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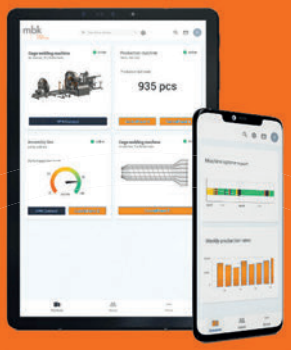

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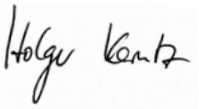

Dr.-Ing. Holger Karutz

Precast Concrete Driving Growth in the Middle East

The Middle East is experiencing one of the most dynamic construction booms worldwide. Population growth, economic diversification, and ambitious infrastructure projects are driving demand for faster, more efficient, and sustainable building methods. In this context, precast concrete has become a cornerstone of regional development.

Precast offers decisive advantages: factory-controlled production ensures consistent quality, while off-site fabrication accelerates schedules and reduces delays. At the same time, optimized use of materials lowers waste and supports sustainability goals. Its flexibility, serving both structural and architectural needs, makes it especially valuable where large-scale projects must be delivered quickly without compromising standards.

Investments in local production mean more than higher output. They strengthen the entire value chain, reduce reliance on imports, and cut logistical costs. Reliable supply benefits contractors and developers, while skilled jobs support broader economic diversification.

Looking ahead, prospects for precast in the Middle East remain highly promising. Megaprojects, housing programs, and infrastructure initiatives will continue to demand solutions that are fast, efficient, and sustainable. Expanded production capacity signals strong confidence in the industry's future and underlines its role in enabling modern, high-quality construction. For the precast sector, the message is clear: now is the time to invest, innovate, and lead the next phase of development in one of the world's most dynamic markets.

الخرسانة مسبقة الصب تدفع عجلة النمو في الشرق الأوسط

يشهد الشرق الأوسط واحدة من أكثر طفرات البناء ديناميكيةً في العالم. يدفع النمو السكاني والتنويع الاقتصادي ومشروعات البنية التحتية الطموحة بالطلب على أساليب البناء الأسرع والأكثر كفاءةً واستدامةً، وفي هذا السياق، أصبحت الخرسانة مسبقة حجر الزاوية في النمو الإقليمي.

تتمتع الخرسانة مسبقة الصنع بمزايا حاسمة: إذ يضمن الإنتاج الخاضع لرقابة المصنع جودةً ثابتة، بينما يُسرّع التصنيع خارج الموقع الجداول الزمنية ويُقلل التأخير. في الوقت نفسه، يُقلل الاستخدام الأمثل للخامات من الهدر ويدعم أهداف الاستدامة. كما أن مرونة الخرسانة في تلبية الاحتياجات الهيكلية والمعمارية على حد سواء تجعلها ذات قيمة خاصة عندما يجب تسليم المشروعات الكبرى بسرعة من دون المساس بجودة المعايير.

الاستثمارات في الإنتاج المحلي تعني أكثر من مجرد زيادة الإنتاج، فهي تُعزز سلسلة القيمة بأكملها، وتُقلل الاعتماد على الواردات، وتخفض التكاليف اللوجستية. يُفيد التوريد الموثوق كلًا من المقاولين والمطورين، بينما تدعم الوظائف الحرفية التنوع الاقتصادي الأوسع.

في ما يتعلق بالمستقبل، لا تزال توقعات الخرسانة مسبقة الصب في الشرق الأوسط واعدة للغاية. وستظل المشروعات العملاقة، وبرامج الإسكان، ومبادرات البنية التحتية تتطلب حلولاً سريعة وفعالة ومستدامة. تُشير السعة الإنتاجية الموسعة إلى ثقة راسخة بمستقبل هذه الصناعة، وتُؤكد دورها في تمكين إنشاءات عصرية عالي الجودة. أما بالنسبة لقطاع الخرسانة مسبقة الصب، فالرسالة واضحة: حان الوقت للاستثمار والابتكار وقيادة المرحلة التالية من النمو في إحدى أكثر أسواق العالم ديناميكيةً.

22

SECTIONS

28

37

CONTENTS

NEWS

CONCRETE TECHNOLOGY

CONCRETE PRODUCTS / CAST STONE

PRECAST CONCRETE ELEMENTS

60

82

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Dr.-Ing. Holger Karutz
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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
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
Bank connection:
Deutsche Bank, Account no.: 6800080, BIC: 370 700 24
SWIFT CODE: DEUTDEDBKOE, IBAN-No.: DE88370700240680008000
Print / Enclosures and supplement delivery:
TheissenKopp GmbH
Am Kieswerk 3
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CPI – Concrete Plant International
Industriestraße 180
50999 Cologne · Germany

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ad-media GmbH
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 Turkey
Gabriele Pianta | T +49 2236 962390 | turkey@cpi-worldwide.com

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ICCX TÜRKIYE 2026

INTERNATIONAL CONCRETE CONFERENCE & EXHIBITION

Istanbul, Türkiye

The ICCX event series (International Concrete Conference & Exhibition) is coming to Türkiye for the first time in 2026!

Make a note of 13 and 14 May 2026, when the international concrete and precast industry will gather in the fascinating metropolis of Istanbul for a top-class industry meeting. Whether you are a concrete manufacturer, supplier, planner, construction company or researcher – ICCX Türkiye offers you the ideal environment for gathering information, presenting yourself and making contacts.

You can look forward to a two-day specialist programme featuring top-class international and regional speakers. The event will cover cutting-edge topics in prefabrication, building materials technology, and earthquake-proof construction, complemented by a trade exhibition showcasing leading suppliers in the industry. In addition, it offers excellent networking opportunities with experts from Türkiye, Europe, the Middle East, and Central Asia, providing a valuable platform for innovation and the development of new business relationships.

Constantly updated information for visitors and exhibitors can now be found on the event website.

The event is organised by ad-media GmbH in cooperation with local and international partners.

ICCX TÜRKIYE 2026 – Istanbul awaits you!

Stay up to date by subscribing to our free ICCX newsletter – we look forward to welcoming you to Istanbul in May 2026.

Join us on www.iccx.org

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Afinitas, Clayton, MO 63105 USA

Afinitas Launches New Alliance Service Partnership Agreements and Spare Parts Plans to Maximize Plant Uptime and Efficiency

Afinitas تطلق اتفاقيات شراكة جديدة لخدمات التحالف وخطط للحصول على قطع الغيار لتعظيم كفاءة المصانع وأوقات تشغيلها

Afinitas, a leading global infrastructure equipment and services company, is proud to announce the launch of its Alliance Service Partnership Programs and Spare Parts Plans. These new offerings are designed to help pipe and precast concrete producers reduce downtime, improve operational efficiency, and extend the life of their equipment through proactive maintenance and strategic parts planning.

تفخر Afinitas، الشركة العالمية الرائدة في مجال معدات البنية التحتية وخدماتها، بالإعلان عن إطلاق خطط لبرامج شراكة لخدمات التحالف وخطط للحصول على قطع الغيار. هذه العروض الجديدة مصممة لمساعدة منتجي الأنابيب والخرسانة مسبقة الصب على تقليل فترات التوقف عن العمل، والنهوض بالكفاءة التشغيلية، وإطالة عمر معداتهم من خلال الصيانة الاستباقية والتخطيط الاستراتيجي للحصول على قطع الغيار.

In today's fast-moving production environment, even small equipment failures can cause expensive delays. The new Afinitas Alliance service and parts programs offer a thorough, proactive strategy for plant reliability – making sure customers have the support, training, and resources they need to stay ahead of potential problems.

AFINITAS | **Afinitas Alliance** Service Partnership Programs

Customers can choose from three service tiers – Essential, Advantage, and Premium – to match their operational goals and budget.

Alliance Service Partnership Programs offer multi-year service agreements tailored to each plant's needs, including:

- Preventative Maintenance for Afinitas machinery
- Afinitas Form Maintenance
- Curing System Maintenance
- Plant Optimization services for sustained success

Complementing the service plans are new Spare Parts Plans, to ensure that critical components are always on hand. These plans are also available in three levels covering everything from basic consumables to comprehensive multi-site coverage. Each plan is designed to reduce the risk of unexpected breakdowns and eliminate delays caused by parts shortages. "Our new Alliance Service and Parts Plans are built around one goal: helping our customers succeed," said Morten Nørgaard, Global Service and Aftermarket Leader. "By combining expert technician support with proactive maintenance and smart parts planning, we're giving producers the tools they need to operate more efficiently, reduce downtime, and focus on what they do best – producing high-quality concrete products."

These programs are now available to all Afinitas customers across the globe. ■

FURTHER INFORMATION

AFINITAS

Afinitas
8027 Forsyth Blvd
Clayton, MO 63105, USA
T +1 314 862 8000
info@afinitas.com, www.afinitas.com

Box Culvert Production

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Expansion due to the construction boom in the UAE and throughout the Middle East

Peikko invests to expand UAE manufacturing facility in response to growing market

استثمار Peikko لتوسعة منشأتها التصنيعية في الإمارات استجابةً لنمو السوق

Peikko Group is investing up to €3 million (AED 13 million) to significantly expand its manufacturing facility in Ras Al Khaimah, the United Arab Emirates, adding 2,000 m² of new production space and state-of-the-art machinery to meet rapidly growing regional demand for innovative construction solutions. The expansion of Peikko Gulf LLC is expected to be fully operational starting in Q2 / 2026.

تستثمر مجموعة Peikko ما يصل إلى 3 ملايين يورو (13 مليون درهم إماراتي) لتوسيع منشأتها التصنيعية في رأس الخيمة في الإمارات العربية المتحدة بشكل كبير، حيث ستضيف 2000 متر مربع من المساحة الإنتاجية الجديدة بالإضافة إلى أحدث الآلات لتلبية الطلب الإقليمي المتزايد بسرعة على الحلول الإنشائية المبتكرة. من المتوقع أن يبدأ مشروع توسعة شركة Peikko Gulf LLC في العمل بكامل طاقته خلال الربع الثاني من عام 2026.

The expansion comes as the UAE and broader Middle East experience a construction boom driven by population growth, economic diversification initiatives, and major infrastructure investments. The investment will significantly increase manufacturing capacity for Deltabeam® Composite Beams, innovative steel-concrete hybrid beams that enable slim floor construction with wide open spaces. Peikko's Deltabeam technology offers particular advantages, enabling faster construction schedules and more efficient building designs with reduced material usage.

"I'm delighted to see our Deltabeam solution gaining such strong traction in the Middle East market," comments Topi Paananen, CEO of Peikko Group Corporation. "This expansion represents our commitment to supporting the region's construction industry transformation while building our local market presence."

Currently employing around 200 people with an annual revenue of close to €30 million (AED 130 million), Peikko Gulf serves customers across the Middle East from its Ras Al Khaimah facility, which also produces precast connections. The company maintains a sales office in Saudi Arabia to support regional operations.

"The demand for our slim floor solutions has increased dramatically across the region, and this expansion will allow us to significantly reduce delivery times while serving more customers in neighboring countries," says Radovan Endel, General Manager of Peikko Gulf LLC. "The Middle East construction market is experiencing unprecedented growth, with major infrastructure and development projects creating substantial opportunities for innovative building technologies." ■

FURTHER INFORMATION

Peikko Group Corporation
Voimakatu 3, 15101 Lahti, Finland
T +358 20 707 511
info@peikko.com
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The investment will significantly increase manufacturing capacity for Deltabeam Composite Beams.

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Tabone Restructuring in the Middle East

إعادة هيكلة شركة Tabone في الشرق الأوسط

As part of the globally renowned Philip A Tabone Group, Tabone has been a cornerstone in providing advanced equipment solutions to the Concrete Industry for over 50 years; specializing in Precast, Hollow Core, Block Business and Cut & Bend operations. Tabone's name has become synonymous with quality, innovation, and unwavering commitment to its clients. In the Middle East, the company has had a solid presence for the past 25 years, playing a pivotal role in transforming the region's Precast construction landscape.

كانت شركة Tabone على مدى أكثر من 50 عاماً حجر الأساس في توفير حلول المعدات المتقدمة لقطاع الخرسانة بصفتها جزءاً من مجموعة Philip A Tabone العالمية ذات السمعة المرموقة، إذ تخصصت في أنظمة الخرسانة مسبقة الصب، والألواح المجوفة، وصناعة الكتل، وعمليات القص والثني. وقد أصبح اسم Tabone مرادفاً للجودة والابتكار والالتزام الراسخ تجاه عملائها. حافظت الشركة في الشرق الأوسط على قوة حضورها طيلة 25 عاماً مضت، حيث اضطلعت بدور محوري في تحويل مشهد البناء باستخدام الخرسانة مسبقة الصب في المنطقة.

Tabone has built its reputation by delivering high-quality equipment designed to produce superior concrete elements. The company's partnerships with leading global suppliers have been a key factor in this success. These include collaborations with Italy's Nordimpianti for cutting-edge extruders and slip form technology, Marcantonini MCT for Batching Plants and Concrete Distribution, Form Impianti for block manufacturing and MEP for state-of-the-art cut & bend solutions

Over the years, TabonE has installed hundreds of machines across the GCC, including Kuwait, Saudi Arabia, Oman, the UAE, and Qatar. Each project taken on has been executed with precision, from equipment supply and installation to comprehensive aftersales support. This robust operational framework has cemented Tabone's position as a trusted partner for the region's concrete and cut & bend industry.

Tabone Stand at Big 5 Dubai – 2004

Adapting to Market Dynamics

The past four years have brought unique challenges and opportunities to the Middle East. The Covid-19 pandemic initially disrupted industries worldwide, but Tabone emerged resilient. The company has actively supported landmark projects such as Saudi Arabia's NEOM, a visionary megacity, and large-scale housing developments in the UAE, which have seen exponential growth in recent years.

This resurgence in demand for concrete equipment has reinforced Tabone's commitment to its Middle Eastern clients. The company has been pivotal in meeting the increasing needs of large infrastructure and housing projects, providing solutions tailored to the region's evolving requirements.

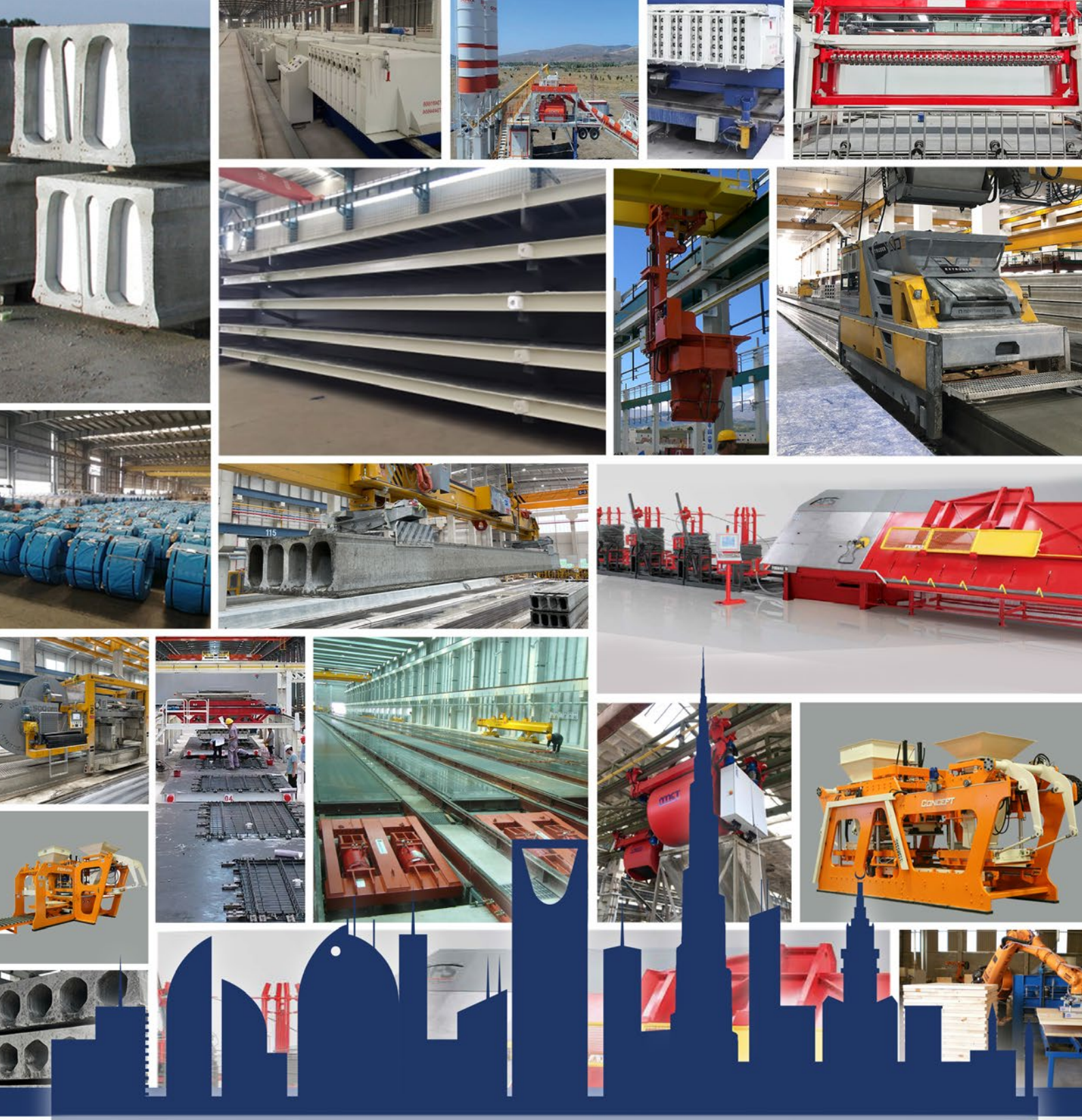
A Vision for the Future

The Middle East is poised for a construction renaissance, with ambitious infrastructure projects and futuristic developments on the horizon. Tabone is prepared to be at the forefront of this transformation, leveraging its expertise to support clients in delivering innovative solutions.

"Our vision aligns with the dynamic trajectory of the Middle Eastern market," says Mr. Tabone the CEO of Tabone. "We anticipate a surge in infrastructure projects in the coming years and remain steadfast in our mission to equip our clients with the tools they need to succeed."

Commitment Beyond Equipment

Tabone's dedication goes beyond the supply of machinery. The company's after sales and technical support services are integral to its value proposition. With a team of experienced professionals on the ground, Tabone ensures its clients receive exceptional service and guidance, fostering long-term partnerships built on trust and reliability.



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INTERNATIONAL OFFICE

+356 7722 3322
sales@patabone.com
+356 2122 3322

MIDDLE EAST

+356 7949 2045
dubai.office@patabone.com
+971 50 475 4225

Tabone Stand at Big 5 Dubai - 2024

Looking Ahead

As the Middle East continues its march toward becoming a global hub of innovation and development, Tabone is restructuring and repositioning itself to meet the region's growing demands. By combining decades of expertise with a forward-thinking approach, Tabone is not only supporting its clients today but also shaping the future of the Concrete Industry in the region.

With its unwavering commitment to excellence, Tabone is set to remain a vital player in the Middle East's construction narrative, helping to lay the foundation for a more sustainable and advanced tomorrow. ■

FURTHER INFORMATION

Tabone تابوني

Philip A. Tabone International
T +971 50 4754255
dubai.office@patabone.com

Afinitas GmbH, 89143 Blaubeuren, Germany

Obituary Klaus Müller

نعي كلاوس مولر

On 13th July 2025, Klaus Müller died in a tragic accident. He had worked for over 30 years in Blaubeuren in mechanical and systems engineering for the concrete pipe and manhole industry.

توفي كلاوس مولر في حادث مأساوي في 13 يوليو 2025. لقد خدم لأكثر من 30 عامًا في بلاوبورن في مجال الهندسة الميكانيكية وهندسة الأنظمة في قطاع الأنابيب الخرسانية وفتحات الصرف الصحي.

Klaus Müller had been one of the managing directors of Afinitas GmbH in Blaubeuren for many years. He started in 1992 as a mechanical engineer at the same location at Baumgartner Maschinenfabrik GmbH, which was renamed BFS Betonfertigteilesysteme GmbH and later taken over by the Afinitas Group based in the USA.

With his unparalleled expertise, strength and leadership skills, Klaus Müller made a lasting impression over a period of decades. He shaped and brought success to all of the companies mentioned above. Business partners around the world held him in the highest esteem on account of his professional expertise, fairness and honesty.

The recollection of his warm nature and positive energy, his patience and humour, as well as his tireless dedication will remain with us lastingly. Our thoughts are with his family and friends.

The industry will miss him dearly. ■

Klaus Müller lost his life at the age of 59 in a tragic accident

FURTHER INFORMATION

Afinitas GmbH
Dr.-Georg-Spohn-Str. 31
89143 Blaubeuren, Germany
T +49 7344 96030
info-DE@afinitas.com
www.afinitas.com

SAVE THE DATE

January 29, 2026

More information online available | Join us on www.iccx.org

ICCX ACADEMY

JW Marriott Absheron Baku Hotel | Baku, Azerbaijan

Modern Concrete Technologies and Construction Trends

The construction industry in Azerbaijan, particularly in Karabakh, is undergoing a major transformation driven by extensive reconstruction and infrastructure development efforts. Following the post-conflict period, the government has prioritized rebuilding cities, roads, and essential facilities to support economic revival and resettlement. Large-scale projects include smart city initiatives, modern residential and commercial complexes, and transport networks. Challenges such as sustainability, logistical hurdles, and environmental considerations are shaping future strategies. With increasing investment and a focus on innovation, Karabakh's construction sector is set to become a model for modern, resilient, and eco-friendly urban development.

"Norm is going to vertically integrate by entering into Readymix Concrete, Aggregates, and Dry Mortar. Other options currently under investigation are Chemical Admixtures, Precast Elements and AAC market and we are looking forward to welcoming professional partners in these fields to exhibit at the upcoming ICCX Academy Event in Baku in January 2026."

Henning Sasse, CEO Norm Cement

ICCX Academy is a professional event under the umbrella of ad-media GmbH. It will already be the third ICCX Academy in Baku, again with Norm Cement as local host, after the successful events in 2019 und 2023! ICCX Academies are high quality knowledge transfer and networking events, organized together with strong local partners.

Conference program

The conference program focuses on innovations and advantages, especially in the production of high-quality ready-mix concrete using crushed aggregates. Additionally, it includes four industry presentations highlighting the benefits of precast construction and building with autoclaved aerated concrete. A panel discussion will explore how Azerbaijan can transition to modern precast construction methods. More topics include roller-compacted concrete, the use of recycled aggregates and strategies for CO_2 reduction in the construction sector.

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A Success Story of Commitment and Growth

20 Years of Topwerk Middle East

20عامًا على تأسيس Topwerk Middle East

In 2025, Topwerk Middle East proudly celebrates its 20th anniversary, marking two decades of unwavering commitment to excellence, customer proximity, and technical expertise in the concrete products machinery industry. The journey began in 2005, when the company was founded by Roland Krause, former Co-Chairman of Hess Group, under the name Hess Middle East.

