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

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

EDITORIAL SCHEDULE FOR 2025

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September (Bonus) issue: **24th September 2025**
December issue: **8th December 2025**

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Fourth RAK Ceramics Design Hub opens in Milan

After Dubai, London and Frankfurt, RAK Ceramics has chosen Milan for its new Design Hub, which will host all the group's brands in the surfaces, bathroom furnishings and tableware sectors.

RAK Ceramics, one of the world's leading ceramic groups, inaugurated its new RAK Ceramics Design Hub in Milan on 7 April, the fourth international outlet following Dubai, London and Frankfurt.

The result of an investment of over €1 million, the space at Via Borgogna 8 plays a key role in the strategy of the Emirati group, whose goal is to establish itself as a go-to partner for architects, interior designers and contractors.

Leonardo De Muro, RAK Ceramics VP International Business Development & Marketing, describes the new Design Hub

The 400-square-metre showroom designed by MMA Projects provides a comprehensive overview of the lifestyle solutions offered by the group and its brands: RAK Ceramics for porcelain stoneware surfaces and slabs, together with a collection of sanitaryware and bathroom furnishings; Elie Saab for exclusive, high-end interiors; Kludi, a historic German bathroom and kitchen tapware brand, now also presenting its own collection of sanitaryware; and RAK Porcelain, the tableware brand that is now the top choice of over 40,000 operators in the foodservice and hospitality industries worldwide.

Inside the Milan Design Hub, Maximus large-format slabs slide on a track system to create dynamic backdrops, while the bathroom displays showcase the RAK-Skin and RAK-Remal collections by Jordanian designer Sahar Madanat, RAK-Cloud by Giuseppe Maurizio Scutellà and the Kludi-Asana shower installation. On the second level, the kitchen area features a countertop made from 14 mm Maximus slabs with the innovative CookingRAK induction system, alongside Kludi taps and RAK Porcelain tableware.

This comprehensive and fully integrated product range is designed to meet the needs of all types of projects, from residential to hospitality, and is available on a truly global scale. With its 23 state-of-the-art manufacturing facilities in the United Arab Emirates, India, Bangladesh and Germany, RAK Ceramics has an annual production capacity of 118 million square metres of tiles, 5.7 million sanitary fixtures, 26 million pieces of tableware and 2.6 million tapware elements. The group, listed on the Abu Dhabi Securities Exchange, serves customers in over 150 countries through operational hubs across Europe, the Middle East and North Africa, Asia, North and South America, and Australia. In 2024, RAK Ceramics posted revenues of 3.23 billion dirhams (approximately US \$880 million).

Lecico chooses SACMI's AVI Concept

New boost to investments in technology and innovation for the Egyptian sanitaryware colossus. Special feature of the AVI is wide use of the robot to control all operations with piece and moulds. This solution, the first of its kind up and running in Egypt, will be dedicated to the manufacture of wall-hung WCs with the possibility to manage complex pieces, even up to 7-part moulds.

Established in 1959, Lecico is one of the leading international manufacturers of sanitaryware, with exports to 50 countries and a clear focus on technological innovation, research and product certification. Following an initial investment in SACMI RobotCasting technology (ALS) for casting washbasins, already being made successfully at the Borg El-Arab (Alexandria) production plant for several years now, Lecico has now given a further boost to innovation with the purchase of a SACMI AVI.

At the cutting edge of robotic automation applied to ceramic sanitaryware casting, this is the first solution of its kind to start operating in Egypt, historic centre of production and strategic area of North Africa for the ceramics industry.



The basis of the AVI Concept is robotized handling of all the main work phases carried out within the cell; from mould handling to loading of the formed piece onto the car, as well as demoulding operations and transfer of the piece to the FPV pre-drier for the ageing stage.

Highly automatic and versatile, the AVI cell can manage complex pieces, with even up to a 7-part mould. At Lecico, the cell will mainly be dedicated to the manufacture of wall-hung WCs. Any kind of mould can be installed on the AVI, even those originally produced for different SACMI machines. For Lecico, this new investment represents a decisive leap forwards in terms of technology, following on from the switch to high-pressure casting already made for washbasin manufacture.

Among the various reasons why the customer chose the AVI was SACMI's ability to provide a carefully tailored training program, alongside the installation and commissioning of the machine, which has been completed working together with Lecico's technical team at their production plant. In fact, SACMI proposes this easy-to-manage robotized solution as part of a personalized plan to help customers obtain immediate results from their investment.

LB supplies technology to Ceramica Cleopatra in Egypt

The LB feeding system for the new large ceramic slab forming line has been in operation for several months now.

LB Technology has further strengthened its partnership with Ceramica Cleopatra, Egypt's largest ceramic tile manufacturer. For one of the group's plants located in the Suez region, LB has supplied a hi-tech feeding system for a new large ceramic slab forming line. The project, completed a few months ago, enables Ceramica Cleopatra to benefit from continuous production, maximum precision in material dosing and reliable, consistent performance over time.

Through this project, LB reaffirms its commitment to driving technological innovation and actively contributes to the growth of the Egyptian ceramic industry, a constantly evolving, strategic market.



The Role of X-Ray Programs in the Cement Industry

Shehab. M. Al-Aryan, ASEC Technical Center

Abstract

X-ray fluorescence (XRF) programs are integral to quality control and material analysis in the cement industry. While specialized programs exist for targeted materials, the development of a robust general-purpose XRF program presents a major advancement in analytical flexibility and operational efficiency. This article discusses the strategic importance of general XRF programs, highlighting their role in analyzing a wide variety of raw materials, supporting quarry exploration, and enhancing quality assurance. ASEC was among the first organizations in the region to implement such a comprehensive analytical system, setting a benchmark for operational standardization.

Keywords

XRF, Cement, Quality Control, Matrix Correction, Trail Lachance, Fusion Method

Introduction

The cement manufacturing process involves the transformation of complex raw materials into a highly regulated product. Ensuring consistent chemical composition of cement and its precursors requires accurate and continuous monitoring. X-ray fluorescence (XRF) is a widely used technique for this purpose due to its speed, reliability, and ability to measure a broad range of oxides in a single scan.

Traditionally, XRF programs in the cement industry are specialized, tailored to specific materials or production lines. However, this approach has limitations, especially when analyzing new or variable raw materials, or evaluating potential quarry sites. A general-purpose XRF program offers the ability to rapidly analyze a diverse array of materials, streamlining operations across laboratory and exploration functions.

Application in the Cement Industry

1. Fusion Method vs. Pressed Powder Method

The accuracy of XRF analysis significantly depends on the sample preparation technique. Two common methods are used: pressed powder and fusion bead preparation. The pressed powder method, while fast and simple, is highly susceptible to mineralogical and grain size effects, leading to analytical errors due to inhomogeneities and particle orientation.

In contrast, the fusion method involves melting the sample with a flux (typically lithium tetraborate) at high temperatures to form a homogeneous glass disc. This process eliminates the grain size effect, reduces mineralogical biases, and ensures a uniform matrix, which is critical for accurate quantification. The fusion method is especially beneficial when applying general-purpose calibration programs as it enables more accurate inter-laboratory comparisons and better long-term repeatability.

2. Development of a General-Purpose XRF Program

A general fused-bead XRF program can address a wide analytical spectrum necessary in cement and mineral industries. Calibration is based on diverse raw and processed materials, and correction for matrix effects is achieved using the Trail Lachance model. This model adjusts the raw intensity readings by applying influence coefficients to account for the absorption and enhancement effects of other elements in the matrix.

Mathematically, the Trail Lachance method uses an empirical relationship:

$$C_i = R_i \left(1 + \sum_j a_{ij} C_j \right)$$

C_i : concentration of analyte element i

C_j : concentration of matrix element j

R_i : ratio of intensity to pure element intensity

a_{ij} : influence coefficient of element j on element i

This correction method is particularly important when dealing with complex cement matrices where multiple oxides interfere with one another. The result is a significant reduction in standard error of estimate (SEE) across the oxide range.

3. Analytical Coverage and Range

The program is configured to detect and quantify the main oxides relevant to cement chemistry — SiO_2 , Al_2O_3 , Fe_2O_3 , CaO , MgO , K_2O , Na_2O , TiO_2 , MnO , and P_2O_5 — across the following concentration ranges:

This extensive coverage makes the general program suitable for both conventional cement control and exploration of alternative raw materials.

4. Implications for Quarry Exploration and Industry Research

The capability to analyze unknown or mixed compositions without frequent recalibration extends the utility of XRF beyond plant control laboratories to geological exploration and academic research. A general calibration model enables rapid evaluation of materials from potential quarries and pilot studies, reducing reliance on specific calibration protocols and increasing analytical throughput.

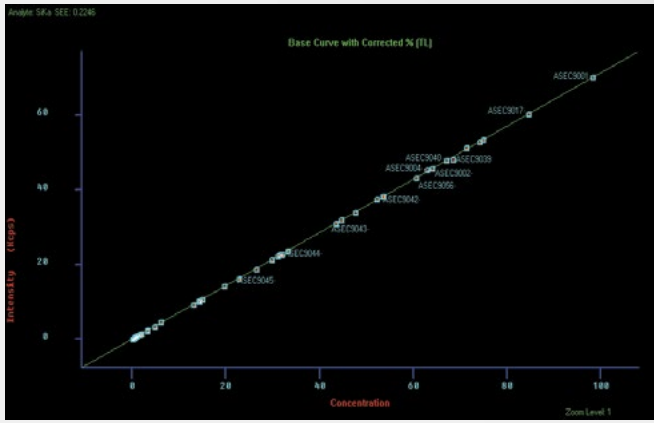
This flexibility supports ongoing efforts in the industry to adapt to changes in resource availability, regulatory requirements, and the push toward low-carbon cement production through use of industrial byproducts and non-traditional inputs.

5. Calibration Curve Integration

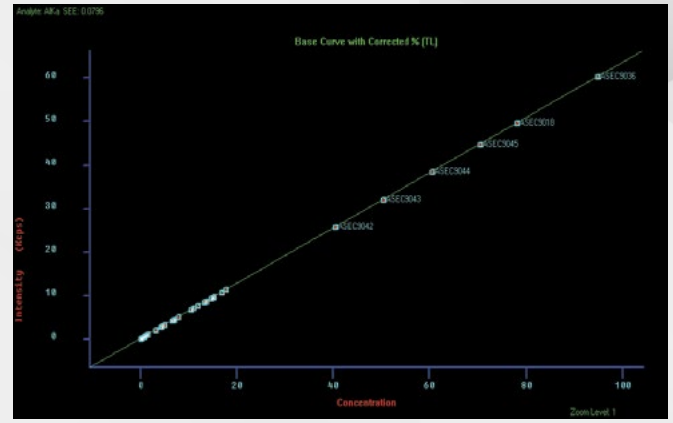
To support the general-purpose program, calibration curves for each oxide were developed and validated. These curves demonstrate the linearity and precision of the XRF response across the full analytical range for each element.

Oxide	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO
Min	0.10	0.12	0.00	0.01	0.00
Max	98.28	94.81	94.50	95.27	90.52

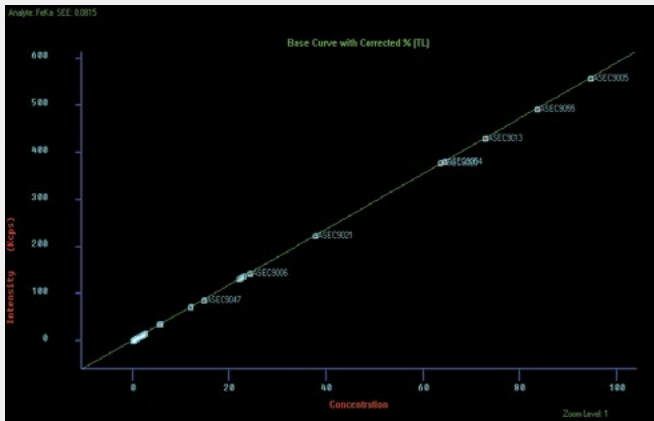
Oxide	K_2O	Na_2O	TiO_2	MnO	P_2O_5
Min	0.03	0.00	0.00	0.00	0.00
Max	14.79	24.34	8.91	6.25	39.96



