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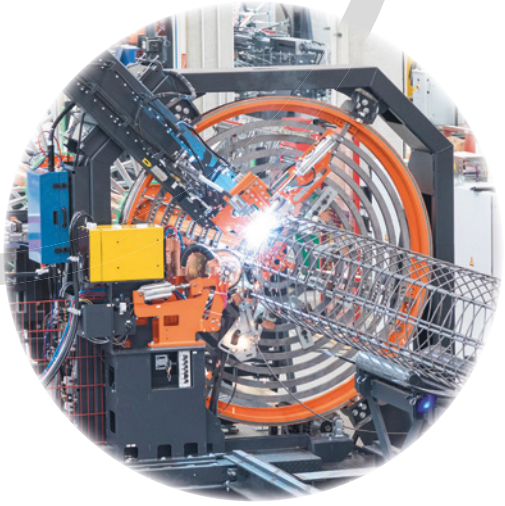

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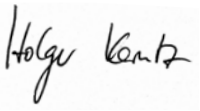

Dr.-Ing. Holger Karutz

Concrete Production in the GCC: Scale, Cost Pressure and Digital Transformation

The GCC construction market continues to be driven by large-scale infrastructure and urban development projects, placing sustained demand on concrete producers across the region.

These mega projects require high-volume output combined with strict quality control, consistency, and accelerated delivery schedules.

At the same time, concrete producers face increasing volatility in the cost of cement, aggregates, energy, and logistics, which directly impacts production economics. Fluctuating raw material prices make accurate cost forecasting and mix design optimization more critical than ever.

To manage these pressures, producers are investing in more precise batching systems, automated quality control, and real-time production monitoring. Digital technologies enable better tracking of material consumption, plant performance, and delivery efficiency across multiple sites. Integration with BIM and project planning systems allows concrete suppliers to align production more closely with project demand curves. Advanced data analytics also support optimized mix designs, reduced overdesign, and lower material waste.

These technical improvements help producers maintain performance under cost pressure while meeting demanding project specifications.

Across the GCC, the ability to combine scale with digital control is becoming a key differentiator in the concrete industry. This issue of CPI Middle East is providing you one more time with up-to-date information to face all these challenges. Enjoy!

إنتاج الخرسانة في دول مجلس التعاون الخليجي: الحجم وضغوط التكلفة والتحول الرقمي

لا تزال سوق البناء في دول مجلس التعاون الخليجي مدفوعةً بمشروعات بنية تحتية وتنمية عمرانية واسعة النطاق، ما يفرض طلبًا مستدامًا على منتجي الخرسانة في مختلف أنحاء المنطقة.

تتطلب هذه المشروعات العملاقة طاقات إنتاجية عالية إلى جانب رقابة صارمة على الجودة، وثبات في الأداء، وجداول تسليم متسارعة.

في الوقت ذاته، يواجه منتجو الخرسانة تقلبات متزايدة في تكاليف الإسمنت والبحص والطاقة والخدمات اللوجستية، ما ينعكس مباشرةً على اقتصاديات الإنتاج. صارت دقة التنبؤ بالتكاليف وتحسين تصميم الخلطات أكثر أهميةً مما كانت مطلقًا بسبب تقلبات أسعار المواد الخام.

يتجه المنتجون إلى الاستثمار في أنظمة خلط أكثر دقة ومراقبة مؤتمتة للجودة وأنظمة متابعة فورية لعمليات الإنتاج لمواجهة هذه التحديات. كما تتيح التقنيات الرقمية تتبعًا أفضل لاستهلاك المواد، وأداء المصانع، وكفاءة التسليم عبر مواقع متعددة. يمكن لموردي الخرسانة مواءمة الإنتاج بشكل أدق مع مستويات الطلب في المشروعات بفضل التكامل مع نمذجة معلومات البناء وأنظمة تخطيط المشروعات. كما تدعم تحليلات البيانات المتقدمة التصميم الأمثل للخلطات، وتقليل المبالغة في تعقيد التصميم، وخفض هدر المواد.

تساعد هذه التحسينات التقنية المنتجين على الحفاظ على مستويات الأداء في ظل ضغوط التكلفة، مع الالتزام بالمواصفات الصارمة للمشروعات.

أصبحت القدرة على الجمع بين النطاق التشغيلي الواسع والتحكم الرقمي عامل تميّز رئيسيًا في صناعة الخرسانة على مستوى دول مجلس التعاون الخليجي.

مجددًا، يقدّم هذا العدد من CPI Middle East أحدث المعلومات لمساعدتكم على مواجهة هذه التحديات كافةً. نتمنى لكم قراءةً ممتعةً!

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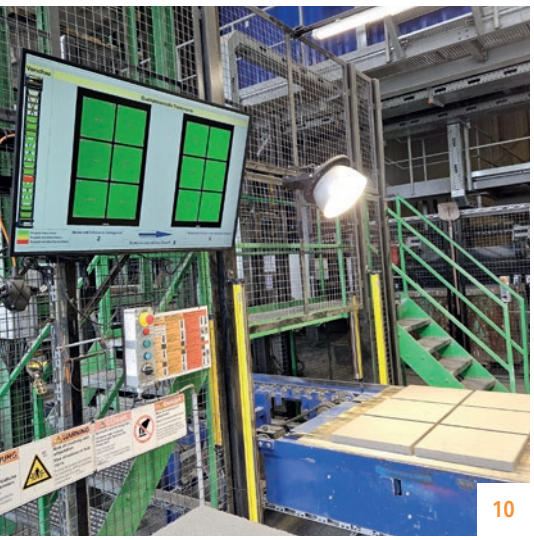
SECTIONS



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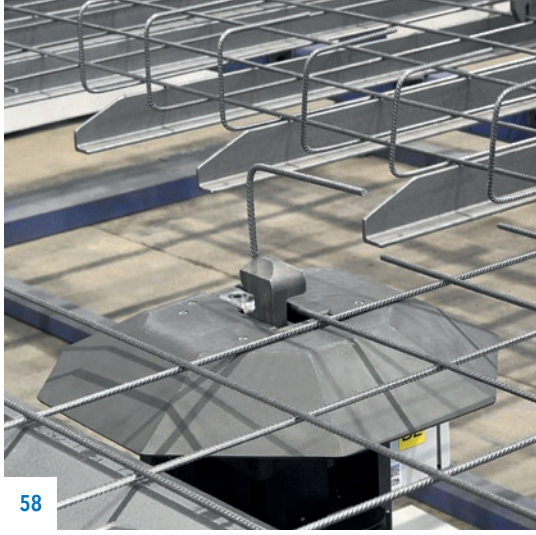

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Managing Director:
Dr.-Ing. Holger Karutz
Editor-in-Chief:
Dr.-Ing. Holger Karutz h.karutz@cpi-worldwide.com
Editors:
Dipl.-Ing. Mark Küppers m.kueppers@cpi-worldwide.com
Dipl.-Ing. Michael von Ahlen (Head of Content) m.vonahlen@cpi-worldwide.com
Prof. Hans-Dieter Beushausen h.beushausen@cpi-worldwide.com
Dipl.-Ing. Juergen Glaesle j.glaesle@cpi-worldwide.com


Dipl.-Ing. Mark Küppers


Dipl.-Ing. Michael von Ahlen


Prof. H.-D. Beushausen


Dipl.-Ing. Juergen Glaesle

Advertisement:
Gerhard Klöckner g.kloeckner@ad-media.de
Gabriele Pianta g.pianta@ad-media.de
Emanuel Schmidt-Halswick esh@ad-media.de
Design:
André Besgens · Carmen Frick · Alex Konn production@ad-media.de
Accountancy:
Sandra Borchert · Maurice Borchert accountancy@ad-media.de
Subscription service:
Maurice Borchert · Sabrina Pontalti subscription@ad-media.de
Head of Events:
Bahram Ghaleh events@ad-media.de
External Data Protection Officer:
Ben Green Consultancy UG dataprotection@ad-media.de
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CPI – Concrete Plant International
Industriestraße 180
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Industriestr. 180 · 50999 Cologne · Germany
T +49 2236 962390 · F +49 2236 962396
info@ad-media.de · www.ad-media.de
www.cpi-worldwide.com

CPI Asia
Zhang Jinying | M +86 13920414614 | asia@cpi-worldwide.com
CPI Brazil
Akemi Soy | M +55 11 98965 3005 | brazil@cpi-worldwide.com
CPI Eurasia
Timur Dmitrov | T +7 4822630039 | eurasia@cpi-worldwide.com
CPI Italy
Gabriele Pianta | T +49 2236 962390 | g.pianta@cpi-worldwide.com
CPI Korea
Moon-Hi Lee | M +49 173 5356753 | M +82 10 42806473 | korea@cpi-worldwide.com
CPI Latin America (without Brazil) / South West Europe
Gabriele Pianta | T +49 2236 962390 | g.pianta@cpi-worldwide.com
CPI Middle East
Kambiz S. Pour Kardan | T +98 21 88888191 | middleeast@cpi-worldwide.com
CPI North America
Judi Taylor | T +1 678-880-9942 | j.taylor@cpi-northamerica.com
Kristy Kieda | T +1 616 706 7536 | kristy@cpi-northamerica.com
CPI Oceania
Michael Khrapko | T +64 9 629 5992 | oceania@cpi-worldwide.com
CPI Poland / Czech Republic
Agnieszka Spychalska | T +48 697 619111 | poland@cpi-worldwide.com
CPI South East Asia
Michael Lazar | T +65 6861 5668 | southeastasia@cpi-worldwide.com
CPI Southern Africa
Prof. Hans-Dieter Beushausen | T +27 82 7375057 | southafrica@cpi-worldwide.com
CPI Türkiye
Gabriele Pianta | T +49 2236 962390 | turkiye@cpi-worldwide.com

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Istanbul, 13-14 May 2026

First-class conference programme to kick off ICCX Türkiye 2026

افتتاح فعاليات المؤتمر والمعرض الدولي للخرسانة في تركيا (ICCX Türkiye 2026) ببرنامج رفيع المستوى

Preparations for the first ICCX Türkiye are in full swing, and the conference programme is already filled with absolute highlights. Both local experts and international speakers will share their expertise to provide attendees with a comprehensive range of valuable, practice-oriented information. The focus is on efficient, modern and cost-optimised construction with concrete. A special emphasis will be placed on earthquake-resistant construction, where the use of modern precast technology can set new benchmarks.

تجري الاستعدادات لإطلاق الدورة الأولى من المؤتمر والمعرض الدولي للخرسانة في تركيا (ICCX Türkiye) على قدم وساق، وقد امتلأ برنامج المؤتمر بالفعل بمحطات فائقة التميز. سيشارك خبراء محليون وخطباء دوليون بخبراتهم لتزويد المشاركين بمجموعة مكتملة من المعلومات القيّمة التي تركز على التطبيق العملي. ينصب تركيز البرنامج على أساليب البناء بالخرسانة التي تتسم بالكفاءة والحداثة والفعالية الأمثل من حيث التكلفة، كما سيُولى اهتمام خاص بالبناء المقاوم للزلازل، حيث يمكن لاستخدام تقنيات الخرسانة مسبقة الصب الحديثة أن يرسّخ معايير جديدة في هذا المجال.

The Turkish Statistical Institute (TurkStat) published the building permits issued for reconstruction in the earthquake-affected regions in August 2025. With the release of this data, building permits and completions rose significantly in the second quarter of 2025 – a positive signal for the concrete and precast concrete industry!

The premiere of ICCX Türkiye will take place on 13-14 May 2026 at the Renaissance Polat Istanbul Hotel. Istanbul is easily accessible from all parts of the world, which will enhance the international character of the event.

In May and June 2025, Turkey's construction output had already recorded strong growth. The calendar-adjusted production index increased by 20-25% compared with the previous year, with building construction growing somewhat more strongly and civil engineering at a more moderate pace. This high growth is attributable to the extensive reconstruction following the February 2023 earthquakes. By June 2025, around 250,000 housing units had been completed, and by the end of 2025 the total reached approximately 450,000 units.

Reconstruction Law 7471 is accelerating the issuing of construction permits and construction processes, while TOKI (The Housing Development Administration of Türkiye) is playing a central role in planning, financing and implementation.

Conference programme with a focus on earthquake-resistant construction using precast concrete

A central theme of the conference programme will be construction in seismic regions. Several presentations will deepen the understanding of this complex subject and present the current state of earthquake-resilient construction methods.

Prof. Alper Ilki of Istanbul Technical University (ITU) will provide an overview of the latest knowledge in his Keynote on "Seismic Construction with Precast Concrete Elements – Lessons Learned".

A dedicated session will address precast concrete construction under seismic conditions. Among others, Stef Maas, CEO of FEBE, the Belgian Precast Concrete Association, will give

a presentation on the advantages of precast concrete construction and will introduce the *fib* handbook. The Design and Construction Manual for Precast Buildings (*fib* Bulletin 74) offers a detailed overview of precast construction and enhances awareness and understanding of precast structures.

Prof. Baris Binici of Middle East Technical University in Ankara will address the fundamental principles of earthquake-resistant design in his presentation on "Seismic Behaviour and Design of Precast Construction: Challenges and Future Prospects".

In addition, Gürol Gerzile, General Manager at AKAT Prefabrike, will provide insights into the production and erection of the four-storey TOKI building type using precast double-wall systems, which is recognised for its earthquake-resistant construction.

Autoclaved aerated concrete (AAC), which is widely used in Turkey, also offers efficient solutions for seismic design. Prof. Christoph Butenweg of the University of Applied Sciences Aachen and Markus Hesse, Head of International Product Management at Xella Baustoffe (Germany), will present their current research project on this topic.

Concrete technology workshop

Another highlight will be the concrete technology workshop jointly conducted by Prof. Hans Beushausen from the University of Cape Town, South Africa, and Dr. James Mackechnie, CEO of Allied Concrete in New Zealand.

Hans Beushausen

James Mackechnie

This workshop carries the title "Concrete Technology – Optimizing Performance, Durability, Sustainability, Quality Control, and Cost" and explores the latest advances in concrete technology with a focus on optimizing performance, durability, sustainability, quality control, and cost efficiency. The workshop begins with an engaging discussion on the intersection of practice and academia, highlighting key differences between research insights and practical applications. Topics include strength development, modern cementitious binders, the use of recycled aggregates in concrete and concrete products, quality control, and current industry trends.

Participants will gain practical knowledge on reducing cement content and associated quality control measures, designing low-carbon and green concrete mixes, and utilizing recycled aggregates effectively. The workshop will also cover high-strength concrete, including mix composition, early strength development, and prestress transfer, as well as strategies for improving durability in challenging environments such as marine conditions. This includes mix optimization, construction practices, curing techniques, protective coatings, and hydrophobic systems.

Many practical topics related to the production of concrete products and precast concrete elements will be addressed in additional conference presentations.

Next to the technical programme, networking will play an important role. ICCX Türkiye positions itself as a central platform for exchange between manufacturers, designers, construction companies, research institutions and industry associations. Participants from Turkey, Europe, the Middle East and Central Asia will have the opportunity to establish new contacts and explore potential collaborations.

Technical exhibition with more than 60 international and regional companies

Alongside the conference, a technical trade exhibition will take place with more than 60 international and regional companies presenting their products, system solutions and services. From machinery and equipment for precast concrete production to concrete mixing technology, software solutions and testing equipment, visitors will gain a comprehensive insight into current developments and innovations in the market.
Most exhibition stands have already been allocated. Anyone wishing to secure a stand at the premiere of ICCX Türkiye should act quickly.
ICCX Türkiye 2026 promises to be a high-level event, providing a clear focus on practical solutions, innovative technologies and efficient construction methods. It offers a unique opportunity to learn about current developments in the concrete and precast concrete industry, establish new business contacts and set the course for future projects.

ICCX Türkiye 2026 – Istanbul awaits you!

Stay fully up to date and subscribe to our free ICCX newsletter, which will keep you informed about all updates regarding ICCX Türkiye. ■

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Far more than a digital magnifying glass – quality assurance as an integral part of intelligent plant control

أكثر بكثير من مجرد عدسة مكبرة رقمية – ضمان الجودة كجزء لا يتجزأ من التحكم الذكي بالمصانع

Fully automated, optical Quality control systems are becoming increasingly established in the block and paver manufacturing industry. However, Masa is going one step further with its system introduced in 2025: the combination of high-resolution image processing, 3D surface inspection and artificial intelligence is not used in isolation, but is seamlessly integrated into the Masa plant control system. The result is a system that not only provides monitoring, but also enables operators to intervene quickly in the production process and optimise it by linking the device to all plant data.

تشهد صناعة الكتل وبلاط الرصف اعتمادًا متزايدًا على أنظمة مراقبة الجودة المؤتمتة بالكامل والمعتمدة على الفحص البصري. إلا أن Masa وسّعت هذا المفهوم في نظامها المطروح عام 2025، من خلال دمج المعالجة الصورية عالية الدقة، وفحص الأسطح ثلاثي الأبعاد، والذكاء الاصطناعي مباشرةً ضمن نظام Masa لمراقبة المصانع. ينتج عن ذلك نظام لا يقتصر على المراقبة فحسب، بل يمكن المشغلين من التدخل السريع في عملية الإنتاج وتحسينها من خلال ربط الجهاز بجميع بيانات المصنع.

Masa's integrative approach combines image processing, process data and control logic into an intelligent overall system. At a time when production processes are becoming increasingly complex, quality requirements are rising and flexibility is becoming a decisive competitive factor, existing staff must also be optimally supported. This calls for a new way of thinking. The key lies in technology that both monitors quality and combines human capabilities with precise digital support, thus becoming a real game changer.

Quality control: Precise sensor technology for defined quality

Quality control demands a trained eye – precise, consistent and reliable. At bauma 2025, Masa presented its technical solution for automated, optical quality control that meets precisely these requirements:
Positioned directly behind the production machine on the wet side, the system performs contactless measurements on

Masa Optical Quality Control: Facts, figures and data

Sensors and detection

- Height measurement accuracy +/- 0.5 mm (product height 25 – 500 mm)
- Surface defect detection from a size of approx. 1 mm²
- Detection of lifted areas on the surface with a height difference of approx. 0.5 mm
- Detection of fine cracks from a width of approx. 0.5 mm
- Detection of edge breakouts
- Detection of smooth inclusions (e.g. gravel grains, paint lumps or cement balls) or faulty smooth surfaces caused by cement on the surface
- Detection of colour defects in coloured products (current batch comparison)
- Differentiation between surface defects and impurities

Intelligent image processing with AI engine

HMI – Human-Machine Interface

- Fully integrated into the Masa plant control
- Uniform user interface in Masa design
- Visualisation possible on every Masa control panel in the plant
- Optional monitor for the sorting station on the dry side for precise display of products to be sorted

Integrated documentation

- Automatic storage of result images (defect detection, height measurement)
- Raw data storage possible on request

freshly manufactured concrete products in-line – without interrupting the production flow. While the production board with the products is continuously transported onwards, the system records precise measurement data in real time.