تفخر شركة Topwerk Middle East باحتفالها في عام 2025 بالذكرى العشرين لتأسيسها، معلنةً مرور عقدين من الالتزام الراسخ بالتميز، وقربها من العملاء، وخبرتها الفنية في صناعة معدات تصنيع المنتجات الخرسانية. بدأت الشركة رحلتها في عام 2005 تحت اسم Hess Middle East، عندما أسسها رولاند كراوس، رئيس المجلس الإدارة المشارك السابق لمجموعة Hess Group.

The vision was clear from the outset: to establish a local presence that could better serve the region's unique market dynamics. "Being closer to our customers was always the key driver – understanding the regional business culture and providing faster, more effective after-sales support," reflects Mohammed Tayseer Qasem, the Managing Director. In the first four years until 2009, Olaf Kohlhaas former Project Manager at Hess Headquarter, set up the company in Dubai. The company invested in a local spare parts warehouse in Jebel Ali Free Zone and hired local service technicians which were properly trained. Laying a strong foundation for long-term customer satisfaction.

Over the years, Topwerk Middle East has achieved numerous milestones that have significantly contributed to its success. Under the leadership of Oliver Rauter, Managing Director from 2009 to 2012, the company introduced a robust inventory management system, solving the logistical challenges of maintaining spare parts thousands of kilometers away from the European production facilities. This system remains the backbone of the company's operational excellence today.

A breakthrough moment occurred in 2015/2016, when Topwerk Middle East's technical team successfully executed a full installation and commissioning of an RH2000 production line, independently managing the project from start to finish. This set a new benchmark for local service capabilities. Further expanding its market reach, the company built up a dedicated sales team in the UAE and Saudi Arabia in 2016, becoming the first in the industry to have an on-the-ground sales presence in the Middle East.

The organization has also focused on strengthening its role as a technical leader, appointing an experienced Technical Director, Mr. Basem Dabbas, in 2019 to raise the standard of technical service further. In 2022, Topwerk Middle East diversified its offerings by initiating local production of rubber matrices for SR Schindler's Hermetic Presses, a move aimed at enhancing market responsiveness and capturing new business opportunities.

In 2025, Topwerk Middle East proudly celebrates its 20th anniversary.

The company's success is also reflected in its stable and experienced team. "One of our greatest assets is the very low employee turnover and strong management continuity, which has allowed us to build unparalleled technical know-how over the years," says Qasem.

Topwerk Middle East has been a trusted partner in numerous landmark projects. From entering the Iraqi market post-Gulf War in 2015 to high-profile collaborations such as the RAKNOR project, which incorporated German technical know-how transfer, the company has consistently delivered value. Notably, Topwerk Middle East has also driven success with premium value-adding solutions, such as the SR Schindler product range, helping customers enhance their product portfolios and competitiveness.

Today, as it celebrates 20 years of service, Topwerk Middle East stands as a testament to the power of customer proximity, technical competence, and continuous innovation, ready to serve the industry for many more decades to come. ■

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FURTHER INFORMATION

TOPWERK MIDDLE EAST

Top Werk Middle East FZE
P.O Box 61487, Warehouse FZS1 BA06
Jebel Ali Free Zone, Dubai, U.A.E
T +971 4 8862030
m.tayseer@topwerk.com
www.topwerk.com

Konic Gearbox (Dalian) Co., Ltd, Ganjingzi Distric Dalian, Liaoning Province 116000, China

Advanced gearboxes tailored for eco-friendly concrete mixers

علب تروس متطورة مخصصة لخلاطات الخرسانة الصديقة للبيئة

Konic Gearbox boasts over 15 years of industry experience in the design, R&D, and manufacturing of gear transmission machinery. Its core products include vertical planetary gear reducers for concrete mixers, marine gearboxes and marine winches. With a product portfolio exported to more than 20 countries including Germany, the Netherlands, Spain, and Turkey, Konic Gearbox has earned high acclaim in the industry for its innovative designs and exceptional quality.

تتمتع شركة Konic Gearbox بخبرة تمتد لأكثر من 15 عامًا في تصميم آلات نقل الحركة بالتروس والبحث فيها وتطويرها وتصنيعها. تشمل منتجاتها الرئيسية مخفضات التروس الكوكبية الرأسية لخلاطات الخرسانة، وعلب تروس السفن والقوارب، ورافعات السفن. تصدر Konic Gearbox محفظة منتجاتها إلى أكثر من 20 دولةً، من بينها ألمانيا وهولندا وإسبانيا وتركيا، وهي ذائعة الصيت في القطاع بفضل تصاميمها المبتكرة وجودة منتجاتها الاستثنائية.

Overview of concrete mixer reducers in India

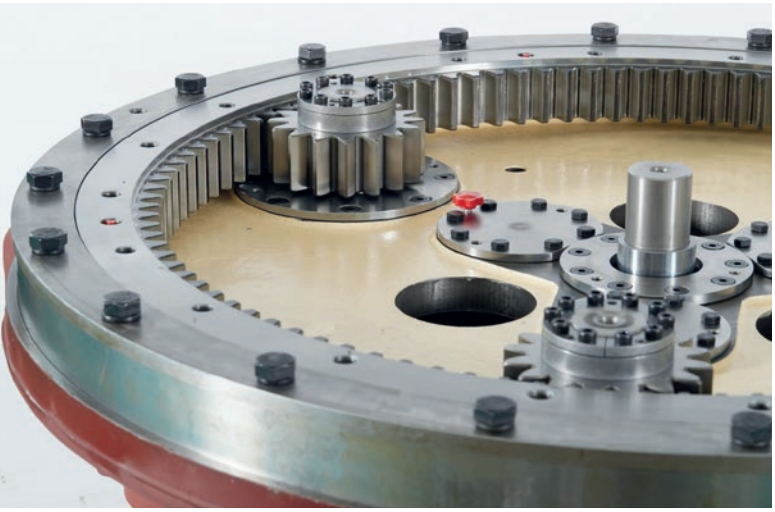
India's booming modernization drive has ushered in an unprecedented golden era for the concrete mixer equipment market. In 2023, this sector surpassed $400 million in market size, demonstrating strong growth resilience with a steady CAGR of 8-10%.

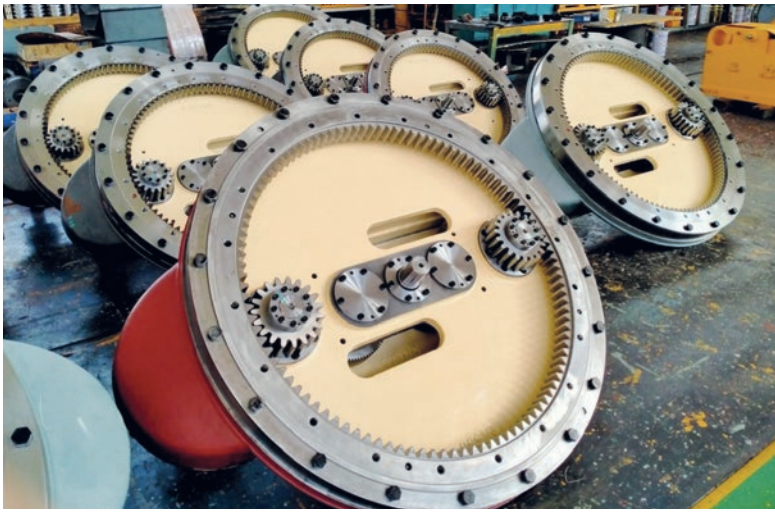
The Ready-Mix Concrete (RMC) Market: India's Growth Engine

As the core downstream application, India's Ready-Mix Concrete (RMC) sector is expanding at an astonishing CAGR of 12-15%, outpacing the broader market and acting as the key driver for the entire concrete machinery industry.

Behind the Boom: India's Infrastructure Revolution

The Indian government has committed to investing over $1.4 trillion in infrastructure by 2030, covering. The primary reasons for this phenomenon can be attributed to three main factors: Infrastructure investment, real estate expansion, and policy support. The Indian government's initiatives in road, railway, airport, and smart city projects (such as the National Infrastructure Pipeline, or NIP plan) have driven demand in the concrete mixing industry.





Konic Gearbox boasts over 15 years of industry experience in the design, R&D, and manufacturing of gear transmission machinery.

India's urbanization is accelerating, particularly with the ongoing boom in residential and commercial real estate development in tier-two and three cities. The launch of numerous new housing complexes, commercial hubs, and industrial parks has significantly increased the demand for both on-site and ready-mix concrete, forming a solid foundation for the steady growth of the mixing equipment market.

Under the "Make in India" initiative, the Indian government actively promotes domestic equipment manufacturing by offering substantial support, including tax incentives and land subsidies, to local mixing equipment manufacturers. These measures have lowered production costs and enhanced competitiveness.

Meanwhile, the "Pradhan Mantri Awas Yojana" (PMAY), aimed at fulfilling the vision of "Housing for All," continues to drive a nationwide surge in affordable housing construction. This has further fueled building activity, creating extensive application opportunities for mixing equipment.

The collaboration between Conee and Indian clients customer feedback

Amid a global economic landscape shrouded in uncertainty, where market sentiment oscillates between hope and apprehension, many enterprises hesitate at the crossroads of decision-making. Yet, the Conee team saw this complexity as a call to forge ahead against the tide.

It was in this seemingly contracting global atmosphere that a door to a profoundly strategic opportunity swung wide open for Konic amidst the bustling halls of bauma China 2019. At the exhibition, an Indian concrete mixer company took a keen interest in Konic's products. After browsing Konic's official website, the company collaborated with Konic twice, purchasing vertical planetary concrete mixer gearboxes - models GSL500sx and GSL260.

As of 2025, the partnership born at bauma China continues to thrive. The Indian client not only maintains regular professional follow-ups on equipment performance but also repeatedly emphasizes their near-flawless satisfaction with Konic's products. Their equipment manager has remarked on multiple occasions: "Konic's gearboxes are the 'silent guardians' of our production line's efficient - their stable output and exceptionally low failure rate have been crucial in safeguarding our production schedules." This goes beyond the success of a single order; it represents a strong vote of confidence from the Indian market in Konic Manufacturing and solid proof of the brand's deep-rooted presence in India, built on exceptional quality.

In 2024, Konic's team launched its latest vertical planetary gearbox model, GSL3000SXJ

This successful collaboration stands as a vivid testament to Konic's ability to cut through market uncertainties with its technical prowess and win enduring trust through service excellence. Not only has it set a shining benchmark for Konic in India's high-potential market, but it has also served as a powerful engine, accelerating the company's strategic expansion across India and broader emerging markets. In an era of global transformation, only by anchoring itself in strength and setting sail with trust can Konic navigate the tides of change and carve out new horizons in uncharted waters.

Konic's development strategy for new products and the Indian market

In 2024, Konic's team launched its latest vertical planetary gearbox model, GSL3000SXJ. Compared to previous models, this upgraded version features a viewing window for oil-level monitoring without disassembly, while also enhancing gear hardness and housing protection strength. These improvements address common challenges such as frequent start-stop cycles, impact loads, and lubrication system contamination from concrete dust.

Globally protected by four R&D patents, the GSL3000SXJ has received high praise from over 20 companies across six countries within just one year of its release. This innovation underscores Konic's commitment to technological leadership and market-driven solutions, further strengthening its foothold in India and other emerging markets.

Looking ahead, Konic is actively deepening its presence in the Indian market with strategic initiatives, including the establishment of a local technical team in India. This move is designed to enhance customer proximity, enabling rapid response times and effectively meeting the growing demand for customized solutions among Indian clients. By embedding expertise on the ground, Konic ensures seamless service delivery and precise implementation of tailored solutions, reinforcing its commitment to the market's evolving needs.

Meanwhile, Konic is aligning its R&D focus with market trends and customer pain points, with plans to launch a new generation of energy efficient, low-noise gearbox products. This initiative not only responds to India's increasingly stringent environmental policies such as carbon emission regulations but also directly addresses customers' core demand for cost reduction and efficiency improvement.

They have prioritized the development of advanced gearboxes tailored for eco-friendly concrete production equipment, aiming to empower clients with dual optimization sustainable development and operational cost savings right from the technological foundation. By integrating innovation with practicality, Konic strives to set new benchmarks in performance and environmental stewardship for the industry.

Konic's vision is clear and unwavering: "We go beyond offering highly flexible customization we aim to become our clients' essential productivity partner through innovative technology and localized support, fundamentally empowering them to boost efficiency and reduce total costs. Together, we will unlock greater value in India's thriving concrete machinery market." ■

FURTHER INFORMATION

Konic Gearbox (Dalian) Co.,Ltd
Qianmu Village, Yingchengzi Street
Ganjingzi Distric Dalian Liaoning Province, 116000, China
T+86 411 86715816
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ColdRock – Mechanical Equipment – L.L.C. – S.P.C., Abu Dhabi – Musaffah – M-11, UAE

Ice-free, energy-efficient cooling for high-strength concrete on The Line project

تبريد بلا جليد وموفر للطاقة للخرسانة عالية القوة في مشروع "ذا لاين"

Julian Cathro, ColdRock - Mechanical Equipment – L.L.C. – S.P.C, UAE

In collaboration with local partners ASAS Al-Mohelib (MHC) and Contemporary Solutions Trading Company (CAST) General Manager Mr Rami Dawoud, ColdRock® Mechanical Equipment LLC - pioneers of the Hydro-Spiral® aggregate cooling system - is proud to contribute to the groundbreaking infrastructure of The Line project in Saudi Arabia. As one of the world's most ambitious urban developments, The Line redefines engineering and environmental benchmarks, especially in high-performance concrete technologies.

بالتعاون مع شركائنا المحليين، شركة أساس المهيلب (MHC) و المدير العامل شركة حلول معاصرة للتجارة (CAST)، السيد رامي داود، تفخر شركة ColdRock Mechanical Equipment LLC، الرائدة في نظام التبريد الحلزوني المائي للبحص، بمساهمتها في البنية التحتية المبتكرة لمشروع "ذا لاين" في المملكة. "ذا لاين" من أكثر المشاريع العمرانية طموحًا في العالم، ويرسم ملامح المعايير الهندسية والبيئية من جديد، لا سيما في تقنيات الخرسانة عالية الأداء.

ASAS Al-Mohileb has invested over SAR 700 million (about EUR 160 million) to establish a cutting-edge concrete manufacturing plant tailored to meet the extensive requirements of The Line project. Purpose-built for scale and efficiency, this facility represents a significant advancement in the ready-mix industry. Designed with sustainability at its core, the complex is set to set new standards for environmentally friendly concrete production.

At the start of concrete production in 2025, ASAS Al-Mohelib in partnership with ColdRock looked to embrace the possibility of aggregate cooling with the ultimate goal of converting its entire existing concrete cooling systems to aggregate cooling. The objective was clear - to meet the concrete cooling demands in the most energy-efficient and environmentally friendly way.

The vision was to have one of the most modern concrete production plants utilising exclusively aggregate cooling technology from ColdRock to set new green standards in environmentally friendly concrete production.

Asas Al – Mohileb ready-mix concrete complex, a total of 10 ColdRock systems are planned here.

ColdRock installation complete with 80-ton insulated cold aggregates silo, NEOM jobsite in Saudi Arabia.

Engineering a new standard in concrete cooling

Temperature-controlled concrete has long been a necessity in the Middle East, but The Line presents arguably unprecedented demands due to both its climate and its reliance on ultra-high-strength concrete. Meeting stringent temperature requirements is critical for concrete durability and performance. However, conventional cooling techniques -namely chilled water and ice have practical limits.

Concrete producers have been able to achieve the required temperatures using the maximum permissible ice content; however, this approach often strained operational efficiency. High volumes of ice introduced significant challenges that adversely affected batching throughput, including:

- Dry loading conditions: Ice enters the mixer in solid form, creating increased mechanical stress requiring a reduction in batch volumes to reduce equipment load and reduce wear.

- Prolonged mixing cycles: The time needed for the ice to melt and achieve uniform fluidity delays the addition of admixtures, further slowing production.

The new system addresses these challenges by offering an efficient and consistent method for temperature control, ultimately improving overall production performance.

The ColdRock Hydro-Spiral: Compact, efficient, and sustainable

ColdRock's Hydro-Spiral aggregates cooler offered a transformative solution. Unlike traditional large-scale aggregate chilling systems, the Hydro-Spiral is a containerized, plug-and-play unit that integrates seamlessly into existing batching plant setups. It specifically targets coarse aggregates, which are responsible for approximately 40% of the thermal load in fresh concrete.

Measured inlet aggregate temperature: 42°C, production throughput 70-100 tph.

It is a matter of minutes for aggregates to exit the HydroSpiral at temperatures between less than 5 and 10 °C.

80-ton insulated aggregates cold weighing silo, ReadyMix Abu Dhabi, Mena Port UAE.

Fresh concrete production temperatures are achievable even when ambient temperature exceed 40+ degrees Celsius.

By reducing the temperature of incoming aggregates from approximately 45°C to below 5°C, the Hydro-Spiral enables contractors to:

- Achieve target concrete temperatures without or with minimal use of ice.
- Eliminate the production slowdowns associated with ice dosing.
- Improve batch consistency and slump control.
- Reduce dependence on admixtures, resulting in significant cost savings.
- Warm silted water coming from the aggregates cooler is directly recycled back through the dedicated dirty water chiller. This specialised chiller cools the silted water and at the same time keeping the fines in suspension for direct re-use back into the aggregates cooler without need for any intermediate filtration. This closed loop cycle efficiently manages the water without any wastage and maintains the fines percentages in the coarse aggregates meaning what goes in goes out with the only difference being a reduction in aggregate temperature.

Environmental and operational benefits

Beyond operational efficiency, the Hydro-Spiral also offers a compelling environmental advantage. Compared to ice-based cooling systems, the Hydro-Spiral uses 50–70% less energy, aligning directly with NEOM's sustainability goals and its broader commitment to green building practices. This energy-saving approach is particularly relevant in a project that aspires to lead globally in carbon-conscious construction.

A scalable model for the future

ColdRock, encouraged by the early success at The Line project, is actively pursuing discussions to promote wider adoption of its technology across other major developments. This momentum could mark a shift from traditional approaches to concrete cooling, both for current and future projects. ■

FURTHER INFORMATION

COLDROCK

ColdRock – Mechanical Equipment – L.L.C. – S.P.C.
Plot No. 92 – Unit No. 15
Abu Dhabi – Musaffah – M-11, UAE
T +971 50 1803103
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Deewan Equipment Trading, Dubai, UAE

AI implementation for batching plants in the Arab Region

تطبيق الذكاء الاصطناعي في محطات خلط الخرسانة في المنطقة العربية

As part of their continued commitment to supporting global directions for a sustainable future, improving construction sector efficiency and contributing to innovative and responsible infrastructure development, Deewan Equipment Trading, a leading provider of concrete industry solutions in the Gulf and Middle East and Conmix, one of the UAE's top ready-mix concrete companies, announced the completion of a concrete batching plant process control automation system. This initiative aims to boost operational efficiency, reduce environmental impact and accelerate project delivery timelines. Ghaith Abdulkarim Al-Aani, CEO of Deewan: "We aim to lead the digital transformation of the concrete industry in the Middle East by using AI to boost operational efficiency, reduce waste and protect the environment."

أعلنت شركة ديوان لتجارة المعدات، وهي الشركة الرائدة في توفير حلول قطاع الخرسانة في الخليج والشرق الأوسط، وشركة كون مكس، إحدى أبرز شركات الخرسانة الجاهزة في الإمارات العربية المتحدة، عن استكمال نظام لأتمتة التحكم في عمليات محطة خلط خرسانة، وذلك في إطار الالتزام المتواصل لشركة ديوان بدعم التوجهات العالمية نحو تحقيق مستقبل مستدام والنهوض بكفاءة قطاع البناء والمساهمة في تطوير بنية تحتية مبتكرة ومسؤولة. تهدف هذه المبادرة إلى تعزيز الكفاءة التشغيلية، والحد من الأثر البيئي، وتسريع مواعيد تسليم المشروعات.صرّح غيث عبد الكريم العاني، الرئيس التنفيذي لشركة ديوان: "نهدف إلى قيادة التحول الرقمي في قطاع الخرسانة في الشرق الأوسط من خلال الاستعانة بالذكاء الاصطناعي لتعزيز الكفاءة التشغيلية وتقليل الإهدار وحماية البيئة".

This is one of the first projects of its kind in the Gulf Cooperation Council (GCC) to combine intelligent operations and AI technologies, marking a transformative shift in the region's concrete industry. It paves the way for broader adoption of digital technologies in the construction sector by automating operations and achieving higher standards of quality, efficiency and sustainability.

Intelligent system powered by AI

The system operates using an intelligent system powered by AI. Mixing, calibration, monitoring and quality control operations are all managed via advanced software, which reduces waste, improves resource usage and lowers operational costs -achieving a balance between intensive production and environmental preservation.

Deewan: Redefining the concrete industry

In light of this pioneering move, Eng. Ghaith Abdulkarim Al-Aani stated: "With the rapid global shift toward AI adoption, the construction sector in the Middle East is clearly transitioning toward smart and sustainable solutions." He added: "We're not just offering equipment - we're driving a comprehensive digital transformation in the operational management of concrete plants. This includes improving energy efficiency, minimizing waste and achieving true sustainability on site jobs, with over 20% savings in operational costs. This is

From left to right: Eng. Ghaith Abdulkarim Al-Ani - CEO of Deewan Equipment, Mr. Ayman Ismail Ahmed CEO – Bukhatir Group, UAE, Mr. Tim Senior – General Manager, Conmix, UAE, Mr. Andreas Dorner – Managing Director, Dorner Electronic GmbH, Austria

Deewan Equipment Trading is a leading provider of concrete industry solutions in the Gulf and Middle East

just the beginning. We remain committed to leading the transition toward more efficient, sustainable practices through the adoption of advanced technologies, better resource management and alignment with international best practices and local standards - ensuring we meet market demands and enhance service quality for our clients."

He also noted that the company continues to develop its technical capabilities and workforce efficiency as part of expanding its operations in the Middle East, affirming Deewan's commitment to delivering high-quality products to global standards. This step aligns with the company's strategy to support the construction sector amid increasing demand in the Middle East GCC markets.

A strategic partnership: Expanding technological and investment horizons

The partnership between Deewan Equipment Trading and Conmix underscores both companies' commitment to driving innovation in the concrete industry through the adoption of advanced technical solutions that align with the region's smart construction goals and climate neutrality targets. The partnership promotes sustainable industry practices and the effective integration of recycling concepts.

