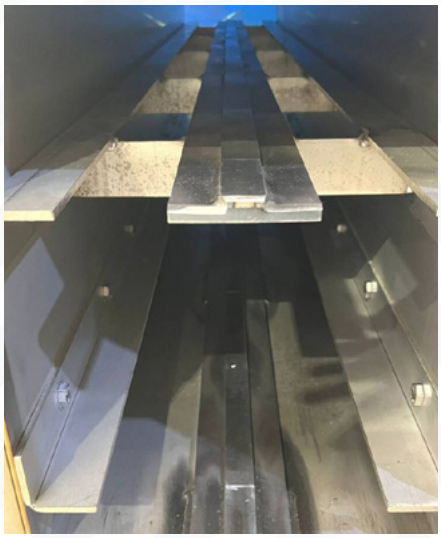
A second possibility is to apply reinforced coatings with a better chemical composition, giving phases greater functionality and more protection. A third possibility is to treat the base metal, making it more resistant.

Wear protection for bucket elevators

For a bucket elevator, the buckets should be reinforced at the edges with an anti-wear steel plate, as this is the area most affected by wear.

Wear protection for screw conveyors

In screw conveyors, on the other hand, the entire spiral and shaft should be made of anti-wear steel. For this purpose an alloyed, hardened and tempered anti-wear steel is used , which is characterised by its resistance to abrasion and impact, as well as its high mechanical strength, good formability and weldability.



Wear protection for chain conveyors

In the case of chain conveyors, the three main points of wear are: 1) the carriers, 2) the central chain or chains that drag the blades, and 3) the structure or body of the conveyor itself, mainly the areas where the chain drags, as well as the bottom where the material is dragged and the sliding parts of the material at the inlet(s) and outlet(s).

bulksolids-portal

Cement mill motor in economic 1-for-3 design

Menzel Elektromotoren supports customers' economical spare parts management by configuring large industrial motors as common parts. The German, family-run company has built a replacement motor for a cement plant in Pakistan that can drive any one of three applications: the raw mill, another cement mill, or a fan. The motors originally installed differ in various features. But most importantly, the available installation space is extremely limited. Therefore, a Menzel engineer visited the site to take all the measurements. The solution was a compact slip ring motor in frame size 710 with the cooling system tailored to fit around a steel girder in the cement plant. To accommodate the existing couplings in two different sizes, Menzel designed the replacement motor with two shaft ends with different diameters. The motor output is configured to ensure efficient continuous operation in each of the three applications. The machine has a rated output of 4600 kW and a rated voltage of 6300 V. It complies with protection class IP55. At the customer's request, it was designed in cooling type IC 666, i.e., with permanent external ventilation of the inner and outer cooling circuit. Before delivery, Menzel ran a load test in its inhouse test field. Although the customer could not be there in person, they attended the load test live via video streaming, which Menzel offers as a standard service.

The custom-made slip ring motor with two shaft ends can replace two different mill motors as well as a fan motor – this saves money and space in spare parts management

About Menzel Elektromotoren

Based in Berlin, Menzel Elektromotoren GmbH has been manufacturing and distributing electric motors since 1927. The medium-sized company specializes in the delivery of large electric motors, including special models, within the shortest possible time. The product range comprises high and low voltage motors, DC motors, transformers, and frequency inverters. Services include motor production and short-term adaptation of stocked motors to application-specific requirements. In order to ensure fast deliveries to the customer at all times, the company maintains a very extensive inventory including more than 20,000 motors with a maximum performance of up to 15,000 kW. Qualified engineering, experienced staff, and state-of-the-art production and testing facilities help Menzel provide excellent reliability. Menzel operates subsidiaries in the UK, France, Italy, Spain, and Sweden, and cooperates with numerous partners worldwide.

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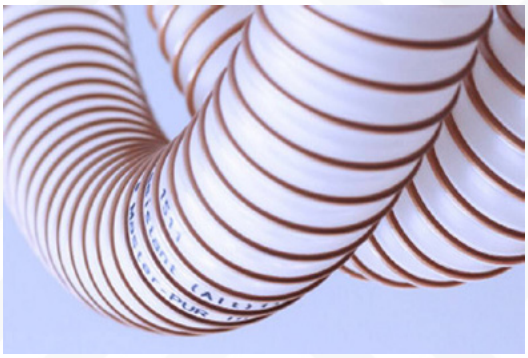
Masterflex: Strong duo helps save costs and time

The Master-PUR inline and Master-PUR performance shine when transporting abrasive materials. With absolutely smooth and seamless inner wall, these Masterflex hoses ensure optimum conveying performance.

Masterflex hoses for optimum conveying performance

The ”strong guys”, as we also call these hose products, shine above all in industrial applications where abrasive materials are transported. There, the demands on a resilient hose are very high. With their absolutely smooth and seamless inner wall, these Masterflex hoses ensure optimum conveying performance and reduce the energy consumption of applications in parallel.



Customer satisfaction as a driver

The objectives for the two hose types were already clearly defined during development. The quality must be right, flexibility and abrasion resistance are a must.

