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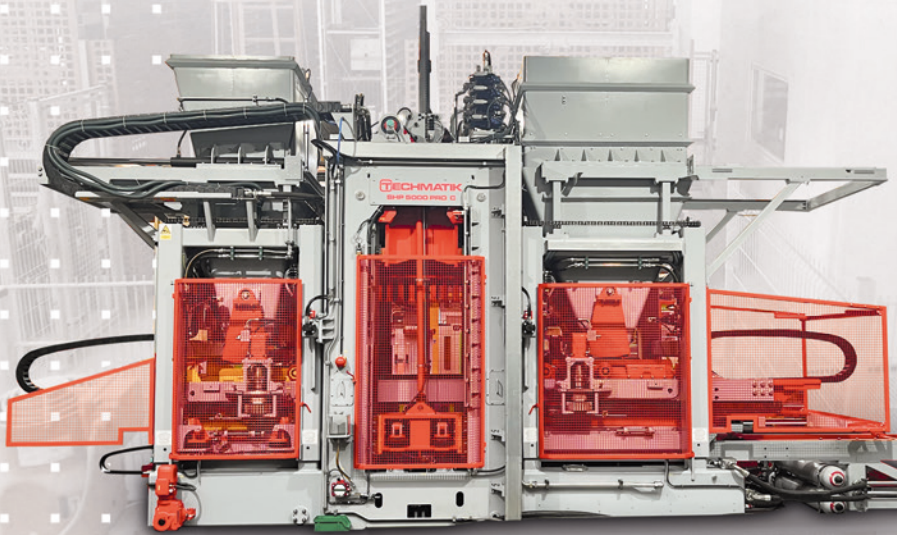
منشأة الإسمنت العالمية

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Dr.-Ing. Holger Karutz



Alexander Olbrich

Ambitious – more ambitious – most ambitious!

The Middle East region is worldwide recognized as a region where building dreams become reality. Symbols like the Burj Khalifa that remains being the tallest building of the world since 2008 until today are underlining the realization of ambitious projects. Restricting yourself to move in known territories only does not allow dreams to become true. And this is something that can be observed from the outside world in The Middle East very often: visions, so ambitious that they can be hardly believed are put into play. And not only ambitious projects. More ambitious, even the most ambitious projects we are talking about.

The outside world doubting about the realization of the perfectly sustainable NEOM project for example should possibly better wait a bit and ask themselves whether these are really doubts, or whether it is jealousy they have in mind.

It is amazing to see what the construction industry can realize once these dreams are put on the table. Let's continue believing in these visions and the power the construction industry brings along.

من الطموح المتواضع إلى الطموح المطلق!

تشتهر منطقة الشرق الأوسط في جميع أنحاء العالم بأنها البقعة التي تتحقق فيها أحلام التشييد والبناء على أرض الواقع. وتشهد البنايات الأيقونية مثل برج خليفة الذي لا يزال أطول بناية في العالم منذ عام 2008 حتى اليوم على تحقيق المشاريع الطموحة. إن تقييد ذاتك بالتحرك في نطاق المناطق المعروفة وحسب لا يفسح لك المجال لتحقيق أحلامك. وهذه ظاهرة يمكن أن نلاحظها من العالم الخارجي في منطقة الشرق الأوسط كثيرًا؛ فهناك الكثير من الرؤى التي تتسم بالطموح الشديد حتى أن أحدًا لا يكاد يصدق أنها تتحقق على الأرض الواقع. ولا نعني بذلك المشروعات الطموحة وحسب. وإنما نعني مشروعات أكثر طموحًا بل وحتى المشروعات الأكثر طموحًا على الإطلاق التي نتحدث عنها.

فحريُّ بالعالم الخارجي الذي يُلقي بظلال الشك على تحقيق مشروع نيوم المستدام كليًا مثلاً أن يتمهل قليلاً ويتساءل عما إذا كانت هذه شكوك حقا، أم أنها غيرة تداعب الأذهان.

إنه لأمر مدهش أن نرى ما يمكن أن تحققه صناعة البناء والتشييد فور أن تُوضع هذه الأحلام على الطاولة. علينا أن نستمر في الإيمان بهذه الرؤى وبالقوة التي تجلبها صناعة البناء والتشييد.



8

SECTIONS

Editorial	3
Imprint	6
Advertiser's List	90



48



54

CONTENTS

NEWS

- December 11-12, 2024, Dubai, UAE
- 7 **International Concrete Technology Forum**
- Peikko Group Corp., 15101 Lahti, Finland
- 8 **Sustainable pilot house using smart design for low-carbon, reusable components**
- Lintec & Linnhoff Holdings Pte Ltd, Singapore 638072
- 12 **Exclusive distributor agreement with MEDCO in Saudi Arabia**
- Assyx GmbH & Co. KG, 56626 Andernach, Germany
- 13 **Gabriele Rose becomes Head of Sales at Assyx**

CONCRETE TECHNOLOGY

- Imer Group | USA, Southlake, TX 76092, USA
- 14 **New mobile precast concrete dispatching machine**
- Wiggert & Co. GmbH, 76227 Karlsruhe, Germany
- 18 **RecafcO replaces two of the existing mixing plants with a new twin-mixer plant**

CONCRETE PRODUCTS / CAST STONE

- Wasa AG, 64293 Darmstadt, Germany
- 22 **New production plant for polyurethane-coated production boards**
- HS Anlagentechnik GmbH & Co. KG, 57290 Neunkirchen, Germany
- 26 **New curing chamber with modern air-conditioning technology at Kronimus in Heilbronn**
- Masa GmbH, 56626 Andernach, Germany
- 32 **Staying one step ahead remains the goal - Modernisation and digitalisation as success factors**
- Hess Group GmbH, 57299 Burbach-Wahlbach, Germany
- 39 **New plant underscores Rochester Concrete Product's commitment to establishing new standards**
- Techmatik SA., 26 - 610 Radom, Poland
- 46 **Planetary mixers with high-speed agitator for the producing of multicolor pavers and large paving slabs**
- Rekers GmbH Maschinen- und Anlagenbau, 48480 Spelle, Germany
- 48 **Focus on sustainability**

CONCRETE PIPES AND MANHOLES

- Afinitas, Clayton, MO 63105 USA
- 54 **Innovative pipe and curing system provide the perfect combo for Dunn Utility Pipe plant expansion**

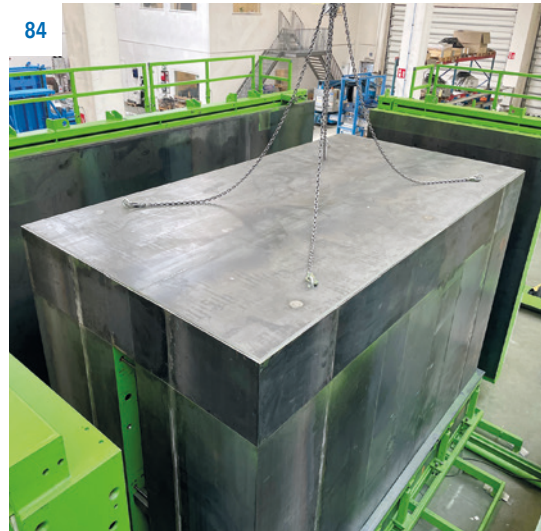
PRECAST CONCRETE ELEMENTS

- Eurobend GmbH, 90547 Nuremberg-Stein, Germany
- 62 **Flexible mesh welding lines with integrated bending modules and unique mesh bending stations**

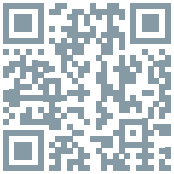


74

- Progress Group, 39042 Brixen, Italy
- 64 A technology leader that sets standards with its own precast plant**
- Moldtech S.L., 41500 Alcalá de Guadaíra (Sevilla), Spain
- 71 Industrialized construction in South América and Oceania with 3D Modules**
- apilion machines + service GmbH, 77694 Kehl am Rhein, Germany
- 74 High-performance welding machine for bored pile and column cages**
- Bianchi Precast Group, 43045 Fornovo di Taro (PR), Italy
- 76 Fully hydraulic adjustable double T mould**
- mbk Maschinenbau GmbH, 88353 Kisslegg, Germany
- 80 Customisable automation solutions for welding machines**
- Construx-Weckenmann, 8531 Hulste, Belgium
- 84 Complex 3D moulds for precast plants all over the world**



84



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Managing Directors:
Dr.-Ing. Holger Karutz · Alexander Olbrich

Editor-in-Chief:
Dr.-Ing. Holger Karutz h.karutz@cpi-worldwide.com

Editors:
Dipl.-Ing. Mark Küppers m.kueppers@cpi-worldwide.com
Dipl.-Ing. Michael von Ahlen 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.kloekner@ad-media.de
Alexander Olbrich a.olbrich@ad-media.de
Gabriele Pianta g.pianta@ad-media.de

Design:

André Besgens · Carmen Frick · Alex Konn production@ad-media.de

Accountancy:

Sandra Borchert accountancy@ad-media.de

Subscription service:

Maurice Borchert 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:

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Industriestraße 180
50999 Cologne · Germany

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Publishing Company:

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

Soy Cho | 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

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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December 11-12, 2024, Dubai, UAE

International Concrete Technology Forum

المنتدى الدولي لتكنولوجيا الخرسانة

Join the National Ready Mixed Concrete Association, Grey Matters, and their esteemed sponsors for the 2024 International Concrete Technology Forum, taking place on December 11-12, 2024, in the vibrant city of Dubai, UAE. This prestigious event is aimed at professionals in the concrete industry, offering many opportunities for learning and networking. Attendees will gain insights into the latest advances, technical knowledge, ongoing research, and innovative tools and solutions in concrete manufacturing, design, and construction.

انضم إلى الجمعية الوطنية للخرسانة الجاهزة وشركة Grey Matters ورعاتهما الموقرين في المنتدى الدولي لتكنولوجيا الخرسانة الجاهزة 2024 الذي سيعقد في 11-12 ديسمبر 2024، في مدينة دبي النابضة بالحياة في الإمارات العربية المتحدة. تستهدف هذه الفعالية المرموقة المتخصصين في صناعة الخرسانة، وتتيح العديد من الفرص للتعليم والتواصل. سيستخلص الحاضرون رؤى ثاقبة حول أحدث التطورات والمعرفة التقنية والأبحاث الجارية والأدوات والحلول المبتكرة في مجال تصنيع الخرسانة وتصميمها وبنائها.

The forum will feature an impressive lineup of industry experts who will share their broad knowledge and experiences through keynote speeches, discussions, and technical sessions. Additionally, the event will provide a platform for meaningful interactions with peers, fostering collaborations and partnerships that can drive the industry forward.

Throughout the event, there will be displays of booths from the sponsors, showcasing the latest products, services, and innovations in the concrete industry. The International Concrete Technology Forum promises to deliver valuable content tailored to individual interests and needs.

Continuing Education

Attendees of the 2024 International Concrete Technology Forum are eligible to receive up to 10 professional development hours (PDHs), depending on the number of sessions attended.

Session Topics

World renowned speakers will present the latest advances, technical knowledge, research, tools and solutions.

Researchers, academics, students, engineers, architects, contractors, concrete producers, public works officials, material suppliers and concrete industry professionals are invited to attend, submit papers and give presentations.

For more information, contact Rabih Fakh (rabih.fakh@greymatters.ws) or Lionel Lemay (llemay@nrmca.org)

FURTHER INFORMATION



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Peikko Group Corp., 15101 Lahti, Finland

Sustainable pilot house using smart design for low-carbon, reusable components

منزل تجريبيّ مستدام باستخدام تصميم ذكي لمكونات منخفضة الكربون وقابلة لإعادة الاستخدام

Reducing emissions and striving for more sustainable practices are already part of everyday life, and the construction industry is no exception to this trend. It is committed to reducing emissions, and new low-carbon solutions are rapidly being developed. But how can these principles be applied to building a single-family home?

إنّ الحد من الانبعاثات والسعي إلى تبني ممارسات أكثر استدامة أصبح بالفعل جزءاً لا يتجزأ من الحياة اليومية، وصناعة البناء والتشييد ليست استثناءً لهذا الاتجاه. وهذه الصناعة ملتزمة بخفض الانبعاثات، وتشهد ابتكار حلول جديدة منخفضة الكربون بسرعة مذهلة. ولكن كيف يمكن تطبيق هذه المبادئ على بناء منزلٍ لأسرة واحدة؟

Peikko collaborated with the structural engineering company Sweco to design a single-family home that revolutionizes traditional construction practices and promotes environmental friendliness. Peikko had previously conducted a pilot project in Vantaa, Finland testing the installation, dismantling, and reassembly of a precast concrete frame. Now it was time to implement the first actual project, where both reusability and reduction of emissions were the guiding themes.

Sustainable construction in the long and short term

The recently completed single-family home's structures can be dismantled in the future and relocated. The house incorporates many low-emission materials, and the majority of the structural elements, such as columns, beams, hollow-core slabs, and windows, can be reused.

"Sustainable construction can be divided into two timeframes. In the short term, it's crucial to minimize emissions related to materials and actual construction, which have an immediate impact. In the long term, the reusability of materials is significant. In this house, we have considered both perspectives as effectively as possible", says Topi Paananen, CEO of Peikko.



Fig. 2: Installation of hollow-core slabs on Deltabeam® Green Composite Beams and Atlant® Strong composite columns



Fig 1: Peikko collaborated with Sweco for the pilot house design



Bolted connections enable dismantling without compromising with the structural integrity

Bolted connections are key to dismantling. The load-bearing structures of the single-family home were connected by bolts instead of welding. A bolted joint can be easily opened and closed as long as it remains accessible.

“Peikko has developed a threaded connection specifically for connecting hollow-core slabs and the company’s own Deltabeam® Composite Beams with dismantling in mind. Once the connection is secured by threads, it can be opened because the concrete outside the beam can be lightly chipped away from the painted steel surface, revealing the threaded joint. The structures remain intact and can be easily reassembled”, explains Jaakko Yrjölä, Senior Manager, Sustainability & Research at Peikko.

Peikko’s intention, regarding demountable connections, has been to change commonly accepted practices as little as possible: To enable dismantling but also retaining the same structural performance and integrity of the structures and their connections.

The joint between the Deltabeams and the hollow-core slabs is a great example of how dismantling and reuse can be enabled with only a slight variation. One of the key properties of Deltabeam is the in-built resistance against fire, which means that no additional fire protection is needed at the construction site. This is partly achieved by securing the load-transfer mechanism between a Deltabeam and the hollow-core slabs with a grouted joint and sufficient amount of joint reinforcement.

Without such a load-transfer mechanism, the total load from hollow-core slabs should be solely carried by the ledges of the Deltabeam. This would mean both heavier structures and the necessity for additional fire protection.

In the dismantling process, the grouted joint must be cut for detaching the structures, and the joint reinforcement is cut in the same process. If using regular continuous reinforcement bars, the reusability of Deltabeam is significantly weakened, because a cut reinforcement bar will no longer be anchored into the joint between hollow-core slabs. To solve this problem, Peikko has replaced single reinforcement bars with Modix® Rebar Coupler System. The threaded connection al-

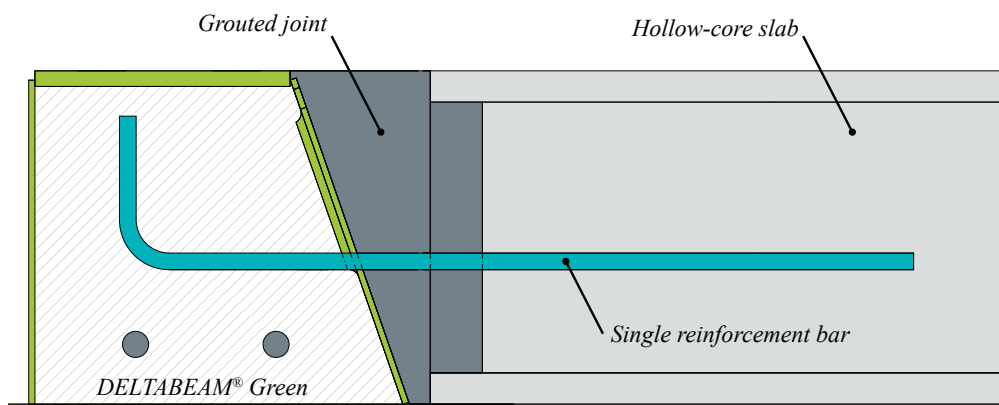


Fig. 3: Detail from the joint between a Deltabeam and a hollowcore slab

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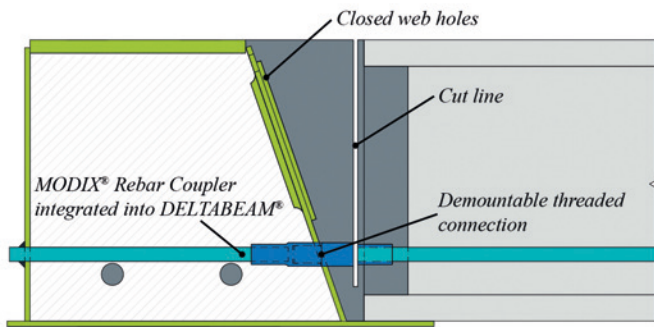
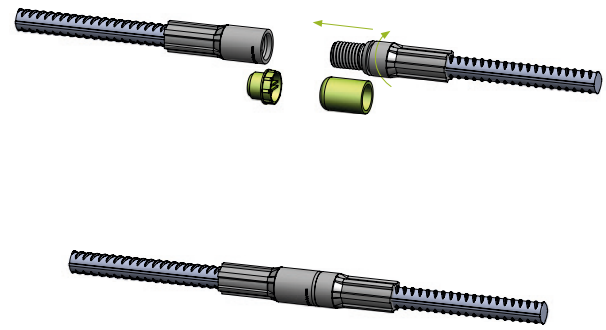


Fig. 4: Demountable beam-to-slab joint (left) and Modix system (right)



lows a similar joint can be established numerous times. Additionally, concrete inside the Deltabeam should not be mixed with joint concrete and that can be prevented by closing the web holes of the beam by means of welding thin circular plates over the web holes.

Such simple but clever detailing of Deltabeam does not compromise the structural performance, but highly improves the reuse potential of Deltabeam without significant amount of extra costs.

Low-emission and reusable materials in focus

Peikko's greener option, the Deltabeam Green Composite Beam, was a natural choice for this sustainable construction pilot house. The carbon footprint is 50% less compared to conventional steel beams, allowing for a high environmental rating regardless of the project.

The Deltabeam Green beams for the single-family home were manufactured at Peikko's factory in Lahti, using over 90% recycled steel. Renewable energy was used in the pro-

duction of these beams, and they were transported to the single-family home construction site via delivery trucks fueled with biodiesel.

"Peikko's Atlant® strong columns have been used in several construction projects across Europe, but this was the first time they were used in Finland. The advantage of these columns is that their steel core stiffens the column so much that it's possible to reduce the column's cross-section. The use of narrower composite columns provides more space, light, and visibility", says Topi Paananen.

Additionally, the house featured other connection components from Peikko like the low-carbon Petra® Green Hollow-Core Slab Hangers. The amount of embedded carbon in the hollow-core slabs was also minimized, due to the use of Parma Green™ hollow-slabs by Consolis.

The glass railings inside the house can be reused because they are standard height. So, the frame and glass panels can be removed and used on another project using additional components which can be added to railing ends, and thus allow fitting into their new location. It's also possible to create new glass products from recycled glass, such as beautiful facade panels or interior glass with a crushed stone surface.



Fig. 5: Hollow-Core slabs installed. Opening in the slab for HVAC (Heating, Ventilation, Air Conditioning) pipes. Petra Slab Hanger supports hollow-core slab.

Project partners

Architect: Arkkitehtitoimisto Pet Michael Oy
Structural engineering company: Sweco Finland Oy
Beams and columns: Peikko Group
Hollow-core slabs: Consolis

FURTHER INFORMATION



Peikko Group Corp.
P.O. Box 104, Voimakatu 3, 15101 Lahti, Finland
T +358 3 844 511
peikko@peikko.com, www.peikko.com

INTERNATIONAL CONCRETE TECHNOLOGY FORUM

11 & 12 DECEMBER, 2024

LIVE CONFERENCE (DUBAI, UAE)

Topics of Interest



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Durability



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Participate in the 2024 International Concrete Technology Forum, taking place on December 11-12, 2024, in Dubai - United Arab Emirates, organized by the National Ready Mixed Concrete Association, Grey Matters, and various sponsors. This conference offers valuable opportunities for learning and networking, focusing on the latest advancements, technical expertise, ongoing research, and innovative tools and solutions in concrete manufacturing and construction. Esteemed speakers from around the globe will share insights on the most recent developments, technical knowledge, research findings, and methodologies for designing, testing, and modeling concrete performance.

In addition to the informative technical sessions, ICTF 2024 will host a dynamic exhibit hall featuring numerous companies showcasing their products and services relevant to the concrete industry. This event presents an excellent opportunity to connect with fellow professionals and discover the latest innovations in concrete technology.



CONFERENCE



MORE INFORMATION

Attendance at this conference is essential for anyone engaged in the concrete sector. For those interested in participating, please visit our website at www.concrete-conference.com, where you can find information about events and attendees, as well as details on upcoming conferences and access to past conference materials.

RABIH FAKIH
E: rabih.fakih@greymatters.ws
T: +971553078777

LIONEL LEMAY
E: llemay@nrmca.org

Exclusive distributor agreement with MEDCO in Saudi Arabia

اتفاقية الموزع الحصري مع شركة ميدكو في المملكة العربية السعودية

Lintec & Linnhoff announced the signing of an exclusive distributor agreement for the Kingdom of Saudi Arabia with Middle East Development Co. Ltd. (MEDCO). Christabel Chan, Global Business Director and Tony Chakra, Regional Sales Manager, Middle East and Africa at Lintec & Linnhoff signed the agreement with Mohammed Khashoggi, Vice President at MEDCO to reinforce the company's firm commitment to the Saudi Arabian market. This latest announcement comes just a few weeks after Lintec & Linnhoff announced a distributor agreement with Tutt Bryant in Australia.

أعلنت شركة Lintec & Linnhoff عن توقيع اتفاقية موزع حصري للمملكة العربية السعودية مع شركة الشرق الأوسط للتنمية المحدودة (MEDCO). ووقع الاتفاقية كريستابل تشان، مدير الأعمال العالمي، وتوني شاكرا، مدير المبيعات الإقليمي لمنطقة الشرق الأوسط وإفريقيا في شركة Lintec & Linnhoff مع محمد خاشقجي، نائب رئيس شركة ميدكو، وذلك لتعزيز التزام الشركة الراسخ تجاه السوق السعودية. وقد صدرَ هذا الإعلان الأخير بعد أسابيع قليلة فقط من إعلان شركة Lintec & Linnhoff عن اتفاقية توزيع أبرمتها مع شركة Tutt Bryant في أستراليا.

The MEDCO distributor agreement will cover the full range of Lintec & Linnhoff's Asphalt Mixing and Concrete Batching Plants, including but not limited to the Lintec CSD Containerised Asphalt Mixing Plant and Lintec UCP Ultra Concrete Batching Plants.