Operators can define tolerance limits according to requirements and product specifications. The system detects a wide variety of product defects and distinguishes, for example, between actual surface defects and contamination.

All detected exceedances of the set tolerance limits are visualised and classified in the Masa plant control system, and the affected products are clearly marked. In addition, the system measures the product heights across the entire production board and displays the height profile graphically–colour-coded according to the defined tolerance ranges. When combined with optional weighing devices, the system calculates the average bulk density of a stone layer, thus providing valuable information about product quality.

One system, one interface, full control

Masa adopts an integrative approach in its plant control concept. For this reason, the Masa optical quality control system for new plants is fully integrated into the Masa plant control software. In younger existing Masa plants, the system can usually be retrofitted without any problems and fully integrated into the plant control system. Integration is also possible in older Masa plants or third-party plants, but requires prior technical testing and, if necessary, a control upgrade.

Operators have direct access to all measurement results at the control station and can respond immediately if required, without needing to walk to the traditional control station. Defect images and stone height deviations can be statistically recorded and evaluated.

Standardised user interface for maximum process reliability

For the plant operator, this means that the uniform and intuitive user interface enables efficient interaction with the entire plant as well as individual components, such as optical quality control. This applies regardless of the complexity of the respective block and paver production plant.

All relevant processes – from dosing and mixing to product manufacturing, quality control and curing to product packaging – can be controlled, monitored and visualised on any Masa control panel in the plant via a uniform HMI interface in the distinctive Masa design. This ensures consistent operating logic, high process reliability and transparent plant communication.

Detecting faults early – producing marketable products faster

Identifying faults is the first step towards efficient production. Successful companies go further: they learn from faults and turn challenges into opportunities. This is exactly where Masa comes in with its holistic system. It not only offers precise quality control, but also opens up new possibilities for process optimisation and increased efficiency.

On the wet side, the quicker the machine operator responds to product faults, the less waste is generated – and the faster saleable products are produced. When switching to a known product or recipe, the system automatically displays all corresponding parameters such as defect tolerances or product height to the machine operator. As the results of the optical quality control are displayed directly on the control panel, the operator can adjust settings immediately and achieve the desired quality more quickly.

When producing new products for the first time, the machine operator benefits from a convenient copy function within the product management of the Masa plant control software. 'Search for and copy a similar product recipe, adjust one or two parameters, run it – it's absolutely easy!' says one machine operator, describing his experience of running-in a new product. 'Our run-in time, including fine-tuning, has been significantly reduced. '

No time-consuming teaching process is required for new products in the Masa system.

Ensuring quality with auto-stop and smart control

Experienced machine operators often take on numerous additional tasks alongside production and are not at the control station around the clock. This becomes problematic when an unplanned drop in quality occurs during a planned absence – and the production machine continues running regardless. For this case, the Masa plant control offers a configurable auto-stop function: if the quality control detects a defined percentage of defective products, the machine shuts down in a controlled manner. This avoids unnecessary waste and increases production reliability.
In addition, the machine operator can mark the production boards via the control system. Depending on the percentage of defects on the production board, this can trigger further intelligent processes:

- Tilting device:
  The downstream Masa tilting device completely tilts the marked production board with defective products while they are still fresh, preventing them from entering the chamber system for curing and occupying storage capacity.

- Marking as second-choice products:
  Alternatively, production boards with second-choice products can be marked. Although they remain in the ring, cost-intensive stations for surface treatment are automatically deactivated during the run.

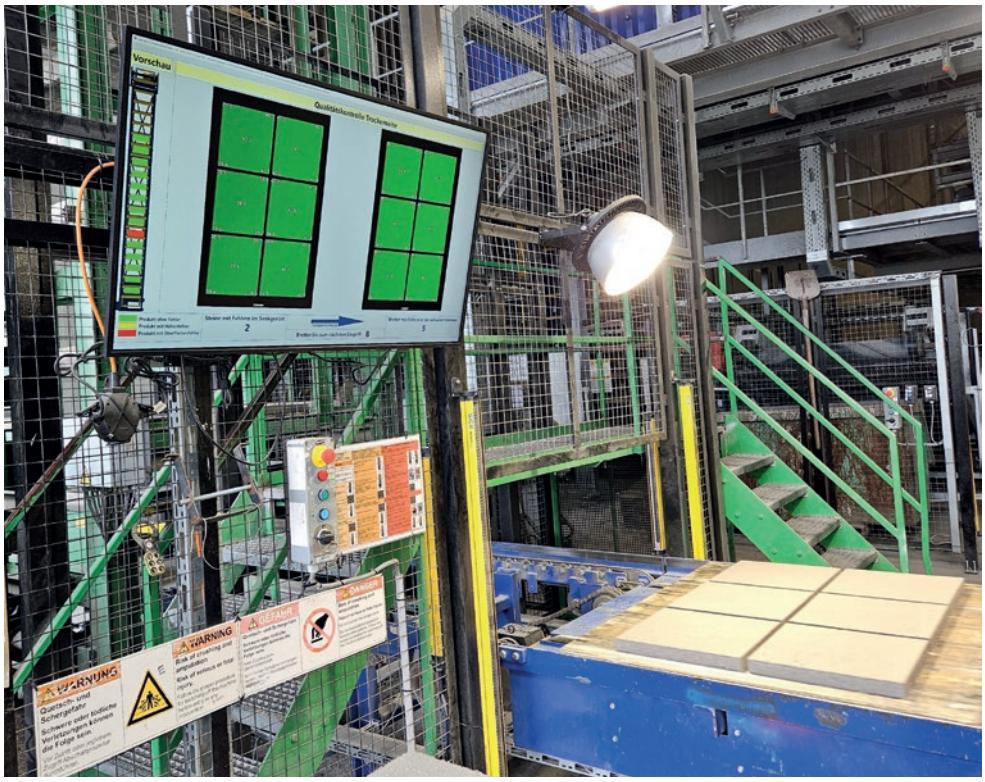
These functions are based on the digital board ID – a central component of Masa's integrative control approach.

Masa Board ID instead of RFID – smart data management for production

The board ID is a unique, sequential number that is automatically assigned by the Masa plant control system to each production board as soon as it enters the block and paver production machine. Thanks to this technology, the time-consuming and costly retrofitting of production boards with digital signal transmitters such as RFID chips is completely eliminated.

Like every other process step within the production plant, optical quality control generates a significant amount of data. Data transfer between the various processing stations in the plant can be carried out using different technical solutions. Masa relies on data transfer using so-called data telegrams in combination with the board ID. Data telegrams are standardised data records that accompany the production board digitally throughout the entire plant. Logging takes place at every station where relevant process steps take place and information is generated.
The Masa plant control system can link various data sets to the board ID – ranging from simple information to complete information packages containing product data, recipes and other parameters. This also includes the log for each mixture, documented via a unique mixture ID.

Chamber preview with visualisation of the percentage of rejects per production board



Convenient quality display with separate monitor on the dry side

Depending on the option selected, Masa thus provides detailed insights into the individual production plant:

Chamber preview – real-time quality overview for the machine operator

The 'Chamber preview' function gives the machine operator a quick, intuitive overview of the quality status of the products currently in the curing chamber – in real time and differentiated by each stored production board. Each chamber position is visually displayed, showing the percentage of rejects.

Short-term benefit:
The operator can flexibly adapt the removal sequence to the current situation – for example, during staff shortages in the sorting area on the dry side.

Medium and long-term benefits:
Evaluation per production board and assignment to the respective production shift enable further analyses, such as:

- Identifying fluctuations in raw material quality
- Identifying training needs for personnel on specific shifts

Ensuring product quality with data-based final inspection

The more convenient the final inspection on the dry side is, the more efficiently it can be carried out. Manual sorting of individual defective blocks and pavers at the QA station is supported by a dedicated monitor. Thanks to the board ID, which seamlessly transfers quality data from the optical quality control on the wet side through the curing area to the dry side, staff at the QA station receive a real-time display of the products on the current production board.

Defective products are clearly colour-coded and can be replaced manually in a targeted way. This contributes significantly to increasing the delivery quality of the finished product layers or complete pallets. Masa is already working towards an automated solution for quality sorting on the dry side and is developing various approaches with different levels of automation.

Work scheduling – more flexibility for staff!

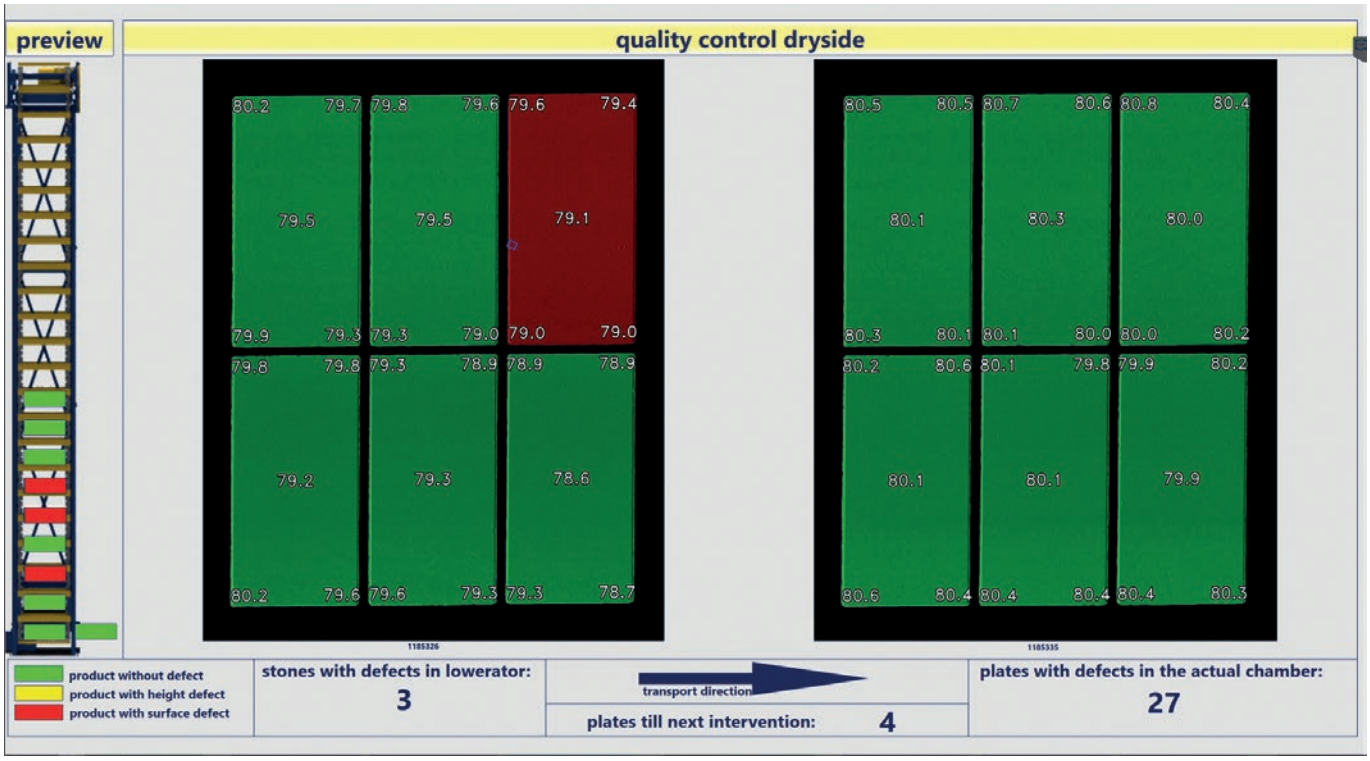
Masa has integrated an additional convenience feature for the personnel on the dry side: the 'Lowerator preview' function provides the operator with advance information on the production boards currently in the lowerator and being cycled step by step to the dry side.

Production boards requiring manual intervention are highlighted in colour. The operator can also see how many defective products are in the lowerator and how many cycles remain until the next intervention.
This enables work to be planned and organised efficiently until the next necessary intervention – for example, emptying residual containers, carrying out cleaning tasks or refilling products for sorting.

As on the wet side, Masa also offers a configurable auto-stop function on the dry side. This ensures that no production board containing defective products enters the packaging process unnoticed.

Secure data storage and reliable support

Masa stores all data on-premises – directly within the customer's IT environment. The information is not stored in an



Lowerator preview and display of the current production boards at the QA station on the dry side

external cloud but remains entirely within the company. This ensures that the customer retains full control over sensitive production and operating data at all times – a decisive advantage for concrete block and paver production, where reliability and data protection are paramount.

All services are supported by qualified specialists based in Germany. They have extensive experience and speak at least German and English, ensuring clear, professional communication – both nationally and internationally.

Masa provides a 24/7 technical support hotline. Based in Germany but accessible worldwide, it ensures customers receive rapid assistance at any time – regardless of location or time zone.

The combination of local data storage, technical expertise, bilingual support and constant availability ensures maximum security, stability and trust – allowing customers to focus entirely on production.

Creating new perspectives for tomorrow's production

With optical quality control, Masa is opening up new perspectives for tomorrow's production. Marcel Helsper, Technical Director at Masa Andernach, describes the vision as follows: 'Masa optical quality control is much more than a function – it is our ambitious step towards intelligent networking and increased efficiency in production, aligned with Industry 4.0.'

The focus is on analysing production data to determine optimal parameters, supplemented by clear recommendations for operating personnel and intelligent assistance functions to support informed decisions. The aim is to increase production output over the long term and make processes future-proof.

Further research and development projects at Masa will drive this vision forward, signalling the next step towards smarter, networked manufacturing. ■

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Fujairah Concrete Products: Top-level production capacity in the UAE

الفجيرة للمنتجات الاسمنتية: قدرة إنتاجية رفيعة المستوى في الإمارات العربية المتحدة

Matthias Bechtold, Wasa AG, Germany

Since its foundation in 1978, Fujairah Concrete Products (FCP) has been one of the most efficient and versatile concrete product manufacturers in the United Arab Emirates. FCP is a subsidiary of Fujairah Building Industries PJSC, which today employs a total of around 1,000 people. At the Fujairah site, 325 employees work for the Fujairah Concrete Products division in one of the most modern production facilities in the region. For almost a quarter of a century, Wasa AG has been a solid and reliable partner to the regional manufacturer. Since 2002, 23,350 Wasa Uniplast® and Wasa Uniplast® Ultra have been delivered to Fujairah Concrete Products.

تُعد شركة الفجيرة للمنتجات الاسمنتية إحدى أكثر الشركات المُصنعة للمنتجات الخرسانية الأكثر كفاءةً وتنوعًا في الإمارات العربية المتحدة منذ تأسيسها في عام 1978. الفجيرة للمنتجات الاسمنتية هي شركة تابعة لشركة الفجيرة لصناعات البناء ش.م.ع، والتي يعمل لديها اليوم نحو 1,000 موظف. في موقع الفجيرة، يعمل 325 موظفًا في قسم الفجيرة للمنتجات الاسمنتية ضمن أحد أحدث مرافق الإنتاج في المنطقة. ولما يقارب ربع قرن، كانت شركة Wasa AG شريكًا راسخًا وموثوقًا للشركة المُصنعة الإقليمية. جرى توريد 23,350 آلةً من طرازي ®Wasa Uniplast و Wasa Uniplast® Ultra إلى شركة الفجيرة للمنتجات الاسمنتية منذ عام 2002.

Competence and continuity in plant management

One key to the company's sustained success is personnel stability. Technical plant manager Mohammad Azamuddin, who has been with the company for 26 years, is responsible for the technical orientation and efficient operation of the entire production process. His many years of experience ensured high plant availability, smooth processes, and consistently high quality standards. He is actively supported by Ravindiran Gubendiran & Stephen Ambrose, the engineers responsible for production.

Production of concrete blocks on Wasa Uniplast Ultra boards

Curing Chamber

Wasa Uniplast Ultra 1400x1200x50mm

Machinery: Four stone pavers machines and wetcast technology

FCP's machinery is broadly based, enabling a high degree of product diversity and enormous capacities: total of four stone paver machines are used: two identical systems from Frima, one Omag system, and one stone paver from Rhino.

While the Rhino plant produces on steel pallets, all other board production machines in use are for solid plastic boards from Wasa. All 23,350 Wasa Uniplast and Wasa Uniplast Ultra boards supplied have dimensions of 1400 x 1200 x 50 mm, thus offering high production capacities.

Production is supplemented by a wetcast press from Forest Press, which is used specifically for high-quality architectural elements and special products.

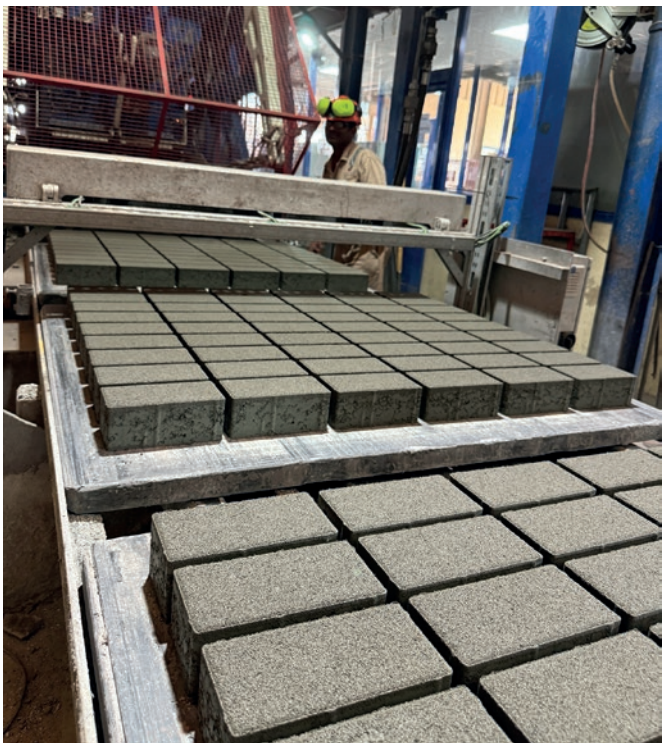
Wasa as a strategic partner

FCP relies on robust and durable production boards for the manufacture of concrete products. Due to its homogeneous solid plastic reinforced with glass fibers, Wasa Uniplast Ultra is known for its high durability and resistance, especially in demanding climatic conditions such as those in the United Arab Emirates.

Fujairah Concrete Products has also taken advantage of the possibility of regrinding this type of board and, after many years of use, had several thousand boards reground by Wasa's own service department. The result was surfaces of the ground production boards that were almost as good as new, thus extending their already long service life.