This collaboration supports a broader strategic plan to strengthen both companies' investment and technology portfolios. Each seeks to capitalize on growth opportunities in regional and international markets while expanding their investments in the smart construction sector. Additionally, the initiative aligns with the regional direction toward smart cities and sustainable infrastructure - enhancing the companies' ability to achieve significant investment outcomes in the years ahead. ■

FURTHER INFORMATION

Deewan ديـــوان

Deewan Equipment Trading
Dubai Head Office
Show room no: 4, Dr. Al Redha Building
Ras Al Khor – Industrial Area 2, Dubai, UAE
T +971 4 3333840
www.deewanequipment.com

Wasa AG, 64293 Darmstadt, Germany

Innovation on a solid foundation: Collaboration proves to be a strategically valuable decision for Bloquera de Vallarta (InBlock) in Mexico

ابتكار على أساس راسخ: التعاون قيّم استراتيجيًا لشركة Bloquera de Vallarta (InBlock) في المكسيك

Benjamin Burschey, Wasa AG, Germany

The concrete block industry is changing: Manufacturers worldwide are looking for innovative solutions to optimize their production processes, improve product quality, and at the same time find sustainable alternatives to traditional materials. In recent years, Wasa has significantly expanded its presence in Latin America, further strengthening its position as one of the leading manufacturers of production boards. A particularly successful example of this development is the partnership with Bloquera de Vallarta, a Mexican concrete block producer with locations in Puerto Vallarta and a new plant in León. The successful transition from wooden to plastic production boards in Puerto Vallarta led the company to also choose Wasa's glass fiber reinforced Wasa Uniplast Ultra for the new plant in León. A crucial role in this partnership was played by Eloy Gonzalez, who, as Wasa's Spanish-speaking sales agent, closely accompanied the entire process.

يشهد قطاع إنتاج الكتل الخرسانية تحولًا ملحوظًا؛ إذ يبحث المصنعون حول العالم عن حلول مبتكرة لتحسين عمليات الإنتاج لديهم، ورفع جودة منتجاتهم، وإيجاد بدائل مستدامة للخامات التقليدية في الوقت نفسه. وسّعت شركة Wasa خلال السنوات الأخيرة انتشارها بشكل كبير في أمريكا اللاتينية، ما عزّز مكانتها كواحدة من أبرز الشركات المصنعة للألواح المستخدمة في الإنتاج. يُعد التعاون مع شركة Bloquera de Vallarta، وهي شركة مكسيكية متخصصة في إنتاج الكتل الخرسانية وتملك مصانع في بورتو فالارتا ومنشأة جديدة في ليون، مثالًا ناجحًا على هذا التطور. لقد أدى الانتقال الناجح من ألواح الخشبية إلى الألواح البلاستيكية المستخدمة في الإنتاج في مصنع بورتو فالارتا إلى اعتماد الشركة أيضًا ألواح Wasa Uniplast Ultra المدعمة بالألياف الزجاجية في المصنع الجديد بمدينة ليون. لقد اضطلع إيلوي غونزاليس، وهو ممثل المبيعات الناطق بالإسبانية لدى Wasa، دورًا محوريًا في هذا التعاون من خلال متابعته الوثيقة لجميع مراحل العملية.

Bloquera de Vallarta – Production facility in Puerto Vallarta

Wasa Uniplast Ultra – the glass fiber reinforced production board from recycled industrial plastic

Bloquera de Vallarta – A company with a future

With almost two decades of experience, Bloquera de Vallarta is a leading company in the manufacturing and distribution of concrete products in the Bajío and western regions of Mexico. The company was founded 17 years ago with the goal of serving the expanding market in Puerto Vallarta. Since its founding, the company has been producing products that contribute to innovation and cost savings in the construction industry. Today, the company is considered one of the most important manufacturers of high-quality concrete products in the region.

The product portfolio includes:

- structural and non-structural concrete blocks
- decorative paving stones and slabs
- special concrete products for construction projects of all kinds

To meet the increasing demands of the market, Bloquera de Vallarta consistently relies on technological innovations and modern production methods. Therefore, in 2019, the decision was made to modernize the production boards at the Puerto Vallarta plant and switch from wooden to plastic boards.

Project 1: Transition to plastic boards at the Puerto Vallarta plant

The challenge

Bloquera de Vallarta started production with wooden production boards from another manufacturer but had originally planned to replace them with a more durable alternative, such as steel or plastic, within four to five years. However, an unexpected issue arose in Puerto Vallarta due to the humid climate: After just five months, a white fungus formed on the wooden boards, the cause of which is still not fully understood. The consequences were:

- decay and structural weakening of the wooden boards
- constant production stops due to damaged boards
- significant machine damage to the Quadra Q12-HP
- quality issues with the concrete blocks

Wooden production boards sold by Wasa can be treated with an antifungal coating upon request to prevent potential issues. The wood used comes exclusively from PEFC-certified, renewable raw materials, ensuring that purchases from unknown sources are excluded. However, due to the high salt content in the air and the climatic conditions, wood is not the recommended choice for such environments.

Wooden boards with white fungal infestation

Cracked concrete products

New Uniplast Ultra in Puerto Vallarta

Curing chamber with concrete products

The solution: Wasa Uniplast Ultra plastic boards

Due to these challenges, Bloquera de Vallarta decided to quickly switch to Wasa Uniplast Ultra plastic boards, measuring 1,400 x 1,300 x 50 mm. Steel boards were ruled out due to their significantly higher weight and susceptibility to corrosion. The new plastic boards were introduced in 2020 and have since been successfully used throughout the entire production cycle. Currently, approximately 4,000 boards are in operation – and still in excellent condition.

The transition from wooden to plastic boards posed no significant challenges. The switch was seamless and took only two days, as the remaining wooden boards were manually replaced with the Wasa Uniplast Ultra boards. The transition was solely dependent on the machine's production speed, according to Ing. Ulises Gaona, Head of Production in Puerto Vallarta.

The advantages of glass fiber reinforced solid plastic boards

According to Ulises Gaona, the switch to plastic boards at the Puerto Vallarta plant brought significant advantages:

- no decay or corrosion of the production boards, regardless of climatic conditions
- no deformations in the production boards, significantly improving product quality

f.l. Eloy Gonzalez (Sales Agent - Wasa AG), Ing. Ulises Gaona (Head of Production in Puerto Vallarta) and Benjamin Burschey (Sales Director - Wasa AG) at Bloquera de Vallarta

NON PLUS **ULTRA**

More than 6 million of our WASA UNIPLAST® ULTRA boards are deployed in concrete plants all over the world. Many of them have been in use for decades – and are showing no signs of fatigue.

When we developed them at the beginning of the 1990s, we were far ahead of our time. And today, more than 30 years later, we are still ahead of the curve – because, while decades have passed, our determination to make what is strong even stronger, to make what is efficient even more efficient, and therefore to make good products and services even better has remained the same.

At WASA, this virtue has become a tradition – so that the best always remains the best.

WASA®

Competence Leadership.

WASA-TECHNOLOGIES.COM

New Bloquera de Vallarta plant in León – Mexico

Manuel Carranza (General Manager InBlock León) infront of his new Wasa Uniplast Ultra production boards

- reduced machine vibration requirements, resulting in a significant reduction in cycle time by seven seconds, ultimately leading to energy savings
- no cracks in the concrete blocks anymore
- increased block strength, making production more efficient
- reduced height variations in concrete products, resulting in less post-processing
- overall, the production waste was reduced by 50 %

Project 2: The new plant in León – A pioneering step

With the success of the plastic boards and the many improvements achieved at the Puerto Vallarta plant, the decision was quickly made to select Wasa again as the supplier of production boards for the new plant in León.

The León plant was opened in 2024 and is equipped with a brand-new Quadra Q12 machine. Manuel Carranza, General Manager InBlock León, reports: "The goal was to rely on efficient and durable technologies from the start to achieve the best possible results right from the beginning." The new production line in León also operates entirely with Wasa's solid plastic boards. Around 5,000 boards are in operation here, same dimensions as in the Puerto Vallarta plant.

The role of Eloy Gonzalez – Key to successful collaboration

A crucial factor in the success of these projects was the support of Eloy Gonzalez. With over 30 years of experience in the

"Our philosophy is based on quality, trust, and outstanding results. With Wasa, we can offer our customers in Latin America innovative solutions that provide them with long-term competitive advantages."

Eloy Gonzalez

Eloy Gonzalez infront of a new stack of Uniplast Ultra boards for Bloquera de Vallarta

f.l. Benjamin Burschey (Sales Director - Wasa AG), Manuel Carranza (General Manager – InBlock León) and Eloy Gonzalez (Sales Agent - Wasa AG) infront of the new Quadra Q12 machine

concrete block industry, Eloy Gonzalez serves as an important interface between Wasa and customers in Latin America and has established himself as a trusted provider of efficient, effective, and innovative solutions. The main focus is to ensure optimal production results for Wasa's customers by jointly integrating the latest technological developments and proven industry practices.

This expertise is built on a solid track record: Eloy Gonzalez has supported over 180 production plants and represents more than 15 leading global brands. By collaborating with internationally renowned manufacturers that utilize cutting-edge techniques and equipment, it is ensured that his clients remain at the forefront of medium- and large-scale concrete product manufacturing. His commitment to the growth and advancement of the industry drives him to provide comprehensive solutions that enhance operational efficiency, productivity, and long-term success.

The transition from wooden to plastic boards is a strategic step that offers long-term benefits to block manufacturers, particularly in the Latin American market. Wasa and Eloy Gonzalez play a key role in guiding their customers through this transition by highlighting the main advantages and ensuring a seamless implementation process.

One of the main reasons for switching to plastic boards is their exceptionally impressive durability, even under varying weather conditions. The climate in Latin America presents challenges that make plastic boards an ideal choice for durability, consistent performance, and cost efficiency. Unlike wood, plastic boards retain their physical properties, such as vibration transmission and compressive strength, over time, reducing the need for frequent replacements and minimizing production downtime.

Collaboration leads to sustainable success

The partnership between Bloquera de Vallarta, Eloy Gonzalez, and Wasa impressively demonstrates how innovative materials and close collaboration can lead to sustainable success. With its investments, Bloquera de Vallarta is setting new standards in concrete block production in Mexico. The collaboration with Wasa has proven to be a strategically valuable decision – and will continue to play literally a fundamental role in the future. ■

FURTHER INFORMATION

InBlock
Boulevard Prisma #2739 Colonia,
San Miguel de Renteria, México
T +52 477 7849655
contacto@inblock.com.mx
www.inblockmx.com

Eloy Gonzalez
Calle Guayacán #8 Urb. Altos de los Samanes,
Santiago, Dominican Republic
T +1 809 2241228
info@eloygonzalezg.com
www.eloygonzalezg.com

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

HS Anlagentechnik GmbH & Co. KG, 57290 Neunkirchen, Germany

Innovative manufacturing process for certified and galvanized steel curing racks

عملية التصنيع المبتكرة لحاملات المعالجة الفولاذية المعتمدة والمغلفنة

The concrete and precast industry is characterized by high production capacities and automated processes. Fully automatic production lines, which often work in multi-shift operation, produce thousands of square metres of concrete paving blocks, kerbstones, hollow blocks and numerous other landscaping elements every day. Curing chambers from HS Anlagentechnik are a central link between the wet and dry sides in these production lines. The freshly produced blocks are temporarily stored and hardened. To improve the hardening process, curing systems are used to control and adjust the temperature and humidity. As presented at bauma 2025 with great customer interest, the curing chambers from HS Anlagentechnik are now certified as load-bearing components and construction kits for steel structures up to EXC2 according to DIN EN 1090-1. The family-owned company is also breaking new ground in production, moving away from traditional welding and towards modern joining technology.

يتميز قطاع الخرسانة والخرسانة مسبقة الصب بارتفاع سعته الإنتاجية وأتمتة عملياته. فخطوط الإنتاج الأوتوماتيكية بالكامل، والتي تعمل غالبًا بنظام الورديات المتعددة، تنتج يوميًا آلاف الأمتار المربعة من أحجار الرصف الخرسانية، وحواف الأرصفة، والكتل المجوفة، وعديدًا من عناصر تنسيق المواقع الأخرى. تُعد غرف المعالجة من شركة HS Anlagentechnik حلقة وصل أساسية بين مرحلتي الإنتاج (ما قبل جفاف الخرسانة وبعده) في خطوط الإنتاج هذه، حيث يتم تخزين الكتل الخرسانية حديثة الإنتاج مؤقتًا ليتم تقسيتها. تستخدم أنظمة معالجة خاصة للتحكم في درجة الحرارة والرطوبة وضبطهما لتحسين عملية التقسية. عُرضت غرف المعالجة من HS Anlagentechnik في معرض bauma 2025 ولاقت اهتمامًا كبيرًا من العملاء، وأصبحت معتمدة الآن كمكوّنات حاملة للأحمال ومجموعات أدوات إنشائية للهياكل الفولاذية حتى (مستوى التنفيذ 2) EXC2 وفقًا للمعيار DIN EN 1090-1. الشركة العائلية بصدد إعادة رسم ملامح أساليب الإنتاج، حيث بدأت بالانتقال من طرق اللحام التقليدية إلى تقنيات الوصل الحديثة والمتقدمة.

Modular system design for flexible expandability and quick installation

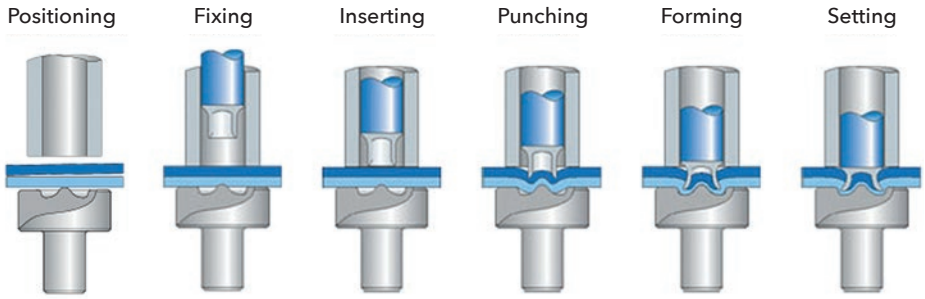
Thanks to the modular system from HS, each chamber is divided into individual assemblies. The modular design turns each assembly into a self-contained, load-bearing unit and does not require any stabilization supports. In addition, extensions and additional parts can be easily attached to the existing system.

The basic element of the HS modular system is the steel frame, which consists of steel uprights (C-profile) and frame trusses (U-profile). The steel frames are connected to the pallet supports. The length of each pallet support corresponds exactly to the length of one assembly, so that the production boards are guided continuously. The contour of the pallet carriers is also specially designed for very high system availability. Due to the cantering slope in combination with the bead, the production board rests continuously on the 80 mm wide contact surface.

The snap-in connection developed by HS connects each steel upright to the pallet carriers, making the chamber system very rigid. The snap-in connection consists of two conically shaped clamps and a pin that prevent the pallet carrier from slipping out during storage and retrieval. The load-bearing capacity of the snap-in connection is certified by TÜV (the

The snap-in connection developed by HS connects each steel upright to the pallet carriers, making the chamber system very rigid

Setting process



The setting process of a hollow punch rivet for joining two steel sheets

© Fa. Böllhoff

German Technical Inspection Association). The precisely coordinated system elements allow for quick and easy installation. A complete assembly can be erected in 2 to 3 days. Due to the simple modular system, HS offers self-assembly by the customer in addition to supervised assembly and complete assembly.

Long-lasting corrosion resistance with special alloy ZM310

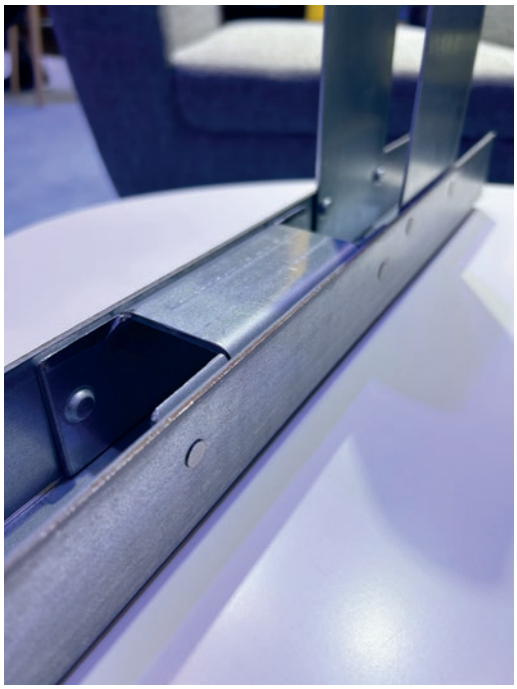
For all load-bearing profiles, HS Anlagentechnik uses the special alloy ZM310 or higher-quality coatings. In contrast to conventional hot-dip galvanizing, the alloy consisting of zinc, magnesium and aluminium forms a compact protective layer when it comes into contact with a corrosive medium. In addition to significantly improved corrosion resistance, this also ensures that cut edges and deformations are protected without requiring additional corrosion protection measures (cf. DIN 55634-1:2018).

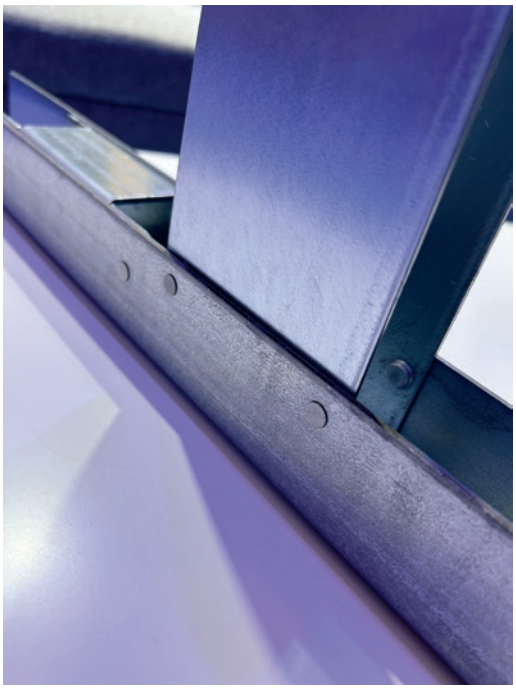
Certified manufacturing quality according to DIN EN 1090-1

The new certification according to DIN EN 1090-1 was presented at bauma 2025. In the course of the increasing regulatory requirements, HS Anlagentechnik has been certified by DVS Zert, which enables CE labelling of the curing chambers. The main focus of the certification is on production control and documentation to ensure high and consistent quality. For each project, the material certificates are kept track of, documenting the European origin and confirming the quality. In addition, it is ensured that the company's own production and the production of its suppliers are tested and correspond to the state of the art.

Innovative joining technology replaces welded joints

In the course of the certification, several internal projects were initiated to optimize the design and simplify production and assembly. The focus is on replacing welding with methods of modern joining technology. To this end, tried-and-tested manufacturing methods of the automotive industry were used as the predominant design basis.
The decision for the biggest design innovation fell on the hollow punch riveting technology, as this method produces not only a high degree of flexibility but also mechanically resilient connections. In hollow riveting, a connection between two sheets is created in a multi-stage setting process by punching in a hollow rivet, which creates a form-fitting connection. The rivet has a shear tensile strength of over 7.6 kN. The use of





In the future, HS Anlagentechnik will increasingly rely on hollow punch rivets

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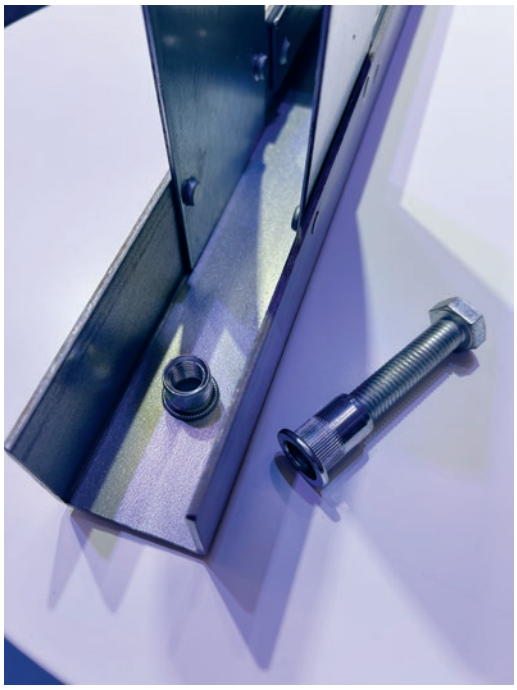
HS Anlagentechnik now also relies on rivet nuts, which have a similar principle to blind rivets



four rivets per component creates a high-strength connection.

"The use of hollow punch rivets offers several advantages over welding. On the one hand, the speed of production can be increased in the joining process. On the other hand, the quality of the connection increases, as the reproducibility is significantly higher and the need for any reworking falls away. The new connection technology will replace the welding of the connectors and the rail fasteners. After final load-bearing capacity tests in a certified testing laboratory, the introduction is imminent," explains Tim Trappe from HS Anlagentechnik. In addition to hollow punch riveting, an alternative method to the traditionally used weld-in nuts was also sought, which serve to simplify assembly. They are used wherever installation is difficult due to limited accessibility. HS Anlagentechnik uses rivet nuts, which have a similar principle to blind rivets. With the help of a battery-powered setting tool, the rivet nut is pulled into the component. Due to a faster and more even setting process, the quality of the nuts is significantly higher.

The final improvement can be found in the attachment of the head guide. To avoid a welded-in suspension system, the head guide is now fastened by means of an elongated hole screw. Compared to the previous design, this saves time during assembly.

The next generation is moving up

In addition to the technical innovations, customers were able to get to know new faces at the HS Anlagentechnik booth at bauma. The sons of managing partner Richard Trappe joined the company in the second half of last year. Tim Trappe takes over the position of Sales Manager and Robin Trappe takes over the technical management in the field of structural engineering. This means that the next generation is also ready to continue the success story of HS Anlagentechnik. ■

Left to right: Tim, Richard and Robin Trappe

FURTHER INFORMATION

HS ANLAGENTECHNIK

HS Anlagentechnik GmbH & Co. KG
Hegelstraße 6, 57290 Neunkirchen, Germany
T +49 2735 781160
info@hsanlagentechnik.com
www.hsanlagentechnik.com

Masa GmbH, 56626 Andernach, Germany

Consent sets new standards in building materials production in Abu Dhabi/UAE

كونسنت تضع معايير جديدة في إنتاج مواد البناء في أبوظبي/الإمارات العربية المتحدة

The construction boom in the United Arab Emirates is leading to an increasing demand for exclusive building materials. Consent LLC is responding to this trend with a new, state-of-the-art production facility in Abu Dhabi. Developed and built by German engineering company Masa GmbH, the plant meets the high standards of exclusivity, productivity and cost control.

يشهد قطاع البناء في الإمارات العربية المتحدة طفرةً عمرانيةً كبيرةً تؤدي إلى زيادة الطلب على مواد البناء المتميزة. تستجيب شركة كونسنت ش.ذ.م.م. لهذا التوجه من خلال بناء منشأة إنتاج حديثة ومتطورة في أبوظبي. طورت شركة الهندسة الألمانية Masa GmbH هذا المصنع وأنشأته ليلبي أعلى معايير التميز والإنتاجية والتحكم في التكاليف.

Major projects such as the new terminal at Al Maktoum Airport and other construction projects in the United Arab Emirates are driving demand for building materials. One of the reasons for this is that the UAE wants to position itself as an important industrial location with government initiatives and new economic partnership agreements. The ten-year 'Operation 300bn', for example, aims to strengthen and expand the UAE's industrial sector and increase its contribution to GDP from AED 133 billion (33.6 billion €) to AED 300 billion (75.8 billion €) by 2031. Local companies are responding to this trend by expanding their production capacities. They are focusing primarily on local procurement.