Tony Chakra said, "As we participate in Saudi Arabia's largest construction event, Big 5 Construct Saudi, we can think of no better occasion to announce our partnership with MEDCO. The company has represented Lintec & Linnhoff in the Middle East region over the last two years and sold several Lintec CSD Containerised Asphalt Mixing Plants and Lintec UCP

Ultra Concrete Batching Plants. We are therefore confident that this partnership will help the company better serve our customers thanks to their unwavering commitment to the efficient delivery of equipment, support services and spare parts. We look forward to a highly fruitful relationship, as we continue to build our business presence in the region."

Delivering Value to Customers

MEDCO is a leading dealer of premium industrial and construction equipment in the Kingdom of Saudi Arabia. The company was founded in 1967 by Sk. Saleh and Ibrahim A.



Present at the signing ceremony were from left to right: Tony Chakra and Christabel Chan from Lintec & Linnhoff and Mohammed Khashoggi, Faisal Alfadl and Emad Mukhalalaty from MEDCO.



This Lintec UCP120 Ultra Concrete batching plant was delivered to Multitask Construction in Saudi Arabia in 2023 and has been busy producing high-strength concrete for local projects since then.

Alfadl and is a 100% Saudi Arabian-owned business. A significant part of Saudi Arabia's infrastructure has been built with the quality brands that are represented by MEDCO and many airports, highways, and buildings have benefited from the premium and high-quality products supplied and supported by MEDCO.

With over 170 employees operating from eight branches and facilities across the Kingdom, MEDCO's highly trained and experienced personnel offer professional equipment and machinery sales, backed by full technical support, servicing, and maintenance, together with a comprehensive inventory of spare parts.

Emad Mukhalalaty, General Manager at MEDCO said, "We are excited to add Lintec and Linnhoff Asphalt Mixing and

Concrete Batching Plants to our company's portfolio of equipment brands. Given Lintec & Linnhoff's renowned reputation in the construction equipment market and the solid existing relationship between the two organisations, we have great confidence that this agreement will provide new and exciting opportunities for our customers across the Kingdom." ■

FURTHER INFORMATION



Lintec & Linnhoff Holdings Pte Ltd
71 Tech Park Crescent, Singapore 638072
T +65 6863 1111
info@lintec-linnhoff.com, www.lintec-linnhoff.com

Assyx GmbH & Co. KG, 56626 Andernach, Germany

Gabriele Rose becomes Head of Sales at Assyx

غابرييل روز تتولى منصب مدير المبيعات في شركة Assyx

Assyx, a manufacturer of high-quality production boards for the concrete industry, announces the appointment of Gabriele Rose as sales manager. Mrs Rose has more than 20 years of experience in the concrete industry, selling polyurethane mixer spare parts and wear protection products.

أعلنت شركة Assyx، المُصنِّعة للوحات الإنتاج عالية الجودة لصناعة الخرسانة، عن تعيين غابرييل روز مديرةً للمبيعات. وتتمتع السيدة روز بخبرة تتجاوز 20 عامًا في مجال صناعة الخرسانة، إذ تخصصت في بيع قطع غيار خلطات البولي يوريثان ومنتجات الحماية من التآكل.



Gabriele Rose is the new sales manager at Assyx

formance polyurethane coating from Covestro. This combination of wood and plastic ensures a long durability and combines the positive properties of both materials. Assyx products are used worldwide in the concrete industry and are characterised by their quality and resistance.

In her new role, Gabriele Rose will continue to drive Assyx's sales activities and contribute to strengthening the company's market position and intensifying customer relationships. ■

FURTHER INFORMATION



Assyx GmbH & Co. KG
Zum Kögelsborn 6, 56626 Andernach, Germany
T +49 2632 947510
info@assyx.com, www.assyx.com

"We are delighted to welcome Gabriele Rose to our team," said Assyx managing partner Alfred Rochlus. "Her extensive industry experience and expertise in sales will be a valuable support for our company."

The company Assyx in Andernach is known for its innovative production boards, which consist of an LVL wood core (Laminated Veneer Lumber) and are coated with a high-per-

New mobile precast concrete dispatching machine

ماكينة توزيع الخرسانة الجاهزة المتنقلة الجديدة

The Speedcast 5.0, the newest offering from Imer USA, is a mobile precast concrete dispatching machine, aimed at providing extreme accessibility in the various areas of precast sites and applications. The Speedcast 5.0 has been designed to meet the needs of multiple sectors in the precast industry.

يُعدُّ جهاز Speedcast 5.0، أحدث منتجات شركة Imer USA، آلة نقل للخرسانة الجاهزة المتنقلة، ويهدف إلى توفير إمكانية الوصول القصوى في مختلف مجالات مواقع وتطبيقات الخرسانة الجاهزة. وقد صُمِّمَ Speedcast 5.0 لتلبية احتياجات قطاعات متعددة في صناعة الخرسانة الجاهزة.

Originating in Italy in the 1960s, Imer is a company with a long, rich history of manufacturing. The United States branch of the company, aptly named Imer USA, was launched in San Francisco in 1990, moving to Maryland in 2000 before finding a home in Southlake, Texas, within the center of the DFW metroplex. Over the past 5 years, Imer USA, wholly owned by Imer International and under new leadership has seized the opportunity to advance their presence into North Amer-

ica. The company consists of 4 separate divisions all in the construction equipment sectors; Imer Equipment, Imer Access, Imer Earth and lastly Imer Concrete. The focus of this article will be on Imer Concrete, a division responsible for batch plants for precast and ready-mix, planetary mixers, twin shaft mixers, overhead delivery systems, and more throughout the United States. One of their new product offerings is the Speedcast 5.0.



The Speedcast in action at The Reinforced Earth Company in Waco TX.

Welcome to the future of precast. The Speedcast is a concrete transport and placing machine for precast sites. It is a perfect replacement for forklifts and buckets for formwork and casting molds. The Speedcast provides complete independence from the use of overhead trolley systems, giving your precast operation more versatility than ever before. With its exceptional features, The Speedcast easily adjusts to various conditions, making it incredibly versatile, powerful, and convenient.

When Off-The-Rails is a Good Thing!

The Speedcast is an indispensable concrete placing machine providing high-quality casting in a variety of scenarios, including its ability to work with very low slumps to self-consolidating concrete in the precast industry. It is suitable for use in temporary, outdoor construction sites or in traditional precast plants, without the need for any bridge cranes or bucket

Working outdoor ...



TOGETHER WE GROW



... and indoor.

systems. Its speed and precision compared to that of traditional bucket and crane methods and rail-mounted concrete distributors, make it a more efficient and convenient option when casting.

The casting time when using The Speedcast is much shorter than that of casting with an overhead crane and bucket, pair this with the Speedcast's ability to cast in tight and confined spaces, making it the ultimate choice for all precast applications.

Technology

Fitted with a powerful 4 cylinder Yanmar Diesel engine, four wheel steer, crab mode, and four wheel drive, the Speedcast's advantage comes from its ability to move freely and have versatility in each of its movements, even at the edges of forms or in tight spaces. The soundproof cabin has the option of adding air conditioning and heating systems for placing concrete in all climates, and comes equipped with two video screens, connected to four cameras on the outside of the machine to ensure perfect visibility at any stage of the casting process. In tandem with the variable speeds and easy to learn controls, the machine is easy to use and makes casting simpler than ever. The machine is also equipped with safety features such as the emergency discharge attached to the hopper, through a manual door and a chute if needed.

Designed With Purpose

The Speedcast's design has been done in a way to maximize the machine's utility without limiting any of its capacity or safety. The position of the hopper has been calculated to

keep the center of gravity directly over the wheels even when carrying a full load, pair this with its variable drive speeds and safety sensors, this unit allows you to get material from point A to point B as quickly and as safely as possible. The Speedcast provides a maximum dispatch angle of 18° and a maximum discharge height of 11 feet allowing you to dispense material in even the hardest to reach places. The auger has also been designed to allow you to have less wasted material by having a hydraulically controlled gate that allows you to cut-off the flow of material between forms.

The Speedcast unburdens your plant to have the highest level of flexibility possible with regards to your precast operation, it opens up opportunities to place forms in places you never thought possible, making it perfect for your ever-growing business. This machine's versatility, design and quality are what make it the precasting machine of the future. ■

FURTHER INFORMATION



IMER Group | USA
423 Bank Street, Suite 180
Southlake, TX 76092, USA
T +1 800 275 5463
T +1 301 336 3700
www.imerusa.com

IMER Group
Headquarters
Via Salceto, 53-55
53036 Poggibonsi (SI), Italy
T +39 0577 97341
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Recafco replaces two of the existing mixing plants with a new twin-mixer plant

ريكافكو تُبدل مصنعين من مصانع خلط الخرسانة الحالية بمصنع يضم خلاطين توأم جديد

Following its incorporation in 1976, RECAFCO (Real Estate Construction & Fabrication Co.) has built over decades an excellent reputation in the Kuwaiti market as a manufacturer of high-performance precast concrete elements, pipes, prestressed and post-tensioned beams, façade elements, roof units and walls. Recafco is Wiggert's longest-standing customer in Kuwait: back in the 1970s Kabag (Wiggert) had delivered the first concrete batching & mixing plant of the Centromat type featuring a star-shaped aggregate storage facility and a boom scraper. In 2005 this plant was brought up to date with a planetary countercurrent mixer HPGM 1500 and a new electrical control system. Two years later, in 2007, another Centromat plant followed and in 2013 the third concrete batching & mixing plant type WiCoMix 2250 with state-of-the-art control technology was delivered to Recafco and commissioned by Wiggert. After many years of successful operation, the two Centromat plants were now replaced by the new twin-mixer plant WiCoMix 2250-2250-6-WCS including a Wiggert WKB flying bucket system. The new plant started concrete production at the beginning of 2024.

اكتسبت شركة ريكافكو (شركة الإنشاء والتصنيع العقاري) على مدى عقود، بعد تأسيسها في عام 1976، سمعةً ممتازة في السوق الكويتية باعتبارها شركة مُصنِّعة للعناصر الخرسانية الجاهزة عالية الأداء والأنابيب والعوارض مسبقة الإجهاد ولاحقة الشد وعناصر الواجهات ووحدات الأسقف والجدران. وتُعد شركة ريكافكو أقدم عميل لشركة Wiggert في الكويت. ففي سبعينات القرن الماضي سلّمت شركة Kabag (Wiggert) أول مصنع لخلط ومزج الخرسانة من نوع Centromat. ويتميز هذا المصنع بمنشأة نجمية الشكل لتخزين الركام ومكشّطة ذات ذراع. وفي عام 2005، خضع هذا المصنع للتحديث بخلاط تيار مُعكس دائري طراز HPGM 1500 ونظام تحكم كهربائي جديد. وبعد عامين، وتحديدًا في عام 2007، تبع ذلك مصنع آخر متطور لخلط الخرسانة من نوع Centromat. وفي عام 2013 تسلّمت شركة ريكافكو مصنع خلط ومزج الخرسانة الثالث من نوع WiCoMix 2250 الأحدث على الإطلاق، مُجهزًا بتكنولوجيا التحكم الحديثة وتولت شركة Wiggert تشغيله.

وبعد سنوات من التشغيل الناجح، أُبدِل مصنعًا خلط الخرسانة ومزجها الآن بالمصنع الجديد الذي يضمُّ خلاطين توأم من نوع WiCoMix 2250-2250-6-WCS بما في ذلك منظومة الدلو الطائر Wiggert WKB. وقد بدأ المصنع الجديد إنتاج الخرسانة منذ أوائل عام 2024.



Two skiphoists for planetary countercurrent mixers HPGM 2250

Concrete curing system ProCure

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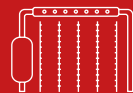
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Two planetary countercurrent mixers HPGM 2250 with three horizontal cement distribution screw conveyors

General

The key plant components such as the mixer platforms including the HPGM 2250 planetary countercurrent mixer with cabling, skiphoists for HPGM 2250, cement silo accessories,

cement screw conveyors, flying bucket system (2 x WKB2), the busbar system and the tracks, as well as the complete control system for both the mixing plant and the concrete transport system (WKB) were supplied by Wiggert & Co. GmbH. Parts of the steelwork structures were manufactured by the customer or provided on site by a supplier on basis of manufacturing drawings and parts lists made available by Wiggert & Co. GmbH to Recafco.

Storage and weighing of aggregates

Aggregates are stored in 6 inline bins having a total volume of approx. 200 m³ with each of the individual bins being filled by means of a wheel loader. The six inline aggregate storage bins were made from concrete and each bin was equipped by Wiggert with two segmental batching gates for coarse-fine batching of aggregates into a travelling aggregate scale. Weighing via electronic load cells ensures high accuracy and trouble-free operation. Following fully automatic weighing, the aggregates are transported to the two skiphoists and a complete batch of aggregates is then discharged into one skiphoist at a time. In a next step, this skiphoist discharges the aggregates into one of the two HPGM 2250 planetary countercurrent mixers.

Two HPGM 2250 planetary countercurrent mixers

Two Wiggert planetary countercurrent mixers of the HPGM 2250 type, each sized for a compacted concrete output of 1.5 cubic meters per mixing cycle, are the centerpiece of the newly installed mixing plant. The 2 mixing stars with 2 mixing shovels each, the powerful drive and the floor-mounted probe for moisture measurement - all features of an up-to-date, well-proven mixer - ensure homogeneous mixing qual-



Two HPGM with skiphoists and six aggregate bins

ity. To provide for a long service life, the mixers are lined with Wicodur 4000 composite armor plates.

Each of the two HPGM 2250 mixers has two hydraulically operated discharge gates: one for concrete discharge into the Wiggert WKB flying bucket system and one for concrete discharge into a truck mixer. The option of concrete discharge into a truck mixer enables Recafco to react in a highly flexible way whenever an additional concrete requirement should come up outside the production hangar.

For batching of water and cement there are two water scales and two cement scales mounted on the HPGM 2250 planetary countercurrent mixers. Three of the four types of cement used by Recafco are batched into the two cement scales via horizontally arranged cement distribution screws, the fourth type is batched into one scale only. Addition of ice into the HPGM 2250 mixers from an ice plant provided by Recafco, aims at keeping the concrete temperature at the time of discharge at 30 degrees C or less.

Cement storage, cement conveying and admixture weighing

The cement is stored in four locally manufactured cement silos, each of which was completed by Wiggert with a dust collector, a radar filling level indicator and a cement aeration device. Both cement scales are filled fully automatically via the four cement screw conveyors based on the stored concrete mix design. In addition, there are two admixture scales.

Wiggert flying bucket system WKB

Concrete is transported by a flying bucket system type WKB 2 that features two rollover buckets. While travelling on straight tracks of approx. 115 m length, the two flying buckets deliver concrete to the various discharge points in the individual bays. Both flying buckets are operated by a frequency converter and equipped with collision protection. Signal exchange is wireless.

The control system for the concrete transport system is integrated into the fully automatic WCS control for the concrete batching & mixing plant from Wiggert.

Control system

The twin-mixer plant is operated via a fully automatic WCS control system based on Siemens S7, which enables an intuitive control with a clear overview over all plant functions. These include mixer status, moisture correction, plant status as well as management of mix designs and storage administration.

The concrete call stations mounted at the 5 concrete delivery points (locally produced concrete hoppers) allow request of the next batches, which are produced according to the mix design preset in the main control system. ■



Wiggert flying bucket system WKB

FURTHER INFORMATION



Real Estate Constructions and Fabrication Co.
Factory & Head Office
Ahmadi City - Mina Abdullah - Block 1
P.O.Box 24478 Safat 13105 - Kuwait
T +965 1811122
ask@recafco.com
www.recafco.com



Wiggert & Co. GmbH
Wachhausstr. 3b
76227 Karlsruhe, Germany
T +49 721 943460
info@wiggert.com
www.wiggert.com

Wasa AG, 64293 Darmstadt, Germany

New production plant for polyurethane-coated production boards

مصنع إنتاج جديد لألواح الإنتاج المطلية بالبولي يوريثان

■ Alexander Simos, Wasa AG, Germany

You really can't deny that Wasa AG knows its trade. For over 60 years now, the market leader in production boards has been successfully developing, researching and producing. Production boards made of classic solid pine, the development and manufacture of the still innovative Wasa Uniplast Ultra glass-fibre reinforced solid plastic board, which has been on the market since 1990, and a meticulously developed polyurethane-coated production board, which has taken over the legacy of the hardwood board that was once so popular on the market. Wasa manufactures all these products every day with around 120 employees at its site in Neubrunn in Thuringia and delivers to almost the entire globe.

لا يستطيع أحد حقا إنكار أن شركة Wasa AG بارعة في مجالها. فمنذ أكثر من 60 عامًا حتى الآن، تعمل الشركة الرائدة في سوق ألواح الإنتاج بنجاح منقطع النظير في مجالات التطوير والبحث والإنتاج. وتشمل منتجات الشركة ألواح الإنتاج المصنوعة من خشب الصنوبر الصلب الكلاسيكي، وتطوير وإنتاج لوح البلاستيك الصلب المقوى بالألياف الزجاجية المُبتكر Wasa Uniplast Ultra، المتاح في الأسواق منذ عام 1990، ولوح إنتاج مطلي بعناية بطبقة من البولي يوريثان، الذي ورث مكانة لوح الخشب الصلب الذي كان يتمتع بشعبية كبيرة في السوق في فترة من الفترات. وتُصنَع شركة Wasa هذه المنتجات كلها يوميًا على يد نحو 120 موظفًا في موقعها في بلدة نويبرون الواقعة في ولاية تورينغن، وتوصّلها إلى جميع أنحاء العالم تقريبًا.

Wasa has been offering Wasa Woodplast to customers since 2010. Wasa Woodplast is a polyurethane-coated board that has become very popular on the market. Wasa is not simply encasing a wooden core here, but is constantly thinking about how the production board can perform successfully and trouble-free in concrete plants for years to come when developing and continuously improving the product. Standstill is just as undesirable in concrete plants as it is in product development at Wasa.

Wasa is in close and constant dialogue with users in the concrete block industry to ensure that the development of its own products is practice-oriented and tailored to the needs of processors.

In 2019, Wasa decided to invest in a new, almost fully automated system for the production of Wasa Woodplast in response to constantly high demand and ever-growing customer requirements as part of its development and endeavours to continuously improve its products. The entire added value of the panel is created in-house. Even the wooden core of the production board is manufactured in the company's own production facility in Neubrunn.

This means that Wasa not only has plenty of flexibility in the choice of the wood it uses, but also has everything under its own control in terms of quality assurance.

With this high vertical range of manufacture, the added product value lies entirely with Wasa - and the company is rightly proud of this.



Wasa Woodplast - The panel with profile



Solid wood cores before the polyurethane coating process at Wasa in Neubrunn, Thuringia

The new Wasa Woodplast production plant was commissioned at the end of 2022.

The question of why Wasa chooses a solid wood core for the polyurethane-coated Wasa Woodplast core board and not a glued wood core is one that Wasa encounters from time to time. Based on many years of experience in the production of solid pine core production boards, the good basic technical properties of solid wood as a production board and, last but not least, the need to avoid becoming dependent on suppliers of plywood, they made the decision to use a solid wood core as the base for this type of production board.

Also, a solid wood core has a higher modulus of elasticity than a multi-layer core of comparable thickness, because in solid wood all the load-bearing fibres lie in the same direction, whereas in cross-laminated plywood the fibres usually must lie 30 percent in one direction and 70 percent in the other due to the process.



High requirements on quality management: Every single Wasa Woodplast is measured for compliance with its dimensional tolerances before despatch

The characteristics of the hardwood board, which has been popular and successful for many decades, are best reflected with a solid pine core. As a hardwood board also consists of individual planks and not laminated timber, they decided in favour of a solid wood grain. Furthermore, the use of a solid wood core offers extensive advantages to protect the board core.

The polyurethane used by Wasa is particularly impact- and wear-resistant. Wasa uses a slow-drying material so that both components - wood and polyurethane - can form a deep and lasting bond.

As the wood core is produced by Wasa itself, the entire production process, from the delivery of the individual planks and the drying of the timber to the finished polyurethane-coated final product, can be meticulously monitored and subjected to constant quality control.

Wasa only uses slow-growing pine wood from sustainable German and European forestry. The solid pine wood has an average modulus of elasticity of approx. 10,000N/mm², like a multi-layer laminated composite made from a softwood. The production board is therefore very stable.

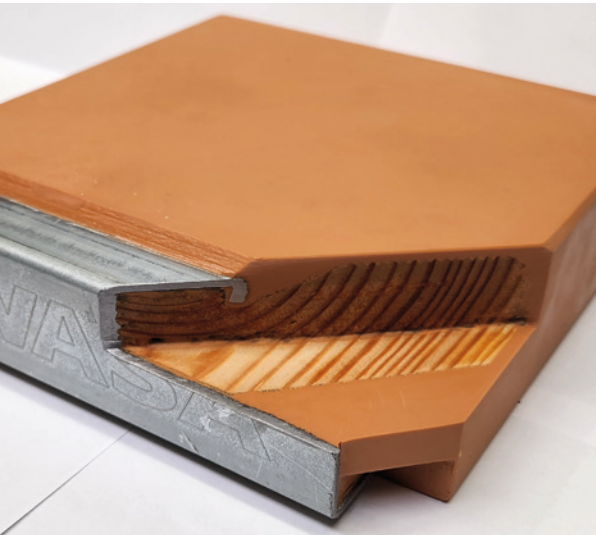
The individual planks of the Wasa Woodplast core are positioned at right angles to the direction of production. Unlike glued laminated timber, the wood fibres therefore bear the full load in this orientation, which is so important for production.

Wasa uses a 2 mm thick galvanised steel profile to fix the individual planks together. This gives the production board the necessary stability in the longitudinal direction and also has the great advantage that the polyurethane-coated board in this area is optimally protected against any damage during daily use in the concrete block plant.

Despite careful brushing and cleaning of the production board, it can happen from time to time in the daily operation



View into the interior of Wasa Woodplast. Plank alignment transverse to the production direction Individual planks are separated from each other by polyurethane strips.



The panel corners are particularly heavily coated with polyurethane

of a concrete block plant that residues are left on the boards. If, in the following production cycle, the steel mould rests on the board again, it is possible that such residues will be pressed into the PU surface and possibly damage the coating. If such damage to the polyurethane coating occurs, it is advisable to localise and repair it quickly so that penetrating moisture does not permanently damage the interior of the board and the bond between the two materials wood and polyurethane.

As minor damage can often not be recognised and repaired promptly in practice, Wasa has separated each individual wooden plank on the inside of the board with an approx. 2 mm thick and durable polyurethane layer.

This ingenious solution has the great advantage that penetrating moisture does not have the opportunity to spread over a large area in the board because each individual plank

is separated from the others. The PU layer in between acts as a barrier and the penetrating moisture remains centralised in just one single plank chamber.

This minimises the risk of extensive damage to the panel and medium-term failure of the production board for production. Damage to the polyurethane coating should be repaired immediately as soon as it is detected.

Wasa also knows that in production it can happen that panels jam from time to time. To provide the best possible protection for the board in such a case, the four board corners and the front side of the Wasa Woodplast are particularly heavily coated with polyurethane.