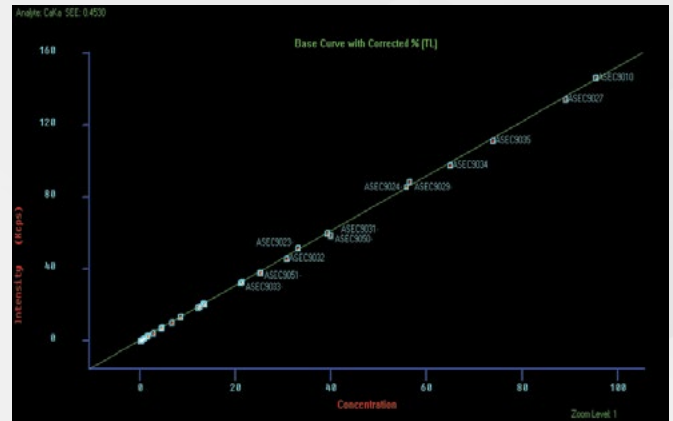
a. Calibration curve for SiO_2



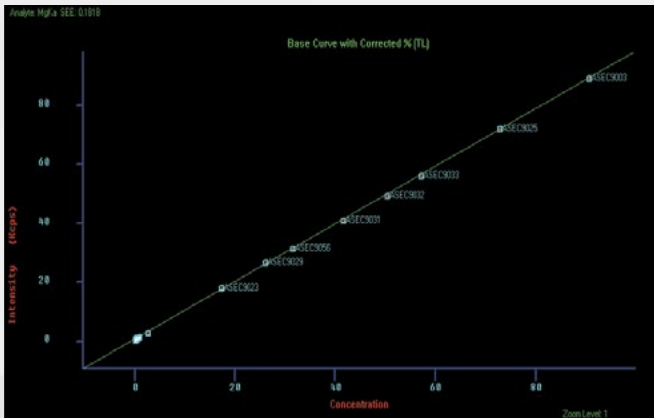
b. Calibration curve for Al_2O_3



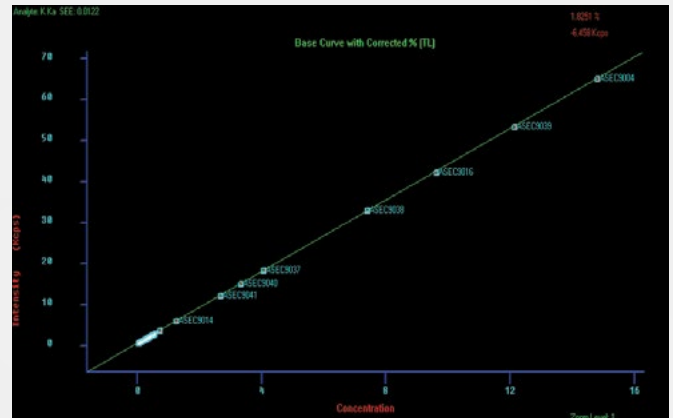
c. Calibration curve for Fe_2O_3



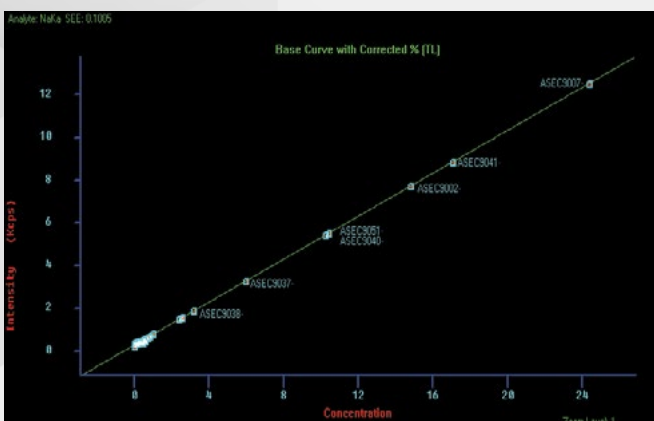
d. Calibration curve for CaO



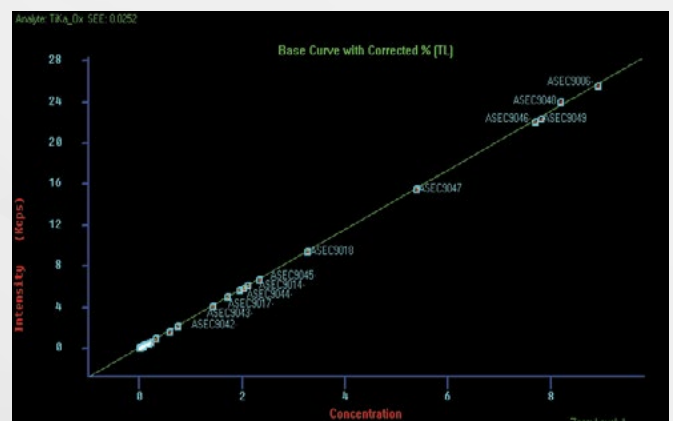
e. Calibration curve for MgO



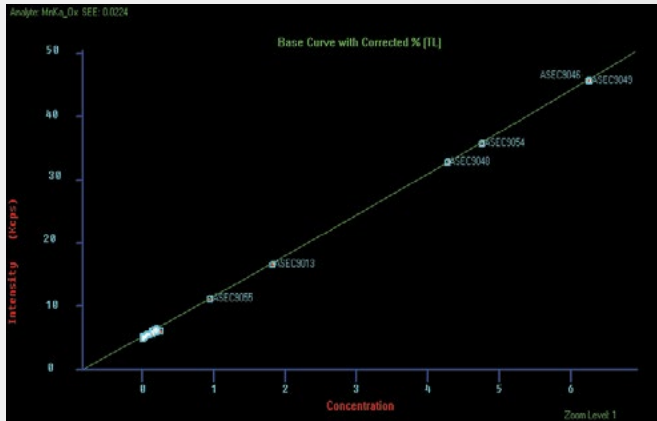
f. Calibration curve for K_2O



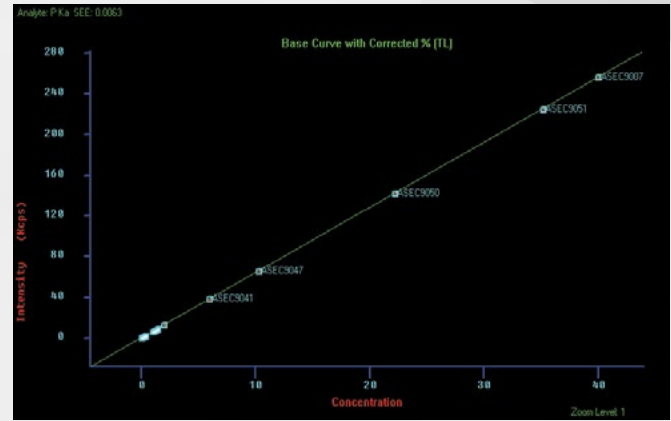
g. Calibration curve for Na_2O



h. Calibration curve for TiO_2



i. Calibration curve for MnO



j. Calibration curve for P₂O₅

These figures will illustrate the quality of the calibration and the effectiveness of the Trail Lachance matrix correction in maintaining low standard errors over wide compositional ranges.

Conclusion

XRF remains the analytical cornerstone in the cement industry. The advancement from specialized to general-purpose XRF programs offers laboratories a robust solution for handling the full range of cementitious materials and beyond. By integrating fusion preparation methods and matrix effect correction models like Trail Lachance, these programs provide unmatched reliability, especially when exploring new materials or maintaining long-term quality consistency.

Such developments align with global analytical standards and reinforce the scientific foundation of quality assurance in cement production. They also open the door to broader industrial applications, making general-purpose XRF programs an essential tool in modern analytical laboratories.

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THE FUTURE CEMENT PLANT



SMART, CIRCULAR, COMPETITIVE
DESIGNING THE HIGH-PERFORMANCE CEMENT PLANT OF TOMORROW



Smart, Circular, Competitive

Designing the high-performance cement plant of tomorrow

A³&Co, United Arab Emirates

Executive Summary:

The future cement plant is now - from fragmentation to integration across mena

The cement industry across the MENA region is entering a new strategic era—driven not only by compliance imperatives but by competitive advantage embedded in decarbonization, digital maturity, and circular economy integration.

At A³&Co., we have worked at the forefront of this transformation, supporting governments and manufacturers in Saudi Arabia, UAE, Egypt, Morocco, and Syria with national and corporate-level roadmaps that deliver on our principle: “Reducing Carbon While Reducing Cost.” The future cement plant is no longer conceptual—it is under construction, rooted in technical rigor, regulatory alignment, and financially viable climate action.

Key strategic pillars

- **Digital Maturity**

Smart infrastructure—SCADA-LIMS-ERP integration, kiln digital twins, and AI-driven predictive control—is redefining plant intelligence, driving down energy intensity, and anchoring compliance reporting in real-time metrics.

- **Alternative Fuels & Fuel Flexibility**

Across UAE, KSA, Egypt, and Morocco, A³&Co. has engineered transition scenarios toward high thermal substitution rates using RDF, biomass, and hydrogen catalysts—supported by OEM-led retrofits, offtake contracts, and national waste valorisation systems.

- **Circular Inputs & SCM Valorisation**

Our SCM cluster mapping has identified millions of tons of viable material (PG, red mud, slag, clay), unlocking clinker factor reductions and CBAM-compliant cement products. Kilns are evolving into circularity hubs.

- **Systemic Integration**

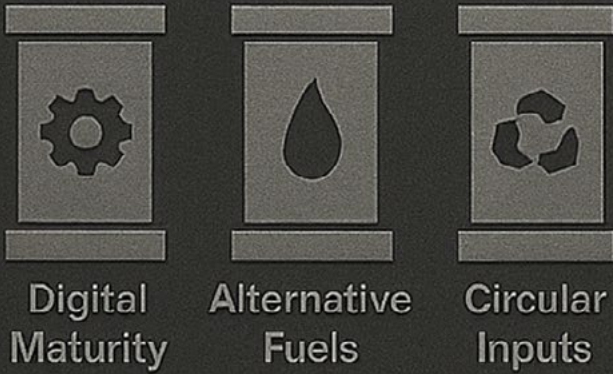
Through our proprietary CDS framework, we link CAPEX/OPEX optimization with regulatory synchronization and climate finance access—enabling decarbonization to serve as both risk mitigation and cost leadership.

Country-level transformation in motion

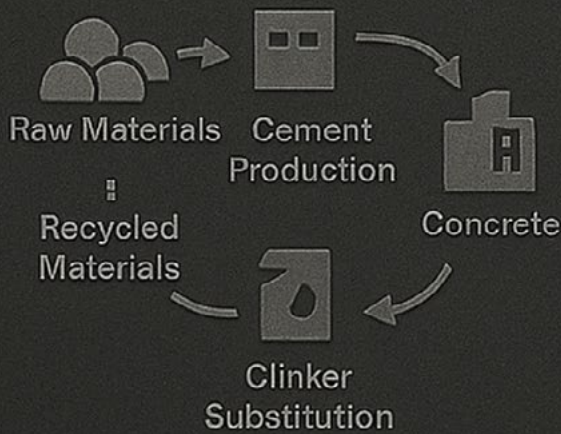
- **KSA:** From RDF integration to SABIC plastic valorization, SASO labeling, and MRV unification, Saudi is building the first fully institutionalized green cement ecosystem under Vision 2030.
- **UAE:** Anticipating the Carbon Law, UAE producers are leveraging LCA tools, EPD platforms, and digital MRV to prequalify for global low-carbon markets—while Emiratization fuels sectoral digital capacity.
- **Egypt:** Overcapacity and CBAM risk are being reframed as export opportunity. Our calcined clay export strategy, digital compliance stack, and SCM corridor design are positioning Egypt as a climate-competitive clinker hub.
- **Morocco:** A surplus in clinker is becoming a surplus in knowledge. Morocco is exporting decarbonization strategy and circularity expertise to Sub-Saharan Africa—blending renewables, digital controls, and alternative fuels.
- **Syria:** Cement will be a cornerstone of post-conflict recovery. A³&Co.’s greenfield designs integrate circularity zones, privatization pathways, and digital-first protocols, establishing climate-smart infrastructure from day one.

The Future Cement Plant is Now: Integrating Digital Maturity, Alternative Fuels, and Circular Inputs across MENA

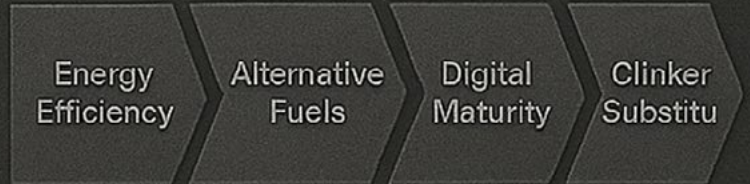
Pillars of the Future Cement Plant



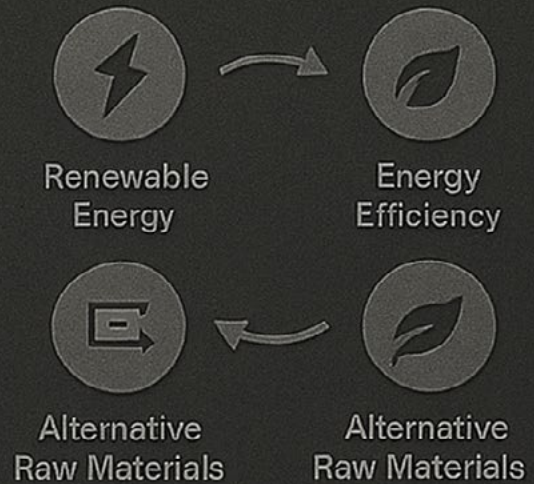
Circular Economy in UAE Cement Sector



Saudi Arabia's Cement Industry Decarbonization St.



Decarbonization and Circularity in Morocco's Cement Industry



Introduction

The cement industry stands at a defining crossroads. With intensifying pressure from global climate commitments, economic volatility, and rising energy costs, producers across the Middle East and North Africa (MENA) region are forced to make transformative shifts. Yet while much of the global conversation still revolves around incremental gains and long-term visions, a different story is emerging in our region: the future cement plant is not a distant concept; it is already materializing today.

At A³&Co., our strategic advisory engagements across Saudi Arabia, Egypt, Morocco, UAE,

and post-conflict Syria have provided a front-row seat to this unfolding transformation. We are witnessing how digital maturity, alternative fuels (AFs), and circular economy principles are converging to rewire the DNA of cement plants—not as isolated technologies, but as integrated systems that are delivering value across carbon, cost, and competitiveness. This article explores how these three pillars are being deployed in practice across the region, what enabling structures are required for scale, and how a new era of industrial performance is being shaped by leaders who embrace the future, now.

Digital maturity: the nervous system of future plants

Digital transformation is no longer confined to dashboards and SCADA enhancements. At its most impactful, it reshapes decision-making, operational agility, and real-time emissions control.

1. Digital Maturity Models in Practice

Through our application of the Smart Industry Readiness Index (SIRI) framework and our proprietary Digital Maturity Roadmap, we've supported manufacturers in:

- Mapping digital pain points and maturity gaps.
- Prioritizing automation and predictive maintenance to reduce downtime.
- Using advanced process modeling (APC/AI) for energy optimization.

In Saudi Arabia, pilot applications of kiln digital twins—integrated with real-time LIMS and fuel flow sensors—have yielded up to 4% thermal efficiency improvements and a 6% reduction in specific emissions per ton of clinker.

2. Data Integration and Decision Systems

Digital maturity also facilitates cross-departmental intelligence. By aligning ERP, quality control, and sustainability reporting under a unified system, companies are enhancing not only plant efficiency but also compliance reporting, ESG readiness, and MRV integration.

A³&Co. has led the deployment of AI-driven fault detection systems in brownfield sites in Egypt and Morocco, delivering process uptime improvements exceeding 5%.

Alternative fuels: the catalyst for fuel flexibility

Fuel substitution has been central to emissions reduction, but the real breakthrough lies in building a structured AF ecosystem around technical readiness, policy frameworks, and circular feedstock streams.

1. Technical Adaptation

We've led the adaptation of main burners, calciner configurations, and dosing systems to accommodate RDF, TDF, biomass, and hydrogen as catalyst fuels. For example:

- In Morocco, a 20% substitution rate using biomass-derived RDF was achieved through joint upgrades with OEM partners.
- In Egypt, trials with hydrogen injection in rotary kilns under UTIS technology have demonstrated stable flame profiles and minimal impact on clinker quality.