Consent LLC, one of the major players in the production of building materials in Abu Dhabi / the UAE, invested heavily in a new production plant in response to the local construction boom. The dimensions of Plant IV are enormous – in every respect. As a supplier of the machine technology, Masa accompanied the major project from the planning phase to the production of marketable products.

'We wanted an exclusive plant for exclusive products.'

Alan Sakr, Owner of Consent, summarises his expectations in approaching Masa as a partner for the plant equipment. 'The market is highly competitive, and our customers' demands are increasing. That is why we wanted to invest in an exclusive plant that would enable us not only to meet our customers' expectations, but to exceed them. At the same time, we need to ensure that our productivity and cost targets are met.'

Exclusivity, productivity and cost control – three clearly defined goals that require equally clear technical solutions. Cristian Brugioli, Managing Director of the Masa Middle East branch in Dubai, has maintained a close business relationship with Consent for many years and is very familiar with the company's priorities. Plants I and II have been successfully producing with Masa technology for a long time. If he had to describe Plant IV in just one word, the word 'unique' would immediately come to mind.

The plant in Abu Dhabi is unique in many respects. In order to fulfil the three main objectives in equal measure, the Masa team worked closely with Consent to develop the layout for a Masa high-tech plant with Multi-Handling Systems, which includes a first-in-first-out solution and the integration of comprehensive finishing lines. The products are manufactured on a Masa XL-R 9.1. The Masa Multi-Color System enables repeatable, excellent colour designs. In order to ensure that each exclusive product meets the high customer requirements and to minimise the risk of contamination, the layout also provides a separate feed of the aggregates for the main and face mix concrete.

First-in-first-out Solution

The chamber system at Consent, where the products cure, can effectively accommodate over 8150 production boards. It therefore offers sufficient space for both standard and exclusive products with lower order volumes. Fast availability is a decisive factor, especially for these products. The Masa plant layout takes this special requirement into account when implementing the storage and retrieval logistics with two Masa finger cars: the cured concrete products are removed according to the batch-based first-in-first-out (FIFO) principle. The use of the chamber system should be as cost-, space- and time-efficient as possible while allowing control over the production processes.

Site diary in time lapse – from the groundbreaking to the acceptance

Day 1

Sun. 27 degrees Celsius. Blue sky. It is 7:30 a.m. local time when construction crews arrive in the Khalifa Economic Zones Abu Dhabi with machinery to move tons of sand and stones in the coming months. Mark out the foundations and excavate the foundation pits. Create formwork, insert reinforcement and pour concrete. The completed foundations only give a hint of the enormous production plant that opens its doors here about a year later.

Day 113

Steel. As far as the eye can see. Steel beams, steel frames, steel struts are delivered. Machine frames precisely aligned. Everything is geared up for the big day when the first low-loaders arrive. With parts and components that will gradually be assembled into a high-tech plant.

Day 177

4,934 kilometres as the crow flies lie between the Masa production facility in Andernach, Germany and the Consent plant in Abu Dhabi, United Arab Emirates. 28 days of transport by land and sea for all individual parts of the Masa block making machine, which will now be carefully assembled, wired and later commissioned by the Masa Service Team Middle East. Just like the other components of the plant, which will arrive here bit by bit. A total of 30 containers and two additional low-loaders.

Day 202

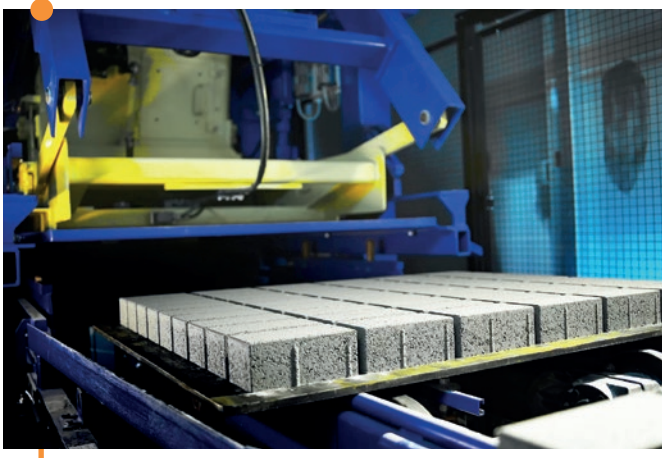
A record pace on the construction site. Meanwhile, it is easy to see where the products will later be freshly manufactured, cured, processed and packaged. Kay Rosengarth, Chief Engineer in the Masa Service Team, has his team and the supporting Consent specialists well under control. So far, only the skeletons of the buildings are standing.

Day 252

The outside areas, building cladding and inside areas are increasingly taking shape. Safety equipment, cables and cable trays, control cabinets. Randomness is not an option. The schedule is tight, the deadlines for commissioning have to be met, including test runs with and without material.

Day 360

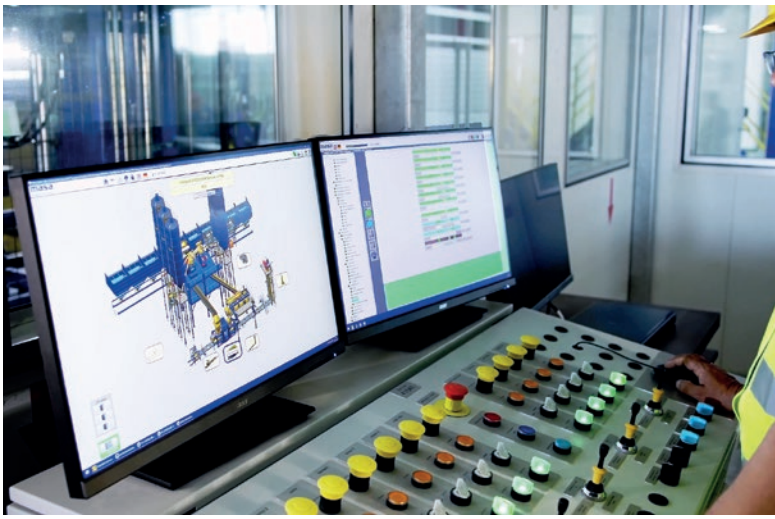
The first pavers. In the hall of Plant IV, two feelings prevail at this moment: relief and pride. Relief that all plant components work together harmoniously despite their dimensions and complexity. And pride in the fact that a unique block and paver making plant has been built here for Consent in the Middle East.



Day 425

As of today, Plant IV produces high-quality concrete products for the Arab market. The plant processes up to 1,000 tonnes of raw materials into fresh concrete products every day, transports them to the respective further processing stations and finally packages them into product cubes that are ready for transport. Everything is done automatically, with fast cycle times, high quality and high availability.

Dry side I with Cuboter: fast handling and accurate packaging of the uni products.



Visualisation of the production plant in the Masa plant control software.

Multi-Handling Systems

To be able to react flexibly to changing customer requirements and market demands, Consent relies on just as flexible production processes. The Masa plant layout with its multi-handling systems and two dry sides meets this requirement: It offers Consent the possibility to take both uni products and concrete products that require finishing or post-treatment almost simultaneously from the chamber plant. Dry side I with Cuboter I primarily ensures fast handling and accurate cubing of the uni products.

Dry side II can realise its full potential with exclusive products. Alan Sakr is particularly proud of one solution here: 'The joint result of very open and fruitful discussions between the project managers at Consent and Masa is the very flexible handling on dry side II via a single layer shifter. Depending on the order, the shifter operates either the finishing line for split concrete products or the second finishing line for shot blasting treatment. After the two finishing lines, all the products come together again at the Masa Cuboter II. The system is really ingenious and required a great deal of dexterity on the part of the Masa programmers.'

Multi-Color System

Customers focus their attention on concrete products with an appealing and exclusive look. The colouring of the Consent range is created by another Masa component, the Multi-Color System 'Premium'. The system includes a dosing unit, swivelling belts and a frequency-controlled collecting belt. The dosing unit consists of easy-to-clean stainless steel silos incl. cleaning flaps and load cells per silo. Different colour combinations are stored individually and recipe-specifically and can therefore be repeated exactly. Alan Sakr summarises the advantages of the Masa Multi-Color System: 'The system allows us to dose each individual colour mixture more precisely, sequence the colour mixture and have better control over how the end product will look. Ultimately, this enables us to offer our customers a wider range of options for multi-coloured products.'

'It's amazing how easy the plant is to operate – despite its enormous complexity.'

Especially at the beginning of the commissioning phase, the Consent team approached the highly complex plant with great respect. However, thanks to the intensive familiarisation and training provided by Masa, their confidence in the machine technology grew day by day. The Consent team learned to pay attention to the intricacies of plant operation and took the opportunity to ask detailed questions. Masa is aware of the importance of this training, which can ultimately determine the success of a plant.

Another key success factor is the operability of the plant. Alan Sakr emphasises three key points that give his staff confidence in their daily work and enable quick orientation and reaction:

- the clear and uniform visualisation of the entire production plant in the Masa plant control software
- the clearly structured and comprehensible instructions in the user guidance
- the alarms and troubleshooting instructions in the event of faults.

'The time and energy that Masa has invested in developing its own plant control software pays off for us every day,' summarises the Consent Owner. 'The plant talks to us and guides us through all these complex processes. This is much more than just aesthetics in visualisation.'

'For us, reliability is the key to a successful business partnership.'

For Masa and Consent, reliability is a central aspect of successful business partnerships. Throughout the entire course of the project, this included, for example, adhering to agreements regarding product quality, delivery deadlines and quality standards. Mutual, transparent communication was also crucial in the planning and implementation of the project. Problems and challenges were addressed at an early stage in order to find solutions together.

Reliability is also closely linked to the durability of Masa machines and plant components. For Consent, this means planning security in terms of productivity and operating efficiency, as well as low downtimes. However, reliability does not end with the completion of the project: Consent can count on the comprehensive Masa After-Sales Service, which offers tailored support and assistance throughout the entire machine life cycle. ■

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FURTHER INFORMATION

Consent LLC
19 street – Al Quoz
Al Quoz Industrial Area 1
Dubai, United Arab Emirates
T +971 4 3472011
info@consent.ae
www.consentconcrete.com

Masa GmbH
Masa-Str. 2
56626 Andernach, Germany
T +49 2632 9292 0, F +49 2632 9292 11
info@masa-group.com
www.masa-group.com

Kobra Formen GmbH, 08485 Lengenfeld, Germany

Mould construction in transition – three decades of innovation for concrete paving stone products

تحوّل في صناعة القوالب – ثلاثة عقود من الابتكار في منتجات أحجار الرصف الخرسانية

Andreas Gebauer, Kobra Formen GmbH, Germany

Most people in the concrete paving stone industry are familiar with this phenomenon: As soon as you get out of the car, bus or train, your gaze involuntarily turns to the floor - and you start analysing paving stones, laying methods, joint patterns and surface structures. This passion has its origins in a tradition dating back thousands of years: Even the Romans laid roads with natural stone to create permanently stable traffic routes. In the 20th century, the concrete paving stone brought a revolutionary innovation – with systematic, efficient and economical solutions, a new era of paving construction was born. While concrete paving stones are now an integral part of the cityscape, mould construction has also changed fundamentally over the last three decades. Kobra Formen GmbH has been at the forefront since 1991 – with innovative technologies and a deep understanding of the needs of concrete paving stone manufacturers. From manual work to high-precision industrial processes, the company is constantly setting new standards.

هذا الشعور مألوف لدى معظم العاملين في قطاع أحجار الرصف الخرسانية: ما إن تترجل من السيارة أو الحافلة أو القطار، حتى يتجه نظرك تلقائيًا إلى الأرض، لتبدأ بتحليل حجارة الرصف، وطرق التركيب، وأنماط الوصل، وهياكل الأسطح. هذه الشغف له جذور ضاربة في تاريخ من تقاليد تمتد لآلاف السنين؛ فحتى الرومان كانوا يرصّفون الطرق بالحجارة الطبيعية لتأسيس طرق مرور ثابتة ودائمة. جاءت أحجار الرصف الخرسانية لتحدث ثورةً حقيقيةً في القرن العشرين؛ فقد قدّمت حلولًا منهجية وفعّالة واقتصادية، معلنةً بداية عصر جديد في إنشاء الأرصفة. اليوم، ومع أن بلاط الرصف الخرساني أصبح جزءًا أساسيًا من المشهد الحضري، إلا أن صناعة القوالب قد شهدت تحوّلًا جذريًا على مدار العقود الثلاثة الماضية. كانت شركة Kobra Formen GmbH في طليعة هذا التطور منذ عام 1991، حيث جمعت بين التقنيات المبتكرة والفهم العميق لاحتياجات مصنّعي أحجار الرصف الخرسانية. تواصل الشركة وضع معايير جديدة في هذا القطاع من الأعمال اليدوية وحتى إلى العمليات الصناعية عالية الدقة.

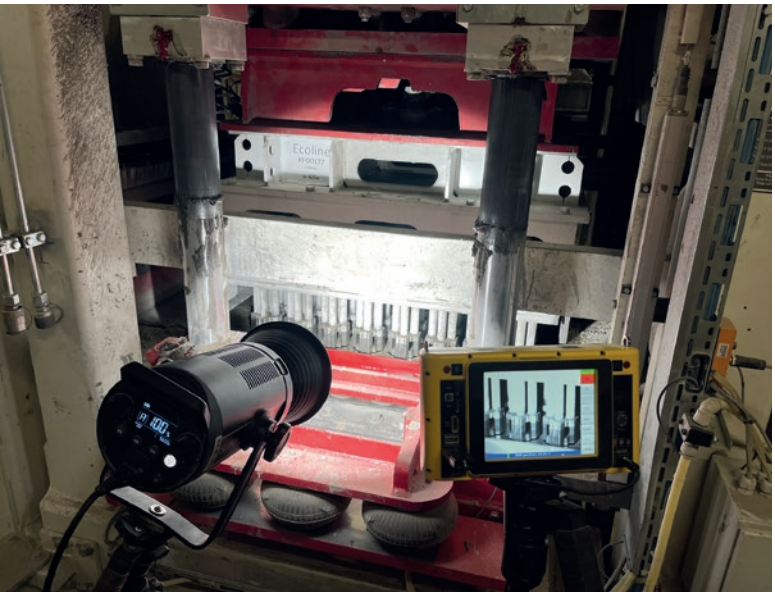
Kobra Formen GmbH in Lengenfeld, Germany

From manual craftsmanship to industrial production

In the past, mould construction was a complex, largely manual process in which each mould was unique. Mould inserts were fired in a water bath – this automatically created a surface hardening layer. However, this hardness was partially lost as manual finishing was necessary to level out any unevenness. Spacers, which served as transport protection and as a laying aid for an optimised joint pattern, were often adapted by welding. The heat generated in the process permanently changed the hardness structure. Tamper shoes were individually inductively heated and hardened in an oil bath, which led to an uneven distribution of hardness - so much so that uneven wear became visible on the paving stones after a few tens of thousands of production cycles. On some areas, indications of the period from which the paving stones probably originate can still be recognised today.

Kobra fundamentally changed this picture with the use of CNC milling technology. Milled paving, kerb and block moulds quickly established themselves as a new standard - despite all the initial scepticism. Precise machining enabled consistent dimensional accuracy and optimised hardening treatment in specially developed high-performance ovens. This decisive advance significantly extended the service life of the moulds and made the production process more efficient in the long term.

Kobra Formen GmbH has always played a pioneering role here. As early as the early 2000s, the company consistently focused on case hardening in mould construction - a feature that is now considered a quality standard in the industry. While competitors often offered cheaper but lower quality alternatives, Kobra remained committed to very high quality.



Setup of the high-speed camera

Tamper shoe change on site at the customer's premises

Service, maintenance and development – Kobra Tools & Care

The technological revolutions also changed the requirements for the service and maintenance of moulds. Where cut-off grinders, hammers and welding equipment were once used for repairs, today replaceable wear parts, precise torque spanners and digitally supported maintenance concepts are used. It was recognised early on that high-quality moulds deserve just as sophisticated handling as their manufacture.

The company offers its customers a comprehensive service – from on-site repairs and regular training to the provision of specialised tools. For example, the Kobra vibrating bar measuring device is used, which records the position of all vibrating bars and the horizontal table alignment on the vibrating table much faster and more precisely than manual measuring methods. Combined with high-speed camera recordings and special lighting, details of the production process in the concrete block making machine become visible that would otherwise remain hidden from the human eye. These findings prove that a reduced vibration with an adapted frequency and amplitude often achieves better stone qualities. This is made particularly impressive by DynamicView™, in which special probes measure the vibration force and acceleration on the vibrating table and mould. Graphic evaluations show the frequency, amplitude, acceleration and synchronisation of the vibration during mould filling and also during the main compaction - almost like an X-ray image of the production process, which is both fascinating and helpful.

In addition to the technical service, design is also an essential part of the service portfolio. The Kobra stone design team, which can look back on over 60 years of combined experience in the development and realisation of innovative paving stone designs, provides customers with advice and support. Whether implementing new ideas, optimising existing designs or solving complex challenges – only those who know their customers and their products inside out can optimally design the tool. In block design, the demoulding behaviour, the packability and stackability of the paving stones, as well as the sequence of the stone clamp in the gripper on the dry side, are also important.

Polishing the stone fields in the 1990s

The sales team also takes a global view of the use of moulds – from the installation drawing of the entire production facility (from the wet side to the dry side) to the loading of the paving stones. Long-term customer relationships are based on the fact that the tool not only fits, but also works reliably. And if something does not meet the requirements, the dedicated Kobra service team is available on site - worldwide.

In addition to the innovative service and maintenance concepts, the company also offers a classic repair service. Worn stone fields are rebuilt with high-quality, wear-resistant welding material and precision ground flat, while used tamper shoes are completely replaced with new ones. All components are thoroughly checked in the repair department: They are blasted, checked for possible damage over the course of their service life and, if necessary, professionally repaired – minor cracks are welded, spacers on the load system are replaced and, if necessary, running rails are also exchanged. A new, protective coating rounds off the repair so that the moulds are returned to the customer in perfect condition.

This comprehensive repair approach significantly extends the service life and reduces the costs per cycle or per square metre. The principle that price does not equal cost is clearly evident: The actual costs of a mould are manifested in its service life, reliability and ease of maintenance – ultimately in the high-quality output for the customer. Although favourable offers can seem tempting, they often mean that you have to invest twice.

Transfer of knowledge: technology symposia and workshops

Innovation thrives on exchange – and Kobra Formen GmbH has relied on direct dialogue with customers and partners for decades. In addition to its international presence at trade fairs such as bauma in Munich and CPI's ICCX events, the company regularly organises technology symposia with accompanying workshops. These events not only offer fascinating insights into the latest developments in production, but also facilitate an intensive transfer of experience and knowledge between concrete paving stone manufacturers from all over the world.

Developed during the pandemic, when it was important to maintain contact despite the lack of a trade fair presence, this concept has continued to evolve dynamically. The Technology Symposium was last held at the main site in Lengenfeld in September 2023 – with over 200 participants, who also inaugurated the newly built Kobra Campus. In addition to presentations on mould construction, customers also presented their projects, while other companies in the industry showcased their products and services. Numerous registrations for the next symposium were already made during the event.

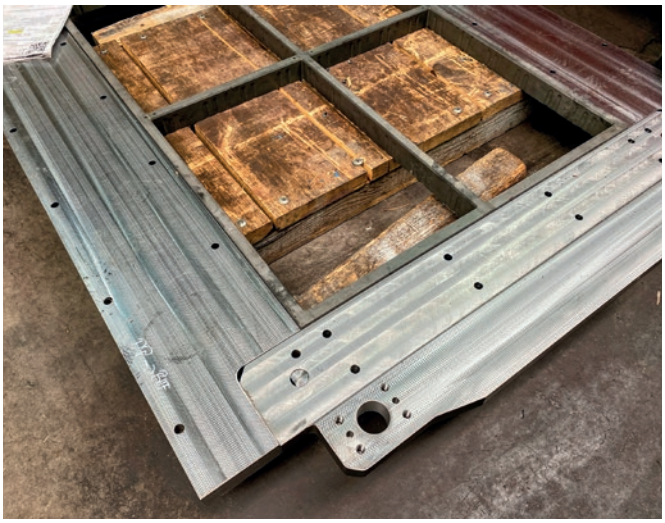
Particularly noteworthy here is the first Kobra Technology Symposium in Hudson, Wisconsin, which took place in October 2024. More than 60 participants attended the event at the North American site, where around 45 employees produce Kobra moulds specifically for the US and Canadian markets. Although the concept, little known in this region, was initially met with hesitation, the feedback was all the more overwhelmingly positive. Numerous registrations for future events emphasise the importance of this format and prove how valuable the exchange of technical know-how and practical experience is in the concrete paving stone industry.

Digitalisation and modularity

While predictive maintenance systems and AI-controlled moulds are still dreams of the future, Kobra Formen GmbH has already taken a decisive step towards digitalisation and modularity. With the development of the paving stone mould system, the company is focusing on flexible and 1:1 reproducible solutions. The bolted frame construction method was optimised at the end of 2018 with the Boltline™ system frame to such an extent that it is now even possible to swap mould frames between different concrete block making machines and production sites in an emergency – an advantage that is particularly valuable for large groups of companies with several locations. This system also proves its advantages time

Dispatch warehouse with new moulds

Incoming warehouse of the repair department



Contemporary mould construction – Kobra Boltline™

The Kobra repair and service team

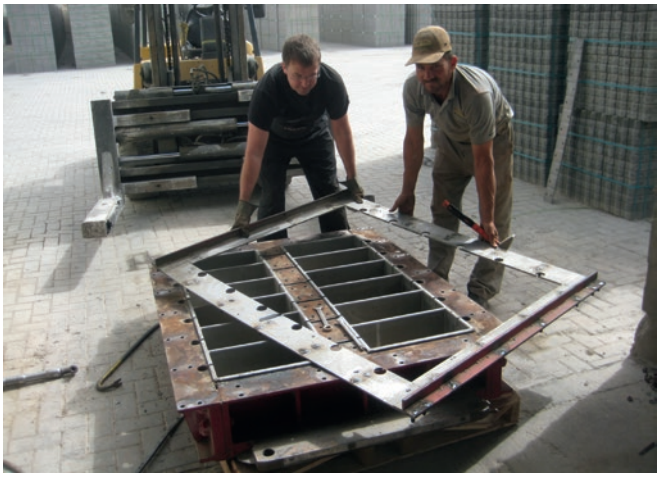
and again at individual sites with several machines. Variable frame heights allow the same mould frame to be used for the production of solid bricks or hollow blocks without the need to purchase completely new moulds. This special construction method not only reduces the use of steel, but also ensures uniform product quality - this can provide a competitive advantage in the globalised concrete paving stone industry. Kobra always focuses on offering solutions that maximise the practical benefits for users.