Wasa offers a special repair kit, Wasa Smart Repair, for any damage to the polyurethane coating. Damage to the surface of the panel can be easily repaired by the customer himself with little effort and the use of minimal materials. ■



Repaired surface damage

FURTHER INFORMATION



WASA AG
 Europaplatz 4
 64293 Darmstadt, Germany
 T +49 6151 780 8500
info@wasa-technologies.com
www.wasa.technologies.com

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New curing chamber with modern air-conditioning technology at Kronimus in Heilbronn

غرفة معالجة جديدة بتقنية تكييف هواء حديثة في شركة Kronimus في مدينة هايلبرون.

■ Mark Küppers, CPI worldwide, Germany

Kronimus AG represents a leading group of companies for the production of concrete products. More than 550 employees at the three German sites in Iffezheim, Heilbronn and Hartheim am Rhein, as well as the Metz site in France contribute to this success. In the concrete industry, the name Kronimus is synonymous with superior concrete products, the quality of which can only be achieved with the appropriate know-how and modern production facilities. The company spares no effort and investment to keep production at the four locations state-of-the-art. For example, at the Heilbronn site, which joined Kronimus after the takeover of Ch. Heinrich Gültig GmbH & Co. KG in 2004, the existing curing chamber was completely demolished and rebuilt from scratch, following several previous renovation steps. HS Anlagentechnik was responsible for the construction of the new hall, including the new shelving systems, while the air conditioning technology was provided by the CDS Group. The project was implemented in perfect team play together with Kronimus.

تمثل شركة Kronimus AG مجموعة رائدة من الشركات في إنتاج منتجات الخرسانة. ويساهم في هذا النجاح ما يربو على 550 موظفًا في المواقع الألمانية الثلاثة في إيفيزهايم وهايلبرون وهارتايم أم راين، بالإضافة إلى موقع ميتر في فرنسا. في صناعة الخرسانة، يُعد اسم Kronimus مرادفًا للمنتجات الخرسانية العالية الجودة، التي لا يمكن أن تتحقق جودتها إلا من خلال الدراية الفنية المناسبة ومرافق الإنتاج الحديثة. ولا تدخر الشركة أي جهود واستثمارات حفاظًا على إنتاجها في المواقع الأربع على أعلى مستوى من التطور والجودة. على سبيل المثال، في موقع هايلبرون، الذي انضم إلى شركة Kronimus بعد الاستحواذ على شركة Ch. Heinrich Gültig GmbH & Co. KG في عام 2004، هُدمت غرفة المعالجة الحالية بالكامل وأعيد بناؤها من الصفر بعد عدة خطوات تجديد سابقة. وقد كانت شركة HS Anlagentechnik مسؤولة عن بناء القاعة الجديدة، بما في ذلك أنظمة الرفوف الجديدة، في حين أن تكنولوجيا تكييف الهواء كانت من نصيب مجموعة CDS. وقد وُضِع المشروع موضع التنفيذ بجهود متضافرة مثالية بالتعاون مع شركة Kronimus.

Approaching the 100th anniversary in 2025

The Kronimus company was founded by Rudolf Kronimus in 1925 at the Iffezheim site, initially as a construction business and for the production of concrete bricks and blocks. In the almost 100 years that followed, the company has continuously developed and expanded its expertise and technology. Today, Kronimus AG is a renowned company in the

concrete industry and stands for particularly high quality and innovation in the production of concrete products. As a result, Kronimus has been able to establish itself as one of the leading manufacturers in Germany and offers an impressive variety of concrete products that meet a wide range of design requirements. The product range includes curbs, paving stones, terrace slabs, steps, bricks, wall elements, palisade fencing and many other special products. The range is not



The new large-capacity curing chamber at Kronimus in Heilbronn, Germany.



HS Anlagentechnik has installed an outdoor version of a large chamber system with 21 aisles and 16 shelves.

only functional, but also characterized by aesthetic design, which allows architects, landscape planners and builders to complete creative and appealing projects.

Kronimus AG relies on state-of-the-art production technologies and attaches great importance to quality assurance. Each product is carefully assessed to guarantee the highest standards. In addition, the company strives to use innovative technologies to produce resource-saving and environmentally friendly concrete products.

Kronimus is aware of its responsibility towards the environment and is actively committed to sustainable production processes. The company invests in energy-efficient technologies and supports recycling and resource-saving production. A prime example of energy-efficient technology at Kronimus is the new large-capacity curing chamber at the Heilbronn site.

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Energy saving as the top priority

A number of modernisation measures have been carried out at the Heilbronn site in recent years. For some time now, two concrete block machines from Frima have been producing high-quality Kronimus concrete products on two parallel lines, with the curing taking place in the large-capacity chamber. However, this large-capacity chamber no longer corresponded to the state of the art, especially from an energy consumption point of view. Consequently, Kronimus thought about how to best improve the situation. "There were two options: either to insulate and renovate the existing hall at great expense or to rebuild everything from scratch. The costs would probably have been almost comparable, so we decided to demolish the old curing chamber and build a new one in cooperation with HS Anlagentechnik and the CDS Group," says Mr. Guido Maier, Technical Director at Kronimus, summarizing the decision-making process.

"Kronimus has had a very good relationship with HS Anlagentechnik for over 40 years, so the decision for the supplier of the shelving system was actually easy and quick," Guido Maier continues. And since HS Anlagentechnik entered into a partnership with CDS Curing Systems from England in 2006, it was also possible to integrate the corresponding air conditioning technology with air circulation and humidity control in the large-capacity chamber. "HS and CDS are two competent companies that were able to offer the best system for us."

One of the major challenges of the project was the construction in existing buildings. But in teamwork during the assembly, also with employees from the Kronimus team with the Project Manager, Mr. Hubert Graf, the old curing chamber was demolished and the new large chamber for over 10,000 underlay plates built in less than three months. "It was a collaborative project, but the teams worked very well together, but independently of each other. In addition to HS, CDS was also on site with its own workforce," says Guido Maier, praising the implementation of the project.

Homogeneous climate for consistent product quality

Sensors distributed throughout the large chamber monitor the climate and provide the appropriate feedback to the system to allow individual control of air circulation and moisture addition. "Now there is a uniform climate throughout the chamber and all the concrete products harden under the same conditions. And of course, this has a very positive effect on the quality of the products," says Guido Maier. "Everything has been properly insulated. In general, many details had to be taken into account, but all of them were implemented by the project participants to our complete satisfaction. In short: I'm thrilled. And the resulting energy consumption is exactly as predicted by CDS."

Shelving system from HS Anlagentechnik

HS Anlagentechnik has installed an outdoor version of a large curing chamber system with 21 aisles and 16 shelves in Heilbronn. The capacity reaches 10,080 underlay plates with



The shelving system has a capacity of 10,080 underlay plates with dimensions of 1,400 x 950 mm.

dimensions of 1,400 x 950 mm and a weight limit of 500 kg per plate.

"With the shelving systems from HS Anlagentechnik, a snap-in connection provides a continuous pallet carrier and the frame design provides a self-supporting modular system in which the rails and the rack are brought up to height in one," says Richard Trappe, Managing Director of HS Anlagentechnik, explaining the advantages of his shelving system.

Snap-in connection

Precisely coordinated system elements make installation easy and safe. The basic element of the HS modular system is the galvanized steel frame. It consists of several steel uprights. The steel uprights and the pallet carriers are connected by a special snap-in mechanism. By means of the frame trusses, the steel uprights are connected at a width distance.

To hang the pallet carriers, wide, stable cleats are embossed at regular distances (storage level height). The conical design avoids harmful movements of the pallet carriers when loading or emptying the chambers. The upper part of the cleats contains a beading that prevents it from folding over, even under higher loads. A pin is punched above these cleats, fixing the pallet carriers in place.

The pallet carriers are cold-formed from specially galvanized strip steel, have a very high load-bearing capacity and, with a width of 80 mm, offer a very good contact surface for the underlay plates.

CDS Envirocure large capacity system

CDS Group has carried out a large number of prestigious projects around the world for a wide range of clients. The CDS Envirocure system was often chosen for its precise control of



The Envirocure system works with a highly efficient 450 kW gas burner.

curing parameters, its flexibility in operation, and its very high efficiency, among other things. By adapting the system to individual requirements, the Envirocure system has proven to be a reliable and efficient solution for the curing of concrete products for many customers. "With the Envirocure system, concrete manufacturers can rely on a curing process that maximizes product quality and increases overall productivity," explains Lucas Dunne, Managing Director of CDS Group.

The CDS Envirocure large-capacity system installed at Kronimus has active temperature and humidity control and provides central air circulation with a central high-performance fan.

The Envirocure system works with a highly efficient 450 kW gas burner, while CDS's patented humidification system works with vaporizing nozzles. This means that no steam is fed into the curing chamber.

With the CDS Envirocure System, air circulation, humidity and temperature can be precisely controlled and adjusted independently.

Air circulation

CDS plans the air circulation for each system very precisely to ensure uniform conditions throughout the curing chamber. The air is distributed evenly and precisely through a technical duct system connected to an industrial primary fan. The design of the duct network ensures an even distribution of the heated air throughout the system.

Patented moisture injection

The moisture control includes moisture supply, distribution and measurement. The moisture is supplied by means of a special moisture injection process. This creates a highly

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The air is distributed evenly and precisely in the chamber through a technical duct system.

humid but non-condensing atmosphere in the chamber. This system is only activated when the humidity is below the desired design value.

The humidity in the chamber is constantly measured by special humidity sensors. The sensor is monitored by the PLC controller, which allows precise control of the moisture in the curing chamber.



For some time now, two concrete block machines from Frima have been used to produce high-quality concrete products at Kronimus.

Temperature control

The CDS Envirocure system uses a precise temperature control circuit that contributes to the optimized curing conditions in the hall. The system is always adapted to the customer's individual requirements on site. The overall control of the system is provided via an operator interface with an HMI and/or a desktop PC on which a suitable SCADA software package for the control system is installed. ■

FURTHER INFORMATION



Kronimus GmbH & Co. KG
 Betonsteinwerk, Austrasse 169-173
 74076 Heilbronn, Germany
 T +49 7131 15180
info@kronimus.de
www.kronimus.de



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



CDS Group
 Cinderhill Industrial Estate
 Weston Coyney Road Longton
 Stoke-on-Trent
 Staffordshire ST3 5JU, England
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info@cds-group.co.uk
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Kronimus model garden in Heilbronn.

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Masa GmbH, 56626 Andernach, Germany

Staying one step ahead remains the goal – Modernisation and digitalisation as success factors

السبق دومًا هو الهدف - التحديث والرقمنة بوصفهما عاملين للنجاح

■ Rudolf Buyna, Michael Dolon, Masa GmbH, Germany

It is no secret that the success of companies goes hand in hand with continuous and targeted innovation and modernisation. The optimisation of structures, flexible innovation management for products and processes or the use of new technologies remain important in order to stay a little ahead of the competition. The decisive factor for the company Rünz & Hoffend GmbH & Co. KG, based in Urmitz/Germany, to realise an ambitious modernisation project with Masa GmbH as its partner.

لا يخفى على أحد أن نجاح الشركات لا يُنال سوى بالابتكار والتحديث المستمرين والهادفين. ويظل تحسين الهياكل، والإدارة المرنة للابتكار في المنتجات والعمليات، أو استخدام التقنيات الجديدة أمرًا مهمًا من أجل البقاء في صدارة المنافسة. ولقد كان العامل الحاسم لشركة Rünz & Hoffend GmbH & Co. KG، التي يقع مقرها في أورميتز/ألمانيا، يكمن في تنفيذ مشروع تحديث طموح بالتعاون مع شركة Masa GmbH شريكًا لها.

Hugo Kessler has been the new man at the helm of Rünz & Hoffend for a good four years now. A generational change at a very active concrete block manufacturer, which – like many other companies in the Neuwied Basin – has its origins a century ago in the pioneering days of the pumice industry. The great-grandson of company founder Lorenz Hoffend knows that today it takes much more than a shovel and a cross hoe to keep a company on the road to success. Product developments, investments and many innovative approaches are essential, for example. "You can't afford to miss the boat!" Hugo Kessler is certain. It is important to keep an eye on the

topics of sustainability and digitalisation, which are becoming increasingly important worldwide. Many concrete plants still have a lot of catching up to do in this area, even compared to other industries.

The foundations of success

Rünz & Hoffend is a company steeped in tradition. At the same time, a young, progressive spirit blows through the highly modernised concrete plant in Urmitz. Just one of the visible signs are the roofs of the administration buildings and



Modern and perfectly organised: The Rünz & Hoffend concrete plant in Urmitz, Germany



■ Rudolf Buyna has been working for Masa GmbH for over 35 years. After successfully completing his electrical engineering apprenticeship in Andernach and working abroad, he initially worked in electrical engineering. He later became head of production in the electrical engineering department. In 2011, he switched to sales, where he is responsible for Germany, Austria, Switzerland, the Benelux countries, the UK and North Africa among others, as Area Sales Manager.
r.buyna@masa-group.com



■ Michael Dolon first completed an apprenticeship as a power plant electronics technician and then studied electrical engineering, specialising in automation. He has been employed at Masa GmbH since 1994. Here he worked for several years in the areas of plant commissioning and software development. In 2003, he became head of the electrical design department, where he is responsible for the continuous further development of Masa control software and visualisation, among other things.
m.dolon@masa-group.com

production halls. Rooftop photovoltaic systems with an output of 600 kW/peak cover almost 40 % of the electricity requirements with the company's own green electricity.

In the administrative area, a lot has been done in terms of multimedia for employees, visitors and customers. "Living digitalisation" is a matter for the boss, so to speak. Just like the four most important criteria that Hugo Kessler believes a modern production facility must fulfil: Occupational safety, product quality, plant availability and tidiness & cleanliness. These foundations of success must be able to withstand continuous inspection and be subject to gradual modernisation as required. Last year, Rünz & Hoffend invested a considerable sum in precisely these areas that have an impact on success. The recently completed measure focussed on the control systems in terms of software/hardware and safety. The partners in this retrofit project were Masa GmbH and the local company Josef Müller Söhne GmbH & Co. KG.

Occupational safety:
Effectiveness and practicability must be in harmony

The Urmitz-based family business takes a broad view of the concept of family. At Rünz & Hoffend, employees are seen as part of the family, which is why occupational safety is naturally a top priority. The production facility should be up to date in terms of safety, and not just with the end of the grandfathering regulation that applied to older workplaces in Germany until the end of 2020. Hugo Kessler recognised the challenge of finding a modern, safe and at the same time very practicable safety solution for his plant and entrusted the Masa safety engineers with this not entirely simple task. He describes the core of the problem as follows: "The more complicated safety gets, the more creative people become in circumventing these very safety systems. So, Masa had to think both ways here."



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Marc Blin,
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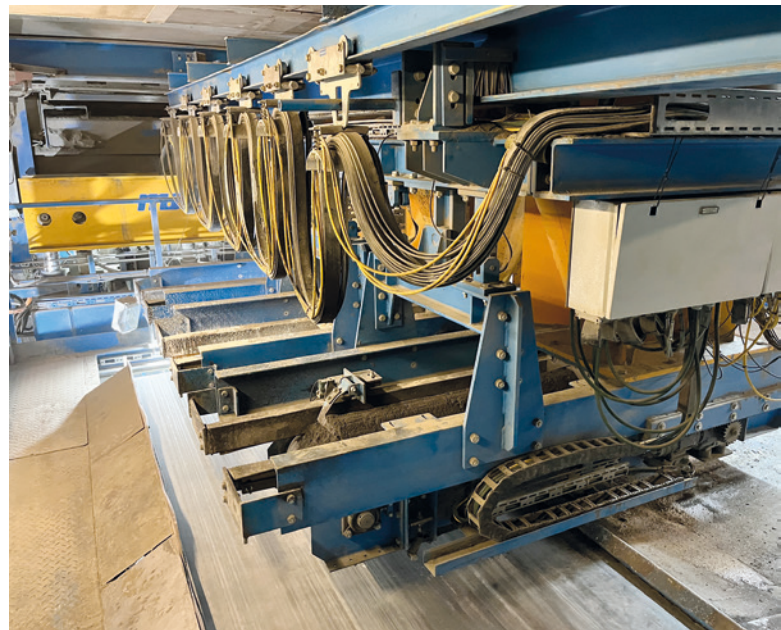


Safe and practical: Lockout-Tagout maintenance protection

It took the project managers from both teams, Masa and Rünz & Hoffend, collaborating on multiply topics with in-depth discussions on various approaches to reach consensus on the final solutions. Above and beyond the overall safety concept, measures such as the acoustic start-up warning or the visual route warning device in the area of the finger car are rated very positively by the production employees, as are the installed rotating beacons, which serve as visual signalling devices to detect and warn of danger spots. Initially, the new key transfer system took some getting used to. It ensures that the critical safety areas are secured with keys that are mechanically locked or released against each other according to a predetermined sequence. In the meantime, however, this system has achieved a very high level of acceptance among the plant operators. The "Lockout-Tagout" maintenance safety devices defined via the Masa Safety concept, which are used to protect against unauthorised access or unintentional activation, for example during a maintenance procedure, also give the operating personnel one thing above all: safety and a good feeling during their daily work.

Product quality & product development: Meeting current market requirements with innovative products.

The company's good reputation, which is best reflected in outstanding product quality, must be maintained in the spirit of the family. The wall-building materials produced must fulfil customer expectations, particularly in terms of their physical



Colour mix system with conveyor belt

properties. In the area of landscaping products, it is also important to deliver customised and visually appealing goods. In this segment, which tends to be focussed on private customers, price plays less of a role in the purchasing decision. What counts first and foremost is the look.

Hugo Kessler sees a clear brand development here, particularly in the area of coloured main mix concrete. The market for nuanced garden walls and shuttering blocks is currently growing in Rünz & Hoffend's sales area, but is characterised by major regional differences. Mediterranean flair, for example, is more in demand in the south of Rhineland-Palatinate. To enable Rünz & Hoffend to serve this differentiated market adequately in future, an effective technical solution was installed in a joint development:

A frequency-controlled belt transports the main mix concrete into the silo of the block making machine. The amount of concrete required depending on the recipe is controlled accordingly by setting the dosing time and speed. Hugo Kessler was already impressed by the functionality of the belt during the first practical test.

To produce multi-coloured main mix concrete blocks, the concrete is conveyed from the existing colour mix system to the machine's main mix silo using conveyor belts. Masa integrated this system into the control and visualisation system as well as into the recipe database.

The entire team is certain that these solutions have brought the production plant a considerable step forward in terms of the reproducibility of main mix concrete mixes.

Plant availability & digitalisation: Networked and future-proof

Only fast spare parts procurement guarantees high availability of the production plant. A simple principle. Conversely, this also means that if series such as the Simatic S5 are dis-

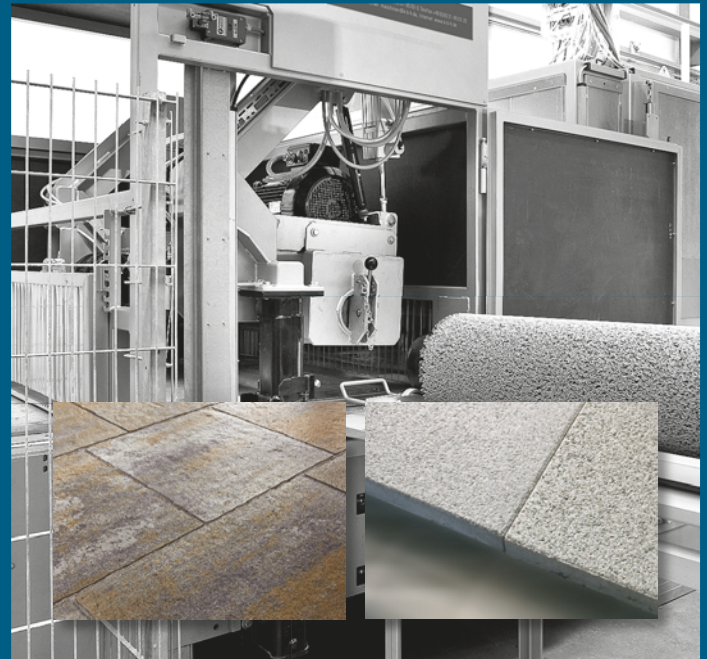
continued, spare parts will no longer be available at a certain point in time. With fatal consequences for plant availability. At Rünz & Hoffend, there was exactly one area that was still controlled by the old S5 system: The mixing plant for main mix concrete with a Masa PH 3000/4000 mixer, which was installed in 2012. The unavoidable replacement of this control system was the starting signal for a much more far-reaching retrofit project. Because when Hugo Kessler does something, he does it right. The inventory at the Urmitz concrete plant offered much greater potential for improvement than the originally planned control system migration: the creation of a fully networked plant with the latest automation technology! Although large parts of the previous control centre of the production plant (face mix plant, block making machine) were already based on the Simatic S7 system, they had an older generation of Delphi visualisation. To set the course for well thought-out digitalisation in the concrete plant, the Masa project team worked with Rünz & Hoffend to gradually develop a future-proof solution.

Industrial, consistent and reliable Ethernet communication based on Siemens Profinet, in combination with the Siemens TIA Portal, offers the latest generation of automation standards.

This solution was realised with the specially developed Masa plant control software FAST (Factory Automation System Tool), which offers a wide range of functionalities and log data.

"The plant now talks to us much better," summarises Hugo Kessler. "The positive effects on availability are unmistakable." This significant improvement is achieved through the interaction of various hardware and software components, only a small selection of which are explained in more detail here:

- **Product changeover**
The more the individual plant components communicate with each other, the better the automatic interaction of plant components. With the new system, Masa has created a solid basis for these demanding communication tasks. Just how efficient it is can be seen, for example, in the time that a product changeover on the dry side now takes: "Less than a minute," reveals Hugo Kessler succinctly.
- **Provision of log and plant data**
The system can automatically and regularly store relevant plant data on a server in various file formats via an interface. Information such as the number of cycles, the type of products, cement consumption or silo fill levels can be easily called up by the plant manager or plant operator before the shift begins. This eliminates the need for many handwritten and very time-consuming entries. The plant operator receives the data directly on his mobile device in a clear format, also by email if required, and can react much more quickly if necessary.
- **Analyses**
Weak points can only be rectified if they are recognised. The plant data provided by the system with a freely selectable analysis period supports the operator in opti-



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missing production. This is particularly relevant in 3-shift operation, when managers are not on site around the clock and the plant operator needs a reliable basis for making decisions immediately. "Knowledge is power," summarises Hugo Kessler. The input history tool can also be used in this sense, although it is only used occasionally, but is also helpful in troubleshooting.

- **Product families**
If master data is managed intelligently and efficiently, the time required to maintain the basic data is significantly reduced. This is where a tool comes in that allows product families to be individually compiled and stored. Recipe changes that affect a product family are made once and then automatically affect all subgroups. Both global changes to cross-recipe values and local changes to recipe-related values are possible.
- **Recipe comparator**
Especially in the initial phase after the changeover to the new control system, Rünz & Hoffend benefited from the option of having the system automatically compare recipes. This is because Rünz & Hoffend did not blindly drag the old recipes into the new system environment. Each recipe was checked, recreated, and compared with each other. Manually and without system support, this would probably have been the proverbial Sisyphian task. With the help of the recipe comparator tool, this work was successfully completed within a very short time, so that the plant could go back into production at an early stage.
- **Product list**
The chamber system at Rünz & Hoffend, in which the products harden, has space for over 15,000 production boards. A large number of products are stored here, including highly customised design pavers with a rather low order volume. It is not uncommon for 10 to 15 different products to be stored in the chambers. Time is always a factor, so the storage and retrieval logistics, which are coordinated by the Masa finger car, take these customer-specific requirements into account. Based on a special product list sorted according to customer requirements, retrieval in these cases follows a batch-based first-in-first-out (FIFO) principle. Depending on the order status, other sorting methods are also possible - always with the aim of utilising the chamber system in a cost-, space- and time-efficient manner.
- **Fault messages**
Detailed logging, signal lights on the control panel and collective fault message lights alert the plant operator immediately and specifically to possible malfunctions, which can thus be identified and rectified more quickly.