2. Value Chain Enablers

High substitution rates are not just about kiln modification. They demand:

- Pre-treatment platforms for moisture and calorific value consistency.
- Long-term offtake contracts with waste aggregators (e.g., SIRC in KSA).
- Local permitting aligned with waste-to-energy regulations.

KSA's recent fuel pricing reforms and waste valorization push have created an inflection point: AFs are not just sustainable—they are increasingly cost-effective.

Circular inputs: redefining material boundaries

In a region where industrial byproducts and waste streams are abundant but underutilized, circularity is emerging as a strategic lever—not only for sustainability but for supply chain resilience and clinker factor reduction.

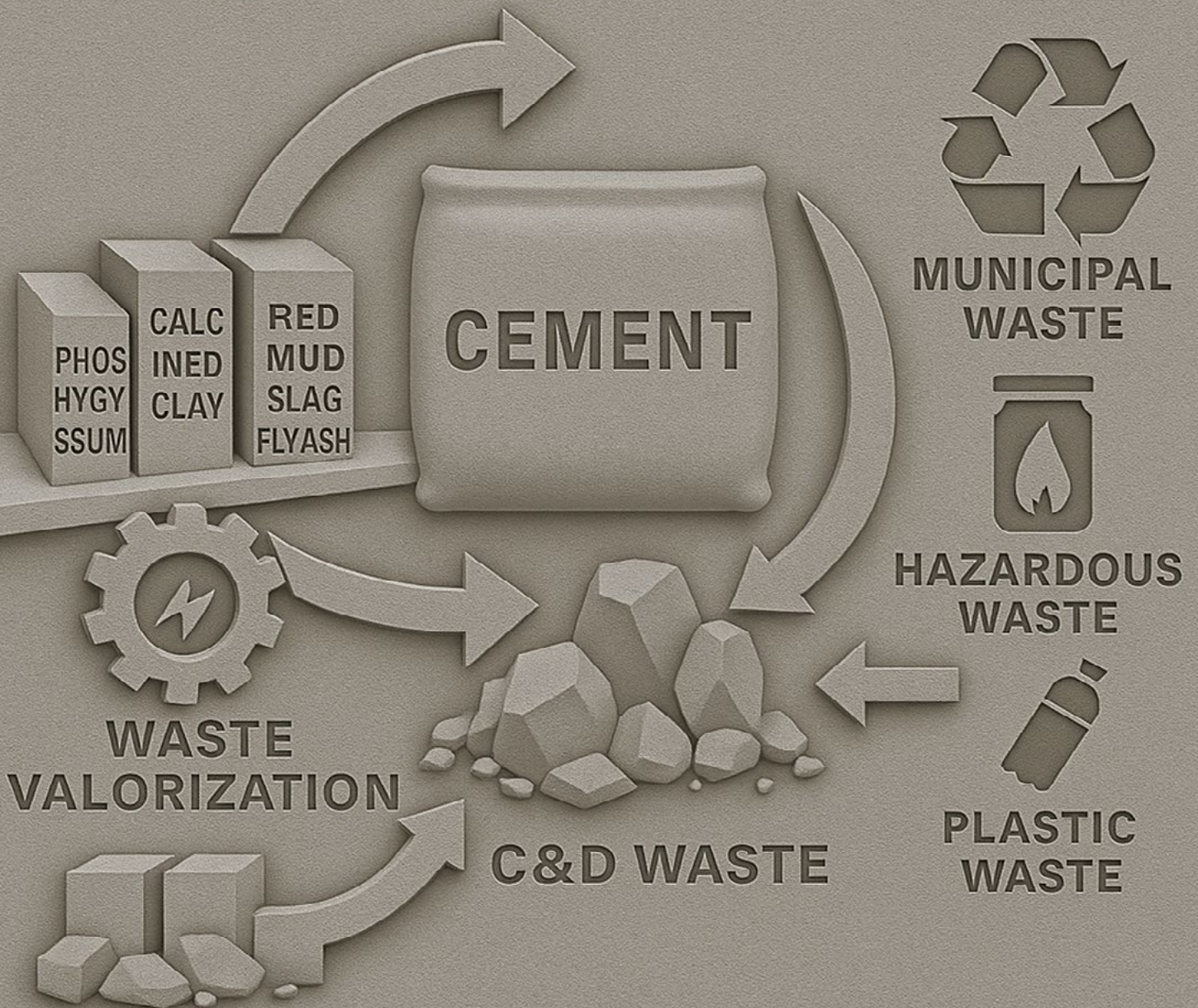
1. SCM Integration

We've advanced the use of:

- Phosphogypsum (PG) in Morocco and KSA, where pilot studies with Ma'aden and OCP show high potential as sulphate-resistant binders.
- Calcined clay in Upper Egypt, targeting exports with EPD-backed compliance.
- Red mud, copper slag, and fly ash in Morocco, UAE and KSA as viable SCMs based on chemical compatibility and LCA metrics.

Our SCM mapping programs across the region are uncovering millions of tons of industrial waste that can be repositioned as inputs, not liabilities.

CIRCULAR INPUTS



2. Waste-to-Product Innovation

Cement kilns are evolving into regional circularity hubs. Projects now link:

- Municipal waste valorization (with RDF routes).
- Hazardous waste disposal (with co-processing protocols).
- Plastic waste integration, both as fuel and potential SCM research.

Systemic integration: cementing a climate competitive strategy

These three pillars—digital, fuels, and circularity—cannot succeed in silos. The most effective transformations are those where these systems are embedded into a cohesive performance architecture, underpinned by adaptive capital investment models and smart regulatory foresight. At A³&Co., this approach is embedded in our guiding principle: “Reducing Carbon While Reducing Cost”—a doctrine not only of sustainability, but of strategic industrial competitiveness.

Our Country Decarbonization Strategy (CDS) methodology operationalizes this vision. It enables the co-design of decarbonization pathways that are country-specific yet globally benchmarked, linking industrial realities with climate ambition. CDS integrates four critical vectors:

- Technology Deployment Sequencing
- Policy & Incentive Architecture Alignment
- Carbon & Resource Efficiency Mapping
- Resilient Financing Structures

We are currently supporting governments and private sector actors in designing multi-decade transformation blueprints that integrate:

- CAPEX Optimization – A digital-first infrastructure, fuel flexibility retrofits, and SCM blending systems prioritized as synchronized value enablers within long-term production reconfiguration plans.
- OPEX Rationalization – Kiln-level energy profiling, digital twins, and predictive maintenance powered by AI/ML enable real-time cost minimization and emissions intensity control.
- Regulatory Synchronization – Alignment with CBAM, SASO's Green Product Label, and MRV systems tied to national NDCs ensure regulatory obligations translate to competitive advantage.

Overlaying these components is our Operational Excellence Strategy: a process engineering and governance model harmonizing plant-level execution with enterprise-level sustainability metrics, emphasizing:

- Granular KPI traceability from raw material inflow to product dispatch.
- Lean transformation protocols for energy use, thermal substitution, and clinker factor.
- Integrated data environments (ERP-LIMS-SCADA) for analytics-driven decisions.

This integrated strategic model unlocks climate-aligned capital from EBRD, IFC, and sustainability-linked bonds, rewarding operational integration—not fragmented projects.

The result is a systemic decarbonization architecture, where industrial optimization and climate leadership reinforce each other.

Country spotlights: transformation in motion

A. Kingdom of Saudi Arabia: Decarbonization and Circular Economy Blueprint

In KSA, cement sector transformation is being institutionalized through a national roadmap led by the Ministry of Industry and supported by A³&Co. Our collaboration involves:

- A national strategy for SCM valorization.
- Fuel displacement strategy leveraging SABIC's plastic waste and MWAN's landfill infrastructure and Substitution of liquid fuels with NG.
- Integration of green labeling protocols with SASO and MRV harmonization across all producers.

Saudi Arabia's industrial ecosystem is uniquely positioned to lead in circularity. Public-private synergies are evolving rapidly, with SIRC developing cement-grade RDF and policy reforms pushing cement players toward alternative fuel compliance.

Moreover, localization policies and the push for Saudi human capital development are driving digital knowledge transfer and local innovation. Plants in the Western Region have adopted advanced process control with national engineers trained under the Vision 2030 platform.

B. United Arab Emirates: Carbon Law, Nationalization, and Compliance Strategy

The UAE is preparing one of the region's most structured regulatory ecosystems with the anticipated Carbon Law and alignment with global carbon markets.

A³&Co. is supporting manufacturers to prepare via:

- CBAM-ready SCM and EPD strategies.
- Integration of LCA tools like One Click LCA and OpenLCA.
- Digital MRV dashboards tied to national inventory systems.

Moreover, Emiratization strategies are focusing on climate jobs. Our digital maturity programs in Ras Al Khaimah and Abu Dhabi embed local engineers in advanced analytics and kiln optimization roles.

The UAE is also pioneering a regional emissions registry. Our advisory role includes embedding plants into the potential carbon market through voluntary MRV alignment and verification programs.

C. Syria: Cement Sector Evolution in a Post-War Context

In Syria, the cement industry will be foundational to national reconstruction. Yet the sector must leapfrog towards sustainability instead of replicating legacy models.

A³&Co.'s framework in Syria focuses on:

- Designing climate-smart greenfield plants integrated with RDF preprocessing.
- Embedding digital twins and remote monitoring from the outset.
- Sector Privatisation to boost production capacities and build future workforce.

Moreover, the decarbonization agenda in Syria intersects with the need for resilience. Our reconstruction blueprint links climate targets with employment, energy independence, and economic integration.

D. Morocco: Exporting Clinker and Climate Intelligence

Morocco has long held a clinker surplus, but it is now turning this into climate-aligned influence. Our work supports Moroccan manufacturers to:

- Co-process municipal waste with local government frameworks.
- Embed digital controls and blockchain-based SCM traceability.

The country's access to renewables (especially wind) also enables low-carbon electricity to power grinding and blending stations.

Moroccan firms, in partnership with A³&Co., are exporting not just product but strategy: consulting, training, and digital solutions to new markets in West Africa.

E. Egypt: Circularity as a Driver of Export and Cost Leadership

Egypt's cement sector is under pressure from overcapacity, high fuel costs, and the need for export competitiveness. A³&Co.'s roadmap aligns decarbonization with export strategy:

- Deploying calcined clay lines tailored for EPD compliance in EU and Gulf markets.
- Leveraging logistics for SCM blending and export terminals.
- Digitalizing MRV and fuel dashboards for transparent reporting.

Egypt is also developing its first SCM cluster maps covering steel slag, fly ash, PG, and construction & demolition waste to industrialize circularity.

Conclusion: the future is now

The cement sector in MENA is not waiting for 2040 or 2050. Across diverse regulatory environments and geopolitical realities, future-ready plants are emerging—with circularity, digitalization, and fuel innovation at their core.

At A³&Co., we believe that the transformation of cement is not a matter of technology readiness. It is a matter of vision, alignment, and integration. By bringing together stakeholders from government, industry, and finance, we are helping to prove that reducing carbon while reducing cost is not just possible—it is already happening.

The future cement plant is no longer a prototype. It is the new normal in the making.

This is not merely a sectoral upgrade, it is an industrial repositioning. The MENA cement sector is shifting from fragmented compliance efforts to fully integrated decarbonization architectures that balance carbon, cost, and competitiveness.

At A³&Co., we are not only designing the roadmap; we are helping build the future-ready plant through strategy, integration, and execution.



Recovery of filter dust with Rhewum fine-cut screens – Sustainable & smart

Dipl.- Ing. Sigurd Schütz^a

^a Managing Director, RHEWUM GmbH, Rosentalstrasse 24, 42899 Remscheid, Germany

1. Summary

When discussing sustainability, most people immediately think of wind turbines, solar panels, and similar green technologies. However, truly sustainable and commercially viable projects can often be implemented quickly and easily within existing screening and grinding processes provided the right technology is in place. This article offers practical insights into this overlooked area.

RHEWUM fine-cut screens, such as the RHEsono[®] or RHEsonox[®] models, enable highly precise protective screening even at substantial throughput rates. These systems can achieve separations as fine as 50 µm or 300 mesh, allowing for effective recovery of valuable materials that would otherwise be lost. In the following sections, we'll demonstrate just how economically beneficial the recovery of filter dust can be, an opportunity many operations currently miss.

2. Introduction

In efficient comminution systems, mills are usually operated in combination with screens. Rather than comminuting the entire product quantity, only the portion exceeding the desired maximum particle size is mechanically crushed. The energy intensity of this process varies depending on the material and particle size, typically, around 2 to 20 kWh/t of high-value electric energy is required.

Depending on the product, drying may be necessary before processing, resulting in additional thermal energy consumption. When starting with a feed moisture content of 10% H₂O and aiming for residual product humidity below 2.0% H₂O, approximately 80 kg of water must be evaporated per tonne of product. The energy needed for this process totals 48 kWh per tonne, translating to at least 50 kWh per tonne consumed for each tonne of finished product. This estimate reflects impressively how it is imperative to avoid product losses.

3. Application in the field

To avoid the release of dust, such processing plants are generally equipped with a central dedusting system. Screens, mills, crushers, and all transfer points in conveying systems including belt conveyors and crushing stations are connected to a central dust extraction unit. Here the dusty air is filtered and the filter dust is collected. However, in addition to removing unwanted dust, the system also unintentionally extracts valuable product that, when retained, can be just as marketable.

Recovering this product is essential, as it has already gained added value through upstream processing. It has been extracted, transported, possibly dried, screened, and ground. The following explains the application and implementation with regard to frac-sand production.

4. Recovery of product at a texan frac-sand producer

To successfully extract shale oil using fracking, one raw material is especially crucial: the right sand. In this process, a fluid mixed with a proppant — typically frac sand — is injected at high pressure into a borehole up to 3,000 meters deep to release the oil or gas trapped beneath the rock.

Perfect frac sand is essential for successful fracking, as it keeps the borehole open and allows shale oil and gas to flow to the surface. The requirements are correspondingly high: the sand must be composed of highly pure silica. The particles need to be round — both to ensure smooth transport through pipelines and to leave enough space for oil and gas to flow. Additionally, they must withstand high pressure without breaking apart.