Impressive production capacities

With an annual processing volume of 800,000 tons of concrete, FCP is one of the largest producers in the entire GCC region. Production runs 24 hours a day, seven days a week, reflecting the enormous demand and capacity.



Paving stone production

Forest Press mould press for wet cast production

Kerbstones are produced using the wet casting process in accordance with the legal requirements of the UAE.

Ambrose Stephen, Ravindiran Gubendiran, Matthias Bechtold & Mohammad Azamuddin (from left to right)

Part of the show garden at Fujairah Concrete Products

Daily production output includes:

- 100,000 blocks,
- 3,000 m² of paving stones,
- 1,000 running meters of curbs.

Product portfolio and market presence

Of the entire product range, around 70% is accounted for by the manufacture of blocks, 25% by paving stones and 5% by curbs. In addition to the United Arab Emirates, FCP also supplies numerous countries in the GCC region, including Qatar and Bahrain. Its strong market presence is the result of both its high production capacities and the consistent quality of its concrete products.

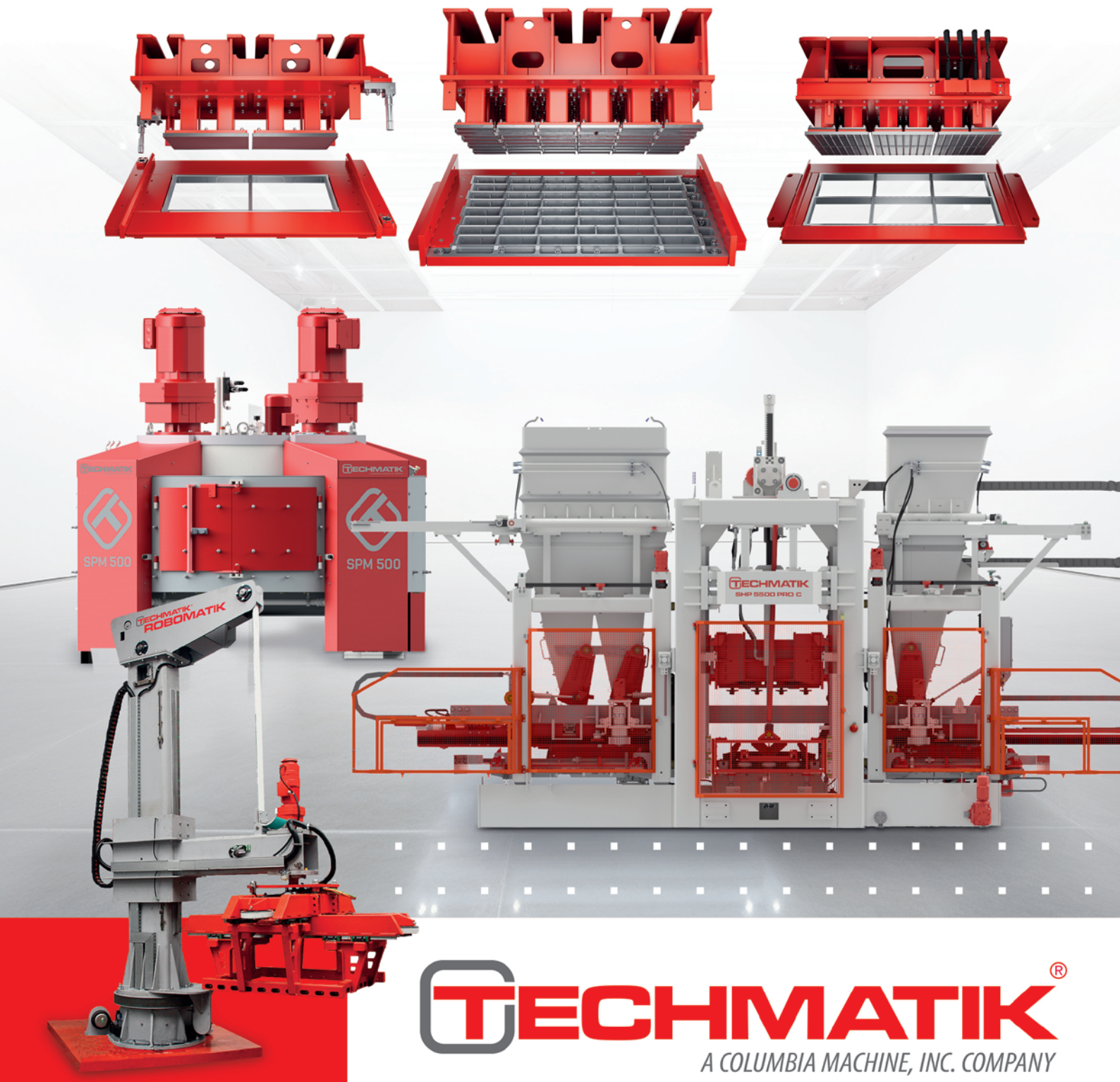
For almost five decades, Fujairah Concrete Products has stood for reliability, production strength, and technical expertise. With modern machinery, experienced specialists, and high-quality production equipment such as the Wasa Uniplast Ultra production board, FCP has positioned itself as a key player in the concrete block market throughout the Gulf region.

Wasa is proud to have been part of this success story for almost 25 years and looks forward to continuing its collaboration with this customer, who has now become a friend. ■

FURTHER INFORMATION

Fujairah Concrete Products
Fujairah, United Arab Emirates
contact@fujfbi.ae, www.fujfbi.ae

WASA AG
Europaplatz 4, 64293 Darmstadt, Germany
T +49 6151 7808500
info@wasa-technologies.com, www.wasa-technologies.com



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The importance of CO_2-reduced cements for the curing process

أهمية الإسمنت منخفض ثاني أكسيد الكربون في عملية المعالجة

Dipl. Ing. (FH) Erik Leu, Rotho - Robert Thomas Metall- und Elektrowerke GmbH & Co. KG, Germany

The cement industry is making great efforts to reduce the high CO_2 emissions generated during cement production. One important objective – among many others – is to reduce the proportion of clinker, which is the main source of CO_2 emissions. This report explains the consequences of using CO_2-reduced cements on the curing process of concrete products.

يبذل قطاع الإسمنت جهودًا كبيرة لخفض انبعاثات ثاني أكسيد الكربون المرتفعة الناتجة عن إنتاج الإسمنت. أحد الأهداف العديدة المهمة التي تسعى الشركة إلى تحقيقها هو خفض نسبة الكلنكر، وهو المصدر الرئيسي لانبعاثات ثاني أكسيد الكربون. يشرح هذا التقرير آثار استخدام الإسمنت منخفض ثاني أكسيد الكربون على عملية معالجة المنتجات الخرسانية.

The production of cement and concrete accounts for a significant proportion of global CO_2 emissions. The largest share is caused by the production of cement clinker, the main component of cement. Cement clinker is produced by burning limestone ($CaCO_2$) in rotary kilns at around 1450 °C. In this process, about two-thirds of the CO_2 emissions are produced by the chemical conversion of limestone to calcium oxide (CaO) and CO_2. The remaining third can be attributed to the combustion of fossil fuels such as coal, gas or oil, which are essential for achieving the high firing temperatures.

The cement industry has drawn up a roadmap with strategies to become climate-neutral by 2045. The strategy has three main thrusts:

- Firstly, the substitution of fossil fuels through the use of alternative fuels or electrification. Already today, over 70% of fossil energy is replaced by biogenic or waste fuels.
- Secondly, the development of CO_2-reduced cements. This approach aims to reduce the clinker content in cement by increasingly using ground granulated blast furnace slag, fly ash or calcined clays as grinding additives. This reduces the proportion of CO_2-intensive clinker and emissions per tonne of cement by up to 40% today.
- Thirdly, CCS and CCU technologies (capture and utilisation or storage of CO_2). This approach is necessary because cement production generates unavoidable process emissions that cannot be completely eliminated, even in the long term.

Although the first and third approaches have no direct influence on the manufacturing process of concrete products, the same cannot be said of the second approach. This is because all CO_2-reduced cements have one thing in common: They all have a lower hydration heat, i.e. they all release less heat during the curing process, which can have a negative effect on the curing process. This fact will be illustrated using the example of calcined clay.

Calcined clays play an important role in the decarbonation of the cement industry, as they can significantly reduce the clinker content in cement without negatively affecting the strength or durability of the concrete. Calcined clays are activated by heating (calcination) at temperatures between approximately 600 °C and 850 °C. Activated, in this context, means that the crystal water and other chemical bonds in these clays are removed. This results in a highly reactive material that exhibits pozzolanic properties in cement production. Calcined clays therefore have two significant advantages over clinker fractions. Firstly, they are activated at only approx. 800 °C, which is significantly lower than the deacidification of limestone at temperatures of 1,450 °C, and therefore consume significantly less energy. Secondly, calcination produces only metakaolin and water vapour and no additional CO_2.

As positive as these properties are in terms of avoiding CO_2 emissions, the question must be asked what consequences this has for the curing process of concrete products.

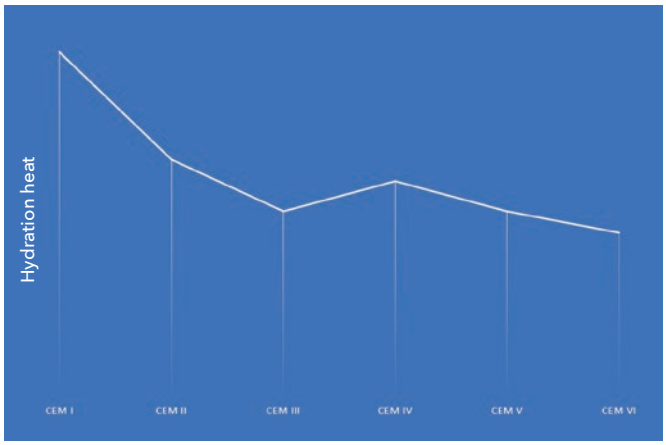

Diagram 1: Hydration heat as a function of cement class

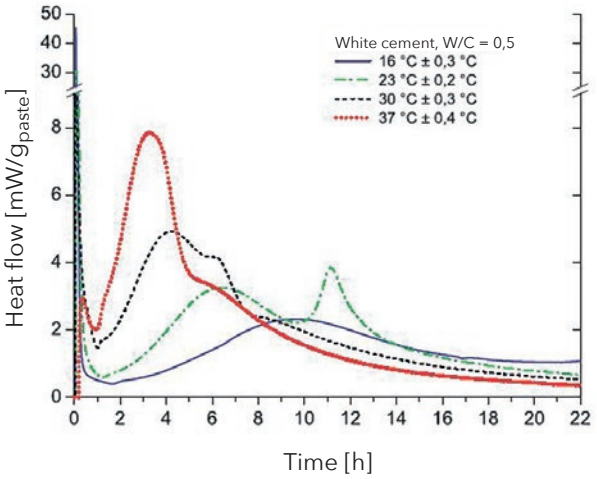

Diagram 2: Measured heat flow of technical white cement at different temperatures (source: Christoph Hesse, Reaction process of early hydration of Portland cement in relation to temperature, Friedrich Aleksander University Erlangen-Nürnberg)

As explained above, CO_2-reduced cements have lower reactivity than pure clinker. As a consequence for the curing of concrete products, the hydration process is slower. It should also be noted that the heat release is significantly reduced due to the reduced clinker content. While standard Portland cement of class CEM I has a hydration heat of between 300 and 400 kJ/kg of cement, calcined clays only release about half that amount of heat, at 150 to 250 kJ/kg. Both factors result in slower development of the early strength that is so important for the production of concrete products. Diagram 1 shows the order of magnitude of the loss of hydration heat when using sustainable cements compared to classic Portland cement of class CEM I.

The consequences of this development trend in cements are not insignificant for concrete curing. In a modern production plant for concrete products, terms such as "time to market" and "online curing" are important factors for the competitiveness of the concrete industry. If you want to avoid production-related disadvantages when using CO_2-reduced cement, you need to focus on the curing process.

The slower reaction and lower hydration heat resulting from CO_2-reduced cements require at least maximum utilisation of this heat through good insulation of the climate chamber and a good recirculation system that distributes the heat evenly. Whether this is sufficient depends on several factors, including how many layers are produced and how high the cement content is. However, it can be expected that, sooner or later, active heating of the curing chamber will become indispensable. Nevertheless, active heating is a good way of counteracting the current trend in cement development. This is because the Arrhenius equation, which is well known in chemistry, shows that the reaction rate of a chemical reaction increases with higher temperatures. This fact is illustrated very well by the investigation of the hydration heat development of white cement (see Diagram 2).

It can be seen that the higher the temperature during curing, the faster the hydration heat contained in the cement is released. This means that active heating can help to at least partially compensate for the lower hydration heat of sustainable cements when it comes to achieving high early strength. Active heating of the curing chambers allows sustainable cements to be used and CO_2 emissions to be reduced without having to accept any major disadvantages in terms of curing. One could argue that the reduction in CO_2 emissions achieved by using sustainable cements might be offset by the emissions generated through active heating of the curing chambers. However, it must be borne in mind that even CO_2-reduced cements still require a large amount of thermal energy during production, even though this has been reduced by a considerable 10–30% for CEM II and even 20–40% for CEM IV compared to CEM I. The thermal energy requirements for active heating of the curing chambers are comparatively low. It can be estimated that active heating only consumes around 3-5% of the above-mentioned thermal energy savings. These figures seem plausible when one considers that increased curing temperatures currently range between 30-35 °C and not hundreds of degrees as in cement production.

Although many concrete product manufacturers already have active heating in their curing chambers, not all producers are equipped with it yet. The reason for this is certainly the associated investment and operating costs. However, it can be expected that investing in active heating of the curing chamber will also be financially worthwhile in the future, considering that CO_2 emissions are factored into the price of cement and the cost of CO_2 certificates is rising.

When evaluating active heating, it should also be taken into account that an increase in cement costs is to be expected. The reason for this is that, in Europe for example, CO_2 certificates ("CBAM certificates") will then have to be paid on imports of low-cost cement in order to avoid distortions of competition. Active heating can also help here, as the faster development of hydration heat tends to reduce cement consumption. This makes it possible to offset higher cement costs to a certain extent. However, this must be checked for each individual application.
If active heating offers the possibility of compensating for the disadvantages of CO_2-reduced cement in the curing of concrete products, the question naturally arises as to which heating technology is best suited for this purpose. The following section provides some basic information about the various energy sources to help you choose the right heating technology:

Fossil fuels

Heating technologies that use fossil fuels are tried and tested, available worldwide and relatively inexpensive. However, due to socio-political discussions and climate policy goals, it is highly likely that such heating technologies will have to be replaced by CO_2-neutral technologies in the medium term.
Solar thermal energy / photovoltaics.
As sensible as investing in a photovoltaic system may seem in order to reduce electricity costs – which remain largely constant over the course of a year – the situation is different when it comes to thermal energy. When it comes to concrete curing, thermal energy is mostly needed during the cooler half of the year, when little to no energy is available from solar or photovoltaic systems. Without a cost-effective way of storing heat and electricity, this option does not currently appear to be viable.

Electricity / heat pumps

In principle, electricity combined with a heat pump is a good way of generating thermal energy in a climate-neutral manner. However, the investment costs for an industrial heat pump are significantly higher than for fossil fuel heat generators and only pay for themselves over a long period of time. In addition, it must be checked locally whether a sufficient heat source is available, e.g. from geothermal energy or waste heat, as a heat pump does not generate energy itself, but uses electrical energy to provide a low-temperature heat source at a higher temperature level. The quality of the heat source is crucial for the efficiency of the heat pump.
In summary, it can be said that none of the options mentioned can be strongly recommended for the active heating of curing chambers. Therefore, another option appears to be interesting, which allows for a more variable approach to determining the heating technology: The option of hot water generation.

Hot water production

Water is not an energy source, but it is capable of transporting large amounts of heat and transferring it to a process by means of a heat exchanger. If your curing chamber is equipped with the appropriate heat exchangers and a hot water circuit, you can connect a single or a combination of different heat generation sources at one end. This means that a gas condensing boiler installed initially can be replaced later by a heat pump without having to dismantle the entire heating system.

This heating technology, favoured by Rotho, is becoming increasingly popular for several reasons:

- Deciding on a heating technology can be changed relatively easily at a later date.
- Rotho offers customers the option of providing their own hot water supply. This allows customers to reduce the costs for heating technology. Another advantage is that the heating system can be maintained by a local supplier.
- By installing heat exchangers in the individual circulation circuits of the Rotho ProAir recirculation system, a very uniform climate can be created in the curing chamber. In combination with an intelligent control system, the installation of several heat exchangers makes it possible to efficiently supply heat to the curing chamber only where it is needed.
- It is possible to couple the waste heat from the hydraulic cooling system and the waste heat from compressed air compressors into the hot water circuit.
- Hot water heating can be retrofitted to a Rotho recirculation system at any time.