Tidiness & cleanliness: In the direct working environment and in the control structure

There are nicer places than a concrete factory. The production process for concrete blocks is inevitably associated with dust



Well-coordinated and customised solutions: storage and retrieval logistics in the curing area

and noise. Nevertheless, a concrete plant can also offer an attractive working environment - if, for example, tidiness and cleanliness are a high priority for the company management. The fact that this is the case at Rünz & Hoffend is evident to any visitor after just a few steps on the company's outdoor premises. Accurately paved, clean storage areas for finished end products, a tidy mould park, structured access routes to all areas of the site. The company is doing its bit to cultivate the image of the industry. "Both employees and customers benefit from the good general working conditions," emphasises Hugo Kessler. "But we're also not doing too badly here in terms of the shortage of skilled labour in Germany."

When you enter the interior of the production hall, you will find a compact but highly efficient production facility that produces a wide range of gardening and landscaping products and an extensive range of wall-building materials in 3-shift operation. Maximum order and clarity also prevail at the plant's central control stand. Large windows provide an all-round view from the soundproofed and air-conditioned room. In addition, the plant operator can view the various plant areas and statuses at any time via monitors. An impressive eight screens for the plant components and five camera screens are installed here.

When tidiness runs like a red thread through the company, the expectations of the visualisation of the newly installed software are obvious. It should be clear, straightforward, logical, and easy to use. The modular Masa plant control software absolutely fulfils these requirements. The changeover and familiarisation phase went smoothly thanks to a standardised and comprehensible tree structure for the operating personnel. Orientation within the input masks and protocols is easy, as Masa has implemented consistent standard templates based on common Office applications with a high recognition value. The relevant parameters are clearly arranged on the screen and there is no need to scroll within the page. Switching to different hierarchy levels is done intuitively at the



Control stand at Rünz & Hoffend before and after modernisation

click of a mouse. Setting favourites also facilitates usability. The Masa Live Motion with its realistic animation of the moving plant components in real time proves to be particularly practical when visualising the finger car, as it largely replaces the previously common but less convenient ride-along on the finger car. From a safety point of view, this is definitely an advantage.

Local cooperation for a quick solution

It was clear to everyone involved that the modernisation project at Rünz & Hoffend would be very extensive, at the latest when the contract was signed. The most favourable time of the year from a production perspective was chosen for the actual conversion phase at the plant: winter. But here, too, every



Professional and just-in-time: laying the new cables

day counted, as every day the plant is out of action incurs considerable costs for the company. Hugo Kessler therefore set a very ambitious target: production was to be fully up and running again after six weeks of plant downtime at the latest. An extremely tight time frame that could only be met with the utmost discipline, detailed planning, precise preparatory work, and reliable co-operation with a competent third-party company. Masa openly communicated from the outset that it simply did not have sufficient in-house capacity for the complete electrical installation with extensive safety technology, the laying of cables and the assembly of the control cabinets during this period. For Rünz & Hoffend, this was an honest statement that once again characterised Masa as a reliable business partner.

Thanks to the local cooperation between Masa and the specialised electrical company Josef Müller Söhne GmbH & Co. KG, two experienced companies from Andernach realised the task quickly and professionally. This was only possible because the project managers from both companies worked conscientiously and hand in hand. The early preparation and handover of the circuit diagrams by Masa was followed by days of intensive work laying several kilometres of cable by Josef Müller Söhne.

The further course of the project was also characterised by a very structured organisation and a high level of commitment from everyone involved, which paid off. Nevertheless, the first phase of commissioning, without any material, was a real challenge for the Masa team led by Jörg Fichtner and Andreas Hück. For new plants, the control cabinets are usually pre-wired and tested in the Masa electrical workshop without any stress. In this project, however, the wiring of the existing mixer, machine, finger car control cabinets, the subsequent wiring, and the obligatory tests of all functions had to be carried out during commissioning. Another challenge was posed by the parallel winter repairs at the plant: Components such as the main mix concrete mixer were still dismantled for maintenance and repair purposes and had to be reassembled before the functional tests could be fully carried out.

In addition to the excellent cooperation between the companies involved, Jörg Fichtner also rated the presence of the Managing Director as positive: "Hugo Kessler attached great importance to the details during his daily visits. Open and very focussed discussions were always possible with him."

Just five weeks after the plant was shut down, the first fresh start was made in the new system environment. And just a few days later, the Rünz & Hoffend team ventured their first free trials in 3-shift operation. With a lot of trust in the experts from Andernach, who deliberately stayed in the background. Looking back, Hugo Kessler describes the situation, which he certainly wanted, as follows: "On the one hand, we had enormous internal pressure from sales, as demand was booming. On the other hand, the motivation for my employees to operate the system independently as quickly as possible and gain their own experience was significantly higher with this approach. However, we also knew that Masa's project managers would have jumped into the breach at any time if necessary.

The fact that we didn't need this safety net once again speaks volumes for the quality of the entire project organisation." The Managing Director of Rünz & Hoffend is visibly proud of his modernised plant. From his point of view, the entire project benefited from one factor in particular: the personal, professional dialogue with the Masa team of experts. Because when it comes to sensitive and important matters, Hugo Kessler still values face-to-face discussions - despite all the openness towards digitalisation and the resulting possibilities. Short communication channels and quick decisions thanks to the strong presence of the Masa specialists contributed significantly to the successful completion of the project. And the future

Regarding digitalisation, Hugo Kessler still sees a lot of potential for the future at concrete block and paver plants. Above all, successful implementation requires trust and a fundamental approach to the topic. However, despite all the ambition, one thing must not be lost sight of: The cost-benefit ratio must be right.

One thing is certain: more projects will be added and the question of digitalisation readiness in concrete block and paver plants remains exciting. ■



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FURTHER INFORMATION



Rünz & Hoffend GmbH & Co. KG
Gewerbegebiet Brückenstraße
56220 Urmitz/Rhein, Germany
T +49 2630 80010
info@rh-steine.de
www.rh-steine.de

masa

Milestone to your success.

Masa GmbH
Masa-Str. 2, 56626 Andernach, Germany
T +49 2632 92920
info@masa-group.com
www.masa-group.com



Josef Müller Söhne GmbH & Co. KG
Rasselsteinstr. 11, 56626 Andernach, Germany
T +49 2632 25170
info@mueller-elektro.de
www.mueller-elektro.de

Hess Group GmbH, 57299 Burbach-Wahlbach, Germany

New plant underscores Rochester Concrete Product's commitment to establishing new standards

مصنع جديد يؤكد التزام شركة Rochester Concrete Products بإرساء معايير جديدة

Rochester Concrete Products (RCP) has opened their doors for customers to tour a new technologically advanced manufacturing plant at their Interlock Concrete Products location in Jordan, Minnesota. RCP is a third-generation family business with a rich history in mortarless concrete manufacturing and construction expertise dating back to 1914. With strong expertise in product manufacturing and design innovation, they have contributed significantly to the construction industry in their home State of Minnesota and the Upper Midwest market region.

فتحت شركة Rochester Concrete Products (RCP) أبوابها للعملاء للانطلاق في جولة في مصنعها الجديد المتطور تكنولوجياً في موقع شركة Interlock Concrete Products في مدينة جوردان بولاية مينيسوتا. إن RCP شركة عائلية يديرها الجيل الثالث من أبناء العائلة. وتتمتع الشركة بتاريخ حافل في تصنيع الخرسانة بدون مونة وخبرة في البناء تعود إلى عام 1914. ويفضل الخبرة الكبيرة في تصنيع المنتجات والابتكار في التصميم، فقد ساهمت الشركة بشكل كبير في صناعة الإنشاءات في ولاية مينيسوتا التي تنتمي إليها العائلة وفي منطقة سوق الغرب الأوسط الأعلى.

With manufacturing facilities in Rochester, Minnesota, as well as other locations in Thorp, Wisconsin, Jordan, Minnesota, and Beaver Dam, Wisconsin they offer high-quality concrete product designs for a wide range of building applications.

Chris Price, CEO of RCP, and Jeff Price, President of RCP, head up the family-run company, and it was their decision to make the impressive investment in capital equipment technology that sets a new standard for quality and innovation.

The journey to build the 45,000 sq. ft. building to house the new plant, which now sits alongside the existing 35,000 sq. ft. manufacturing facility, began touring European production plants to better understand what was needed to position their company for growth in the dynamic North American market that now demands these "European" standards of architectural grade quality in innovated product shapes, sizes, and finishes.

The new plant underscores Rochester Concrete Product's (RCP) commitment to establishing these new standards in color finish, product innovation, and increased availability for the hardscape community in a manner that has enthused not only all the of their contractors and dealers, but all the RCP employees as well.

"The driving factor for the new plant was the fact that we were losing market share to face-mix products which were rapidly becoming the customer's preference" states Jeff Price. "Our existing facility was labor intensive and especially difficult

to maintain the necessary spare parts inventory to limit the breakdowns and associated downtime. It was time to do more than merely upgrade the existing manufacturing capabilities. It was critical to embrace a generational change."

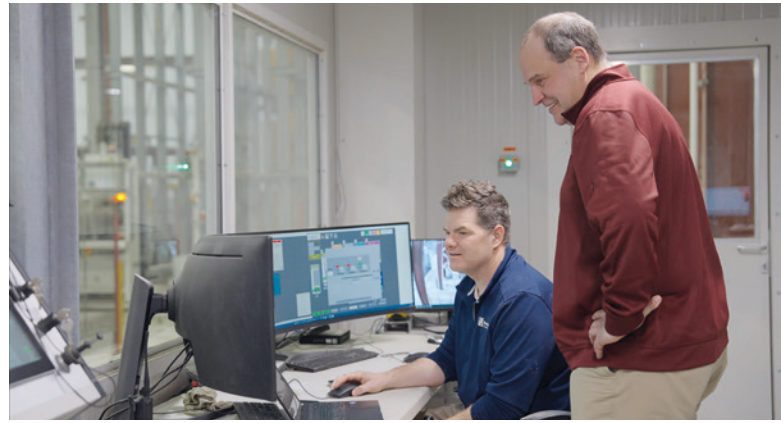
The RCP Team previously had traveled to Europe to tour selected facilities with regularity, but they decided to intensify their research with more express purpose in 2019. "It became apparent that producers who made the critical investment in face-mix products of high quality were operating the RH 2000-4 MVA Hess production machines. Our philosophy and commitment to a higher standard of quality and innovation seemed to naturally lead us to the Hess Group technology" offers Chris Price. "We also saw an opportunity to share best



Rochester Concrete Products' new manufacturing plant at their Interlock Concrete location in Jordan MN



Oliver Rauter, Managing Director of Hess Group, and Jeff Price, President of Rochester Concrete Products, reviewing safety controls of new plant.



Scott Schaffler, Director of Operations, and Kevin Mensink, Vice President of Marketing, in the plant control room monitoring the batching and mixing systems.

practices with these fellow Hess producers to shorten our learning curve and accelerate the elevation of our standards. Moreover, the Topwerk Group (of which Hess Group is a part) and their expanding commitment to support the North American Market with the establishment of Topwerk America, Inc. in Conroe, Texas was a crucial factor in our final selection."

The final decision to build a new facility and forego upgrading the existing facility was, in the end, an easy decision once all critical factors were considered by the RCP executive team. The ability to increase the level of automation, capacity output, material management, and quality control provided the justification for the capital investment. Chris Price was pleased to select Hess Group as the lead equipment vendor for this transformative project. "Hess Group was supportive throughout the entire process - from providing us with upgrade quotations for the existing facility, to coordinating the European plant tours, and then ultimately to the final new plant discussion, design, and analysis." He adds "Their entire team was very professional and supportive of our decision to go forward with the advanced equipment technology. Their project management was diligent and aligned with what you would expect from the leader in concrete product manufacturing technology."

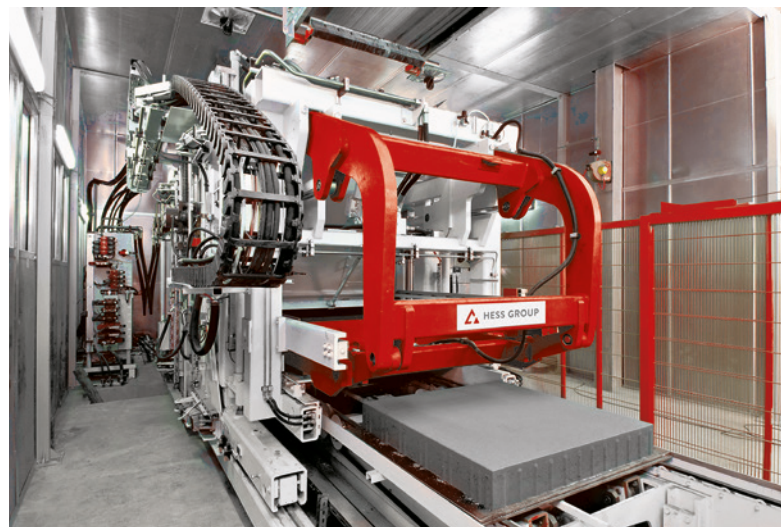
Hess RH 2000-4 MVA Production Machine

"The centerpiece of the new plant was the Hess RH 2000-4 MVA production machine. This is not just another machine, but a machine like no other," exclaims Kevin Mensink, Vice President of Marketing for RCP. "This machine's specialized operating system and technical capabilities were developed expressly for the larger size paving slab with face-mix finish. We are now able to consistently produce architectural grade products that meet our new standards!" Scott Schaffler, Director of Operations at the new Interlock Concrete facility in Jordan, agrees with the reliable performance of the new Hess machine by sharing that "Whatever products we might now categorize as seconds are better than what was previously viewed as first-quality output. This machine is a game changer!"

During the frequent plant tours for contractor customers, Kevin Mensink highlights the specific features of the RH 2000-4 MVA production machine that make the difference. Beginning with the four (4) independently controlled tamper head cylinders which deliver uniform height and density to the highest calibrated value, to the patented Planing Roller that allows face-mix design with higher moisture content to deliver a stronger, bolder, and richer paver finish.

"Others have attempted to do this using different methods, but never with the quality, precision, and efficiency that Hess technology delivers. The Planing Roller has made possible a broader spectrum of products sizes and richer palette of color finishes," Kevin adds.

All of this is on full display for over six hundred contractor customers who will have taken advantage of the 2024 introductory plant tour campaign. "The entire plant was conceived to be an eye-opening testimony of our commitment to become the brand that contractors prefer for ease of installation and



Hess RH2000-4 MVA production machine with advanced technology for larger sizes and high quality finishes.

simplicity” offers Jeff Price. “Availability, Quality, Reliability, and Innovation are now the bedrock attributes associated with the RCP brand.

Molds

A further example of the new commitment to the highest standards are the care and attention given to the manufacturing molds by Kobra. The mold components are essential to shape the concrete paver. The stability, durability and design of the mold will directly bring about the size, structure, and architectural qualities of the manufactured paver or paver slab unit. “Molds are a great example of how a small decision, upstream in the production process can have a huge impact on what the contractors experience in the backyard” states Kevin Mensink. “RCP has made investments to ensure these mold components translate into meaningful benefits for our customers.” For example, a Headguide Alignment which ensures that the head comes down in precisely the same spot on the mold frame, cycle after cycle, will maintain uniform chamfers and edges for the paver unit. Additionally, Heated Tamper Head Shoes enable RCP to efficiently produce a paver product with face-mix finish of higher moisture content which results in bolder and brighter colors.

Production Boards

The production board itself is often overlooked as a vital component in the manufacturing process of a paver slab product of larger sizes. The production board forms the bottom side



Production boards with tilted paver configuration

of the mold, and its strength and durability will contribute to the production cycle with a direct cast on the final product. RCP selected the Wasa Woodplast® production board by Wasa AG. This highly valued production board combines high-performance plastic with a softwood core to deliver for extreme impact-resistance and high bending strength to maintain the integrity of the production board.

Board Buffer Capacity

To assure the constant output efficiency of the RH 2000-4 MVA production machine, RCP has made a substantial investment to provide ample Board Buffer storage capacity 2400 production boards. This surplus accounts for any cycle-time differential between the Wet Side (production line) and the Dry Side (handling and packing lines) that may occur due to temporary or planned downtimes. Moreover, this enables the production and/or packing lines to keep operating to assure increased product availability for customers. “This Board Buffer capacity allows us to run 14 hours in case of short-term stoppages on the lines. Being able to continuously run a machine does more than simply increase output capacity, it also supports consistent product quality,” offers Kevin Mensink.

Batching, mixing, and color blending

Batching

Apparently, every plant tour begins at the beginning, and that starts with the raw materials batching, mixing, and color blending. RCP selected Advanced Concrete Technology (A.C.T.) to provide the batching, mixing, and color blending equipment systems for their new plant. A.C.T. has collaborated with Hess Group on numerous plants throughout the world, and they share the same view towards customer technical support in North America. A.C.T. was able to supply the complete scope of equipment within the established timetable for the project despite supply chain issues confronting others in the industry at the time.



The board buffer cart automatically collects, stores, and transfer production board to machine on demand.

Inside storage of raw materials with 660 tons capacity to assure consistent moisture of batched mix design.



To assure that there is consistent moisture content and the correct temperature in raw materials, ample inside storage for all raw material aggregates was provided. There is now 660 tons storage of raw materials inside the plant.

Mixing

The mixing platform has three (3) mixers: one (1) Wiggert HPGM-3750 mixer for the base mix, and two (2) precision Wiggert HPGM-375 mixers for the face-mix designs. The HPGM-3750 Mixer capability assures steady supply of raw materials to keep up with the material consumption demands of production machine cycles for even the highest volume product types, such as over-sized steps and retaining walls. The two HPGM-375 Face-Mixers reduce the risk of cross-contamination from one mix design to the next, and to ensure consistent purity of mix design colors when white cement is part of the color mix design.

Color Blending

The four (4) Quad Oscillating Shuttle Belts can move in-and-out in twenty distinct positions. This overcomes color striping

common through laying color directly on the belt. The Quad belts deliver the raw color mixture in exact proportions controlled by the speed of the belts and the position of the belt drop point. This flexible combination of speed, proportion, and placement on the main feed belt allow a wider range of color blending designs. These highly calibrated mix designs are programmable and saved on the operating software for consistent recall for future production runs of the same products. "Our goal is to deliver the same color blends in October that we delivered in May. We want our customer to know they can rely on our colors to be consistent from batch to batch" Kevin Mensink remarks.

The facemix microdoser dispenses color by the grams, not by the pound as many concrete facilities currently practice. Tighter and finer aggregates in controlled dosages assure vibrant and distinctive color finishes and create a more natural blending of colors.

Chroma Shield Sprayer

A layer of chemical surface protection is applied to the freshly made pavers with the Chroma Shield Sprayer. This coat-



HPGM-3750 base mixer to assure constant supply for production machine.



HPGM-375 face mixer for optimal mixture of finer aggregate material.



Quad Belt oscillate distribution automatically programmed for consistent color blending.



Microdoser dispenses color in grams for precise control of final color design.

ing process protects the color finish and bright bold finish against harmful effects of exposure to sun, salt, and other lawn chemicals.

Quality Control

Wet Side QC

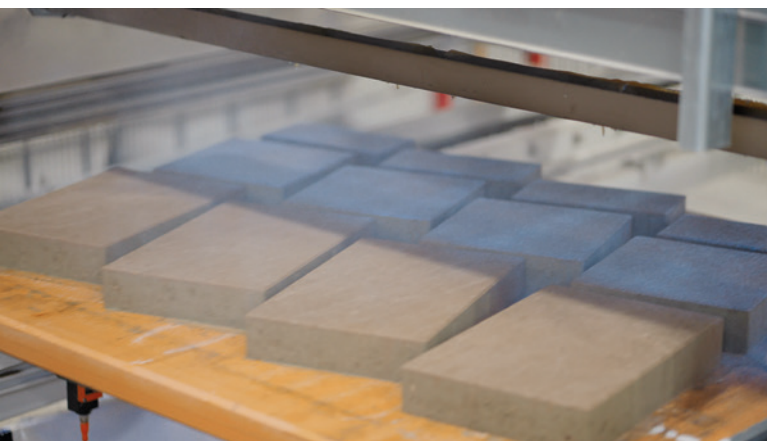
To assure the new standard of high-quality products RCP has provided specific Quality Control stations on both the Wet-side and the Dry-side of the manufacturing lines. On the Wet-side, the height and the density of the product layers are monitored and measured by laser for precise height with a tolerance of +/- 1 mm. "Our products are easier to install for the contractor. Our pavers will have consistent height from the first one they pull until the last one installed", Kevin Mensink points out.

The density measurement is achieved by weighing the board before the production machine and then after the board emerges from the machine with fresh new product layers. "Density is the fundamental determinant of final strength in

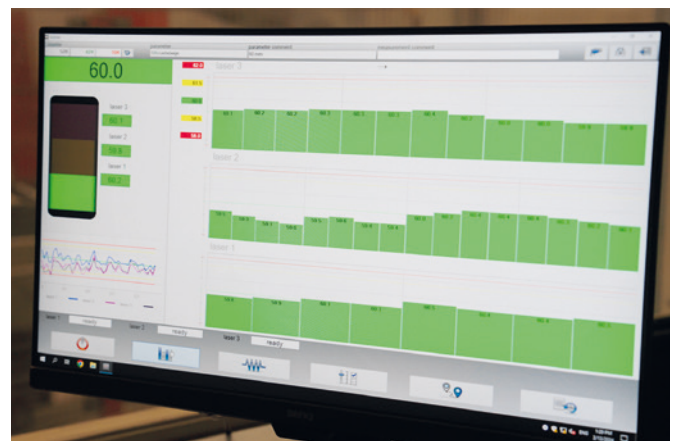
the finished product. If any product does not meet our density standard, we reject that product right then and there, before it even reaches the kiln" explains Scott Schaffler. The Wet-side Quality Controls also visually check for face and edge definition as well as other aspects that will be correlated back to the production machine cycle parameters.

Dry Side QC

On the Dry-Side a specific QC Station is staffed by two QC Specialists who monitor and replace any defective pavers that have been identified by the laser-monitored QC system, and any that do not pass their further visual inspection standards. Jeff Price quickly adds "Our commitment to quality will continue to advance. We have planned the future installation of an AI Robotic System which we will install within a few years. The conveyor lines are already prepared for this purpose. This system will use camera technology and AI software to convert this QC station into an automated Smart Station that identifies the defects, removes the defective paver, and captures the data for our continuous improvement."



Chroma Shield coats products to prevent final color from fading from exposure to weather and sun elements.



