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منشأة الإسمنت العالمية
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The globally recognised event series ICCX launches a new spot and thus opens up promising opportunities for the local concrete industry and suppliers from all over the world.

The concrete industry in Morocco has experienced a great growth since the early 2000s, which will continue now that the Corona crisis has been overcome. This growth shows enormous potential for production facilities for precast concrete parts and products, especially for housing and infrastructure construction.

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Looking forward

Not only in The Middle East but globally climate change is forcing humanity to develop clever solutions. It is a challenge for all of us to allow our children a prosperous life on earth.

The construction industry is playing an important role here, and many projects are targeting zero-carbon results already. Especially precast structures and buildings contribute quite significantly here. And those who are talking against concrete and precast do often not understand the difference between cement and concrete at all.

It is easy to say that timber is greener than concrete. There are so many aspects that need to be taken into account that such an impression is misleading and simply false. But to to be fair: Saying it the other way round would be false, too!

Building materials have to be evaluated in the context they are used for. Considering the life span of structures for housing and infrastructure, there is no alternative to our building material, unless you are happy to design apartment buildings, bridges or tunnels for a life time of a few years, only.

While building codes in the past were looking at structural safety and stability mainly, in the future there will be among others also aspects of sustainability taken into account, as well. And looking at structures from cradle to cray will include a variety of aspects that were not taken into account so far.

For concrete and especially for precast, this change will mean even more advantages. Adding the targets of the cement industry to reduce their carbon footprint, or replacing cement in parts or fully with alternative binders, will underline the market power of precast and concrete.

With this in mind, we are indeed looking into a prosperous future. However, all this will not take place automatically. It is on us to further develop and adapt modern technologies that you can always find in CPI. Enjoy reading!

نظرة تطلعية

يُحتم التغير المناخي على البشرية العمل على تطوير حلول ذكية، ليس فقط في الشرق الأوسط ولكن في العالم أجمع، إنه لتحدٍ لنا جميعًا أن نوفر لأطفالنا حياةً مزدهرةً على هذا الكوكب.

يلعب قطاع البناء دورًا مهمًا في هذا الشأن، وثمة مشاريع عديدة تستهدف بالفعل الوصول بصافي الانبعاثات الكربونية إلى الصفر.

تساهم المنشآت والمباني مسبقة الصب بشكل خاص في هذا الأمر بدرجة كبيرة، وتجدر الإشارة إلى أن الفريق الذي يعارض فكرة الخرسانة والصب المسبق غالبًا لا يدرك الفرق بين الإسمنت والخرسانة على الإطلاق.

فمن السهل أن نقول إن استخدام الأخشاب أكثر ملاءمةً للبيئة من الخرسانة، وهناك العديد من الجوانب التي يجب أخذها في الاعتبار والتي تجعل هذا الانطباع مضللًا وخاطئًا بكل بساطة. ولكن لكي نكون منصفين: فإن قول عكس ذلك سيكون خطأً أيضًا!

يجب تقييم مواد البناء في سياق الغرض من استخدامها. وبالنظر إلى العمر الافتراضي للمنشآت المخصصة للأغراض السكنية والبنى التحتية، فلن تجد بديلاً لمواد البناء الراهنة، إلا إذا كنت ستقبل بفكرة تصميم مباني سكنية أو جسور أو أنفاق لا تدوم إلا لبضع سنوات فقط.

في حين كانت قوانين البناء في الماضي تُركز على السلامة الهيكلية والاستقرار بشكل أساسي، فستراعي في المستقبل أمورًا أخرى أيضًا من بينها جوانب الاستدامة، وستضمن الجوانب ذات الصلة بالمنشآت التي يتعين النظر فيها من بداية إنشائها حتى انتهاء عمرها الافتراضي مجموعةً متنوعةً من الجوانب لم تُوضع في الاعتبار حتى الآن.

بالنسبة للخرسانة وخاصة مسبقة الصب، فسيترتب على هذا التغيير المزيد من المزايا، حيث ستستهدف صناعة الإسمنت تقليل بصمتها الكربونية، أو استبدال الإسمنت بشكل جزئي أو كلي بمواد تماسك بديلة، ما سيؤكد على القوة السوقية للخرسانة والصب المسبق.

ومع وضع هذا في الاعتبار، نتطلع بالفعل إلى إيجاد مستقبل مزدهر. ومع ذلك، لن يحدث هذا من تلقاء نفسه، بل تقع على عاتقنا مهمة المزيد من التطوير والتكيف مع التقنيات الحديثة التي يمكنك أن تجدها دائمًا في CPI، استمتع بالقراءة!

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info@ad-media.de · www.ad-media.de
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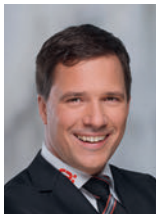
Dr.-Ing. Holger Karutz · Alexander Olbrich
Editor-in-Chief:
Dr.-Ing. Holger Karutz h.karutz@cpi-worldwide.com
Editors:
Dipl.-Ing. Mark Küppers m.kueppers@cpi-worldwide.com
Dipl.-Ing. Michael von Ahlen m.vonahlen@cpi-worldwide.com
Prof. Hans-Dieter Beushausen h.beushausen@cpi-worldwide.com
Dipl.-Ing. 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.kloeckner@ad-media.de
Alexander Olbrich a.olbrich@ad-media.de
Gabriele Pianta g.pianta@ad-media.de
Patrick Gürtler p.guertler@ad-media.de
Design:
André Besgens · Alex Konn · Miriam Scheunemann production@ad-media.de
Accountancy:
Sandra Borchert · Christian Hoffmann accountancy@ad-media.de
Subscription service:
Christian Hoffmann subscription@ad-media.de
Head of Events:
Thomas Rieck events@ad-media.de
External Data Protection Officer:
Ben Green Consultancy UG dataprotection@ad-media.de
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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 +1 770-672-7082 | 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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Focus on integrity, quality, and trust

Tabone to celebrate 50 years in business

مجموعة Tabone تستعد للاحتفال بمرور 50 عامًا على انطلاق أعمالها

Philip A Tabone is currently preparing to celebrate 50 years in business in 2023. This was said by Mr. Philip A Tabone, Chairman of the Philip A Tabone Group with a head office in Malta and also regional office in the Middle East.

تستعد مجموعة Philip A Tabone حاليًا للاحتفال بمرور 50 عامًا على انطلاق أعمالها في عام 2023. صرح بذلك السيد فيليب إيه. تابون، وهو رئيس مجموعة Philip A Tabone التي يقع مكتبها الرئيس في مالطا ومكتبها الإقليمي في الشرق الأوسط.

Philip A Tabone has been supplying equipment and concrete additives in the Maltese market since its foundation back in 1973. Having been in the concrete industry for the past 50 years, the company established and maintained its trustworthiness in this sector.

Philip A Tabone has excelled in several areas, primarily these:
- Equipment to produce concrete ready mix and elements being hollow core, blocks and precast
- Quality laboratory equipment
- Concrete additives

Initiating with technologies from Modern Advance Concrete in Italy in the early 1970's, the latter has now expanded with various ranges of building materials within the concrete industry.

Specialising in precast and hollow core, chairman and founder Mr Philip A Tabone, explored another direction for the company. The company expanded its business into international markets, particularly the Middle East, providing services such as consultancy, supply and after sales service of hollow core, precast, block business and cut & bend set ups. Tabone promotes proactively brands such as Nordimpianti, MCT, Bianchi, MEP and others. Today, several prestigious precast plants have been set up by Tabone, to produce hollow core and precast elements, and also blocks.

Tabone, as known internationally, excels in aftersales with a full team, providing on the ground support. Over the years the brand has become synonymous for the setting up of plants within the concrete and cut and bend industry.

Tabone's wealth of experience, can save clients both time and money, especially during the start-up phase; providing value in the coordination between; the civil engineers at erection phase, the manufacturing set ups, and the raw materials provided on site for the production to take place. Putting it all together serves as an experience with a scope to attain production capacity as fast as possible, for the shareholder to start seeing an early return on their investment.

Mr. Philip A Tabone (Chairman Tabone) and Mr. Gianpiero Gagliardi (CEO Nordimpianti) at Big Five Show in Dubai.

Philip A Tabone Group will be celebrating its 50-year anniversary since its foundation in 1973. When asked about the future of the company and what makes it successful, Mr Philip Tabone stated, "focus is on integrity, quality, and trust."

With a management team, both in Malta and in the Middle East, Tabone envisages further growth in these regions, as well as markets such Africa. ■

FURTHER INFORMATION

50 YEARS Tabone تابوني

Philip A. Tabone International
T + 356 21223322 (Europe)
T + 971 582528210 (Dubai)
dubai.office@patabone.com
www.philipatabone.com

Introduction to *fib* Bulletin 101

Precast Concrete in Tall Buildings

مقدمة لنشرة الاتحاد الدولي للخرسانة الإنشائية 101

George Jones, BSc C.Eng MICE MIEI, Commercial Design Concepts, UK

There has been continued global growth in tall building construction over recent years. The variation in the use of such buildings is remarkable, from lavish hotels and apartments to socially affordable units. As the world struggles to cope with growing numbers of people, dwindling resources and movements from rural to urban habitats it is unavoidable that population densities will increase, and more efficient use of scarce land and all other resources will be needed. Taller buildings are the inevitable consequence. Tall buildings can use several different types of material to form their framework and envelope. Those materials are mixed to provide an optimum building solution to suit client requirements such as structure, occupancy, vision, affordability, timing, sustainability and quality. Precast concrete is one of those materials, and has been used from whole frameworks to facades, and elements mixed with structural steelwork and cast in place concrete.

شهد قطاع تشييد المباني الشاهقة نموًا عالميًا مستمرًا خلال السنوات الأخيرة، وتجدر الإشارة إلى أن تباين استخدامات تلك المباني هو أمر رائع للغاية، حيث تتفاوت بين الفنادق والشقق الفخمة وحتى الوحدات ذات الأسعار المعقولة اجتماعيًا. وفي الوقت الذي يثابر فيه العالم لمواكبة الزيادة السكانية وتضاءل الموارد وموجات الانتقال من المناطق الريفية إلى المناطق الحضرية، فلا مفر من زيادة الكثافة السكانية، مع ضرورة الاستخدام الأكثر كفاءةً للأراضي النادرة وجميع الموارد الأخرى. ومن ثم فإن المباني الشاهقة هي النتيجة الحتمية لذلك. يمكن أن تستخدم المباني الشاهقة عدة أنواع مختلفة من المواد لتكوين هيكلها وجسمها الخارجي. يتم مزج تلك المواد لتوفير حل بناء مثالي يناسب متطلبات العميل فيما يتعلق على سبيل المثال بالهيكل ومستوى الإشغال والرؤية ويسر التكلفة والتوقيت والاستدامة والجودة. وتعتبر الخرسانة مسبقة الصب واحدة من تلك المواد، وقد تم استخدامها بدءًا من الهياكل الكاملة وحتى الواجهات، والعناصر الممزوجة بالمصنوعات الفولاذية الإنشائية وحتى الخرسانة المصبوبة في مكانها.

In view of their current popularity several references have been written on the design of tall buildings in steelwork and structural concrete. However, it was felt in *fib* Commission 6 for Prefabrication that there was not an up to date reference available for the use of precast concrete in tall buildings, that brought together in a single document the modern applications of precast concrete in tall building construction. Task Group 6.7 was therefore set up to address this issue and to prepare a "State of the Art Report" on the subject. This report would focus on how to integrate precast concrete into tall buildings and aims to capture the interest and influence professionals and all parties involved in tall building construction through a single reference without being unduly theoretical in approach. We are also pleased to have had close cooperation with PCI throughout the drafting process and that the Bulletin will be published by both *fib* and PCI.

Bulletin 101 is divided into four parts. The first four chapters introduce the reader to the benefits that can be achieved with precast concrete and how it can be integrated into any building as individual elements either mixed with other construction forms or as precast systems themselves. Shafts, stair and service cores, division walls, floors and facades are all parts of any functioning tall building and can be provided in precast concrete to act as the structural framework also.

Benefits that can be achieved through using precast concrete in tall building construction, in addition to those from using traditional cast in place concrete, include:

- Offsite dependability.
- Higher strength and more advanced materials.
- The capability to produce components outside the site cycle in advance of construction.
- Greater speed of construction resulting in reduced floor cycle times (critical in tall building construction).
- Time and budget certainty (site climatic and logistical effects are mitigated).
- Assured and improved quality.
- Less clutter on congested floor areas during construction.
- Fewer site personnel with resultant health and safety benefits.
- Ease of demountability and reuse.
- Enhanced performance in earthquakes.
- Automated production processes with great accuracy and less waste.
- Moulding of complex shapes in factory conditions to realise architectural visual intentions more easily.

The next four chapters cover the individual "building blocks" in precast concrete, i.e. floors, columns, walls and stairs. Their application to tall building construction is described with particular attention given to design and detailing and production methodology. There are then three chapters on areas of specific interest. These are building facades, precast in seismic zones and construction itself.

The Bulletin concludes with numerous case studies. The Group particularly wanted to use case studies from as many different regions as possible, and we believe this has been

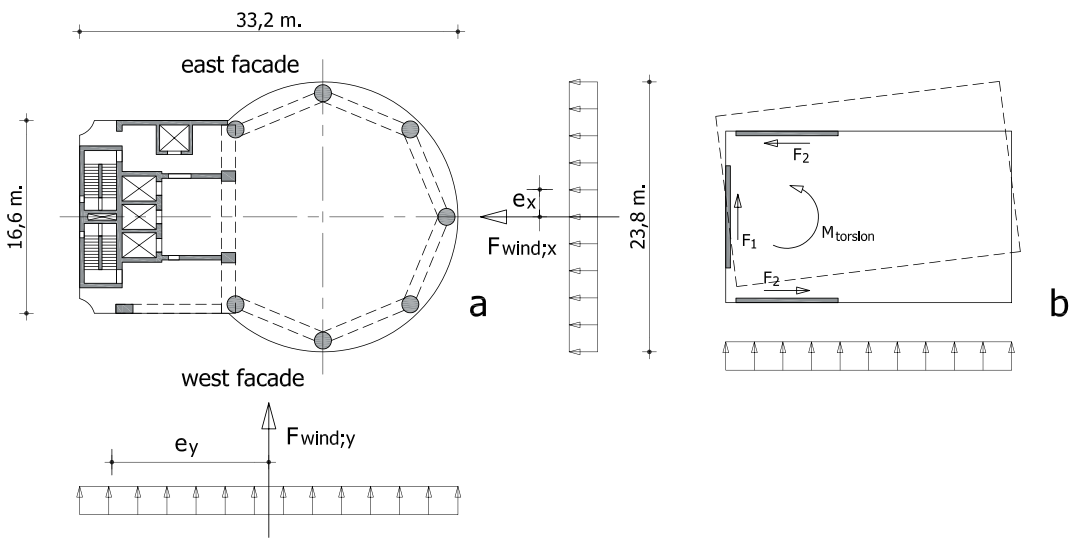
George Jones is a graduate of the University of Manchester, Chartered Engineer and a member of both the Institution of Civil Engineers and Engineers Ireland. He has been involved in the precast concrete industry since the 1980s, and set up his own engineering consultancy, Commercial Design Concepts Ltd (www.cdcltd.net), in 1996 to specialise in the engineering design and development of precast concrete. He has been a member of *fib* Commission 6 since 2009 and is the convener of TG6.7, "Precast Concrete in Tall Buildings".
george@cdcltd.net

Breaker Tower, Bahrain

achieved with examples from Europe, North and South America, Australia, Japan, the Middle East and China. Sample case studies illustrating the application and benefits of precast concrete include:

Breaker Tower, Bahrain – Fully Precast Framed

This structure has a full precast concrete framework comprising wall panels, columns, beams and hollowcore floor slabs. The building has 35 storeys and is 165m tall. It has two basic volumes. The high-rise volume has the shape of a vertical "cylinder lock". Apartments occupy 28 storeys and are situated in the round part of the high rise footprint. Each storey has a free height of 4.2m and apartment residents have an exceptional view of the surroundings. The rectangular part of the high-rise functions as the stabilising "backbone" of the building and houses the elevators and stair cores. The low-rise of the building has a rectangular volume where the 5-storey car park and show room are housed.
Columns are positioned in the round peripheral to allow freedom of placing partition walls. The shear walls at the back of the building form the lateral stability structure. Vertical joints



High Rise Footprint: Stabilising rectangular "backbone" of shear walls forming stair cores and elevator shafts, with apartments located in the open round part of the floor.

connect the individual shear walls at their intersections. The shear walls act together as stabilizing 3D structures.

Production of the precast elements was always at least two floors ahead of the erection schedule, ensuring that all precast elements were available on time. The contractor carried out precast element installation at an average speed of 2.5 floors per month, which resulted in a floor cycle time of 13 days. Seven days were spent for setting-out, erection and grouting of the precast beams, hollowcore slabs and stairflights. Six days were then needed for installation of the precast columns and shear walls supporting the next floor.

Erasmus Medical Centre, Rotterdam, The Netherlands – Framed by Precast Walls with Innovative Construction Method

The building has 35 storeys and is 120m high. It has a complete precast concrete structural framework. The façade consists of architectural insulated sandwich walls, weighing up to 34 tonnes per element, internal solid walls form the service and circulation shafts, and the floors consist of hollowcore slabs. All walls are loadbearing, and they act together as a tube inside a tube to provide lateral stability.

Construction speeds can be maximised if precast element weights are also maximised. Often it is crane capacities, and their susceptibility to high winds, that inhibit speed benefits that can be achieved from precast construction. In this case the contractor decided to use a climbing shed for handling and installation of precast elements instead of the conventional tower crane approach. The elements are installed one floor level at a time and the shed jacked to the next level as the storey is completed. Using the shed it was possible to split vertical and horizontal transport of elements, whereas they are generally combined when using a tower crane. By splitting vertical and horizontal transport a creditable floor cycle time of five days was achieved on a floor area of 43m x 19m. Moreover, the roof of the shed provides cover with consequent health and safety benefits in the closed working environment. Weather, particularly wind, has little effect and there can also be an early start to non-structural work.