Conclusions

Thanks to innovative developments in the cement industry, concrete manufacturers now have access to cements with a significantly lower carbon footprint. However, these sustainable cements have lower reactivity and lower hydration heat. This has a negative effect on the curing process of concrete products. Those who want to be prepared for the use of climate-friendly cements in the future can partially compensate for these disadvantages with active heating. When it comes to choosing the right heating technology, heat transfer using heat exchangers and a hot water circuit has proven to be an efficient method in practice. This can be achieved using different energy sources for hot water production and combined with heat recovery. ■

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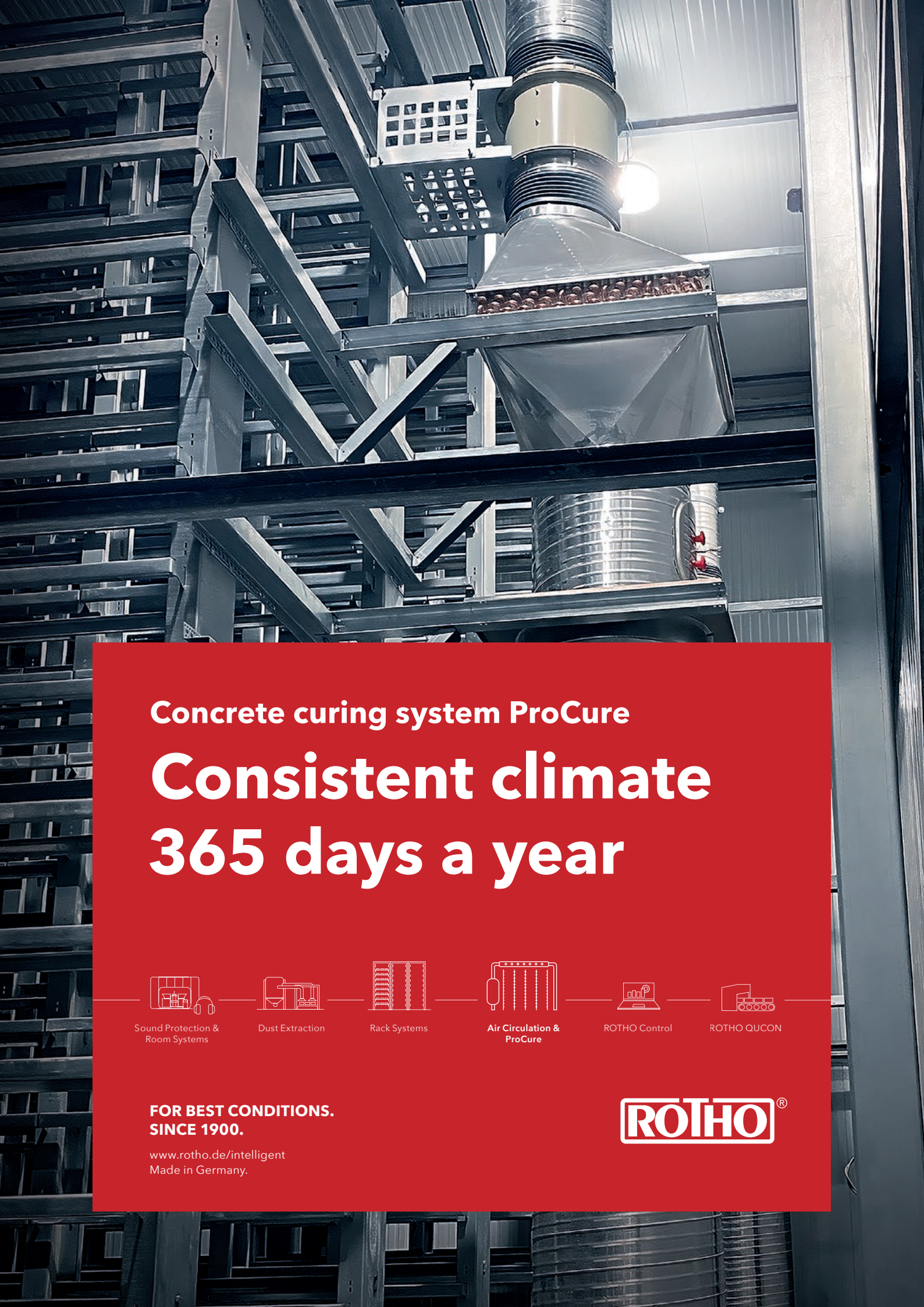

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Mehramat Concretes starts concrete block production – a plant with vision

شركة Mehramat Concretes تبدأ في إنتاج الكتل الخرسانية – مصنع برؤية مستقبلية

Sven Beel, Hess Group, Germany

By constructing a new plant and commissioning a fully automated production line, Mehramat Concretes has moved into a new business segment. The company, which previously operated exclusively in the raw materials sector, is now focussing on vertical integration and sustainable added value - supported by a strong network of experienced mechanical engineering partners. At the heart of the plant is the RH 2000-4 VA concrete block machine. This is supplemented by a comprehensive circulation system, incorporating conveyor technology, packaging and control systems. All of these are supplied by the Hess Group in Germany. Designed for maximum efficiency and product diversity, the plant forms the centrepiece of the new production facility.

دخلت شركة Mehramat Concretes قطاعًا تجاريًا جديدًا من خلال إنشاء مصنع جديد والتشغيل التجريبي لخط إنتاج مؤتمت بالكامل. فبعد أن كانت أنشطة الشركة تقتصر سابقًا على قطاع المواد الخام، باتت تركز اليوم على التكامل الرأسي وتحقيق قيمة مضافة مستدامة، تدعمها في ذلك شبكة قوية من شركاء الهندسة الميكانيكية ذوي الخبرة. يقع في صميم المصنع الجهاز RH 2000-4 VA لإنتاج الكتل الخرسانية، والذي يدعمه نظام تدوير متكامل يشمل تقنيات السيور النقالة والتعبئة والتغليف وأنظمة التحكم. تم توريد هذه المنظومة بالكامل من قبل مجموعة Hess في ألمانيا. المصنع مصُمم لتحقيق أعلى مستويات الكفاءة وتنوع المنتجات، ويشكل المحور الأساسي لمنشأة الإنتاج الجديدة.

A special feature of this project is the close cooperation with Topwerk India, achieved on this scale for the first time. While the main components come from Germany, simpler steel structures - such as maintenance platforms for elevators and lowerators and the cuber - were manufactured and supplied locally according to German drawings. This combination of German engineering skills and local manufacturing expertise enabled an economically attractive solution with consistently high quality.

Polystyrene insertion unit

From raw material supplier to concrete block manufacturer and system supplier

Mehramat Concretes has been successfully active in the mining business for many years and operates several quarries in and around Guwahati, the capital of the north-east Indian state of Assam. Assam is known for its rich natural resources, especially granite, limestone and other mineral resources that are in high demand in the construction industry. The region is strategically located in the so-called Seven Sisters area and acts as an economic gateway to the north-eastern states of India as well as neighbouring countries such as Bhutan and Bangladesh.

With an impressive production capacity of approximately 1,100 tonnes of aggregates per hour, Mehramat Concretes is one of the most efficient suppliers in the region. The decision to start producing concrete blocks was made for strategic reasons: By utilising its own raw materials, the company can cover the entire value chain - from extraction and processing through to the finished product.

The plant's technology centre: RH 2000-4 VA from Hess Group

The heart of the new production line is the RH 2000-4 VA - a high-performance machine for the production of concrete blocks, which is appreciated worldwide for its precision, durability and high production capacity. The machine was specially developed for demanding production environments and offers maximum flexibility thanks to its modular design.

The RH 2000-4 VA from Hess Group is a concrete block making machine of the latest generation, which was put into operation at Mehramat Concretes. The machine processes production boards made of sheet steel measuring 1,400 mm × 1,150 mm, resulting in a usable production area of 1,300 mm × 1,100 mm. These dimensions enable a high cycle output and contribute to the efficiency of overall production.

RH2000-4 VA with open facing concrete section

The machine is equipped with a variety of optional accessories to cover a wide range of products with heights from 25 mm to 500 mm. These include a polystyrene insertion unit for the production of thermally insulated hollow blocks, a facing concrete unit for the production of paving blocks with sophisticated surfaces, a drawing plate unit for creating complex geometries and a colour-mix system for the multi-coloured design of concrete products. This equipment facilitates the production of a wide variety of products and allows for flexible adaptation to changing market requirements.

The production cycle is fully automated and includes the wet side with elevator, the curing area with finger car, as well as the dry side with lowerator and a Servo 700-2 cuber with hydraulic clamp. The empty production boards are returned via a transverse transport with turning device. The finished products are conveyed out of the hall via a slat conveyor and then stored using a forklift truck.

In addition, the possibility of further upgrading the manufactured products with finishing technologies from SR Schindler was already taken into account during the planning phase. The Regensburg-based company is part of the Hess Group and is internationally recognised for its surface treatment solutions - including grinding, blasting and coating.

It is particularly noteworthy that Mehramat Concretes is the first and so far only manufacturer of concrete blocks with this product range in the state of Assam. In a rapidly growing economic environment, the company is thus positioning itself as a pioneer and technology leader.

Topwerk India - Local presence, global know-how

Close cooperation with Topwerk India, the Hess Group's local sales and service location, was a decisive factor in the success of the project. As the extended arm of the German machine manufacturer, Topwerk India not only offers technical advice, but also comprehensive after-sales support and training directly on site.

The work of the local team, including Sachin Shetty, who collaborated closely with the customer throughout the project, is particularly noteworthy. The recent opening of the new Topwerk office in Delhi emphasises the Group's long-term commitment to the Indian market.

It is worth noting that Mehramat Concretes had no experience in concrete block production before this project. This made the trust placed by the company in the Hess Group and its partners all the more significant. The Hess Group and its partners provided full support - and continue to do so.

Mixing technology from Simem India

Mehramat Concretes relies on a mixing plant from Simem India for the concrete supply. The plant ensures a homogeneous and reproducible concrete quality - a decisive factor for processing in the RH 2000-4 VA.

Curing by Robert Thomas

Another component of the plant is the curing chamber from Rotho, a company in the immediate neighbourhood of the Hess Group. Rotho technology ensures controlled curing conditions and contributes to high product quality.

Sustainability through zero-waste mining

A special feature of Mehramat Concretes is its consistently implemented zero-waste mining concept, which was developed in response to a particular challenge. In the Assam region, there is hardly any demand for fine aggregates on the local market. These fractions were previously a by-product of rock processing and were discarded as 'waste mountains' with no economic value.

Curing with elevator and lowerator and finger car

Servo 700-2 cuber

Servo 700-2 cuber with latch conveyor and slat conveyor

Mehramat Concretes approached the Hess Group with precisely this question: 'What should we do with these materials?' A solution was developed together that was technically sound and economically viable. In terms of throughput, flexibility and product quality, the RH 2000-4 VA proved to be the ideal machine for fully integrating fine aggregates into concrete block production.

This close collaboration resulted in the Zero-Waste-Mining project: a production concept that focuses on the complete utilisation of raw materials and thus offers both ecological and economic advantages.

Slat conveyor for removing block packets

Charanjit Singh Gandhi, Managing Partner Singh Brothers and Mehramat Concretes LLP.

Economic environment and market potential

Assam is one of India's most economically promising regions. There are numerous infrastructure projects in the planning stage or already underway, including road and bridge construction, residential developments, and industrial parks. The region benefits from its strategic location in north-east India, as well as its role in connecting South-East Asia.

In this environment, Mehramat Concretes is in an excellent position as the first and currently the only supplier of industrially manufactured concrete block products in Assam. The company can benefit from growing demand in areas such as residential construction, public infrastructure and commercial development early on, and set new regional construction standards with its modern products.

Conclusions

With the new plant, Mehramat Concretes has entered the concrete block production market and realised a production concept that is both technologically and ecologically forward-looking. Its own raw material base, state-of-the-art machinery and strong partnerships with the Hess Group, Topwerk India and SR Schindler are the foundation of its successful market positioning, demonstrating how trust, technology and sustainability can transform the concrete block industry. ■

FURTHER INFORMATION

HESS Group GmbH
Freier-Grund-Straße 123
57299 Burbach-Wahlbach, Germany
T +49 2736 49760
info@hessgroup.com
www.hessgroup.com

SR Schindler
Hofer Straße 24
93057 Regensburg, Germany
T + 49 941 696820
info@sr-schindler.com
www.sr-schindler.com

ROTHO – Robert Thomas Metall- und Elektrowerke GmbH & Co. KG
Hellerstraße 6
57290 Neunkirchen, Germany
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CDS Curing, Staffordshire, ST3 5JU, England

Modern Curing Technologies for Durable and Sustainable Concrete

التقنيات الحديثة لمعالجة الخرسانة لضمان متانتها واستدامتها

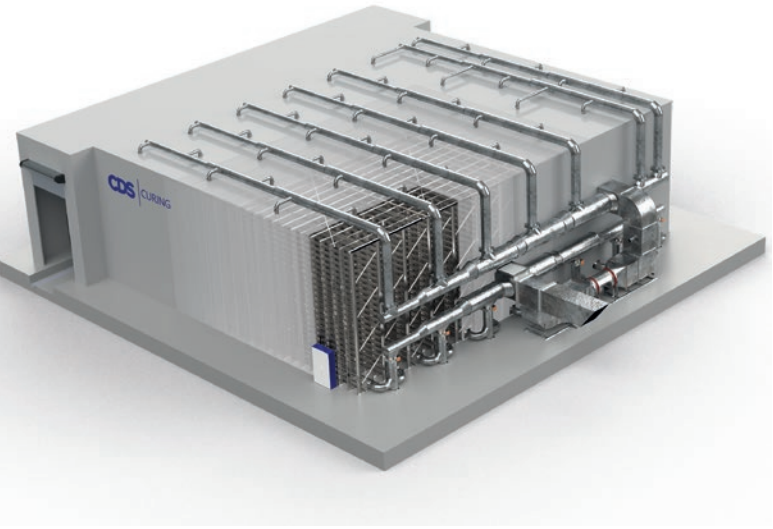
The strength, finish, and long-term performance of precast concrete products depend heavily on the quality of their curing process. Curing is the critical stage that determines not only the durability and appearance of each unit, but also the overall consistency and productivity of the precast operation. The CDS Envirocure System delivers a controlled, intelligent curing environment – optimizing temperature, humidity, and airflow to achieve superior strength gain, reduced cycle times, and enhanced sustainability across all precast production lines.

تُعد متانة الهياكل الخرسانية وقوة تحملها من أهم الركائز في عديدٍ من مشروعات البناء الحديثة، وتأتي عملية المعالجة في صميم تحقيق ذلك، فهي مرحلة حاسمة تؤثر على متانة الهيكل ومظهره وعمره التشغيلي. يقدّم نظام CDS Envirocure حلًا ذكيًا وفعالًا لمعالجة الخرسانة، والذي يوازن بين الأداء العالي والمسؤولية البيئية.

Concrete Curing Matters

Curing means maintaining concrete at the optimal temperature and moisture level for a sufficient period to achieve its designed strength. When done properly, curing:

- Reduces the risk of cracks and surface flaws
- Builds the required compressive and flexural strength
- Improves resistance to chemicals, freeze-thaw damage, and wear
- Strengthens the surface and limits dusting
- Extends the overall life of the structure



The CDS Envirocure System provides a smart and efficient way to cure concrete

Traditional methods such as steam generators, boilers etc can be inconsistent and energy-intensive, particularly on larger or more complex projects. This is where CDS Envirocure comes in to ensure optimised curing.

CDS Envirocure Systems

These are advanced, automated systems are designed for curing concrete products and precast elements. They create a precisely controlled environment where temperature, humidity, and airflow are regulated. CDS Envirocure Systems allow for consistent results regardless of the weather or climate.

Key features of the CDS Envirocure Systems include:

- Automated Climate Control: Constant monitoring and adjustment for ideal curing conditions.
- Energy Efficiency: Heat recycling and optimised air circulation lower energy costs and environmental impact.
- Water Conservation: Precise control avoids excessive usage of water resources
- Scalability: Suitable for both small plants and large infrastructure projects.
- Data Logging & Control: Real-time monitoring and remote access for quality assurance.
- Maintenance: with hundreds of systems installed worldwide the CDS Envirocure System has proven to be one of the lowest costs of ownership, a yearly service visit by a CDS Service Technician is all that is required. A small inventory of spare parts and on-line system monitoring comes with the service package.

The system encloses the curing space and uses sensors to track internal conditions.

How It Works

The system encloses the curing space, whether that be a chamber, tunnel, or room, and uses sensors to track internal conditions. A central control unit manages air handling, heating, humidifying, and, when required, cooling, to ensure the very best curing process.

When using a CDS Envirocure System, a typical curing process is as follows:

1. Freshly manufactured elements are placed inside the enclosure.
2. Sensors record temperature, humidity, and sometimes CO_2 levels.
3. The system adjusts airflow, heat, and moisture to match the ideal curing curve.
4. Data is stored for quality control records.
5. Once complete, products emerge with improved quality and strength.

The Benefits of Using CDS Envirocure Systems

- Consistency & Quality
  Predictable curing reduces rejects and rework.
- Faster Turnaround
  Shorter curing cycles keep projects moving.
- Environmental Responsibility
  Less water and energy use, plus lower emissions.
- Cost Savings
  Fewer defects and reduced running costs over time.
- Improved Safety
  Less manual handling of wet concrete.

Where It's Used

CDS Envirocure Systems have a range of applications across the construction sector. They can be the right choice for precast manufacturing, as well as producing paving blocks, stones, pipes, and manholes. Their precision also can benefit the creation of architectural panels and façades, and they play an important role in major infrastructure such as bridges, tunnels, and transport networks. In addition, they are well-suited to sustainable building projects seeking LEED or BREEAM certification.

Considerations Before Implementation

Before introducing a CDS Envirocure System, it's important to think about how it will integrate with the existing production processes and logistics. Staff will need appropriate training to operate and monitor the system effectively to ensure consistent results. There is an initial investment to account for, although this is often outweighed by the long-term savings in energy, water, cement, consistency, and reduced wastage, but it is still important to consider this. Finally, selecting a curing profile that matches the specific concrete mix is crucial to achieving the best possible performance. ■

FURTHER INFORMATION

CDS CURING

CDS Curing
Cinderhill Industrial Estate,
Weston Coyney Road,
Longton, Stoke-on-Trent
Staffordshire, ST3 5JU, England
T +44 1782 336666
info@cds-group.co.uk
www.cds-group.co.uk

Kobra Formen GmbH, 08485 Lengenfeld, Germany

Shaping tomorrow today

تشكيل الغد بدءًا من اليوم

Andreas Gebauer-Günther, Kobra Formen GmbH, Germany

"Learn from yesterday, live for today and shape the future." This sentence aptly describes how the concrete block industry has made its way – and why it is now more dependent than ever on the innovative power of mold making. Both industries are closely intertwined: Progress in one area drives the other. Standing still would be a step backwards.

"نتعلم من الأمس، ونعيش اليوم، ونشكّل المستقبل". تعكس هذه العبارة بدقة مسار تطور صناعة الكتل الخرسانية، وتوضح سبب اعتمادها اليوم على القوة الابتكارية لصناعة القوالب أكثر من أي وقت مضى، فالقطاعان وثيقا الترابط، إذ يدفع التقدم في أحدهما تطور الآخر، في حين أن الجمود لا يعني إلا التراجع.

Change as a constant

In just a few decades, concrete paving stones and other concrete products have evolved from simple pavers to highly functional, creative and ecologically relevant building products. Formerly simple machines and molds that were mainly focused on functionality are now precise, sensor-controlled high-performance tools. Nowadays, processes take place both in the concrete block plant and in mold making that hardly anyone would have expected just a few decades ago. Behind every improvement is always the aim of increasing quality, avoiding downtime and providing customers with decisive advantages.

But the challenges are growing: Sustainability, energy efficiency, CO_2 reduction and increased expectations of flexibility and delivery capability are changing the rules of the game. Anyone producing today must be able to react quickly to changes in the market – with maximum precision and, above all, reliability. Future viability is not only achieved by investing in machines, but above all through partners who think about development and responsibility together.

Benefit and risk

Modern molds with a longer service life, precise machining and modular design reduce production costs and increase availability. At the same time, sustainable production is increasingly becoming a market access option: Public clients demand environmental and CO_2 certificates, customers expect resource-saving products.

Those who delay too long risk backlogs and have to accept higher life cycle costs and the loss of market share. Progress is therefore no longer an option, but a prerequisite for survival in a competitive environment. "Shaping tomorrow today" means not postponing decisions, but recognising and exploiting opportunities at an early stage.