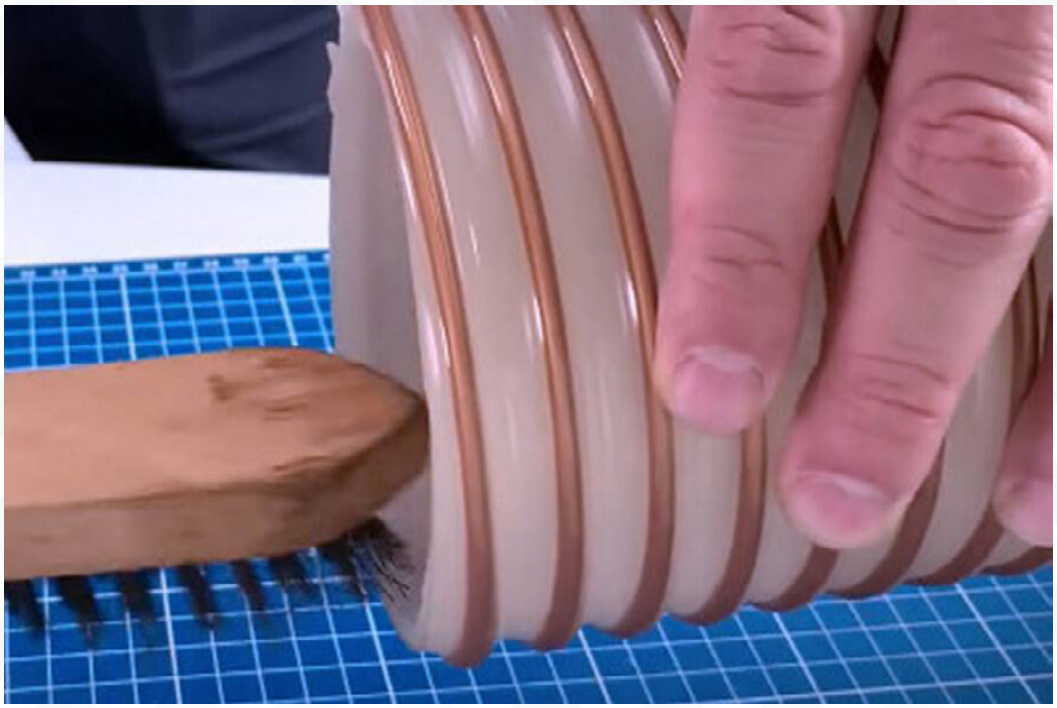
Our question was: How can our hose be better than others? - Through its properties. Because when many good properties are combined, a hose becomes a superior product. Only a high-quality hose proves itself in use and thus leads to long-term customer satisfaction.

So spread our message: Be successful in the long term with Master-PUR Inline and Master-PUR Performance hoses, save costs and time and gain safety.

Optimal production process

Do you also want to finally have time for the important things again? This powerful duo fulfils all the added values that are important for an optimal production process. Find out all about it and take a look at the benefits.

bulksolids-portal



Eliminate product loss & residue during discharge

Eliminate products loss & residue in horizontal mixers by switching from center bottom discharge valves to bomb bay door type discharge valves.

Since 1954 PerMix has been leading the industry with our engineering, innovation, performance & quality.

When we talk about product loss and residue, this is an issue everyone faces that is using a horizontal mixer. To minimize this PerMix already created a discharge valve that is offset at a 15* angle, which is as the center slope of the powder. This gives PerMix an advantage over others as we are the ONLY manufacturer offering this offset. The reason for this offset is because in a mixer, with the rotation of the agitation, the powders create a slope inside the mixer, if you were to stop the agitation you would see this. Where everyone else puts the valve in the center of the mixer, we put it in the center of the slope of the powder.

The other thing PerMix does to eliminate this product loss & residue even more is to offer a bomb bay type door on ALL horizontal mixers. The bomb bay type door extend the length of the bottom of the mixer and eliminate product loss & residue all together. In addition it reduces the discharge time significantly which reduces the batch time, increasing production when multiple batches are done per day.

bulksolids-portal

Single-walled suction probe with convenient regulation of intake air

Siloanlagen Achberg has designed a user-friendly and powerful suction probe with gradual regulation of the suction air, to ensure the proper solids to air ratio for pneumatic conveying.

To expand the market-renowned suction probe range, Siloanlagen Achberg has designed a user-friendly and powerful suction probe with gradual regulation of the suction air.

As is generally known, suction conveying begins when the bulk material enters the material line. Here it is important that the ratio of bulk material and conveying air can be optimally adjusted. ”The single-walled suction probe with the designation SGL.1B was designed precisely for this purpose,” says the manufacturer. Another advantage: the lance is a cost-effective alternative to the double-walled suction probe. The focus is on the sliding sleeve, which is easy to lock in place by means of a locking bolt. With a total of 6 graduations, the conveying air can be optimally adjusted and documented for the respective application. In practice, it has been shown that even larger throughputs of plastic granulate can be realised reliably, especially for small to medium distances.

Achberg manufactures an extensive range of suction probes. These have one common feature: the cathedral-like suction openings, which allow the bulk material to be sucked in efficiently and evenly. This technically mature and robust solution makes welded-on and cost-intensive spacer bars superfluous. All suction probes from the southern German manufacturer are made exclusively of stainless steel.

bulksolids-portal

Achberg develops new user interface for silo control

Silo control in the plastics industry: Achberg has developed a new interface for user-friendly operation and monitoring of silo systems.

A silo system is controlled and monitored via control components housed in a switch cabinet. The user interfaces developed specifically for this purpose by the south German manufacturer clearly depict the components built in to the silo systems. The navigation guides the user through the sub-menus in an intuitive and user-friendly manner, similar to an app.

The main tasks the user interface offers include viewing filling levels, operating system components and the registration of parameters as well as information regarding the bulk solids. The filling level indicator continuously and/or intermittently displays measured filling levels, maximum filling levels and components signals in real time via high-quality touch panels, which are available in different sizes. The user interface can also be accessed in the company network via a web client that works on all mainstream web browsers.

The standardised user interface is pre-configured by the factory for the silo system in question. Important configurations and settings are user-controlled via an administrator password. Relevant areas can be defined for each user through specific users and hierarchical user levels. The user interface therefore acts as an extension to the hardware-based control unit and helps users to control and monitor the silo system.

bulksolids-portal

Younexa launches DIMENSION

A new era of ceramic innovation is on show in Younexa's new exhibition space in Vall d'Alba.

Younexa, a pioneer in the development of ceramic materials, presents DIMENSION, a new line of products that combines relief and texture to achieve different ceramic pieces with a natural finish. By fusing technical precision with artistic expression, DIMENSION opens up a world of possibilities for ceramic manufacturers.

DIMENSION represents an evolution in ceramic design. Unlike traditional methods that require pressing the support, Younexa's specialized materials provide relief to ceramic pieces with a remarkable 3D effect. These products not only add volume and texture but also synchronize relief with ceramic design.