Fraction mm	Residue		Cumulative distribution	
	-	%	R	D
1.000				100.0 %
0.850	2.5	2.5 %	2.5 %	97.5 %
0.600	2.4	2.4 %	4.9 %	95.1 %
0.425	5.8	5.8 %	10.7 %	89.3 %
0.355	5.6	5.6 %	16.3 %	83.7 %
0.250	20.4	20.4 %	36.7 %	63.3 %
0.180	32.0	32.0 %	68.7 %	31.3 %
0.125	21.0	21.0 %	89.7 %	10.3 %
0.106	4.2	4.2 %	93.9 %	6.1 %
0.075	4.1	4.1 %	98.0 %	2.0 %
	2.0	2.0 %	100.0 %	
Total	100.0			

Table 1: Typical size distribution for frac-sand feed

Consequently, in frac-sand production, it is necessary to maintain an exact particle distribution of the product at an extremely high output. From the extracted sand with its very wide particle distribution, only a narrow particle size range is produced by means of screening. Typically, frac sand producers need a certain particle size, which lies between 0.1 mm (~140 mesh) and 0.7 mm (~25 mesh). The remaining particle sizes are discarded from the production process.

Typical feed rates are around 150 tons per hour per machine, of which only 10–15 % is often converted into a saleable product with a purity of 90% between 106 µm (140 mesh) and 425 µm (40 mesh). At the same time, all emitted dust must also be captured and collected. This filter dust contains valuable, saleable material as well.

This example illustrates the screening of 20 tonnes per hour of filter dust at a 425 µm (40 mesh) cut to efficiently recover the valuable product contained in the dust.

5. Choice of the suitable screen

Given that grain sizes close to the mesh width need to be screened, a pitched screen was preferred. The angled design of the mesh reduces the contact surface between the particles and the screen, improving efficiency. A flat screen, by contrast, is more prone to rapid blinding, requiring additional equipment — such as tappers — to keep the screening surface clear. However, when processing silica sand, these components are exposed to significant wear, leading to increased maintenance costs.

Following in-house screening tests and joint trials at the customer's facility, a RHEWUM RHEsono® 300x538/2 screen was selected. This model features electromagnetic drives — known as PowerPacks — that directly excite the screening surface across an area of approximately 30 m². These PowerPacks generate extremely strong vibrations exclusively in the screening surface, without the need to move the entire machine body. This results in high, superimposed accelerations while protecting surrounding components. Thanks to the static housing, fixed, zero-leakage flange connections can be used instead of maintenance-intensive pipes or leaky slide seals. As a result, employees are better protected from health risks such as silicosis, which can occur during quartz sand processing.

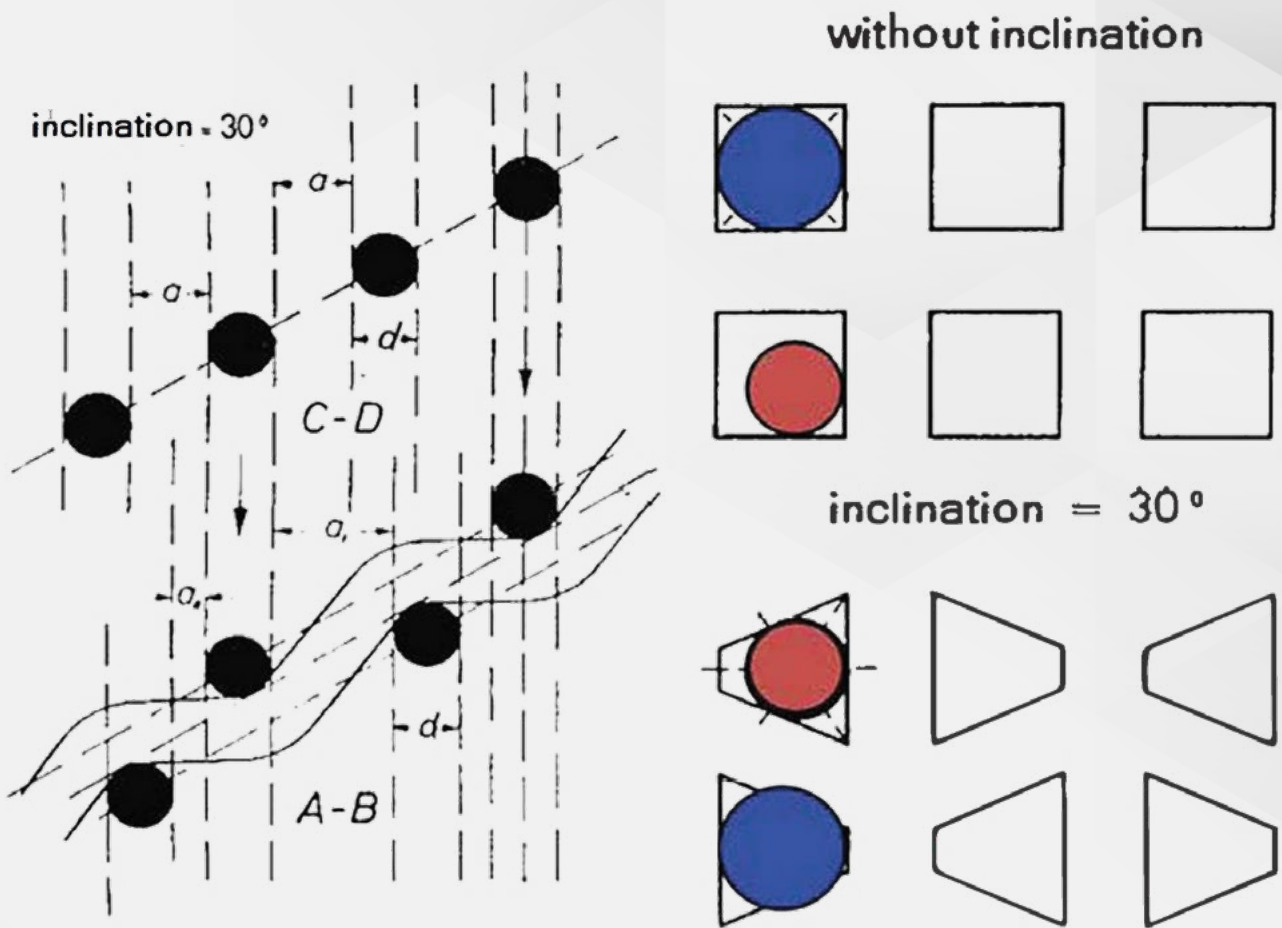


Illustration 1: Relationship between screen pitch to the number of contact points of a particle



Illustration 2: View of a double-deck RHEWUM RHEsono® with sound insulation

The product is fed by two controllable RHEspin 1950 rotary valve feeders positioned above the screen, ensuring even distribution of the free-flowing material across the entire screening surface. In addition to uniform distribution, the design also prioritizes wear resistance and easy maintenance of both the cellular wheel and the housing.

The amount of recoverable product was approximately 12 tonnes per hour. Based on a conservative price of around \$30 per tonne, this results in a payback period of less than one year for the application — even when accounting for annual wear and maintenance costs totaling 7% of the acquisition value.

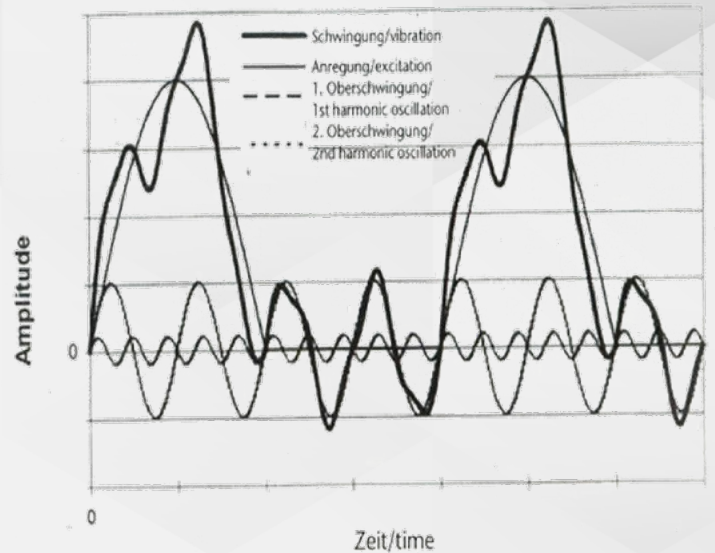
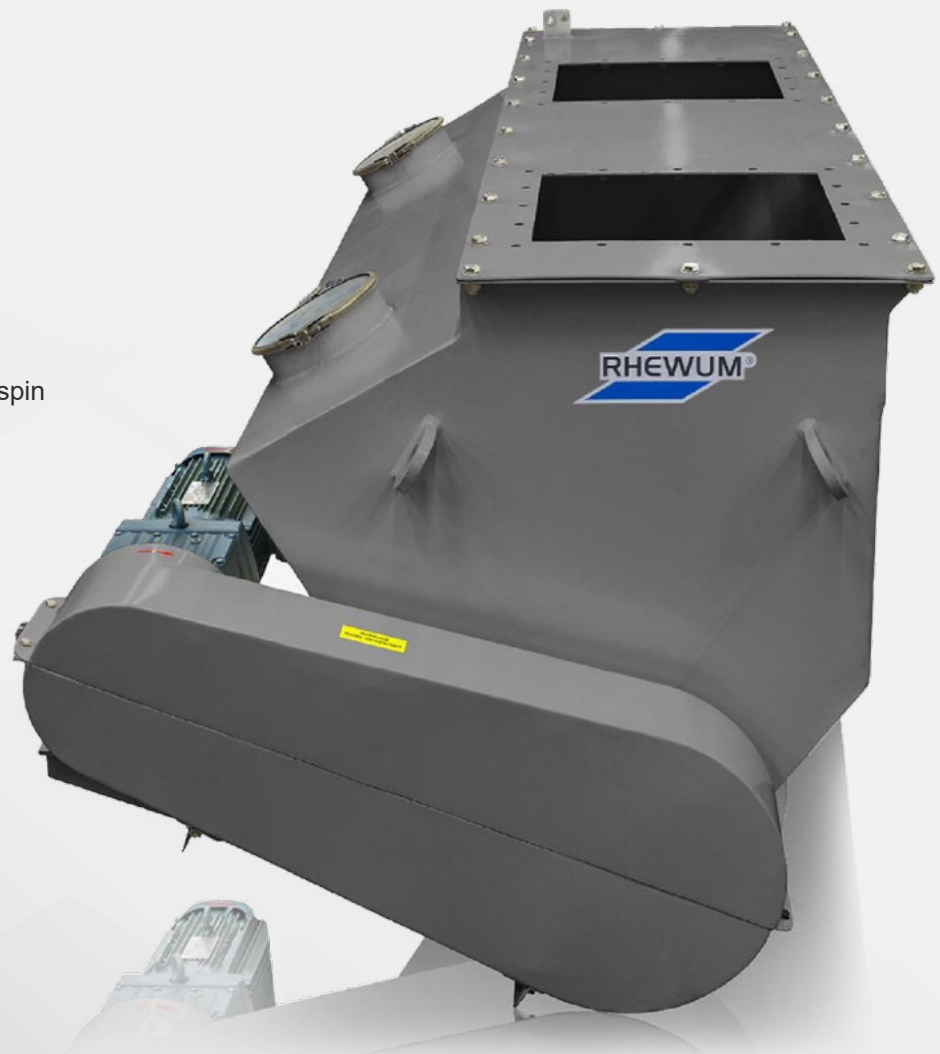


Figure 3: Superimposed vibrations at the screening surface caused by multiplied frequencies at the screen cloth

Illustration 4: RHEWUM RHEspin 1950 with drive



The additional energy costs resulting for direct excited screens are low:

Number of PowerPacks in the RHEsono®:
40 units at 160 W = 6.4 kW

Drive power for the RHEspin rotary valve feeders: 2 units at 3.5 kW = 7.0 kW

Total drive power = 13,4 kW

Resulting energy requirement:

$$13,4 \text{ kW} \times \frac{20 \text{ t/h}}{12 \text{ t/h}} \times \frac{1}{12 \text{ t/h}} = 1,9 \text{ kWh/t marketable product}$$

At typical energy rates — 12.7 US¢/kWh in the US and €0.32/kWh in Germany — energy costs amount to roughly 24 US¢ and 61 €¢ per tonne of product. Thanks to the efficient electromagnetic drive, these costs are negligible.

At the same time, production is more sustainable, wasted material is minimized, existing resources are used more efficiently, and overall profitability increases.

6. Is it worth the effort?

Yes, simply put: from a management perspective, investments with a payback period of less than 36 months are generally considered worthwhile. For payback periods under 18 months, swift implementation is strongly recommended to avoid missing out on a fast and significant competitive advantage.

Given the expected profits, even external financing or contract processing may be worthwhile if internal resources are insufficient. Beyond the purely financial view, this approach also improves raw material utilization and reduces disposal costs for filter dust — making the entire frac sand processing plant more sustainable and efficient.

7. Why are these possibilities so rarely utilized?

As a manufacturer of highly energy-efficient, directly excited screens, we've observed that energy consumption across all machinery in processing plants is still rarely given the attention it deserves. The focus has traditionally been on major energy consumers — such as mills, fans, and dryers — with efforts directed toward improving the efficiency of these specific units.

However, many companies continue to rely on the same “heavy-duty” machines they've used for decades. While these machines served their purpose in the past — when advanced sizing and calculation methods were unavailable — today, opting for outdated technology is a long-term decision. Given the typical lifespan of such equipment, this choice can effectively lock a company into decades of inefficiency.

In a worst-case scenario, what may initially appear to be a cost-effective decision could turn into a 20-year competitive disadvantage, especially if competitors adopt modern, energy efficient and low maintenance solutions. This refers to outdated screen designs with heavy housings, cross members, gear drives and V-belts. When it comes to modern recovery screening, less is more, and outdated technology simply cannot deliver economically efficient results.

For plant operators, it makes little sense to vibrate large, heavy housings just to generate the oscillation needed for the screening surface — the component that actually performs the screening. Fully vibrating screens with heavy masses require significantly more energy and subject the surrounding building or steel structure to continuous vibration.