From mobile block production to precision molds

The history of the industry shows how closely development and success are linked. Mobile block machines, which were primarily used to produce building construction products, were initially followed by multilayer machines for more effec-

AM-produced tamper shoes

Printed cores without weld seam in mold insert

tive paving block production with a smaller footprint. Developments in the market and the expectations of the concrete paving block surface finally paved the way for stationary machines that took precision and productivity to ever new dimensions. At the same time, tools were developed that enabled increasingly differentiated products: functional spacers, drainage functions, colour mix surfaces and interlocking contours even on the underside of the stone. Molds with contoured draw plates or draw fingers for the internal profiling of concrete products are as commonplace in use today as tamper heads with heated tamper shoes and mechanically or pneumatically moved tamper heads for particularly special product surfaces.

In addition, surface treatments such as washing, blasting, grinding, bush-hammering or curling have considerably expanded the design possibilities in concrete block plants. As a result, concrete paving block became a product that was not only functional, but also aesthetically and ecologically convincing. Surfaces paved with paving stones have been part of everyday life around the world for many decades, although they are rarely consciously recognised.

The mold became the decisive quality factor. Over the past 3 decades, service life has increased from around 35,000 to over 100,000 cycles – progress that reduces downtime and cuts costs. A rethink has also long since begun when it comes to materials: Alternative binding agents are increasingly replacing cement in order to reduce CO_2 emissions and increase performance. Old concrete products have long been recycled to save valuable raw materials.

Each of these developments shows: Concrete paving block production and mold making are a joint system. Machines, materials and tools influence each other – and every advance benefits both sides.

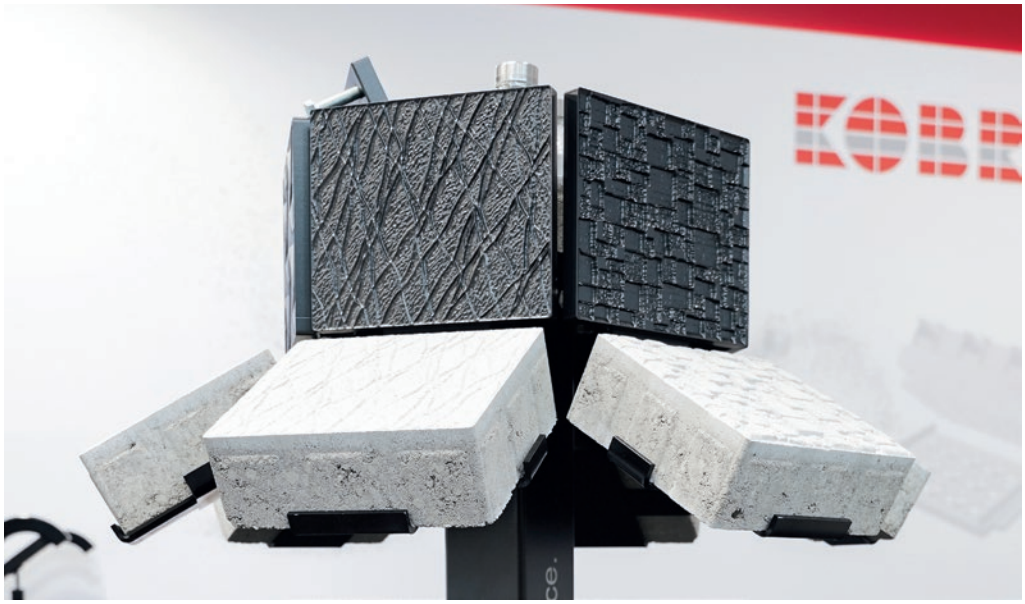


Exhibit at bauma 2025 – AM-manufactured tamper shoes and pavers produced with them

Kobra as a development partner

Kobra Formen GmbH has established itself as a driving force in this interplay. Bolted molds with interchangeable wear parts, fully milled cavities and modular construction were already setting standards in the early 2000s. The idea: not replace the entire mold, but replace specific components. This reduces costs, shortens downtimes and increases planning reliability.

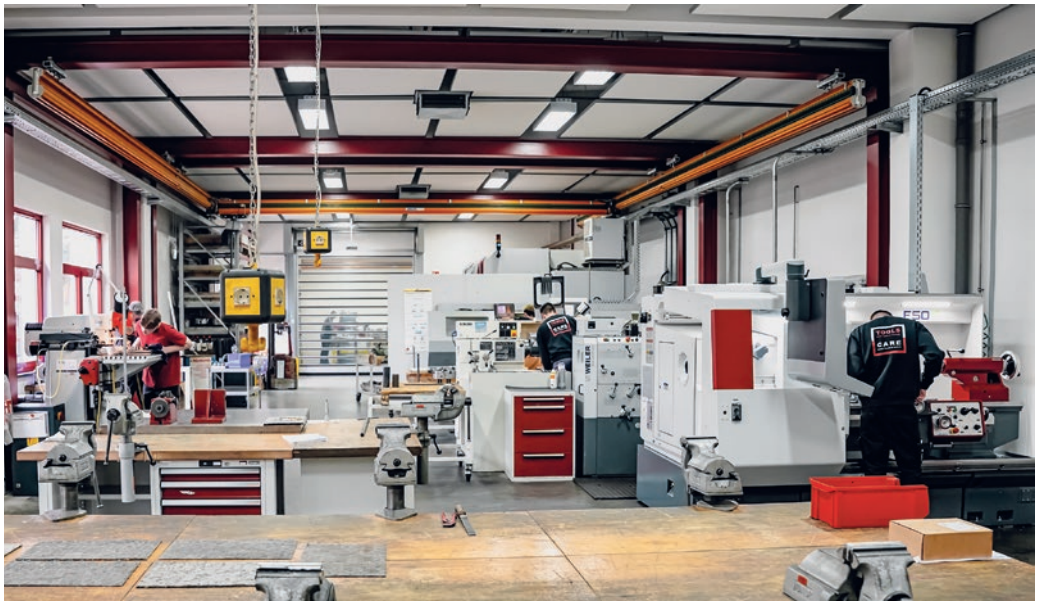
Modularity also creates flexibility: Tools can be adapted to changing product requirements without having to be redesigned or completely replaced. Start pavers, edge pavers or half pavers in the paver mold can be designed as an interchangeable cavity or changeable cavity. Depending on the requirements of the project, production can be easily customised. The simultaneous production of the different pavers has the advantage of less colour variation than if they are produced in different batches. Reproducibility and interchangeability guarantee consistent quality and precision in the mold tool. This gives concrete block plants the security of working with a system that remains constant over many years.

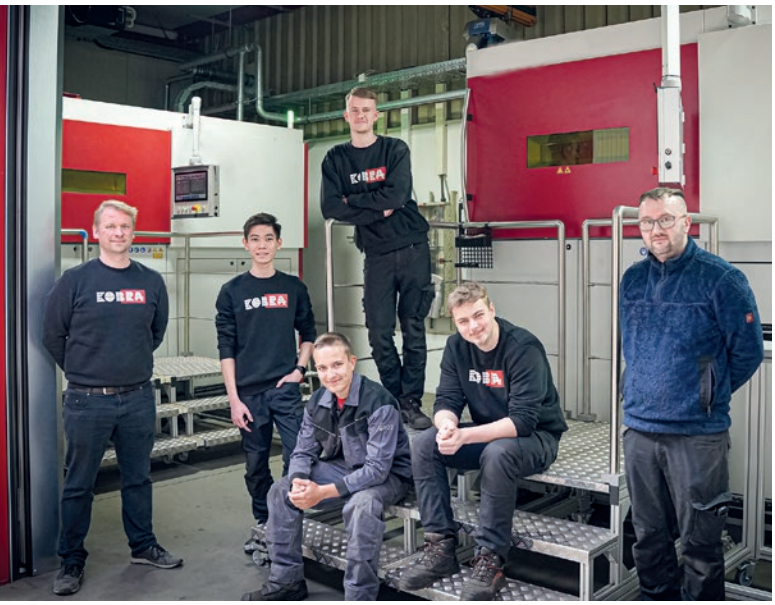
This philosophy has made Kobra a technological benchmark. The goal is clear: To supply tools that fulfil today's requirements and define new standards tomorrow.

New technologies – new possibilities

Additive manufacturing is fundamentally changing mold making. It does not replace conventional processes, but complements them in a decisive way. Highly complex components can be produced with less material and shorter lead times. Spare parts are available more quickly, and quality and precision are more reproducible than ever before. This also involves intensive rethinking and redesigning components

Kobra's own training workshop with machine equipment





Kobra AM team with printers

that were previously subject to the technological constraints of conventional CNC production. In particular, designs with round geometries or particularly sharp-edged surfaces as imitation natural stone were limited by milling.

Additively manufactured components with geroid structures are lighter and at the same time more stable than components made of solid steel and already make it possible to influence the vibration behaviour of molds. The results can lead to better compaction and higher product quality and – depending on the application – to shorter cycle times. At bauma in April 2025, corresponding mold components and also sample blocks were already presented; the advantages were immediately apparent. At Kobra, the future is already tangible and can be experienced.

Those who utilise the possibilities gain flexibility, efficiency and new scope for design. Those who wait will lose time and market share. Kobra follows a clear principle: Use technology where it creates measurable added value for the customer – through precision, reliability and future-proofing.

Sustainability as a commitment

Sustainability in the concrete block industry is no longer an additional topic, but an economic necessity. Kobra combines ecological responsibility with technical performance. A photovoltaic system with 1.8 MWp covers a large part of the energy requirement, a PV carport with over 2,200 modules supplies additional electricity and at the same time covers 180 car parking spaces.

A circular economy is created in production: Steel chips and waste from conventional CNC machining are processed and the resulting primary material is used in several classifications for different additive processes – a contribution to

Pure raw material is generated from the production waste

truly low-emission steel. Molds can be recycled on a modular basis: Only worn components are replaced, the material of the old inserts and tamper shoes is recycled and reused in-house.
This way of thinking corresponds to the cradle-to-cradle principle (C2C). Additive manufacturing significantly reduces the use of raw materials and directly improves the carbon footprint. Only the actual loss of the total steel mass due to wear – i.e. the material that remains permanently in the concrete product – is assessed. System frames and tamper head adapters are reused and reduce the proportion of critical tool to a minimum.

The decisive factor is therefore no longer the pure mold price, but the ability of the mold maker to manage modularity and minimise the scope of replacement. Kobra's additive processes make it possible to produce the most complex wear parts quickly, precisely and with very little waste; quantities have an ever smaller influence on production costs.

Raw material recycling works in a similar way to waste glass: old components are sorted, shredded, melted down and remanufactured as high-quality components – with identical precision, quality and reliability. Kobra has long countered the need to work with mono-material by using bolted and replaceable wear parts. Welding is only used where it is still unavoidable – or when it is not a decisive factor due to the reuse of components.

Responsibility and continuity

At Kobra, sustainability is also reflected in the corporate culture. More than a third of employees were trained in-house and many have been with the company for decades. Experience, loyalty and knowledge ensure consistently high quality. With a vertical range of manufacture of over 95%, Kobra remains virtually independent of external supply chains – a clear advantage in times of global uncertainty.

A new addition: Kobra trainees in the production area are the first to complete an additional module on additive manufacturing and 3D printing. In this way, Kobra is consciously and specifically preparing its own crew for the future – expertise for new materials, processes and component geometries is created directly in the team and flows back into development, production and service without any loss of time.
In this way, the company combines ecological responsibility, social stability and technical independence into a reliable overall package. "Customers can be sure: Whoever works with Kobra not only receives a product, but also a piece of future security."

Shaping the future – together

The next few years will be characterised by digitalisation, alternative binding agents, new surfaces and advanced drainage systems. Concrete block products are already active and architectural elements of urban infrastructure – they store, filter and shape water management and serve as traffic guidance systems. Mold making provides the precision that makes such systems possible in the first place.

Kobra with 11 production halls and the new PV carport

Tamper with geroid structure for optimised force distribution

Additive and conventional processes are merging, boundaries between the traditional product types are disappearing. Whether paving, grass pavers or hollow blocks – in future, it will be function rather than form that counts. Modularity, reusability and resource efficiency will become the standard.

The future of the concrete block industry lies in the combination of technical innovation and corporate responsibility. It will not be decided by machines alone, but by people who are willing to try new things and support continuous development.

Kobra sees itself not only as a supplier, but also as a partner to the concrete block plants – a partner that combines development, precision and sustainability into a common strategy. "Those who act today shape tomorrow. And if you want to shape the future, you need partners who share your vision."

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Kobra Formen GmbH
Plohnbachstraße 1, 08485 Lengenfeld, Germany
T +49 37606 3020
info@kobragroup.com
www.kobragroup.com

Frima GmbH & Co. KG, 26723 Emden, Germany

Kann modernizes the concrete block production line at the Übach-Palenberg site

Kann تُحدّث خط إنتاج الكتل الخرسانية في موقع أوباخ-بالنبرغ

Mark Küppers, CPi worldwide, Germany

The history of Kann GmbH Baustoffwerke dates back to 1927, when the company was initially founded as a producer of pumice-lime blocks. In 1936, Paul Kann took over the company as managing partner, and since 1959 it has been wholly family-owned. An important milestone in the company's growth was the takeover of Grenzlandbeton in Übach-Palenberg in 1988. Since then, Kann has continuously expanded and modernized production facilities at this location. Most recently, the company Frima from Emden was tasked with an extensive modernization, during which numerous components were replaced, from the main hydraulics to the control system.

تعود جذور شركة Kann GmbH Baustoffwerke إلى عام 1927، حين تأسست في بدايتها كشركة متخصصة في إنتاج كتل الخفاف والجير. تولّى "بول كان" إدارة الشركة كشريك مدير في عام 1936، وأصبحت الشركة مملوكةً بالكامل للعائلة منذ عام 1959. شكّل الاستحواذ على شركة Grenzlandbeton في أوباخ-بالنبرغ في عام 1988 نقطة تحول في مسيرة نمو الشركة. واصل "كان" منذ ذلك الحين توسيع مرافق الإنتاج في هذا الموقع وتحديثها باستمرار. مؤخرًا، أسندت إلى شركة Frima من مدينة إمدن مهمة تنفيذ عملية تحديث شاملة، جرى خلالها استبدال العديد من المكونات، بدءًا من الأنظمة الهيدروليكية الرئيسية وصولًا إلى نظام التحكم.

Kann Baustoffwerke is a leading company in the building materials industry, specializing in the manufacture of high-quality concrete block products, and is now represented at 20 locations in Germany. The company places particular emphasis on sustainability, quality and innovation in order to support both private and public construction projects with high-quality products.

Kann offers a wide range of concrete block products for building and civil engineering, gardening and landscaping, and road and pavement construction. The range includes paving stones, terrace slabs, concrete masonry and kerbstones. The company relies on environmentally friendly materials and innovative manufacturing processes to meet the increasing demands for sustainability and quality.

Protective grid system from Frima.

Safety sliding gate system for maintenance-friendly system protection on the mould change side.

Maintenance-friendly protection of the machine by sliding door on the operator's side.

Control panel and visualization of the system.

A central concern of Kann Baustoffwerke is the sustainable use of resources. The company focuses on energy-efficient production processes, the use of recycled materials and the reduction of CO_2 emissions. In addition, environmentally friendly concrete mixes are developed to minimise the ecological footprint.

Production plant at Übach-Palenberg, Germany

The Übach-Palenberg site is a production facility of Kann Baustoffwerke. In 1991, the company's second production plant was commissioned here to expand production capacities. In 2012, another modernization followed in order to

Hand protection cover on the sliding track.

Cleaning screw for concrete waste.

High-performance hydraulics in a separate hydraulic room.

Air-conditioned control cabinet room.

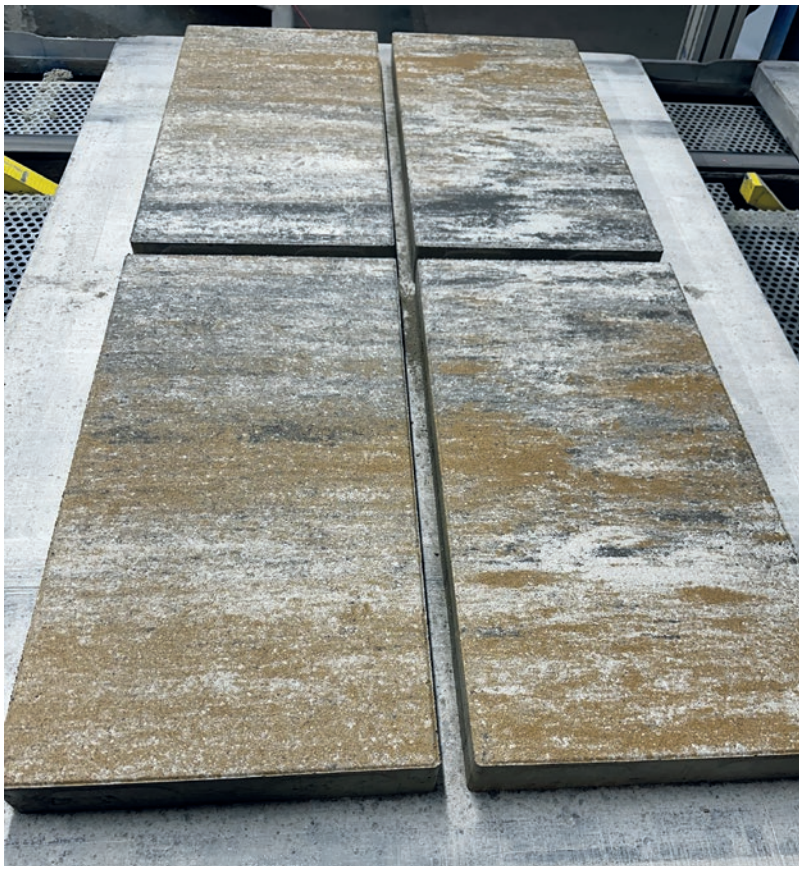
keep pace with the increasing demand. Last year, another major modernization measure was implemented by the experts of the company Frima.

Modernization of the existing concrete block machine

The commissioning and implementation of the modernization measures on the concrete block machine took place in January and February 2024. The aim was to bring the control system as well as the mechanical and hydraulic components up to the latest state of the art in order to improve efficiency, safety and operability.
As part of the modernization, the outdated Siemens S5 controller was replaced by a new S7-1500 controller on the wet side. This includes a modern visualization, a new control panel and the integration of a vibration cabinet with ASi-5 technology. In addition, the wet side was completely rewired. The sensor technology was also renewed, including the replacement of the motion measuring systems.
The hydraulic rebuild included the installation of new proportional valves with IO-Link technology, which enable improved feedback as well as detailed fault and status evaluations. The entire machine has been re-piped and equipped with high-performance hydraulics, including a new main hydraulic system with two oil heat exchangers for indoor and outdoor

Machine with new attachment hoppers from Frima.