Laser measurement monitor tracks each cycle for height tolerance.



Curing Racks are in a single room to maintain temperature and moisture control for optimum product curing.



Beader device spreads a protective layer of organic beads to prevent surface damage during shipment.

Finger Car and Curing Kiln

The freshly made products are smoothly transferred to the Curing Kiln by the Finger Car which operates on a rail. This single-room curing area by Rotho tightly controls moisture and temperature values so the concrete products gain optimal strength and durability. The initial storage capacity of 5500 production boards will hold multiple shifts and/or certain products which may need to remain longer. An additional capacity of 3300 more boards is planned in the plant layout and can be added with minimum disruption to ongoing operations.

Product Handling and Packing

Stone Squeezer and Beed dispenser

The product layers are consolidated by the Hess Stone Squeezer/Doubler for transport to the shipping pallet line.

The Stone Squeezer tightly pushes the layer together which prevents beads from settling between the individual stones. Each layer of the face-mix pavers is then protected with an application spray of organic beads to safeguard the surface finish through shipping. The organic beads are biodegradable and do not contribute to environmental waste.

Hess Cuber

After curing, the Finger Car transports the products to the Dry Line for handling and product transfer to the packing lines. The Hess Servo 700-2 Cuber itself sets a standard for careful handling and smooth transfer movement of the product layers. It efficiently picks up the layer and transfers the layer while turning the layer for proper positioning on the shipping pallet. This efficient transfer maintains optimum throughput volume of packaged shipping cubes into the inventory yard.



Hess Cuber efficiently transfers product layer from production board to shipping pallet cube.



Banding allows product cube to breathe and minimize packing waste.



Dry Side Handling and Packing lines are fully automatic and maintain efficient throughput of product volume.

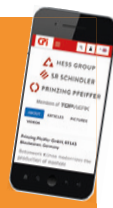
Strapping and Wrapping

Most products unless specified otherwise are banded on the shipping cubes as opposed to being plastic-wrapped to allow air to circulate around the shipping pallet. This method also reduces the carbon footprint by avoiding plastic waste on site. A wrapping device on the packing line is installed in the event wrapping is needed.

The excitement created by the numerous customer tours of the new facility and the unveiling of the new products at tradeshow and industry events demonstrates the transformative power of investing in manufacturing equipment technology that, in turn, advances a company's capabilities to meet and exceed customer expectations. "The timing has been great," asserts Chris Price. "And while we are extremely excited for 2024, we are even more enthused about what the future holds for further innovation and even higher levels of quality and consistency. And it all started with a simple goal to upgrade our existing machine."



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Rochester Concrete Products, Inc.
3535 Bluff Drive, Jordan MN 55352-8302, USA
T +1 952 4923636
www.rochesterpcp.com



Hess Group GmbH
Freier-Grund-Straße 123
57299 Burbach-Wahlbach, Germany
T +49 2736 497 60
info@hessgroup.com, www.hessgroup.com



Advanced Concrete Technologies, Inc.
300 Portsmouth Avenue
Greenland, New Hampshire, 03840, USA
T +1 603 4315661
info@concretebiz.com, www.concretebiz.com



Wiggert & Co. GmbH
Wachhausstr. 3b, 76227 Karlsruhe, Germany
T +49 721 943460
info@wiggert.com, www.wiggert.com



Wasa AG
Europaplatz 4
64293 Darmstadt, Germany
T +49 6151 780 8500
info@wasa-technologies.com, www.wasa-technologies.com



The Contours Pavers are one of the featured new products that create a new standard.

Planetary mixers with high-speed agitator for the producing of multi-color pavers and large paving slabs

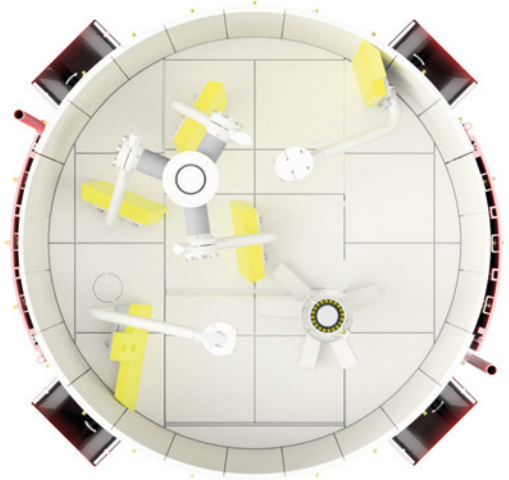
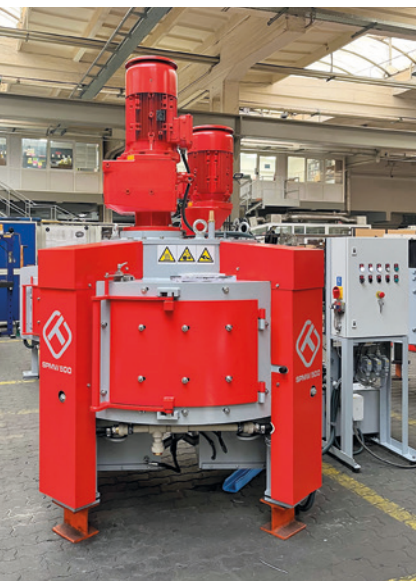
خلاطات دائرية ذات مضرب عالي السرعة لإنتاج الحجارة المبلطة متعددة الألوان وألواح الرصف الكبيرة

In the US and European market, the decision to choose large concrete slabs in garden arrangements has become a significant trend in recent years. The charm of multicolored surfaces has long captivated both designers and consumers. The pursuit of subtle shades and textures reminiscent of natural stone remains a driving force in the concrete production industry. Terrace slabs with a melange effect represent high-margin products highly esteemed by architects. However, achieving this effect has proven to be a challenging task.

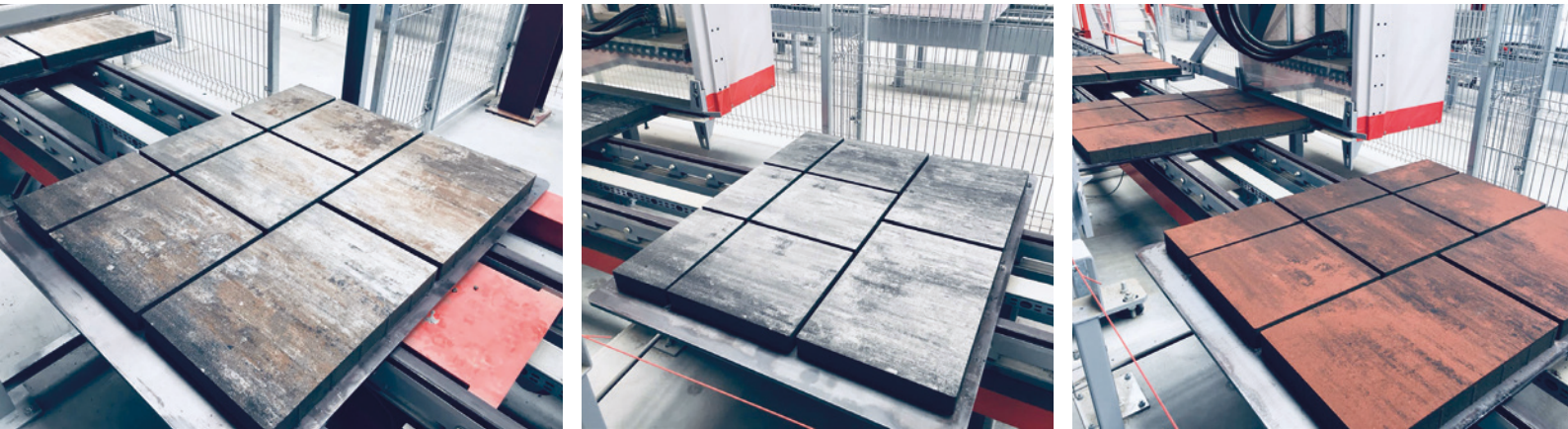
في السوق الأمريكية والأوروبية، أصبح قرار اختيار الألواح الخرسانية الكبيرة في تنسيقات الحدائق اتجاهًا سائدًا خلال السنوات الأخيرة. فقد أسرّ سحر الأسطح متعددة الألوان الباب المصممين والمستهلكين على حد سواء منذ فترة طويلة. ولا يزال السعي وراء الظلال والقوام الرقيق الذي يذكرنا بالحجر الطبيعي قوة دافعة في صناعة إنتاج الخرسانة. وتمثل البلاطات الخرسانية المُندَسَّة ذات التأثير المختلط منتجات عالية هامش الربح يقيم لها المهندسون المعماريون وزنًا كبيرًا ويقدرونها كل التقدير. ومع ذلك، فقد ثبت أن تحقيق هذا التأثير مهمة صعبة.

In the production of multicolor paving blocks and especially large-format elements, it is crucial to achieve a homogeneous concrete mix. Improperly prepared concrete mixes not only result in poor strength parameters of the product but also pose the risk of visible imperfections, leading to either markdowns or waste due to aesthetic reasons. In the case

of small-format paving stones, the waste percentage may be marginal, but with large formats, significant losses occur, as entire batches or product series may end up as waste. Given the current energy and cement prices, this significantly impacts the profitability of manufacturing facilities.



Techmatik planetary mixers SPMW 500 and SPM 1125 and with high-speed agitator



Sample photos of products that have been manufactured on Techmatik production lines using SPM/SPMW planetary mixers with high-speed agitator.

Traditionally, the production of multi-colored blocks and colormix slabs involved batch-by-batch feeding of different pigmented mixes into the face mix hopper. While this method allowed for some degree of control, it often resulted in unwanted color blending or inconsistencies in the final product. As a result, manufacturers faced significant waste and inefficiency, with numerous cycles yielding improperly blended or rejected products.

To address these challenges, manufacturers have turned to innovative solutions such as the production lines featuring planetary mixers with high-speed agitator. These state-of-the-art machines are specifically designed for the precise preparation of various types of dry and wet mixtures, including those required for multi-color paving slabs.

Planetary mixer SPMW with high-speed agitator is a device dedicated to the preparation of concrete top layer. Customer feedback indicates that by employing high-speed mixers (whirlwinds), waste can be reduced by up to 90%!

The mixing process has been thoroughly examined in an accredited laboratory, IAB, in Germany. The utilization of a high-speed mixer has resulted in a 20% reduction in mixing time (from 5 minutes to 4 minutes for the SPMW-500 mixer). The mixture achieves homogeneity, making it ideal for preparing top-layer concrete, facemix, colormix, saves cement and more.

In conclusion, mastering the production of multi-color paving slabs requires a combination of innovation, precision, and state-of-the-art technology. By leveraging advanced equipment such as Techmatik's planetary mixers with high-speed agitators, manufacturers can meet the growing demand for these high-margin products while minimizing waste and maximizing efficiency. With careful attention to detail and a commitment to excellence, the possibilities for creative expression in garden design are limitless. ■



In the US and European market, the decision to choose concrete slabs in garden arrangements has become a significant trend in recent years.

FURTHER INFORMATION



Techmatik SA
 ul. Żółkiewskiego 131/133
 26 - 610 Radom, Poland
 T +48 483690800
sales@techmatik.com
www.techmatik.com

Rekers GmbH Maschinen- und Anlagenbau, 48480 Spelle, Germany

Focus on sustainability

التركيز على الاستدامة

Rekers GmbH Maschinen- und Anlagenbau is a family-run mechanical engineering company based in Spelle, Lower Saxony. Rekers has been supplying machines and systems for the concrete industry since it was founded in 1955. Rekers has characterised the concrete industry from the very beginning with innovative, automated and energy-saving plants. Rekers' key success factors are rooted in its status as a medium-sized, family-run company. This structure enables the company to pursue a long-term and sustainable strategy, which creates trust among customers and partners.

إنّ Rekers GmbH Maschinen- und Anlagenbau شركة هندسة ميكانيكية عائلية مقرها مدينة شبيليه الواقعة في ولاية ساكسونيا السفلى. وتختص شركة Rekers بتوريد آلات وأنظمة لصناعة الخرسانة منذ تأسيسها في عام 1955. وقد تميّزت شركة Rekers منذ بداياتها في صناعة الخرسانة بمصانعها المبتكرة والمؤتمنة والموفرة للطاقة. وترجع عوامل النجاح الأساسية لشركة Rekers إلى مكانتها بوصفها شركة عائلية متوسطة الحجم تديرها عائلة واحدة. ويُمكن هذا الهيكل الشركة من اتباع إستراتيجية طويلة الأجل ومستدامة، مما يغرس الثقة بينها وبين العملاء والشركاء.

The corporate philosophy is based on a deep-rooted commitment to sustainability. The company firmly believes that long-term economic success is closely linked to a responsible approach to environmental and social considerations. Integrating sustainability into all business activities is the key to creating a sustainable company that makes a positive contribution to society and the environment.

The sustainability strategy is based on a comprehensive understanding of sustainability that takes equal account of environmental, social and economic considerations. Rekers is guided by the global goals of the United Nations, the Sustainable Development Goals (SDGs). These serve as a guideline for specifically focusing on those sectors in which the greatest contribution to sustainable development can be made.

Resource- and energy-efficient products

RS - Block making machines

The RS4, the largest block making machine in the Rekers RS series, pursues an innovative concept in the field of block production lines. One striking difference is that the machine is rotated by 90° to the board supply, which leads to a new design of the production process. The RS4 is characterised in particular by its high energy efficiency, which is achieved through the use of servo technology and the reuse of braking energy, also known as recuperation.

A special feature of this machine is that, unlike conventional Rekers machines, no lifting of the facemix (approx. 7 tonnes)



Reker's main site in Spelle



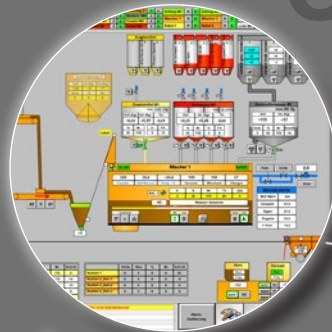
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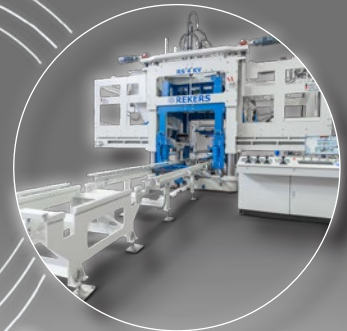
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RS 4 KV block making machine with electric feed box drives for core and facing concrete

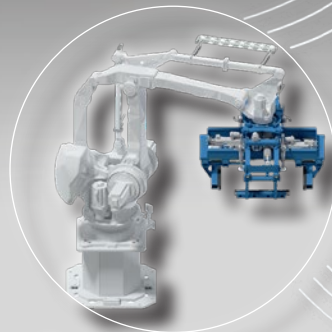
Machines MADE IN GERMANY



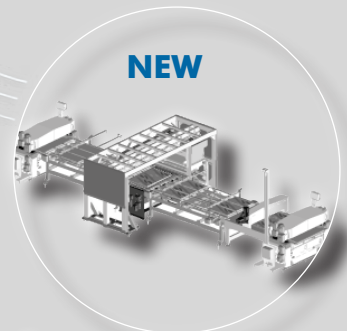
1 From mixing and dosing system controls



2 to stone production



3 via packaging



4 including finishing
• Shotblast
• Curling
• Splitting
• Calibration
• Coating





Fully automatic industrial Sandosit production plant



Application example wall elements



Application example blocks

is required. This technological innovation leads to a considerable increase in efficiency.

Sandosit

The Sandosit plant is for the production of a new generation of lightweight aggregates for use in the concrete and building industry. The aggregate can be used for the production of lightweight masonry blocks or insulating plaster, for example. The new process implemented by Rekers enables the utilisation of previously unusable materials and industrial waste, such as desert sand, slag and fly ash. This means that sand and gravel can be completely dispensed with. The result of this process is the production of Sandosit aggregate, which can be produced in a CO₂-neutral way. This contributes significantly to reducing the environmental impact

and supports the endeavour to offer sustainable products. Another environmentally friendly aspect is that there is no production waste in the production of Sandosit aggregate, as 100% of the residues can be reused.

Attractive working conditions

At the end of the financial year on 30 September 2023, Rekers GmbH had 178 permanent employees. For the 2023 financial year, 14 employees left the company and 23 joined it. Currently, 10% of the 178 employees are female. At 15%, the proportion of women in management positions is significantly higher than the overall proportion in the company. One of Rekers' aims is to intensify the promotion of young people in apprenticeships and further education and to provide attractive jobs.



Park for employees at the rainwater retention basin

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Concrete Pen!



[personalization]

- » New design
- » Enhanced surface quality
- » Personalization now possible in precise color printing

[design]

[surface]

Occupational health and safety

Occupational safety

Rekers emphasises the need for a committed contribution from both employees and managers to ensure a safe workplace. This includes strict adherence to work and safety instructions. To achieve this goal, regular training courses are organised for all employees to raise awareness of safety measures.

Despite Rekers' efforts, occupational accidents occurred in the reporting year. However, Rekers reaffirms his endeavours to reduce the number of accidents and further improve safety standards.

Risk analysis and prevention

The overriding aim at Rekers is to recognise health risks at an early stage and manage them proactively. Risk assessments are carried out both for workplaces and for mental stress. To promote the health of its employees, Rekers offers occupational preventive medical checkups. These examinations serve to identify potential health risks and initiate preventive measures in good time.

Health protection

The health and well-being of employees have high priority at Rekers and are regarded as essential values. In this context, the company has implemented various company benefits to actively contribute to the promotion of employee health.

Customer health and safety

As a manufacturer of machines and systems, Rekers is aware of the responsibility that the use of its products entails for the health and safety of its customers' employees. This applies in particular to the operation of the machines, but also to deliv-

ery, assembly and commissioning phases in which potential hazards may arise.

Digitisation and innovation

Production innovation

By constantly researching and developing new technologies and processes, Rekers sets standards in the quality and performance of its products. The aim is to master the challenges faced by customers through innovative solutions and to make a significant contribution to increasing efficiency and sustainability in the industry.

Digitisation

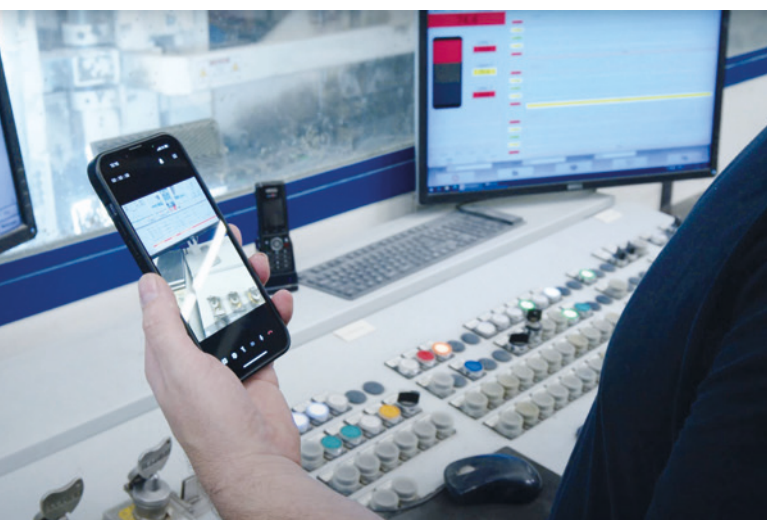
The digitisation of processes is a major and crucial task for Rekers. Significant increases in efficiency can be realised through the targeted integration of digital technologies into work processes. This development towards digitisation is a clear trend that runs through all areas of the company and is fundamentally changing the way work is done.

The optimisation of internal processes through digital solutions is not only a means of increasing efficiency, but also forms the basis for future innovative developments.

Resource efficiency and climate protection

Materials

As a manufacturing company, Rekers attaches great importance to the efficient and sustainable use of raw materials. The aim is to use resources responsibly and minimise the ecological footprint of production as much as possible. With a volume of approx. 400 tonnes, metal constitutes the largest proportion of the raw materials used. This is an advantage for Rekers, as metals - especially steel - can be recycled without any loss of quality. In general, the use of raw materials



RSC - Rekers Simply Connect App



at Rekers is characterised by a high proportion of recyclable materials.

Energy

Rekers' current energy consumption is a major contributor to CO₂ emissions, and this will remain the case as long as fossil fuels continue to play a major role. It is therefore essential to promote the transition to renewable energies. The expansion of photovoltaic systems and the definition of specific expansion targets are important steps in this direction. The aim is to achieve the highest possible proportion of self-consumption of energy and thus enable a more sustainable use of energy and a reduction in environmental impact.

The use of renewable energies plays a decisive role in reducing emissions in electricity generation. Since January 2023, Rekers has only been using CO₂-neutral electricity, which is a significant step towards becoming a climate-neutral company. Rekers also contributes to the energy transition by using the available roof space for electricity generation using photovoltaic systems.

Heat generation

At all three locations, the majority of the energy is used to generate heat. Due to the fact that over 99% of gas consumption is recorded at the Spelle site, measures to reduce consumption were focussed primarily on this site. As it is not possible to simply switch to climate-neutral gas procurement, reducing gas consumption is an essential part of the efforts to become climate-neutral. Various measures have been introduced to achieve these goals. Major successes have already been achieved in the 2023 financial year, including a reduction in gas consumption of over 50%. These positive results form a solid basis for following up on these successes and continuing to pursue the path of energy efficiency.



Rekers e-parking for employees and customers

Emissions

A key objective is to reduce the use of fossil fuels. The first step in this process at Rekers is to calculate a carbon footprint. This takes into account both direct emissions, which are primarily caused by the company's own use of fossil fuels such as gas for heating, the fuel consumption of company vehicles and refrigerants in air conditioning systems, for example, as well as indirect emissions caused by the purchase of energy. In the case of Rekers, the latter relates exclusively to electricity purchases. ■



With the current expansion of the photovoltaic system, approx. 2.3 MWh of solar power is already available

FURTHER INFORMATION



Rekers GmbH Maschinen- und Anlagenbau
 Gerhard-Rekers-Str. 1
 48480 Spelle, Germany
 T +49 5977 9360
info@rekers.de
www.rekers.de

Afinitas, Clayton, MO 63105 USA

Innovative pipe and curing system provide the perfect combo for Dunn Utility Pipe plant expansion

الأنابيب المبتكرة ونظام المعالجة المبتكر يمثلان المزيج المثالي لتوسعة مصنع Dunn لأنابيب المرافق

The leadership at Dunn Utility Products saw a gap and an opportunity in the market back in 2014. The Mississippi-based building products company had recently launched a precast concrete operation as a Redi-Rock precast wall producer. But that was just a start. Seeing an underserved market, in 2018 Dunn's parent company, MMC Materials, invested in a concrete pipe and precast facility in Byram, Mississippi, a short distance from Jackson.

رصد قادة شركة Dunn Utility Products وجود فجوة وفرصة سانحة في السوق في عام 2014. وقد أطلقت شركة منتجات البناء والإنشاءات، ومقرها ولاية مسيسيبي، مؤخرًا عملية لإنتاج الخرسانة الجاهزة بوصف الشركة جهة منتجة لجران الخرسانة الجاهزة Redi-Rock. لكن كانت هذه البداية ليس إلا. فبعد أن لمست MMC Materials، الشركة الأم لشركة Dunn، سوقًا غير مُستغلة، ضُحّت استثمارات في عام 2018 في منشأة لأنابيب الخرسانة والمنتجات الجاهزة في مدينة بيرام الواقعة في ولاية مسيسيبي، على مسافة قصيرة من مدينة جاكسون.