Erasmus Medical Centre, Rotterdam, The Netherlands

Climbing Shed being assembled

The crane operated in a gantry system inside the shed and consequently through direct lifting could also lift heavier precast elements than would have been possible using more traditional craneage.

Urban Dock Park City Toyosu, Japan – Precast Framed and Earthquake Resistant

The larger apartment block has 52 storeys and is 180m high. There is also a second building of 32 storeys on the same site.

The building was designed and constructed using the Sumitomo Mitsui Quick RC Integration Method (SQRIM). This method was developed with the aim of converting all main structural members to fully precast concrete. The method utilises all frame elements to resist lateral forces. This is a seismic damping device equipped structure and uses concrete of 120N/mm² compressive strength for some structural members.
The construction period was 33 months with a SQRIM applied floor structural framing cycle of 3-4 days. Seven tower cranes were set up with a capacity of 15 tonnes each. The total number of precast elements was 24,035, which were produced in twelve precast factories. The percentages of in-situ concrete elements converted to precast were 100% columns, 95% beams and 74% of floor slabs. This resulted in the on-site labour demand being reduced by 95% for formwork and 97% for rebar fixing.

Urban Dock Park City Toyosu, Japan

Premier Tower, Melbourne, Australia – Precast and Insitu Concrete Mixed Construction

As one of Melbourne's tallest and most prestigious developments, this project is best known for its inspiration: Beyoncé's video 'Ghost', which features writhing dancers tightly shrouded in fabric.
The result is an elegant, amorphic form, designed by Elenberg Fraser, that sits on an island site opposite Melbourne's main train terminal, Southern Cross Station. When completed it is expected to rise to 78 storeys (249m tall), comprising 780 one and two-bedroom apartments and 180 hotel suites, as well as a range of leisure facilities.

Premier Tower, Melbourne, Australia

Composite "shell" mega columns used to assist lateral stability of Premier Tower, Melbourne.

Melbourne's construction industry is predisposed to concrete, with precast vertical elements (columns and wall panels) mixed with post-tensioned flat slabs a common method of construction.

To maintain the building's movement, due to wind, to within acceptable levels, precast mega-columns on the façade maximise the width of the stabilising structure. These are tied to the core by two- or three-storey outriggers concealed in party walls, and secondary outriggers at the mid-height plant floor.

The precast mega columns are sized to carry both gravity and wind loads. The forces generated by the wind loads can be equal to the weight supported by the column. Due to the overall weight of the mega columns, the producer and structural engineer worked closely to create a precast option to form the project's 'mega-columns' within the structure, that could be safely lifted by the site tower cranes.

The result is a composite 'shell' column that not only has the required vertical capacity, but also easily accommodates the outrigger connections through the building.

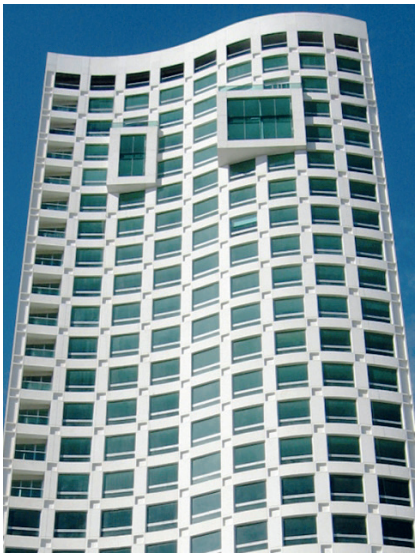
Conjunto Paragon, Santa Fe, Mexico – Architectural Precast Concrete Facade

This hotel of 27 storeys is sited on the highest ground in a recently developed area, making it a prominent landmark. The building façade is formed with architectural precast concrete elements, comprising 520 curved and straight pieces, both concave and convex.

Its relatively massive size was slimmed visually with the undulating design which blends the precast panels with large windows that give expansive views of the landscape.

This building has a winding "S" shaped profile, and consequently precise fabrication of the precast panels was the key to defining the unique shapes needed. High-quality off-site manufacturing ensured achievement of complicated geometry, curved panels, intricate medallions, cubic protruding shapes and balconies.

Panels were erected in a horizontal sequence around the building perimeter. This allowed early phased shell completion at each floor level and release of large sections of the façade for fixing of glazing and protected crews working on interior finishing. The early close-in also meant that hotel owners were able to adapt interiors to specific needs.



Conjunto Paragon, Santa Fe, Mexico

Wind, site restraints, building height, the wavy design, protruding windows at the top floors and the construction schedule all created challenges that could only be met with precast architectural panels. ■

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Complete turnkey plant curing system and services

Afinitas Announces New Curing Solutions Offering

Afinitas تعلن عن طرح حلول جديدة لمعالجة الخرسانة

Afinitas, a leading global infrastructure equipment and services company, announced at National Precast Concrete Association Meeting in Kansas City that it will now offer Afinitas SmartSet Concrete Curing Solutions for precast, pipe, block, paver and pre-stress products and aggregate heating needs worldwide out of its Mediapolis, IA, manufacturing facility.

أعلنت شركة Afinitas، وهي شركة عالمية رائدة في مجال معدات البنية التحتية وخدماتها، في اجتماع الرابطة الوطنية للخرسانة مسبقة الصب الذي انعقد في مدينة كانساس أنها ستقدم الآن حلول معالجة الخرسانة Afinitas SmartSet للخرسانة مسبقة الصب والأنابيب والكتل ومواد الرصف ومنتجات الخرسانة مسبقة الإجهاد واحتياجات تسخين الركام في جميع أنحاء العالم، وذلك في مرفق التصنيع التابع لها في مدينة ميديابوليس، بولاية آيوا

The Afinitas Curing Team rolled on to the show floor, literally, in its new 20-foot long, fully stocked, SmartSet Curing Solutions service van to tout the new product and on-site services offering. Afinitas SmartSet Curing Solutions will include a line of direct-fired steam generators for concrete curing as well as installation and turnkey services, annual on-site services, retrofits, and upgrades, troubleshooting and preventative maintenance, a vast parts inventory and a dedicated technical team.

The SmartSet Curing technical team is led by industry curing expert Dan Hodel, Chief Engineer of Afinitas Curing Systems, who has more than 20 years of experience in concrete curing solutions. He will be assisted by Ed Fisher, Afinitas Service Technician, a 10-year veteran in the field, who will run the on-site service van program.

"Afinitas is thrilled to bring the industry this complete curing solution, which rounds out our existing offering of kiln structures, piping, controls and moving floors," said Hodel. "The convenience of one supplier for all your curing needs, as well as the technical expertise and resources of Afinitas will benefit our producer partners with durable, reliable and quality products." The Afinitas Curing Team can be reached at +1-833-4 or CURING (833-428-7464). ■

FURTHER INFORMATION

Afinitas
8040 Forsyth Blvd, Clayton, MO 63105, USA
T +1 314 862 8000
info@afinitas.com
www.afinitas.com

The Afinitas Curing Team new 20-foot long, fully stocked, SmartSet Curing Solutions service van.

December 7-8, 2022, in Dubai, UAE

ICTF is back

عودة المنتدى الدولي للتقنيات الخرسانية (ICTF) من جديد

The pandemic brought an abrupt halt to in-person events. The National Ready Mixed Concrete Association, and Grey Matters accepted the challenge and utilized the new virtual interfaces effectively and connected Concrete Minds from across the globe for the last 2 years. This year they are back with a live conference.

أدى الوباء إلى توقف مفاجئ للفعاليات التي تنطوي على الحضور الفعلي، وقبلت الرابطة الوطنية للخرسانة الجاهزة (National Ready Mixed Concrete Association) وشركة Grey Matters التحدي واستخدمت الواجهات الافتراضية الجديدة بفاعلية وربطت المختصين بالخرسانة من جميع أنحاء العالم على مدار العامين الماضيين، وكانت العودة هذا العام بتنظيم مؤتمر مباشر.

Join National Ready Mixed Concrete Association, Grey Matters and the Sponsors for the 2022 International Concrete Technology Forum, December 7-8, 2022, in Dubai - UAE. The International Concrete Technology Forum provides learning and networking opportunities on the latest advances, technical knowledge, continuing research, tools and solutions for concrete manufacturing, design and construction.

Continuing Education

Attendees of the 2022 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 on the following topics:

- 3D Printing
- Durability
- Sustainability
- Innovations

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 Fakih (rabih.fakih@grey-matters.ws) or Lionel Lemay (llemay@nrmca.org). ■

FURTHER INFORMATION

INTERNATIONAL CONCRETE TECHNOLOGY FORUM

NRMCA

Grey Matters

www.concrete-conference.com

5-8 December 2022, DWTC, Dubai

Middle East Concrete at The Big 5

الشرق الأوسط للخرسانة في معرض The Big 5

Middle East Concrete will return to the Dubai World Trade Centre this 5-8 December 2022, as this year's only and leading international exhibition for the concrete sector in the Middle East and Africa, highlighting the latest product innovations and technological advancements. Organised by dmg events, with over 40 successful years of delivering events in the region, Middle East Concrete will be co-located with The Big 5 - the largest and most influential building and construction event in the Middle East, Africa and South Asia and the annual meeting hub for the global construction community.

سيعود معرض الشرق الأوسط للخرسانة لينعقد في مركز دبي التجاري العالمي في الفترة من 5 إلى 8 ديسمبر 2022 بصفته المعرض الدولي الرائد والوحيد لقطاع الخرسانة في الشرق الأوسط وأفريقيا هذا العام، حيث سيتم استعراض أحدث الابتكارات والمنتجات والتطورات التكنولوجية. سينعقد كل من معرضي الشرق الأوسط للخرسانة و The Big 5 في نفس الموقع بتنظيم من شركة dmg Events التي تتمتع بأكثر من 40 عامًا من النجاحات في تنظيم الفعاليات في المنطقة. ومن الجدير بالذكر أن معرض The Big 5 هو أكبر فعاليات البناء والتشييد وأقواها تأثيرًا في الشرق الأوسط وأفريقيا وجنوب آسيا، ويعد مركز لالتقاء مجتمع البناء العالمي سنويًا.

The concrete industry is on a steady rise with $2 trillion worth of future planned and unawarded projects in the pipeline across the GCC. This optimistic outlook is ignited by rapid infrastructure development, mainly driven by high population growth and long-term visions such as Saudi Vision 2030 and the Dubai 2040 Masterplan. In the region, the Kingdom of Saudi Arabia takes up the biggest share of the projects pie, at a value of $1.15 trillion, and is followed by the United Arab Emirates as second biggest market with a planned project value of $430bn for the years to come (source: MEED Projects – MENA Construction Industry Trends 2022).

Some of the giga-projects in the pipeline include NEOM, Amaala, The Red Sea Development Project, and Jeddah Economic City in Saudi Arabia, alongside Al Marjan, Six Senses The Palm and the Guggenheim Museum in the UAE.

"With a strong foundation and future project outlook for construction in the region, we aim to deliver another successful edition of Middle East Concrete, alongside the flagship event The Big 5. We bring together the top industry players in the concrete sector, while also advancing knowledge and promoting industry best-practices through strategic summits and industry talks," commented Josine Heijmans, Vice President Construction, dmg events.

World-leading brands featured in the exhibitor line-up at Middle East Concrete this year include MASA, CIFA, Besser, TOPWERK, Kobra, Rampf, German Plant Experience and Elematic.

"MASA has participated in Middle East Concrete at The Big 5 for many years, where we have continuously received excellent feedback. As an international company, we have welcomed visitors from all GCC countries, confirming our position as a leader in the market. We look forward to continuing the positive interactions we have experienced to date at the next exhibition," commented Cristian Brugioli, Managing Director, MASA.

"Topwerk Group is happy to participate at the Middle East Concrete, as Dubai is an excellent place to meet regional clients and regulators, as well as to showcase our innovations and technological developments," commented Mohammed Tayseer Qasem, Managing Director Topwerk Group.

Middle East Concrete will also host a series of free-to-attend CPD certified Concrete Talks in partnership with the American Concrete Institute, highlighting topics of high-performance concrete, quality assurance, 3D concrete printing and ACI building codes in the region.

The Big 5, Middle East Concrete and five other specialized construction events will take place from 5-8 December 2022 at the Dubai World Trade Centre (DWTC). For further details, visit www.middleeastconcrete.com ■

FURTHER INFORMATION

MIDDLE EAST CONCRETE

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Dipl. Ing. (FH) Markus Feix,
Head of Customer Training and Service Hotline

www.masa-group.com

At Masa, we think of nothing but concrete – and how to shape it for the building materials industry. The machines we design and build are used to produce concrete blocks, sand-lime bricks and aerated concrete blocks. In other words, we are true concrete heads with a passion for reliable, high-performance machines. One of our smart concrete heads, Markus Feix, has developed a solution that saves your concrete block production from recipe and process data loss: **Masa Smart BackUp. Talk to him about it at Bauma.** We will be presenting his and many other new milestones there.

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Brecon Vibrationstechnik GmbH, 50933 Cologne, Germany

German-Italian cooperation in concrete testing

تعاون ألماني إيطالي في اختبار الخرسانة

In the December 2020 issue of CPI, Brecon GmbH presented the portfolio introduced since January 2018 for the product range of material testing. It is marketed under the brand name Bepete (concrete testing technology), was presented. Now, after four years, Bepete is a valued supplier of testing equipment from A to Z to many testing laboratories. With effect from 01 November 2021, Brecon has entered into a contractual agreement with Controls S.p.A. from Northern Italy for the sales of concrete testing machines in the D/A/CH countries. This complements Bepete's own extensive range of products with the very strong portfolio of Controls, a renowned manufacturer for over 50 years.

في إصدار ديسمبر 2020 من CPI، عرضت شركة Brecon GmbH الحافظة التي تم طرحها منذ يناير 2018 لمجموعة منتجات اختبار المواد، والتي يتم تسويقها بالاسم التجاري Bepete(تقنية اختبار الخرسانة). والآن، وبعد مرور أربع سنوات، أصبحت Bepete مُوردًا قيمًا لمعدات الاختبار بالكامل في العديد من معامل الاختبار. واعتبارًا من 1 نوفمبر 2021، أبرمت شركة Brecon اتفاقيةً تعاقديةً مع شركة Controls SpA التي يقع مقرها في شمال إيطاليا لبيع آلات اختبار الخرسانة في ألمانيا والنمسا وسويسرا، وهو ما يعزز مجموعة منتجات Bepete الواسعة بالمجموعة القوية جدًا التي تقدمها شركة Controls، وهي شركة تصنيع عريقة بتاريخ يزيد 50عامًا.

Within the first six months of the cooperation, numerous testing machines were delivered to customers in Germany, Austria and Switzerland. Customer interest covers the complete spectrum of products and applications. Here we present three testing machines that can be described as key products.

Compression testing machines

Compression testing machines are one of Controls' strengths in the fiercely competitive global marketplace. The compression testing machines are available in frame sizes from 2000 kN to 5000 kN test force. The test frames impress with their efficient and compact design and thus require little space in the laboratory. The hardware and firmware comply with all current international concrete testing standards, including EN 12390-4 and ASTM C39.

Brecon was able to book the first customer order as early as the end of 2021 and deliver the compression testing machine in January 2022. After the DAkkS calibration according to DIN EN ISO 7500-1 passed off to their complete satisfaction, the concrete plant group ordered a second compression testing machine for a second location. Due to the very good reference, further customers were convinced by the Controls compression testing machines.

The testing machine is intuitively, quickly and easily handled by the operator via a 7-inch colour display, which allows time-saving, fully automatic test execution. The testing chamber of the machine provides space for testing concrete cubes

Automatic compression testing machine 3000 kN

Testing machine combination

SLIM2 Quick Release Vibrator

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smart vibration technology

* 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 Schnellspannhalterung ist auch für BRECON Hochfrequenz und BRECON Normalfrequenz Rüttler einsetzbar.

Digital Mortar Mixer 5 litres with automatic programme

Gyrator

with edge lengths of 100, 150 and 200 mm, as well as concrete cylinders with dimensions Ø 100 and 150mm, height 200, 300 and 320mm, using spacers. A very compact overall solution for test laboratories can be implemented via additional measuring channels adding further test frames, such as for mortar tests and/or flexural tensile tests for concrete beams.

Digital mortar mixer

The digital Controls mortar mixer with a volume of 5 litres in accordance with EN 196 is a sophisticated device that is used worldwide in large numbers as basic equipment for laboratories. Thus, Brecon was also able to deliver tens of units to concrete plants in all three countries (D/A/CH) within the first six months.

The mortar mixer has a user-friendly display and a clear user interface. It is also ideally suited for individual uses outside the norm. The two mixing speeds of 140 or 285 rpm are available from the factory in accordance with the standard. However, the mixing speed can also be selected individually, even during the mixing process.

To protect the operator, the mixer stops automatically as soon as the protective grid is opened during operation. The mixer is available with a programme automatic and individual mixing cycles can be programmed.

Gyrator (rotary compressor)

The Galileo gyrator from Controls is a model for cement and concrete that covers most applications very well, even in its basic version. The method, which is very popular especially in Scandinavia, is used recipe design and quality control mainly in concrete plants where concrete with low workability is used (examples: hollow core slabs, pipes and paving stones).

The method is used for mix design, simulation of selected production processes, sample preparation for strength tests (fresh and cured) and research into mix-related phenomena (workability, curing time, admixtures, etc.).

The simultaneous application of a low static pressure and a shear action achieves a compaction that results in a movement of the centre line of the specimen, creating a conical surface of revolution, while the ends of the specimen remain approximately perpendicular to the axis of the conical surface.
The machine is equipped with a 100mm diameter mould and a scraper and processes in real time the evolution of the sample density as a function of the number of cycles and records a densification curve.