Fresh products on the wet side.



use. A new platform was erected to centrally accommodate hydraulics and control cabinets. This includes a soundproof enclosure for the hydraulics and an air-conditioned control cabinet room.

Another task was to eliminate the complexity of the pneumatics. For this reason, the pneumatic cabinet developed by Frima was selected.
In addition, numerous mechanical adjustments have been made to increase the operability and safety of the machine:

- The conversion of the conveyor platform now allows it to be lifted so that the board can be ejected from the vibrating table without lifting the entire arrangement.
- Automatic locking of the moulds has been enabled, including automatic docking and undocking during mould changes. This not only brought safety improvements, but also significantly increased the speed of the mould change.
- The retrofitting of a mould feeder further facilitates and accelerates the mould change.
- A new core filling carriage with hydraulic shaking grate ensures more uniform filling of the mould.
- Safety features have been complemented by the Frima fence system, while cover plates on the slideway provide additional hand protection.
- The vibrating table crossbeam was replaced by a reinforced version.
- The machine hoppers and the top hopper for core concrete were replaced with technologically improved geometries.
- Replacing the Colourmat attachment with electric drive enables optimised colouring of the products.
- A hydraulic board lock, which was newly developed by Frima, was provided.

These comprehensive measures not only upgraded the machine technologically but also optimized the work processes and significantly increased operational safety. ■

FURTHER INFORMATION

KANN GmbH Baustoffwerke
Friedrich-Ebert-Straße 10-14
52531 Übach-Palenberg, Germany
info@kann.de, www.kann.de

FRIMA GmbH & Co. KG
Stedinger Straße 12, 26723 Emden, Germany
T +49 4921 5840
info@frima-emden.de
www.frima-emden.de

Assyx GmbH & Co. KG, 56626 Andernach, Germany

Long-Term Reliability: Production boards in use at Semmelrock/Wienerberger

موثوقية طويلة الأمد: ألواح الإنتاج المستخدمة لدى Semmelrock/Wienerberger

Gabriele Rose, Assyx GmbH & Co. KG, Germany

Assyx, headquartered in Andernach, is known as a manufacturer of high-quality production pallets featuring a polyurethane coating from Covestro and a core made of laminated veneer lumber (LVL). This combination ensures exceptional durability and outstanding performance – even under the harsh conditions in concrete block production plants. An impressive example of the quality and longevity of Assyx pallets is their use at Semmelrock Stein+Design, a subsidiary of Wienerberger. Nine years ago, 9,000 DuroBoards were delivered to Semmelrock in Gnatowice, Poland. The company, recognized as a leading provider of high-quality construction materials and infrastructure solutions in Central and Eastern Europe, offers innovative and aesthetically appealing solutions for private and public spaces.

Assyx شركة يقع مقرها الرئيسي في أندرناخ، وهي من الشركات المتخصصة في تصنيع منصات نقّالة عالية الجودة تستخدم في الانتاج، والتي تتميز بطلاء خارجي من البولي يوريثان من Covestro ونواة مصنوعة من خشب القشرة الرقائقي. يضمن هذا المزيج متانةً استثنائيةً وأداءً متميزًا، حتى في ظل الظروف القاسية السائدة في مصانع إنتاج الكتل الخرسانية. يُعد استخدام منصات Assyx النقّالة لدى شركة Semmelrock Stein+Design، التابعة لشركة Wienerberger، مثالًا جديرًا بالإعجاب على جودة هذه المنصات وطول عمرها التشغيلي. فمنذ تسعة أعوام، تم توريد 9,000 لوح DuroBoard إلى منشأة Semmelrock في ناتوفيتسه في بولندا. الشركة من أبرز مزودي مواد البناء عالية الجودة وحلول البنية التحتية في وسط وشرق أوروبا، حيث تقدم حلولًا مبتكرةً وجذابةً من الناحية الجمالية للمساحات الخاصة والعامة.

Long-Term Reliability

Semmelrock produces concrete products at its Gnatowice facility. The pallets used in these lines measure 1400 x 1150 x 50 mm and are subjected to production loads of up to 600 kg. The 9,000 Assyx pallets have performed exceptionally well under these demanding conditions over the years. Thanks to the robust polyurethane coating and the durable LVL wood core, they have remained in excellent condition.

Assyx DuroBoard

Refurbished DuroBoards from Semmelrock at Assyx in Andernach

The board handling in the processing plant is robot-assisted.

Refurbishment Before Reuse

In order to maintain the high-quality standards in Semmelrock facilities and to use the boards for just as long again, the production boards undergo a thorough refurbishment process at the Assyx processing center. The design of the Assyx DuroBoard ensures that the average 2.75 mm-thick polyurethane layer protects the LVL wood core, which is crucial for vibration transfer, from moisture and other environmental influences. Unlike solid wood variants, the LVL wood core is not in constant contact with external conditions, allowing for significantly longer service life.

The use of LVL wood aims to replicate the benefits of hardwood while eliminating its drawbacks. By using special layered constructions made from spruce, pine, or highly rigid beech, Assyx tailors the properties of the boards to meet customer requirements. The robust adhesive bonds ensure long-lasting quality and even after years of use there is minimal loss in vibration transfer performance.

The physical properties of polyurethane remain stable throughout the product's lifetime, enabling repairs even after many years. Customers can either repair their DuroBoards on-site or have them professionally refurbished at the Assyx processing center. Damaged areas are prepared for repair by grinding, milling, and cutting, without reducing the overall thickness, thus preserving the stiffness of the pallets. Cracks and indentations are filled with a specially developed filler,

The production boards are processed fully automatically.

and the wood core is resealed. These processes significantly extend the product's service life and delay the need for new purchases.

This approach saves customers not only money but also time, as only the damaged pallets need to be repaired. If the entire surface was to be grinded down by several millimeters, a time-intensive rework of the entire batch would be necessary.

The High-Tech Assyx Processing Center

The Assyx processing center, installed in 2019, operates in three shifts and uses state-of-the-art technology for specialized treatments. These advanced processes allow complex tasks to be completed in the shortest possible time. For example, the refurbishment of the Semmelrock pallets can be completed within just a few weeks – a testament to the center's efficiency and capabilities.

Assyx invested a seven-figure sum in the processing center to establish a new quality standard for the serial refurbishment of pallets. Since its installation, the facility has been operating at full capacity and has become an essential part of the production process. It has also reduced Assyx's dependence on external suppliers and significantly increased flexibility in meeting individual customer requirements.

To stay ahead in the future, Assyx is currently planning a 2.000.000 EUR expansion of the processing center. This investment will not only increase capacity but also strengthen Assyx's position as a technological innovation leader in the industry.

A particular highlight of the processing center is its innovative ability to separate polyurethane from wood. This technology represents an important milestone in achieving a fully circular production process and integrating sustainable solutions into manufacturing.

Innovation and Sustainability

With its combination of high-tech expertise, continuous innovation, efficiency, and sustainability, Assyx is setting new standards in the industrial processing and refurbishment of materials.

Assyx is committed to sustainability, combining durable products, resource-efficient materials and energy-efficient processes into an environmentally friendly overall concept. The robust polyurethane-coated pallets with a responsibly sourced wooden core provide maximum stability while reducing the use of synthetic materials. Energy-efficient production, including a 2,000 m² photovoltaic system and the use of 100% green electricity minimizes CO_2 emissions. By collaborating with regional suppliers, Assyx reduces transportation distances, supports local economies and decreases dependence on international supply chains. Additionally, a comprehensive waste management strategy ensures the reduction, recycling, and proper disposal of production waste, further minimizing environmental impact. ■

FURTHER INFORMATION

Semmelrock stein+design®

Wienerberger EOOD
Semmelrock EOOD
Elin Pelin, Road 6 (E871), Grigorevo, Bulgaria
office.bg@semmelrock.com

ASSYX

Assyx GmbH & Co. KG
Zum Kögelsborn 6
56626 Andernach, Germany
T +49 2632 947510
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A Proactive Approach to Service

نهج استباقي في تقديم الخدمات

Prevention and parts are at the center of the new Afinitas Alliance Service Partnerships which launched in early 2025. Afinitas is committed to helping customers with a proactive approach to equipment maintenance and plant optimization. There's little doubt that the concrete pipe and precast industry have changed dramatically since the turn of the century. In many plants, the heavy industrial equipment that drives production has evolved into computer-based, data-dependent machines that dramatically increase production, improve quality, enhance safety, and reduce back-breaking labor.

الوقاية وتوافر قطع الغيار هما من الركائز الجوهرية التي تقوم عليها شراكات Alliance الجديدة لتقديم الخدمات (Alliance Service Partnerships) لدى Afinitas، والتي طرحتها الشركة في أوائل عام 2025. تلتزم Afinitas بمساعدة عملائها من خلال اعتماد نهج استباقي في صيانة المعدات وتحسين أداء المصانع بالشكل الأمثل. لا شك أن صناعة الأنابيب الخرسانية والعناصر الخرسانية مسبقة الصب قد شهدت تغيرات جذرية منذ مطلع هذا القرن، إذ تطورت المعدات الصناعية الثقيلة التي تقود عمليات الإنتاج في عديدٍ من المصانع إلى آلات قائمة على الحواسيب وتعتمد على البيانات، ما يسهم في تحقيق زيادات ضخمة في الإنتاج وتحسين الجودة وتعزيز مستويات السلامة والحد من الأعمال الشاقة المرهقة.

modern manufactured concrete products plant can be highly automated and interconnected, which makes servicing the equipment a more difficult proposition than in the last century, when equipment was simpler and repairs could be handled internally and as needed. That's where the new Afinitas Alliance Service Partnership enters the picture.

With its creation in 2018, Afinitas set about to transform the industry by bringing legacy equipment manufacturers together with state-of-the-art equipment and expert customer support. Now, the company is working on another transformation – bringing a proactive preventive mindset to companies that want to optimize production, reduce downtime and ensure that equipment maintenance is thoughtfully planned and scheduled.

Afinitas technician performs a form maintenance check.

John Witte, Afinitas North American Service Project Manager

When Witte talks with customers or industry groups, he often borrows an example from a longtime manufacturer, who puts it this way: "When I first got into this industry, my people made the pipe. Now the machine makes the pipe, and my people take care of the machine."

Increased Industrial Automation

John Witte, North American Service Project Manager, has witnessed the evolution of the industry first-hand. Witte has spent 37 years working in the field as a troubleshooting engineer for HawkeyePedershaab and now Afinitas.

"We have seen more and more industrial automation come into the precast world," he said. "The industry was a little late to the game because there were not sensors and automation durable enough for the operation." There is now. Those sensors and other automation devices evolved to the point where they are now routinely deployed in a pipe or precast plant.

Industrial automation, "probably first focused on batching and making concrete," Witte said. Today, data collection and automation drives nearly every aspect of production. "It's expensive, you need more technical staff, and you need a

Afinitas on-site service is geared toward extending the life of equipment.

market that justifies the investment," Witte said. Those factors started coming together in recent years.

Taking Care of the Machines

Taking care of the machines is at the core of the Afinitas Alliance Service Partnership. The mission is to move from a reactive service model to a proactive one, according to Keith Cole, North American Service Leader. Cole joined Afinitas in 2023 after 28 years in the technical services field at Illinois Tool Works.

In moving from the "break-fix" reactive model to the proactive preventive maintenance approach, Cole is building a team of service technicians that are strategically located throughout the United States, rather than dispatching service technicians from a single Afinitas location in Mediapolis, Iowa.

"It has to be very agile, so we're looking to have remote field service resources," Cole said. "At the same time, I've found that the most successful approach is to partner with the customers. You do that through a robust services program."

The Afinitas Alliance Services approach offers three tiers of service: a basic maintenance plan; an intermediate plan that blends general maintenance with some plant optimization services; and a premium plan that includes full maintenance services plus more extensive optimization services.

Keith Cole, Afinitas North American Service Leader

With the premium plan, "we look at all the Afinitas equipment. We can also look at the concrete delivery, the mix chemistry and the plant layout," Cole said. "We'll look at how their operators are being assigned to different stations. We take the entire picture and then partner with our customers in making recommendations on how they can improve their business. Then we're going to benchmark it to give you an estimate of where you are," he added. "And when we're done, we'll do another benchmarking exercise to demonstrate the return on investment, not only for the equipment, but for the service visit and the partnership plan."

If it Ain't Broke …

While there is a longstanding philosophy among some manufacturers that "if it ain't broke, don't fix it," that ethic starts to disappear when the Afinitas team works with a customer to analyze the cost of lost revenue during unplanned downtime versus preventive maintenance throughout the lifecycle of the equipment. That's why offering service partnerships is growing in importance in the industry among equipment manufacturers, Cole said.
"I think it's transformational, and through benchmarking and optimization we can show that they're going to make more money with this approach than by running their machines into the ground. We're perfectly positioned to lead this effort. We've got the infrastructure. We've got the vision. And we've got the team."

Parts: Integral to the Plan

Afinitas also has the parts, which are an integral component to any service plan.

Zach Vail, Global Aftermarket Leader, sees the parts component of Alliance Partnerships as an opportunity to strengthen relationships with customers. In fact, in his previous position as leader of the Afinitas Curing Team, ensuring parts availability was key.

Zach Vail, Afinitas Global Aftermarket Leader

"Everything evolves as time goes on," Vail said. "Traditionally in our parts business, we've been very reactive." Afinitas team members have always been focused on customer support, but now they are taking it to an even higher level.
"So now we have a responsibility to do what I'm calling a wellness check," Vail said. "We're reaching out to our customers to see if there's anything they need from us."

High quality has always been a hallmark of Afinitas equipment, forming systems, accessories and parts.

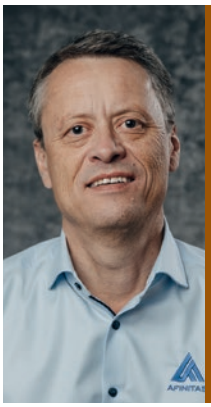
"We have a strong and well-established installation base, not only in North America, but across the globe," Vail said. All equipment needs servicing at some point, and rather than waiting for a breakdown, Afinitas is moving toward a more predictive model, developing parts packages for customers that can be located onsite and ready to go when it's time to service a machine.

"We aren't quite at the position yet where we're able to predict when and what is going to break down," Vail said. "However, we do have the history to confidently tell customers that parts will be needed at some point. And we're able to tailor parts packages to individual customers, depending on the size of their operation and type of equipment they're going to run. We can confidently tell customers that it's in their best interest to put these on your shelf, because you can't always predict when you're going to have a maintenance window or when downtime will occur, but you'll have the part when you need it versus having to order it and wait for it to arrive."

While there are about a dozen Afinitas team members dedicated to the aftermarket parts initiative, "the reality is that everybody in the organization touches some part of the aftermarket," Vail said. "Most of our customer service representatives come from other parts of the business, whether it's field services or the shop, so these are individuals that have intimate knowledge of the equipment and parts. "Our team has hands-on experience – they've worked with the parts and repaired these machines themselves," Vail said. "So when you reach out by phone or email, you're connecting with someone who truly understands the equipment, not just someone reading from a manual."

The goal of the Alliance Partnerships initiative is to help customers get ahead of downtime, Vail said. "We know that every minute their equipment isn't running is costing them money. Investing in a parts package can make all the difference – it could mean the difference between a brief one-day downtime and the stress, frustration, and added cost of having to expedite a critical part while your operation is at a standstill."

The Afinitas Alliance team works with plant operators to ensure performance, reliability and efficiency.



Morten Nørgaard, Afinitas Global Service and Aftermarket Leader

"We have a large, global, expert team of service engineers and technicians available to partner with our customers and ensure they succeed as concrete product producers," Nørgaard said. "Our preventive maintenance and plant optimization programs improve efficiency and productivity, and in general help to create a good work environment for employees."

The Message is "We've Got Your Back"

As a Global Service and Aftermarket Leader for Afinitas, Morten Nørgaard sees the Alliance Partnerships initiative as an opportunity to form closer relationships with customers.

The Afinitas team is stacked with highly experienced engineers and technicians who understand the challenges faced in running a concrete products manufacturing plant, Nørgaard said. Nørgaard, an engineer by trade and a 35-year veteran of the company, oversaw design, engineering and manufacturing at the Afinitas Brønderslev, Denmark site for decades. He feels the ever-advancing technology inside plants makes it an ideal time for customers to take advantage of the knowledge being offered by Afinitas through the Alliance program.

"As an equipment and service supplier to the concrete industry, and with our comprehensive knowledge about equipment and concrete production, it's just a natural step to create a closer partnership with our customers," he said.

Zach Vail would put a slightly different spin on it. "We want our customers to know, hey, we've got your back. It's a message that we want everybody to not just hear, we want you to feel it. At Afinitas, we've got your back, and we'll be there for the life of your equipment." ■

FURTHER INFORMATION

AFINITAS

Afinitas
8027 Forsyth Blvd
Clayton, MO 63105, USA
T +1 319 394 3197
info@afinitas.com
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Ratec GmbH, 68766 Hockenheim, Germany

Glass GmbH Bauunternehmung Modernises Production Line with New Battery Formwork

شركة Glass GmbH Bauunternehmung تُحدِّث خط الإنتاج بقالب بطارية جديد

With a customised battery formwork from Ratec, Glass GmbH Bauunternehmung in Mindelheim has renewed its production capabilities. In close collaboration with Ratec, a solution was developed that meets very high standards of precision, stability, and operational comfort – optimally adapted to the local conditions.

جددت شركة Glass GmbH Bauunternehmung في مدينة ميندلهايم قدراتها الإنتاجية عن طريق الاستعانة بقالب بطارية مُصمم خصيصًا من شركة Ratec. بالتعاون الوثيق مع Ratec، جرى تطوير حل يلبّي معايير فائقة من حيث الدقة والاستقرار وراحة التشغيل، مع تكييفه على النحو الأمثل مع الظروف المحلية.

The Glass Group, headquartered in Mindelheim, around 80 kilometres west of Munich, is one of the most significant construction companies in southern Germany. On its over 170,000 square metre site, the family-run business, now in its third generation, operates, among other things, its own precast concrete plant. With approximately 555 employees at this location, Glass covers almost all areas of construction – from civil and bridge engineering to building construction and turnkey industrial and commercial projects.

Modernisation of the Production Line

The collaboration between Glass and Ratec emerged in the context of modernising the existing production line for large-format precast concrete elements. Glass already had an older battery formwork with a pit, which was, however, technically outdated. The aim of the project was to modernise production with a new, precise, and user-friendly battery formwork – while retaining the existing infrastructure. The existing scissor lift platform with end actuators had also become heavily worn after many years of intensive use. As part of the project, a new lift platform was procured to significantly improve both safety and ergonomics.