The success of DIMENSION is achieved through three effects from the NexaEffects family: Deeper, Frame and Glue + Grit.

Deeper allows to create precise micro-reliefs with high performance without interfering with color inks. Frame, available in white and transparent variations, replicates natural structures, adding richness and detail to ceramic pieces. Glue + Grit offers pronounced reliefs before digital decoration to replicate natural stones and providing greater volume on the ceramic support.

Younexa is committed to ceramic innovation and DIMENSION emerges as a new product line that perfectly integrates relief and texture. The extraordinary results are on show in Younexa's new exhibition space in Vall d'Alba, where several ceramic pieces with a natural finish can be observed and where Younexa's team of experts is at disposal to describe the technical possibilities and benefits of this new product line.

Cement

The Green Cement Conference – Unlocking data driven net zero transition

10-12 July 2023

Grand Hyatt Athens, Greece

Website a3cement

Website cembrgroup

Congress and Exhibition Cement Central Asia: construction and modernisation of plants

Tashkent, Uzbekistan

5-6 September 2023

For more information, please contact:

Ms. **Yulia Torba, Project Producer**

Tel: +44 207 3943090

Email

Website

7th Latin American Drymix Mortar Conference and Industry Showcase ladmmc7

Espaço Escandinavo
São Paulo, Brazil

7 August 2023

Email

Drymix

INTERCEM 2023

Istanbul, Türkiye

5-7 September 2023

Tel: +44 20 8669 5222

Email

Website

CEMENTTECH 2023 The 24th China International Cement Industry Exhibition

Chongqing International Expo Center, China

For more information, please contact:

Ms. Joanna Long

Tel.: +86-10-88083329

23-25 August 2023

Email

Website

10th International Cement Industry & Technologies Conference

Marriott Pendik Hotel
Istanbul, Türkiye

For more information, please contact:

Ms. Neşe Atıcı, General Manager

IMC Organization

Tel.: +90 216 641 20 76 -77
Fax: +90 216 6412077
Mobile: +90 538 6373004

7 September 2023

Email

Website

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THE GREEN CEMENT CONFERENCE

UNLOCKING DATA DRIVEN NET ZERO TRANSITION

10 - 12 July 2023 | Grand Hyatt Athens, Greece

INDUSTRY ADVISOR

CBA

cembrgroup.com | a3cement.com

Cementtech

The 24th China International Cement Industry Exhibition

CEMENTTECH 2023

August 23-25,2023

Chongqing International Expo Center, China.

Organizer:

China Building Materials

China Cement Association

CCPIT Building Materials Sub Council

Contact Information:

Joanna Long

Tel: +86-10-88083329

Joannalong@ccpitbm.org;

WWW.CEMENTTECH.ORG

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Training Programme 2023 & 2024

Online Seminars

Firing Alternative Fuels: Opportunities, Impacts on Process, Optimisation and Limitations
18 - 21 September 2023
8 - 11 April 2024
16 - 19 September 2024

Durability of Concrete
4 June 2024

In-class Training

Crash Course for Young Engineers and Scientists
13 - 17 November 2023

Crash Course Process Control
19 - 21 February 2024

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training@vdz-online.de

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40476 Duesseldorf
Germany

6th Virtual Global Concrete - global concrete business

Your device

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

12 September 2023

10:00 → 16:00 CET
Central European Time
Berlin, Paris, Rome

Register

Email

Website

1st Global ConChems Conference & Exhibition on construction chemicals

Brussels, Belgium

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

11-12 October 2023

Email

Website

16th Global CemFuels Conference & Exhibition Alternative Fuels for Cement and Lime

Istanbul, Türkiye

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

20-21 September 2023

Email

Website

The 16th annual Drymix (MEDMA) Conference

Drymix Mortar in the Middle East Conference

Sharjah, UAE

11 October 2023

Email

Website

Cemtech Europe 2023: Decarbonising the cement industry

Manufacturing excellence and the circular economy

Conrad Hotel, Istanbul, Türkiye

8-11 October 2023

Email

Website

The 7th India Drymix Mortar Conference and Industry Showcase

Mumbai, India

17 October 2023

Email

Website

INTERNATIONAL CEMENT CONFERENCE

Cemtech — EUROPE 2023

PRODUCTION EXPERTISE - MANAGEMENT SKILLS

Decarbonising the cement industry

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8-11 October 2023

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www.Cemtech.com/Europe2023

25 ANNIVERSARY

XXV INTERNATIONAL CONSTRUCTION FORUM

CEMENT · CONCRETE DRY MIXTURES

OCTOBER 18 - 20, 2023. EXPOCENTRE, MOSCOW.

CEMENT · CONCRETE DRY MIXTURES

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

ConTech International Conference
«Concrete Technologies: Chemistry, Production, Precast»

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

More than 6000 exhibition visitors

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80 reports

18 countries

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organizers

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venue

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

Real-world events in 2023-24 from:

global cement MAGAZINE

Details and registration

Meet us at

16th global cemfuels Conference, Exhibition & Awards 2023

Alternative fuels for cement and lime

Istanbul, Türkiye
20-21 September
www.CemFuels.com

Meet us at

global conchems CONFERENCE & EXHIBITION

Global construction chemicals

Brussels, Belgium
11-12 October '23
www.GlobalConChems.com

Meet us at

16th global insulation CONFERENCE & EXHIBITION 2023

Insulation trends and technology

Chicago USA
9-10 November 2023
www.GlobalInsulation.com

Meet us at

21st global gypsum CONFERENCE EXHIBITION AWARDS

Global gypsum trends and technology

Chicago USA
9-10 November 2023
www.GlobalGypsum.com

Meet us at

4th global futurecem CONFERENCE & EXHIBITION

CO_2 reduction from cement and concrete

Brussels, Belgium
6-7 December 2023
www.FutureCem.com

Meet us at

2nd global cemproducer CONFERENCE & EXHIBITION

Future-proof process optimisation

Limassol, Cyprus
6-7 March 2024
www.CemProducer.com

See you there!