In the worst case, the screen may reach the building's natural resonance frequency, causing both the structure and the machine to vibrate, potentially leading to serious damage. To counter this, counter vibration frames are often used. These add mass to absorb the vibrations transmitted by the machine, but they only treat the symptoms, not the root cause. For operators, this means having to build an even more robust steel structure, resulting in additional cost and complexity.

The right design approach is to optimally utilize the existing resources, that means in this case first and foremost steel plate and designing the machine to be as light yet as sturdy as possible.

8. Conclusion

In summary, companies often stick to familiar, proven solutions rather than exploring new approaches that carry some risk — but also potential opportunity. Existing plans can simply be reused, making the decision easier. As a result, operators tend to focus more on upfront investment costs rather than considering the total cost of ownership, often overlooking or underestimating the energy consumption of individual machines. Plant operators should not shut themselves off to the possibilities of modern fine-cut screening to remain competitive over the upcoming ten years.

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CBI Ghana unveils Supacem LC3-45 a breakthrough in sustainable cement production

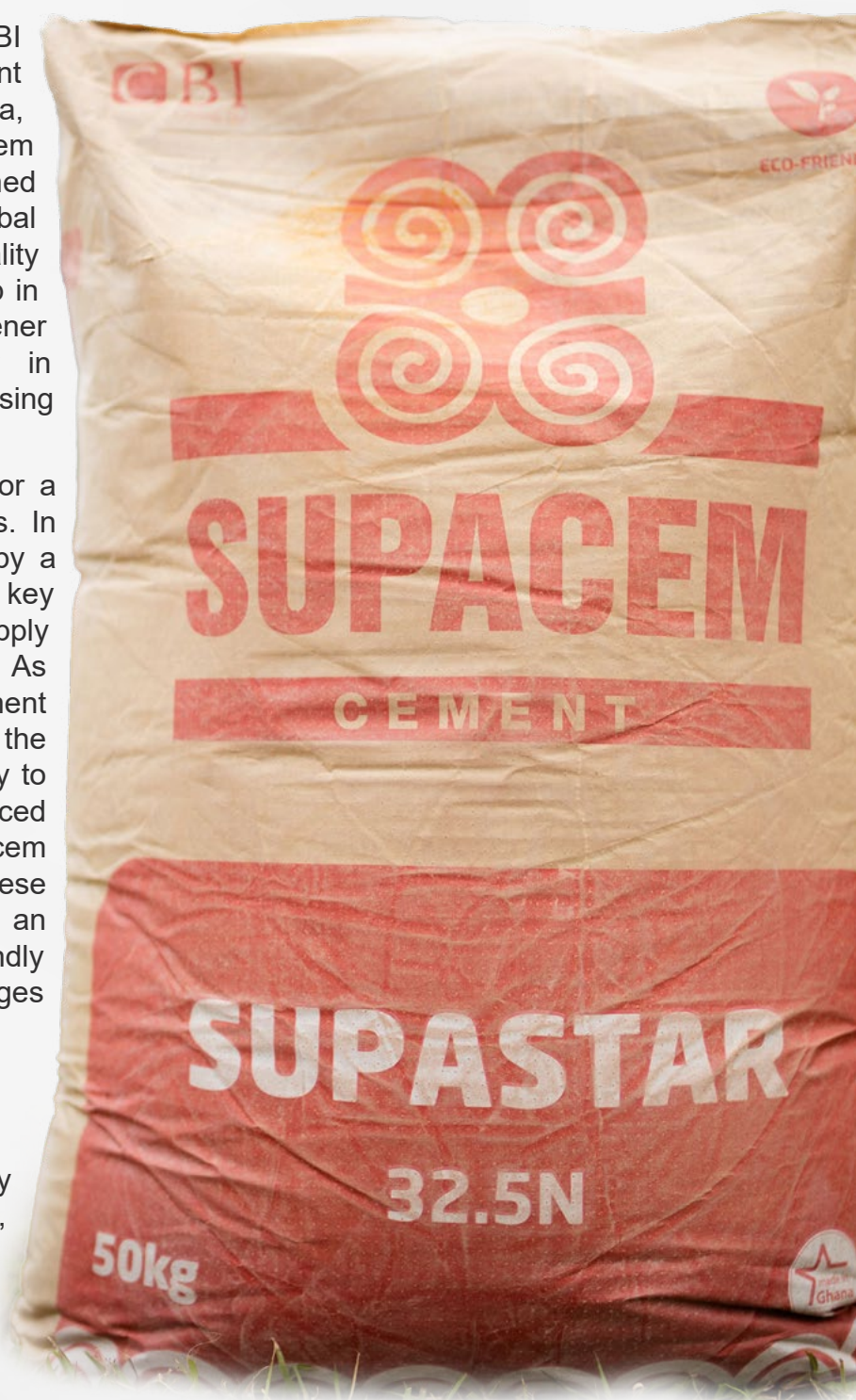
CBI Ghana Ltd, Ghana

[ACCRA, Ghana] – 15th April 2025 – CBI Ghana Ltd, a leading Ghanaian cement manufacturer located in Tema, Ghana, today announced the launch of Supacem LC3-45, an innovative Limestone Calcined Clay Cement (LC3) that sets a new global standard for eco-friendly and high-quality construction. The launch is a major step in CBI Ghana's strategy to cement a greener future and vindicates their audacity in pursuing a competitive advantage using pioneering technology.

The global cement industry accounts for a staggering 8% of global CO₂ emissions. In Ghana, this challenge is exacerbated by a heavy reliance on imported clinker, the key raw material, which creates cost and supply chain vulnerabilities for manufacturers. As a developing economy, Ghana's cement consumption is expected to double in the next 15 years, presenting an opportunity to pivot towards sustainable, locally-sourced solutions. CBI Ghana's launch of Supacem LC3-45 is a direct response to these challenges and opportunities, offering an innovative, high-quality, and eco-friendly cement that reduces emissions and leverages Ghana's abundant local resources.

CBI Ghana's Mission

To drive innovation in the cement industry by pioneering LC3 technology at scale, efficiently reducing CO₂ emissions and leading the way towards a greener and more sustainable future for construction in Ghana and beyond.





CBI Ghana's History

CBI Ghana Ltd., started as a family-owned business located in Tema, Ghana. In 2019, the business launched a 600,000 t cement grinding station that exceeded capacity in 2021. At this point, CBI Ghana recognised the need for a strategic shift to become more competitive and environmentally conscious, in line with global sustainability trends. This led to a bold decision to build the world's largest calcined clay plant, pursuing a competitive advantage through technology implemented at scale. Partnering with investors and Heidelberg Materials, CBI Ghana invested \$100 million in this project, on top of the initial \$45 million investment, to lead the transition to lower-emission cement production. CBI Ghana has increased its workforce to create 307 direct jobs.

Flagship Products

Supacem LC3-45. Supacem LC3-45 is CBI Ghana's first 32.5N-grade product in the LC3 space, leveraging LC3 technology to offer a sustainable and high-performance alternative to their OPC alternative.

Supacem LC3-60. CBI Ghana also produces Supacem 42.5R cement grade, which will transition to an LC3-60 42.5-grade product in Q2 2025.

Key Benefits

Reduced Environmental Impact: CBI Ghana is pioneering low-emission cement production, aiming to be the first to mass-produce LC3 with under 400 kg CO₂/t by 2026 through Supacem LC3-45. Moreover, as the first to mass-supply calcined clay to a third party (Ghacem, a Heidelberg Materials subsidiary), CBI Ghana is actively enabling the decarbonization of Ghana's cement industry. This dual approach – lower emissions in their own products and supplying to others – is projected to avoid 380,000 tons of CO₂ annually, significantly outperforming the GCCA's GNR benchmark of 654 kg CO₂/t.

Pioneering Technology Resulting in

Clinker Reduction: Supacem LC3-45 is the world's first LC3 cement to utilize less than 50% clinker in its formulation, containing only 45%. LC3 technology reduces the reliance on clinker, the most CO₂-intensive component of cement, compared to traditional cement which typically requires over 60%. CBI Ghana, alongside industry leaders like Heidelberg Materials' Ghanaian subsidiary, Ghacem who are also exploring LC3, is at the forefront of implementing this clinker-reducing technology at scale.



World's Largest Flash Calciner: Central to CBI Ghana's LC3 production is the world's largest flash calciner, capable of producing 1,200 tons of calcined clay per day. This state-of-the-art plant in Tema, Ghana, guarantees the mass production of high-quality calcined clay needed for sustainable cement, allowing CBI Ghana to produce more calcined clay than needed for their own operations, and push the cement industry to change by supplying other manufacturers.

Exceptional Quality and Durability: Supacem LC3-45 offers superior quality to traditional cement of the same grade. Rigorous testing shows superior compressive strengths at various stages. LC3 also provides additional advantages for the Ghanaian market, such as increased resistance to chloride and sulphate attacks, which is particularly beneficial for buildings in coastal environments or those susceptible to dampness, contributing to longer-lasting structures. The company's world-class cement laboratory and extensive clay investigations highlight its commitment to quality cement products.

Key Partnerships

The success of CBI Ghana's LC3 project has been built upon strong collaborative relationships with key partners across various sectors:

- **Investment Partners:** Norfund, IFU, and FLSmidth provided important financial backing and are new equity partners, while EIFO and Société Générale provided an export credit facility.
- **Technology and Industry Partners:** FLSmidth contributed to the technological aspects, while Heidelberg Materials served as a strategic alliance partner to work with regulators.
- **Research, Academia, and Regulatory Bodies:** Collaborative research and knowledge transfer partnerships with EPFL in Switzerland and KNUST in Ghana have been vital. The Ghana Standards Authority (GSA) has played a key role in bringing policy and research institutions along and adopted the world's latest LC3 standard, GS PAS 5:2024, in May 2024. Collaborations also extended to the University of Ghana (UG) and the Building and Road Research Institute (BRR). These partnerships, involving science, policymakers, and industry, have been crucial in navigating regulatory challenges and driving innovation.



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Bulk Material Storage and Transportation Technology: Intelligent Green Innovation Practice

Wen Peng / Yang Gongxiao, Henan SRON Silo Engineering Co., Ltd., China

Abstract

In the wave of greening and intelligence, SRON Silo Engineering Co., Ltd. will lead a new era of material storage and transportation, proposing the idea of clean transportation and unattended conveying of cement to directly address the environmental protection and efficiency pain points of the industry. Through examples such as fully enclosed transportation, intelligent scheduling and automated robots, it shows how technology can reshape traditional storage and transportation. As it is said: "Science and technology are the primary productive forces.", SRON is interpreting this truth with practical actions and promoting the industry's transformation to green and intelligent.

SRON is committed to providing safe, reliable and technologically advanced silo engineering systems, closed yard systems, fast loading and unloading systems, bulk loading and unloading systems and other bulk material storage and transportation engineering system solutions and EPC contractor services for the industrial infrastructure construction of bulk material storage and handling in building materials, grain, minerals, coal, energy, metallurgy, chemical industry and other industries around the world. As a pioneer enterprise that has long been committed to the bulk material storage and transportation industry, SRON is well aware of the importance of technological innovation, green development and intelligent transformation in promoting industry progress, improving production efficiency and protecting the environment in this era full of challenges and opportunities. Next, SRON will focus on the four aspects of "cement clean transportation, unattended conveying system, greenness, and intelligence" to deeply elaborate on SRON's thinking and practice, and share our innovation results and future prospects.

1. Clean Transportation of Cement: Protecting the Environment and Creating a New Chapter in Green Transportation

Firstly, use fully enclosed transport vehicles and loading equipment to ensure that there is no leakage or dust during the transportation of materials. These devices not only effectively prevent materials from being spilled, but also significantly reduce dust emissions during transportation. At the same time, we further reduce dust pollution through technical means such as high-efficiency filtration and electrostatic adsorption.

Secondly, reduce empty driving and waiting time, and improve transportation efficiency. At the same time, focus on the refined management of the transportation process. Through the intelligent management system, we can monitor key information such as the location, speed, and load of transportation vehicles in real time, optimize transportation routes and scheduling plans. We have also established complete transportation files to record the detailed information of each transportation to provide a basis for subsequent environmental protection assessment and continuous improvement.

2. Unattended System: Intelligent Technology Reshapes the New Ecology of Material Storage

The unattended system integrates advanced sensor technology, machine vision, Internet of Things, AI algorithms and other advanced technologies to achieve fully automated control and remote monitoring of material transportation.



3. Greenness: Innovation Drives the Construction of a New Low-carbon and Environmentally Friendly System

Greenness is one of the core strategies of SRON development.

Firstly, by the application and promotion of environmentally friendly materials. In the design and manufacturing process of material storage and conveying systems, we actively use environmentally friendly materials to reduce the use and emissions of harmful substances. At the same time, we also focus on the recyclability and recycling of materials to promote the development of a circular economy.

Secondly, SRON committed to the research, development and application of energy-saving and consumption-reducing technologies. Reduce energy consumption and improve energy utilization efficiency by optimizing system structure and improving process flow. We also promote the use of advanced equipment such as high-efficiency and energy-saving motors and variable frequency speed regulation to further reduce energy consumption during equipment operation.

4. Intelligentization: Technology Empowerment Leads the Future of Material Storage and Transportation

4.1. Intelligent Perception and Recognition

SRON deeply explores sensor technology, machine vision to achieve intelligent perception and accurate identification during the material storage process. We have developed high-precision sensors that can monitor key parameters such as the status, weight, and humidity of materials in real time to ensure the accuracy and real-time nature of the data.

At the same time, combined with machine vision technology, the system can automatically identify the type, shape and size of materials, providing accurate information for subsequent storage.

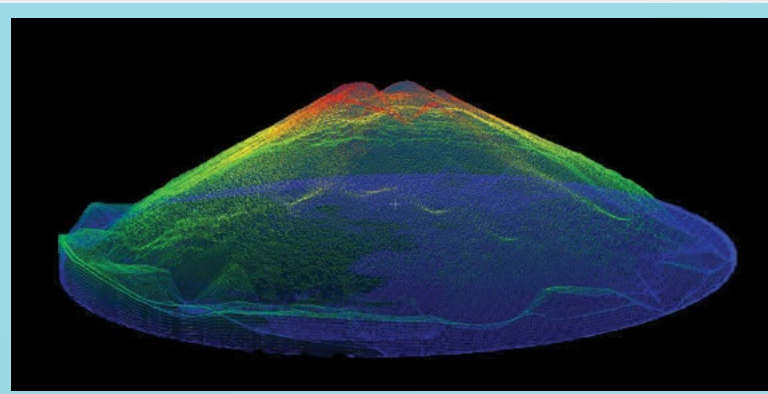
In addition, the application of 5G technology enables the material storage and transportation system to be seamlessly connected with other production systems to realize the interconnection and sharing of information.