As the company quickly grew, Dunn's leadership discovered the need for basic pipe and precast infrastructure products beyond the Jackson region. In 2019, MMC Materials spun off Dunn Utility into its own division and the company created its vision to become a premier supplier of pipe and precast products in the Southeast United States.

"We didn't know what it entailed when we first started it," said Mark McCormick, president of Dunn Utility Products. "We were in the Redi-Rock business, and that was our first stab at the precast industry."

That's where a fertile partnership with Afinitas started. The Dunn Utility Products Byram facility expanded its product lines with an Afinitas HawkeyePedershaab PipePlus machine, manufacturing a variety of pipe sizes, cones, manhole risers/bases, catch basins and other products. The business took off, and the leadership at Dunn Utility Products and its Birmingham, Alabama-based Dunn Investment Co., saw the potential for further expansion.

"Volume kept growing and markets kept changing," McCormick said. "We couldn't keep up. We were shipping pipe pretty much out the back door as soon as we made it. The demand was so high that we knew we had to increase our production."

That led to a search for a second facility, which they found in a 100,000-square-foot shell building about 200 miles north



Dunn Utility Products, a Mississippi-based building products company

in New Albany, Mississippi. Dunn Utility Products called on its Afinitas partners for advice on the optimal equipment for Phase One of its expansion: A high output pipe plant coupled with a state-of-the-art curing system.

The ePak Emerges

The Afinitas team presented a range of options for McCormick and his team, and a solution soon emerged. "Discussions quickly went to our ePak system because of the volumes of pipe and types of pipe they wanted to produce," said Derek Von Cannon, vice president of sales.



Dunn and AFINITAS established a great working relationship that helped keep the project on schedule.

The ePak machine system at Dunn Utility in New Albany, MS.



ePak's powerful rollerhead drive



Afinitas SmartSet CurePak Curing System

The Afinitas HawkeyePedershaab ePak machine provided the ideal platform for the high volumes that Dunn Utility Products wanted. With its packerhead technology and eDrive system, ePak cranks out pipe quickly and efficiently.

The ePak features a powerful rollerhead drive and user-friendly production controls. The new pipe plant quickly gave Dunn Utility the capacity it needed to serve its markets. The ePak differs from the PipePlus system at Dunn's Byram plant in that it is dedicated to making round pipe in basic sizes, Von Cannon said.

"The PipePlus is an extremely versatile machine, while the ePak is a high-volume production machine," Von Cannon said. "The ePak is designed for very rapid production of round pipe - producing one after another to ramp up your production."

McCormick found the ePak to be the optimal system for the New Albany facility, and a perfect complement to the PipePlus equipment in Byram.

"At Byram, we have the flexibility of making a variety of pipe - three different sizes at one time. We can make arch pipe and larger sizes," McCormick said. "But we went with the ePak because we needed volume. We needed 18s, 24s and all those sizes that just fly off the shelves. We really needed to be able to meet the demand."

SmartSet CurePak Curing System

To keep up with the ePak's output capacity, Dunn Utility needed an efficient, exacting curing system to keep production moving and ensure that its pipe would meet the Dunn team's quality expectations. The Afinitas SmartSet CurePak Curing System provided the perfect match.

Commissioned in early 2023, the ePak and SmartSet CurePak Curing System installations "went very well," McCormick said. "We were up and running much faster and able to hit our production marks extremely fast. We actually had to scale back just a bit after a few months of producing. We were producing too much pipe. Our storage yard area was limited," he said. "But as far as working with Afinitas - they had some great guys out there. They educated our guys really well. They got after it."

The new equipment provided the first exposure to the ePak and the SmartSet CurePak Curing System for Dan Allen, New Albany plant manager. "The Afinitas team trained the managers so we could train our employees," he said. "We were very lean at start-up time when we were firing up the ePak machine. Along with other managers, I drove a forklift and operated the ePak, and we were also working positions in the kiln throughout the production process."

Allen worked with the SmartSet CurePak Curing System during training and found it easy and intuitive, with automated controls handling much of the functions. SmartSet features a telescopic curtain that travels as needed to encase an entire day's run of pipe. SmartSet features direct-fired steam generators that ensure the proper hydration of the cement and result in rapid curing times and the strongest possible concrete. The Afinitas team designs the optimal setup for each facility and backs each SmartSet CurePak Curing System with



Curing process



Cured pipe



More than 70 years of competence in the construction of welding machines for the production of reinforcements for:

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- Manholes
- Piles
- Poles
- Box Culverts

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ePak magnetic motors



ePak production control system



a dedicated technical team, a vast parts inventory and service vans for troubleshooting and preventive maintenance. "The kiln system is a vital part of our daily curing process," Allen said. "The push button control panels are easy to navigate with default settings that are easily modified, as the kiln environment may change with seasonal changes throughout the year," he said. "We found it very easy to train several employees on how to operate the functions of our kiln system," Allen added. "As long as the settings are programmed, it takes less than five minutes to telescope the kiln curtains out, lower the front and rear doors and begin pumping steam."

Fully Electric ePak

Like the SmartSet CurePak Curing System, the ePak's control hardware ensures product quality and consistency through-

out the production cycle. A fully electric packerhead machine, the ePak runs on a direct drive platform based on two permanent magnetic motors that deliver powerful packing action. The electric powerplant makes ePak energy efficient, less noisy and requires less maintenance. The direct drive makes ePak very smooth and more fluid, resulting in faster cycle times and more throughput.

The ePak's production controls operate on sophisticated software algorithms that provide operators with continuous feedback on production. Strategically positioned video cameras enable the operator to monitor production cycles in real time. In addition, ePak's compact turntable allows forms to be mounted close to the center point of the turntable, which permits faster rotation speeds. All of this adds up to efficiency for Allen and the Dunn Utility Products production team.



Mold Transport



Quality Control can be a boring job, if the product quality is like this.

“It’s a really smooth process,” Allen said. “For the last three or four months we’ve been fine-tuning our quality and efficiencies. Every position within the production team revolves around the ePak itself. The unique part for us is how quick and efficient the ePak produces each joint of pipe and how many joints it can produce per hour and per run each day. Everything else that we do revolves around that time frame – how many employees and how much labor you need around the ePak and other departments. It’s been very impressive.”

Looking Ahead

With pipe production firmly established in the New Albany facility, Dunn Utility Products president Mark McCormick is looking at Phase Two, which will include a wetcast side to manufacture a full line of precast, including products like boxes, culverts and manholes that go hand-in-hand with pipe in infrastructure projects. Dunn’s pipe production doubled in 2023 with the ePak coming online, McCormick said, but it’s time to keep growing. The expansion to New Albany gives Dunn Utility a stronger presence throughout the region and cuts delivery times to several major cities.

“From New Albany, we can reach Northern Mississippi, Tennessee, Alabama and Arkansas. It positioned us a lot closer to the metro area markets and cut our haul times in half,” McCormick said. The pipe plant was just one-half of the New Albany expansion, McCormick added. Plans are now underway for a Phase Two buildout for the wetcast side.

“Afinitas has been a very good partner in helping us design and lay things out and plan for the future,” McCormick said. The Afinitas team appreciates the partnership too, according to Derek Von Cannon.

“Working with Dunn has been a great experience for us – a shared focus on quality and providing customers with the best products and services in the industry makes collaborating a pleasure,” he said. ■

FURTHER INFORMATION



Afinitas Equipment & Automation Division

The Americas

506 S. Wapello St. Mediapolis, Iowa 52637, USA
T +1 319-394-3197
info@afinitas.com

Denmark

Saltumvej 25, 9700 Brønderslev, Denmark
T +45 9645 4000
info-DK@afinitas.com

Germany

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

Italy

Viale Venezia 79/G, 33074 Fontanafredda, Italy
T +39 0434 599211
info-ITA@afinitas.com



Dunn Utility Products LLC
6699 I-55 South
Byram, MS 39272, USA
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www.dunnutility.com

HawkeyePedershaab and BFS Box Culvert Production

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System Benefits:

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- **Pegged and machined mold components facilitate precise assembly.**
- **Strong design withstands vibration and stripping forces and dead-weight stresses without flexing or sagging.**

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Intelligent
Infrastructure
Solutions

Afinitas is a global, comprehensive and customer-oriented infrastructure equipment and services platform that brings together the expertise of HawkeyePedershaab, BFS, New Hampton Metal Fabrication, Spillman and CAM Products.

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Flexible mesh welding lines with integrated bending modules and unique mesh bending stations

خطوط لحام شبكات مرنة تضم وحدات ثني مدمجة ومحطات ثني شبكات فريدة

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

تقدم شركة Eurobend GmbH مجموعة شاملة من الآلات الأوتوماتيكية لجميع تطبيقات الخرسانة الجاهزة: بدايةً من آلات اللحام الأساسية التي تُستخدم لإنتاج عناصر التسليح البسيطة وانتهاءً بالمعدات المعقدة لإنتاج الشبكات الخاصة والشبكات الهندسية والشبكات ذات الفتحات والشبكات ذات الأسلاك المنحنية والمستعرضة والشبكات المثنية على هيئة سلال.

The Eurobend AMM series of mesh welding machines work from coil and offer very high flexibility at a very high level of automation without any changeover times.

Depending on productivity requirements, the PL XY AMM models are available with one or two multi-point weld heads that weld up to six or twelve spot welds per cycle. For the highest productivity requirements, the PLC AMM models are available with up to 81 fixed weld heads.

The line and cross wires are fed into the welding portal immediately by two separate Flexiline rotor straightening and cutting machines with maintenance-free 5G rotors each with

eight hyperbolic rollers and with very fast diameter change system. The diameter change takes place in less than 3 seconds without mechanical moving parts. Depending on the model, up to six diameters can be processed.

Direct feeding of the cross wires into the welding portal

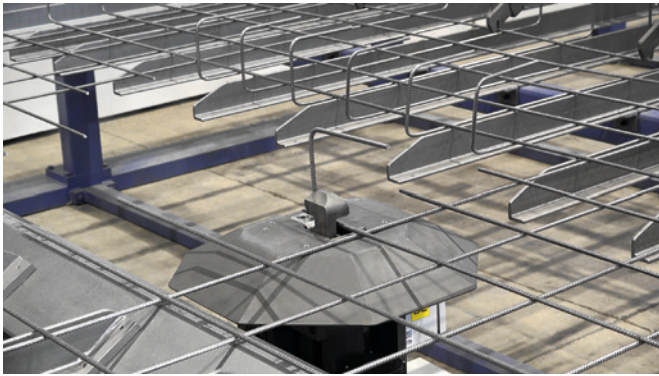
The complicated, maintenance intensive and susceptible common cross wire feeding systems, where the cross wires have to be produced first and then the longitudinal wires, as it is the case in the lines with one straightening machine, are no longer necessary.



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



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



Universal bending module



Synchronous working universal bending modules



Bent mesh



Detail of bends

More innovations and design features

- Machines available processing diameters up to 12mm, 16mm and 20mm, cold drawn or hot rolled material, from coil.
- Any type of mesh can be produced automatically, immediately and without changeover and idle times.
- Thanks to the innovative concept, the AMM machines are very compact and have a minimal floor space demand.
- Sophisticated design, drive with servo motors and advanced modern software

The machines are offered with unique precision bending systems:

- Integrated, in-line universal bending modules for bending up individually selected line and cross wires, even within openings. Characterized by very high precision and speed. Two bends are performed in 2.5 seconds with consistently precise bending geometry.
- Integrated, in-line mesh bending stations for bending mesh into baskets.
- No idle times during production. During the bending process of one mesh the next one is already in production.
- Connection to master computer for the “Just-In-Time” production, synchronized with circulating pallet systems.
- The AMM welding machines require only one operator



Cage production with integrated, in-line mesh bender

Additionally available optional systems include:

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

FURTHER INFORMATION



Eurobend GmbH
 Alexander Str. 1
 90547 Nuremberg-Stein, Germany
 T +49 911 94 98980
sales@eurobend.com
www.eurobend.com

A technology leader that sets standards with its own precast plant

شركة رائدة في مجال التكنولوجيا تضع المعايير بمصنعها للخرسانة الجاهزة

The Progress Group is primarily known as a full-range supplier of system solutions for the automation of reinforcement and precast element production including the necessary software. Yet what many do not realise is that the international group operates its own state-of-the-art precast plant with integrated rebar shop at its headquarters in Brixen (South Tyrol/Italy), producing innovative and sustainable precast concrete elements for the northern Italian and Austrian markets.

تشتهر مجموعة Progress في الأساس بأنها مُورّد كامل النطاق لحلول الأنظمة لأتمتة التسليح وإنتاج المكونات الجاهزة بما في ذلك البرنامج اللازم. غير أنّ ما لا يدركه كثيرون هو أنّ المجموعة الدولية تدير مصنعها المتطور للخرسانة الجاهزة الذي يضم متجرًا متكاملًا لحديد التسليح في مقرها الرئيسي في مدينة بريكن (جنوب تيرول/إيطاليا)، حيث تنتج عناصر خرسانية جاهزة مبتكرة ومستدامة للأسواق الإيطالية والنمساوية الشمالية.

More than 30 years of in-house production

The first pallet circulation system was put into operation in Brixen in the early 1990s. Previously, precast slabs with in-situ topping were produced on membranes. A second circulation plant for the production of double walls and precast slab with in-situ topping went into operation in 1998. The first system was completely modernised in 2011.

Overall, the individual machines in the carousel plant have a very long service life. However, the Progress precast plant is

undergoing constant modernisation and expansion, as the company is not only a producer but also an in-house innovation hub. The Group's latest developments in mechanical engineering and software are deployed in line with market requirements.

Automation as a guarantee for employee satisfaction

One example of ongoing automation is the Form Master shuttering, deshuttering and storage robot, which eliminates strenuous manual formwork and makes workplaces more



Just a few metres from the Progress Group's new headquarters, their own precast plant is producing precast elements.



The headquarters in Brixen serves as a showroom for the innovative construction system, as it was built entirely with the company's own precast elements from the factory next door.



The precast plant at the headquarters of the company group, which specialises in automation and digitalisation, produces with its own machines and software.



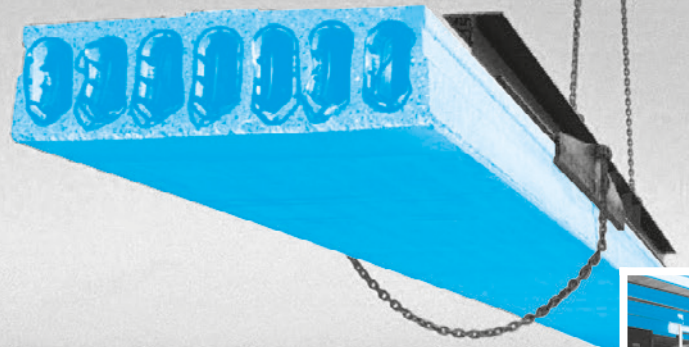
The M-System Smart Mesh welding machine is equipped with an additional bending machine, which facilitates fully automatic cage production.

attractive and safer. It shows: Several production employees have been with the company for almost 40 years and could continuously develop their area of responsibility. Automation creates new perspectives and also binds young employees to the company with secure and exciting tasks.

All innovations in one place

Apart from the Progress Group's classic reinforcement machines such as a Wire Centre, which considerably improves the production process through the automated processing of reinforcing steel from the coil and the installation of reinforcement as per CAD specifications, the Blue Versa lattice girder welding plant, the EBA automatic stirrup bender and the MSR multi-rotor straightening and bending machines, there are also absolute world firsts in use in the rebar shop and in the

Pure flexibility.



Production of hollow core slabs

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The experts in Prestressed Concrete Technology. stressing.paul.eu

Paul at YouTube



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The Tube Master pipe-laying robot is a market first. It installs heating and cooling pipes fully automatically as part of the prefabricated ceilings.



The Pin Master places the GC pins automatically straight through the insulating material into the fresh concrete, eliminating the manual insertion.

precast plant. The M-System Smart Mesh mesh welding plant with bending system can, for example, automatically produce extra-wide mesh and process it into a complete reinforcement cage. The Tube Master is a novel pipe-laying robot that automatically bends heating and cooling pipes for the production of thermally activated and energy-efficient precast concrete elements and lays them precisely on the pallet. This increases productivity and makes work easier. Other modernised machines in the circulation plant include the automated eCon Drive concrete spreader, which provides significant material savings and high concrete quality, and two combined shaking and vibration devices.

Further, two impressive innovations were installed in the precast plant in 2023, which automate and efficiently organise the production of the licensed precast concrete elements, the Green Code Thermo Wall® and the Green Code Eco Slab®. The Pin Master automatically inserts the GC pins, thermal bridge-free connectors between the inner and outer panels of the thermal wall, into the insulating material of the thermal wall so that they do not need to be inserted manually. The GC base (the lower part of the Green Code Eco Slab recess body) is installed automatically in the factory using the Box Master, with millimetre precision and without any manual work.



The Box Master places the lower half of the GC box (the GC base) fully automatically in the Green Code Eco Slab® at the plant - this is then completed on building site with the GC top, i.e. the other half.



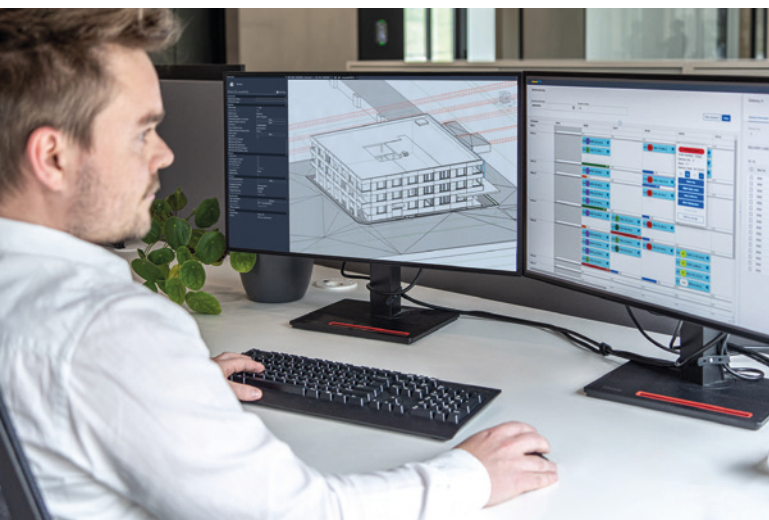
The Form Master shuttering and deshuttering robot can position the shuttering precisely according to the CAD data transmitted by the ebos® control system.



The automatic control unit transports the elements for effective curing, supported by the Green Code Curing Control.

Software as the key to efficiency

The precast concrete plant works with Progress software solutions from the initial planning stages through to production. The BIMpro software, which quickly and easily converts an architectural model into a precast concrete model, supports the element design, resulting in time savings of up to 50%. The model-based data is simply exported for planning and production via PXML data and transferred to the other systems. All planning is carried out using the Progress ERPbos solution, which maps the entire business process specifically for the precast concrete industry - from sales to invoicing.



The entire workflow and production are planned using the model-based data. Due to the integrated process and real-time data flow, changes can be addressed quickly.



Product catalogue

MEET THE BETTER



For 30 years leading in magnetic formwork technology for precast concrete production. In the development and production of intelligent magnetic formwork components and complex formwork solutions we set global standards.

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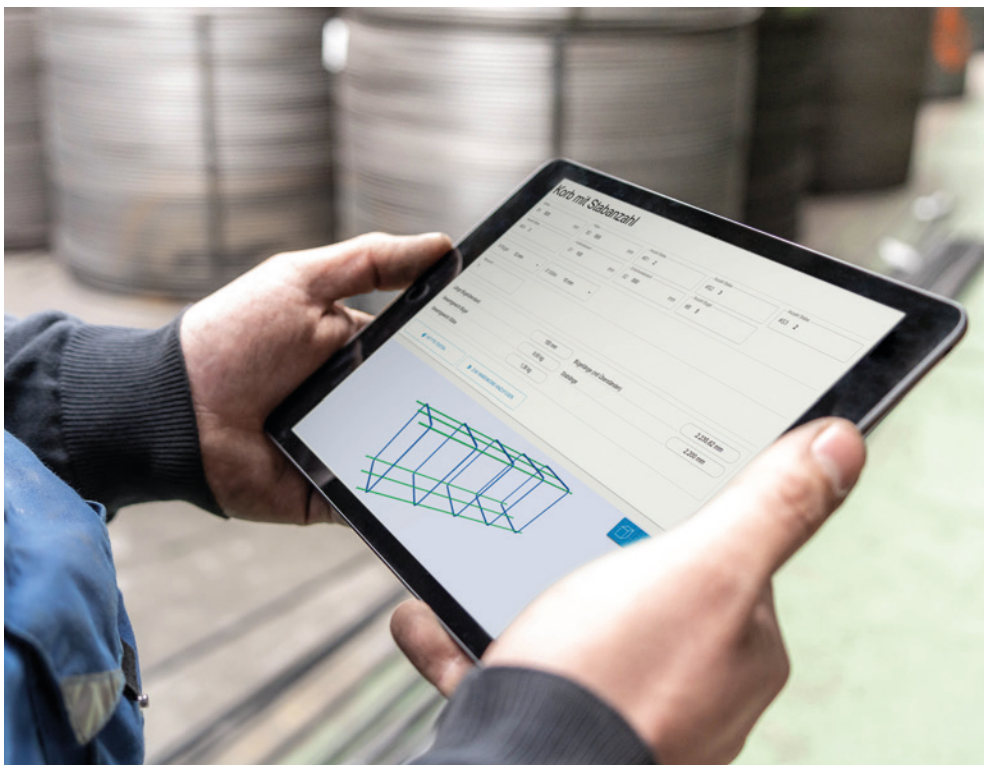
Real-time information from ebos is used to visualise production data and thus create transparency and control over current production. The Dynamic Smart Production screens show employees the right information at the right time.

Production is controlled and monitored by the industry-specific Progress MES systems. The control system benefits, controls and monitors all production processes and machines in reinforcing steel processing to guarantee maximum accuracy and efficiency in the in-house rebar shop. ebos, the corresponding equivalent, controls both circulation plants in the production of precast elements and ensures the quality with the respective features. One example is the Green Code Curing Control, which monitors the curing process and uses intelligent sensors to send data in real time. This monitors exactly when the elements are ready for deshuttering.

This fully digitalised production guarantees an integrated process from design, planning and production through to assembly. Efficiency and productivity are significantly increased and up to 15% higher machine availability is achieved.

Sustainable recess body for reinforcement reduction

Progress AG is a founding member of Green Code - a licensed building system for sustainable and innovative precast concrete elements. The Green Code building system enables the construction of modern, individualised and high-quality buildings. The innovative precast concrete elements optimise the use of materials and minimise the impact on the environment. The latest achievement of this system is the Green Code Eco Slab, which is produced automatically at Progress AG using the Box Master. With the Green Code Eco Slab, you can now dispense with some of the steel reinforcement and replace it with an environmentally friendly recess body - without sacrificing structural performance. With the recess body, the GC box, the Green Code Eco Slab not only saves steel, but also concrete. In concrete terms, this means up to: -25% concrete and inherent weight of the ceiling.