www.GlobalCement.com

XXV International Construction Forum | Cement Concrete - Dry Mixtures

Expocentre, Moscow, Russia

For more information, please contact:

Tel.: +7 812 3350992

18-20 October 2023

Email Website

CarbonZero Global Conference and Exhibition 2023

Lyon, France

For more information, please contact:

Industry Link

Tel.: +40726 497 448

26-27 October 2023

Email

Email

Website

16th Global Insulation Conference & Exhibition
Insulation trends and technology

Chicago, USA

For more information, please contact:

Dr. Robert McCaffrey

Tel.: +44 1372 743837

Fax: +44 1372 743838

9-10 November 2023

Email Website

21st Global Gypsum Conference, Exhibition & Awards
Global gypsum trends and technology

Chicago, USA

For more information, please contact:

Dr. Robert McCaffrey

Tel.: +44 1372 743837

Fax: +44 1372 743838

9-10 November 2023

Email Website

International Cement Seminar & Exhibition 2023

Cobb Galleria in Atlanta, USA

14-15 November 2023

Website

7th Virtual Global CemProducer Seminar - Cement plant maintenance & optimisation

Your device

For more information, please contact:

Dr. Robert McCaffrey

Tel.: +44 1372 743837

Fax: +44 1372 743838

8:00 AM - 2:30 PM GMT

21 November 2023

Email Free Registration

CARBON ZERO

ALTERNATIVE FUELS & RAW MATERIALS
GLOBAL CONFERENCE & EXHIBITION

26-27 OCTOBER 2023, LYON, FRANCE

World's most brilliant minds come together for the best climate-friendly solutions for the cement industry

Details and registration:

contact@industrylink.eu

The 16th Annual SEADMA Conference and Industry Showcase

Bogor, West Java, Indonesia

23 November 2023

Email

Website

3rd Virtual Global CemPower Seminar - Electrical generation and efficiency

Your device

For more information, please contact:

Dr. Robert McCaffrey

Tel.: +44 1372 743837

Fax: +44 1372 743838

10:00 → 17:00 CET
Central European Time

Berlin, Paris, Rome

28 November 2023

Email

Website

Free Registration

5th Conference and 1st Exhibition of Cement Industry and Technology 2023

Damascus Fairground, Damascus, Syria

30 November ↓ 02 December 2023

For more information, please contact:

Mobile/WhatsApp: +963969019984

Email

Website

3rd Virtual European Cement Conference - Market trends and technology in Europe

Your device

For more information, please contact:

Dr. Robert McCaffrey

Tel.: +44 1372 743837

Fax: +44 1372 743838

10:00 → 17:00 CET
Central European Time

Berlin, Paris, Rome

5 December 2023

Email

Website

4th Global FutureCem Conference & Exhibition - low CO_2 options for cement and concrete

Brussels, Belgium

For more information, please contact:

Dr. Robert McCaffrey

Global FutureCem Conference

Tel.: +44 1372 743837

Fax: +44 1372 743838

6-7 December 2023

Email

Website

4th Virtual Global Ash - Ash for cement and concrete

Your device

For more information, please contact:

Dr. Robert McCaffrey

Tel.: +44 1372 743837

Fax: +44 1372 743838

10:00 → 17:00 CET
Central European Time

Berlin, Paris, Rome

12 December 2023

Email

Website

INTERCEM Dubai 2024

Dubai, UAE

Website

27-29 February 2024

66th IEEE-IAS/PCA Cement Industry Technical Conference

Gaylord Rockies, Denver, USA

5-9 May 2024

Website

2nd CemProducer Conference & Exhibition Future-proof process optimisation

Limassol, Cyprus

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

6-7 March 2023

Email

Website

Training

Your Device

Email

Website

Alternative Fuels for Firing Cement Kilns
(3-Week Online Training)

03rd July 2023

02nd October 2023

Cement Kiln Refractories
(6-Week Online Training)

10th July 2023

Cement Kiln Process Chemistry
(6-Week Online Training)

03rd July 2023

02nd October 2023

Cement Factory Maintenance
(6-Week Online Training)

10th July 2023

09th October 2023

Cement Manufacturing Technology
(6-Week Online Training)

03rd July 2023

02nd October 2023

Decarbonizing Cement Manufacture
(6-Week Online Training)

10th July 2023

09th October 2023

Cement Kiln Pyroprocessing
(6-Week Online Training)

10th July 2023

09th October 2023

Cement Factory Quality Control
(6-Week Online Training)

31st July 2023

30th October 2023

Grinding and Milling Systems
(6-Week Online Training)

31st July 2023

09th October 2023

White Cement Manufacturing Technology
(6-Week Online Training)

04th September 2023

Ceramic

DEBURRINGEXPO 2023
Messe Karlsruhe, Germany

10-12 October 2023

Website

2024 Uniceramics Expo
Foshan, China

Tel: +86 18566021320

18-22 April 2024

Email

Website

ACHEMA 2024
Frankfurt, Germany

10-24 June 2024

Website

General

Maintenance and Reliability 4.0

Bangkok, Thailand

For more information, please contact:

Mr. John Karras

Tel.: +603 2775 0067

5-6 July 2023

Email Website

Advanced Manufacturing Summit

Singapore

For more information, please contact:

Mr. John Karras

Tel.: +603 2775 0067

16-17 August 2023

Email Website

2nd Edition of Uganda Buildcon

UMA Show Grounds Lugogo, Kampala, Uganda

For more information, please contact:
Moiz S J, Exhibitors Consultant
Bright Exhibitions
Tel: +971-6-5096127
Cell: + 971 50 8721510

10-12 August 2023

Email Website

16th JORDAN BUILD International Building Technology and Construction Industries Exhibition

Amman, Jordan

22-24 August 2023

Website

Gastech

Singapore, Singapore

5-8 September 2023

Website

21st International Conference on Building Materials - ibausil

Weimar, Germany

13-15 September 2023

Website

Powtech 2023

Nürnberg, Germany

26-28 September 2023

Website

SOLIDS Rotterdam

Rotterdam, the Netherlands

4-5 October 2023

Website

Our Factory Expo

Int'l Fair Ground , Nasr City - Cairo, Egypt

For more information, please contact:
Sama Marketing Business SMB Co.
Tel.: +202 33539456 / +20111 6475842
Mobile: +2011 50540883 / +20122 7564203 / +20100 7274969