Headquarters of Glass in Mindelheim

The requirements for the desired formwork were demanding: smooth surfaces on both sides, minimal dimensional tolerances, suitability for self-compacting concrete, and precise integration into the existing structural conditions.

After intensive discussions and factory visits at Ratec in Hockenheim, and examining another battery formwork from Ratec, the decision was ultimately made in favour of a customised solution from Hockenheim. Key factors were, in addition to the technical expertise of the development team, the detailed project support, geographical proximity, flexibility in adapting to local conditions, and the cooperative partnership.

Key Technical Data

The installed solution is a battery formwork with 2 × 3 pockets, designed for elements with a net size of up to 8.00 m × 3.55 m and wall thicknesses from 10 to 25 cm. The elements are primarily used in industrial and commercial construction, where high dimensional accuracy and surface quality are required.

The battery formwork consists of a robust steel construction with the following main components:

Battery formwork with platforms and staircase

- 4 partition walls, with 10 mm steel sheets on both sides, movable on rollers via a drive mechanism
- 1 fixed central tension wall, with 10 mm steel sheets on both sides
- 2 movable tension walls, manually driven via the drive mechanism
- Panels with a flatness tolerance of ±1.5 mm / 3 m
- Hydraulic clamping unit with 2 × 4 cylinders per side, automatic pressure monitoring, and re-clamping function
- Base frame with running rails and 12 carriages to guide the walls

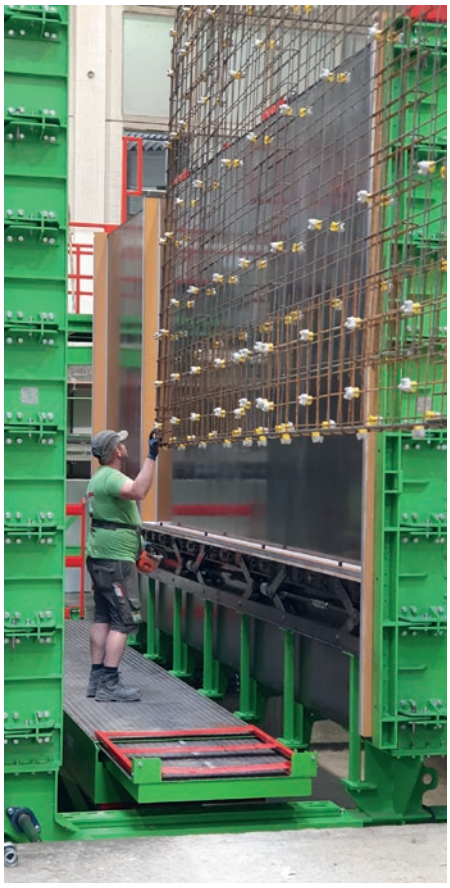
The system is designed for filling with self-compacting concrete (SCC).
Concrete is poured from above, with each pocket able to be filled independently. Concrete pressure is absorbed via the outer tension walls against the central tension wall.
The new scissor lift platform with a 1,000 kg load capacity allows access between the panels. Two electromechanical 1-metre extensions at the end faces enhance safety and facilitate operation. The use of magnetic formwork components allows rapid adjustment of wall thicknesses – a crucial factor for flexibility in production. The formwork system consists of modular side formwork, base formwork, and central supports with integrated SPB magnetic systems, which are clad with plywood on-site, along with additional components such as chamfer strips, extension angles, and top boxes.

Assembly and commissioning were carried out by Ratec assembly team in collaboration with customer's factory staff. The existing pit was reused and adapted to the new formwork system. Following installation, commissioning and functional testing were performed, including a factory pre-acceptance of the lift platform.

Challenge Mastered: Precision Despite Limitations

During the project, several customer-specific requirements had to be fulfilled:

Battery formwork with tension arms for hydraulic clamping of pockets



Work on the panels is made more user-friendly by the scissor-type lift platform

The formwork design ensures excellent surface quality with minimal dimensional tolerances

- **Integration into the existing pit**
  The new battery formwork was integrated into the pit of the previous system, allowing the existing infrastructure to be reused and minimising conversion effort.

- **Stability and dimensional accuracy**
  Due to the high requirements for the flatness and dimensional accuracy of the produced concrete elements, the formwork was designed to be particularly torsion-resistant. Panels are clad with 10 mm thick steel sheet, with a flatness tolerance of ±1.5 mm over 3 m, ensuring consistently precise production results.

- **Self-compacting concrete**
  The formwork is designed for top-down concrete pouring and meets the requirements for tightness and stability during the processing of self-compacting concrete (SCC).

- **Hydraulic clamping**
  A hydraulic clamping unit with 2 × 4 cylinders per side ensures uniform pressure distribution and reliable clamping during concreting and curing.

- **Magnetic formwork system**
  The magnetic formwork components enable rapid adaptation to different element heights and geometries.

- **Continuously adjustable wall thickness**
  Variable top angles and top boxes allow wall thicknesses from 100 mm to 250 mm to be adjusted continuously without additional conversion time.

- **Ergonomic operation**
  Operation and access to the formwork are facilitated by integrated walkways and the new scissor lift platform, enhancing both safety and productivity. The formwork was precisely matched to the existing pit and, in combination with the new lift platform, constitutes a modern, ergonomic, and safe production unit.

In close cooperation between the customer and the technical team, a solution was developed that considered all safety requirements – such as railings, stair access, and statutory regulations.

Positive Overall Assessment

Franz-Rainer Göhrle, Head of the Precast Plant at Glass, gives a positive summary:

"The collaboration with Ratec was extremely pleasant on all levels. As a customer, we always felt very comfortable and had the impression that all employees involved in the project carried out their work with genuine passion. We had a shared

goal in mind, and it was pursued with dedication by both parties. From our side, great praise and thanks to all Ratec staff!"

Both the technical implementation and project organisation met the high expectations. Timely delivery, high professional expertise, and open, respectful communication characterised the collaboration.

"We are very grateful to Glass for giving us the opportunity to demonstrate our capabilities," says Jörg Reymann, Managing Director of Ratec GmbH. "Every solution we provide is developed in close consultation with the customer – we do not sell off-the-shelf standards. Our aim is to make our customers' production processes better and more efficient. We take their requirements and wishes seriously and develop a solution that fits perfectly to each plant and its individual workflows. This is what makes such projects so special for us."

The installation of the new battery formwork in Mindelheim demonstrates that the success of such projects lies primarily in open communication and careful coordination between customer and manufacturer – with a solution that optimally supports operations on-site. Ratec once again proved its expertise in developing customised solutions. Customer satisfaction is always the top priority. ■

FURTHER INFORMATION

Glass GmbH Bauunternehmung
Daimlerstraße 3
87719 Mindelheim, Germany
T +49 8261 9920
info@glass-bau.de
www.glass-bau.de

Ratec GmbH
Karlsruher Str. 32
68766 Hockenheim, Germany
T +49 6205 940729
info@ratec.org
www.ratec.org

Bianchi Precast Group, 43045 Fornovo di Taro (PR), Italy

Double beams line in Morocco

خط إنتاج للكمرات المزدوجة في المغرب

Bianchi Casseforme s.r.l. supplied the complete equipment to produce precast concrete beams, further expanding and consolidating its presence in Morocco. The Hamri group, founded in 1993, initially focused its activities on marble extraction, before expanding in 2006 with the opening of three subsidiaries: Aggregates, Concrete, and Blocks (Agglos). In 2020, the group expanded its portfolio by establishing a fourth subsidiary dedicated to mortar production.

وردّت شركة Bianchi Casseforme s.r.l مجموعةً متكاملةً من المعدات اللازمة لإنتاج الكمرات الخرسانية مسبقة الصب، ما يعزز حضورها في السوق المغربية ويُرسّخ مكانتها فيها. تأسست مجموعة الحمري في عام 1993، وتركزت أنشطتها في بدايتها على استخراج الرخام، قبل أن توسع أعمالها في عام 2006 من خلال تأسيس ثلاث شركات تابعة، ألا وهي Aggregates وConcrete و(Blocks (Agglos. واصلت المجموعة في عام 2020 توسيع محفظة أنشطتها من خلال إنشاء شركة تابعة رابعة متخصصة في إنتاج الملاط.

With two reserves of 15 and 26 hectares, totaling 41 hectares of quarries, Hamri is recognized as one of the largest aggregate operators in Morocco, ensuring high-quality materials through a process that follows five key stages: Extraction, Transfer, Aggregate Treatment, Storage, and Delivery. The plant is equipped with over 5 fixed crushing lines and 3 mobile lines, ensuring high production standards.

In the concrete sector, Hamri confirms its position as a true leader in Morocco, with three plants producing 80 m³/h, 120 m³/h, and 180 m³/h, making it the top producer in the country in terms of production capacity.

In 2023, the Hamri Group selected Bianchi Casseforme s.r.l. as its partner for the supply of a universal track equipped with

First production line

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EUROBEND GmbH
Alexander str. 1, 90547 Stein, NÜRNBERG, GERMANY
TEL. +49 911 9498980, WEB SITE: eurobend.com
e-mail: info@eurobend.com

The two production lines

a strand anchoring structure, designed for the production of prestessed beams.
In 2024, the group decided to expand its production capacity with a second supply: a special track designed to enable the simultaneous production of two beam lines.
The collaboration with Bianchi Casseforme has been a success, so much so that by the end of 2024, the company requested a third supply, currently under production, consisting of sides for the manufacturing of "I" beams.
Bianchi Casseforme S.r.l. is an international leader in the design and construction of plants and machinery for precast concrete. Thanks to their experience and expertise gained over a long history, they offer a wide range of fully automated products and services, showcasing the quality and reliability of Made in Italy.

First Supply

1. Universal manual casting bed 100 long
   A 100-meter-long base with a maximum width of 60 cm, made of 8 mm thick plate and stiffened by metal profiles.
2. Strands anchoring structure
   The anchoring structure is designed to support a maximum prestressing load of 600 tons. The strand relaxation end consists of two columns inserted into pits, with an internal space of 60 cm. It includes a pre-drilled sliding beam, used during relaxation operations, complete with 0.6" wire holes, and single-acting relaxation cylinders. Bianchi also supplied all hydraulic equipment for pre-stressing and relaxation strands: this included one Relaxation Unit for operating simple-effect relaxation cylinders and one prestressing hydraulic pump unit for operating a 25-ton stressing jack, complete with handling support.
3. Mould sides for prestressed beams
   100-meter-long sides for the production of precast concrete beams with a base width ranging from 20 to 60 cm and a maximum height of 80 cm. Made with 6 mm thick steel sheets and reinforced with a frame made of bent sheets and structural profiles.

Strands anchoring structure

Prestressed Beams

The sides are designed for use on a universal base and are equipped with manual clamping devices and a vibration system consisting of 40 pneumatic vibrators.

Second Supply

1. Universal manual casting bed 100 long
   A 100-meter-long special double base with a maximum width of 60 cm, made with high-quality 8 mm thick plate and stiffened by metal profiles, designed for the simultaneous production of two precast concrete beams with a maximum base width of 40 cm.

2. Strands anchoring structure
   The anchoring structure is designed to support a maximum prestressing load of 800 tons. The strand relaxation end consists of two columns inserted into pits, with an internal space of 40 cm. It includes a pre-drilled sliding beam, used during relaxation operations, complete with 0.6" wire holes, and single-acting relaxation cylinders.

For this second supply as well, Bianchi Casseforme s.r.l. provided all the equipment for pre-stressing and relaxation strands: this included one Relaxation Unit for operating simple-effect relaxation cylinders and one prestressing hydraulic pump unit for operating a 25-ton stressing jack, complete with handling support.

FURTHER INFORMATION

HAMRI
ENSEMBLE POUR MIEUX CONSTRUIRE

Hamri Group
Lahouamed des Zears, BP N' 4374,
Skhirat 12050, Marocco
T +212 661 165748
contact@hamri.ma
www.hamri.ma

BIANCHI
PRECAST GROUP

BIANCHI TECHNOLOGY FOR PRECAST · BIANCHI PREFABBRICATI · PRECAST ACADEMY

Bianchi Precast Group
Via G. Di Vittorio, 42
43045 Fornovo di Taro (PR), Italy
T +39 0525 400511
info@bianchiprecastgroup.com
www.bianchiprecastgroup.com

Eurobend GmbH, 90547 Nuremberg-Stein, Germany

Combining precision and flexibility: Mesh welding lines with integrated universal bending modules and unique mesh bending stations

الجمع بين الدقة والمرونة: خطوط لحام شبك التسليح مع وحدات ثني شاملة مدمجة ومحطات ثني شبك فريدة

Eurobend GmbH offers a comprehensive line of automatic machines for all precast concrete applications: from entry-level welding machines producing simple reinforcement elements to complex equipment to produce special mesh, engineering mesh, mesh with openings, mesh with bent line and cross wires and bent mesh into baskets.

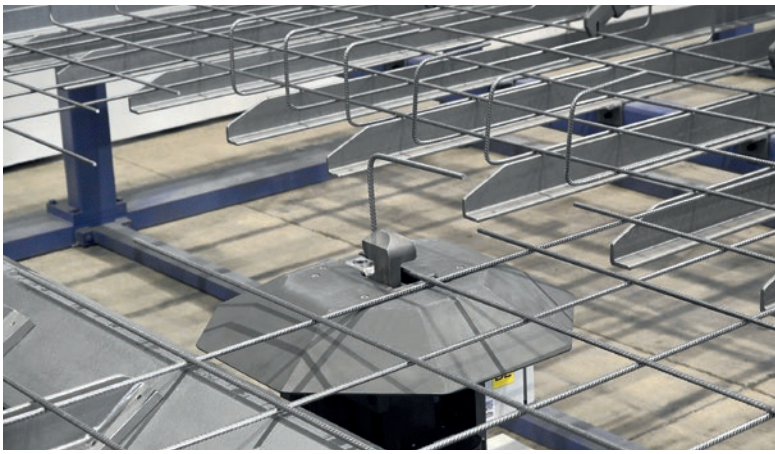
تقدم Eurobend GmbH مجموعةً متكاملةً من الآلات الأوتوماتيكية لمختلف تطبيقات الخرسانة مسبقة الصب، بدءًا من آلات اللحام الأساسية لإنتاج عناصر التسليح البسيطة وحتى المعدات المتقدمة لإنتاج الشبك الخاص، والشبك الهندسي، والشبك المزود بفتحات، وشبك التسليح بأسلاك طولية وعرضية مثنية، إضافةً إلى تشكيل الشبك المثني على هيئة سلال.

The Eurobend AMM series of mesh welding machines work from coil and offer high flexibility at a very high level of automation without any changeover times. Several innovations and unique design features make them the leading models on the market:

- Machines available processing diameters up to 12mm, 16mm and 20mm, cold drawn or hot rolled material, from coil.
- Depending on productivity requirements, the PL XY AMM models are available with one or two multi-point weld heads that weld up to six or twelve spot welds per cycle. For the highest productivity requirements, the PLC AMM models are available with up to 81 fixed weld heads. The PLC AMM models are by far the most productive in this category.
- Any type of mesh can be produced automatically, immediately and without changeover and idle times.

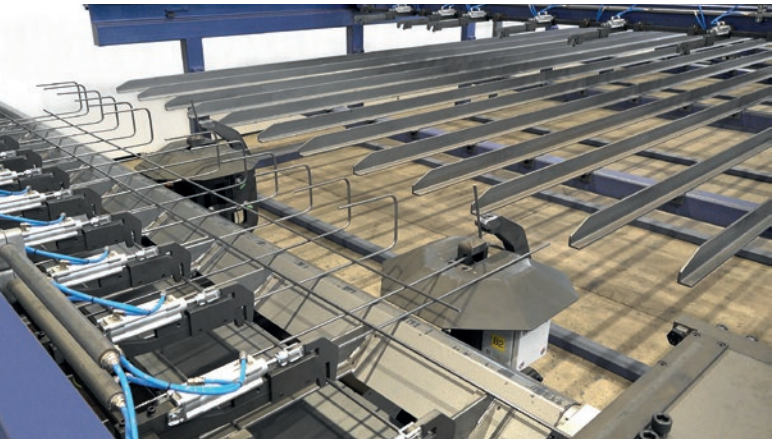
View of a PL XY AMM machine with two moving, multi-point welding heads

View of a PL XY machine with two integrated, in-line universal bending modules



Universal bending module

- The line and cross wires are fed into the welding portal immediately by two separate Flexiline rotor straightening and cutting machines with maintenance-free 5G rotors each with eight hyperbolic rollers and with extremely fast diameter change system. The diameter change takes place in less than 3 seconds without mechanical moving parts. Depending on the model, up to six diameters can be processed.
- Direct feeding of the cross wires into the welding portal. The complicated, maintenance intensive and susceptible common cross wire feeding systems, where the cross wires must be produced first and then the longitudinal wires, as it is the case in the lines with one straightening machine, are no longer necessary.
- Thanks to the innovative concept, the AMM machines are the most compact on the market and have a minimal floor space demand.



Synchronous working universal bending modules

PLC AMM line with integrated universal bending modules, mesh buffer racks and distribution system on circulating pallets

Detail of bends

Cage production with integrated, in-line mesh bender

The machines are offered with unique precision bending systems:

- Integrated, in-line universal bending modules for bending up individually selected line and cross wires, even within openings. The sophisticated design, the drive with servo motors each and the advanced modern software make them the most technically superior in the industry. They are characterized by highest precision and speed. Two bends are performed in 2.5 seconds with consistently precise bending geometry.
- Integrated, in-line mesh bending stations for bending mesh into baskets.
- No idle times during production. During the bending process of one mesh the next one is already in production.
- Connection to master computer for the "Just-In-Time" production, synchronized with circulating pallet systems.
- The AMM welding machines require only one operator.

Additionally available optional systems include:

- Robotic transport systems for automatic transfer of produced mesh to circulating pallets.
- Mesh buffer and storage systems ■

FURTHER INFORMATION

EUROBEND GmbH
Alexander Str. 1
90547 Nuremberg-Stein, Germany
T +49 911-94 98 980
sales@eurobend.com
www.eurobend.com

Elematic, 37800 Akaa, Finland

A new series of extruders featuring built-in connectivity

سلسلة جديدة من آلات البثق مزوّدة بتقنيات اتصال مدمجة

Elematic unveils its next-generation extruders – Extruder P7 2026 and Extruder E9 2026 – marking a significant development in hollow core slab production. These models feature built-in connectivity as standard, providing a new approach to smart, efficient, and transparent precast operations.

تكشف Elematic عن الجيل الجديد من آلات البثق لديها، Extruder P7 2026 وExtruder E9 2026، في خطوة نوعية تمثل تطورًا مهمًا في إنتاج الألواح الخرسانية المجوفة. تتميز هذه الطرازات بتقنيات اتصال مدمجة كميزة قياسية، ما يرسخ نهجًا جديدًا لعمليات تصنيع الخرسانة مسبقة الصب التي تتسم بالذكاء والفعالية والشفافية.