The MES system profit monitors and controls all machines to achieve maximum efficiency in reinforcing bar processing. All production data is collected centrally and helps to increase productivity.

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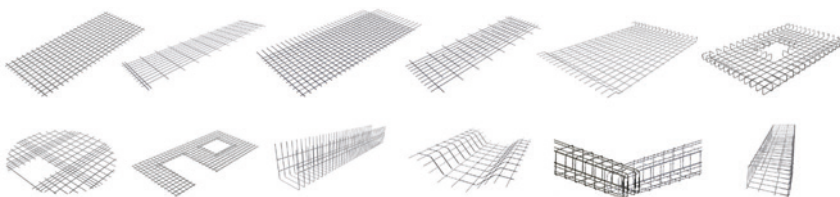


Mesh Welding Plants



Highly automated reinforcement technology:

- flexible
- energy efficient
- made-to-measure



Customized mesh welding plants for the cost-effective production and bending of bespoke reinforcement mesh for a variety of applications.



The Green Code Eco Slab® is completed on the building site with the GC top, i.e. the upper half of the recess body, which is available in different versions for different slab thicknesses.

ing, -15% steel meaning considerable CO₂ savings. The GC box is made from 100% recycled polypropylene, which can be fully recycled again at the end of the building's life. It consists of a base (GC base) installed at the factory with the Box Master and a cover (GC top) added on site.

Advantages of automation - precision and product safety

From the perspective of plant manager Robert Wenter, who has been with the company for 25 years, the advantages of

automation are not just increased productivity, but above all quality: "Precision and product safety are essential in our sector. It is particularly important that all precast elements are manufactured exactly according to plan to guarantee the safety and stability of the building and minimise sources of error."

We are Progress - constant progress

The Progress Group's future development is also fully focussed on innovative and sustainable solutions, which are put through their paces in the company's own factory. And this in all three areas of the corporate group: Mechanical engineering, software and precast concrete element production.



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FURTHER INFORMATION

PROGRESS GROUP

Progress Group
Julius-Durst-Straße 100
39042 Brixen, Italy
T +39 0472 979 900
info@progress.group
www.progress.group



The new BSV headquarters is a prime example of how modern, sustainable and time-saving precast concrete elements can be used in construction.

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

Industrialized construction in South América and Oceania with 3D Modules

الإنباءات الصناعية في أمريكا الجنوبية وأوقيانوسيا باستخدام وحدات ثلاثية الأبعاد

Moldtech has recently commissioned new 3D moulds for housing modules (PPVC) in Chile and prefabricated bathrooms (PBU) in New Zealand. These new projects reflect the company's ability to adapt and apply its technology in different geographical contexts, promoting more efficient, sustainable and high-quality construction practices.

أطلقت شركة Moldtech مؤخرًا قوالب ثلاثية الأبعاد جديدة لإنتاج وحدات سكنية جاهزة (PPVC) في تشيلي وحمامات جاهزة (PBU) في نيوزيلندا. وتعكس هذه المشاريع الجديدة قدرة الشركة على تكيف تقنياتها وتطبيقها في سياقات جغرافية مختلفة، مما يُعزِّز ممارسات بناء أكثر كفاءة واستدامة وجودة عالية.

The Chilean company, founded in 1972 as a manufacturer of concrete electric poles, has evolved to become a national leader in the production of all types of prefabricated elements. With five plants in different parts of the country, the company has maintained its position at the forefront of the sector through the constant incorporation of innovative technologies.

Moldtech has become a strategic partner, supplying a flexible mould for the production of 3D modules for housing pro-

jects. This system allows the manufacturing of complete 3D housing modules, with roof and walls casted in a single monolithic piece with the best structural properties.

Precast modular housing represents an efficient and sustainable construction solution. Prefabricated, pre-finished 3D modules (PPVC) go one step further, significantly increasing efficiency and quality control at factory production and considerably reducing on-site installation time, the necessary personnel and their qualifications, achieving unbeatable execution time.



3D modular mold for housing



3D mold and part extraction

This system can offer great versatility, adapting to both single-family homes and multi-story buildings. Furthermore, these molds allow the production of modules with thermal insulation in the walls that face facades, offering excellent properties, improving energy efficiency and reducing heating and cooling costs.

The flexible mould supplied by Moldtech is designed according to the client's specifications, allowing the production of 3D modules with variable lengths between 5 and 7 meters, a fixed width of 3 meters and variable heights between 2.50 and 3 meters. It also includes magnetic door and window formworks that can be placed in any position. The exteriors are opened by means of hydraulic cylinders and the hydraulic shrinking core allows demoulding of monolithic 3D modules with straight walls in record time. Simultaneously, Moldtech has also completed the installation of a 3D mould for prefabricated bathroom units (PBU) with an important New Zealand company.



Finished piece: Housing unit

In this case, the mould is designed to produce 3D monolithic units with floor and walls. The bathrooms are casted in an inverted position and once demolded, the units are rotated 180° to continue with the finishing process in the factory.

In the case of bathrooms, even more efficiency is achieved, with the finishing percentage reaching up to 90%, including waterproofing, installation of tiles, plumbing, electricity, toilets and accessories etc.

Therefore, these 3D prefabricated bathrooms are even used in combination in construction projects with in-situ concreting or with traditional prefabricated 2D elements.

This mould has also been designed as a flexible system that would allow increasing the lengths of units to be produced in the future, according to the customer's needs. Likewise, the mould allows the production of 3D bathrooms with variable wall thicknesses and varying heights.



3D mold for bathrooms (PBU)



Finished piece



Finished bathroom unit

More and more clients trust Moldtech to implement construction technology with 3D modules and improve both manufacturing efficiency and on-site installation processes.

Moldtech has a decade of experience in 3D industrialized construction and high specialization in the design and manufacture of flexible moulds for 3D Modules (PPVC) and prefabricated bathrooms units (PBU). The company also designs and installs adjustable hydraulic turners 180° and automated

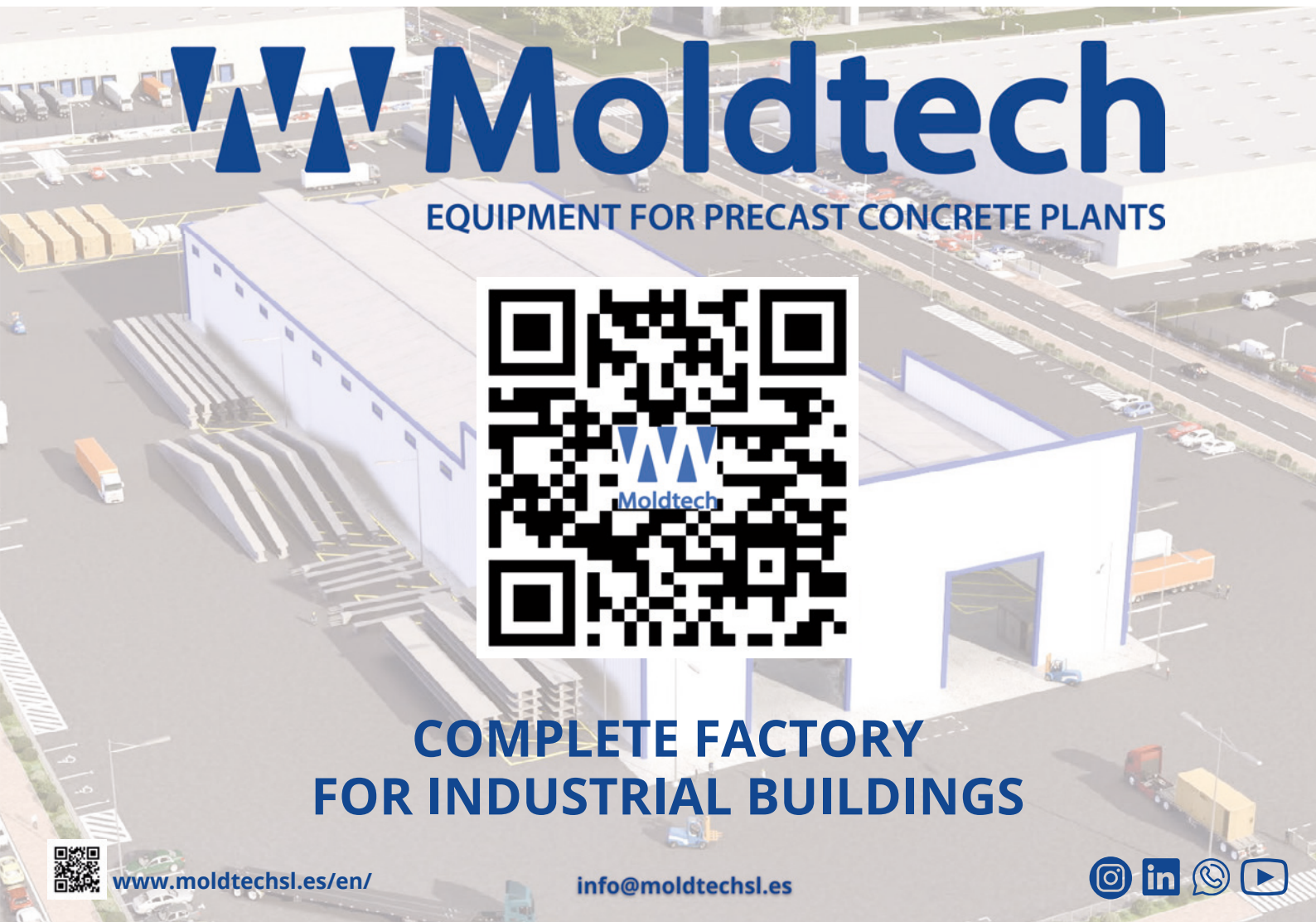
lines for the complete finishing of modules in the factory, using circulation systems that allow great efficiency and flexibility.

Moldtech has extensive experience in this type of plants, with clients in countries such as Singapore, the United States, Malaysia, France, Saudi Arabia, Sri Lanka and Hong Kong. These two projects in Chile and New Zealand highlight Moldtech's commitment to modernizing the construction sector. These initiatives not only transform the way homes and bathrooms are built, but also lay the foundation for a new standard in the global construction industry. ■

FURTHER INFORMATION



Moldtech S.L. C.
 Polysol Uno 40, P.I. Piedra Hincada
 41500 Alcalá de Guadaíra (Sevilla), Spain
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apilion machines + service GmbH, 77694 Kehl am Rhein, Germany

High-performance welding machine for bored pile and column cages

ماكينة لحام عالية الأداء للركائز المحفورة وأقفاص الأعمدة الخرسانية

Even at the time when apilion machines + services GmbH was still operating under the name Züblin Maschinen- und Anlagenbau GmbH (Züblin MAB), the company was known worldwide for its fully automatic reinforcement welding machines. The basic principle of the wire drawn from coils makes it possible to produce reinforcement cages of virtually unlimited length.

حتى في الوقت الذي كانت فيه شركة apilion machines + services GmbH تعمل تحت اسم Züblin Maschinen- und Anlagenbau GmbH (Züblin MAB)، كانت الشركة مشهورة عالميًا بأجهزة لحام حديد التسليح الأوتوماتيكية بالكامل. إن المبدأ الأساسي للأسلاك المسحوبة من لفيفات الحديد يجعل من الممكن إنتاج أقفاص حديد التسليح بطول غير محدود تقريبًا.

This advantage is particularly important for bored pile reinforcements. For this reason, Züblin MAB and apilion developed a machine model in the 1990s as part of a cooperation with renowned customer in the Middle East, a machine type, the characteristics of which are still state-of-the-art today and of which all six machines supplied are still in use today.

Amongst others, mid-frequency resistance-welding technology from the automotive industry was already adapted for use in this machine and has since been continuously improved. This complex welding technology, which uses a welding power of 1,000 kVA, permits extremely fast, clean and

reliable welds, even of corroded or scaled wires. The position of each respective weld can be set easily and with millimeter accuracy via the machine program and control system, which guarantees exact setting of the welding spots.

This high-performance welding machine is supplemented by a fully automatic wire transport synchronized with the machine, which, in the standard configuration, can pull 24 longitudinal wires with a diameter of up to 20 mm from the reels and feed them to the welding machine. Reinforcement cages with asymmetrical longitudinal wire arrangement and different wire diameters, in practically any configuration can



Automatic cage welding machine USM for the production of reinforcement cages for bored piles



The position of each respective weld can be set easily and with millimeter accuracy via the machine program and control system.



Longitudinal wires with diameter 20 mm wound on 3 to spools

also be manufactured without any problems by conveniently connecting or disconnecting individual wire transport units via hydraulic cylinders.

In the production of reinforcement cages, output values are achieved that cannot be achieved by any other supplier to date. With medium cage diameters, up to approx. 2.5 m/min of finished welded cage can be produced at a speed of approx. 20 rpm. This enables some of our customers to process up to 800 tons of reinforcing steel per month with one machine.

Our new customer, one of the largest reinforcing steel processing companies in the Middle East, did not have to think long about who to turn to, when it came to investing in a reinforcement welding machine for bored piles. Since the machine was set up and the operators received introductory training, it has been working almost continuously in 24/7 operation. The return on investment was achieved in less than one year, so that, about a year later, the next machine was ordered and put into operation.

In this way, he gains a decisive competitive advantage to continue supplying the booming local market with large quantities of high-quality reinforcement cages for bored pile and columns reinforcement. ■

FURTHER INFORMATION



apilion machines + service GmbH
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Bianchi Precast Group, 43045 Fornovo di Taro (PR), Italy

Fully hydraulic adjustable double T mould

قالب T مزدوج هيدروليكيّ بالكامل قابل للتعديل

Bianchi Casseforme S.r.l is a family-run company now in its third generation, with its headquarters in Fornovo di Taro near Parma, Italy. Founded in the early 1960s, it is one of the first companies in Italy to produce molds for the precast concrete industry entirely made of steel. Today, the company is present on 5 continents thanks to its branches located in France, Spain, Brazil, India, and Russia, and an extremely active and dynamic commercial network, with the aim of always being close and attentive to the needs of its customers.

تُعدُّ Bianchi Casseforme S.r.l شركة عائلية يديرها الآن الجيل الثالث من العائلة، ومقرها بلدة فورنوفو دي تارو بالقرب من مدينة بارما الإيطالية. وقد تأسست الشركة في أوائل الستينيات، وتُعدُّ واحدةً من أوائل الشركات في إيطاليا التي تنتج قوالب لصناعة الخرسانة الجاهزة المصنوعة بالكامل من الفولاذ. وللشركة حالياً وجود في 5 قارات بفضل فروعها الموجودة في فرنسا وإسبانيا والبرازيل والهند وروسيا، وتتمتع بشبكة تجارية نشطة للغاية وديناميكية، الغاية منها أن تكون دائماً قريبة من عملائها ومستجيبة لاحتياجاتهم.

The company, an international leader in the design and production of plants and machinery for the precast concrete industry, has always invested in research and the development of new technologies to apply to its products. Thanks to the experience and know-how acquired over their decades-long history, they can boast a wide range of fully automated products and services with the quality and reliability of Made in Italy. The company's mission is to create advanced technological solutions that are highly customized and flexible, always putting customer satisfaction at the center.

The use of Double T beams as flooring or a roofing solution in the precast industry is world-renowned. They are primarily used in parking structures and other commercial applications where heavy loads are present. Bianchi Casseforme, which



Adjustment in slab width done hydraulically



Fully hydraulic double T mould-form



Hydraulic locking of the side form



Change in beam-stem height

has been producing formwork for TT slab production for over 40 years, has maintained the traditional robust steel structure while integrating the most technologically advanced solutions to best meet the specific needs of the customer and the market. Bianchi Casseforme can supply TT tracks with a fixed shape, where it is possible to modify the height of the ribs by inserting bottoms and the width by moving the side rails. Alternatively, a fully hydraulic version is available, where all the dimensions of the element can be changed in a short time, by acting on the levers of a control unit.

The most technologically advanced formwork for the production of double T beams that Bianchi Casseforme S.r.l produces are fully adjustable hydraulically and offer customers a single solution for a complete range.

These molds are typically self-reacting with a capacity of up to 1000 tonnes, this means that the pull heads and the strand tension contrast structures are integrated within the formwork itself. The hydraulically operated open and closed side form allow easy access for all operations necessary for the



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“Since 1964 an international leader in design and implementation of customised solutions for precast concrete factories “



Hydraulic strand relaxation with collar

production of the element (e.g., positioning reinforcement, cleaning, positioning, and cutting of strands, etc.). When the side forms are closed, an additional hydraulic locking system secures the sides, eliminating the need for mechanical or manual locking. For the hydraulic adjustment of the beam/stem height, a system of hydraulic cylinders lifts/lowers and secures the two-casting beam/stem bases (one on each side of the central core), according to the desired measurement to be produced. It's also possible to change the width of these two-casting bases thus ensuring extra flexibility. All bases are supplied with oil resistant sealing gasket on both sides. Additionally, to allow the width change of the beam/stem, hydraulic cylinders move the supporting structure, ensuring that



Examples of double T beams

these seals are compressed against the sides of the mould/form, leaving a clean chamfered edge with no leaks.

As is customary in Europe, each formwork is supplied with a strand relaxation system, consisting of 4 single-acting hydraulic cylinders and load-absorbing collars. This system works by releasing the stresses imposed on the strand during tensioning, transferring them to the concrete in a controlled and synchronized manner. During the tensioning operation of each individual strand, the collars absorb the loads and apply them to the formwork structure. Once the concrete has reached the minimum design strength, the collars are removed, and the hydraulic cylinders transfer the compression load to the concrete.

In recent years, Bianchi Casseforme S.r.l. has supplied formwork for the production of TT slabs to various clients in Italy, Romania, Algeria, Poland, and the United States, designing each individual formwork to meet the specific needs and requirements of each client. ■



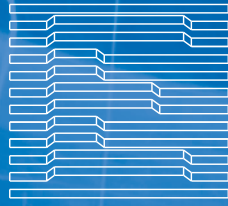
Double T being lifted

FURTHER INFORMATION



Bianchi Precast Group
 Via G. di Vittorio, 42
 43045 Fornovo di Taro (PR), Italy
 T +39 0525 400511
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Customisable automation solutions for welding machines

حلول الأتمتة القابلة للتخصيص لماكينات اللحام

In 1961, Georg Pfender started with a small lathe engineering workshop, thereby laying the foundations for today's mbk Maschinenbau. The first cage welding machine was manufactured by Pfender a little later in the 1960s when reinforced concrete pipes came onto the market in Germany, marking a milestone on the company's path to success. Now, under the management of Mario in the third Pfender generation, the company has developed into a leading manufacturer of welding machines and systems for producing reinforcement in the construction and precast concrete industries.

في عام 1961، بدأ جورج فيندر أعماله بورشة صغيرة لتصنيع المخارط، وبذلك وضع حجر الأسس لشركة mbk Maschinenbau الحالية. وقد صنَّعت شركة فندر أول ماكينة اللحام الأقفاص الحديدية بعد ذلك بقليل في الستينات عندما ظهرت أنابيب الخرسانة المسلحة في السوق في ألمانيا، مما شكّل علامة فارقة على طريق الشركة نحو النجاح. والآن، تحت إدارة ماريو الذي ينتمي إلى الجيل الثالث من عائلة فندر، تطورت الشركة وأصبحت رائدة في تصنيع أجهزة وأنظمة اللحام لإنتاج منتجات التسليح في صناعات البناء والتشييد والخرسانة الجاهزة.

mbk has advanced to become a global player with over 60 years of experience, subsidiaries in the USA and Russia and 120 employees worldwide. The company stands for quality "made in Germany" guaranteed by qualified specialist staff, a modern design and development department and ISO 9001 certification.

Optimised automation solutions

The extensive product portfolio at mbk includes state-of-the-art welding machines for various applications in the construction and precast concrete industries. The company is currently showcasing customisable automation solutions that



MSM-M with mesh conveyor and Z bending station (BF4)



Fully automated mesh welding machine made by mbk for producing meshes with wire diameters from 8 to 20 mm and a stacking/turning unit e.g. for manufacturing double walls.



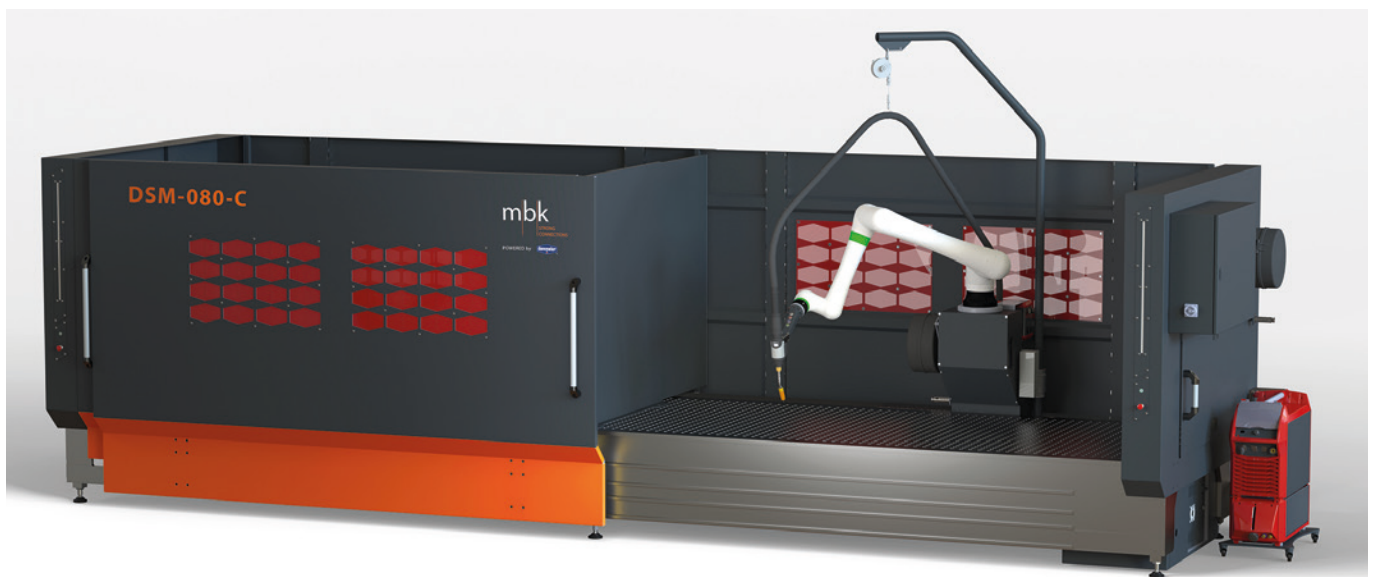
Semi-automated mesh welding system with longitudinal and transverse wires from a coil

not only guarantee very high performance but also minimise the need for personnel.

When it comes to manufacturing precast concrete elements, mbk can boast of machines such as the DRA wire straightening and cutting system with integrated double bender, the MSM mesh welding machine series and the BSM cage welding machine. Each of these machine types is available in different sizes and designs and has a very extensive portfolio as regards automation. This ranges from simple stand-alone machines to fully automated versions integrated into a production process. At mbk, we work closely with our customers to fulfil their specific requirements, devise a solution together with the design and development department and implement the system accordingly.

mbk will soon be launching the new DSM, a cobot solution for the automated welding of customised products. The DSM employs a collaborative robot in conjunction with a gas-shielded welding unit. It offers very simple, intuitive operator programming and can be used flexibly in precast concrete production facilities as well as in reinforcing steel and bending operations.