14-16 October 2023

Email info@smbegypt.com

Email ourfactoryexpo@gmail.com

SYMAS® and MAINTENANCE Trade Fair 2023

14th International Trade Fair for Powder & Bulk Solids Technologies SYMAS®

14th international trade fair for suppliers of maintenance products and services maintenance

Expo Kraków, Poland

For more information, please contact
Barbara Płuciennik
Project Manager / Team Leader
Tel.: +48 12 651 90 38 Fax: +48 506 038 382

18-19 October 2023

Email

Website

BUILD EXPO Egypt
4th Cairo International Building, Construction, Energy, Electricity Municipal Equipment Exhibition

Cairo International Conference Center, CICC, Egypt

For more information, please contact:

International Sales & Marketing, tel.: +90 216 575 2828

26-28 October 2023

Email info@pyramidsfair.com

Email filiz.karakul@pyramidsfair.com

Website

The 28th International Mining Congress and Exhibition of Türkiye (IMCET 2023)

Antalya, Türkiye

Tel.: (+90 546) 4251072 Fax: (+90 312) 4175290

28 November ↓ 1 December 2023

Email imcet@maden.org.tr

Email madenmuhodasi@maden.org.tr

Website

Exposolidos, Polusolidos And Expofluidos 2024

6-8 February 2024

La Farga de L'Hospitalet, Barcelona, Spain

Website

MARINTEC China

Shanghai New International Expo Centre, Shanghai, China

5-8 December 2023

Website

International Conference for Dispersion Analysis & Materials Testing 2024

10-11 June 2024

Berlin, Germany

Email

Website

19th Edition SteelFab 2024 Machinery, Technology, Equipment

Sharjah, UAE

8-11 January 2024

Website

Email
Alroy
alroy@expo-centre.ae
Tel.: +971 50 3506541

Email
Adib
adib@expo-centre.ae
Tel.: +971 55 5337314

مجلة عالم الإسمنت ومواد البناء

تصدر عن الاتحاد العربي للإسمنت ومواد البناء

العدد 92
يونيو/ حزيران 2023

المحتويات

الموضوعات

مؤتمرات ومعارض

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

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

رئيس التحرير - الأمين العام
المهندس أحمد محمود الروسان

مدير التحرير
سها منير كنعان

البريد الالكتروني
aucbm@scs-net.org
aucbm1977@gmail.com

الموقع الالكتروني
www.aucbm.net

English

الجزائر

تحسن صناعة البناء في الجزائر بنسبة 2.4% في عام 2023

إن البناء والآلات ومواد البناء، إلى جانب الطاقة، هي القطاعات الرئيسية للاقتصاد الجزائري. وبعد فترة من تقلب أسعار النفط والتأثير السلبي لوباء Covid-19، أدت الزيادة في أسعار الهيدروكربونات إلى ظهور إشارات واضحة للانتعاش.

ووفقاً لتقرير GlobalData الأخير، من المتوقع أن تنمو صناعة البناء في الجزائر بنسبة 2.4 % في عام 2023. وسيتحسن أداء قطاع المباني من خلال المشاريع الرئيسية الجارية في قطاعات البنية التحتية السكنية والنقل والطاقة المتجددة.

وقد وافقت الحكومة الجزائرية في موازنة 2023 على استثمارات بإجمالي 545 مليار دينار جزائري (3.7 مليار دولار) في الإسكان والتخطيط الحضري والتنمية الحضرية، و364.3 مليار دينار جزائري (2.4 مليار دولار) في الأشغال العامة والنقل، و193.9 مليار دينار جزائري (1.3 مليار دولار) في الكهرباء ومشاريع الغاز والطاقة الجديدة و67.6 مليار دينار جزائري (453.6 مليون دولار) في التنمية الصناعية.

الإمارات العربية المتحدة

مشروع لاسترداد الحرارة المهدرة بمصنع لافارج الإمارات للإسمنت

أعلنت "إنجي لحلول الطاقة"، الشركة المتخصصة عالمياً في مجال حلول الطاقة المستدامة، عن المباشرة بأعمال بناء مشروعها لاسترداد الحرارة المهدرة، بقدرة 10 ميجاواط في مصنع الإسمنت التابع لشركة لافارج الإمارات للإسمنت في الفجيرة، والذي من المتوقع أن يولد أول كيلوواط ساعي بحلول نهاية عام 2023.

وكانت شركة لافارج الإمارات للإسمنت قد وقعت العام الماضي عقداً بنظام البناء والتشغيل والتحويل لمدة 10 سنوات مع إنجي لحلول الطاقة لتصميم وتمويل وبناء وإدارة عمليات نظام مشروع استرداد الحرارة المهدرة، بقدرة 10 ميجاواط، ضمن لافارج الإمارات للإسمنت في الفجيرة.

وسيساعد نظام دورة رانكين العضوية على تجنب إطلاق 29 كيلو طن من انبعاثات ثاني أكسيد الكربون سنوياً، ما يشكل انخفاضاً بنسبة 28 % بكمية الانبعاثات المرتبطة بالطاقة.

www.albayan.ae

المملكة العربية السعودية

إسمنت المدينة تحصل على المستوى المتقدم ضمن برنامج مصانع المستقبل

أعلنت شركة إسمنت المدينة عن حصولها على المستوى المتقدم ضمن برنامج مصانع المستقبل.

وأوضحت الشركة في بيان لها أن البرنامج يستخدم منهجية سيري للتقييم (Smart Industries Readiness Index) SIRI وهو المؤشر العالمي الذي تبنته المملكة العربية السعودية لقياس مستوى نضج المصانع من خلال مقيمين معتمدين لتبني تقنيات الثورة الصناعية الرابعة وجاهزيتها للتحول الرقمي.