It is possible to upgrade the machine to measure shear during compaction in kN/m². Shear is a measurement parameter useful for more accurate selection or batching and thus tuning of earth-moist concretes. For example, a very small change in water and liquefier can significantly shift the position of the maximum shear value along the compression curve. An increase in the water and superplasticiser content generally shifts the maximum shear value towards the first gyratory cycles; a reduction in the water and superplasticiser content, on the other hand, shifts the maximum shear value towards the end of compaction. ■

FURTHER INFORMATION

BEPETE
beton prüf technik

BEPETE
Brecon Vibrationstechnik GmbH
Stolberger Straße 393, 50933 Cologne, Germany
T +49 221 95442753, F +49 221 954427-7
info@bepete.de, www.bepete.de

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Controls Group
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Setting the pace – innovative spare parts online services

الحفاظ على التقدم - خدمات إلكترونية مبتكرة لقطع الغيار

Accessibility, availability and lifetime of spare parts catalogs including additional service information are a well-known challenge throughout the concrete block machine industry. Depending on the technology used, this may mean that the technical documentation is already out of date before the update reaches the customer. While printed hard copies are the most time-consuming way in terms of accessibility for the customer, the Hess Group relied on a data carrier-based distribution, such as e.g. USB sticks, for electronic spare parts catalogues and manuals. However, such a data distribution approach could not always cover all needs, and some information has to be delivered in paper form. A few years ago, Hess Group switched to a 3D representation of the assemblies. Thus, it has become necessary to install a proprietary software module on the customer's PC. The installation of third-party software, on the other hand, poses a security problem in many companies. The challenge for the HESS Group was, therefore, to create a new standard for the electronic spare parts catalogue that overcomes the hurdles described at the beginning, functions independently of devices and platforms, and allows changes to be entered quickly and as conveniently as possible for the customer. The "SmartParts" project was launched."

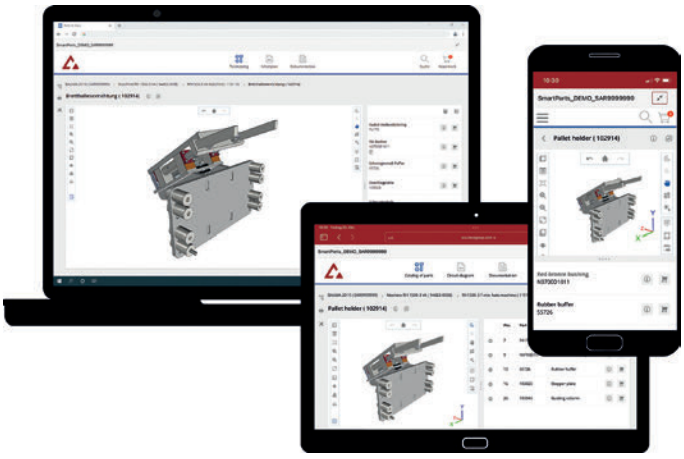
تعد إمكانية الوصول إلى كتالوجات قطع الغيار وتوافرها وعمرها الافتراضي، بما في ذلك معلومات الخدمات الإضافية، تحديًا معروفًا في قطاع آلات الكتل الخرسانية، واعتمادًا على التقنية المستخدمة، فقد يعني هذا أن الوثائق الفنية تصير قديمةً بالفعل قبل أن تصل التحديثات إلى العميل، وفي حين أن النسخ المطبوعة هي الطريقة الأكثر إهدارًا للوقت فيما يتعلق بإمكانية وصول العميل إليها، فقد اعتمدت مجموعة Hess Group على آلية توزيع قائمة على نواقل البيانات، مثل أجهزة USB، في إيصال الكتالوجات وأدلة قطع الغيار الإلكترونية. ومع ذلك، لا يتسنى لآلية توزيع البيانات هذه أن تلبي جميع الاحتياجات دائمًا، ومن ثم يجب نقل بعض المعلومات في شكل ورقي. وجدير بالذكر أنه قبل بضع سنوات تحولت مجموعة Hess Group إلى استخدام التمثيل ثلاثي الأبعاد للتركيبات. وبالتالي، أصبح من الضروري تثبيت وحدة برمجية مسجلة الملكية على كمبيوتر العميل. ومن ناحية أخرى، يمثل تثبيت برامج خاصة بجهات خارجية مشكلةً أمنيةً في العديد من الشركات.

لذلك كان تحدي HESS Group، انشاء كتلوج قطع غيار الكتروني وفق معايير جديدة و ذلك لتجاوز الصعوبات التي تم ذكرها في البداية، يعمل على اجهزة و منصات مستقلة التي تسمح باجراء تعديلات و يتم ادخالها بشكل سريع و ملائم بشكل كبير للعميل. لذلك تم اطلاق مشروع "القطع الغيار الذكي".

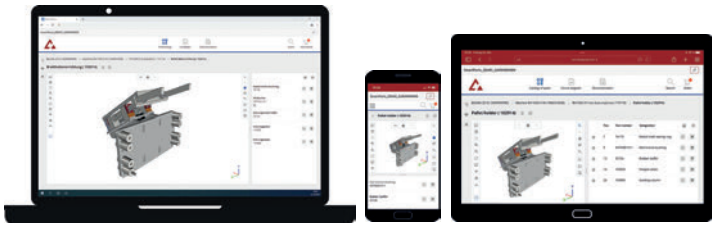
SmartParts

The challenge for the Hess Group was, therefore, to create a new standard for the electronic spare parts catalogue that overcomes the hurdles described at the beginning, functions independently of devices and platforms, and allows changes to be entered quickly and as conveniently as possible for the customer. The "SmartParts" project was launched.

Hess Group developed a platform-independent solution, which makes it possible to guarantee even more complex 3D representations - without installing third-party software. Only necessary is a browser of your choice, which is available by default with every operating system anyway. Also, the operating system (OS) itself is freely selectable. No matter if Windows, macOS, iOS, Android or Linux. Therefore, a SmartParts user may walk within his plant using , for instance, a tablet, and while walking around can access every assembly in his plant as a 3D model representation!



Customer may access SmartParts regardless of OS or device



Responsive design adapts to the capabilities of the hardware

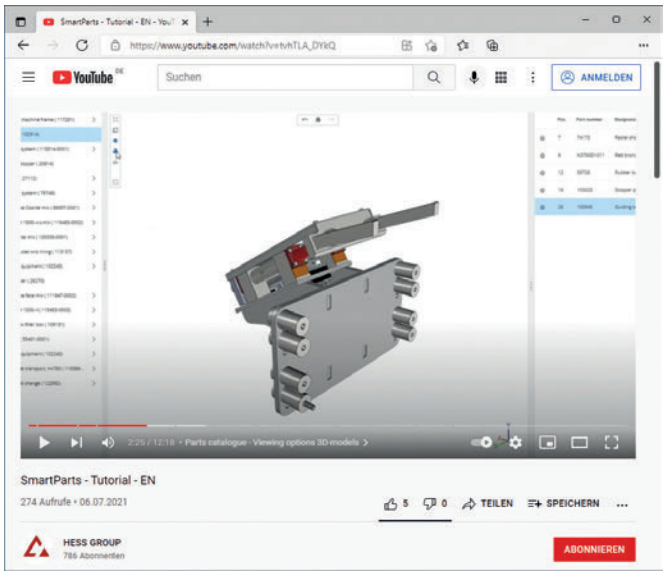
SmartParts, being essentially an online service accessible with the browser software of the customer's choice, is well embedded within a service platform, is currently in its development stages, called SmartCloudConnect by Hess Group. SmartCloudConnect is all about the machine and plant monitoring, gaining access to production statistics, operating parameters of every machine assembly via its very own sensors, filling the phrase of Industry 4.0 and its claim of predictive maintenance with life in the process.

Among the advantages of a service provided by SmartCloudConnect are on-demand available production status, maintenance type according to the high standards, reducing downtime to a minimum. The embedding of SmartParts in this SmartCloudConnect Ecosystem means that the customer can find and select the parts he needs with minimal effort. Intelligent. Intuitive. Instant.

SmartParts provides online access to parts catalogue, circuit diagrams and documentation, thereby providing the complete range of information a customer needs for service and maintenance of his plant. All this service information is easily accessible as an online service at the internet URL https://scc.hessgroup.com.

Hess Group SmartCloud Connect

Starting point: the SmartParts Log-in Screen



Tutorials how to use SmartParts are available via the Hess Group YT Channels

SmartParts is available for free to every Hess Group customer. After a brief personal introduction to this online platform provided via MS Teams by the Hess Group documentation department, the customer gets the log-in data necessary to gain access. When a user logs in for the first time, the system will ask for a personalized password forwarding afterward to the SmartCloudConnect start page. This dashboard serves as a general starting point. The documentation department has gathered a knowledge base consisting of a downloadable manual on the SmartParts software operation, an FAQ, and direct links to videos explaining the system functionality on the Youtube channel of Hess Group. SmartParts covers the entire Hess plant as 3D models, wiring diagrams, and operating instructions.

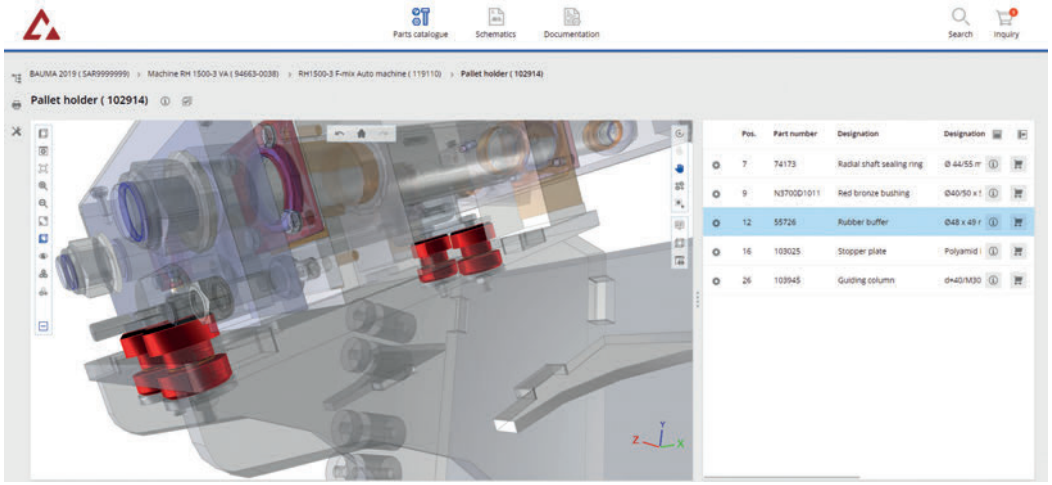
SmartParts consists of three main areas, the parts catalogue, the wiring diagram section and the documentation part. All manuals received by customer as a hard copy are available as searchable and printable PDF documents. In addition, the software provides a powerful search function and the possibility to place an inquiry for any selected part represented by SmartParts. Just one click at the shopping cart will do as a central collection point. Each request will be automatically transferred in the Hess ERP system, avoiding typing errors while providing inquiry in digital form to a Hess After Sales Service employee. The responsible employee will process the request and create an individual offer for the components of the customer choice on short notice.
A known problem of data carrier distribution mode is not just that it requires the installation and lacks the performance of SmartParts. Updates of installed software at the customer's site are quite often comparatively slow, maybe even problematic, or not possible at all. SmartParts, on the contrary, is constantly updated by an overnight synchronization process so that the customer does not have to worry about the timeliness of his data.

Parts catalogue

The parts catalogue comprises all components of the machine. The virtual components in the main window can be rotated in any direction, shown or hidden, or shown semi-transparent to view internal parts of assemblies that are normally not visible from the outside.

The 3D model representation is a highlight of the parts catalogue. Using WebGL as technology, the 3D display is extremely performant and requires no additional software to be installed. Loading times are remarkably short, even for complex models. Although the software is not intended as an assembly guide, it allows the disassembly of components for a basic understanding of the structure of a component. This is making SmartParts also very popular with Hess's own fitters who use it on portable devices to get a basic understanding of necessary steps when disassembling machine parts on-site.

A windows-like directory tree on the left side of the main window always provides navigation while the parts list on the right side shows the parts of the selected model. There is a bidirectional connection throughout the whole of SmartParts. Whenever a part is selected in the parts list it will be highlighted in the 3D model. Vice versa a part selected in the 3D representation will lead to a parts list entry highlighted correspondingly. That of course helps to overcome the language barrier in the long term, because you do not necessarily have



Find internal parts with the transparent mode

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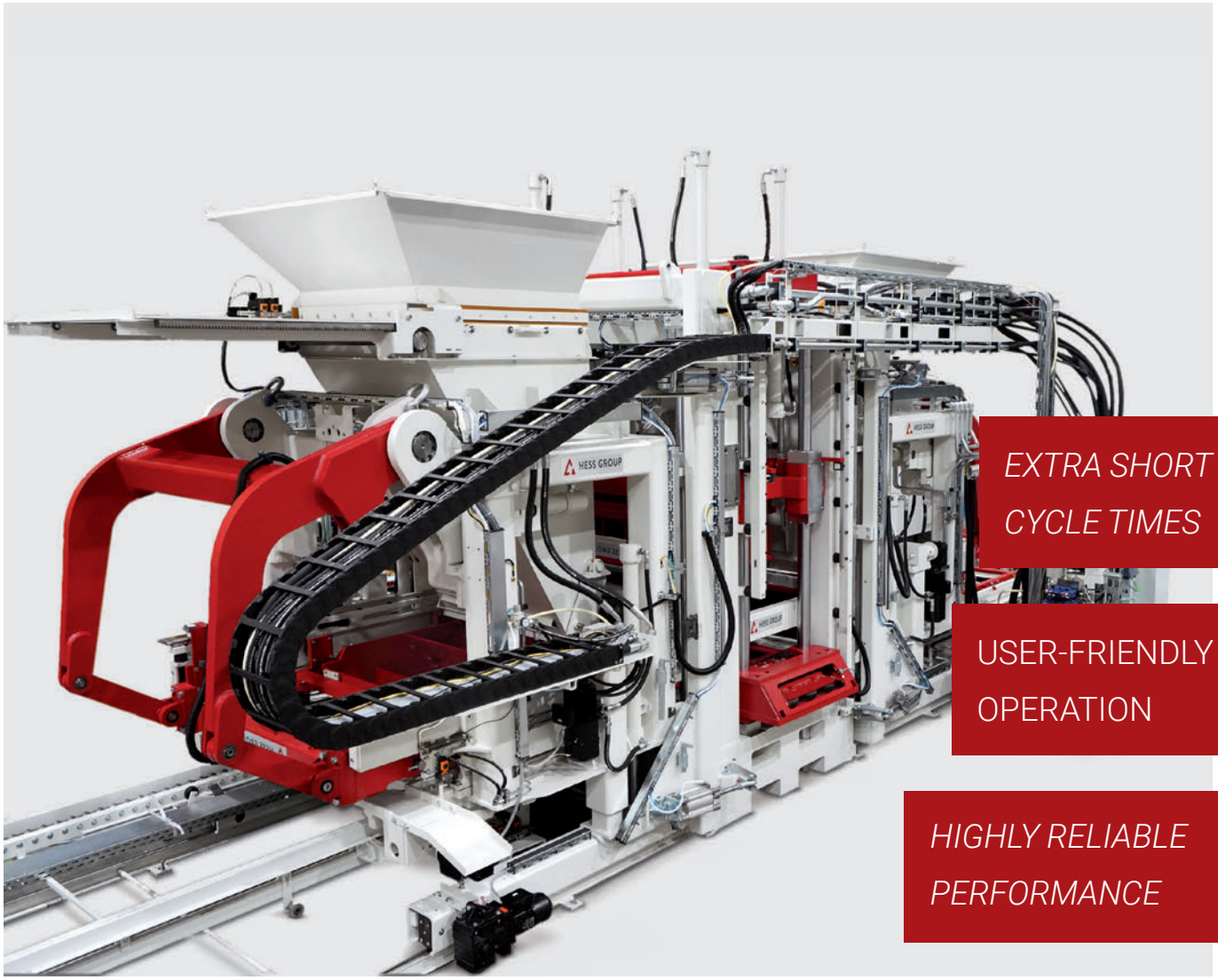

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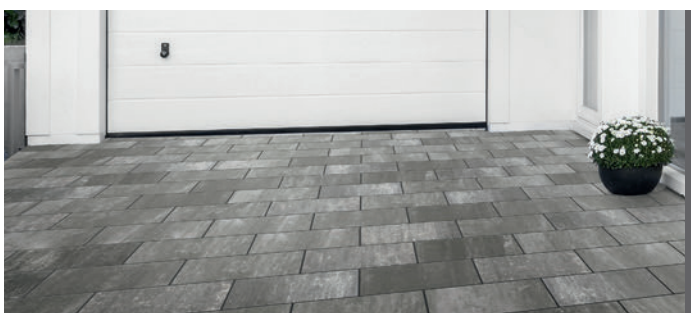

HESS GROUP is a world leading supplier of high-performance concrete block machines, dosing and mixing systems as well as the associated packaging and conveying technology.
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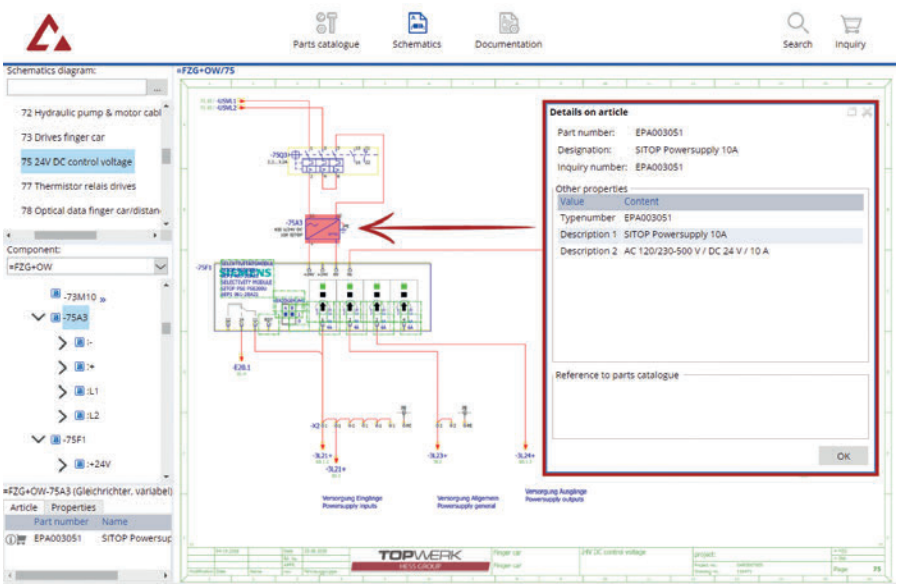

Part identification and circuit tracing with interactive schematic data

to know the Hess-specific designation to identify parts. This bidirectional connection is continuous throughout the whole online service and is not limited to the connection between the parts list and the corresponding 3D model. Having selected an electrical part jumping to the corresponding electrical diagram where the component is implemented is as easy and done with one click as taking the other way round by selecting a part in the wiring diagram section and from there getting directly redirected to the parts list where an inquiry regarding this very component can be placed. This comes in handy when an electrician uses the electrical diagram section for current tracing.