This launch emphasizes not only mechanical innovation but also the integration of built-in connectivity – a feature that redefines how precast production is monitored, managed, and optimized.

Built-in connectivity: The new standard

Elematic has included built-in connectivity as a standard feature in its new Extruder E9 2026 and P7 2026 models. This approach transforms traditional machinery into intelligent, data-driven systems that give producers real-time insights and control.

By embedding connectivity directly into the extruders, Elematic removes the need for retrofits and ensures customers are ready for future requirements. This feature supports:

Elematic unveils its next-generation extruders – Extruder P7 2026 and Extruder E9 2026 (shown here) – marking a significant development in hollow core slab production.

- Real-time visibility into machine performance and production status
- Predictive maintenance that prevents unplanned downtime
- Data-driven decision-making for improved casting speed, quality, and resource efficiency

“With built-in connectivity, producers can now see uptime trends daily, weekly, and monthly – and understand what´s really affecting performance. Whether it’s concrete supply issues, parallel line usage, or incorrect operation, the data provides a clear view of the process. Alerts and warnings help pinpoint causes and guide corrective actions. It’s a step toward smarter and more efficient production.” – Jani Eilola, Product Director, Elematic

This step not only enhances operational transparency but also strengthens Elematic’s partnership with its customers – offering proactive support and continuous improvement through digital services.

For years, precast producers have faced challenges in accessing real-time data from machinery. Limited visibility into performance and maintenance needs often led to reactive decision-making, increased downtime, and higher operational costs. Elematic’s new extruders directly address this gap.

“Digitalization in the precast industry is still at a relatively low level compared to many other sectors. Today, decisions in concrete element production often rely on individual experience rather than data and facts. We frequently see a conflict between maximizing short-term output and performing proper maintenance, which can lead to a run-to-failure strategy. In the long run, this approach jeopardizes performance and results.” – Lasse Eriksson, VP Service, Elematic

Elematic Fleet Management on a computer screen.

Easy to use: Elematic Fleet Management.

With connectivity now embedded as a standard feature, the Extruder P7 and E9 models can transmit production data to the cloud, enabling seamless integration with Elematic's Fleet Management digital service. Operators and managers can monitor machine status, plan production more effectively, and anticipate maintenance needs before issues arise.

From machines to smart systems

This is more than a product upgrade – it is a shift in philosophy. By turning extruders into smart, connected systems, Elematic provides its customers with actionable insights. The result is a more resilient production environment where decisions are informed by data and downtime is minimized.

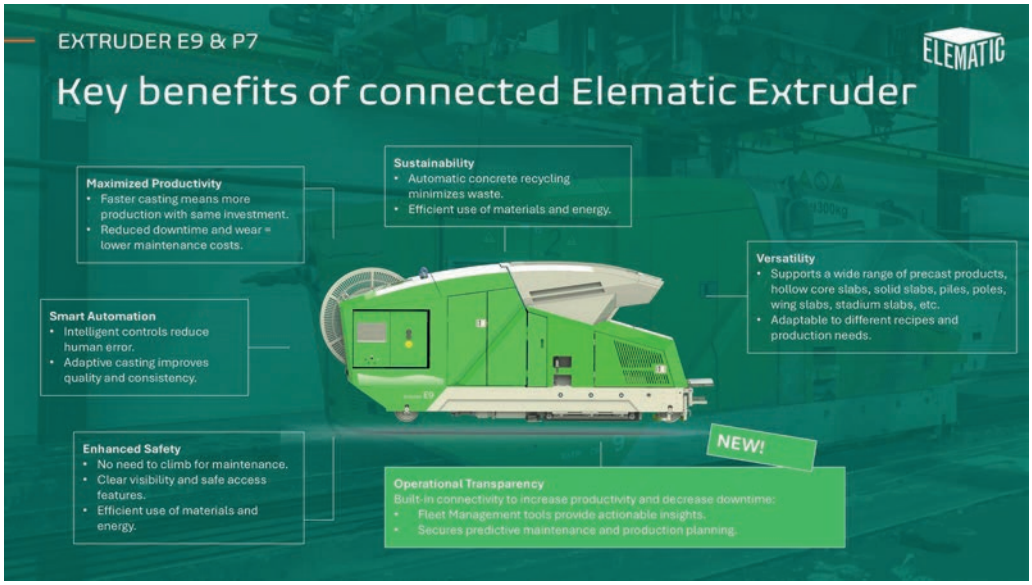
The connectivity feature also supports predictive maintenance, helping teams stay ahead of potential disruptions. And while data transmission capability is built into every new extruder, customers can choose to activate it through a subscription to the Fleet Management service, allowing flexibility based on operational needs.

"New digital solutions bring facts to the table, enabling better decisions. For example, knowing the remaining lifetime of a feeding screw in an extruder allows maintenance to be planned at the optimal time. This allows you to compare the cost of maintenance and parts with the potential cost of lower product quality and extra raw material caused by a worn component. In the end, optimizing production output becomes much easier when you have the facts. That's exactly what digitalization and connectivity make possible." – Lasse Eriksson, VP Service, Elematic

Why choose Elematic extruders?

Elematic's latest extruder models, the P7 2026 and E9 2026, are designed to meet the demands of modern precast production with precision, efficiency, and intelligence.

Thanks to their high compaction efficiency, these machines use less cement while producing high-quality slabs with consistent strength, lightness, and geometry. The E9 model offers high-speed casting, while the P7 provides consistent perfor-



Overview: build-in connectivity in Elematic Extruders

mance at regular speed. Automatic compaction reduces the need for manual labor and ensures uniform results, even when concrete mix properties vary.

Durability is a key advantage: wear parts are long-lasting, and the machines are designed for dependable operation over time. Safety features such as quiet operation, protected components, and improved visibility enhance operator protection. For example, the P7 includes a viewing hatch to check mix levels, and the E9 uses sensors to measure concrete volume. Visual and audible alerts further improve safety during operation.

The integration of built-in connectivity converts these machines into smart systems. Real-time data transmission and access to Fleet Management tools give producers full transparency over operations, enabling predictive maintenance and informed decision-making.

"We didn't just upgrade the extruders – we redefined them. By embedding connectivity, we're giving producers tools to make smarter decisions, reduce downtime, and optimize every part of their process. It's about turning data into value."
- Jani Eilola, Product Director, Elematic

Looking ahead

Elematic's connected extruders are more than machines – they are a pathway to efficient precast operations. By embedding connectivity in its new models, Elematic helps its customers manage production more effectively and stay well-prepared for future challenges. ■

FURTHER INFORMATION

Elematic
Airolantie 2
37800 Akaa, Finland
T +358503973810
info@elematic.com
www.elematic.com

Progress Maschinen & Automation AG, 39042 Brixen, Italy

Automation as a game changer in Saudi Arabia

الأتمتة بوصفها عاملًا مغيرًا لقواعد اللعبة في المملكة العربية السعودية

For decades Al Rashid Abetong Co. has been a cornerstone of Saudi Arabia's construction industry. Founded in 1977 as a Swedish-Saudi collaboration, the company has grown into one of the largest precast concrete manufacturers in the country and is now 100% owned by the Al Rashid family, producing approximately 500,000 cubic meters of precast annually. With Saudi Arabia's construction market booming – particularly in housing projects – the company has embraced advanced automation to meet rising demands and secure its competitive edge.

على مدى عقود، كانت شركة الراشد أيه بيتونج ركيزةً أساسيةً في صناعة التشييد في المملكة العربية السعودية. تأسست الشركة في عام 1977 نتيجة التعاون بين أطراف سويدية وسعودية، ثم نمت لتصبح أحد أكبر مُصنعي الخرسانة مسبقة الصب في البلاد. يملك آل راشد الشركة حاليًا بالكامل، وتنتج نحو 500,000 متر مكعب من العناصر مسبقة الصب سنويًا. اعتمدت الشركة تقنيات أتمتة متقدمة لتلبية الطلب المتزايد والنهوض بميزتها التنافسية مع ازدهار سوق التشييد في المملكة العربية السعودية، ولا سيما في مشروعات الإسكان.

Why automate?

In a fast-paced and cost-sensitive market, automation is a necessity. Al Rashid Abetong Co. recognized this early and strategically partnered with Progress Group, a leader in automated machinery for the precast industry. The company's decision to invest in two cutting-edge reinforcement machines has transformed its operations.

"These machines help us produce custom-engineered reinforcements for wall panels, with minimal waste and significantly less manpower," explains the Projects Planning Manager Ingemar Heikenberg. This highly automated solution allows for mixed-diameter welding, bending, and creating door and window openings in a streamlined process.
By adopting this technology, Al Rashid Abetong Co. has achieved:

- **Increased efficiency**
  The new machines produce up to 700 wall panels per day, ensuring a reliable supply for three factories.
- **Labor savings**
  Automation has reduced labor dependency by 80%, freeing up resources for other critical tasks.

Al Rashid modernizes with reinforcement machinery from Progress Group.

Ingemar Heikenberg
Projects Planning Manager

The M-System mesh welding plant is fully automated and saves a lot of time and manpower.

- **Waste reduction**
  Precision engineering minimizes material waste, contributing to cost savings and sustainability.

- **Safer working environment**
  Many heavy and often dangerous tasks are now performed by the automated machinery.

Streamlining production and logistics

Automation has significantly improved production processes at Al Rashid Abetong Co. Factory Manager Ronald Tabula highlights the impact: "Before the investments in automation, we struggled to meet reinforcement demand, even working on weekends. Now, we are often ahead of schedule."

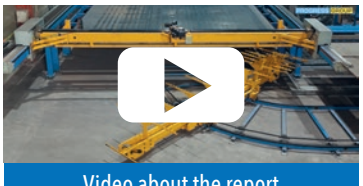
The M-System is welding the needed mesh exactly according to CAD plan and thus producing less waste.

One key advantage is the integration of design and production workflows. Plans from the design department are sent directly from the software program to the machine, the M-System Evolution mesh welding plants, eliminating delays and saving production time. This streamlined approach ensures delivery of reinforcement on time, a critical component for precast producers in their plants. The two new M-System Evolution with individual bending heads produce customized meshes and cages through automatic welding and bending. The mesh welding plants can weld wires of varying diameters and automatically bend reinforcement, delivering ready-to-use components directly from the machine. With the special bending heads implemented in the machinery all kinds of cages can be produced fully automated with only one machinery. These innovations not only accelerate production but also broadens the range of products Al Rashid can offer to its public, private, and governmental clients.

Reliable progress with Progress Group

The collaboration with Progress Group has been a cornerstone of Al Rashid's automation success. From the initial purchase to installation and ongoing support, the partnership has been seamless. "Progress Group offered the right balance of quality, service, and cost," explains the Mr. Heikenberg.

During the installation phase, Progress engineers worked closely with Al Rashid's team to ensure a smooth transition.

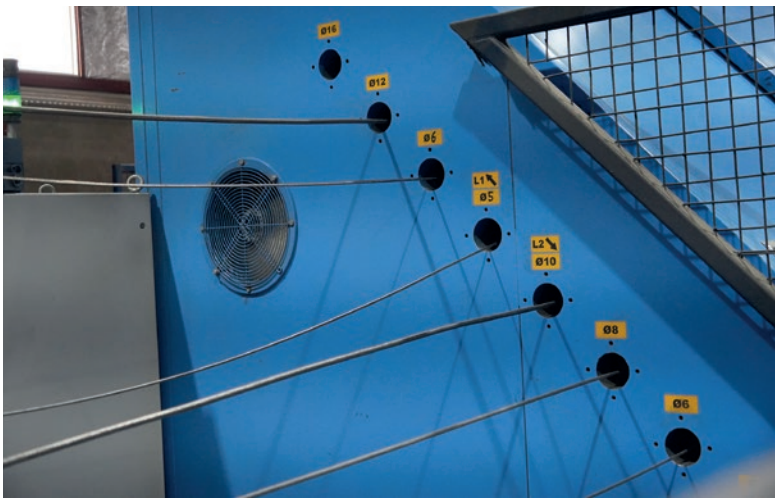

Video about the report

Post-installation, the company continues to benefit from excellent support. "We have a reliable help desk, and whenever we need assistance, Progress Group responds promptly," continues Mr. Heikenberg.

Automation as the future of precast

The benefits of automation extend beyond operational efficiency. By reducing costs, increasing production capacity, and ensuring consistent quality, Al Rashid Abetong Co.is well-positioned for future growth. The company plans to further expand its factories, and further leveraging its automated systems.

"In today's market, automation isn't a luxury – it's a necessity," says a spokesperson for the company. With manpower costs



With different wire diameters all reinforcement needed can be welded in a short amount of time.

With the automated single bending head all types of cages can be produced without manual labour.

rising globally, automation enables companies like Al Rashid Abetong Co.'s to stay competitive while meeting growing market demands. Their investment in automation demonstrates the transformative power of technology in the precast concrete industry. Automation doesn't just save time and resources – it shapes the future. ■

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FURTHER INFORMATION

ALRASHID - ABETONG الراشد - أيه بيتونج

Al Rashid Abetong Co.
Kind Saud Rd, As Sulimaniyah,
Riad 12621, Saudia Arabia
www.alrashidabetong.com

PROGRESS GROUP

Progress Machines & Automation AG
Julius-Durst-Strasse 100
39042 Brixen, Italy
T +39 0472 979100
info@progress-m.com
www.progress-m.com

Prensoland S.A., 08592 Sant Martí de Centelles, Barcelona, Spain

Exposed wires system: A silicosis-free, water-friendly solution

نظام الأسلاك المكشوفة: حل بلا داء السحار السيليسي وآمن على المياه

Exposed wires in prestressed concrete elements are increasingly used across Europe. This method, validated by the CSTB in France, is included in Eurocode 2, EN1992-1-1, though not explicitly mentioned. It avoids silicosis by eliminating silica in factories and is water-friendly, preventing sludge from cuts. The Prensoland patented system add-on for the Tensyland casting machine automates this system for hollow core slabs and beams, requiring no operator. Additionally, our system produces exposed wires without any concrete waste, unlike conventional methods that require removing excess concrete after casting the slab.

يتزايد استخدام الأسلاك المكشوفة في العناصر الخرسانية مسبقة الإجهاد في مختلف أنحاء أوروبا، وقد اعتمد المركز العلمي والتقني للتشييد (CSTB) في فرنسا هذه الطريقة، كما أُدرجت ضمن الكود الأوروبي Eurocode 2، EN1992-1-1، وإن لم يُنص عليها صراحة. تسهم هذه التقنية في تجنب داء السحار السيليسي عن طريق الاستغناء عن السيليكا داخل المصانع، وهي طريقة آمنة على المياه، إذ تمنع تكوّن الحمأة الناتجة عن عمليات القطع. تقوم التقنية المُضافة للنظام من Prensoland الحاصلة على براءة اختراع والمخصصة لماكينة الصب Tensyland بأتمتة هذا النظام لإنتاج الألواح المجوفة والكمرات، من دون الحاجة إلى تدخل المشغل. كما يتيح النظام إنتاج أسلاك مكشوفة من دون أي هدر في الخرسانة، على عكس الطرق التقليدية التي تتطلب إزالة الخرسانة الزائدة بعد صب الألواح.

One-Way Elements

Beams, pre-slabs, and hollow core slabs are installed adjacently to form a single, cohesive slab. This setup is crucial for resisting lateral forces from wind or earthquakes, preventing relative displacement between plates.

Action of Horizontal Forces

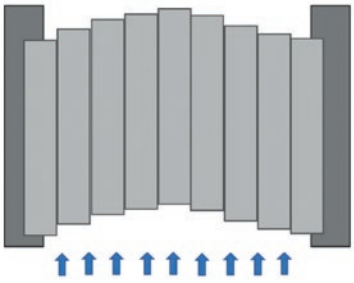
To maximize friction and prevent separation, the plates must be in close contact. Exposed wires enhance this friction by interfering with the stirrups of supporting beams, ensuring the plates stay together. This method avoids silicosis and is water-friendly, reducing the need for water and preventing sludge formation.

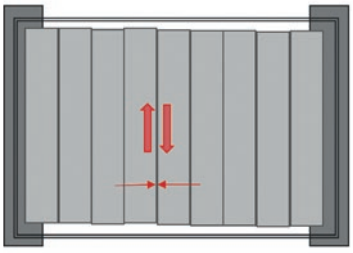
This relative friction, as explained when justifying the lateral notching, is due to two factors

The first is the cohesion of the concrete. The second factor contributing to the development of longitudinal friction between the slabs is surface friction. In this case, there is indeed a force exerted by one surface against the other.

As a result, it is very important that adjacent slabs are either in direct contact with each other or that there is a force pressing one against the other—but never forces that tend to separate them, because in that case, there would be no friction from either cohesion or surface contact.

The exposed wires relate to this second factor, that is, to surface friction. When constructing floor systems, it is not possible to apply permanent loads that create a pressing force between adjacent slabs. These forces instead arise from irregular building shapes, the positioning of partition walls, and foundation settlement.





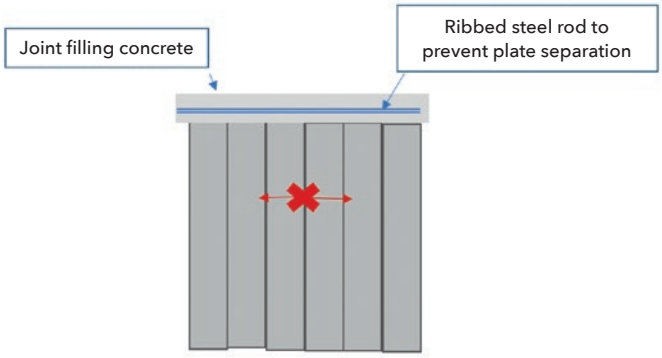
Action of horizontal forces due to wind or earthquakes on floor slabs

However, action can be taken to prevent separation between the slabs. That is, if there is no force pressing them together, you must at least ensure that there is no tendency for them to pull apart.

When prestressed concrete elements have exposed wires, these interfere with the stirrups of the supporting beams or with the edge reinforcements (tie beams), making it more difficult for the hollow-core slabs of a floor system to separate from each other.

Conclusion

Exposed wires help maintain the integrity of adjacent plates by increasing friction. This method is particularly effective when combined with lateral dentation. Alternatives like transverse bars can also be used to achieve similar results. Additionally, this approach avoids silicosis and is environmentally friendly. The patented machine makes this system fully automated, eliminating the need for operators. ■



Tensyland casting machine

FURTHER INFORMATION

PRENSOLAND S.A.
C/Industria, 5-9
08592 Sant Martí de Centelles, Barcelona, Spain
T +34 93 844 01 25
F +34 93 844 10 11
www.prensoland.com

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