4.2. Intelligent Scheduling and Optimization

In order to achieve efficient and orderly material storage, SRON has developed an intelligent scheduling and optimization system. Based on data analysis, the system can analyze production needs, inventory status and equipment status in real time, and automatically plan optimal storage paths and scheduling solutions.

Through intelligent scheduling, the system can reduce waiting time and improve storage efficiency.

At the same time, the optimization algorithm can also intelligently predict and maintain equipment operation, discover and solve potential problems in advance, reduce the failure rate, and increase the service life of the equipment.



4.3. Remote Monitoring and Maintenance

In order to achieve comprehensive monitoring and efficient maintenance of material storage and transportation systems, SRON developed a remote monitoring and maintenance platform.

The platform uses cloud computing and Internet of Things technology to transmit equipment information from each production site to the cloud server in real time to achieve remote monitoring and data analysis.

Through remote monitoring, we can understand the operating status and performance indicators of the equipment in real time, discover potential problems in a timely manner and provide early warning.

At the same time, combining AR (Augmented Reality) and VR (Virtual Reality) technology, we can also achieve remote fault diagnosis and maintenance guidance, improving maintenance efficiency and accuracy.

4.4. Data-driven Decision-making

In the era of intelligence, data is one of the most valuable resources for enterprises.

SRON focuses on data collection, organization and analysis, and has built a complete data-driven decision-making system.

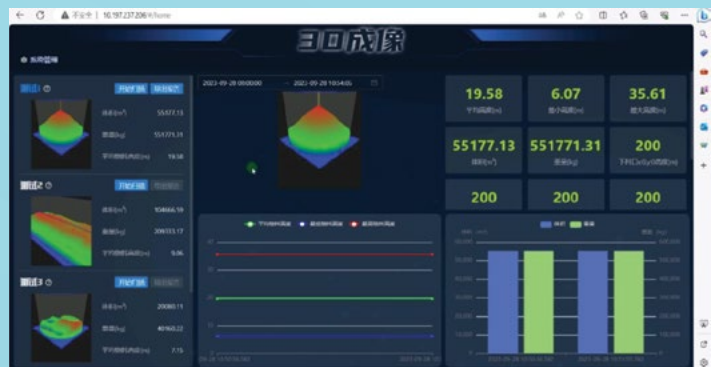
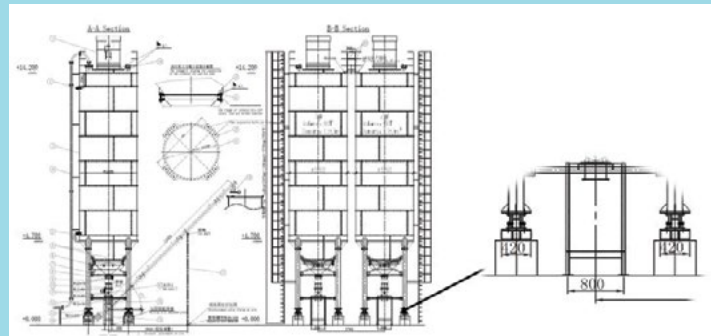
Through data analysis we can gain an in-depth understanding of each link and key indicators in the material storage and transportation process, providing strong support for decision-making.

For example, can use data analysis to discover bottlenecks and room for optimization, and propose improvement measures; can also use data to predict future production needs and trends to provide a basis for production planning and resource allocation.

Conclusion:

Looking forward to the future, SRON will continue to adhere to the product and service concept of "technology builds the beauty of project", take high standards, internationalization, and branding as its business goals, and continue to promote the clean, unmanned, green, and intelligent development of material storage and transportation systems.

We believe that through continuous innovation and practice, SRON will be able to set more brilliant milestones in the global bulk material storage and transportation industry and contribute more wisdom and strength to the sustainable development of the industry.



Improved process reliability in sustainable cement production

It's all in the mix – with the completed expansion of its TestCenter in Darmstadt, Qlar now offers its customers comprehensive support in the simulation of blending processes. As part of sustainable cement production, the use of additives in concrete production can be tested and optimised.

By reducing the proportion of clinker, the cement industry aims to drastically cut CO₂ emissions in production. Cement manufacturers are therefore increasingly turning to additives such as granulated blast furnace slag, fly ash, calcined clay, recycled concrete and others. However, the different raw materials must be fed and blended in exact proportions to ensure the desired product quality. With the now expanded TestCenter in Darmstadt, Qlar offers perfect conditions for simulating such process steps and working with customers to validate the ideal material composition for the desired product result. 'With the expansion of our TestCenter to include blending trials for sustainable cement, we are marking a decisive step forward in the development of environmentally friendly building materials,' explains André Appel, Head of the TestCenter in Darmstadt. 'Our goal is to take a leading role in the implementation of solutions and the validation of clinker substitutes in order to significantly reduce CO₂ emissions in cement production.'

Precise measurements and blending tests

The new closed loop system at the TestCenter allows different products to be combined and accuracy tests to be carried out using different measuring principles. At the heart of the new tower setup are the MULTICOR S mass flow meter and LIW Feeder MET screw feeder. MULTICOR S can measure bulk quantities of up to 7 t/h in the closed loop. Based on the Coriolis principle, this technology delivers high-precision measurements with an accuracy of ±0.5%, even with bulk material of different particle sizes. When combined with the LIW Feeder MET screw feeder, two-component processes can be simulated. The rotation of the MULTICOR measuring wheel causes an initial mixing of the materials. Various materials can be mixed in different ratios in the TestCenter.



The customer analyses the resulting material samples and can use the results to fine-tune their production process.

'The weighing, feeding and pneumatic conveying test stations already available at our TestCenter have now been meaningfully extended,' says Karsten Grünwald, Head of Sales Infrastructure at Qlar. 'Our customers benefit from simplified processes for evaluating new material combinations, dosing concepts and applications in order to make their cement production more sustainable.' An initial test run with material from an international manufacturer has already been successfully completed, and further test series are in preparation.



In addition to its location in Germany, Qlar operates other specialised test and innovation centres to support customers worldwide in process optimisation. While the TestCenter in Prague, Czech Republic, focuses on the processing of alternative fuels for the cement and recycling industries, pneumatic conveying and injection systems are tested at the Doncaster site in the United Kingdom.

About Qlar Group

Qlar (formerly Schenck Process) is a global provider of sustainable products, integrated solutions, and services in mission-critical applications for bulk materials. Headquartered in Darmstadt, Germany, the group has more than 1,100 employees with a presence in over 13 countries focusing on markets alongside chemicals and performance materials,

infrastructure and energy as well as alternative fuels. The production sites are located around the globe in Germany, India, China, UK and Czech Republic.

The product range includes solutions for industrial weighing, feeding, conveying, milling and grinding, and related digital applications of the CONiQ product family. With its testing infrastructure of 4 global test centres and 6 centres of competence, Qlar knows more than 40,000 different bulk materials across its relevant verticals.

Under the motto “driving circular transformation” the long-established international company is taking on a leading role in climate-neutral material processing and will focus even more strongly on digitalised and sustainable solutions in future, helping their clients to achieve a carbon-neutral sector by 2050.

NAVIGATE TOWARDS SUCCESS

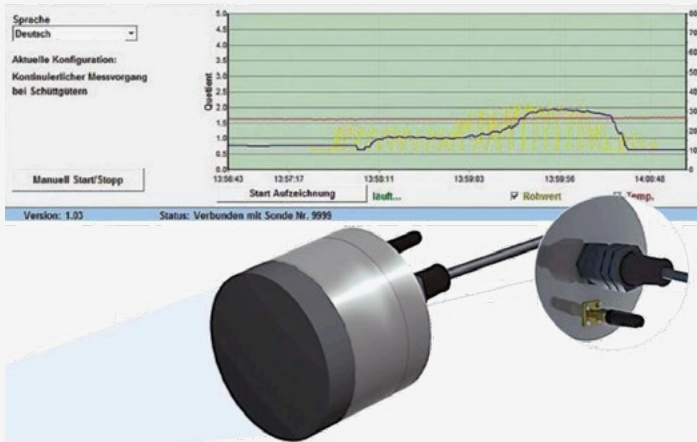
The cement industry knowledge your competitive advantage needs:

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



Digitalising the moisture measurement of bulk solids

App-controlled microwave measuring method. Franz Ludwig GmbH specialises in the measurement of moisture in bulk solids in a wide range of applications.



Building material manufacturers, glass and chemical plants are among the internationally orientated customer base. Agriculture is also a growing field of activity with regard to smart farming and the associated automation of work processes. This very long and intensive involvement with the subject of moisture measurement in industrial applications in terms of precision, durability, robustness and user-friendliness predestines Ludwig to develop and manufacture the moisture measurement technology described below.

The microwave measurement method, which has been tried and tested for years and operates in the 433 MHz frequency range, serves as the basis for the measurement technology. It utilises the dielectric constant of water, which has a permittivity value of $\mu r 80$. This number indicates how strongly electric fields propagate in materials. Due to the high permittivity of water, the microwave measurement method is suitable for determining the moisture content of bulk materials. Different medium and ambient temperatures have no influence on the precision of the microwave measurement method described.

The unique selling point of these sensors, which can be used in both mobile and fixed installations, is their ability to network intelligently and wirelessly with end devices or process controllers. They support plant operators and planners in configuring systems based on the Industry 4.0 standard.

The output signals can also be provided in both analogue and digital form. Thanks to their high computing power, the sensors are able to deliver usable measurement results even under the most difficult conditions, such as when measuring very small quantities in mixing and dosing processes. Parameterisation can be carried out via a terminal device independent of the manufacturer, as the access point (website) is implemented in the sensor.

Reliable measurements conveniently via app

An app is available for smartphones with Android operating systems; Windows operating systems are also supported. By using this technology, the customer benefits from the latest software developments and can update them at any time. Existing and familiar electronic devices such as tablets and smartphones can be used to operate the measuring sensors, which also represents an economic and ecological aspect.

The realisation that the use of apps significantly simplifies the use and operation of electronic systems, making it much less complicated for the operator, has led us to this development. This WLAN technology ensures safe operation/parameterisation by technical personnel outside of any danger zones. A software function is available for continuous recording of the sensor signals received, which enables subsequent precise analysis of measurement and process sequences.

ЦЕМЕНТ

и его применение

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**The journal for producers
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equipment producers**

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

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

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

Russia, 191119, Saint-Peterburg,
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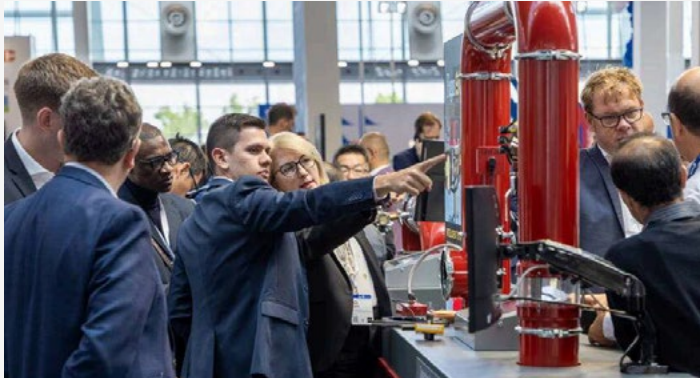
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GreCon mission control: Smart maintenance and intelligent forecasting



bulksolids-portal

The next generation of intelligent spark detection control panels: predictive maintenance, plug & play integration and comprehensive remote access for less downtime, more safety and maximum efficiency.

At LIGNA 2025, Fagus-GreCon will introduce GreCon Mission Control, the next generation of intelligent spark detection control panels. This innovative system combines predictive maintenance, plug-&-play integration, and comprehensive remote access—minimising downtime, enhancing safety, and maximising efficiency.

The Command Centre of Preventive Fire Protection

For a fire protection system to be fully effective, it requires a central control unit that intelligently coordinates all processes. GreCon Mission Control takes this technology to the next level - offering smart networking, real-time monitoring, and maximum system reliability.

Maximised Availability Through Smart Maintenance

With its Segmented Maintenance System (SMS), GreCon Mission Control sets new standards: scheduled and unscheduled maintenance can be carried out on individual components or segments of the production line without shutting down the entire system. This minimises production downtime and ensures stable processes.

Thanks to full remote functionality, the control panel optimises maintenance and monitoring processes. Firmware updates for the fully digital fire protection system are centrally managed and rolled out to all system components. Realtime alerts, secure data logging, and predictive maintenance enhance operational safety and simplify incident analysis - helping manufacturers quickly assess events after disruptions.

The Advantages of GreCon Mission Control

- Minimised downtime – Segmented maintenance reduces production interruptions and lowers costs.
- Remote support – Updates and external access improve availability and enable preventive fault detection.
- Plug-&-Play – Less wiring, lower installation and maintenance costs, and simple setup.

Less Effort, More Sustainability

GreCon Mission Control combines intuitive operation with efficient installation. Key functions are accessible in just a few clicks, and frequently used features are readily available. At the same time, the system significantly reduces installation complexity: less wiring means faster commissioning, lower maintenance costs, and a more sustainable use of resources. Thanks to plug-&-play integration via Industrial Ethernet, the control panel can be seamlessly incorporated into existing systems with minimal installation effort.



Large display 120mm, remote display for scales

New large display with 120mm digit height, made in Germany, aluminum housing, various protocols and interfaces, programmable without needing to open the display.



WWD-2 is a further Development of the WWD-1 for Displaying Weights on Scales and Weighing Systems. But the WWD-2 can do much more. Whether used as a display for photovoltaic systems or other control applications, the WWD-2 impresses everywhere with its excellent readability.

With the ability to display in three colors, there are virtually no limits to its applications. The low power consumption also allows for mobile applications. The display was developed in our own factory and is also produced there. Adaptations to existing protocols can therefore be made quickly and easily.

Another brilliant feature: programming the display—e.g., when changing the measuring amplifier or the display unit—does not require direct access to the remote display (e.g., using a lift). Programming can be done via cable using simple software on a laptop, that's saving costs.