Worth mentioning, SmartParts works online within your browser. No installation is required, easy to access on any device of your choice. Find and select the spare parts, maintenance information, access the supplied documentation and electrical circuit diagrams with one click.

To sum up, SmartParts was developed to provide customers with easily accessible electronic spare parts, schematics, and documentation applications from one source. Using SmartParts, users can identify and select the spare parts by application of advanced 3D modeling features. Thanks to integrated interactive circuit diagrams, SmartParts makes recognizing electrical components throughout the plant very easy. Manuals with integrated search functions provide all available information for a smooth and secure operation and maintenance of your concrete block and paver machine leading to extended uptime and higher overall efficiency.

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HESS GROUP

Hess Group
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Join Dubai Municipality, National Ready Mixed Concrete Association, Grey Matters and the sponsors for the 2022 International Concrete Technology Forum, December 7-8, 2022, in Dubai, UAE. The conference provides learning and networking opportunities on the latest advances, technical knowledge, continuing research, tools and solutions for concrete manufacturing and construction.

World renowned speakers will present the latest advances, technical knowledge, research, tools and solutions for design, testing and modeling concrete performance.

In addition to the technical sessions, ICTF 2022 will feature a lively exhibit hall with over various companies displaying their products and services for the concrete industry. This is your chance to network with fellow concrete professionals and learn about the latest innovations in concrete technology.

This conference is a must-attend event for anyone involved in the concrete industry.

If you're interested in attending the conference, you'll want to check out our website www.concrete-conference.com. This is where events and attendees were being posted. You can also find out about upcoming conferences and read and preview past ones.

Few of the Speakers:

Emad Abu-Aisheh
Engineering Specialist | Saudi Aramco - KSA

James Aldred
Technical Director
School of Civil & Environmental Engineering, UNSW - Australia

Haidar Alhaidary
Project Executive
Middle East Engineering Technologies (MEET) - UAE

Praveen Dhilip
Senior Engineer
Technical & Sales, Grey Matters - UAE

Andreas Gerdes
Professor
Karlsruhe Institute of Technology - Germany

Lionel A. Lemay
Executive VP, Structures and Sustainability
NRMCA - USA

Rebecca Rickwood
Chief Executive | Gement - UK

Faez Sayahi
Development Engineer | LKAB - Sweden

Michael Wymant
VP Building Innovation | NRMCA - USA

For more information, contact:

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

LIONEL LEMAY
E : llemay@nrmca.org
www.concrete-conference.com

Techmatik SA, 26 – 610 Radom, Poland

Extending the service life of steel moulds for the concrete block industry

إطالة العمر الافتراضي للقوالب الفولاذية لصناعة الكتل الخرسانية

The quality of the moulds depends not only on the technological process itself, but above all on the quality of the material from which they are made. At Techmatik, quality control already takes place when the steel is delivered. The machining of stone cavities and pressure plates on high-quality CNC machining equipment guarantees very precise mechanical shape machining and ensures high dimensional accuracy of the stone cavities, their reproducibility and very precise edges. This ensures the quality of the concrete products, especially for the currently popular large-format products.

لا تعتمد جودة القوالب على العملية التكنولوجية نفسها فحسب، بل تعتمد في الأساس على جودة المواد التي صُنعت منها. ويتم في شركة Techmatik تنفيذ عملية مراقبة الجودة بالفعل عند استلام الفولاذ، كما تضمن معالجة التجاويف الحجرية وألواح الضغط من خلال معدات تصنيع عالية الجودة بتقنية التحكم الرقمي بالكمبيوتر تشكيلًا ميكانيكيًا دقيقًا للغاية، بالإضافة إلى دقة عالية لأبعاد التجاويف الحجرية، وقابلية استنساخها، والدقة الشديدة لحوافها، وهو ما يضمن جودة المنتجات الخرسانية، خاصة للمنتجات كبيرة الحجم الشائعة حاليًا.

The pressure plates are manufactured with little play, which ensures the production of a high-quality concrete product and has an effect on the longer service life of the mould.

The innovative Dyna Hard thermochemical machining technology guarantees a long mould service life. Depending on the type of mould and its components, different thermochemical finishing processes are used - carburising, hardening or nitriding. According to the manufacturer, the Dyna Hard Plus technology guarantees a hardness of the mould bottom of 63HRC. It also provides high abrasion resistance and ensures uniform hardness distribution in the hardened layer. Thanks to these technologies, the moulds produced by Techmatik achieve a long service life, which can ultimately reduce the cost of manufacturing concrete products.

Welding is one of the most important processes in mould making. Welding robots are used for welding mould parts, which ensure the very high strength of the welded joints and the reproducibility of the welding seams. The specially developed, robust ram construction in conjunction with high-quality and heavy-duty weld seams is designed to withstand high vibration loads. The load on the pressure plates and the mould upper part during the production process is very high and affects the wear of the mould construction. This has a negative impact on the quality of the concrete products. In

Techmatik also offers its customers an overhaul service

order to prolong the service life of the moulds, Techmatik offers a repair, overhaul and maintenance service not only for all its own products but also for those of other manufacturers.

Wide range of services in the field of mould overhaul and repair

Both the overhaul service and the production are tailored to individual customer needs. They are carried out in compliance with our own quality standards. The actual service does not begin with the delivery of the mould to the factory, but already with the examination of the technical implementation possibilities already at the customer's site.

It is also very important to train the employees of companies that manufacture concrete products. The proper use of moulds during the production process can have a significant impact on the service life of the mould. That is why Techmatik regularly organises training/webinars where concrete producers and their employees learn how to extend the life of the mould and assess its wear.
In order to preserve the customer's budget and save him unnecessary transport costs, which are getting higher and higher these days, Techmatik first carries out a visual inspection and evaluation of the mould to be reworked. Special agreements between the Techmatik service and the customer ensure that each reconditioned mould is of very high quality and has a long service life. A strict schedule for the respective service steps guarantees that the overhaul of the moulds can be carried out within 4 weeks. The completion date is already determined during the visual inspection and assessment.

Example of a mould overhaul process at Techmatik:
1. Examination and evaluation of the mould
2. Preparation of the technical and technological documentation of the mould
3. Repair of wear, cracks and cavities in the mould lining
4. Repair of the ram
5. Production of new pressure pieces and heat curing (Dyna-Hard)
6. Production of new boxes and suspensions (cellular paving stones or hollow blocks)
7. Assembly of the overhauled mould
8. Delivery to the customer

Techmatik's specialists are happy to help organise the transport and acceptance of the mould. ■

FURTHER INFORMATION

TECHMATIK®
A COLUMBIA MACHINE, INC. COMPANY

Techmatik SA
Ul. Żółkiewskiego 131/133
26 – 610 Radom, Poland
T +48 483690800
techmatik@techmatik.pl,
www.techmatik.pl

A strict schedule for the respective service steps guarantees that the overhaul of the moulds can be carried out within 4 weeks.

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

Two new and innovative processes for printing on vibration-pressed blanks and for bonding of ceramic tiles

عمليتان جديدتان ومبتكرتان للطباعة على الألواح المضغوطة بالاهتزاز ولصق البلاط السيراميكي

Dipl.-Ing. Alwin Bennmann, KBH Maschinenbau, Germany

KBH - the think tank - is coming up with a special innovation to provide manufacturers of concrete products with new ideas for diversification. Printing – efficiently and economically – a joint project with the companies Rhein-Chemotechnik GmbH und Zschimmer & Schwarz GmbH.

مجمع التفكير والبحوث KBH بصدد طرح ابتكار مميز لتزويد مصنعي المنتجات الخرسانية بأفكار جديدة بهدف التنويع. الطباعة - بكفاءة وفعالية اقتصادية – وهو مشروع مشترك مع الشركتين Rhein-Chemotechnik GmbH وZschimmer & Schwarz GmbH.

Printing on concrete products has been a topic in the concrete industry longer time. However, creativity was limited to the extent that the industry's goal of realistically imitating natural stone was only achieved to a limited extent. In addition, existing plant designs require considerable capital - not only for machinery and equipment, but also in terms of space requirements and energy costs.

With regard to sustainability, KBH decided to develop an economical system that allows access to a wide range of plant technology available. So far, mainly concrete products produced on slab presses have served as print blanks. However, a large number of vibratory presses are available worldwide, and their operators are constantly seeking for special products allowing to set them apart from the competition.

Together with the companies Rhein-Chemotechnik and Zschimmer & Schwarz, KBH has succeeded in creating a new type of concrete product using existing paver plant production technology economically, efficiently and sustainably.

So, it made sense for KBH to develop a system that would allow blanks to be printed coming from the vibro presses (board machines). Following the principles of efficiency, economy and sustainability, KBH has turned to the wet side of a concrete paver plant and developed a printing system that can be installed there - in existing plants as well as in new plants of course.

The product arrangement according to the mold pattern remains unaffected. Subsequently, the production board is transported with the usual plant components into the curing chamber system for curing. The hydration process binds pigments deep into the concrete matrix to produce a resilient product during curing.
After the curing process, the printed concrete products can be processed further as usual, using existing plant technology.

Together with the companies Rhein-Chemotechnik and Zschimmer & Schwarz, KBH has succeeded in creating a new type of concrete product using existing paver plant production technology economically, efficiently and sustainably. Basically, there are no limits to creativity anymore. High level of competitive pressure can be eased and diversification is possible.

Bonding of ceramic tiles

Another KBH innovation is the bonding of ceramic tiles on a concrete carrier slab. For some time now, ceramic has found its way into our industry. In the process, ceramic has replaced some of the natural stone slabs and concrete slabs. However, ceramic reaches technical and economic limits, especially with higher material thicknesses.
The issue of unbound construction in particular should be mentioned here. Additional cost increases have led producers to come up with creative solutions to meet the market's demands. This involves ceramic elements being fixed onto concrete support slabs.

In some cases, this is done with very complex plant technology and the related costs for machinery, equipment and buildings. KBH has also addressed this issue and devised solutions that allow existing concrete paver plants to be used to combine ceramics with concrete - efficiently, economically and sustainably. Of course, the same also applies to new plants. KBH Maschinenbau has successfully achieved this goal. ■

FURTHER INFORMATION

KBH
>> MASCHINENBAU

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

SR Schindler, 93057 Regensburg, Germany

Al Sarif in Saudi Arabia is increasing its product quality with a value-adding line

شركة الصريف في المملكة العربية السعودية تضيف منتجات جديدة ذات جودة عالية من خلال خط معالجة الاسطح الذي يضيف قيمة عالية للمنتجات

Mark Küppers, CPi worldwide, Germany

The Al Sarif Company for Building Materials (SCBM) was founded in 1979 and started with the production of concrete products in 1985 to meet the growing demand for concrete products, particularly for infrastructure projects in the Kingdom of Saudi Arabia. To continue to earn the confidence of its customers, SCBM has set itself the task of driving quality forward through continuous improvements and product diversification. SCBM is therefore keen to always keep pace with the latest requirements in the modern building materials industry. This also requires new and high-quality production facilities. By commissioning a new shotblasting and curling line, this quality standard was recently underpinned. The new finishing line was supplied and installed by SR Schindler, a company in the globally operating Topwerk Group, as the 1st phase of an ambitious investment plan for the production of "world-class premium pavers and tiles".

تأسست شركة الصريف لمواد البناء (SCBM) في عام 1979 وبدأت بإنتاج منتجات الخرسانة في عام 1985 لتلبية الطلب المتزايد على المنتجات الخرسانية، وخاصةً لمشاريع البنية التحتية في المملكة العربية السعودية. ومن أجل الاستمرار في كسب ثقة عملائها، وضعت شركة الصريف لمواد البناء نصب عينيها مهمة الارتقاء بمستوى الجودة من خلال التحسينات المستمرة وتنويع المنتجات. ولذلك، تحرص شركة الصريف لمواد البناء دائمًا على مواكبة أحدث المتطلبات في صناعة مواد البناء الحديثة، وهو ما يتطلب أيضًا إنشاء مرافق إنتاج جديدة عالية الجودة. وجدير بالذكر أنه من خلال تشغيل خط الشوت بلاست و الكرلينغ الجديد ، تم دعم معيار الجودة هذا مؤخرًا، كما تم توريد وتركيب خط التشطيب الجديد من قبل شركة SR Schindler، وهي إحدى شركات مجموعة Topwerk Group عالمية النشاط، وذلك كمرحلة أولى من خطة استثمارية طموحة لإنتاج" مواد رصف وبلاط فائقة الجودة من طراز عالمي."

Al Sarif Company for Building Materials is a pioneer in the Saudi Arabian concrete industry. In 1979, SCBM was the first company in Saudi Arabia to produce interlocking paving stones for the diplomatic quarter in Riyadh, an important area where most foreign embassies are located.

Over the last few decades, SCBM has successfully expanded its production to four plants, which are distributed over the two largest regions of Saudi Arabia: Riyadh and Makkah al-Mukarramah. The product portfolio of SCBM comprises concrete products such as interlocking paving stones, kerbstones and terrazzo tiles. Yet steps, street furniture and blocks are also made on twelve fully automatic production lines.

One of the latest products and the boast of the company are the Roxtile premium paving stones. These are a new generation of paving stones that are manufactured using ultra-modern technology.

SCBM has gained the trust and loyalty of its customers over recent decades due to its own high quality standards. With its comprehensive quality tests on both the raw materials as well as the finished products, Al Sarif is able to meet its customers' high expectations.

SCBM is proud of its extensive network of public and private customers, who have placed their trust in SCBM in the past on many projects in Saudi Arabia. SCBM is highly regarded by most ministries (e.g. housing, transport) and all municipalities. What is more, SCBM is involved in most of the challenging projects in Saudi Arabia, e.g. for the metro project in Riyadh.

Finishing line supplied by SR Schindler

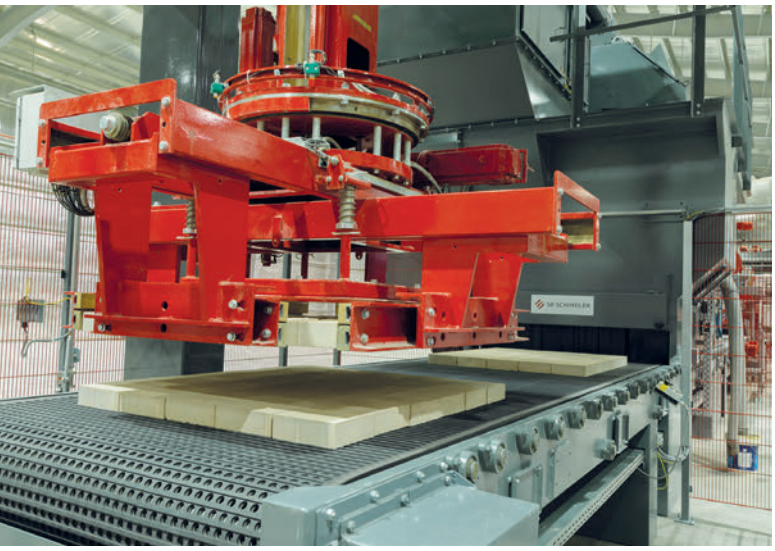
A shotblasting unit removes the cement from the product surface, thereby exposing the aggregates in paving stones and concrete slabs. The products are machined on the face side. Shotblasting machines are operated with steel or stainless steel blasting materials. In operation, the steel or stainless steel balls, standard size 0.6–0.8 mm, get thrown by means of turbines at the products to be shotblasted.

The blasting speed and belt speed are adjustable depending on the product being treated and the desired surface appearance. The turbine and belt drive are frequency-controlled for a homogeneous treatment from rough to fine.

The stone packages being finished are transported by the heavy-duty conveyor to the LPU layer stacker.

SR-1250 shotblasting unit

For finishing the surface of concrete products, a type SR-1250 shotblasting unit supplied by the German plant manufacturer, SR Schindler. The SR-1250 shotblasting unit processes layers with dimensions between 800 x 800 mm and 1,200 x 1,200 mm. Layers with a side length of more than 1,200 mm are rotated by 90° and then transported with the shorter side at right angles to the direction of movement so that these layers can also be processed in the shotblasting unit. The maximum product thickness is 200 mm.



Set down in layers onto the shotblasting unit's rubber conveyor belt

The curling machine has its own control system with operating panel and display.

Firstly, the stone packages being finished are set down on the 11.70-m-long heavy-duty conveyor with a frequency-controlled drive. The packages are transported in cycles to the LPU stacker with electromechanical four-sided clamp. The running gear of the LPU is also equipped with an electrical drive, whilst an electromotive rotary device allows the layers to be individually positioned on the shotblasting unit's rubber conveyor belt before the infeed entrance lock. The rubber conveyor belt is ribbed at right angles to the direction of movement, which prevents the product layers from drifting apart during finishing.

The shotblasting chamber is made of 12 % austenitic manganese steel to protect against damage and wear from the blasting process. In the shotblasting chamber, two frequency-controlled turbines, each with an output of 18.5 kW, blast the surfaces of the layer positioned below with small steel or stainless steel balls. This exposes the aggregates in the facing layer of the concrete products and they are given a refined and aesthetic surface finish. Another effect of the shotblasting process is the much improved slip resistance due to the acquired roughness of the surface.