Sustainability and the future

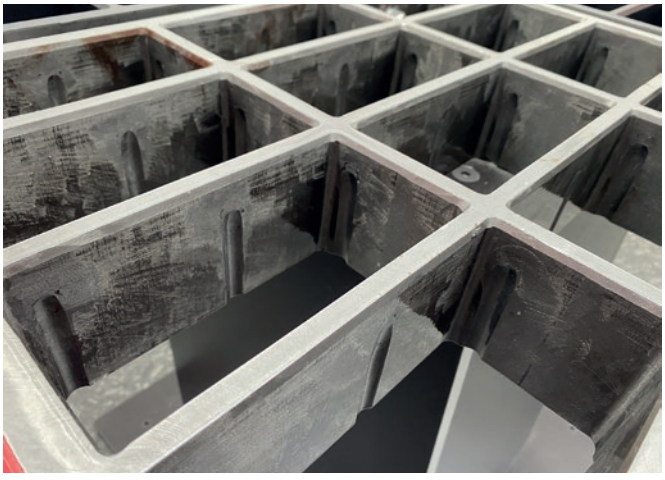
At Kobra Formen GmbH, sustainability is far more than just a buzzword - it forms an integral part of the company's philosophy. Thanks to the modular design of the mould parts, for example by separating the load box and part tampers, the moulds can be used much more efficiently. This separation makes it possible to combine numerous part tampers with just a few load boxes, which reduces the amount of material used, lowers the transport volume and thus saves not only costs but also CO_2 emissions.

In addition, the load boxes can be used as adapters so that moulds can be used on different machines in one or more concrete block plants – with minimal effort. The Boltline™ design, which has been established for almost 25 years, also emphasises the early direction of technological development: The first kerb moulds with bolted frames and replaceable wear parts were initially received with great scepticism by the market, but their success quickly dispelled any doubts - the 10,000th Boltline mould was delivered within a few years. To this day, replaceable wear parts in a frame that can be dismantled are a unique selling point that no other mould maker has implemented to the same extent.

Another key issue is the energy supply. 500 kWp of photovoltaics are already in use on the production roofs at the Lengenfeld site - this capacity will be expanded to 1.3 MWp by mid-2025, covering around 20% of the company's own electricity requirements. The next milestone in terms of sustainability lies in a pioneering project that goes far beyond conventional manufacturing approaches. Kobra Formen GmbH has long invested heavily in the development of material-saving



Kobra service for changing wearing parts on site



Classically polished stone fields

13TH INTERNATIONAL CONFERENCE ON CONCRETE BLOCK PAVEMENT [ICCBP]

HARDSCAPES FOR FUTURE

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THE CONFERENCE

HARDSCAPES FOR FUTURE, the 13TH INTERNATIONAL CONFERENCE ON CONCRETE BLOCK PAVEMENT (ICCBP) is organized as a part of a long-term series of events to discuss and promote technical and scientific progress with recent developments/ issues in the design and construction of block pavements worldwide.

THEME

The conference covers a diverse array of themes and sub themes. These include:
ROAD CONSTRUCTION | PAVEMENT DESIGN | STREET & LANDSCAPE DESIGN | URBAN PLANNING & TRANSPORTATION INFRASTRUCTURE | INNOVATIONS & RESEARCH | ECOLOGICAL & SUSTAINABILITY ASPECTS | PERFORMANCE & MAINTENANCE | PRODUCTION TECHNOLOGY & MATERIALS

PARTICIPANTS

The conference brings together **BLOCK PAVEMENT RESEARCHERS, ENGINEERS, CONSULTANTS AND MANUFACTURERS, LANDSCAPE ARCHITECTS, ARCHITECTS, URBAN DESIGNERS, PLANNERS, SUPPLIERS, VENDORS, CONSTRUCTION AND INFRASTRUCTURE COMPANIES, ACADEMICIANS AND RESEARCHERS, GOVERNMENT AUTHORITIES, REAL ESTATE DEVELOPERS & ASSOCIATED NGOs** to enrich the discourse by exploring new ideas, encouraging collaborations with designers and envisioning practical solutions for sustainable development.

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Change of use for the Kobra system frame

The Kobra sales team

production processes and new concepts that are designed as a circular economy in the production process. Some approaches had to be reinvented for mould construction – such as the development of 100% recyclable monomaterials, energy-reduced production processes and waste-free technologies. This long-term development process aims to drastically reduce the use of materials and significantly cut both CO_2 emissions and resource consumption. The resulting added value for customers and for the company heralds the next revolution in mould construction. Initial impetus and exciting insights into these pioneering approaches were presented at bauma 2025 in Munich.

Conclusions

The last three decades in mould construction have impressively demonstrated that progress is not a product of chance, but the result of vision, innovation and continuous development. As a market leader, Kobra Formen GmbH has redefined the industry time and again – from manual production and precise CNC processes to sustainable, modular systems and pioneering technologies with a circular economy – always with the customer's needs in mind. With a clear commitment to innovation and sustainability, the company is looking to a future in which technical progress and environmental awareness go hand in hand. bauma 2025 was once again a showcase for these developments – because the best thing about progress is that it never ends. ■

Natural paving in Erfurt's historic city centre

Different concrete block pavement in the city centre

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Kobra Formen GmbH
Plohnbachstraße 1
08485 Lengenfeld, Germany
T +49 37606 3020
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Solution on an industrial scale

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Innovative system technology for storing CO_2 in concrete products

تقنية نظم مبتكرة لتخزين ثاني أكسيد الكربون في منتجات الخرسانة

With the ProCarbonCure process, large quantities of CO_2 can be stored in products made from concrete or steel slag. The process has now been successfully implemented on an industrial scale. The Rotho ProCarbonCure technology gives concrete products a significantly lower carbon footprint by storing CO_2 sustainably and permanently.

يمكن تخزين كميات كبيرة من ثاني أكسيد الكربون في المنتجات المصنوعة من الخرسانة أو خبث الصلب من خلال عملية ProCarbonCure، والتي تُنفذ الآن بنجاح على نطاق صناعي. تخفض تقنية Rotho ProCarbonCure البصمة الكربونية للمنتجات الخرسانية بشكل ملحوظ من خلال تخزين ثاني أكسيد الكربون بشكل مستدام ودائم.

The construction industry, including the cement and concrete industry, faces major challenges on the road to greenhouse gas neutrality. In cement production alone, around two-thirds of CO_2 emissions are attributable to non-reducible, raw material-related process emissions and one-third to fuel emissions. In order to offset the irreducible process emissions, these emissions must be sequestered by CCS/CCUS (capture, utilization and storage of CO_2). This is precisely where the innovation comes in, as the ProCarbonCure process allows almost all of the carbon dioxide added to the curing process to be absorbed by the concrete. The process therefore makes an important contribution to making concrete products greener in the future.

The construction of such a plant in the vicinity of CO_2 emission sources where the carbon dioxide is filtered out of combustion processes is particularly interesting. In this way, sequestration can be achieved without the energy-intensive liquefaction of CO_2, which would be necessary to transport CO_2 over long distances and store it underground in geological sites, for example.

To realize the process, it was necessary to develop a completely new concrete curing process. The specialized disciplines of hardening and drying had to be combined in order to be able to store large quantities of carbon dioxide in the concrete. The result was a closed process that gives the CO_2 time to penetrate deep into the concrete without a significant proportion being emitted back into the atmosphere.

Sophisticated CO_2 feed system

A central element in the carbonization of concrete is the CO_2 supply. The precise dosing of carbon dioxide is a decisive factor for the realization of a stable process. A closed process reacts to too much or too little CO_2 by rapid and high-pres-

Front of the ProCarbonCure - system for CO_2-negative facing bricks

Chamber top with the process technology of the ProCarbonCure -system for CO_2-negative facing bricks

sure fluctuations, which in turn can trigger safety chains and lead to a process that is difficult to control. At the end of the development, a CO_2 supply was achieved that provides the process with the required amount of carbon dioxide largely automatically.
In addition, for the carbonization of concrete products based on steel slag, a uniform supply of CO_2 in the batch is essential to achieve a uniform concrete strength. For this reason, specially designed nozzle walls for chamber aeration have been developed to ensure this.

High safety

As high concentrations of CO_2 are harmful to the human organism, high demands are placed on the tightness of the structure and the process engineering equipment. Here, Rotho can rely on a self-developed and patented structure that fulfils the highest tightness class according to DIN EN 1507.
The harmful effects of carbon dioxide required a so-called HAZOP analysis in advance. During the analysis, both hazards and the operational capability of the system are systematically analyzed in order to achieve a high level of safety for personnel, equipment, the environment and functionality. Based on this risk analysis, Rotho developed various safety devices, such as a leakage-measuring device and a multi-stage pressure monitoring system. The realization of a safe system is the central focus of the ProCarbonCure process.
The Rotho ProCarbonCure technology thus provides a process that can make an important contribution to storing large quantities of CO_2. ■

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Frima GmbH & Co. KG, 26723 Emden, Germany

Optimizing production quality with innovative technology – new systems for paving block production

تحسين جودة الإنتاج بتقنيات مبتكرة - أنظمة جديدة لإنتاج أحجار الرصف

In concrete paving block production, precision and quality are essential in ensuring flawless products and minimizing production costs. A major advancement in the industry is the integration of advanced technologies such as intelligent quality control systems. This technology not only improves efficiency but also enhances control over production quality.

الدقة والجودة من الأهمية بمكان لضمان جودة المنتجات وتقليل تكاليف الإنتاج في إنتاج أحجار الرصف الخرسانية. يُعد دمج التقنيات المتقدمة، مثل أنظمة مراقبة الجودة الذكية، من التطورات المهمة في هذا المجال. لا تقتصر هذه التقنية على تعزيز الكفاءة فحسب، بل وكذلك النهوض بالتحكم في جودة الإنتاج.

Board weighing for greater precision

The weighing of production boards is a crucial step in ensuring production accuracy. Before machine processing, the production board is weighed to determine the weight of the empty board. This weighing process takes place during the idle time of each cycle, ensuring that the flow of production remains uninterrupted. After processing, the weight of the product is measured on the walking beam conveyor, enabling precise determination of product quantities and continuous monitoring of production performance. This measurement also takes place during the cycle's idle time, keeping the production process efficient.

Automatic quality control with AI

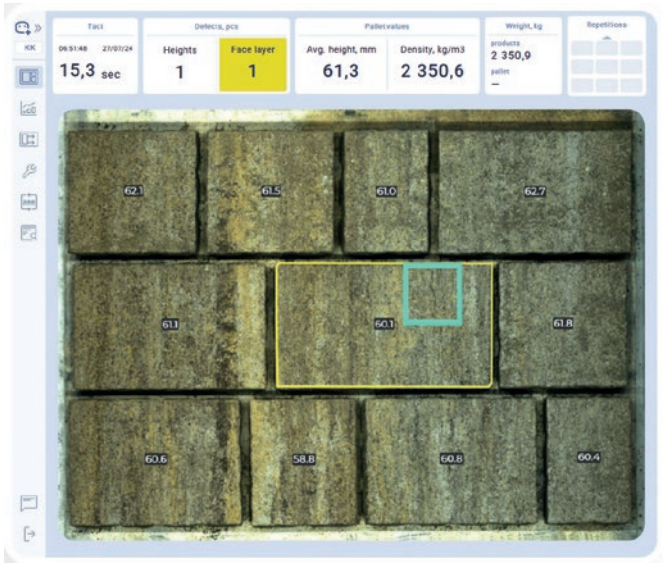
The new automatic quality control system Frima AQC (Automatic Quality Control) was specifically developed for paving block / paving slab production and is based on artificial intelligence. It can be easily integrated into existing production lines and works with equipment from any manufacturer without requiring modifications. The system operates on the wet side of the production line following the block-making machine and ahead of the elevator.
Using a high-precision laser scanner and a camera, the products are continuously monitored. The laser measures product height with an accuracy of 0.5 mm, while the camera system detects surface defects such as cracks, stains, inclusions, or depressions. These defects are displayed in real time on the operator's screen, with deviations highlighted in colour, allowing the operator to intervene immediately and prevent the production of defective products.

Advantages for production

The Frima AQC system can offer the following advantages:

- **Reduction of production losses**
  Fast error detection helps minimizing the number of defective products.

Frima AQC (Automatic Quality Control).

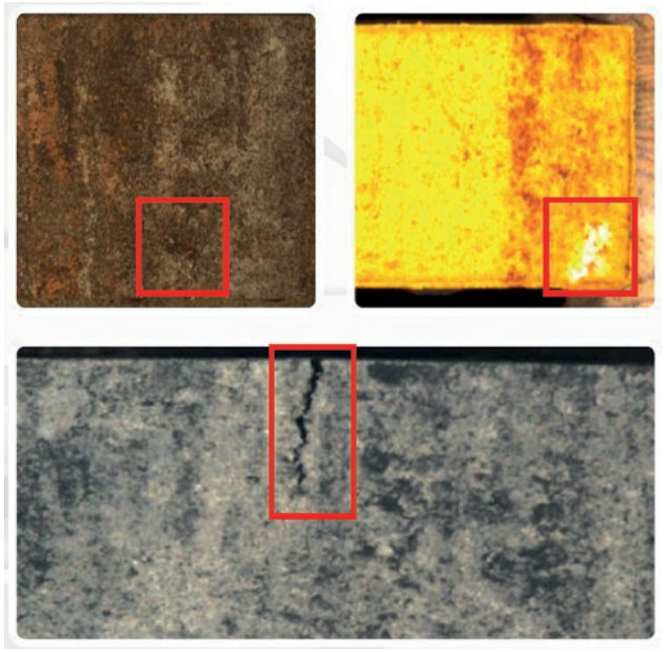


Display on the operator's monitor for detecting surface defects on the wet side.

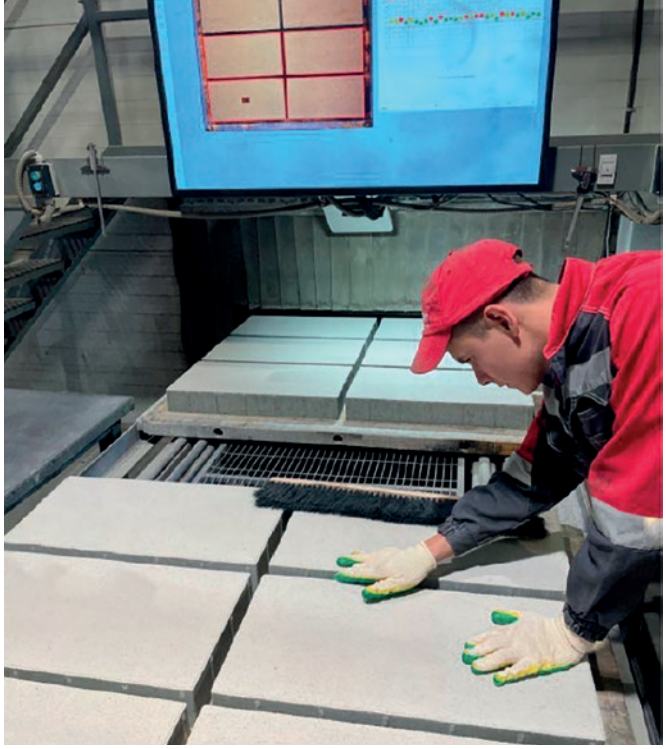
- **Improved product quality**
  Defective products are detected immediately, increasing the overall quality of the final products.
- **Increased automation**
  The system enables complete production control without operator intervention.

Data analysis and feedback

Another highlight of the system is the continuous recording and analysis of production data. All measurement values are stored and can be used for future batch analyses. The user interface always provides a complete overview of the most



According to information provided by manufacturers, Frima AQC detects 95% of all surface defects, such as stains, cracks, holes/projections, and inclusions.



Detection of defective products on the dry side.

The introduction of the Frima AQC system and RFID technology was carried out in collaboration with Quatromatic. From left to right: Ingo de Vries and Frank Mansholt (Frima), Nikita Shumeyko (Quatromatic), Onno Fritzen (Frima).

recently produced product and the current batch. In addition, the storage of production statistics enables detailed analysis and optimization of production processes.

Precision through height measurement and density calculation

Frima AQC enables highly precise measurement of product parameters:

- **Height measurement**
  With the previously mentioned accuracy of 0.5 mm, even the smallest deviations in product height can be detected. This allows production to be optimized to the lowest permissible height, which in turn reduces raw material costs.

- **Density calculation**
  By precisely measuring product geometry, the volume of each product can be calculated. This enables accurate determination of density, which is crucial for product quality.

Error detection and reporting

The system detects a wide range of surface defects such as discolorations, cracks, depressions, and inclusions.

As soon as a defect is identified, the system sends a signal to both the operator interface and the production control unit to stop the transport system, thereby preventing the production of defective products.

Integration of RFID technology

Another key element of the new production line is the Radio-Frequency Identification (RFID) tracking system. With the help of RFID read/write devices, production documents are equipped with RFID chips containing all relevant production data. The data can be read accurately and securely, enabling full traceability of each product. The system thus ensures seamless documentation and improves data integrity across the entire production line.

Web-based user interface

The system's user interface is web-based, offering simple and user-friendly operation. It is accessible on various devices, including computers, tablets, and smartphones. Through the interface, operators can not only detect errors in real time but also view detailed production statistics and monitor the status of the current batch.

A new level of automation and quality assurance

With the introduction of the Frima AQC system and RFID technology in collaboration with Quatromatic, Frima aims to elevate paving block and paving slab production to a new level of efficiency and quality assurance. Through precise measurements, real-time defect detection, and the ability to immediately control production, the system can not only reduce costs but also significantly enhance product quality. These systems represent an innovative solution with higher automation levels and improved production standards. ■

FURTHER INFORMATION

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

KBH Maschinenbau, Baustoffwerke Gebhart & Söhne GmbH & Co. KG, 87760 Lachen, Germany

Innovation from Tradition

الابتكار من قلب التقاليد

Production of architectural landscape products demands highest quality machine and automation processes. To meet these challenges with precision and efficiency, companies need to master both theory and practice. KBH – both a producer of architectural landscape products and manufacturer of secondary processing machines – has been successfully developing and manufacturing cutting-edge solutions for decades under its unique philosophy: "from Producers for Producers" "The Future Begins Now!" – This slogan encapsulates KBH Maschinenbau's passion and commitment to developing innovative solutions for the concrete industry. The goal is clear: delivering market-specific technology tailored to the concrete landscape industry whether as a retrofit or for green field sites.

يتطلب إنتاج منتجات التنسيق المعماري أعلى درجات الجودة في عمليات الأتمتة والآلات. تحتاج الشركات إلى إتقان الجانبين النظري والعملي على حد سواء لمجابهة هذه التحديات بدقة وكفاءة. KBH، وهي شركة متخصصة في إنتاج منتجات التنسيق المعمارية وصناعة آلات المعالجة الثانوية، من الشركات الرائدة منذ عقود في وضع وتنفيذ حلول متقدمة وفق فلسفتها الفريدة: "من المنتجين إلى المنتجين". "المستقبل يبدأ الآن!" يجسّد هذا الشعار شغف شركة KBH Maschinenbau والتزامها بإنشاء حلول مبتكرة لقطاع الخرسانة، والهدف واضح: تقديم تقنيات متخصصة تلبي احتياجات سوق المنتجات الخرسانية للتنسيق المعماري، سواء لإعادة تهيئة خطوط الإنتاج القائمة أو إنشاء مواقع إنتاج جديدة بالكامل.

A Legacy of Excellence

From day one, KBH Maschinenbau has been synonymous with top-tier quality, efficiency, and innovation in mechanical engineering. The company specializes in designing and manufacturing custom machine solutions for the concrete products industry, adapting them to customer-specific needs – from concept to production. Sustainability and durability are top priorities, making KBH a trusted global partner for concrete product manufacturers.

What sets KBH apart? A unique blend of mechanical engineering expertise and real-world concrete production experience. As a producer of high value architectural landscape products, KBH understands industry challenges firsthand – and solves them with smart machine solutions and cutting-edge technology. The result? Solutions that enhance efficiency and quality across the global concrete industry – truly "from a Producer for Producers"

Shaping the Future with New Developments

KBH constantly pushes boundaries, optimizing existing processes while venturing into new technological frontiers. Recent innovations include:

Crushing Technology

KBH's specialized crusher system enables immediate on-site concrete cull recycling, reintegrating material directly back to production. Capable of processing dimensions up to 1200 x 500 x 150 mm, the system allows grain sizes down to 0-6 mm. The sieve line produced by the system is consistent

As a producer of high value architectural landscape products, KBH understands industry challenges firsthand - and solves them with smart machine solutions and cutting-edge technology.

KBH's specialized crusher system enables immediate on-site concrete cull recycling, reintegrating material directly back to production.

and can be used directly in the production of concrete products. Additional screening and segmentation are not necessary, and the fines content is marginal. The result? Efficient use of resources available with a low maintenance high yield system. A game-changing technology that reduces waste, cuts costs, and enhances sustainability.

Ceramic Connect

Ceramic composite compound products gain popularity among architectural landscape products. The unique KBH process allows to use commercially available paver plants to produce ceramic composite compound products. Ceramic tiles in different formats are glued to the "green" product before entering the curing chamber. This allows the glue to be cured together with the product in the curing system. The technical concept enables automation at different levels of expansion to be able to keep the initial investment to a minimum. The KBH Ceramic Connect System can be accommodated in existing paver plants or in "green field" sites. The retrofit solution allows to use the existing plant configurations while significantly enhancing the plant`s output portfolio.

Automated Quality Control System – QC Imager

The QC Imager – when installed on the wet side – allows to check product quality right after production. State-of-the-art sensors in combination with unique software allows for outstanding product quality control. Not only the product height is being verified. Any surface irregularities including cracks as well as the product density will be evaluated, analyzed and processed in real time. Thus, machine settings can be adjusted right away to reduce bad production. Product replacement can be done on the dry side. The implementation of the latest product tracking enables the display of as defective identified products on the dry side QC station. Products can be replaced manually or fully hands-off by means of robots. When developing this solution KBH aimed for modular expansion stages allowing to keep the initial investment as low as possible. In addition, all data collected including the picture of the product layer can be stored for an infinite amount of time.

Printing on concrete products

Custom-printed concrete products offer highest design flexibility with virtually zero setup time. KBH's wet-side printing system enables seamless integration into existing production lines, ensuring high-quality prints while maintaining the efficiency of board plants. The system is available both as retrofit for existing plants and for new plants. Not only were the machine components completed by KBH, but a suitable ink and a means to neutralize the cement skin were created in collaboration with partner companies.

Advanced Nozzle Cleaning for Coating Systems

KBH's new nozzle cleaning technology significantly enhances the reliability of spray-based coating systems, ensuring consistent application and reduced maintenance downtime.

Proven Classics That Continue to Impress

KBH Maschinenbau isn't just about innovation, it's also renowned for its industry-leading classics:

Dancing Weights Machine

This patented aging process is very good solution for manufacturers looking to achieve a naturally aged appearance for architectural landscape products. Advantages include exceptionally low operating costs per cycle and the ability to process stones in-line after just 17 hours of curing. The system's versatility covers everything from multi-format stone layers to large-format 50 mm terrace slabs with minimal waste – fully hands off.

Curling

The Curling System is another classic from KBH that significantly enhances product haptics and ultimately product value. The result: a smoother surface. Just the use of one single brush unit is enough to achieve the goal. Another unique feature is that product layers will not have to be consolidated to an endless product string. Single product layers will be indexed through the system. A special cantilevered brush support system compensates for deviations of product height within a product layer. This ensures a consistently uniform curling intensity and extends the lifespan of the brushes.