Technical Data:

- Power supply: 230VAC / Wide-range input 85 - 305VAC Alternative: 12 - 24VDC; Power consumption: max. 20W
- Housing: Aluminum: 610 x 187 x 55mm (excluding screw connections); IP66 / IP68
- Display: 481 x 120mm, 64 x 16 pixel matrix display
- Digit height: Single-line: 120mm; Two-line: 60mm
- Digit colors: red, green, yellow
- Brightness: adjustable
- Interfaces: Serial interface RS232; Optional interface: CAN-Bus, RS485

Additional

- Optional stainless steel weather protection available
- Parameters easily adjustable via external push buttons

Robot automation for existing packaging lines

GREIF-VELOX offers flexible robot solutions for palletizing, labelling and load securing - seamlessly integrated into any packaging line.



By using state-of-the-art robotics technology, GREIF-VELOX massively increases the efficiency of packaging processes.

Full-line components for automated palletizing, labelling and load securing reduce manual intervention, increase work safety and minimize

downtimes. The flexible systems can be modularly integrated into existing packaging lines and individually adapted to different containers such as bags, cartons, canisters or drums - for smooth processes and maximum process reliability.

bulksolids-portal





Silo control from SSB Wägetechnik

In the field of silo-control and visualization, SSB Wägetechnik offers versatile and individual solutions, integrated into software tools such as SAP and ORACLE or tailored to your own database exchange.

With our silo-control system, which can either be integrated into software tools such as SAP and ORACLE or tailored to your own database exchange, the management of your silo plant becomes more targeted, convenient and functional.

When using a control system, the production processes from product receipt, order acceptance, silo discharge control, safety scanning, determination of filling variants (e.g. truck, big bag, FFS) and backtracking to the finished container can be precisely monitored and controlled. The WinCC software solution we offer helps you optimize the management of your plant and make it autonomous and user-friendly.

To make the control of your silo plant even more functional, we offer control systems with integration of the filling technology, visualization system and databases. In addition to process monitoring, our silo control systems also enable remote monitoring with worldwide access, linking with databases, connection of truck scales, and flexible networking of the filling and loading technology. The visualization of the silo control system is done with WinCC Scada or WinCC flexible.



The PCE-LES 103: For non-contact measurement of rotational speed

Stroboscopes are often used for rotating or vibrating objects to determine rotational speed or vibration frequency. Typical areas of application include rotating industrial machinery, fans in air-conditioning and ventilation systems.

PCE Instruments has developed a new stroboscope, the PCE-LES 103. This state-of-the-art device enables precise measurements and inspections in various industrial applications. The PCE-LES 103 stroboscope features three powerful high-power LEDs that provide an impressive light intensity of 6160 lux at 30 cm and 1000 Hz. With its digital pulse width modulation and phase shift of -360° to $+360^\circ$, the compact stroboscope guarantees extremely precise control of the light pulses.



The PCE-LES 103 stroboscope offers flexible application options thanks to its adjustable flash frequency in FPM (flashes per minute) and Hz, for example for the visual inspection of materials (textiles, coatings), non-destructive testing (NDT) and troubleshooting in high-speed automation processes using virtual slow motion. With a frequency measurement range of 60 to 300,000 FPM or 1 to 5000 Hz and a high accuracy of 0.003 % or ± 1 LSD, it is ideal for testing ink densities and curing quality, making it an indispensable tool for professionals.

The intuitive operation of the device is a particular benefit. The clear 2.8-inch TFT colour display makes it easy to navigate through the menus, which are available in ten languages, including English, German, Spanish and French. The flash frequency can be quickly and easily adjusted using the x2 and $\div 2$ keys, allowing for rapid adaptation to different requirements.

The stroboscope also offers a long operating time of 4.5 hours at a flash frequency of 100 Hz and a display brightness of 70 %. The automatic power off can be set to between two and ten minutes and can be deactivated if necessary to ensure continuous use.

PCE Instruments has designed the PCE-LES 103 to be rugged, with an IP52 rating and to operate in a wide temperature range of -20 to 60°C . Power is supplied via a 5 V DC, 2 A adaptor and the built-in lithium-ion battery with a capacity of 2200 mAh and a voltage of 7.4 V ensures a reliable power supply.

The PCE-LES 103 is also available in two UV versions – PCE-LES 103UV-365 and PCE-LES 103UV-385. The UV stroboscope PCE-LES 103UV-365 covers a UV light range from 365 to 370 nm and the PCE-LES 103UV-385 covers a range from 370 to 385 nm. These UV stroboscopes are used, for example, to inspect printing webs during the production of pharmaceutical packaging and documents with security features (ID cards, banknotes, barcodes with invisible ink) that only become visible under UV light.

To summarise, the PCE-LES 103 series stroboscopes from PCE Instruments offer a combination of high performance, precision and ease of use that makes them indispensable testing tools for professionals in industry and research.

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Wireless monitoring of heavily loaded bearings prevents downtime

Most bearing damage occurs due to material fatigue as a result of continuously varying loads. To tackle this problem, an advanced system for wireless monitoring of bearing temperatures was installed.

For a circular future with lower CO₂ emissions and manageable costs, smart and efficient use of raw materials is indispensable. Heros Sluiskil, a leader in the circular economy, plays a key role in this. By sustainably processing bottom ash into secondary raw materials, the company minimises waste and maximises reuse.

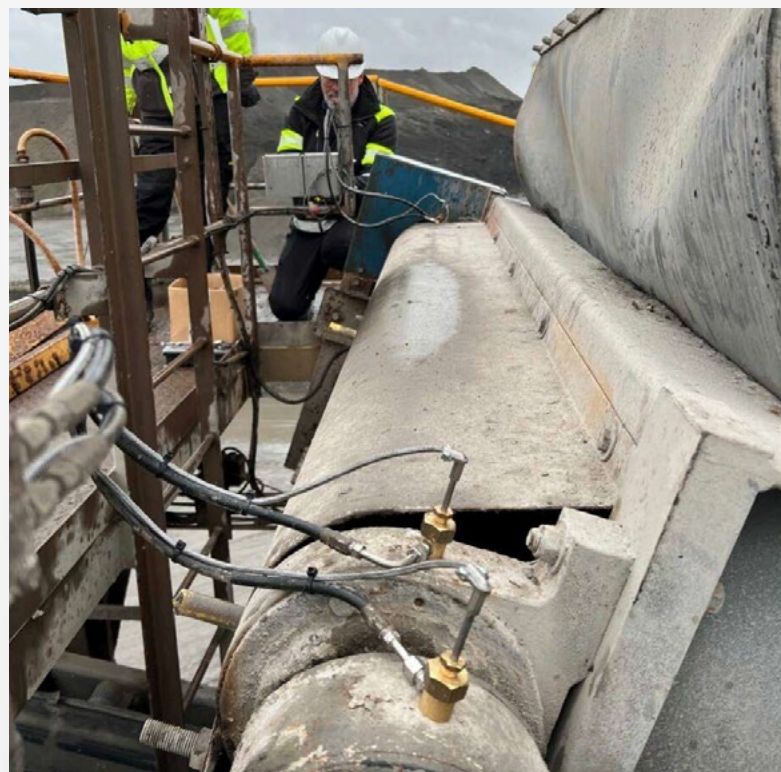
A crucial link in this process are the heavy industrial screening plants that process the bottom ashes. Heros processes 1 million tonnes of AEC bottom ash annually, a quantity that continues to increase. To achieve these ambitious targets, the plants must continue to operate reliably. Especially the heavily loaded bearings in the screening plants are a risk factor; their failure often leads to unexpected and costly downtime.



Cause of bearing failure and the solution

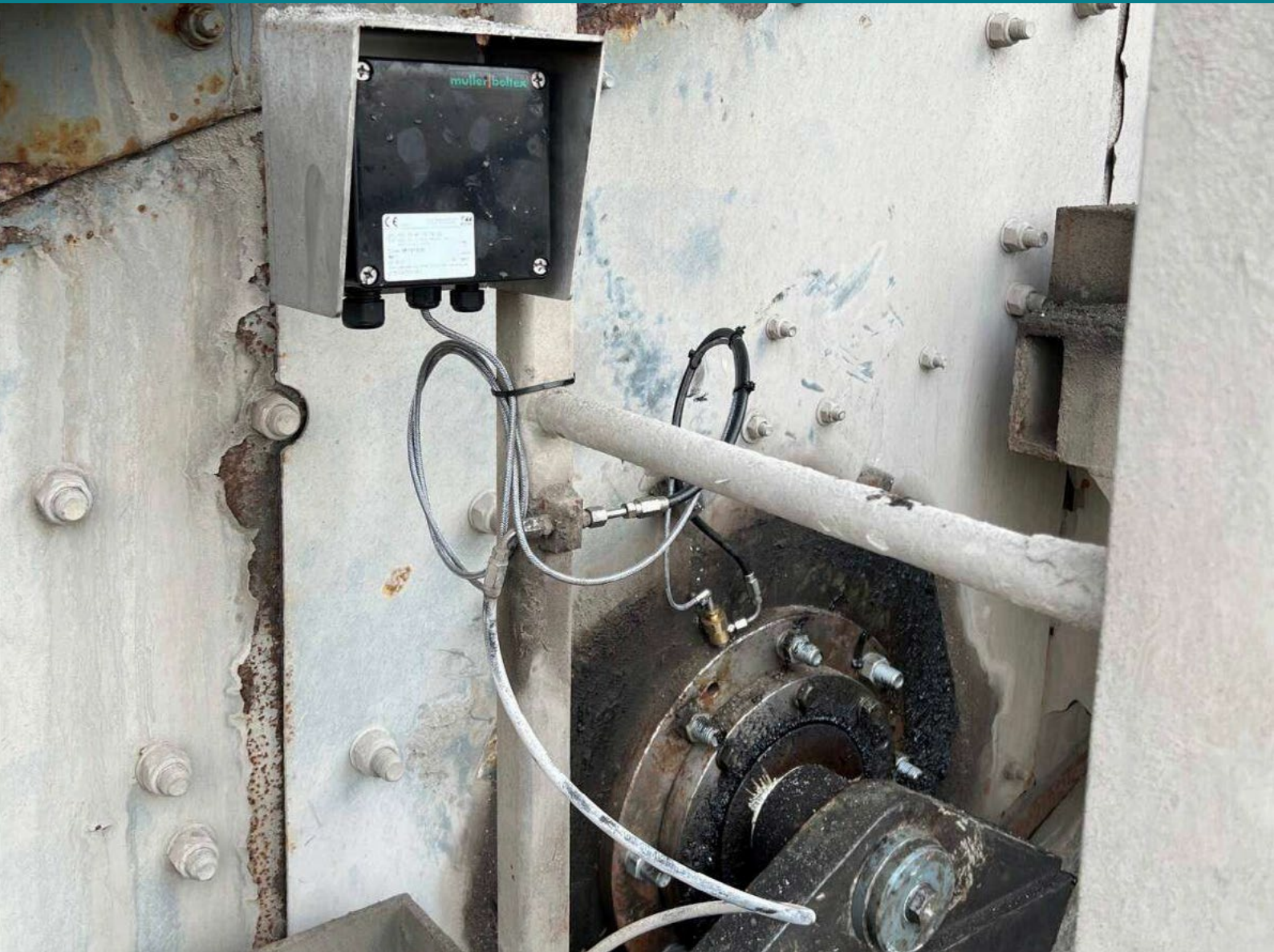
Most premature bearing damage occurs due to material fatigue as a result of continuously varying loads. Research shows that 60% of bearing failures are caused by this. This results in unexpected downtime and loss of productivity.

To tackle this problem, Heros, in collaboration with Muller Beltex, has developed an advanced system for wireless monitoring of bearing temperatures. This enables technicians to spot anomalies early and intervene before damage occurs.



Wireless monitoring system

The system uses PT1000V3C bearing temperature sensors. These sensors measure temperature directly on the outer bearing through the grease nipple, which is much more accurate than surface temperature measurements. The wireless transmitters are built into industrial junction boxes to ensure robustness. This is essential on Heros' vast premises, where wired systems are impractical due to the mass of ferrous and non-ferrous materials.



The PT1000 sensors were chosen for their low power consumption and long lifetime of 7 to 10 years. They transmit a temperature reading every three minutes over a 4G network. In case of anomalies, the system automatically generates a notification with specific location data and a work order, allowing the maintenance team to take targeted and efficient action.

Benefits of wireless monitoring system

- Preventive maintenance: Early detection of temperature anomalies prevents unexpected downtime.
- Reliability: The wireless network functions excellently on large industrial sites without complex cabling.
- Cost savings: Avoided downtime and targeted repairs reduce operational costs.
- Longevity: The sensors require minimal maintenance, contributing to stable and efficient production.

Innovative technology

The PT1000V3C sensor is designed for a wide range of industrial applications, from block and flange bearings to motors and pumps. Its corrosion-resistant housing meets stringent ATEX standards for explosive environments, making the sensor suitable for challenging industrial conditions.

Conclusion

The successful application at Heros illustrates how wireless monitoring can contribute to a more sustainable and efficient industry. The monitoring system that technology plays a key role in the circular economy. Real-time insight into bearing temperatures minimises downtime, increases efficiency and contributes to a more sustainable production process. This can also be applied in other sectors, such as mining, steel production and recycling industries. Continuous innovation in wireless technology and sensors can further optimise processes.

VPVision Energy Monitoring 8.1: Enabling detailed analysis with Audit Mode

VPInstruments is proud to announce the release of VPPVision 8.1. A major upgrade packed with enhancements that boost performance and improve data accessibility. With up to 40% faster data processing and advanced KPI functions. VPPVision 8.1 sets a new benchmark for real-time monitoring of your factory utilities, like compressed air, power, gas, steam, water and more.

Key enhancements in VPPVision 8.1:

Enhanced Audit Mode – Now available for all subscriptions

The Audit Mode in VPPVision provides high-resolution, second-level data for in-depth analysis of compressed air and gas systems. Previously exclusive to select users, Audit Mode is now available for all VPPVision subscriptions. This allows end users to enable granular data collection, giving their air audit consultant direct access to real-time data for actionable improvement recommendations for system performance.

Real-Time CSV data logging for seamless export

The improved Audit Mode now writes data directly to CSV files in real time. With the new CSV publisher, you gain complete control on data export of this huge amount of data. Options include amongst others, time interval, data averaging, channel selection and data formatting.