The throughput of blasting material is approx. 240 kg per minute and turbine. The dosing amount of blasting material can be regulated electropneumatically.

Once the blasting process has finished for a layer, this is transported out of the shotblasting chamber and a new layer is positioned in the chamber. The shotblasting process is automatically stopped whilst the layer is being changed and only started up again as soon as the next stone layer is in the right position in the chamber.

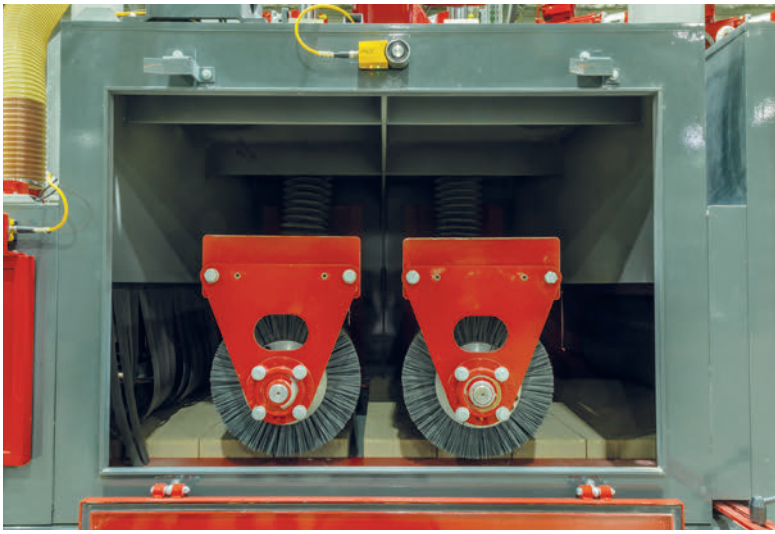
In the following cleaning chamber, two high-pressure blowers with height-adjustable slot nozzles remove the blasting material from the surface of the processed concrete products. The contaminated blasting material is collected and dirt particles are removed from it in a cleaning unit. It is then made available for the shotblasting process again in the blasting material silo.

CA 1200 curling unit

A layer pusher with transfer table transports the freshly shotblasted products in an endless row into the CA 1200 curling unit, also supplied by SR Schindler.

Curling is particularly well suited for textured products but also gives a slight shine and exclusive surfaces to roughened and/or shotblasted products. By removing surplus cement, the aggregates in the stone are presented in detail and polished by the brushes. This makes the product surfaces dirt-repellent and non-slip.

The CA 1200 linear machine for processing the surface of all kinds of concrete products on one side is made in a heavy-duty tunnel design with 3 segments. The concrete stone layers or slabs are transported through the machine on a belt

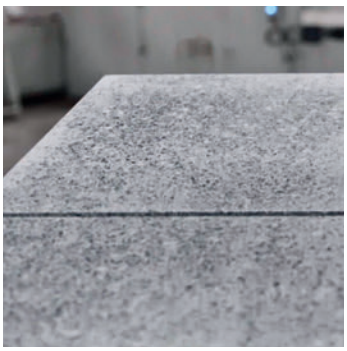


In total, the concrete stone layers or slabs pass through 6 brushes.

SR SCHINDLER

A member of TOPWERK

The **PERFECT SLAB** *made by* **HERMETIC PRESS UNI 1200**



Hermetic Press UNI 1200 produces all kinds of slabs: double-layer, square, rectangular, or large-sized to **1000 x 1000** mm and flexible thickness of up to **100 mm**.

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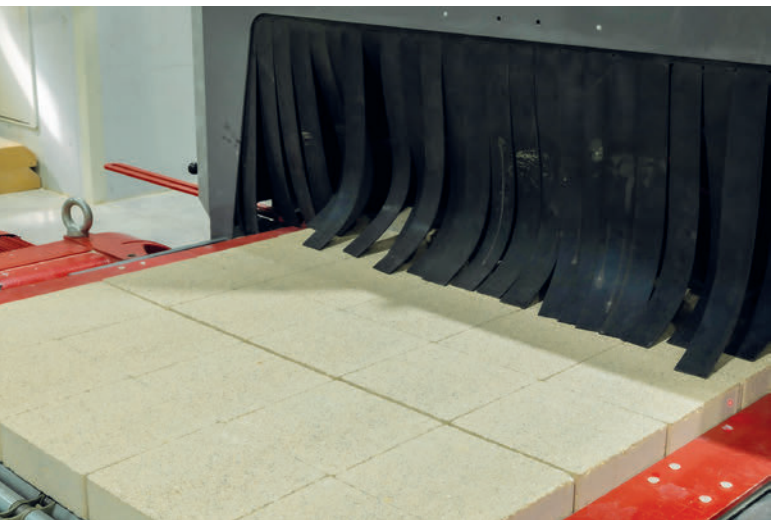


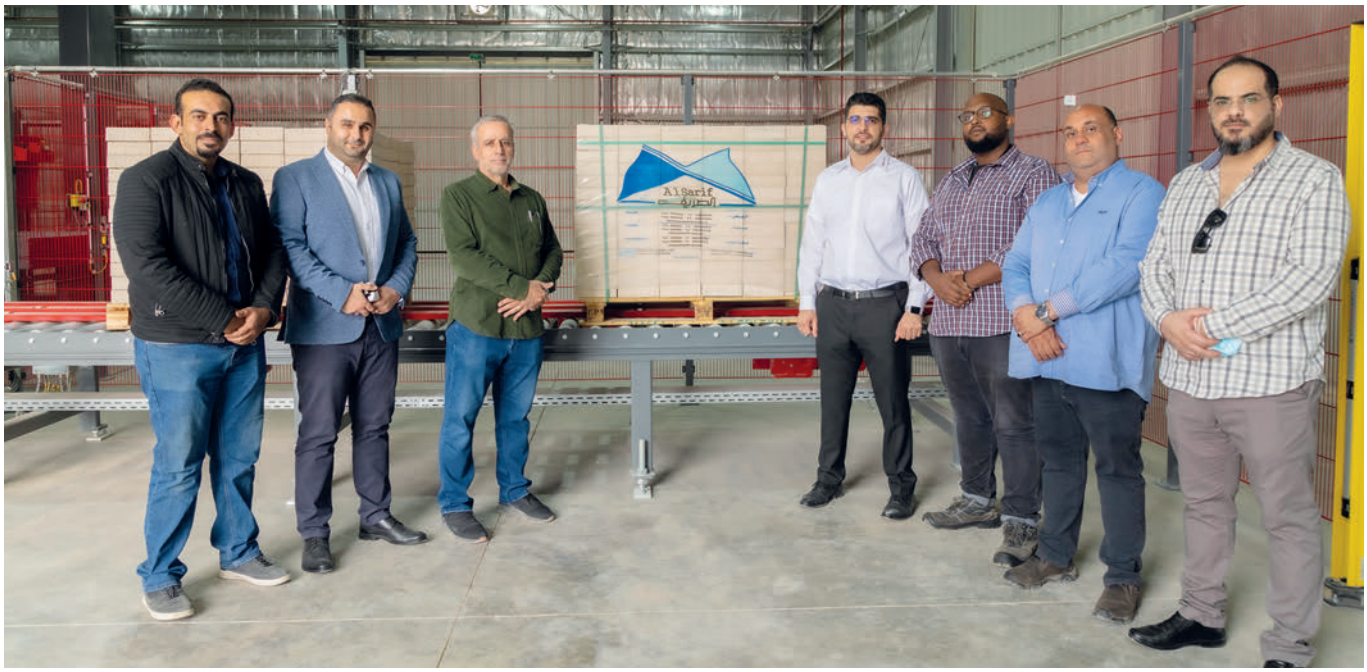
Finished products on the line

Al Sarif outside warehouse

conveyor. In the treatment tunnel, 2 brush rollers are fitted in each segment. In total, the stone layers or slabs therefore pass through 6 brushes. The brushes have different brush strengths, whereby brushes are arranged in the machine from coarse to fine. Brushes 1, 3 and 5 run in the opposite direction to brushes 2, 4 and 6. Due to this counter-rotating processing and the mirrored inclined position of the brushes, line traces of the brushes on the surface are avoided.

The main drives and vertical movement are frequency controlled. The machine has its own control system with operating panel and display. The processing parameters can be saved for each product type.

On a downstream accumulating roller conveyor with free-running rollers, the endless row of products is pulled apart. At this point a visual inspection takes place. Products that do not meet the quality standards can be sorted out here manually and replaced with flawless products by hand. The following layer pusher transports the finished stone layers onto the subsequent belt conveyor. A second LPU layer stacker with the identical design to the first-mentioned stacker takes the finished stones from the belt conveyor one layer at a time and stacks the layers on the heavy-duty roller conveyor arranged parallel to it onto transport pallets that are fed automatically. Once the desire stack height has been reached, the stone packages are transported in cycles into the buffer area to be taken away by fork-lift truck.



Team of Al Sarif is happy about the outstanding cooperation and successfully completed project with Topwerk Middles East and SR Schindler

One of the latest products and the boast of the company are the Roxtile premium paving stones.

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FURTHER INFORMATION

Al-Sarif Company for Building Materials
T+966 11 4029738
info@alsarif.com.sa
www.alsarif.com.sa

SR SCHINDLER

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

TOPWERK MIDDLE EAST

TOP WERK Middle East FZE
P.O. Box 61487, Warehouse FZS1
BA06 Jebel Ali Free Zone; Dubai, U.A.E.
T +966 54 800 5838
h.hamwi@topwerk.com

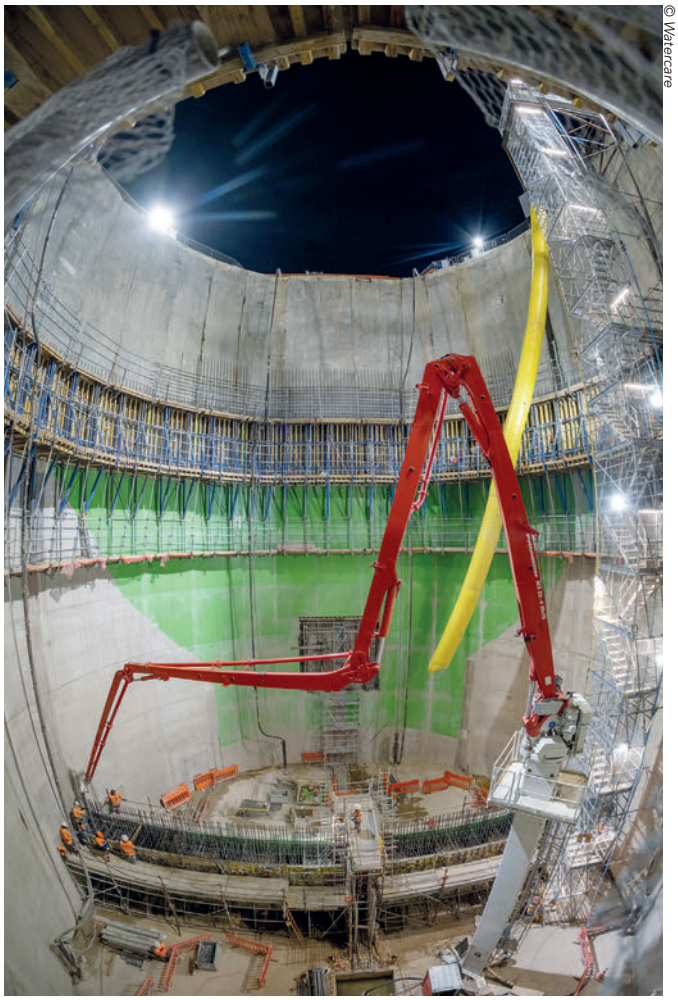
Agru Kunststofftechnik GmbH, 4540 Bad Hall, Austria

Concrete protection for giant wastewater tunnel

حماية خرسانية لنفق صرف صحي عملاق

The Auckland Central Interceptor is the largest wastewater project in New Zealand's history. This super-sized wastewater tunnel will transport sewage from the west of the city to the Māngere Wastewater Treatment Plant in the east. Commissioned by Watercare Services Ltd, the new wastewater tunnel will cost around NZD 1.2 billion and is scheduled for completion by 2026. Agru Kunststofftechnik supplies concrete protective liners made from polyethylene that will protect the wastewater tunnel against concrete corrosion in the long term.

يعتبر مشروع مرفق الاحتباس بوسط أوكلاند أكبر مشاريع الصرف الصحي في تاريخ نيوزيلندا، حيث سينقل نفق الصرف الصحي الضخم هذا مياه الصرف الصحي من غرب المدينة إلى محطة معالجة مياه الصرف الصحي في مانجري في الشرق، وسيتكلف نفق الصرف الصحي الجديد، الذي يُنفذ بتكليف من Watercare Services Ltd، حوالي 1.2 مليار دولار نيوزيلندي ومن المقرر الانتهاء منه بحلول عام 2026. توفر شركة Agru Kunststofftechnik بطانات واقية للخرسانة مصنوعة من البولي إيثيلين من أجل حماية النفق من تآكل الخرسانة على المدى الطويل.



© Watercare

Agru supplies Ultra Grip concrete protective liners for the largest wastewater project in New Zealand's history.

The Central Interceptor Tunnel is 4.5 meters in diameter and will run for 14.7 kilometres from Grey Lynn under central Auckland and Manukau Harbour to Māngere. The tunnel is situated between 15 and 110 meters below the surface. Together with two smaller connecting tunnels, the main tunnel will collect wastewater from the existing network and convey it to the Māngere Wastewater Treatment Plant. For maximum durability of the multi-billion infrastructure project, Watercare Services Ltd has chosen Agru concrete protective liners.

HD-PE lining protects against concrete corrosion

The high-quality lining made of high-density polyethylene effectively prevents concrete corrosion and abrasion. Thanks to their 13 mm long anchor studs, Agru Ultra Grip concrete

© Watercare

The access shaft is protected from concrete corrosion with green Ultra Grip concrete protective liners.

AGRUSAFE CONCRETE PROTECTION

AGRU-Ultra Grip concrete protection liners for the ultimate grip in concrete

HIGHEST PULL-OUT STRENGTH
50 % higher pull-out strength than conventional concrete protective liners

RESISTANT TO BACKPRESSURE
Water backpressures of up to 1.75 bar are permanently withstood

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420 anchor studs per m² are an integral part of the liner

DURABLY SEALED SURFACES
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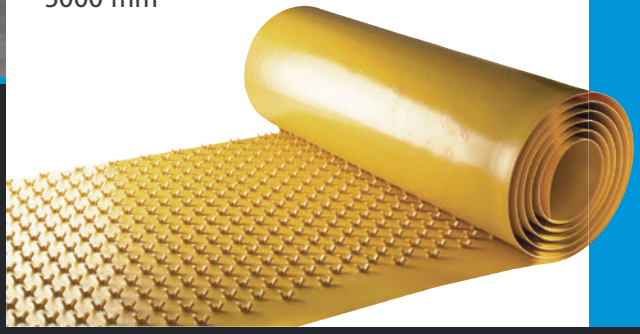

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agru Kunststofftechnik Gesellschaft m.b.H. | Ing.-Pesendorfer-Strasse 31 | 4540 Bad Hall, Austria
T. +43 7258 7900 | office@agru.at | www.agru.at | @agruworld |

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Construction of main tunnel is lined with yellow, blue, pink and grey Ultra Grip concrete protective liner.

protective liners have enormously high pullout force. The thermoplastic lining protects the concrete against corrosive gases generated by the wastewater in the tunnel. This allows for maximum service life of the tunnel structure. For easier sewer inspection and detection of damage, the tunnel is divided into four different coloured sections. Agru supplies the Ultra Grip concrete protective liners in 3 mm thickness. While the access shafts are lined in green, the sewer tunnel is lined in yellow, pink, blue, grey and sealed by extrusion welding.

This project is not only intended to accommodate the population growth in this major city of 1.7 million inhabitants and the resulting increased demand for wastewater. In older parts of downtown Auckland, wastewater and storm water flow into a combined pipe network. During heavy rains, storm water can flood these pipes. Currently, during heavy rains, storm water contaminated by fecal matter is discharged into Waitematā Harbour. The new wastewater tunnel is expected to significantly reduce these overflows.

The construction contract was signed with the Ghella Abergeldie Joint Venture in March 2019. A 200 m long Herrenknecht tunnel-boring machine is in use. The finished wastewater tunnel will have a gradient of 1:1000 to allow wastewater to drain to Māngere. A total of sixteen access shafts with a depth of up to 65 meters will be built for maintenance and operation. In the course of this, control and overflow structures as well as air treatment facilities will also be built for future operation.

Prior to construction of the project, AgruKunststofftechnik GmbH and Agru New Zealand Ltd provided technical support for the installation of the lining for the shafts and tunnel. Agru New Zealand Ltd provided on-site extrusion welding support and training to the site crew. Agru Kunststofftechnik GmbH and Agru New Zealand Ltd. have coordinated and continue to coordinate the supply of approximately 210,000 m² of lining for the project. ■

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In this section of the tunnel, blue liner is used.

FURTHER INFORMATION

Agru Kunststofftechnik GmbH
Ing.-Pesendorfer-Str. 31
4540 Bad Hall, Austria
T +43 7258 7900
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Moldtech S.L., 41500 Alcalá de Guadaira (Sevilla), Spain

Construction with 3D moulds in Sri Lanka

البناء باستخدام قوالب ثلاثية الأبعاد في سريلانكا

Moldtech, as one of the global leaders in the fabrication of 3D moulds, with experience in several projects both in Asia, Middle East, Europe and as well as in North and South America, has been selected by an innovative and progressive civil engineering organization in Sri Lanka as the exclusive supplier for 3D moulds, creating a great and constant collaboration between both companies. The client is already leading an innovation trend in the local building sector by using Moldtech's three-dimensional prefabrication system technology, which will be used in the production of residential buildings in the country.