KBH's state-of-the-art Coat Applicator ensures a homogeneous and precise application of coating material, significantly enhancing the durability and appearance of concrete products. The core of the system, the spray bar, is housed in a pressurized drawer equipped with highly durable guide rails.

Coat Applicator-Cap

KBH's state-of-the-art Coat Applicator ensures a homogeneous and precise application of coating material, significantly enhancing the durability and appearance of concrete products. The core of the system, the spray bar, is housed in a pressurized drawer equipped with highly durable guide rails. A positive pressure environment prevents external contamination, ensuring a consistent and high-quality coating application.

KBH's coating system is available with a frequency-controlled exhaust system, further optimizing efficiency while maintaining an operator-friendly environment. The system can be seamlessly retrofitted to existing production setups.

Additionally, an advanced flow measurement system can be added to continuously monitoring each spray nozzle, detecting clogging or irregular spray patterns in real-time. Any inconsistencies are immediately flagged for correction. Thus, a consistent and reliable coat application on every concrete block is ensured preventing time-consuming customer complaints and costly warranty claims.

Colorist

The KBH Colorist, a patented add-on device developed by KBH for all board machines. The unit allows for a consistent inconsistent color blend – up to six different colors. This device can be used for both face mix and base mix applications. Thanks to its unique dosing technology, the Colorist creates irregular, random color variations right from the first production board. This color shading method stands out with its space-saving design and very low operating costs.

For decades, KBH technologies have set industry benchmarks and are successfully deployed in concrete block plants worldwide.

FURTHER INFORMATION

® KBH
» MASCHINENBAU

KBH Maschinenbau
Baustoffwerke Gebhart & Söhne GmbH & Co. KG
Einöde 2
87760 Lachen, Germany
T +49 8331 950315
maschinen@k-b-h.de
www.k-b-h.de

Moldtech S.L., 41500 Alcalá de Guadaira (Sevilla), Spain

Complete line for the manufacture of electrical transformer substations in France

خط إنتاج متكامل لتصنيع محطات التحويل الفرعية الكهربائية في فرنسا

Modular technology and custom-made precast solutions for the client Duhalde: Moldtech has successfully completed a large-scale project in France with Duhalde Industries, specializing in the production of PAC4UF transformer substations. The objective: to design and supply an automated production line for the manufacture of reinforced concrete transformer substations in compliance with the very strict local regulations. This project strengthens Moldtech's position as a provider of comprehensive, customized, high-tech solutions in the European precast sector.

التقنية المعيارية والحلول المخصصة للخرسانة مسبقة الصب للعميل، Duhalde. نجحت شركة Moldtech في تنفيذ مشروع ضخم في فرنسا بالتعاون مع شركة Duhalde Industries المتخصصة في إنتاج محطات التحويل الفرعية، PAC4UF. كان الهدف من المشروع هو تصميم وتوريد خط إنتاج مؤتمت بالكامل لتصنيع المحطات الفرعية لتحويل الخرسانة المسلحة مع الامتثال للوائح المحلية الصارمة للغاية. ينهض هذا المشروع بمكانة Moldtech كمزوّد لحلول متكاملة ومخصصة وعالية التقنية في قطاع الخرسانة مسبقة الصب في أوروبا.

Transformer substations play an essential role in medium- and low-voltage electrical infrastructure, providing a safe, resilient, and regulatory-compliant environment for the installation of transformers, medium-voltage switchgear, and auxiliary equipment. Their presence is common in industrial facilities, residential areas, agricultural operations, solar farms, and wind turbines, requiring versatile, reliable, and efficient construction solutions. Duhalde Industries was looking for precisely that: a production line capable of covering different configurations with high technical standards and a production capacity of 1,200 units per year.

To meet this need, Moldtech designed and supplied a state-of-the-art production line, integrating all production systems into a continuous, automated, and safe process. The new industrial plant, a modern 5,000 m² building, is equipped with the necessary equipment to manufacture strong and safe HTA/LV sheds: 3D moulds, covers, slabs, and more. Duhalde Industries operates completely autonomously thanks to its precast concrete plant. The production system is kept under control, from order receipt to delivery anywhere in France.

1. 3D moulds for PAC4UF transformer substations (5 units)

- Dimensions: 3.6 m (L) x 3.1 m (W) x 2.4 m (H).
- Use: Comprehensive manufacturing of prefabricated transformer substations using a single concrete casting process.
- Technical characteristics:
  - Modular design allows adaptation to different configurations.
  - High dimensional accuracy, facilitating the subsequent assembly of doors, grids, frames, and electrical systems.

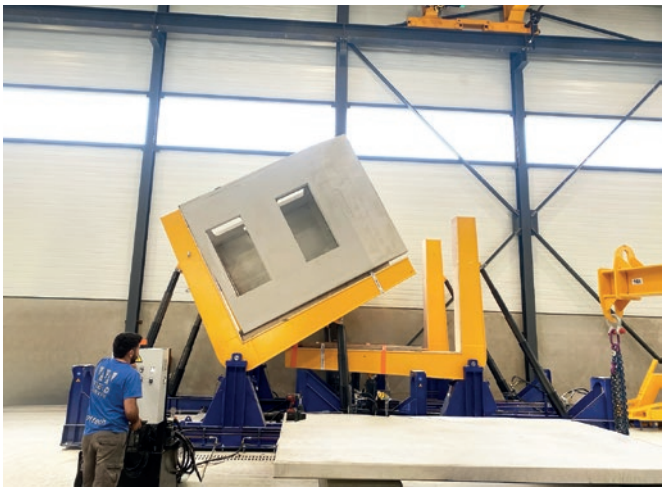
3D moulds for PAC4UF transformer substations

- Efficient opening and closing system, designed to optimize formwork removal and reduce waiting times between cycles.
- Robust, reinforced steel structure capable of withstanding intensive production cycles.
- Safety elements to protect operators during handling and maintenance.

Operational advantages:
- Significant reduction in production time per shed.
- Uniformity in finishes and dimensions.
- Greater durability and ease of maintenance.

2. Fixed tables for sheds slab panels and roof slabs (10 units)

Lay-out:
- 5 fixed tables for the production of sloped roof slabs.
- 5 fixed tables for the production of intermediate slabs with slopes according to regulations.
- Use: casting of flat elements complementary to 3D structures.
- Technical characteristics:
  - Work with different slab thicknesses, adapting to project requirements.
  - Smooth surface for an excellent surface finish.
  - Calibrated geometry to ensure a perfect fit in the final assembly.



180° hydraulic turner device

Operational advantages:
- Versatility for different types of sheds.
- Production in parallel with 3D moulds, increasing the plant's total capacity.

3. 180° Hydraulic Turner device

Use: Safe handling of three-dimensional precast elements after demolding and before installation.

Concrete pieces

Carousel line

This auxiliary equipment plays an essential role in the plant, allowing complete precast 3D elements to be rotated from their molding position to their final orientation for installation on site. Its use is especially important in cases where the casting position does not coincide with the assembly position, making safe and precise rotation necessary to avoid risky crane manoeuvres.
The turner supplied for this project is composed of two 90° modules that, acting sequentially, allow a complete 180° rotation. It operates using telescopic hydraulic cylinders connected to a hydraulic power unit and is designed to support up to 50 tons, making it the largest capacity manufactured by Moldtech to date.

- Technical characteristics:
  - Hydraulic system driven by telescopic cylinders.
  - Full 180° rotation with two 90° steps.
  - Maximum capacity: 50 tons.

  Operational advantages:
  - Ensures safe handling of large volumes.
  - Improves ergonomics and reduces plant risks.
  - Facilitates the transition of elements between stages without tandem cranes.

4. Carousel line for final assembly

Use: Sequential assembly of precast elements, execution of finishing works and electrical installations.

The CAROUSEL system was designed as a solution for the serial production line of precast concrete transformer sheds. Its main function is to facilitate the entire manufacturing process, from obtaining the structural elements using specific moulds to the final finishing phases and installing the electrical components.

This system allows for efficient and safe handling of precast elements during the various stages of the production process, ensuring operational continuity, final product quality, and optimized cycle times.

The system was designed according to the client's specifications to operate under the following conditions:

- 36 working stations
- Shed size: 3.6 x 2.37 x 2.35 m
- Pallet dimensions: 5.32 x 2.37 m
- Precast elements processing area
- Assembly area
- Storage area

The carousel features main, secondary, and individual control panels, as well as centralized control software that allows for management and control of the entire process.

- Technical characteristics:
  - Closed-loop modular layout.
  - Fixed positions for each assembly phase: placement, fixing, connection, and inspection.
  - Structural support and guidance system to ensure precise alignment.
  - Integration with auxiliary handling systems.

Final assembly

Operational advantages:

- Reduced assembly times.
- Greater control over process traceability.
- Standardized assembly with the ability to adapt to different configurations.

Comprehensive solution adapted to market demands

This project reflects a 360° approach to precast engineering. Moldtech not only provided the equipment but also supported Duhalde in setting up an efficient, safe, and mass-produced plant. All equipment has been designed based on principles of functional compatibility, enabling smooth operations from start to finish.

Daily manufacturing capacity is increased thanks to the ability to perform simultaneous processes. While the 3D moulds work on the main structure, the fixed tables produce ceiling and floor slabs in parallel, which are then assembled using the carousel, completing the cycle with efficiency and precision.
Furthermore, the robust design of all the equipment ensures a long lifespan, easy maintenance, and safe operation even during long production shifts. This type of solution is especially relevant in today's precast context, where competitiveness demands maximum efficiency, regulatory compliance, and adaptability.

Technical and personalized approach

Each component of the system has been designed with engineering criteria applied to actual plant use. Moldtech worked closely with the Duhalde Industries technical team to adapt the dimensions, anchoring systems, manoeuvrability, and ergonomics to the client's specific needs.

This customized approach has optimized both the equipment's performance and the quality of the final product. The transformer substations produced with this line meet French and European standards for structural strength, insulation, durability, and compatibility with standard electrical equipment.

The French precast market: an evolving environment

France currently represents one of the most dynamic markets in Western Europe in terms of electricity grid modernization and energy transition. The growing demand for infrastructure associated with renewable energy, rural electrification, and new construction regulations have driven the adoption of precast solutions that guarantee rapid execution, technical traceability, and structural strength.

In this context, the use of prefabricated transformer substations has become an increasingly valued alternative for electricity distribution companies, construction companies, and energy project developers. The ability to manufacture in-house, under controlled conditions, and deliver ready-to-install solutions reduces construction times, logistics costs, and operational risks in the field.

Final result

Therefore, this project not only responds to a specific need of the client, Duhalde Industries, but also aligns with the structural trends of the French market: industrialization of the sector, automation of the construction process, and a focus on sustainable and adaptable solutions.

Conclusion

The project developed with Duhalde Industries not only represents a high-level technical solution, but also an example of business collaboration focused on efficiency and technological innovation in the field of construction industrialization. Moldtech once again demonstrates its ability to integrate engineering, production, and customer support into a comprehensive offering aligned with the challenges of modern precasting.

With this new facility in France, Moldtech consolidates its expansion into the European market and reaffirms its commitment to developing precast technologies tailored to each client, each application, and each production environment. ■

FURTHER INFORMATION

Moldtech
EQUIPMENT FOR PRECAST CONCRETE PLANTS

Moldtech S.L. C.
Polysol Uno 40, P.I. Piedra Hincada
41500 Alcalá de Guadaira (Sevilla), Spain
T +34 955 444190
info@moldtechsl.es
www.moldtechsl.es

mbk Maschinenbau GmbH, 88353 Kisslegg, Germany

Flexible automation for the manufacture of reinforcement elements

الأتمتة المرنة في تصنيع عناصر التسليح

Industrial robots have been established for years as a proven solution for the automation of welding processes. They offer high speed and precision, resulting in improved welding quality. Another advantage of industrial robots is their ability to handle heavy and unwieldy parts. However, these robots require high investment costs and extensive programming skills. They are therefore often too complex for the production of small batch sizes, for use in small and medium-sized companies or for special applications such as the welding of reinforcements.

رُسخت الروبوتات الصناعية منذ سنوات كحل موثوق لأتمتة عمليات اللحام، إذ توفر سرعة عالية ودقة متناهية تؤدي إلى تحسين جودة اللحام. ومن المزايا الأخرى لهذه الروبوتات الصناعية قدرتها على التعامل مع الأجزاء الثقيلة والتي تصعب مناولتها. ومع ذلك، تتطلب هذه الروبوتات استثمارات مالية كبيرة بالإضافة إلى مهارات برمجة متقدمة، ولهذا السبب غالبًا ما تكون معقدةً لدرجة لا تتناسب مع إنتاج الكميات الصغيرة، أو للاستخدام في الشركات الصغيرة والمتوسطة، أو حتى للتطبيقات الخاصة مثل لحام عناصر التسليح.

In comparison, welding cobots are much easier to programme. Their low investment costs enable rapid amortisation, which makes them particularly attractive for smaller manufacturing companies. However, one disadvantage of standard welding cobots compared to industrial robots is often their limited radius of action and working area. With the new mbk welding cobot, however, this disadvantage is a thing of the past.

DSM-L (Line)

The DSM-L (Line) model was specially developed for the manufacture of long reinforcement elements and is suitable for a wide target group - from small steel companies to precast concrete plants. "The DSM-L can process components up to eight metres in length, which was previously only possible with industrial robots. We thus offer a unique solution on the market," says Mario Pfender, Managing Director of mbk. The cobot travels on an eight metre long linear axis and thus covers the entire working area. In addition to the robot, the welding power source, the wire supply, the welding fume extraction system and the torch cleaning station also move. The integrated 3D welding table has an impressive size of 8400 x 1395 mm.

Very high safety at full performance

Safety is the top priority at mbk. Protective welding walls around the welding cell protect the operator from electric arcs and eye damage. Laser scanners monitor the working area and ensure that the cobot stops immediately if an operator gets too close to the working area. These safety precautions make it possible to achieve the maximum movement speeds of an industrial robot without jeopardising safety.

mbk welding cobot DSM-L

Welding torch of the mbk Cobot DSM-L

mbk Cobot DSM-H

mbk Cobot DSM-T

Simple operation and flexible programming

The mbk Cobot impresses with its user-friendly interface. The software was specially developed and optimised for the cobot and the welding process. The multifunctional handle serves as an interface between the robot and the operator. Teaching involves manually moving the welding torch to the desired welding spots. Start, end and intermediate points are saved at the touch of a button. Whether you are an experienced programmer or a beginner – professional welding programmes can be created in just a few minutes. The entire process can be simulated before the actual welding so that the operator can make adjustments if necessary.

Efficient work in alternating operation

Another highlight of the mbk Cobot DSM-L is its special design, which enables efficient work in alternating operation. The workspace can be divided into two areas by a partition wall. This arrangement creates space for two working areas, so that the operator can set up or clamp workpieces on one area while the cobot is already welding on the other. This significantly increases productivity.

Welding is a demanding, physically strenuous activity that requires a high level of concentration. The cobot relieves employees of tiring routine tasks and reduces physical strain at the same time. An optional single-axis manipulator with counter bearing enables the precise positioning of workpieces weighing up to 2,000 kg in the optimum welding position, eliminating the need for laborious reclamping. The manipulator and robot axes work simultaneously, resulting in greater efficiency and speed during welding. The result is precise spot welds of consistently high quality.

Other models and versions

In addition to the DSM-L, there are also the DSM-H (House) and DSM-T (Table) models, which are each tailored to smaller component dimensions and their specific requirements and applications.

mbk – Partner for innovative manufacturing solutions

With the new mbk Cobot DSM-L and other advanced technologies, mbk is setting new standards in automated production. The company stands for quality, innovation and customised solutions that sustainably increase productivity and efficiency in the manufacturing industry. mbk is not only aimed at small and medium-sized companies, but also offers user-friendly automation solutions to large companies. ■

FURTHER INFORMATION

mbk STRONG CONNECTIONS

mbk Maschinenbau GmbH
Friedrich-List-Straße 19
88353 Kisslegg, Germany
T +49 7563 91310
info@mbk-kisslegg.de
www.mbk-kisslegg.de

Elematic Oyj, 37800 Akaa, Finland

Solving precast challenges with preventive and proactive services

مجابهة تحديات الخرسانة مسبقة الصب بالخدمات الوقائية والاستباقية

Unexpected breakdowns, production delays, workforce shortage, and inefficiencies in the production process degrade productivity, while aging equipment leads to higher maintenance costs and reduced output and quality. Elematic offers services for its precast customers around the world to maintain their equipment, ensure uptime, and to constantly improve productivity.

تؤدي الأعطال غير المتوقعة وتأخير الإنتاج ونقص القوى العاملة وانعدام كفاءة عملية الإنتاج إلى تراجع الإنتاجية، بينما يؤدي تقادم المعدات إلى ارتفاع تكاليف الصيانة وخفض الإنتاج والجودة. تقدم "إليماتيك" خدماتها لعملاء الخرسانة مسبقة الصب حول العالم لصيانة معداتهم وضمان استمرارية العمل وتحسين الإنتاجية باستمرار.

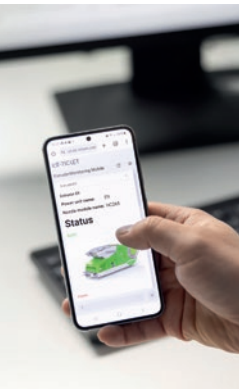
Typical production challenges faced by precasters

The global precast construction market is constantly growing due to precast's unparalleled durability, structural strength, fire resistance, thermal mass, and usability in all climates. Precast elements are produced in precast plants; however, running one effectively is no simple task. Highly controlled production process with advanced technology, precision and skilled workforce is needed to produce every single wall panel, floor slab, staircase etc.

Through discussions with precasters Elematic noticed a re-curring pattern in the challenges faced by precasters. These typical challenges were mentioned:

- Downtime: Machinery downtime causes costly losses in production.
- Productivity: Limited automation and expertise slow down improvements.
- Workforce & competence: High staff turnover affects productivity and safety.
- Maintenance costs: Aging equipment increases expenses and lowers quality.
- Curing time: Green concrete requires longer curing or expensive additives.
- Quality: Achieving the right concrete mix and process conditions is crucial.
- Traceability: Meeting quality and sustainability requirements requires better material tracking.
- Visibility: Poor planning and monitoring lead to inefficiencies and material loss.

All the challenges above cause significant revue losses. For example, you could loose 16,200 € in revenue every day if one extruder is not operational while still incurring operational costs. Also, incurred extra cost of one millimeter extra concrete layer due to suboptimal machine settings can add up to 41,400 €/year.



Elematic plant control

Training programs – have the right competence always on site

At every precast plant more than one person should know how to safely operate the machines, how to use their operating systems and how to maintain them. For example, how to charge batteries, check sensors to avoid tripping, clean photocell sensors and mirrors, wash the equipment, and maintain extruder nozzle and saw vacuum units, and modifier and plotter inkjet systems.

When there are changes in staff there are changes in know-how. A lot of information leaves the plant, and training is needed for the new mechanics or people responsible for maintenance.

To solve the challenge, Elematic offers three types of training services: digital training library, e-learning program and in-depth training programs to make sure that the right competence is always available for the precast plant.

- Digital training library: 38 videos on operations and maintenance of multiple machines for fast onboarding and refreshing knowledge.
- E-learning program: Program for strengthening and tracking competence development and ensuring competence on the production floor, with Elematic's approval of training competence.
- Training programs: Ensuring in-depth practical knowledge through classroom and hands-on training.

Elematic training packages focus on the best practices and safe procedures to operate and maintain the machines. They are always tailored to the needs of specific precast plants and their production. Operator training is an investment in the precast plant and its efficiency.

Saving money through proactive maintenance

There are two options for tackling precast production challenges: contacting Elematic when unforeseeable factory downtime occurs and the service agreement. Through the first production challenges are solved as they arise. On the contrary, service agreement is a cost-efficient partnership that results in the highest uptime and productivity, achieved through proactive support and quick responses. Here the focus is on preventive maintenance and production improvement before any challenges arise – and if challenges still occur, Elematic tries to solve them as soon as possible.

The service agreement, designed to meet the needs and challenges of precasters, is the most efficient way to utilize Elematic's global expertise for:

- Reducing downtime by minimizing unplanned service needs.
- Cost savings by preventing costly emergency repairs and extending machine lifespan.
- Expert support through highly skilled experts enabling preventive maintenance and technical support.
- Increased equipment efficiency resulting in higher output and lover energy consumption.

Increase productivity and minimize downtime with new digital services

Elematic's digital services offer visibility, uptime, productivity – and everything what is needed for comprehensive maintenance management and planning. Through the system the client can access the machine and production data anytime and anywhere, plan maintenance, manage costs, and secure a high level of uptime.

Depending on the needs, Elematic can manage single machines or connect all the equipment, regardless of the provider, to its maintenance management software, which includes fleet and maintenance management. This is what the service agreement customers say: "Elematic experts are always there when we need them and do their best to help us. We always look forward to the time some of the service engineers come on a visit. They have a lot of knowledge, and they are very forthcoming. Until now, all the people I have been in contact with have always been in a good mood. They are eager to help in any way they can. So, keep up the good work, and I hope we can work together for many years!" "Elematic prioritizes us, which makes a difference in keeping our production running smoothly. And we appreciate the consistency of your follow-ups and quick responses when needed. Elematic always finds someone who can give you a proper answer. For us, it is important that the service engineer has hands-on experience with what they do and also a strong knowledge of how the machines work." With Elematic service agreement, the client gain a trusted partner committed to improving the operations and delivering expert support throughout the entire life cycle of the precast plant. ■

FURTHER INFORMATION

Elematic Oyj
Airolantie 2
37800 Akaa, Finland
T +358 3 549511
www.elematic.com

Ratec GmbH, 68766 Hockenheim, Germany

Flexible transformer substation moulds in demand in Europe

قوالب محطات فرعية مرنة تشهد طلبًا في ألمانيا والمجر

Ratec is an innovator and specialist in the field of magnetic formwork. In the last 15 years, however, the company has also attracted increasing attention with its innovative 3D mould solutions. Since 2018, Ratec has already installed over 20 adjustable substation moulds, three variable moulds for cable basements and over 20 roof moulds – both horizontal and vertical – for the production of transformer substations. With the extensive experience gained from past projects, Ratec has significantly expanded its expertise in this field and at the same time expanded its team in design, production and assembly.

Ratec من الشركات المبتكرة والمتخصصة في مجال القوالب المغناطيسية، إلا أنها لفتت مزيد من الانتباه خلال السنوات الخمس عشرة الماضية بفضل قوالبها المبتكرة لوحدات الغرف. ركّبت Ratec منذ عام 2018 أكثر من 20 قالباً قابلاً للتعديل للمحطات الفرعية، وثلاثة قوالب متغيرة لأقبية الكابلات، وأكثر من 20 قالباً أفقيًا وعموديًا للأسقف لإنتاج المحطات الفرعية. بفضل الخبرة الواسعة التي اكتسبتها من المشاريع السابقة، وسّعت Ratec من نطاق تخصصها بشكل ملحوظ في هذا المجال وكذلك من حجم فريقها في التصميم والإنتاج والتجميع.