In addition, mbk regularly engages 8 to 10 apprentices at its headquarters in Kisslegg with a view to developing skilled labour and has earned an excellent reputation as a training company in the region. Its regional roots also play a decisive role in product quality, with each machine made by mbk only being handed over to a customer after a successful test run.



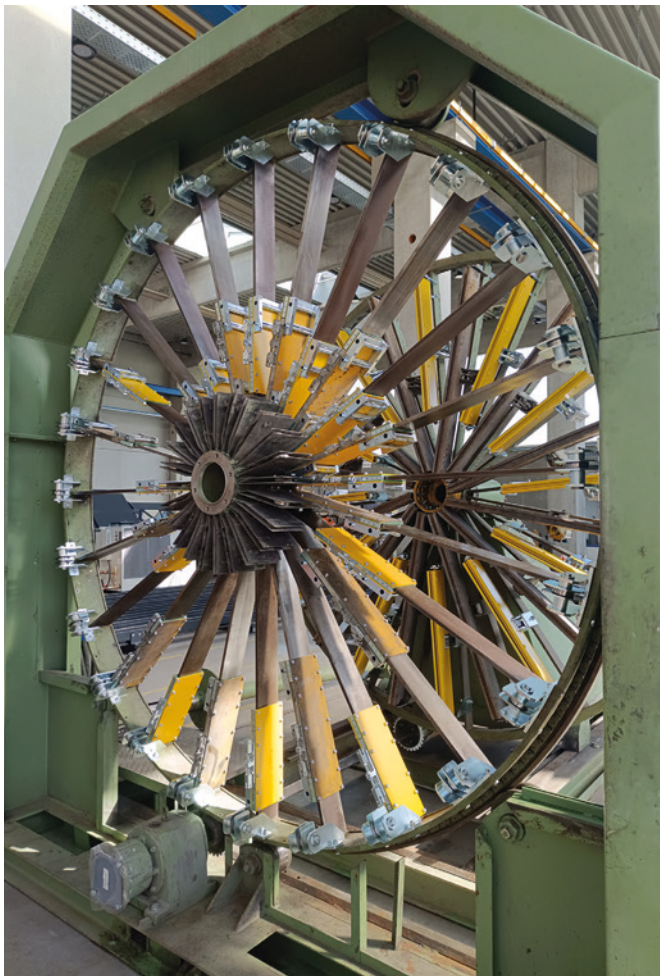
The new DSM, a cobot solution for the automated welding of customised products

Well equipped for the future – mbk has been training apprentices for many years; here the training workshop



Michael Raich, sales director at mbk, emphasised the importance of regional roots and quality standards: “We not only offer high-quality machines, but also a proactive aftersales and spare parts service to ensure a long machine service life through preventive maintenance.”

With its new dedicated website, which went online in January 2024, mbk is advancing still further on its successful path towards the future in the global market for welding machines and automation solutions. And the continuous optimisation of production processes underlines the company's innovative strength and future viability. ■



mbk is also active in the retrofit sector



Jochen Simon joined the mbk Maschinenbau sales team as Area Sales Manager on 1st October 2023 and is responsible for regions such as Australia, India, Central Africa and parts of Europe. He also brings additional valuable input and a corresponding network thanks to his knowledge of the industry

and many years of experience, particularly in the field of reinforcing steel processing. He has already completed intensive familiarisation and training specifically with the mbk product portfolio at the mbk headquarters in Kisslegg.

FURTHER INFORMATION



mbk Maschinenbau GmbH
Friedrich-List-Str. 19
88353 Kisslegg, Germany
T +49 7563 91310
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* BRECON Außenrüttler mit SL Charakteristik(Synchronlauf) erreichen exakt die von der Frequenzsteuerung vorgegebene Drehzahl, z.B. 6000rpm bei 100Hz elektrischer Frequenz. Die Angaben sind bezogen auf Außenrüttler, die die gleichen Charakteristik aufweisen wie BRECON SL-Rüttler. BRECON SL-Rüttler sind in der Geschwindigkeit regelbar. Die SLIM2 Schnellspanhalterung ist auch für BRECON Hochfrequenz und BRECON Normalfrequenz Rüttler einsetzbar.

Complex 3D moulds for precast plants all over the world

قوالب مُعقَّدة ثلاثية الأبعاد لمصانع الخرسانة الجاهزة في جميع أنحاء العالم

Being one of the world's most renowned mould manufacturers, Construx Weckenmann, developed over time a vast portfolio of moulds that suit precast manufacturers' needs. In close collaboration with the customer Construx Weckenmann tries to find the most appropriate mould which is in accordance with all technical specifications, which fits the customers' budget and which copes with the dimensions and numbers of precast elements the customer wants to cast. For companies supplying precast culverts and pods, such as electrical substations and prison cells, Construx Weckenmann conceived over the years a full range of state-of-the-art moulds. Either with a fixed geometry, adjustable or fully automated, 3D moulds are the most complex moulds due to the particular design and technical specifications of these pods and culverts. Being "Top of Mind" in 3D moulds, Construx Weckenmann became a leading supplier for most of the major European precast substation manufacturers. Recently, Construx Weckenmann supplied several different moulds to a number of precast manufacturers all over the world.

طوّرت شركة Construx Weckenmann، باعتبارها واحدة من أشهر مصنعي القوالب في العالم، بمرور الوقت مجموعة كبيرة من القوالب التي تلبي احتياجات مصنعي الخرسانة الجاهزة. وبالتعاون الوثيق مع العملاء، تحاول شركة Construx Weckenmann العثور على القالب الأنسب الذي يتوافق مع جميع المواصفات الفنية، ويناسب ميزانية العملاء ويتوافق مع أبعاد وأعداد عناصر الخرسانة الجاهزة التي يريد العملاء صبها. وبالنسبة للشركات التي تورد قنوات التصريف والحجيرات الجاهزة، مثل محطات الكهرباء وزنازين السجون، ابتكرت شركة Construx Weckenmann على مر السنين مجموعة كاملة من القوالب المتطورة. وتُعدّ القوالب ثلاثية الأبعاد، سواء كانت ذات أشكال هندسية ثابتة أو قابلة للتعديل أو مؤتمتة بالكامل، الأكثر تعقيداً على الإطلاق نظراً للتصميم الخاص والمواصفات الفنية لهذه الحجيرات وقنوات التصريف. لقد أصبحت شركة Construx Weckenmann مورداً رائداً لمعظم الشركات الأوروبية الكبرى المُصنِّعة للمحطات الفرعية الجاهزة نظراً لأنها العلامة التجارية "العالقة في الأذنان" أكثر من غيرها في مجال القوالب ثلاثية الأبعاد. وفي الأونة الأخيرة، ورّدت شركة Construx Weckenmann العديد من القوالب المختلفة لعددٍ من الشركات المصنعة للخرسانة الجاهزة في جميع أنحاء العالم.

Australia: Fully automated culvert moulds

The precast concrete culvert elements, made in these two hydraulically operated moulds, are cast on their side, and turned 90° after demoulding by means of a turning device. Because the elements were going to be placed at the base

of a bored tunnel, the dimensions of the moulds had to cope with very strict technical specifications. The tolerance on the joint dimensions (machined shear key soffits and top recess formers with tongue and groove feature) was +/- 0.75mm. The width, height, diagonal and radius had to be within a tolerance of +/- 1.5mm.

Geometrical requirements of the precast Culverts:

- Length: 2380mm + 170mm shear key
- Outside width: 4440mm
- Overall outside height: 2995mm
- Wall thickness: 300mm
- Roof thickness: 300mm
- Base thickness: 380mm



Fully automated culvert moulds, ready for commissioning in the Construx production facilities

Seen the large number of units the customer had to manufacture and the high cost of labour in Australia, Construx Weckenmann included a number of features which allowed to reduce the production cost per unit as much as possible, by making the moulds fool-proof and by limiting labour wherever possible. They also included electronic valves and sensors with plc-controls to secure the correct sequence of actions and to ensure a safe working procedure, according to Australian standards.

Machinery

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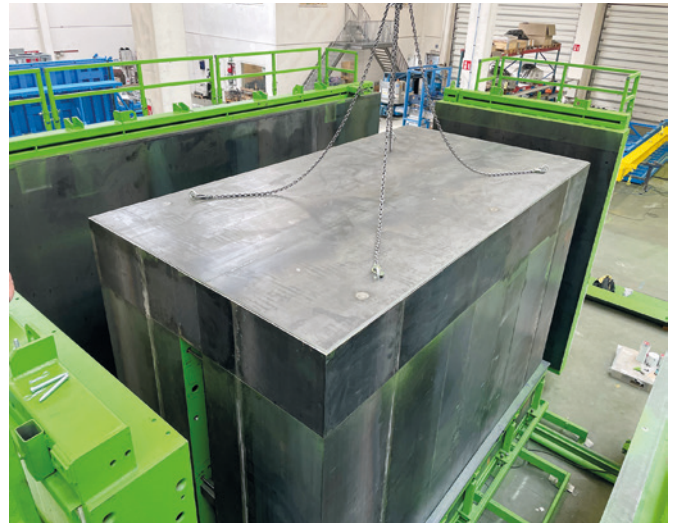


Shaping the Future of Concrete





Fully adjustable substation mould, at commissioning in one of the Construx production facilities, just before leaving for Poland



Inside of the fully adjustable substation mould

Special hydraulic and electronic features of the moulds, for making the moulds fool-proof and limiting labour as much as possible:

- Hydraulic opening and closing of the outside panels
- Hydraulic shrinking of the inside core
- Hydraulic securing of the outside panels onto each other
- Hydraulic securing of the outside panels onto the inside core
- Hydraulic securing of the shrinkable inside core
- Hydraulic unit, including tubes, valves, connections and controls
- Electronic valves and sensors with plc-controls
- Remote control for all hydraulic movements

Poland: Fully adjustable substation mould

These substations are poured upside-down and turned 180° after demoulding. This fully hydraulically and electrically controlled substation mould is conceived to manufacture 4 different lengths and 2 different widths with following possible dimensions:

- Inside length adjustable: 3150mm, 3800mm, 4200mm and 4700mm
- Inside width adjustable: 2600mm and 3000mm
- Inside height steplessly adjustable from 2400mm to 3000mm,
- Wall thickness adjustable: 90mm and 120mm

Construx also provided 2 different top parts for the inside mould, to be able to make elements with sharp edges between floor and walls or with large chamfers at both ends, a typical feature to accommodate underground duct connections.

The outside mould has hydraulically movable panels. Vibrating the elements is done with high frequency vibrators. The inside mould has a fixed part and several movable parts, according to the above modularity. The intermediate parts can

be fit in individually or together. When demoulding, first the inside corners are pulled down hydraulically after which the wall panels are also pulled down in the same way, this leaves an 8mm opening on all sides.

Northern Ireland: Communication chambers mould

These so called precast ‘Comms Chambers’ or communications boxes are mainly used in infrastructure works, including airports, railway projects, roads and housing developments. The mould is suitable for manufacturing Comms Chambers with inside dimensions from 1500mm x 1500mm up to 3000mm x 3000mm, with 500mm increments applicable in both directions. The inside height may vary from 400mm up to 2400mm, with 100mm increments. The wall and base slab thickness of the elements can be 200mm, 250mm or 300mm. The mould is suitable to make standard units (with base slab) as well as riser sections (without base slab). The elements will be cast upside-down and be turned 180° after demoulding



Communication chambers mould at the Construx production facilities

by means of a turning device, also supplied by Construx Weckenmann. Seen the large number of units the customer had to manufacture, and the high cost of labour, the Construx Weckenmann proposal included a number of features which allowed to reduce the production cost per unit as much as possible, by making the moulds fool-proof and by limiting labour as much as possible.

Technical specifications of the standard units:

- Inside dimensions of the units, 10 different sizes:
 - 1500mm x 1500mm, 2000mm, 2500mm and 3000mm
 - 2000mm x 2000mm, 2500mm and 3000mm
 - 2500mm x 2500mm and 3000mm
 - 3000mm x 3000mm
- Units to be poured in any increment of 100mm from 400mm up to a maximum single unit height of 2400mm internal height
- Wall thickness, 3 different possibilities: 200mm, 250mm and 300mm
- Base slab thickness: 3 different possibilities: 200mm, 250mm and 300mm
- Tongue & groove joint to allow riser sections to be added to base unit/riser section
- Rebated joint to allow lids to be added to base unit/riser section
- Tapered toes on both short sides, maximum 500mm x 200mm

Technical specifications of the riser sections (without base slab):

- With similar dimensions and features as the standard units
- Available in 500mm, 750mm and 1000mm heights
- With spigot (tongue & groove joint) on top and at the bottom

The mould provided by Construx Weckenmann is state-of-the-art, hydraulically operated and equipped with all required safety features. The mould is an adjustable and flexible solution for all different communication chambers and allows for a monolithic cast: walls and base slab at the same time. The hydraulically movable outside panels consisting of 4 main panels plus infill panels to cope with the different required dimensions. The hydraulically shrinkable inside core consists of 4 shrinkable corner parts plus infill panels. Interchangeable top plates for the 10 different sizes of the standard Comms elements are included. These top plates have machined chamfered edges, and they sit on the support structure of the inside core. A height adjustment system allows for inside heights from 400mm up to 2400mm, with 100mm increments. Soffits and top recess formers create very precise tongue and groove features.

Belgium: Fully automated and hydraulically operated substation mould

Because the main walls of the substations are straight and only the basement walls, both inside and outside, are tapered, the demoulding needs to be done hydraulically. The mould has 2 hydraulically shrinkable inner cores and 4 hydraulically movable outside panels. Not only shrinking and moving are hydraulic, but also securing the outside panels is done with a hydraulic wedge system. Before the outside panels can be opened completely, they are slightly pushed backwards by means of a hydraulically operated eccentric device. The actual demoulding of the element is initiated by pushing the bases up and consequently lifting the element out of the mould by means of 6 perfectly synchronized hydraulic rams and 6 air vents. Construx provided the complete mould with electronic valves, sensors and a control panel, thus controlling all movements and securing the right sequence of movements, which resulted in a fool-proof system.

List of sensors:

- On every corner joint: check wedge open or wedge closed
- On every wall: check wall open or not
- On every corner of the shrinking core: check core completely out or core completely in

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Fully automated and hydraulically operated substation mould for a Belgian customer

- On the push-up system: check system out or system in / bottom in or bottom out

Sequence of demoulding operations:

- Pulling wedges on the outside corners
- Pushing walls slightly open
- Opening walls completely
- Shrinking of inner core
- Pushing up the concrete element

Sequence of closing operations:

- Expansion of inner core
- Closing outside panels (pushers retracted)
- Securing the outside panels by closing the wedge connections

An audio signal and a flashing light indicate when the mould is in operation.

The elements are poured upside-down with self-compacting concrete. To facilitate the turning of the element, Construx supplied a special frame connecting the mould onto the customers' turning device. All the outside panels have working platforms, one of which is equipped with a stair and the 3 others have access ladders. Construx also supplied a roof mould. Dimensions of the substation:

- Length 3525mm x Width 2380mm x Height 2780mm
- Upper part wall thickness: 80mm
- Inside and outside basement walls with various tapers

Australia: Fully adjustable box mould

This fully adjustable mould is conceived to manufacture elements with 6 different lengths and 3 different widths with following possible dimensions:



Fully adjustable box mould, ready for commissioning before leaving for Australia

- Inside length adjustable: from 2500mm up to 5000mm, with 500mm increments
- Inside width adjustable: 2200mm, 2500mm and 3800mm
- Height: steplessly adjustable from 1350mm to 2600mm
- Wall thickness adjustable: 150mm, 175mm, 200mm and 250mm

The outside panels have wheels and sit on rails, as they can be opened and closed by hand using a gear drive. The long outside panels have a 1500mm stroke: 700mm demoulding + 800mm adjustability. The short outside panels have a 1750mm stroke: 700mm demoulding + 1050mm adjustability. The two long lateral outside panels are 6000mm wide and the two short transverse outside panels are made of a main 2200mm wide panel plus two add-on parts, one of 300mm and another of 1600mm. The inside mould has shrinkable corner panels with interchangeable intermediate panels. Steel bases of 4 different widths sit on height adjusters. Obviously, there are no tie-bars through the concrete elements, only over the top and underneath.

USA: Fully automated mono-box mould

The system is suitable to make mono-boxes. These elements come with a fixed width and different lengths, forming a minimum size box of 6' x 6' and a maximum size of 6' x 20':

- Inside width: 6'
- Inside length: 6' to 20' in steps 1'
- Wall thickness: 8", 10" and 12"

The idea of the mould is to start with a stable chassis with integrated rails on which all components can roll into position. Outside panels are also rolling on this frame and height adjusters fit on the chassis. The fixed part of the core consists

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Fully automated mono-box mould, ready for shipment to the USA

of a fixed end segment made up of two hydraulic shrinkable corners and a fixed roof plate. A second end segment sits on wheels and is longitudinally movable on the frame. In this way the core can be extended with intermediate segments. Both connected end segments form the minimum box size: 6' x 6'. When adding infill segments in between the end segments, any other internal length can be achieved. The 2 transverse outside panels of 6' long have 4 extra extensions of 2" and 4 extra extensions of 4" on both sides, to make the 3 different thicknesses. These 2 transverse panels roll between the 2 longitudinal panels of 22'. The panels can be connected to make all combinations of wall thicknesses and core dimensions. All

panels can open 800mm for demoulding and easy access to put rebar and box-outs. Opening and closing the outside panels is done hydraulically. All infill segments and the movable end segments are equipped with a hydraulic lock. This hydraulic locking device consists of 3 individual pins which each have a hydraulic cylinder to activate them. The hydraulic lock avoids workers having to go inside the core when assembling it. All outside panels are equipped with safety floors and access ladders, and Construx also supplied an extra working platform between outside panels and inside core.

Shaping the Future of Concrete

Construx Weckenmann meets the requirements of their customers, in order to obtain the most appropriate solution to manufacture their precast culverts and pods. The outcome of achieving such an objective is always a very satisfied customer. Construx Weckenmann is an engineering-driven manufacturing company relying on the commitment, creativity and experience of its employees. Their aim is to establish a partnership, rather than to be a supplier, in providing turnkey solutions for precast and on-site formwork issues. ■

FURTHER INFORMATION



Construx
Hazebeekstraat 11
8531 Hulste, Belgium
T +32 56724793
info@construx.eu
www.construx.eu

Weckenmann
Birkenstraße 1
72358 Dormettingen, Germany
T +49 7427 94930
info@weckenmann.de
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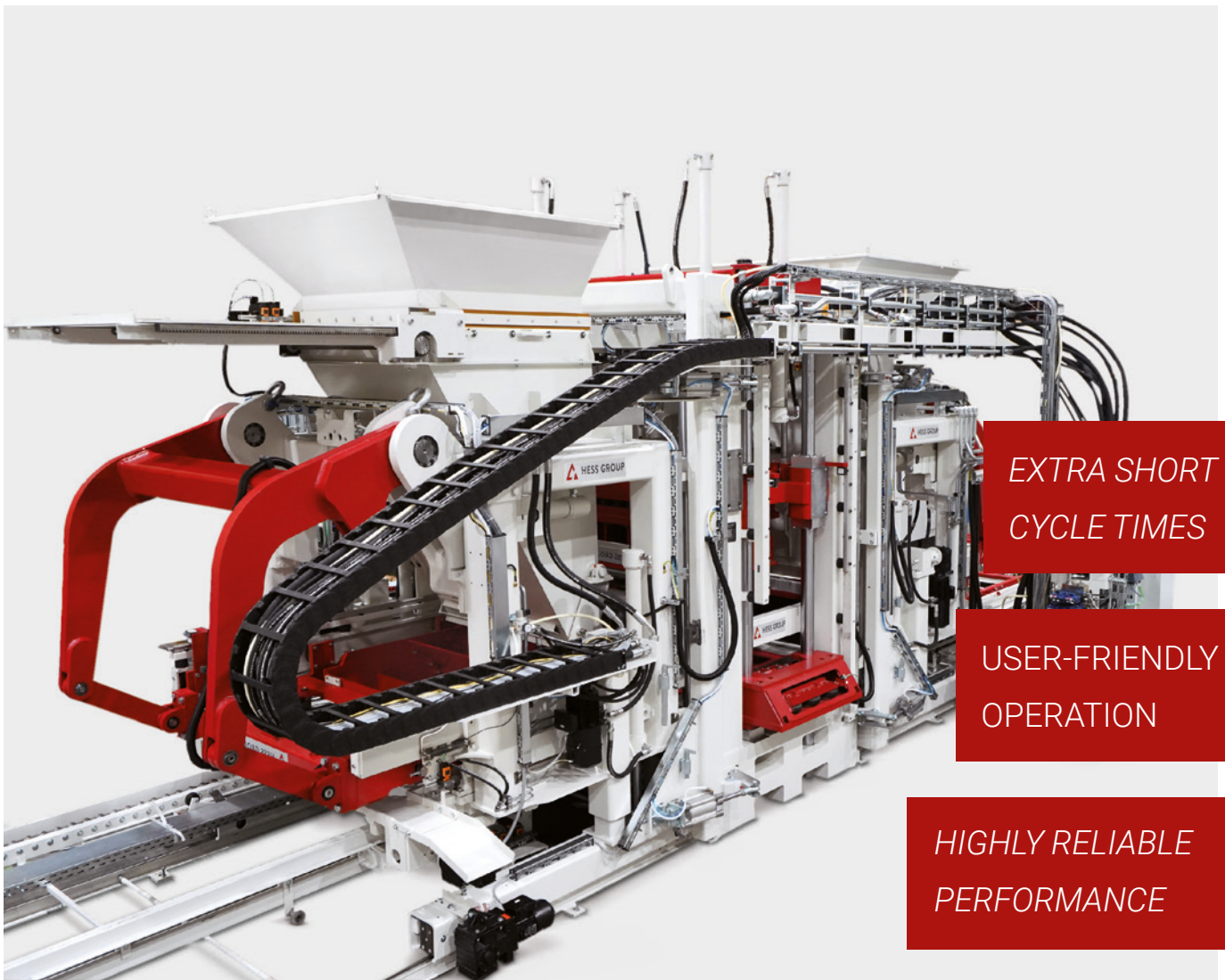
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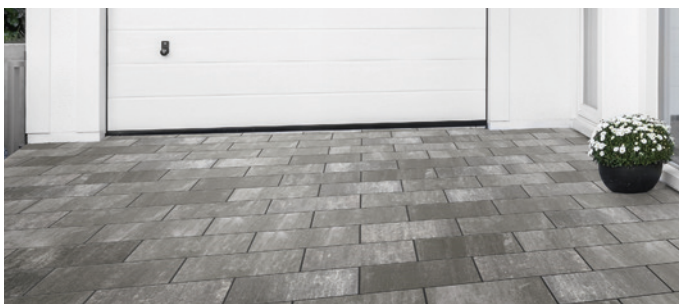
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