وقع اختيار مؤسسة هندسة مدنية مبتكرة وتقدمية في سريلانكا على شركة Moldtech، باعتبارها واحدة من الشركات الرائدة عالميًا في تصنيع القوالب ثلاثية الأبعاد التي تتمتع بالخبرة في العديد من المشاريع في كل من آسيا والشرق الأوسط وأوروبا وكذلك في أمريكا الشمالية والجنوبية، لتكون المورد الحصري للقوالب ثلاثية الأبعاد، ما يخلق تعاونًا كبيرًا ومستمرًا بين المؤسستين. وجدير بالذكر أن العميل يقود بالفعل اتجاهًا ابتكاريًا في قطاع البناء المحلي باستخدام تقنية نظام التصنيع المسبق ثلاثي الأبعاد التي تقدمها شركة Moldtech، والتي سيتم استخدامها في إنتاج المباني السكنية في البلد.

For several years, Moldtech has introduced to the market a new generation of 3D hydraulic moulds which are used for the construction of residential buildings, bathroom modules or even prison cells.
In this mentioned project, the 3D mould allows the client to precast the 4 walls and the top slab of the different modules, which once lifted from the mould are moved to a finishing table where the lower slab is incorporated, allowing the module to be closed on its 6 faces. This working system avoids the turning of the three-dimensional modules. Later, the finishes, installations and accessories are incorporated, and the furniture is installed, in a fully industrialized production line at client's facilities. Once finished, the module could be directly transported to the building site almost ready to be used, where they are structurally connected to each other.

This methodology offers a series of advantages such as improvement of quality standards and productivity, increased control over the project duration and better project control as less people are required to work at the building site.
Moldtech supplied a mould which is prepared to cast different configurations, with maximum dimensions of 6.55 m

General view of the mould with vibrators

Hydraulic closing of the mould

Preparation reinforcement

Insertion of reinforcement with lifting beams

Concrete pouring

Casted elements

Demoulding of finished elements

length x 3.24 m width x 3.11 meters height. The wall thickness could be also modified. The inner core of this mould includes a hydraulically retractable system thereby allowing to perform the de-moulding in a swift manner without the need for conical slope, making it easy to remove just by pulling from the top of the piece.

The entire project is executed using only 1 mould, since it has the flexibility to manufacture different configurations, as it has been designed with a modular adjustment, to adapt to different types of modules, not just for a single project, but also for future projects.

Moldtech also delivered sets of the necessary door and window shutters and 2 lifting devices which lift the precasted elements. These lifting devices have a maximum weight capacity up to 35 tons and a total of 6 different lifting points.

Moldtech is proud to be able to participate in this innovative project in Sri Lanka, for the construction of residential houses using the latest advances in precast construction technology.

FURTHER INFORMATION

Moldtech
EQUIPMENT FOR PRECAST CONCRETE PLANTS

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

Construx b.v., 8531 Hulste, Belgium

Wide range of battery moulds for precast concrete beams and columns

مجموعة واسعة من قوالب البطاريات للعوارض والأعمدة الخرسانية مسبقة الصب

Since 2003 Construx has been manufacturing state-of-the-art battery moulds for reinforced precast concrete beams and columns. These moulds may be manually adjustable and simple-to-use or fully hydraulically operated. Construx has a suitable solution for every application, for precast factories as well as for on-site use.

تُصنّع شركة Construx قوالب بطاريات فائقة التطور للعوارض والأعمدة الخرسانية مسبقة الصب منذ عام 2003، يمكن تعديل هذه القوالب يدويًا واستخدامها ببساطة أو تشغيلها هيدروليكيًا بالكامل. توفر شركة Construx حلولًا مناسبةً لكافة الاستخدامات، لمصانع الخرسانة مسبقة الصب وكذلك للاستخدام في الموقع.

Multibat: Manually adjustable and simple-to-use battery mould

Each Multibat is a configuration of several panels sitting on a number of rails. These steel panels, which can be moved by hand, have a 6mm steel sheeting on one or on both sides. The movable panels are set and fit opposite to a fixed panel. Customers can choose for a set-up with a fixed centre panel or a set-up with a fixed end panel.

The centre panel set-up offers three major advantages:

- The option of having movable panels of various heights on the two different sides of the centre panel
- From the working platform of the centre panel, the precast elements on both right and left side can easily be finished by hand
- The Multibat battery mould is as if it is divided into two sections, allowing to work independently in each individual section

The fixed end panel set-up is the preferred choice if there is not enough space available.
Customers can choose out of a wide variation of lengths and heights. Standard lengths vary from 6m to 16m. Standard heights vary from 750mm to 1500mm, including the thickness of the soffit. The movable panels are fitted onto 4m, 6m or 8m long, double steel profiles. Each set of profiles is equipped with 5 feet. Two of these sets are equipped with flat steel guide rails for the panels to roll on. The panels are equipped with a built-in mechanism to roll, lock and release, so they can be moved by hand. At the bottom, the panels are closed by spindles. At the top, the panels are held into posi-

Multibat manually adjustable battery mould, 12m long, with pockets of three different heights

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Multibat mould, 16m long, with 8 pockets 1250mm high

tion by tie-bars, allowing to close and secure the panels in an alternating way. The top of the panels has a built-in timber profile between both sheets, to easily fit triangular chamfers or other accessories.

Construx offers a wide range of soffits, stop-ends, and height adjustments. The height adjusters are stepless and the desired height is achieved via spindles, which are provided with an interchangeable support plate on which a steel or timber soffit can be fixed. The various types of oval support plates can be aligned differently, depending on the width of the soffit. The great advantage of these mobile adjustment devices is that they do not need to be removed from the battery whilst demoulding. As a result, a great deal of time is gained in preparing of the Multibat battery mould for the next day. Girders and columns can also be prefabricated on the construction site. On-site, the Multibat system is used in exactly the same way as in a precast facility. When used outside, an 18mm thick multiplex or a 5mm thick stainless-steel sheet is used as an alternative for the normal steel sheeting. The special stainless-steel alloy is magnetic, so that the advantages of using magnets, which is common in precast, are retained. The Multibat battery mould can be equipped with working platforms, stairs and corbels, in order to meet the strict safety standards applicable on building sites. Beyond that, Construx also supplies a handy lifting frame in which the mobile panels can be placed so that the battery can be unloaded from the truck in a single crane movement.

Bibat: Fully hydraulically operated battery mould

The Bibat battery moulds are for large-scale precast facilities, where manual labour must be reduced as much as possible. A standard Bibat configuration consists of a fixed centre panel and two movable panels. Depending on the application, the panels are equipped with a 6mm or 8mm steel sheeting. The panels are opened and closed by means of hydraulic cylinders. The panels are therefore opened and locked without any manual intervention. There is also the possibility of installing additional intermediate panels in between the movable panels and the fixed centre panel. In that case, the additional panels will have to be locked into position by using tie-bars. Customers are free to choose any panel length or height. Lengths of 10m to 16m and multiples (connected) are very common. The stroke length of the cylinders combined with the height of the panels determines the maximum and minimum sections of the elements which can be made in a Bibat battery mould; anything between 600mm and 1200mm is considered a standard height. The centre panel can either be double (with a working platform) or single.

Bibat hydraulic battery mould 14m long, with hydraulic height adjustment system

Bibat mould 18m long, with interchangeable panels and box-outs for corbels

To complete the range of Bibat battery moulds, there are several options available:

- Fixed or modular panels, the modular panels are removable and interchangeable
- Recesses to cast corbels together with the columns
- Hydraulically adjustable supports to set both the lateral position and the height and width of the bases
- Various manual systems for adjusting the base height
- Fixed or removable triangular chamfers at the top of the panels
- Working platforms with access stairs at different levels
- Full steel soffits with chamfers and rubber sealants

Shaping the Future of Concrete

In almost 20 years, Construx has grown into a world player in the field of moulds and machines for the concrete precast industry. Construx meets the requirements of every customer, in order to obtain the most appropriate solution to manufacture their precast elements. The outcome of achieving such an objective is always a very satisfied customer. In addition to precast moulds, Construx develops and produces custom-built formwork for infrastructure projects, together with a complete range of modular shuttering and scaffolding systems. This versatile approach proves that Construx is a technically driven production company that relies 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. Their baseline "Shaping the Future of Concrete" is the best definition of what Construx stands for. ■

FURTHER INFORMATION

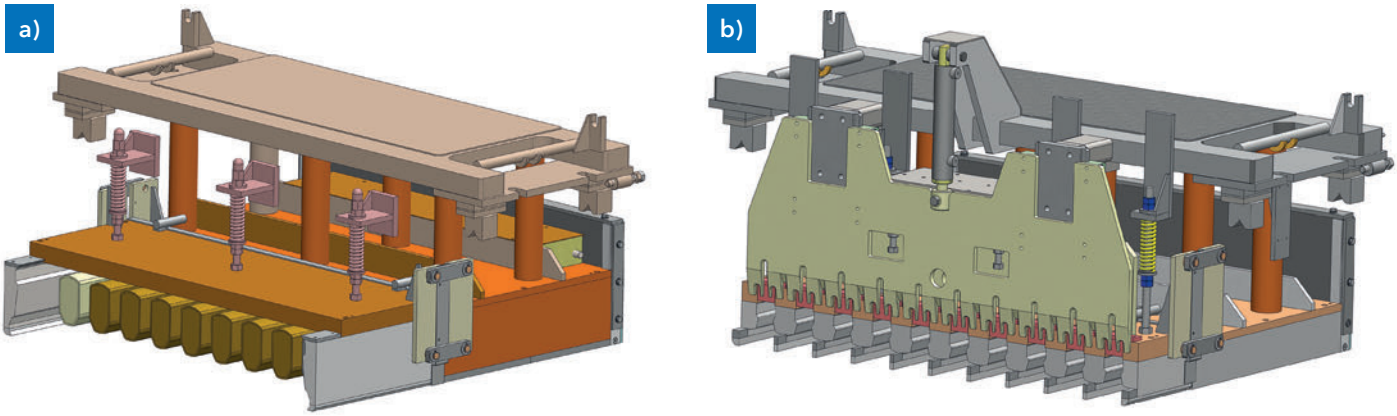
Construx b.v.
Hazebeekstraat 11, 8531 Hulste, Belgium
T +32 56724793
info@construx.eu, www.construx.eu

Beneficial application of exposed prestressing wires

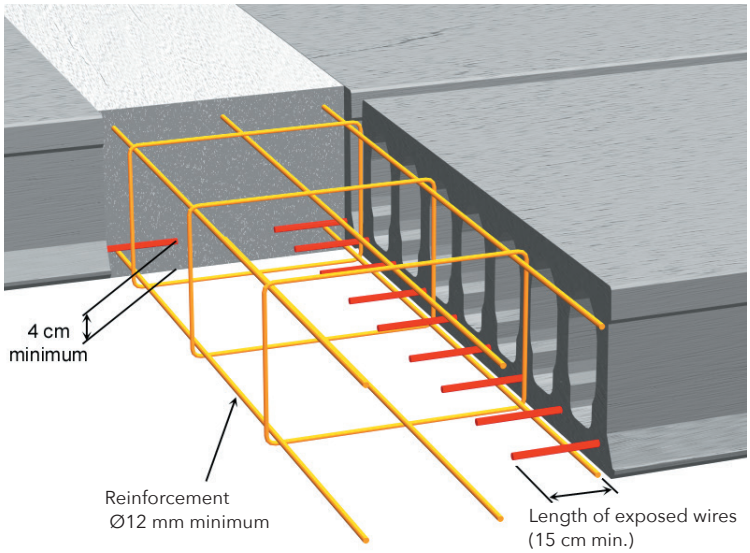
استخدام مفيد لأسلاك الإجهاد المسبق المكشوفة

Hollowcore slabs may offer advantageous features and performance criteria in addition to the characteristic reduced weight and the higher concrete density created by prestressing the steel wire strands. Since hollowcore slabs are precast concrete elements, there is always an interface at the site between concrete surfaces cast at different times. Therefore, the adhesion of the newly cast concrete, the friction created by forces normal to the interface, and the dowel action are factors that must be evaluated for each member. With this in mind, this article discusses the advantages of exposed wires in hollowcore slab production.

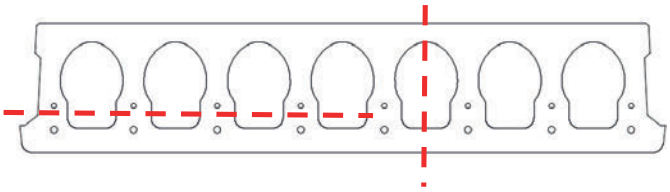
قد توفر البلاطات المفرغة ميزات مفيدة ومعايير خاصة بالأداء، بالإضافة إلى الوزن المنخفض المميز وزيادة كثافة الخرسانة بفضل الإجهاد المسبق لجدائل الأسلاك الفولاذية. ونظرًا لأن البلاطات المفرغة هي عبارة عن عناصر خرسانية مسبقة الصب، فيوجد دائمًا سطح فاصل بين الأسطح الخرسانية المصبوبة في أوقات مختلفة في الموقع. ولذلك، فإن التصاق الخرسانة المصبوبة حديثًا والاحتكاك الناتج عن القوى الطبيعية للأسطح الفاصلة وتأثير الوتد هي عوامل يجب تقييمها لكل جزء، ومع وضع هذا في الاعتبار، تناقش هذه المقالة مزايا الأسلاك المكشوفة في إنتاج البلاطات المفرغة.



a) The 6-screw fixing system mold in standard execution and b) modified to produce the pre-stressed concrete slabs with tracks of exposed wire at both ends.



Prestressed hollowcore slabs on the casting bed showing a preset length of exposed prestressing wires (left) and a schematic view of the connection between wires and the rebar cages in the in-situ-cast beam (right), images courtesy of SEAC Guiraud Frères – Toulouse (France).



Potential spalling effect in hollowcore slabs with heavy strand concentration patterns during the cutting with a rotating disc.

Prestressed concrete elements such as filigree slabs, solid slabs or hollowcore slabs are normally cut to length using a cutting disc mounted on a machine. In this process, the prestressing wires are frequently cut flush with the concrete.

The Prensoland Flowformer machine uses concrete with a certain degree of plasticity from additives. It is therefore possible to introduce a simple mechanism on the finishing mold to continuously produce the prestressed concrete elements on the casting beds and in the same time leave preset tracks of exposed wires at the end of the slabs.

At the factory, the 'exposed wires function' is enabled or disabled using a two-positions selector switch provided on the operator's HMI display on the machines.

The benefits that have been identified at the factories producing with tracks of exposed wires at the end of the slabs are described in the following.

Strand patterns with higher number of wires or strands

For a given slab thickness, the Flowformer machine produces hollowcore slabs with 6 to 9 cores in standard execution. It is possible to mount a total of 20 strands 1/2" in a cross section. With the traditional fabrication, significant internal shear forces are created due to the differential stress between cut strand zones and uncut concrete during the disc cutting process.

When the hollowcore slabs are produced with exposed wires, they are cut with a hand tool inside the tracks, which contain no concrete. This avoids the risk of spalling and allows to cut the slabs much faster, compared to full-depth concrete cutting.

Strand concentration patterns result in higher bending moment capacity

Hollowcore slabs with strand concentration patterns result in higher bending moment capacity for the same hollowcore slab thickness.

The correct instantaneous bonding between wires or strand and concrete after cutting the wires is measured with an extensometer to confirm the absence of slippage.

During installation and casting of in-situ concrete on site, the exposed wires on the horizontal support element create a perpendicular dowel effect supporting the connection between adjacent hollowcore slabs on a floor. The friction at the longitudinal joint between slabs is not compromised:

$\mu * \sigma n$; with $\sigma n \geq 0$.

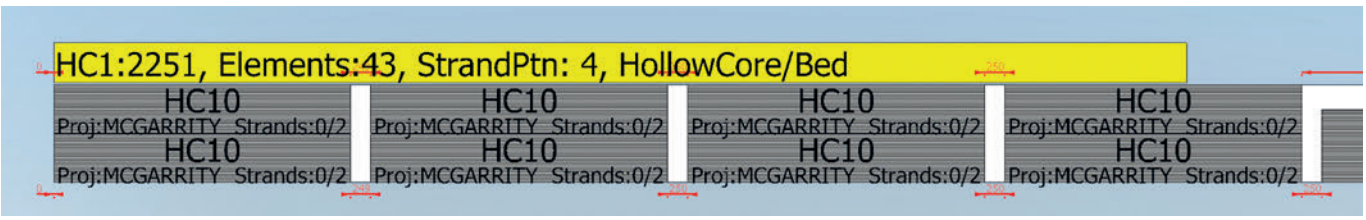
The cut flush hollowcore slab would be simple supported, while the cast-in exposed wires restrain both ends at the horizontal support elements.

Cutting discs are no longer required in the production of prestressed concrete hollowcore slabs.

Regarding the use of hollowcore slabs with exposed wires in BIM software, the company Strusoft proposes to consider the protruding strands when planning the casting beds. First the hollowcore floor layout is modelled automatically and then the protruding strands are added. The positions can also be exported to a plotter. ■

FURTHER INFORMATION

Prensoland SA
C/ Indústria, 5-9
08592 Sant Martí de Centelles, Barcelona, Spain
T +34 93844 0125
F +34 93844 1011
contact@prensoland.com
www.prensoland.com



Schematic view of hollowcore slabs in a BIM software.

Bianchi Casseforme s.r.l., 43045 Fornovo di Taro (PR), Italy

New turning device for prefabricated reinforced concrete elements

جهاز تدوير جديد لمنتجات الخرسانة المسلحة مسبقة الصنع

Bianchi Casseforme srl supplied to Fratelli Abagnale srl a 0°-90°-180 ° rotation device, for precast electrical substations and tanks, automated and highly flexible.

قامت شركة Bianchi Casseforme srl بتزويد شركة Fratelli Abagnale srl بجهاز تدوير مؤتمت وعالي المرونة 0 درجة – 90 درجة – 180 درجة للمحطات الفرعية الكهربائية والخزانات مسبقة الصب.