Transformer substations are subject to strict technical requirements in terms of safety and installation. In combination with the customer's desire for a wide range of variants and flexibility, this results in complex requirements for the mould. Ratec meets these challenges with modular and adaptable formwork solutions that enable efficient utilisation of production areas.

The focus is always on customer needs: Right from the planning phase, Ratec works closely with customers to optimise the implementation of specific requirements and production targets. Moulds are designed to facilitate workflows, relieve the burden on plant personnel and ensure a consistently high quality of elements. The robust design and high-quality workmanship ensure that the formwork has a long service life.
A look at the latest projects makes it clear why formwork solutions from Ratec are so popular with manufacturers worldwide.

Europe: new production plant equipped

In 2024, several moulds were installed for a new plant in Southeastern Europe, including modular moulds for substations, roof moulds and a mould for cable basements.

Modular mould for substations

- Mould 1: fixed width of 1.30 m, length of 2.00 m or 3.00 m
- Mould 2: fixed length of 3.00 m, width of 2.00 m or 2.45 m
- Mould 3: length adjustable in 20 cm increments from 3.00 to 8.00 m, width 2.50 m, height 2.60 m
- Mould 4: length adjustable in 20 cm increments from 3.00 to 8.00 m, width 2,920 mm, height 2,600 mm or 3,000 mm

Variable basement mould

The length of the mould can be adjusted in 20 cm increments from 2.95 m to 7.95 m, with two widths of 2.45 m and 2.87 m, similar to the elements from moulds 3 and 4, and a fixed height of 0.90 m. It consists of a fixed and a movable base end core and various core segments in lengths of 100, 200, 300, 400 and 800 mm, which can be flexibly combined to cover the various lengths. Widening segments are also available for the second width. The core segments are moved hydraulically on a base frame. The outer panels can be raised and lowered hydraulically for moulding and demoulding.

Over 1,000 different variants can be produced

Moulds 3 and 4 as well as the basement mould thus each cover 26 lengths, the basement mould an additional two widths. Mould 4 can also produce two different element heights. For the moulding of interior walls, the requirement was that there should be eight possible variants for interior walls, six of them in a fixed position and two that can be freely positioned along the length in a 10 cm grid. This required a very compact and well thought-out design solution.

Various recesses are also available for doors, which can also be freely varied and positioned. For moulds 3 and 4, this results in more than 1,000 different variants of concrete bodies that can be produced in one mould. The basement mould is also customised according to the elements produced.

View of the factory, here with 2 modular moulds, a vertical roof mould and variable basement mould (right)

Vertical roof mould

The dimensions of the roof moulds were planned to match the room module moulds:

- 1 roof mould for 2 lengths (3.20 m or 2.10 m) with a fixed height (1.60 m)
- 1 roof mould for 2 heights (2,55 m or 2,10 m) with a fixed length (3,20 m)
- 2 roof moulds with adjustable length in 20 cm increments from 3.20 to 8.40 m - corresponding to the different variants of the room modules moulds 3 and 4

The roofs were to be produced vertically in a space-saving manner, so the knowledge gained from the development of battery moulds had to be incorporated in the design. They were designed as battery moulds with one pocket each, consisting of a fixed panel for the top of the roof and a sliding panel for the underside of the roof.

A floor formwork, a magnetic side formwork and a swivelling side formwork form the boundary of the formwork surface. For the different element sizes (roof lengths), formwork kits are available in different versions (corresponding to the element length). A screw-on side support serves as a fixed point. A magnetic side formwork is placed on the other side according to the length of the element.

Supplementary equipment

The moulds are supplemented by other equipment, including a 180° turning station with a capacity of 30 tonnes, suitable for all elements and basements, hydraulic tilting tables and high-frequency vibrators for concrete compaction for all moulds.

Adjustable mould for elements from 3.00 to 8.00 m in length

Finished room module (left) and roof (right)

Germany: adjustable mould with fire protection extension

For some elements, there are increased requirements in terms of wall thickness for fire protection reasons. A solution was also developed for this case to extend the length and width by 26 mm on each side. To do this, a few steps are carried out on the floor formwork, the panels, the door recesses and, if necessary, the add-on formwork, and the wall thicknesses are increased with just a few components.

Germany: horizontal roof mould

In the case of roof moulds for horizontal production, the mould has hinged profile extensions to form a circumferential recess, which can be opened or closed using a tilting joint. The recess in the element is later used to connect to the room module for the station.

The circumferential swivel arms replace the otherwise required frame traverse, which has to be inserted and lifted out by crane. As a result, the mould significantly reduces crane times and the effort required for moulding and demoulding.

The roof mould is equipped with vibrators and feet with vibration isolators as standard. Dimensions and other accessories are customised.

Accessories

Ratec also supplied accessories such as storage racks for the vertical storage of concrete roofs and wall elements. These

Example of horizontal roof mould

Storage rack for roof and wall elements

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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 door recess shrinks automatically during demoulding

space-saving solutions ensure the safe storage of large concrete elements. The storage racks are planned and configured as required in terms of the number of storage locations and the necessary load capacity according to the dimensions and weight of the elements.

Intelligent formwork extensions using magnet technology

As a specialist in the field of magnetic formwork, Ratec has numerous formwork extensions for recesses in its programme. With frequently changing recess sizes, manual placement and removal of the recesses is often necessary. However, with only a few constant sizes, it is worth investing in more intelligent solutions that are easier and faster to handle. One of these solutions is a door recess with movable side beams that are automatically pulled upwards when the concrete element is lifted, folding inwards and thus shrinking. The formwork can therefore remain attached to the inner core and is ready for the next casting process in two quick steps.

The projects presented provide an insight into the variety of production solutions for transformer substations developed by Ratec. The starting point is always the catalogue of elements that a customer wants to produce. On this basis, the mould and its variation options are developed in such a way that they are space-saving, easy to use and save resources. The focus is always on comprehensive advice for efficient production processes.

Prospects: adjustable 3D moulds with shrink core

Several projects for 3D moulds are currently under development, including an elevator shaft mould with a shrink core that is variable in length and width from 110 to 2,750 mm. A similar flexible solution with a shrink core is currently being developed in Asia, where a mould for so-called household shelters is being created. Like elevator shafts, these household shelters are also 4-sided concrete elements that are installed in residential buildings in Singapore in accordance with the usual building standards there. This type of room module is characterised by a higher weight, due to the greater wall thicknesses of between 250 - 300 mm, as well as complex connection details for anchoring in the buildings.

Conclusions

Ratec moulds and formwork systems can set standards in precast concrete element production - especially for demanding projects such as transformer substations. Precision, efficiency, sustainability and flexibility make these systems a very suitable solution for manufacturers who prioritise quality and cost-effectiveness. ■

FURTHER INFORMATION

RATEC
MEET THE BETTER IDEAS

Ratec GmbH
Karlsruher Str. 32
68766 Hockenheim, Germany
T +49 6205 940729
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Gulf Precast: Redefining efficiency with machine automation in the UAE

الخليج للخرسانة الجاهزة: إعادة رسم ملامح الكفاءة باستخدام أتمتة الآلات في الإمارات العربية المتحدة

Gulf Precast is revolutionizing the construction industry in the UAE with cutting-edge automation and advanced technology. Through its partnership with Progress Group, the company has enhanced efficiency, and elevated quality standards of their mesh production with a brand-new M-System BlueMesh® mesh welding plant.

تُحدث شركة الخليج للخرسانة الجاهزة طفرةً في قطاع البناء في الإمارات بفضل استعانتها بالأتمتة والتقنيات المتقدمة، كما عززت من خلال شراكتها مع مجموعة Progress Group كفاءتها في إنتاج الشبكات ورفعت معايير جودته، وذلك بفضل مصنع لحام الشبكات الجديد كليًا من طراز M-System BlueMesh®.

Founded in 1984, Gulf Precast has grown to become one of the UAE's leading precast concrete manufacturers, playing a pivotal role in shaping the region's skyline. With landmark projects such as the Dubai Mall and Abu Dhabi Airport under its belt, Gulf Precast has evolved from a single plant to a big market name with multiple facilities. Today, the company operates three precast plants in Abu Dhabi and two facilities in Dubai, including one dedicated to hollow-core slab production.

"Gulf Precast is one of the first precaster in the region," explained Valentijn Blonk, General Manager of Gulf Precast. "We have significantly expanded our capacity to meet growing market demands and have invested heavily in innovation and automation."

The role of automation in meeting market demands

The construction sector in the UAE has rebounded strongly after 2020, with a surge in demand for villa construction, schools, and infrastructure. Gulf Precast has risen to the occasion, producing over 1,000 cubic meters of precast concrete daily - enough to build and erect eight villas per day.

Automation has been central to this success. By streamlining production and reducing reliance on skilled labor, Gulf Precast ensures it remains competitive in a rapidly evolving market. "We always look for ways to improve productivity, quality, and reliability," Blonk noted. "Automation has become the future of the industry. The newest machinery we bought from Progress Group is enabling us to maintain high standards while addressing labor shortages."

Progress Group's technology

A key driver of Gulf Precast's success is its partnership with Progress Group. The introduction of a M-System BlueMesh® mesh welding plant has revolutionized production processes. This highly automated machine is working from coil and inte-

Valentijn Blonk, General Manager of Gulf Precast: "Our expanded capacity is driven by automation."

Walid Aoun, Senior Factories Manager: "With the automation in place we can plan and produce much more efficiently ."

The M-System BlueMesh® revolutionizes Gulf Precast's mesh production with enhanced precision.

Automated mesh welding reduces waste while boosting speed and quality of the products.

grates panel openings automatically according to plan. Furthermore, it reduces waste and significantly enhances quality and speed.

"The mesh welding plant from Progress Group has been a game-changer for us," said Blonk. "It's not just about reducing labor hours; it's also about minimizing material waste, increasing accuracy, and delivering a superior product. Even in the UAE, where labor costs are relatively low, the savings are substantial across the board."

Factory Manager Walid Aoun elaborated on the benefits: "With the automation in place, we can plan and produce much more efficiently. Daily production requirements are communicated directly from our engineering department to the mesh welding plant, which executes them flawlessly."

Efficiency and flexibility

One of the standout features of the mesh welding plant is its flexibility. The system is capable of customizing products to meet specific client requirements. This versatility has proven invaluable for Gulf Precast's diverse portfolio of projects, ranging from villas to infrastructure.

Flexible and precise: The new mesh welding plant adapts to customized requirements with ease.

"When selecting this machine, we prioritized flexibility alongside productivity," Blonk explained. "Progress Group's solution met all our criteria, ensuring we can adapt to a wide range of project demands while maintaining high output levels."

Transforming operations with support and collaboration

Gulf Precast's longstanding relationship with Progress Group began in 2006 with the implementation of an MSR straightening and cutting machine, which is still operational today. The recent addition of the mesh welding plant represents the culmination of this partnership.

"The installation process was seamless, thanks to Progress Group's professional team," said Aoun. "Their service and support have been exceptional, ensuring we get the most out of the technology. Any technical issues were addressed immediately, which made the transition incredibly smooth."


Video about the report

On the Pre-Storage Area and Storage Yard the produced wall panels are temporarily stored.

Villa Nova La Rosa, a project completed with precast wall panels.

The training provided by Progress Group was thorough, enabling the staff to fully understand and operate the machinery. This has not only improved productivity but also made the workplace safer and more efficient.

A future built on innovation

The broader benefits of automation are hereby not only referring to cost savings. Automation allows the company to deliver consistent quality, improve reliability, and create sustainable processes. Looking ahead, Gulf Precast remains committed to leveraging advanced technology to meet the UAE's growing construction demands. ■

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شركة الخليج للقوالب الخرسانية الجاهزة ذ.م.م.
GULF PRECAST CONCRETE CO. L.L.C.

Gulf Precast Concrete Company LLC
Head Office, ICAD-1, Musaffah Industrial,
Musaffah, Abu Dhabi, UAE
T +971 2 5502044
www.gulfprecast.ae

PROGRESS GROUP

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

Eurobend GmbH, D-90547 Nuremberg-Stein, Germany

Innovation in rotor straightening technology: The new maintenance-free 5G rotors

الابتكار في تقنية تقويم الدوارات: الدوارات الجديدة من الجيل الخامس التي لا تحتاج إلى صيانة

As the inventor of the hyperbolic roller rotor, Eurobend GmbH sets a new milestone with the new, maintenance-free fifth generation straightening rotor.

أطلقت شركة Eurobend GmbH، باعتبارها مخترعة الدوار ذي الأسطوانات الهذلولية، مرحلةً جديدةً بطرحها دوار التقويم الجديد من الجيل الخامس الذي لا يحتاج إلى صيانة.

The heart of the rotor straightening machines of Eurobend GmbH are the latest 5G rotors. They ensure excellent straightening quality, with a straightening accuracy of better than 1/1000. Even with highly ductile material, such as ductility class "C" reinforcing steel with diameters up to 25 mm, the material properties are unaffected (preserved) and the reinforcing steel ribs are protected. The patented, fully automatic rotor maintenance system minimizes operator intervention:

- Minimize of machine downtime, as maintenance and readjustments of the long-life hyperbolic straightening rollers, compared to conventional systems with straightening dies, are not required.
- The Eurobend straightening machines consume over 40% less energy than similar machines using rotors with straightening dies.
- Perfect straightening even of high tensile concrete steels.
- The different rotor sizes and types cover diameters up to Ø25 mm and a wide range of wire qualities.
- The simplicity of the design allows the construction of multi-line machines according to the productivity requirements and the diameter ranges to be processed.
- Waste reduction by exploiting the last length of each coil thanks to the last piece extraction system.
- Production data is processed using common industry formats such as Unitechnik, BVBS, etc. Software updates and rapid remote diagnostics can be performed via the Internet.

MELC Flexiline machine with order sorting pocket system

MELC Polyline with three rotors up to 25mm and coil opener robot

MELC Polyline with four rotors and automatic bundling and tying station

By combining (with) a number of other innovations, machines are offered to meet any customer-specific production requirement:

MELC Monoline Series – Single Rotor Straighteners

A range of machine versions processing rebar diameters up to 25mm. Special models are available processing up to 50mm stainless steel reinforcing steel with tensile strengths up to 1800 N/mm².For processing large diameter and high tensile rebar, special robotic systems are offered for opening the coils and feeding the rebar into the machine.

MELC Polyline series – Multi-rotor straightening machines

These are machines with high production output. Each rotor or line can be operated independently of the others, allowing processing of the same or different diameters and cutting of the same or different lengths. Straightening rotors of different sizes for material up to 26 mm can be combined to form a multi-line machine with automatic feeding and discharging system.

MELC Polyline NS series – Multi-line straighteners for non-stop operation

The fully automatic MELC Polyline NS series multi-line rotor machine versions are designed for non-stop operation (are designed) to process coiled material up to 25 mm diameter without any operator intervention.

This version of the MELC Polyline series has the following newly developed features:

- Fully automatic loading and unloading of coils using an automatic overhead crane system, fully synchronized

Coil opener robot system

MELC Polyline NS - Automatic coil loading with robotic crane system

with machine operation and programmed through the main computer and control panel of the machine.

- Double de-coiling stations on each line for uninterrupted operation (non-stop system). As soon as one coil is finished, after the last coil is automatically fed out, the next coil is immediately processed.
- Coil feeding is performed without any operator intervention; as the coils are opened by robot and the rebar is pre-straightened by powered pre-straightening systems and fed into the machine.
- The remains of each coil are automatically discharged into a separate collection bin avoiding mixing with the produced parts.
- The produced bars are automatically conveyed to a buffer and storage area via an automatic bundle module with bundle transportation system.

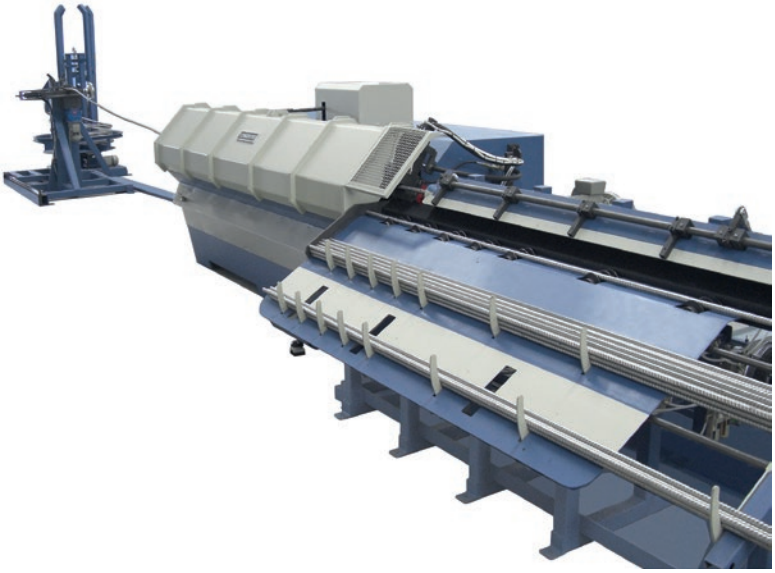
Flexiline and Syntheton series – straighteners with multiple rotors and double bending system

Operations in a modern production environment must be able to process incoming orders quickly and reliably. Machines with up to six rotors are available. Each rotor is dedicated to one diameter. No downtime for readjusting the rollers, as with systems using straightening dies.

Diameter changes occur in about 3 seconds thanks to the Eurobend Flexiline convergence system without moving mechanical parts (patent). The diameter change is done simply by changing the direction of rotation of the rotor and not by the time consuming up and down movements of the sliding table of the rotors until the desired diameter is aligned with the production line, as it happens with the machines available on the market. For the large diameters, automatic coil opening and feeding robots are used. The Flexiline concept can be combined with a unique double bending system – the Syntheton series. This is a sophisticated processing centre for reinforcing steel from coil. In order to be able to perform many and, above all, fast diameter changes, it makes sense to rely on a reliable and maintenance-free system for diameter changes which does not require any moving mechanical parts. This enables extremely fast diameter changes in 3 seconds and avoids the use of components that are susceptible to wear.

The models of the Syntheton series cover the diameter range from 6 - 25mm and can be configured with three up to six straightening rotors. Each rotor is dedicated and factory set to one diameter. To further optimize the production flow, the Syntheton features a patented system to quickly resume work

Syntheton machine up to 25mm with order sorting system



MELC Monoline machine up to 25mm

when the coil to be processed is changed, without having to use time-consuming butt-welding units. To do this, the last coil piece is driven out to the front in the direction of production and the new rebar is inserted into the rotor with the driven fixture and wire guide units, without having to readjust the rollers of the rotor.

Time is also saved when changing the bending radius, as this takes place automatically without delay. All bending radii are located on a retractable bending tool attached on the bending modules. The bending modules do not have to travel to the changeover station, as this is the case with the widely used systems, with a great loss of time.

Due to the sophisticated and compact design, all components of the Syntheton are easily accessible and require minor maintenance. ■

FURTHER INFORMATION

EUROBEND

Eurobend GmbH
Alexanderstr. 1
90547 Nürnberg-Stein, Germany
info@eurobend.com
www.eurobend.com

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

An International Benchmark in Precast Concrete Solutions

معيار عالمي في حلول الخرسانة مسبقة الصب

With over 3,000 clients worldwide, Bianchi Precast Group, led by Bianchi Casseforme SRL (a company established in 1964), stands out as a global reference in the precast concrete industry. Headquartered in Fornovo di Taro – Parma, Italy, the Group operates on five continents thanks to branches in France, Spain, Brazil, India, and Russia, supported by a dynamic commercial network and more than 100 skilled professionals.

مجموعة Bianchi Precast Group، بقيادة شركة Bianchi Casseforme SRL (التي تأسست عام 1964)، لديها أكثر من 3000 عميل حول العالم وترسم المعايير العالمية في صناعة الخرسانة مسبقة الصب. يقع مقر المجموعة الرئيسي في فورنوفو دي تارو في بارما بإيطاليا، وتمتد عملياتها عبر خمس قارات بفضل فروعها في فرنسا وإسبانيا والبرازيل والهند وروسيا، كما تدعمها شبكة تجارية ديناميكية وأكثر من 100 خبير ماهر.

Backed by over half a century of expertise in construction and precast technologies, Bianchi Precast Group continues to expand into new markets, driven by continuous research and the development of advanced, tailor-made solutions. This approach has enabled the Group to serve more than 3,000 clients in 88 countries, always keeping customer satisfaction and technological excellence at the forefront.
By integrating the production of formwork with cutting-edge automated machinery, Bianchi Casseforme delivers flexible and innovative solutions that help customers optimize their processes and improve product quality – all proudly made in Italy.

Technology & Innovation

Speedy: The Next Generation of Concrete Distribution

Among the Group's flagship technologies, Speedy redefines automated concrete distribution. As a fully integrated Industry 4.0 solution, Speedy enhances production efficiency and precision through advanced connectivity and real-time monitoring.

Key features include:

- Remote supervision and control
  Total monitoring of production phases, including operator cabin status and alarms, from anywhere, via integration with the MDR (Modular Distribution Remote) module.

- Geolocation and diagnostics
  Continuous tracking of the machine's position and operating conditions, enabling immediate intervention when needed.

- Safety and visibility
  Cameras and in-cab monitors provide a complete 360° view around the machine, eliminating blind spots and enhancing worker safety.

Among the Group's flagship technologies, Speedy redefines automated concrete distribution

Prestressing equipment

Stressing pump units

- Environmental responsibility
  The fully electric version of Speedy offers zero-emission operation, making it ideal for enclosed environments and aligning perfectly with modern sustainability goals.

With the ability to transport up to 4 cubic meters of concrete and cast at heights up to 3,500 mm, Speedy combines performance with versatility. Its distribution arm, which rotates 360° on a reduction gear-driven fifth wheel, ensures precise placement, while ergonomic design guarantees comfort and efficiency for the operator.

Hydraulic Equipment for Prestressing

Bianchi Casseforme also offers a complete range of hydraulic equipment designed to support prestressing processes in production lines:

- Hydraulic Pump Units for Strand Tensioning
  Available in multiple configurations – 2-way for a single jack, 4-way for dual jacks, and advanced DIGITAL models with electronic control, programmable pressure levels, PC connectivity, and optional roll printers for detailed reporting.

- Relaxation Pump Units
  High-pressure hydraulic systems (up to 350 bar) equipped with manual controls, alarms, and monitoring panels, ensuring safe and controlled relaxation of strands during production.

- Strand Pusher Machines
  Facilitate and accelerate strand insertion along production lines, featuring adjustable speeds, remote-controlled operation, cutting systems for fast and precise trimming, and advanced safety devices.

- Barrels, Wedges, Joiners, and Sheaths

- Produced in high-quality steel and subjected to heat treatments to ensure longevity and repeated use. Options include open barrels for easy inspection and maintenance, automatic barrels for quicker setup, and joiners for recovering long strand remnants efficiently.

Commitment to Excellence

From highly automated machinery to precision-engineered formwork and accessories, Bianchi Precast Group continues to shape the future of precast concrete. Every product reflects a dedication to quality, customization, and technological progress – offering customers reliable, efficient, and sustainable solutions that meet the evolving demands of the global construction industry.