ويهدف البرنامج إلى تبني المصانع في المملكة تقنيات الثورة الصناعية الرابعة لرفع الكفاءة وتخفيض التكاليف وخلق فرص وظيفية نوعية.

www.mubasher.info

"إسمنت الجنوب" توقع عقداً مع "سينوما العالمية" لإنشاء خط إنتاج بـ330 مليون دولار

أعلنت شركة إسمنت المنطقة الجنوبية "إسمنت الجنوب" عن توقيعها عقداً مع شركة سينوما العالمية الهندسية المحدودة لإنشاء خط بطاقة إنتاجية 5 آلاف طن/ يوم، مع إنشاء بنية تحتية لخط آخر بطاقة إنتاجية 5 آلاف طن/ يوم.

وأوضحت الشركة أن قيمة العقد تبلغ 330 مليون دولار (1.2 مليار ريال)، ولمدة 30 شهراً.

www.mubasher.info

الجمهورية العربية السورية

الشركة السورية لصنع الإسمنت بحماة تعيد تأهيل المطحنة العامودية

نجحت الشركة السورية لصنع الإسمنت ومواد البناء بحماة في إعادة تأهيل وصيانة المطحنة العامودية لأول مرة منذ إقلاع المعمل رقم 3.

وبذلت الشركة جهوداً كبيرة لتجاوز كافة معوقات العمل سيما المتعلق منها بتأمين مادتي الفيول والمازوت والانقطاعات المتكررة للتيار الكهربائي والذي أدى إلى الخسارة في المعدات والإنتاج فضلاً عن الصعوبة الكبيرة في تأمين مستلزمات الإنتاج الخارجية نتيجة العقوبات الاقتصادية . وبلغت مبيعات الشركة خلال الربع الأول من العام الحالي 161 ألف و440 طناً من مادة الإسمنت.

وقد أنتجت الشركة خلال الفترة المذكورة 141,365 طناً من مادة الإسمنت بينما بلغت كميات الكلنكر المنتجة 111,931 طناً، فيما كان مخزونها من الإسمنت نحو 10,897 طناً ومن مادة الكلنكر 1,259,735 طناً.

وتنتج الشركة الكلنكر العادي والمقاوم للكبريتات والآباري وأيضاً الإسمنت البورتلاندي العادي والآباري والمقاوم للكبريتات إضافة إلى البورتلاندي البوزولاني والإسمنت صنف 42.5. وتعمل الشركة حالياً على زيادة الطاقة الإنتاجية لوحدة إنتاج البلوك نظراً لتحقيقها ريعية اقتصادية جيدة.

SIMAN NEWS
Iran Cement News Agency

www.simankhabar.ir
پایگاه خبری تحلیلی صنعت سیمان ایران

simankhabar @simankhabar

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SK Cement Packing Plant

For more information please contact us :

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

العراق

نجمة السماوة للصناعات الإسمنتية توسع طاقة إنتاج الكلنكر

تخطط شركة نجمة السماوة للصناعات الإسمنتية لإنشاء خط جديد لإنتاج الكلنكر بطاقة 1.82 مليون طن سنوياً لدى معمل إسمنت السماوة. وسيؤدي تشغيل الخط الجديد إلى مضاعفة الطاقة الإنتاجية للمعمل من الكلنكر لتبلغ 3 ملايين طن سنوياً. وسيؤمن المصنع بعد توسعته الكلنكر لمطحنة البصرة التابعة له.

وشركة نجمة السماوة للصناعات الإسمنتية هي مشروع مشترك لمجموعة الشموخ وشركة Lucky Cement الباكستانية.

معمل سمنت الكوفة يحصل على شهادة الجودة الدولية ويحقق قفزات نوعية على مستوى الإنتاج والمبيعات

أعلنت الشركة العامة للسمنت العراقية إحدى شركات وزارة الصناعة والمعادن عن حصول معمل سمنت الكوفة أحد معامل معاونية السمنت الجنوبية على شهادة الجودة الدولية ISO 9001:2015 من شركة Bureau veritas البريطانية، إضافة إلى شهادات الجودة المتتابعة الدورية التي تؤكد مطابقة المنتج للفحوصات والمواصفات القياسية الدولية فضلاً عن المطابقة للمواصفة القياسية المحلية رقم 5 لعام 2019.

وقال مدير عام الشركة المهندس حسين محسن عبيد إن المعمل حقق قفزات نوعية في الإنتاج والمبيعات وبنسب تطور بلغت 31 % على مستوى الإنتاج و24 % على مستوى المبيعات، مؤكداً أنَ المعمل يسير بخُطىً ثابتة وتصاعُدية لإنتاج السمنت المُقاوم عالي الجودة مع الإستمرار بأعمال الصيانة والتأهيل للخطوط الإنتاجية بغية الوصول إلى الطاقة الإنتاجية التصميمية خِلال العام.

يُذكر أن معمل سمنت الكوفة تأسس عام 1977 من قِبل الشركة المنفذة FLSmidth الدنماركية يعمل بالطريقة الرطبة ويحتوي على أربعة خطوط إنتاجية بطاقة تصميمية تصل إلى مليوني طن سنوياً من السمنت المقاوم للأملاح .

سلطنة عُمان

بيع حصة جهاز الاستثمار العُماني في "إسمنت عُمان"

أفصحت شركة "إسمنت عُمان" بأنه إلحاقاً إلى الإعلان السابق الصادر بتاريخ 13 مارس/آذار المنصرم عن إبرام اتفاقية شراء الأسهم بين جهاز الاستثمار العُماني، وشركة هواشين انترناشيونال القابضة المحدودة والمتعلقة بالاستحواذ على ما نسبته 59.58 % من أسهم رأسمال شركة إسمنت عُمان، ووفقاً للإعلان السابق أبرز المشتري والبائع الاتفاقية ووافق المشتري بموجبها على الاستحواذ على ما نسبته 59.58 % من أسهم رأسمال إسمنت عُمان. كما وافق البائع "جهاز الاستثمار العُماني" على بيع نصيبه من أسهم رأسمال شركة إسمنت عُمان، وذلك بسعر شراء يقدر بنحو 193.1 مليون دولار أمريكي. ووفق شروط الاتفاقية تنازل المشتري عن حقه في تملك أسهم البيع لصالح شركة أبرا هولدينغر ليمتد وهي شركة تابعة مملوكة بالكامل للمشتري وقد تأسست بجمهورية موريشيوس، وأعلنت "إسمنت عُمان" عن اكتمال الصفقة، وأن المشتري أصبح يملك من خلال الشركة التابعة والمملوكة له بالكامل بصورة غير مباشرة "أبرا" ما نسبته 59.58 % من رأسمال شركة إسمنت عُمان.