F.lli Abagnale has been operating in the precast sector since the 1970s. Over the years, production has continuously expanded, initial production was destined for the waste water sectors (such as Imhoff tanks, monolithic and monobloc tank systems, etc.), road (service channels, drainage channels, curbs, etc.)) and urban products (paving slabs, etc.). With a continuous approach to innovation and modernization of their production techniques, they ventured into the water treatment, cemetery construction and technical rooms sectors (Electrical substations cabins, multiuse precast pods, etc.). Finally, with addition of water attenuation and environmental reclamation with large capacity precast concrete water tanks, aimed at the flood prevention and wastewater containment flows.

Today, F.lli Abagnale, with their production site located in Palomonte (SA) Italy, with the advantage of a modern concrete batching plant, using cutting-edge mechanical components, a sophisticated and punctual remote-control system, ensures production processes that guarantee high quality standards in the production of concrete.

Their constant adaptation of advanced technical equipment in line with high compliance to safety regulations – at the workplace and to the environment - has placed Fratelli Abagnale srl in an important position in the Italian precast community. The company works and delivers precast concrete products throughout Italy to both private and businesses sectors.

Supply

At the end of 2021, F.lli Abagnale commissioned Bianchi Casseforme srl to design and construct a turning device for its electrical substations and prefabricated tanks in reinforced concrete. Born in 1964, Bianchi Casseforme Srl, is an expert partner in the design, production and commissioning of plants and machines for the precast concrete industry. The company can offer modern, highly customized, and flexible technological solutions to ensure economic efficiency and ease of use in a constantly evolving market, respecting the needs of its customers.

The device supplied is highly flexible, in fact it can rotate precast elements (electrical substations and tanks for water containment) of different length (from 2.5m to 11m) and heights (from 2m to 2.7m) and has the following characteristics : The equipment is made up of 6 independent L-shaped rotating structures, hydraulically operated, divided into two groups of 3, and arranged to cover the whole range of tanks produced respecting the maximum admissible overhangs.

First rotation

Second rotation

The 0°-90°-180° tilting device is fully automated, using a PLC which enables that the whole turning process can be controlled and documented thus enabling this piece of equipment to comply with the Italian automation initiative "Industry 4.0" criteria. In fact, it was included in the production cycle of the factory and connected to the company network to exchange production data in real time with the ERP software.
The cycle begins with the positioning of the product oriented as it comes out of the mould on to the first group of L-shaped rotating structures which according to its length could be either 2 or 3 of these. Selecting the corresponding command and the PLC takes control of the first rotation from 0 ° to 90 ° resting the precast element on to the second set of L-shaped structures ready for the phase.

The second phase involves the horizontal movement of the precast element to account for the varying heights which can be rotated, this is also done hydraulicly. Once this movement has been completed and contact with the vertical part of the structure has been verified, the third and last phase of rotation begins on the second group of rotors, from 90 ° to 180 °, orienting it for transport and final installation on site. Once again Bianchi Casseforme srl has distinguished itself for its ability to innovate and adapt to customer needs, designing a flexible and technologically advanced device that fits perfectly into the company's production cycle. ■

FURTHER INFORMATION

Fratelli Abagnale - Prefabricated Concrete
Via Petraro, 67, 80053 Castellammare di Stabia (NA), Italy
T +39 081 871 3471, M +39 347 2790 39
info@fratelliabagnale.it, www.fratelliabagnale.it

Bianchi Formforme srl
Via G. Di Vittorio, 42, 43045 Fornovo di Taro (PR), Italy
T +39 0525 400511
info@bianchicasseforme.it, www.bianchicasseforme.it

Ebawe Anlagentechnik GmbH, 04838 Eilenburg, Germany

Modernland is building earthquake safe houses in Indonesia with precast concrete elements

شركة Modernland تبني منازل مقاومة للزلازل في إندونيسيا باستخدام مكونات خرسانية مسبقة الصب

Modernland, one of Indonesia's leading developer through its subsidiaries PT. Modern Panel Indonesia, is creating a new housing project with tested, earthquake-safe precast elements. The prefabricated elements are produced at their own automated precast plant equipped by Progress Group. Now also the reinforcement for the precast elements is processed more effective and automated with the new mesh welding plant M-System BlueMesh® from Progress Maschinen & Automation, one of the leading automation machinery providers.

تعمل شركة Modernland، أحد المطورين الرائدين في إندونيسيا، من خلال شركاتها التابعة PT. Modern Panel Indonesia على إنشاء مشروع سكني جديد باستخدام مكونات مسبقة الصب مختبرة ومقاومة للزلازل، يتم إنتاج المكونات الجاهزة في مصنع الصب المسبق المؤتمت المجهز بمعرفة مجموعة Progress Group، كما يتم الآن معالجة تسليح المكونات مسبقة الصب بشكل أكثر فعالية وأتمتته من خلال ماكينة لحام شبكي جديدة تُعرف باسم M-System BlueMesh®من تصنيع شركة Progress Maschinen & Automation، وهي إحدى الشركات الرائدة في توريد آلات الأتمتة.

PT. Modern Panel Indonesia is a manufacturing company and a subsidiary of PT. Modernland Realty Tbk. It produces building materials such as Ready-Mix Concrete (RMC), Precast Concrete, EPS Panel and Mesh.

The benefits of building with precast concrete elements

Precast has many advantages over conventional building systems and thus the market is very accepting of this new way to build. One of the most important benefits of using prefabricated precast elements is the fast, on-site installation time. On the Indonesian market the government issues a great advantage for real estate developers realizing a fast construction time: The developer who can hand over a new house to the customer within 6 months saves 10% in tax payments. It only takes 5-6 days to install a house made of precast elements (45 pcs precast panels for 1 house). So, all in all it takes about

The installation of the prefabricated concrete elements is being done on-site with little noise, waste and personnel needed.

75 days to build one house from foundation work to finishing steps and the final handover to the real estate developer (5-8 days for foundation work, 6 days for installing the precast elements and the rest is usually planned for architectural work). But not only the short building time is a benefit advocating for constructing with precast elements. Due to the production in a plant with automated machinery the quality is consistently high. No weather conditions are influencing the timing and product quality and the safety and environmentally friendlier conditions are huge benefits of those factories.

Mr Hendy W.Budijanto, Operation Div.Head of PT. Modern Panel Indonesia is convinced, that precast houses have the most potential for being the future of building.

Earthquake-safe prefabricated concrete elements benefit first housing project

First housing project

Jakarta Garden City (Cluster Shinano) in East Jakarta is the first housing project of the well-respected company, who chose to plan and provide the prefabricated earth-quake safe elements for this huge project. 106 of the 120 units are already sold within 3 months. The real estate agents bought immediately and so did their clients. For the 67 m² per unit they charged 1,5 B Rp (around 103.500 USD) thus making it also affordable for the middle class. Due to the very central location the houses do not need any further infrastructure added within the complexes, such as pools or similar, because the clubhouse as well as the periphery are providing the needed shops, pools, gym etc.

Additionally, to the quick and secure building method and the affordability also for the middle class, this house has been tested in the laboratory for earthquake resistance. These approved tests were carried out in Puskim, Bandung. The strength of the earthquake reached more than 9 on the Richter scale and still, the precast concrete elements passed the test!

The main customer of PT. Modern Panel Indonesia are independent real estate developers, who will sell these houses. PT. Modern Panel Indonesia are not only delivering the elements and setting up the house. At the Jakarta Garden City (Shinano) precast house projects for example, they also handled the structural work as well as painting and finishing. The project is built with the full bearing wall system (walls, slabs, beams, and stairs) made of prefabricated precast concrete elements. The slab thickness is 12 cm, while the walls are 10 cm thick.

With the support of the new mesh welding plant M-System BlueMesh and its facilitating of the production through automation, PT. Modern Panel Indonesia has also already finished a hotel as well as a university. Currently it is finishing another hotel project. The hotels were supplied with the precast façade (ready to paint surface), while at the new housing project everything is in their hands (precast structure, architecture, and electrical plumbing) up until the final steps.

Production of precast elements – fast, reliable and high-quality

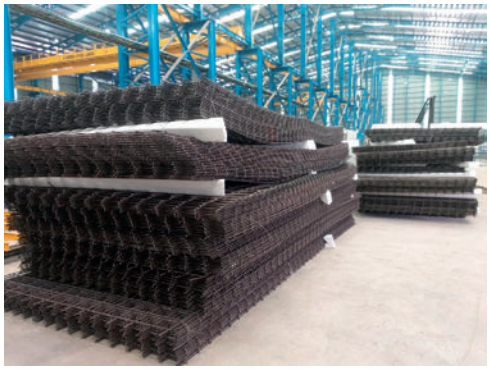
To provide the top-notch materials PT. Modern Panel Indonesia is working in two long shifts (shift 1 from 8 AM to 8 PM and

Fieris Hotel at Jl. Perserikata, Rawamangun, Jakarta.
1.015 sqm wall panels
16 days for installation
Finished

Fieris Hotel – Rawamangun

Binus University at Alam Sutera Jl. Jalur Sutera Barat, Jakarta.
1.864 sqm wall panels
30 days for installation
Finished

GOR Binus Alam Sutra



With the customized mesh welding plant M-System BlueMesh® the production of mesh directly from coil has been automated.

shift 2 from 8 PM to 8 AM) and is producing precast as well as ready-mix at a capacity of 60 m³ per hour. Per shift around 25 precast elements are produced on the pallets.

The finished elements - mainly solid slabs and walls as well as beams and stairs - are shipped to the site during day- and night-time and thus, by far, provide the quickest way of building.

Reinforcement automation ensures constantly high quality and safety

For the further modernization of the production, which has been equipped in 2018 with fully automated plants from the German automation specialist Ebawe Anlagentechnik, and to increase the automation in the factory, Modernland decided to invest in a mesh welding plant from the reinforcement machinery expert Progress Maschinen & Automation, both Progress Group companies. Both times this has been made in cooperation with the local partner PT Detede. The new M-System BlueMesh is currently working one shift with using mainly 6, 7 and 8 mm in wire diameters. As the walls are only 10 to 12 cm thick the bent mesh cannot be produced with wires of a higher diameter range. This is reflecting the whole Indonesian market and thus has been specifically adjusted and installed for this need. Nevertheless, the walls are earthquake tested and resistant, although being slim.
The mesh is mainly used for the needs of the factory itself. The new machine welds reinforcing steel from coil according to individual specifications, which leads to considerable reductions in labour costs and waste. The M-System BlueMesh is convincing not only because of its high technological level, but also because of being economical in terms of energy, usage, space requirements and steel as well as personnel costs. Until to now, reinforcement production still involved manual workstations. With the new M-System BlueMesh, the mesh is automatically produced, just-in-time and with the corresponding cut-outs for the precast elements.

The earthquake tested and safe elements with the cut outs for doors and windows already implemented are transported to the sites.

The solid slabs and walls are already equipped with reinforcement and ready for transport and installation on site.

The building time is enormously reduced by building with prefabricated elements that are installed on site with cranes and qualified staff.

Future of building – precast concrete elements

With the plant operating automated and with a high capacity, Modernland is already planning further projects. Currently they are developing a plan for an 8-storey apartment complex, built with a full precast system (bearing wall system). Also, another housing project is in the making with the production and providing of a precast façade for the 24-storey high Cleon Apartment. Modernland is working on creating a new future of safe living with prefabricated concrete elements and is convinced that this will be the future of building - not only in Indonesia. ■

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FURTHER INFORMATION

MODERNLAND
PT MODERNLAND REALTY Tbk

PT Modernland Realty Tbk
Green Central City, Commercial Area 5th Floor
Jl. Gajah Mada no.188, Jakarta Barat 11120, Indonesia
T +62 21 293 65888, F +62 21 293 69999
www.modernland.co.id

PROGRESS GROUP

EBAWE Anlagentechnik GmbH
Dübener Landstraße 58
04838 Eilenburg, Germany
T + 49 3423 6650
info@ebawe.de
www.ebawe.de

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

Progress Group GmbH
Zeil 127, 60549 Frankfurt am Main, Germany
T + 49 69 77044044
info@progress-group.info
www.progress-group.info

PT. Detede

PT DETEDE
Multika Building 2nd Floor, Suite 203, Jl. Mampang Prapatan 71-73
Jakarta - Selatan 1160, Indonesia
T +6221 7975101, F +6221 7975141
info@ptdetede.com, www.ptdetede.com

Ratec GmbH, 68766 Hockenheim, Germany

Smart further development in magnetic formwork technology

مزيد من التطور الذكي في تكنولوجيا القوالب المغناطيسية

Despite a noticeable trend towards automation, precast concrete manufacturers still have a high demand for intelligent and modern solutions in stationary production with a high proportion of manual handling. Manufacturers are confronted with numerous challenges, whether it is opening up new markets, improving quality or reacting even more flexibly to customer wishes. Scarcity of resources and supply bottlenecks are also causing the production of precast concrete elements to be rethought or at least reconsidered with regard to potential for improvement.

على الرغم من أنه ثمة توجه ملحوظ نحو الأتمتة، لا يزال مصنعو الخرسانة مسبقة الصب بحاجة شديدة إلى الحلول الذكية والحديثة في عمليات الإنتاج الثابت التي تتمتع بنسبة عالية من المناولة اليدوية. يواجه المصنعون العديد من التحديات، سواء أكانت تتعلق بفتح أسواق جديدة أم تحسين مستوى الجودة أم التفاعل بشكل أكثر مرونةً مع رغبات العملاء. وجدير بالذكر أن ندرة الموارد والصعوبات المرتبطة بالإمداد تؤدي أيضًا إلى النظر من جديد في إنتاج مكونات الخرسانة مسبقة الصب أو على الأقل إعادة النظر فيها فيما يتعلق بإمكانية تحسينها.

For stationary production with a low degree of automation, Ratec has established various solutions on the market that can be used very flexibly based on the SPB Standard Pro magnet box and cover a variety of tasks with just a few components.

Intelligent extension for modular formwork system

One of these solutions, the universal plywood beam (abbreviated MST), has now been supplemented by an extension arm for the production of solid upstands. It facilitates the production of upstands in solid elements and enables a significant reduction in formwork timber. In addition, the MST extension impresses with its high dimensional accuracy, reduced assembly effort and easier handling.
The new accessories bring advantages especially for users:

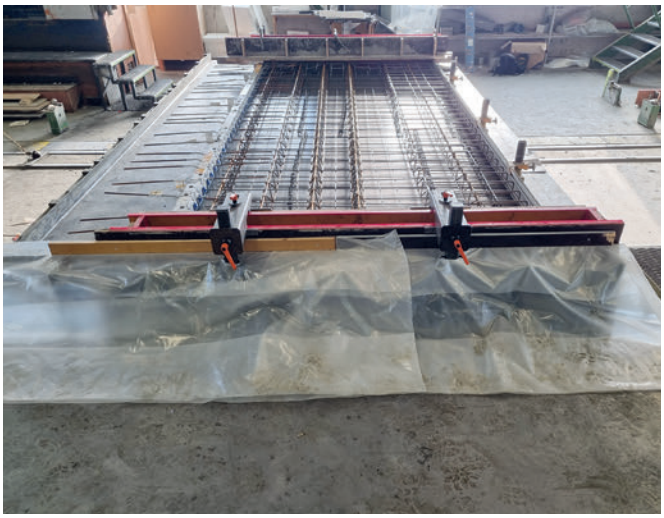
- significant reduction in formwork timber consumption compared to self-made solutions
- faster assembly
- more precise result due to exact adjustment possibility for 90° angle and stabilisation by means of C-rail
- for users who already have the MST in use, the upstand is a useful and slim addition

The width of the upstand is continuously adjustable from 70 – 210 mm, while the height is also continuously adjustable from 80 – 350 mm..

Customer favourite thanks to versatility and low weight

The new accessories supplement the many advantages of the MST formwork system. Initially, it was born out of the desire to offer a system that is simple, versatile, flexible and lightweight, while being able to cover many different formwork

The universal plywood beam has now been supplemented by an extension arm for the production of solid upstands.



Easier production of upstands in solid elements with significant reduction in formwork timber.

tasks. MST is therefore universally usable for the production of wall and floor elements from 100 to 500 mm in thickness. The system is flexible in both length and height, consists of only a few individual parts and scores points for its low weight and easy handling. The formwork beam is attached to the magnet box SPB 2100 by means of clamping brackets and serves as a base for attaching the formwork timber or front sheet.

However, flexibility is only one of the many advantages:

- as a lightweight, the MST is optimised for manual handling. With a weight of less than 21 kg over a length of 3 m, it remains below the BG standard (employer's liability insurance association) and takes a load off the factory personnel
- the MST is stackable, so that customers can manufacture almost all required element thicknesses with only one height.
- The formwork beam can not only be used on one side, but can also be coupled for two-sided use. This saves space on the pallet and reduces the effort

The very good static properties, which were tested in the precast plant, and the very high variability of the MST make it a real all-rounder.

The reliable basis for all applications

The SPB Standard Pro magnet box forms the common basis for fixing the formwork solutions for formwork timber and numerous adapter solutions. With the magnet box, Ratec set a standard for switchable shuttering magnets in concrete plants more than 20 years ago. The integrated pro-magnet offers absolute reliability and durability, even under difficult conditions. The magnet core is regularly tested in the company's own magnet production to ensure that it meets the specified holding force – from 900 to 2,100 kg. Due to the standardised and unchanged design, the magnet box offers countless application possibilities in the factory and guarantees manufacturers a great deal of flexibility for the future.

Outlook – robot-assisted integration of complete windows in concrete elements

Numerous development projects in the area of formwork technology are currently already dealing with automation in the plant and new solutions for automated or robot-supported processes. Ratec has now developed a solution for embedding complete windows including glass panes, which is being used for the first time in North America. A detailed report on this will follow in an upcoming issue.