New KPI logic processor with smarter custom formulas

VPPVision 8.1 introduces an ‘if’ processor element for KPI formulas, expanding the capabilities of virtual channels. This enables advanced calculations such as: Converting compressor amperage into flow output or creating customized performance indicators based on real-time conditions.



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About VPInstruments

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23-24

July 2025

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09-11

17-18

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23-24

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15-16

16-17

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Industry Link
Ms. Mariana Gheorghe, Marketing and Program Manager
 Tel.: +40726 497 448



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16-17

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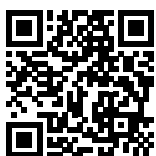
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29-30
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29-31
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26-29
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Fort Lauderdale, USA

09-10
June 2026
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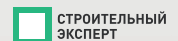
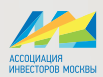
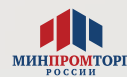
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28 and 30

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from 2 pm to 5 pm Rome time

Faculty: Siti B&T faculty team →

October 2025

06

Firing for ceramic products and roller kiln

from 2 pm to 5 pm Rome time

Faculty: Siti B&T faculty team →

11 and 13

Management of storage, sorting, packaging
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08-09

5th ICCCM

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10-11

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September 2025

23-25

October 2025

MERSEM 2025

12th International Marble and
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11-14

IMCET 2025

29th International Mining Congress and Exhibition of
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For more information, please contact:
Dr. Nejat Tamzok, Congress Chairman



17-18

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جدول موضوعات المجلة لعام 2025

المناسبات	الموضوعات	العدد
المؤتمر والمعرض العربي الدولي الثامن والعشرون لصناعة الإسمنت ومواد البناء دبي الإمارات العربية المتحدة 11 - 13 نوفمبر/تشرين الثاني 2025	* التعبئة والتغليف * أنظمة التحميل / التفريغ والتخزين * حلول النقل * تكنولوجيا التغذية * سيور الرافعات الدلوية * مناولة المواد في مصانع الإسمنت والمحاجر والمحطات والموانئ * القباب والصوامع والنقل * الحماية من التآكل * التروس والمحركات والتزييت * أنظمة الحماية من الحريق * إجراءات الصيانة * الحرارية * تأهيل المحاجر * تنظيف الصوامع * المرشحات وإزالة الغبار	سبتمبر/أيلول 2025 (العدد رقم 101)
	* المبردات * المراوح * مدافع الهواء * الصحة والسلامة المهنية * تكنولوجيا الطحن * الطواحين العمودية * زيادة إنتاج مطحنة الإسمنت * التكسير * مساعدات الطحن والطحن * استعادة الحرارة المفقودة * التصوير الحراري * إعادة التدوير الحراري * طرق معالجة واستخدام غبار الممر الجانبي * الحماية من الانفجار في صوامع تخزين الوقود البديل * أنظمة مناولة الوقود البديل * إنتاج واستخدام الوقود الصلب المستعاد	ديسمبر/كانون الأول 2025 (العدد رقم 102)

آخر موعد لاستلام المقالات أو النصوص الصحفية أو الإعلانات لأعداد عام 2025:

1. عدد سبتمبر / أيلول (عدد خاص) : 24 سبتمبر / أيلول 2025

2. عدد ديسمبر / كانون الأول : 8 ديسمبر / كانون الأول 2025

الإعلانات

(بالدولار الأمريكي)

الإعلان في عدد واحد	الإعلان في عددين	الإعلان في ثلاثة أعداد	الإعلان في أربعة أعداد	
1,250	*	*	*	غلاف خارجي ملون
750	950	1,250	1,350	صفحة داخلية ملونة (A4)
450	550	650	750	نصف صفحة داخلية ملونة (A5)
300	350	400	450	ربع صفحة داخلية ملونة (75*210 مم)

أبعاد الإعلان على الغلاف الخارجي: ارتفاع 20 سم وعرض 20 سم
الدقة : 300dpi
نوع الملف: PSD أو EPS أو PDF

إعلان على موقع الاتحاد www.aucbm.net

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



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الإمارات العربية المتحدة

”إمستيل“ تتبنى استراتيجية شاملة لإزالة الكربون

أعلنت شركة ”إمستيل“ عن تحقيق إنجاز رائد في مجال إزالة الكربون، حيث تتبنى أول استخدام صناعي على نطاق واسع للإسمنت منخفض الكربون في المنطقة، حيث تعمل الشركة، بالتعاون مع شركة ”ماجسورت“، على تحويل خبث الحديد إلى مادة خام أساسية لإنتاج الإسمنت، مما يسهم بشكل كبير في تقليص انبعاثات ثاني أكسيد الكربون وتعزيز الاقتصاد الدائري. هذه المبادرة تمثل نقلة نوعية، حيث لا تقتصر على إبراز التكامل بين عمليات الشركة في مجالَي الحديد والإسمنت فحسب، بل تسهم أيضاً في تسريع تحقيق الاستدامة عبر مختلف الصناعات.

صناعات إسمنت الفجيرة تعلن استئناف الإنتاج

أعلنت ”صناعات إسمنت الفجيرة“ عن استئناف الإنتاج في 14 يونيو / حزيران وبدء شحنات الإسمنت اعتباراً من 23 يونيو / حزيران 2025. ومن المتوقع ظهور الأثر المالي لاستئناف الإنتاج في البيانات المالية لعام 2025.

الجمهورية التونسية

حفل تسليم شركة إسمنت جبل الوسط إلى Sinoma Cement في تونس

جرى يوم 15 أبريل / نيسان 2025، في ولاية زغوان، حفل تسليم مصنع الإسمنت بجبل الوسط إلى شركة Sinoma Cement الصينية.

وستواصل شركة Sinoma Cement الاستفادة الكاملة من مركز شركة الإسمنت جبل الوسط المحلي، مع الالتزام بمبدأ الاستفادة الجيدة من الموارد لخدمة البناء، والسير على طريق التنمية الخضراء منخفضة الكربون والمستدامة، وتعزيز الابتكار من خلال التكنولوجيا المتقدمة، وتحسين جودة وكفاءة الشركة عبر إدارة محلية، وتقليص استهلاك الطاقة، والسعي لتحقيق تنمية عالية الجودة في إطار مبادرة ”الحزام والطريق“ والهدف هو جعل المصنع نموذجاً في الرقمنة واحترام البيئة، والمساهمة في تطوير صناعة مواد البناء وفي الاقتصاد المحلي، بفضل قوة مجموعة CNBM.

لمحة عن Sinoma Cement

تأسست شركة Sinoma Cement في 20 نوفمبر / تشرين الثاني 2003 ومقرها في بكين، تمتلك حالياً فروعاً في الصين وفي الخارج (زامبيا، نيجيريا، تونس، منغوليا، موريشيوس، الإمارات العربية المتحدة، وغيرها).

Sinoma Cement هي شركة مشتركة بين شركة Tianshan لمواد البناء المحدودة وشركة الصين الوطنية للمواد الهندسية الدولية المحدودة، كما تشكل منصة الاستثمار والتشغيل والإدارة الدولية في قطاع المواد الأساسية لمجموعة CNBM.

بعد أكثر من 20 عاماً من التطوير، تحولت Sinoma Cement من شركة مصنعة متخصصة في الإسمنت إلى مجموعة متنوعة في مجالات الخرسانة، والركام المصنوع، والطوب الإنشائي، وغيرها، مع الحفاظ على رؤية عالمية والتمسك بمبدأ التعاون المربح للطرفين، مما ساعدها على الاندماج العميق في السوق الدولية.

الجزائر

إعادة تشغيل مصنع الإسمنت التابع لمجمع ”جيكاً“ بأدرار

تمت إعادة تشغيل مصنع إنتاج الإسمنت التابع لمجمع ”جيكاً“ ببلدية تيمقطن بولاية أدرار. ودخل هذا المصنع حيز التشغيل بخط إنتاج بقدرة واحد مليون طن سنوياً، فيما يجري التحضير للشروع في أشغال تشغيل الخط الثاني لهذه الوحدة في الأيام القادمة بطاقة إنتاج تقدر بـ 1.5 مليون طن سنوياً.

المملكة العربية السعودية

ترشيد“ توقع اتفاقية لتطوير محطة توليد الطاقة الكهربائية باستخدام الطاقة المتجددة

وقعت شركة إسمنت المتحدة الصناعية مع الشركة الوطنية لخدمات كفاءة الطاقة ”ترشيد“ عبر إحدى شركاتها التابعة، اتفاقية تطوير مشروع إنشاء محطة توليد الطاقة الكهربائية باستخدام الطاقة المتجددة لتزويد مصنع إسمنت المتحدة الصناعية، في محافظة الليث بمنطقة مكة المكرمة، بمنظومة خاصة لإنتاج الطاقة النظيفة، بمساحة تقارب 200 ألف متر مربع، وبطاقة توليد تبلغ 20 ميغاواط.

وأفاد الرئيس التنفيذي لإسمنت المتحدة الصناعية المهندس محمد بن دخيل الله المطرفي، أنه تم توقيع اتفاقية مشروع الطاقة الشمسية مع ”ترشيد“ لتوفير حلول طاقة نظيفة، مبيناً أن إسمنت المتحدة الصناعية رائدة في الطول البيئية المستدامة، بما فيها إنتاج الإسمنت الأخضر، الذي تخطت نسبته 40% من إجمالي إنتاجها.



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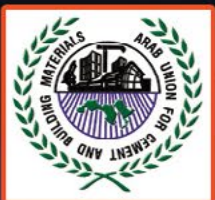
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شركة النهضة للصناعات - مصنع إسمنت النهضة

نجحت شركة النهضة للصناعات (مصنع إسمنت النهضة) في الحصول على علامة المطابقة الأوروبية (CE Marking) لمنتجاتها من الإسمنت البورتلاندي العادي وفق المعايير الأوروبية -EN 197-1، وهي:

- OPC - EN 197-1 CEM 1 (42.5 N)
- OPC - EN 197-1 CEM 1 (42.5 R)
- OPC - EN 197-1 CEM 1 (52.5 N)

وهذا الإنجاز يعد خطوة استراتيجية تفتح أمام الشركة أبواب التصدير إلى دول الاتحاد الأوروبي، مما يعزز من مكانتها كرائدة في صناعة الإسمنت ذي الجودة العالمية.

وقد تمكنت الشركة من تحقيق هذا الإنجاز بفضل الجهد المبذول من كافة إداراتها، وخاصة المعامل ومراقبة الجودة، التي تطبق أنظمة رقابية صارمة تبدأ من فحص الخامات، مروراً بجميع مراحل التصنيع، ووصولاً إلى المنتج النهائي، لضمان مطابقته لأعلى المعايير المصرية والعالمية، مع تحقيق خدمة ما بعد البيع، التي تركز على تلبية احتياجات العملاء والاستجابة الفعالة لملاحظاتهم.

العراق يدين 6 مشروعات صناعية باستثمارات 1.17 مليار دولار منها 5 مصانع إسمنت

أعلنت الحكومة العراقية عن بدء الأعمال التنفيذية لستة مشاريع صناعية في محافظة المثنى، بتكلفة استثمارية بلغت 1.17 مليار دولار.

وقالت الحكومة العراقية إن المشاريع تتضمن التشغيل التجاري لمصنع إسمنت نجمة السماوة 2، بطاقة إنتاجية 6 آلاف طن في اليوم، فضلاً عن إطلاق العمل التنفيذي لمصنع إسمنت العربي، بطاقة إنتاجية 6 آلاف طن في اليوم.

كما تم إطلاق العمل في مصنع إسمنت خيرات المثنى، بطاقة إنتاجية 6 آلاف طن في اليوم، وفق وكالة الأنباء العراقية "واع".

وتم إطلاق العمل في مصنع إسمنت السماوة بطاقة 6600 طن في اليوم، فضلاً عن إطلاق العمل في مصنع إسمنت الاتحاد بطاقة 6 آلاف طن في اليوم.

نشاطات عربية



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المكان: قاعات المركز الاردني للمعارض الدولية - مكة مول | بوابة 3 - القاعات (A,B,C) | المملكة الأردنية الهاشمية

الجهة المنظمة: الروانغ العالمية لتنظيم المعارض للاستفسارات: السيدة منى علقم | المدير العام

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التاريخ: 22 - 24 يوليو / تموز 2025

المكان: جامعة اليرموك، إربد | المملكة الأردنية الهاشمية

الجهة المنظمة: مركز الملكة رانيا ومركز دراسات التنمية

المستدامة في جامعة اليرموك



مؤتمر ومعرض صناعة الإسمنت والمجبول البيتوني في سورية 2025

التاريخ: 23 - 25 أكتوبر / تشرين الأول 2025

المكان: مدينة المعارض بدمشق | الجمهورية العربية السورية

الجهة المنظمة: مجموعة "سيم تك"

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دورات تدريبية عربية

الجهة المنظمة: المعهد العربي للتدريب والاستشارات الصناعية والتعدينية (AIMTCI) التابع للمنظمة العربية للتنمية الصناعية والتقييس والتعدين AIDSMO

المكان: المملكة المغربية

التاريخ: 25-22 يوليو / تموز 2025

للاستفسارات: المعهد العربي للتدريب والاستشارات الصناعية والتعدينية (AIMTCI)
د. سامي نبهان

جوال: +212706048333

هاتف: +212537274500

فاكس: +212537772188



إدارة البيانات والتحليل في سلاسل التوريد الصناعية باستخدام الذكاء الاصطناعي 25-22 يوليو / تموز 2025

الصيانة التنبؤية باستخدام الذكاء الاصطناعي 29-26 أغسطس / آب 2025

تحليل البيانات للصناعة 26-23 سبتمبر / أيلول 2025

التأهيل في سلامة العمليات (NEBOSH HSE) 26-23 سبتمبر / أيلول 2025

منهجية PRINCE2 في إدارة المشاريع 31-28 أكتوبر / تشرين الأول 2025

أنظمة الإدارة البيئية ISO 14001 (EMS) 31-28 أكتوبر / تشرين الأول 2025

إدارة المشاريع بحسب المواصفة ISO 21500 28-25 نوفمبر / تشرين الثاني 2025

التعلم الآلي لتحليل البيانات الصناعية 28-25 نوفمبر / تشرين الثاني 2025

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