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قطر

لدعم التحوّل الرقمي، شراكة بين قطر الوطنية للإسمنت و"إس إيه بي"

وقعت شركة قطر الوطنية لصناعة الإسمنت اتفاقية شراكة مع عملاقة التقنية العالمية لمساعدتها على التحول الرقمي للاستفادة من مزايا الحوسبة السحابية وتخزين بياناتها بأمان على منصة "جوجل كلاود Google Cloud".

وتضمنت الاتفاقية شركة المناعي لتقنية المعلومات التي ستتولّى تنفيذ المشروع. ومن المقرر أن يشمل التنفيذ باقة تطبيقات الأعمال الخاصة بتخطيط الموارد المؤسسية، HANA 4/S من "إس إيه بي"، التي تتيح رؤية شاملة وتحكماً تاماً في جميع العمليات. كما تشمل الاتفاقية الحل المبتكر لإدارة شؤون الموظفين، SAP Success Factors من "إس إيه بي".

ومن المنتظر أن تمكّن اتفاقية الشراكة هذه شركة قطر الوطنية لصناعة الإسمنت من أتمتة العمليات التجارية وتبسيطها وتسريعها، علاوة على تعزيز الخدمات المقدمة لعملائها وموظفيها. وسيعمل التحول المرتقب أيضاً على تحسين القيمة المستخلصة من الأعمال التجارية للشركة لتمكين الشركة من الابتكار والتوسّع في التطبيقات المؤسسية وتخصيصها، لتصبح مؤسسة ذكية مستدامة.

وقال المهندس عيسى محمد علي كلداري الرئيس التنفيذي لشركة قطر الوطنية لصناعة الإسمنت، إن هدف الشركة من إجراء التحوّل الرقمي الشامل يتمثل في تحديث أنظمتها وتبسيطها، وزيادة مستويات كفاءة العمليات، وتعزيز الخدمات المقدمة للعملاء والموظفين.

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جمهورية مصر العربية

"السويس للإسمنت" تستثمر ملايين الدولارات في دعم الاستدامة البيئية

تحتفل مجموعة شركات السويس للإسمنت – واحدة من أكبر منتجي الإسمنت الرمادي في مصر وإحدى الشركات التابعة لمجموعة هايدلبرج ماتريالز الألمانية بإنجازاتها في مجال الحد من انبعاثات ثاني أكسيد الكربون وتأثيرها السلبي البيئي وذلك توافقاً مع رؤية مصر 2030، وأهداف الأمم المتحدة للتنمية المستدامة.

وعلى غرار ما قامت به الشركة الأم، هايدلبرج ماتريالز، تعمل السويس للإسمنت بكامل طاقتها على دفع التحوَل بهدف خفض انبعاثات ثاني أكسيد الكربون بنسبة تصل إلى 24 % بحلول عام 2030 مقارنة بالمستوى المسجل عام 2019.

وقد بلغت استثمارات المجموعة حوالي 60 مليون دولار منذ عام 2010 للتطوير التكنولوجي من أجل تقليل وخفض انبعاثات الغبار بشكل ملحوظ في عملياتها الإنتاجية. وظهر ذلك جيداً عام 2020، مقارنة بالنسبة المسجلة عام 2012، فقد انخفضت انبعاثات الغبار بنسبة 80 %، ويؤدي هذا إلى جودة ونقاء الهواء بالبيئة المحيطة وأيضا تقليل المشاكل الصحية.

كما تم تخصيص استثمار إضافي بنحو 16 مليون دولار لاستخدام الوقود غير الأحفوري، والذى يمثل عنصراً بالغ الأهمية في خفض الانبعاثات الكربونية في صناعة الإسمنت.

ومن جهة أخرى استخدمت المجموعة تكنولوجيا مختلفة داخل مصانعها الثلاثة "حلوان، القطامية، السويس" لدعم استخدام الوقود البديل في عملياتها، وهو ما جعل السويس للإسمنت أول منتج للإسمنت في مصر يقوم بتغذية الأفران للعمل بالوقود البديل.

وأعلنت المجموعة مؤخراً أنها ستستثمر 25 مليون دولار أمريكي لبناء نظام لتجميع الحرارة المتولدة من أفرانها في مصنع حلوان وتحويلها إلى طاقة كهربائية.

ويمكن أن يكون "نظام استعادة الحرارة المهدرة" عاملاً حاسماً في تقليل استخدام الطاقة والتكاليف وانبعاثات ثاني أكسيد الكربون في مصانع الإسمنت من خلال استخدام الطاقة المهدرة بهدف تحسين كفاءة استهلاك الطاقة لإنتاج ما يصل إلى 30% من احتياج المصنع من الكهرباء.

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التخطيط الاستراتيجي للطاقة الإنتاجية

م. مدير
عبدالمهيمن يحيى ذنون
دبلوم عالي تخطيط استراتيجي
معاونية السمنت الشمالية

الطاقة الإنتاجية هي أقصى عدد من الوحدات التي يستطيع المصنع إنتاجها، أي معدل المخرجات التي يمكن إنتاجها وقد تكون مرفق إنتاج خلال فترة زمنية محددة. ومرفق الإنتاج قد يكون ماكنة أومحطة عمل أو خط إنتاجي أو مصنع أو منظمة ككل.