But even in semi-automated or stationary production facilities, ideas are needed that help to conserve resources, produce more efficiently and/or increase quality. Under the motto "Meet the better ideas!", the further and new development of intelligent solutions is therefore part of Ratec's daily corporate culture. ■

CPI tv

The MST formwork system in video

FURTHER INFORMATION

RATEC
MEET THE BETTER IDEAS

Ratec GmbH
Karlsruher Str. 32, 68766 Hockenheim, Germany
T +49 6205 9407-29, F +49 6205 9407-30
info@ratec.org, www.ratec.org

B.T. innovation GmbH, Max-truder GmbH, 39116 Magdeburg, Germany

Precast construction systems, a sustainable and reliable solution for housing shortage crises

أنظمة البناء مسبقة الصب، حل مستدام وموثوق لأزمات نقص المساكن

Lack of affordable housing combined with increasing prices of material and labor, considering the rising financing costs are nowadays major challenges in most regions. On the other hand, like all other aspects of human life, the environmental consequences of mass construction continue to gain more global attention. Considering the world's top priorities sustainability, global warming, resource saving and waste management, the implementation of efficient, controlled, industrialized models of construction seems inevitable. Precast construction allows higher material usage efficiency, reduction of waste, shorter construction times and optimized planning for site installation. All of them result in less material and energy consumption.

يعتبر نقص الإسكان ميسور التكلفة وزيادة أسعار المواد وتكلفة العمالة بالإضافة إلى تكاليف التمويل من التحديات الرئيسية في معظم المناطق حاليًا. ومن ناحية أخرى، تستمر العواقب البيئية الناجمة عن عمليات البناء السريعة ومنخفضة التكلفة في اكتساب المزيد من الاهتمام العالمي مثلها مثل جميع الجوانب الأخرى للحياة البشرية. وإذا ما نظرنا إلى الأمور التي يضعها العالم الآن على رأس أولوياته، وهي الاستدامة والاحتباس الحراري وتوفير الموارد وإدارة النفايات، فسيبدو حينئذ أن تنفيذ نماذج بناء صناعية وفعالة وخاضعة للرقابة هو أمر لا مفر منه. توفر أنظمة البناء مسبقة الصب كفاءةً أعلى في استخدام المواد وتقليل النفايات وتقليل أوقات البناء، إضافة إلى التخطيط المحسن لعمليات التركيب في المواقع، وجميعها عوامل تساعد في خفض استهلاك المواد والطاقة.

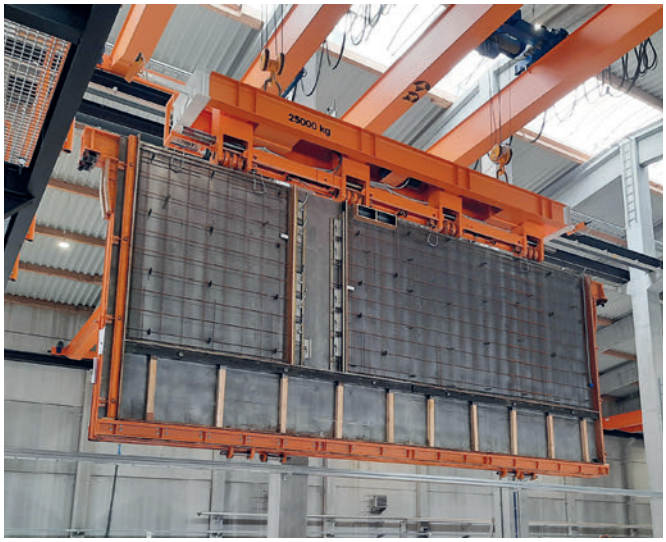
One of the worldwide most popular and proven structural systems in precast concrete world is so called "large panel system" or "wall frame system". This designation normally refers to multistory structures, composed of wall and floor panels connected in vertical and horizontal directions. This type of construction technique has been successful with building mass housing in different points of history. It is most appropriate for projects where speedy assembly is of great importance and the costs of heavy hoisting equipment are easily compensated by savings resulted from such industrial construction method.

Large panel / wall frame system as a proven precast technology for mass housing projects

In this concept, wall panels are usually one story high and load bearing elements. They normally consist of solid concrete as internal walls, and (if desired) sandwich panels as insulated external walls. Considering various parts as horizontal elements, pre-stressed hollow core slabs are among the most advantageous ones. They are typically known for their slim dimensioning and long span coverage and reduced weight, which result in more architectural flexibility.

In the precast concrete industry, there are several types of prefabrication equipment and machinery. As mentioned above, the main structure in large panel system consists of wall, floor and roof slabs. Typically, the wall elements are produced either on horizontal steel surfaces as tilting tables, or casted in a vertical form by means battery moulds. For the production of prestressed hollow core slabs relatively long casting beds are required (often approx. 120 m long).

Typical necessary machinery and equipment for prefabrication of large panel-shaped elements



Butterfly formwork® and battery mould, combination of horizontal preparation with vertical casting

After casting one very long slab it is cut into pieces in the required length. In fact, with a clever combination of hollow core lines, tilting tables and battery moulds, positioned in an efficient layout, all major components of this structural system can be prefabricated. Secondary elements like staircases can also be precasted using the suitable formworks.

Classic battery moulds have been in the industry since decades for production of walls, with their typical advantages and inconveniences. As a massive formwork with several vertically positioned casting compartments, they have offered simultaneous production of many elements with formwork smooth surfaces on both major sides. Space and heating savings are other results of this compact prefabrication equipment. However, difficulty of preparation the elements in an upright set-up and limited working space inside the cells with high temperature are some of the main disadvantages of classic battery moulds. To address these problems, the Butterfly formwork® has been introduced to the industry and gained attention of some of the most important market players.

Butterfly formworks as a two-sided shuttering surface enables the easy and faster horizontal preparation of precast parts with all embedded items and even using the laser or robotic technologies. Additionally, and more importantly, the concept makes it possible to prepare the next elements, while the battery mould is full with casted elements, which are in curing process. This enormous time saving in preparation phase can result in a daily multiple production cycle.

Pre-stressed hollow core slabs are elements with constant cross section with specific number of holes. Thickness and width, produced by extrusion technology. Flexibility in element's length, reduced weight, high span/thickness ratio, high load resistance and reduced usage of cement are among many advantages of these products. It is possible and usual to produce further pre-stressed elements as piles, T-beams, lintels etc. on the same production beds.

For most of investors who are planning to start business in precast industry, it is favorable and wise to take a holistic,

MAX-truder machinery for the production of pre-stressed hollow core slabs

professional approach i.e. to get competent consulting, efficient plant design, and a made to fit pack of quality tools and equipment.

B.T. innovation GmbH and MAX-truder GmbH, as technology providers with synergized broad experience deliver system solutions, all from one hand. With their accumulated experience of approx. 100 years, all necessary technology can be supplied by this group of companies.

Both companies have a successful track record in providing the precast concrete market with innovative products and system solutions which result in faster prefabrication, considerable savings in raw material, controlled quality and easy assembly on job site. Efficient production equipment as Butterfly Battery® Mould, premium tilting tables, or MAX-truder's long line casting machinery are completed with trendsetting consumable products as connectors and sealants to ensure fast and high-quality project execution. Last but not least, with its consulting department and the new acquisition of an engineering and design office, the companies are now in a position to offer a full service of market study, structural analysis of targeted construction systems, plant design and equipment supply.

Decisive in almost every investment plan is the option to expand. "Think big and start small" is the root of MAX-truder and B.T. innovation's multi-level modular equipment and plant setup. It allows easy upgrades in capacity and range of concrete products, according to market demands. In this way, not only the goal of supplying the building market with stable, safe and sustainable construction elements will be achieved, but also economic feasibility of setting up a modern efficient precast plant is guaranteed. ■

FURTHER INFORMATION

BT innovation

B.T. innovation GmbH
Sudenburger Wuhne 60
39116 Magdeburg, Germany
T + 49 391 73520
info@bt-innovation.de
www.bt-innovation.de

maxtruder

MAX-truder GmbH
Sudenburger Wuhne 60
39116 Magdeburg, Germany
T +49 6725 300990
info@maxtruder.com
www.maxtruder.com

Schwing GmbH, 44653 Herne, Germany

Light and powerful

وزن خفيف وقوة كبيرة

With the new S 51 SX truck-mounted concrete pump, Schwing introduces a new large boom pump that is characterised by a significantly reduced weight with the usual stability and durability. Mounted on a 10x4 Euro 6 chassis, this results in a typical operating weight of less than 40 t with sufficient reserve for additional equipment and payloads. Operation and registration of the machine are significantly simplified, fuel consumption is reduced.

تقدم شركة Schwing من خلال مضخة الخرسانة الجديدة S 51 SX المثبتة على الشاحنات مضخةً ذراعيةً كبيرةً وجديدةً تتميز بوزن أقل بكثير مع تمتعها في الوقت ذاته بالثبات والمتانة المعتادين، ويتم تثبيت هذه المضخة على هيكل 10x4 Euro 6، ما يوفر وزنًا تشغيليًا نموذجيًا أقل من 40 طنًا مع توفير احتياطي كافٍ لمعدات وحمولات إضافية، كما أن تشغيل الماكينة وتسجيلها هو أمر في غاية السهولة، فضلاً عن تقليل استهلاك الوقود.

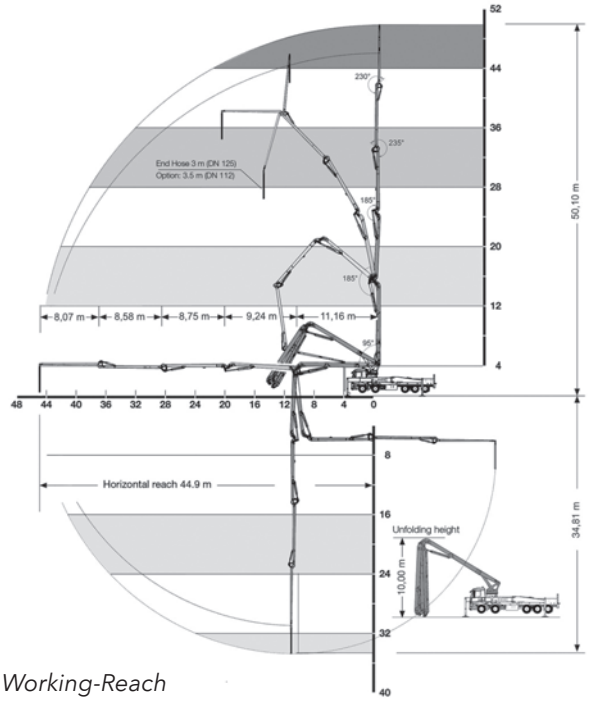
Boom

The combined Roll-Z-Fold with 235° and 230° rotation angles in the last two mast elements offers maximum mobility for every construction site. The short front mast elements further increase flexibility. The Schwing concept offers a great possible degree of freedom in the selection of chassis and engine options. A vehicle conversion scope reduced to the minimum saves costs and effort.

SX Outriggers

The SX outriggers developed and patented by Schwing are curved and can thus occupy a significantly longer space in the machine than a classic X-outrigger. Even larger outrigger spreads can be realized with a single extension beam.
The center of the frame is not blocked by outriggers and remains free. As a result, the efficient long-stroke pump kit P2525 can also be installed, which increases running smoothness and reduces wear.
All in all, the S 51 SX is under 40 tons operating weight due to the use of modern lightweight construction, is designed for a wide range of chassis and engines, has a flexible RZ folding and at the same time is uncompromisingly designed for performance:

- Operating weight <40 tonnes (Euro 6 /10x4)
- 8x4 Euro 3 / Euro 5 available
- 5-section boom with RZ folding and large opening angles
- DN 125 delivery line without special pipe bends
- Long-stroke pump battery P2525
- SX outriggers support, optionally with Easy (-Flex) support system



Working-Reach

New S 51 SX truck-mounted concrete pump

FURTHER INFORMATION

SCHWING Stetter

Schwing GmbH
Heerstraße 9-27, 44653 Herne, Germany
T +49 2325 9870, F +49 2325 72922
info@schwing.de, www.schwing.de

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Lintec & Linnhoff Holdings Pte Ltd, Singapore 638072

Concrete batching plants for the booming Philippines construction market

محطات خلط الخرسانة لسوق البناء الفلبيني المزدهر

With the construction sector in the Philippines predicted to grow by 16.1% during 2022, following a strong recovery of over 12% in 2021, Eurotec concrete batching plants from Lintec & Linnhoff have been a popular choice for construction projects. Contractors and concrete producers in the north of the country, in particular, have been working on a variety of major projects throughout the recent growth period. They are also eager to capitalise on several exciting new opportunities.

مع توقع نمو قطاع البناء في الفلبين بنسبة 16.1٪ خلال عام 2022، بعد انتعاش قوي تجاوز نسبة 12٪ في عام 2021، كانت محطات خلط الخرسانة Eurotecالتي تقدمها شركة Lintec & Linnhoff خيارًا رائجًا لمشاريع البناء. يعمل المقاولون ومنتجو الخرسانة في شمال البلاد على وجه الخصوص في مجموعة متنوعة من المشاريع الكبرى طوال فترة النمو الأخيرة، كما أنهم حريصون على الاستفادة من عدد من الفرص الجديدة والمثيرة.

Under the national government's Build Build Build program, PHP1.18 trillion (US$2.252 billion) has been allocated to the improvement of infrastructure in 2022, raising expectations of a minimum 10% annual growth rate until 2025.

Concrete batch plants from Eurotec that offer remarkable portability have witnessed a great success in this market. In fact, the high flexibility was a crucial factor for one Eurotec customer, which deployed a PTT120 portable concrete batch plant on a challenging two-year project, producing high-quality ready-mix concrete at the Manila International Airport.

Ready for take-off

Because the project site was close to the airport runways, all equipment had to comply with Manila International Airport Authority's requirements. In the event of a security or safety threat, any plant on site must be able to be relocated at short notice. Even though the PTT120 is the largest model in the PTT/PTP range, with an impressive 120 m³/hr output capacity, its completely modular design and construction lends itself to being quickly and easily disassembled before being economically transported to another location, ensuring compliance with the edict.

Approximately 110 km to the northwest, in Pampanga province, a Eurotec PTT90 – the second-largest model in the range – is being used to supply large volumes of ready-mix concrete to contractors working on various commercial projects, including the construction of a manufacturing facility in the Clark Freeport Zone, and building projects in San Fernando city.
Delivering an output of 90 m³/hr, its highly productive twin-shaft mixer design was a prime attraction for the customer. As on the PTT120, the mixer has a 2-stage planetary gearbox for strong, equal torque and low heat generation. Manufactured in Italy, the mixer delivers a rigorous mixing intensity that enables large-volume production.

The PTT120 plant produced high-quality concrete for a two-year project at the Manila International Airport.

In Batangas, Philippines a Eurotec ECO90 concrete batching plant has been supplying ready-mix concrete for commercial projects.

The Eurotec ECT90 concrete plant is equipped with a highly efficient electric motor to reduce energy consumption and deliver superior performance.

The PTT120 concrete plant is designed in modules for enhanced portability and easy transportation.

"The superb reliability offered by this design was a key factor in our customer's purchasing decision," confirmed R. Sakthi, CEO, Lintec & Linnhoff Concrete Pte Ltd. "This customer already owns several other Eurotec concrete plants, which is a testament to their satisfaction with the brand, and their trust in its quality and durability."

Compact and modular

In two provinces close to Manila, suppliers are relying heavily on Eurotec's Ecotec ECT60 portable batching plants to produce ready-mix concrete for commercial sales to local contractors, leveraging the compact, modular design that makes them a popular choice for smaller job sites.
To the west, in the municipality of Mariveles, Bataan province, one Eurotec customer installed its ECT60 on the site of a 450-hectare residential and commercial development that is set for completion later this year. To the south, in San Pascual, Batangas, a plant was installed in 2019 to supply nearby commercial projects.
With their 60 m³/hr output capacity, these compact plants offer convenience from start to finish. Transportation is both easy and economical; after arriving onsite, they can be quickly installed as they need little or no foundation. Two-sided aggregate bins, in a quadrant design, enable materials to be loaded effortlessly, with minimal or no loading ramps.

The same can be said of the Eurotec ECT90 which is being used for the production of high-quality ready-mix concrete for the construction of the country's first ultra-supercritical coal-fired power plant, at Barangay Villa Ibaba, near the town of Atimonan, Quezon province. Certified as an Energy Project of National Significance (EPNS), work on the US$3 billion Atimonan One Energy Inc., (A1E) 2 x 600 MW plant began in September 2020.
With the aim of providing a stable, reliable and cost-competitive power supply, the plant will be one of the most efficient coal-powered facilities in the country. In accordance with the sustainable objective of MGen, the power generation arm of the Philippines' largest power distributor, the concrete plant was equipped with a highly efficient electric motor to reduce energy consumption throughout its 90 m³/hr production cycle.

One customer in Batangas has been using the ECO90 stationary concrete batching plant to supply up to 90 m³/hr of ready-mix concrete for its own projects, as well as for those of other construction companies, since 2020. "Our customer purchased this unit after recommendations from another owner about the reliable customer support provided by Lintec & Linnhoff," elaborates R. Sakthi. "Almost two years later, they're now just as enthusiastic about the reliability, efficiency and quality of our concrete production!"
Designed with simplicity and functionality first and foremost, this affordable solution offers no compromise in the quality of concrete production.

If you build it, they will come

As the province of Laguna prepares itself for a spate of long-awaited infrastructure projects beginning over the next year or two, one concrete supplier in Calamba city has recently finished the installation of a Eurotec PTT120 portable concrete batching plant to meet the expected increase in demand for its services.
Known as the Spring Resort Capital of the Philippines due to its many hot spring resorts, Laguna is likely to enjoy an even-greater influx of tourists once several major transport projects have been completed.
Ready mix concrete produced from this plant will be used for commercial projects including roads, residential and commercial buildings, and highway projects.
With so much potential work on the horizon, the Eurotec concrete plants throughout the country are set for a challenging decade, but we are confident they can handle whatever the Philippines demands of them. ■

FURTHER INFORMATION

LINTEC & LINNHOFF

Lintec & Linnhoff Holdings Pte Ltd
71 Tech Park Crescent, Singapore 638072
T +65 6863 1111, F +65 6863 3811
info@lintec-linnhoff.com, www.lintec-linnhoff.com

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Tabone تابوني
+971 50 475 4255
+356 794 92045 / +971 58 252 8210
dubai.office@patabone.com

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