For over 60 years, Bianchi has been more than a manufacturer: it has been a trusted partner, helping clients turn complex ideas into concrete reality. ■

FURTHER INFORMATION

BIANCHI PRECAST GROUP

BIANCHI BIANCHI 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

Joiner

Barrels & wedges

Construx Weckenmann, 8531 Hulste, Belgium

Innovative dual-production precast plant in Portugal

مصنع مبتكر للإنتاج المزدوج للخرسانة مسبقة الصب في البرتغال

With the increasing demand for efficient, sustainable construction methods in Portugal, Construx Weckenmann has supplied Krear with a state-of-the-art precast plant to set a new benchmark in industrialized construction. The innovative precast plant, located in Estarreja, features a dual-production system and will begin operations in early 2025, offering enhanced flexibility to meet the evolving needs of the market.

مع تزايد الطلب على أساليب البناء الفعالة والمستدامة في البرتغال، زودت شركة Construx Weckenmann شركة كراير بمصنعٍ متطورٍ للخرسانة مسبقة الصب لتُرسي معيارًا جديدًا في قطاع البناء الصناعي. يتميز هذا المصنع المبتكر في إستاريجا بنظام إنتاج مزدوج، وسيبدأ تشغيله مطلع عام 2025 ليوفر مزيدًا من المرونة لتلبية احتياجات السوق المتغيرة.

A benchmark in industrialized construction

Krear is driving innovation in Portugal's construction sector with one of the few precast plants in Europe to integrate both circulation and stationary production. At the heart of this unique setup is the central shifter, seamlessly connecting two production halls, allowing for maximum flexibility and efficiency. This state-of-the-art plant, stands as a benchmark for industrialized precast concrete production, tackling major industry challenges such as labor shortages, construction delays, and cost volatility.

A vision for the future of industrialized construction

The Krear joint venture was founded to transform the construction sector by introducing industrialized precast concrete production for residential and commercial projects. Formed as a collaboration between Secil and Casais, Krear brings together the strengths of two industry leaders.

Secil, a leading Portuguese group, is recognized for its expertise in the production and distribution of cement, concrete, aggregates, mortars, and hydraulic lime. With its roots in Portugal, Secil has strategically expanded its operations over the past two decades to establish a strong presence in eight countries across four continents.

Casais Group, one of the largest construction companies in Portugal, operates in 17 countries across four continents. Its expansive reach spans markets including Portugal, Angola, Germany, Saudi Arabia, the USA, and more.

Shuttering robot

Pallet cleaning/oiling device and Shuttering cleaning/oiling device

Tilting station

The collaboration of Secil's material expertise and Casais' extensive construction experience within the joint venture Krear represents a powerful partnership. Together, they aim to innovate industrialized construction solutions that address the evolving demand for efficiency, sustainability, and quality in the construction sector.

Tailored plant concept with cutting-edge technology

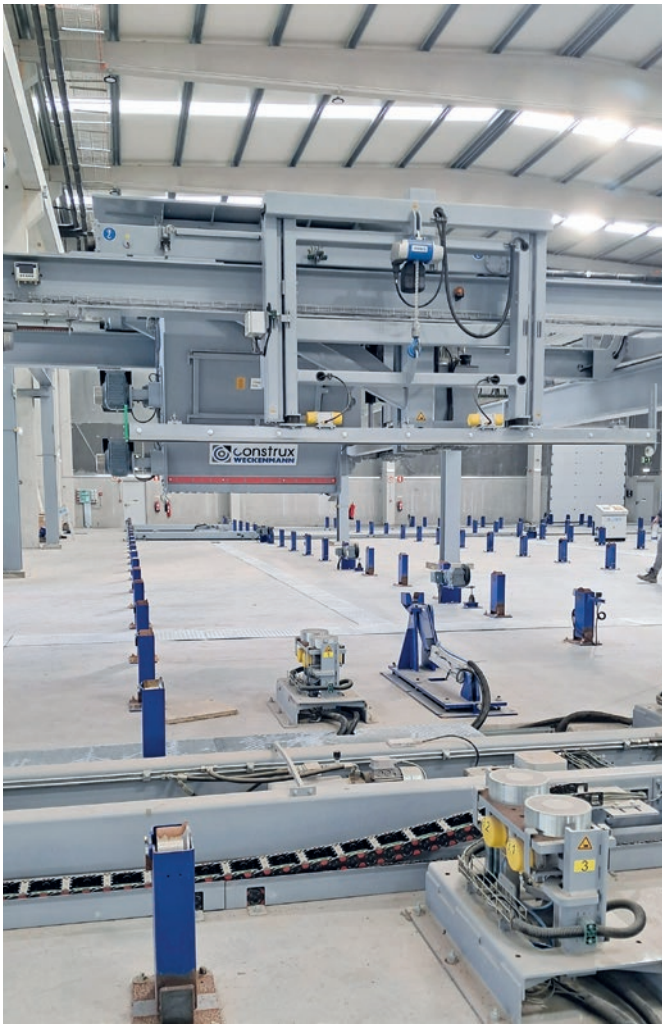
Construx Weckenmann's expertise in engineering and manufacturing was instrumental in bringing this project to life. The plant layout features a two-hall production setup, integrating a fast circulation system in Hall 1 for filigree slabs, double walls, solid walls, and sandwich walls, while Hall 2 offers a flexible workspace for complex elements such as beams, columns, staircases, Cree hybrid timber slabs, and special precast products.

The plant is equipped with advanced automation and transport systems, including a rack operator for pallet handling. A centralized curing chamber ensures optimal precast concrete quality and allows for future expansion. A central shifting system optimizes workflow between both halls.

To start off the production process, the pallets pass through a specialized cleaning and oiling system, ensuring they are perfectly prepared for the next production cycle. Similarly, the shuttering systems are maintained using a modular shuttering cleaner and oiler, preserving their quality and extending their lifespan.

In Hall 1, the shuttering robot automates the precise placement of molds, ensuring minimal errors in the shuttering process. Additionally, embedded parts and steel reinforcement are added at designated buffer stations, seamlessly integrating all necessary components into the process.

Central shifting system



Concrete spreader and MagVib compaction station

A centralized concreting station serves both halls, with a shared concrete spreader and an additional bucket for Hall 2. The high-performance concrete spreader is equipped with a spiked roller discharge, ensuring precise and even concrete distribution. Integrated within this station is the MagVib compaction system, utilizing high-frequency electromagnetic technology to achieve superior concrete consolidation. Furthermore, the production line includes a turning device specifically designed for double wall production. This station also incorporates a shaking station, optimizing the compaction process for different concrete formulations. Both stations utilize energy-efficient technology to deliver high compaction performance, with precise amplitude and frequency adjustments tailored to different concrete mixes. The total pallet circulation system features 26 production pallets with premium steel surfaces ensures superior exposed concrete finishes.

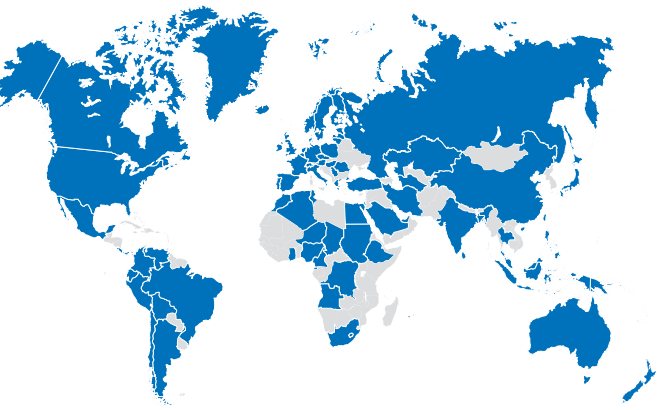
Collaborative expertise in planning & execution

The planning phase of the plant was guided by strong collaboration between key experts, with Construx Weckenmann playing a crucial role in translating production requirements into an efficient and highly automated workflow tailored to Krear's needs. Martin Dobler, Projektmanagement für Betonfertigteilbau, supported the process by contributing to the product definition, demand analysis, and initial plant layout concept. The close partnership between all parties resulted in a plant concept designed for long-term success and future scalability.

Production capacity

In an eight-hour shift, the facility can produce 750 square meters of precast elements, totaling 166,000 m² annually, supporting the efficient construction of large-scale residential and commercial buildings. With the newly established production capacity, Krear is poised to build up to 1,500 apartments annually, catering to a diverse range of projects, from multifamily and single-family housing to hotels, student accommodations, and public infrastructure. This capacity ensures that Krear can meet the evolving demands of the construction market effectively.

construx



WITH A PROVEN TRACK RECORD IN OVER 110 COUNTRIES, CONSTRUX SETS THE STANDARD AS THE GLOBAL ONE-STOP PARTNER FOR FULLY INTEGRATED PRECAST AND ON-SITE CONSTRUCTION SOLUTIONS. BRINGING TOGETHER ENGINEERING EXPERTISE, CUSTOM MANUFACTURING, AND PROJECT KNOW-HOW, ALL FROM ONE TRUSTED SOURCE.

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Shaping the Future of Concrete




Precast Moulds | Tunnel Segments Moulds | Machinery | Circulation Plants
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Let's talk! construx.eu

Shuttering robot with shuttering magazine

Shuttering pallet

Empowering Krear's mission with engineering excellence

Portugal's housing sector urgently requires innovative solutions to meet growing demand for faster, more efficient, and sustainable building methods. For this transformation to happen, the industry must adopt new technologies and shift its approach to construction.
By seamlessly integrating automation and a flexible production layout, Construx Weckenmann has provided Krear with the necessary tools to achieve its ambitious growth and sustainability targets. The factory's highly automated processes and precision-driven production methods will help Krear significantly cut construction timelines while maintaining top-tier quality and reducing environmental impact.

The official launch of Krear is scheduled for the first half of 2025, it will be another important milestone in the company's strategy. With a strong commitment to delivering advanced industrialized construction solutions, Krear continues to drive innovation in the sector. The engineering expertise of Construx Weckenmann has been instrumental in transforming this vision into reality, reinforcing the company's position as a leader in the industry. ■

FURTHER INFORMATION

KREAR – Construção Industrializada SA
Estarreja Business Park
3860-529 Estarreja, Portugal
T +351 915 189 890
www.krear.pt

Construx bvba
Hazebeekstraat 11
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T +32 56724793
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Modern precasting of pre-stressed concrete hollow core slabs

الصب المسبق الحديث للألواح الخرسانية المجوفة سابقة الإجهاد

Flowforming technique with plastic concrete mix designs – The application of pre-stressed concrete hollow core slabs in the industrialized construction was banalized to a certain extent until recent years, because they were repeatedly produced with the same concrete mix designs, cross sections and thicknesses. The progress in the development of the advanced pre-stressed concrete elements due to the availability of concrete admixtures, namely superplasticizers and water reducers, has led to a situation where the performances brought by the modern products compare to the legacy pre-stressed concrete elements like clay for ceramics to compacted beach sand. The plasticity of the concrete results in countless advantages in productivity, production costs, available market, lean construction and introducing mechanisms of additional shear at no extra cost.

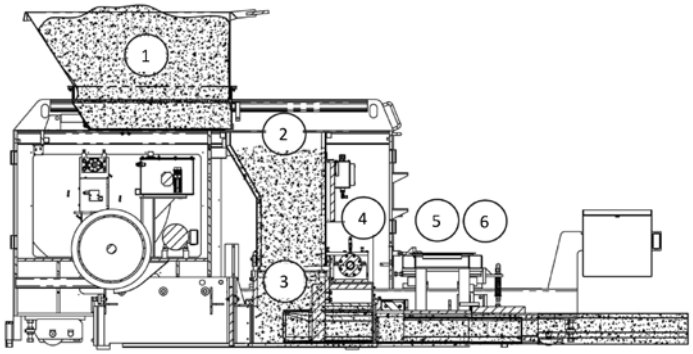
تقنية التشكيل بالتدفق مع تصاميم للخلطات الخرسانية اللدنة – لقد أصبح استخدام الألواح الخرسانية المجوفة سابقة الإجهاد في الإنشاءات الصناعية أمرًا تقليديًا إلى حدّ ما في السنوات الماضية، إذ كانت تُنتَج مرارًا وتكرارًا باستخدام تصاميم الخلطات الخرسانية والمقاطع العرضية ودرجات السمك نفسها. لكن التقدّم في تطوير عناصر الخرسانة سابقة الإجهاد المتقدمة، بفضل توفر الخلطات المضافة للخرسانة مثل المُلدّنات الفائقة ومختزلات الماء، قد أحدث نقلةً نوعيةً أبرزت أداء المنتجات الحديثة بوضوح عند مقارنتها بالمنتجات سابقة الإجهاد القديمة، أشبه بالمقارنة بين الطين الصلصالي ورمل الشاطئ المضغوط في صناعة السيراميك. توفر لدونة الخرسانة مزايا لا حصر لها، تشمل زيادة الإنتاجية، وخفض تكاليف الإنتاج، وتوسيع نطاق السوق المتاح، والنهوض بالبناء الرشيق، بالإضافة إلى إدخال آليات لتوفير مقاومة إضافية لقوى القص من دون أي تكلفة إضافية.

The production becomes simple, with a tiny maintenance required. The concrete is not stressed anymore by screws or rocketing mechanisms. Instead, it flows at a faster pace than when it was used in the legacy hollow core slabs production.

Instead of casting just hollow core slabs of fix thicknesses and strand patterns, the flowforming of plastic concrete features: Any thickness of slab, the production of fractional width slabs without waste, and the production of hollow core slabs, planks and linear elements in one single machine with just 5 minutes required for a mold change.

The above products may be produced with inserted stirrups, exposed wires at their ends, shear keyed at the top, or side indented.

Prensoland Tensyland flowformer EV-5



The flowformer principle of operation: Concrete is fed into the upper receiving hopper (1); it is then gradually moved forward to fall in a controlled manner and guided into an internal hopper (2) until it reaches the vibrating mold (3). Internal vibration, produced by rotating eccentric weights (4), is applied to the concrete until it reaches the finishing mold (5); in the final stage (6), marking can be applied to the surfaces of the pieces, or wire sections can be added by selecting the functions available on the operator's control panel.

SAVE THE DATE

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ICCX – International Concrete Conference & Exhibition – will take place already for the third time again in Almaty, Kazakhstan. Almaty is ideally situated in Central Asia, easily accessible for participants from Central Asia and exhibitors from around the globe.

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The side indenting of the slabs is of particular importance because in seismic zones they become mechanisms to store quantities of energy before they collapse in a ductile mode. Furthermore, in diaphragm action, their shear is not limited by the Eurocode at 0,15 Mpa, as it happens with extruded or slipformed half dry concrete parts.

In non-affected zones, when the loads are uniformly distributed, it is possible to make the floors using pre-stressed concrete members but without compression layer.

Indeed, at the interface between two precast concrete surfaces working in shear, there are three factors contributing to the shear resistance:

- The cohesion of the concrete
- The forces normal to the interface surfaces
- The dowel action by steel bars protruding one of the concretes and inserted in the other one.

Depending on the finish of the concrete surface, different coefficients are assigned by the international building codes in the calculation of the shear resistance.

The American Concrete Institute Code ACI318, Nov.19, states the following:

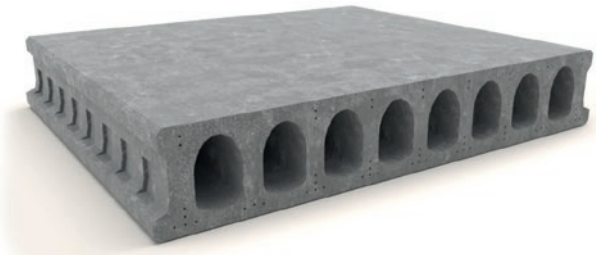
Chapter 16.2.1.1 – Transfer of forces by mean of grouted joints, shear keys, bearing, anchors, mechanical connectors, steel reinforcement, reinforced topping, or a combination of these, shall be permitted.

From the table 16.4.4.2 – Nominal horizontal shear strength, of the same code, we can estimate that the concrete placed against hardened concrete intentionally roughened to a full amplitude of approximately 1/4 inch, mobilizes about 4 times more shear than the concrete placed against hardened concrete not intentionally roughened.

In Europe, the Eurocode 2, in turn defines the geometries of the hardened concrete surfaces as very smooth, smooth (slipformed or extruded), rough and indented.

The European approach is as follows:

The shear design value V_{ED} must be less or equal to the shear resistance.



Shear key on the side of a 200 mm. thick pre-stressed concrete hollow core slabs.

The shear resistance vRdi must be less or equal to the friction mobilized by the shear key after cracking.

Both are summarized on the following equations:

V_{ED} =< vRdi

vRdi =c fctd +μ*σn +ρfyd (μ sinα+cosα)

vRdi ≤ 0,5*v* fcd (1)

Where:

C, μ are coefficients assigned by depending on the surface finishing:

Surface finish	'c'	'μ'
very smooth	0,025 to 0,10	0,5
smooth (slipformer or extruded)	0,2	0,6
rough	0,4	0,7
indented	0,5	0,9

σn : force normal to the interface surface.

fctd: design tensile strength

fcd: design compressive strength (for αcc = 1)

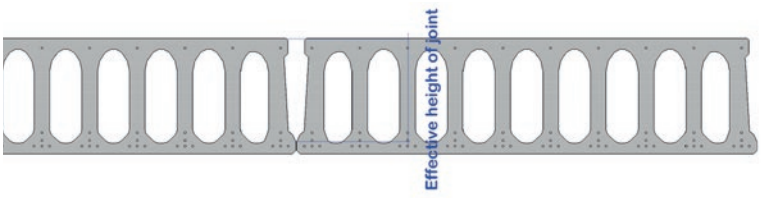
The third term of vRdi in equation (1) is not considered because there is no armature protruding from the slabs and inserted on the grout pored at the longitudinal joint.

But the same European code EC2 in point 10.9.3 (12) reads that in diaphragm action of hollow core slabs with grouted joints, the average longitudinal shear VRDI must be limited to 0,15 MPa for smooth or rough surfaces.

In other words, based on the European code EN1992-1-1 (Eurocode 2), if they are smooth on their sides, all the extruded or the slipformed hollow core slabs existing or with installation in progress in the world on the date this article is published, have a longitudinal shear limited to vRdi =0,15 N/mm² when they are meant to work in diaphragm action, which is the great majority of the cases.

Then the question is: 'Would the pre-stressed concrete hollow core slabs be indented, what is the order of magnitude of the shear brough by this indenting on the hollow core slabs used in floors/roofs?'

We are interested in the value by itself and comparing it to this of the extruded and the slipformed hollow core slabs.



Out of the total thickness, the shear key is applied to a zone on the sides.

Numerical example:

STEP A: shear resistance generated by the indenting covering 50% of the effective height, 200 mm., on the 250 mm. hollow core slab side, when there is a force of 0,25 N/mm² normal to the joint.

The 50% of the side surface smooth, generates:
vRdi = 0,2 * f ctd + 0,6 * 0,25 N/mm² = 0,2 * 1,2 + 0,6 * 0,25 = 0,39 N/mm²
The 50% of the side indented surface, generates:
vRdi = 0,5 * 1,2 + 0,9 * 0,25 = 0,825 N/mm²
Total vRdi = 1,21 N/mm²

On a length of 1,0 meter: V= 0,825 * (1000*200/2) + 0,39 * (1000*200/2) = 121,5 kN/m
If smooth, extruded or slipformed, the code limits to 0,15 N/mm², therefore:
V = 0,15 *(1000*200) = 30,0 kN/m
The additional shear force brought by the indenting is: 121,5 – 30,0 = 91,5 kN/m.

STEP B: friction generated by the 40 mm. concrete compression layer on the top of the slabs:

Vc = bw * d * fv = 1.200 mm * 0,04 * 0,63 = 30,24 kN/m (value 0,63N/mm² following Walraven: 'Shear under which no shear reinforcement is necessary in elements unreinforced in shear, general limit, for concrete C40 and thicknesses up to 200 mm.)

Therefore, we verify that the additional shear resistance of 91,5 kN/m is bigger to that of the compression layer 30,24 kN/m.

STEP C: If we fit #10 teeth as per the figure below and height 100 mm in a slab length of 1,0 meter, according to the example shown, the resistance of each indenting submitted to compression will be the following:

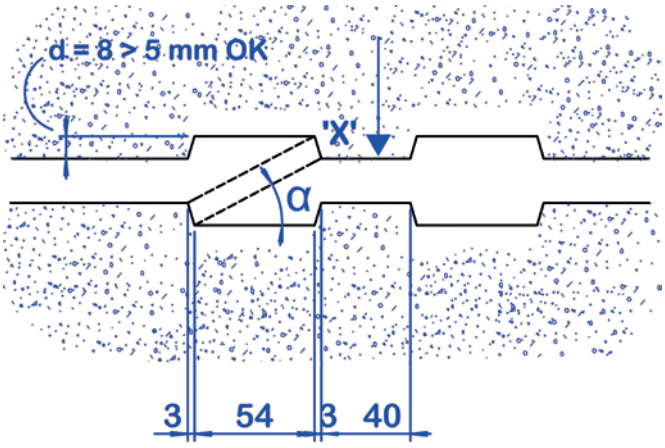
Applying IPHA Precast Concrete Structures, II edition, prof. Kim S. Elliott:
tg α = 23 / 57 → α = 22°
X = 8 / cos (α) = 8,63 mm.

The root shear area is: #10 * (3+54+3) * (h=100) = 60.000 mm²

The friction at the indented zone is 0,825 N/mm², then:
V= 0,825N/mm² * 60.000 mm² = 49,50 kN
On each indenting there will be: 49,50 kN / (10 teeth * cos α) = 4,95 / 0,927 = 5,33 kN

The resistance of the teeth taking the weaker concrete (poured at the joint C30/37) including the correction factor is:

fc = 5,33 kN * 1000/100*'X' = 6,17 N/mm²
fck / γc = 30 / 1,5 = 20,00 N/mm² > 6,17 N/mm² stress on each tooth.



Eurocode 2 compliant geometry of a shear key as example

Since eq(1) 0,5 * v * fcd = 0,5 * 0,6 * 20 = 6,66 N/mm² > 6,17 N/mm² an indenting on more than 50% of the interfacing surface would be redundant, and particular attention must be drawn on the selection of the grout pored at the shear-keyed longitudinal joints between adjacent HCS on the floors.
Note: vis strength reduction factor for concrete cracked in shear. EN1992-1-1 6.2.2.(6).

Conclusion

In precast concrete construction, the shear key (also known as indenting or even castellated concrete surfaces) is contemplated by most of the international building codes as a mechanism for the transmission of additional shear.
In affected zones they become an inelastic lateral mechanism for the absorption of energy during a seismic episode.
Further to an eventual crack and snap shifting the shear keys after a stress, the surfaces would offer a smooth interface, this is still equivalent to brand new smooth surfaces before they start mobilizing any shear.
In non-seismic zones the shear brought by the side indenting equals or even exceeds this from the compression layer on the top of the hollow core slabs of a floor, for what in case of uniformly distributed live loads, the floors may be built without topping. The casting machine which can produce the pre-stressed concrete hollow core slabs with side indenting using plastic mix design is the Tensyland Flowformer from Prensoland. ■

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
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