فعندما نتحدث عن الحد الأقصى من الوحدات المنتجة التي يمكن أن ينتجها مصنع أو الخط الإنتاجي تسمى الطاقة الإنتاجية يختلف عن كمية الوحدات المنتجة (المنتج) التي تم إنتاجها من الموارد المتاحة في المصنع في أي ظرف كان ويسمى حجم الإنتاج فلابد من التفريق بين حجم الإنتاج والطاقة الإنتاجية.

إن هدف تخطيط الطاقة الإنتاجية هو تحقيق الأهداف الإنتاجية للمنظمة بأفضل طريقة ممكنة من خلال اختيار المزيج الملائم من المكائن والمعدات والعاملين لمواجهة الطلب المستقبلي على المنتج وتحديد المستوى المناسب من طاقة الإنتاج بحيث تقابل هذه الطاقة أو توازن الطلب المتنبأ في الأمد الطويل والمتوسط والقصير.

إن التخطيط الاستراتيجي للطاقة الإنتاجية هو تحديد أنواع وأعداد الموارد المطلوبة لتنفيذ الخطة الاستراتيجية اللازمة لمواجهة الطلب المستقبلي. حيث يقع على عاتق مدير التشغيل توفير وتجهيز هذه الموارد لمقابلة الطلب المتوقع وإلا ستخسر الشركة فرص النمو والأرباح لذا يعتبر التخطيط الاستراتيجي غاية الأهمية على المدى الطويل.

فإذا ما تم بناء طاقة تفوق حجم الطلب المتوقع، فإن جزءاً منها سيستخدم ويترك الجزء الفائض احتياطاً (Capacity Cushion) أو عاطلاً مستبعداً عن النشاط والذي قد يحول إلى منتوج آخر إن أمكن ولكن بكلفة أعلى. وبالعكس عندما تكون هنالك طاقة منخفضة جداً، فإن الشركة قد تعتمد عدداً من البدائل والقرارات قصيرة الأمد لزيادة تلك الطاقة (سياسة أو قرار استخدام العمل الإضافي مثلاً) أو أن جزءاً من الطلب غير مشبع، مما يعني فقدان الشركة لجزء من حصتها السوقية المتوقعة، وفي كلتا الحالتين ـ فإن امتلاك طاقة فائضة أو منخفضة سيكون مضراً ومكلفاً للشركة.

إن تخطيط الطاقة طويل الأمد يتطلب جهداً مشتركاً ما بين أقسام العمليات والتسويق والمالية في الشركة، وعند اختيار استراتيجية الطاقة يتوجب على المديرين دراسة المشاكل المهمة ذات الصلة من خلال الإجابة على عدد من الأسئلة مثل: (محسن، النجار 2021)

1. كيف يتغير سوق المنتجات الحالية ، وكيف يؤثر التطور التكنولوجي الحالي والمستقبلي في العمليات؟ وما هو مقدار الدقة التي يمكن بها التنبؤ بهذه الاتجاهات؟
2. هل يمكن لموارد الإنتاج الحالية في مصانع الشركة أن تتلاءم مع المنتجات الجديدة؟ وهل يمكن أن تتكيف تلك الموارد إذا ما تغير الطلب على المنتجات الحالية؟
3. هل ينبغي بناء مصانع جديدة؟ وما هو الحجم الذي ينبغي أن يكون عليه المصنع الجديد؟ وهل ينبغي بناء مصنع واحد جديد أو مصانع عديدة صغيرة؟ أين ينبغي أن نشيد (في أي موقع ينبغي أن تكون)؟ هل ينبغي أن تكون لدينا مصانع كبيرة عددها قليل قرب المجهزين؟ أو مصانع كثيرة صغيرة قرب المستهلكين؟
4. هل ينبغي تحوير المصانع الحالية، أو توسيعها؟ أوغلقها؟ وماهي الآثار المالية لمثل هذه القرارات؟ وهل ينبغي أن يحصل ذلك؟
5. هل ينبغي أن نوسع الطاقة قبل أن يصل الطلب إلى مستوى الطاقة المراد بلوغه، أو ننتظر حتى يصبح الطلب مؤكداً؟
6. ماهو مقدار وسادة الطاقة (الطاقة الخامدة أو الاحتياط Capacity Cushion) المطلوبة للتعامل مع الطلب المتغير غير المؤكد؟
7. كم هو عدد المكائن والمعدات والعاملين التي ستكون مطلوبة للعمليات في المستقبل؟

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23←27 يوليو / تموز 2023

الأعمال المساحية وأساليب العمل الحقلي
9←13 يوليو / تموز 2023

الأساليب الحديثة في تكنولوجيا المعلومات ودورها في دعم المؤسسات
23←27 يوليو / تموز 2023

التقنيات الحديثة لتحليل المخاطر والأثر على دعم القرار
9←13 يوليو / تموز 2023

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30 يوليو / تموز ↓ 3 أغسطس / آب 2023

مجلة عالم الإسمنت ومواد البناء

جدول موضوعات المجلة لعام 2023

العدد	الموضوعات	المناسبات
سبتمبر/أيلول 2023 (العدد رقم 93)	* 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	
ديسمبر/كانون أول 2023 (العدد رقم 94)	* المبردات * المراوح * مدافع الهواء * الصحة والسلامة المهنية * تكنولوجيا الطحن * الطواحين العمودية * المكابس الأسطوانية * زيادة إنتاج مطحنة الإسمنت * التكسير * مساعدات الطحن والطحن * استعادة الحرارة المفقودة * التصوير الحراري * إعادة التدوير الحراري * طرق معالجة واستخدام غبار الممر الجانبي * الحماية من الانفجار في صوامع تخزين الوقود البديل * أنظمة مناولة الوقود البديل * إنتاج واستخدام الوقود الصلب المستعاد	المؤتمر والمعرض العربي الدولي السادس والعشرون لصناعة الإسمنت: الرياض / المملكة العربية السعودية 9-7 يناير / كانون الثاني 2024

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

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2. عدد ديسمبر / كانون الأول (**عدد خاص**): **5 ديسمبر / كانون الأول** 2023

الإعلانات

(بالدولار الأمريكي)

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

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

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