

Hess Group GmbH, 57299 Burbach-Wahlbach, Germany

Tailor-made concrete block manufacturing at new Lithonplus location in Bornhöved

The Lithonplus block-making plant specialises in the development, manufacture and sales of high-quality concrete products. A team of more than 600 employees at eighteen locations across Germany is responsible for the professional handling of the processes – from planning support, job and order to manufacturing and delivery. Lithonplus is a subsidiary of HeidelbergCement AG and Schwenk KG. The company has concentrated the traditional activities in the field of concrete products since 2004 and can look back on over one hundred years of experience. The machine-manufactured products are made on modern plants at a very high technical level. An example of this is Lithonplus' latest location in Bornhöved, with which the company has now gained a foothold in Schleswig-Holstein with a production facility. The company had purchased an old factory here, with an aging production hall and the associated site. First of all the hall was stripped down to its steel skeleton and completely re-enclosed. Then a completely new, modern concrete block production facility was installed, including a new concrete mixing plant. The circulation plant was supplied by the Hess company from the Topwerk Group. The extensive dosing and mixing equipment was supplied and installed by ubo Engineering from Holland.

■ Mark Küppers, CPI worldwide, Germany ■

Lithonplus' product range serves the requirements for free space and traffic area planning in the public and private sector. Apart from paving and slab systems, it encompasses palisades, walls, steps and kerbstones. The block-making factory offers extensive possibilities for the manufacture of individual special structural elements.

Lithonplus attaches great importance to modern machine technology in order to ensure a high quality standard. Continuous checks of incoming raw materials and con-

stant monitoring of the end products by in-house laboratories and external monitoring institutes ensure this high standard.

Strict customer orientation

Lithonplus' actions revolve around people and their needs. The company considers its task to be one of developing optimum solutions for individual requirements. Competent employees dedicated to providing a high standard of service assist customers with product advice and selection up to the successful completion of a project. Specialised and individual services supplement the products.



Lithonplus turned this old hall into a state-of-the-art production facility.



The new Lithonplus plant in Bornhöved



The aggregates are transported via two 800 mm wide conveyor belts (34 and 22 m long) to the highest level of the mixing tower, which is integrated in the hall.



On delivery the aggregates are tipped directly from the truck into a 22 m³ feed silo.

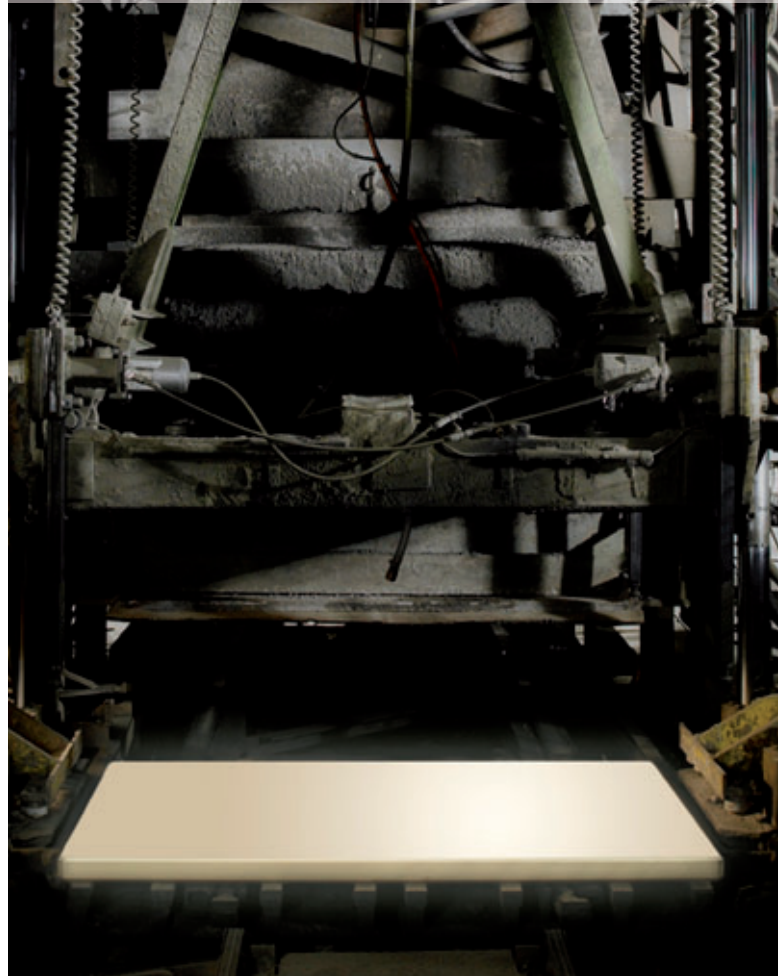


All mixing and dosing processes are controlled by the Sauter controller.



In ubo Engineering's concept, water and cement are guided downwards into the mixer.

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Dosing equipment for pigments

The goal is absolute customer satisfaction and long-term customer retention. Lithonplus wishes to achieve that with convincing products, smooth processes and the uncompromising implementation of all requirements. Co-operation characterised by mutual respect and reliability is required for this.

Trend-setting developments

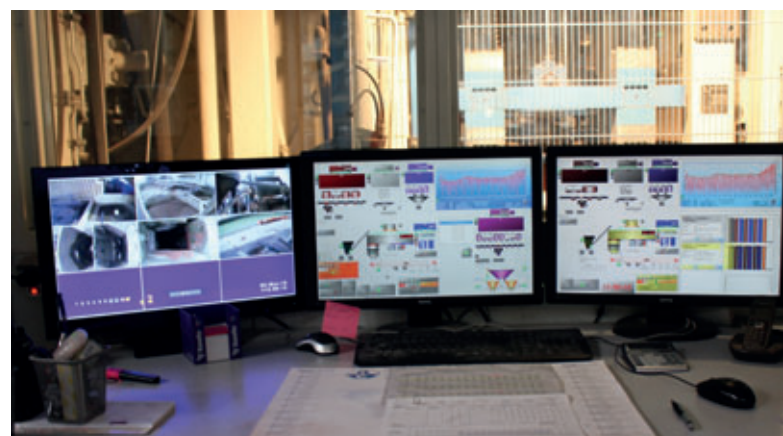
Lithonplus occupies itself intensively with the development of sustainable products. The reconcilability and improvement of functionality, sustainability and aesthetics have top priority here. Today Lithonplus plays one of the leading roles in the development and introduction onto the market of uniquely designed and functional concrete products.

Concrete mixing plant designed according to customer requirements

Lithonplus chose strong partners for the construction of the new production location



Hess RH 1500-3 MVA concrete block making machine



Every production sequence of the concrete block making machine can be directly observed from the control room through large windows. The operator can follow all current production sequences on monitors, from the concrete production to the packaging.



The finger car of the board buffer rack also supplies the concrete block making machine with the Assyx underlay boards.



Board buffer rack for 2,800 underlay boards



Individual underlay boards can be taken out of the production line directly behind the concrete block making machine for quality checking.

with the required plant technology. For the concrete production area, ubo Engineering, which took over the representation of the Topwerk Group in the Netherlands and Belgium last year, impressed with its concept.

On delivery the aggregates are tipped from the truck directly into a 22 m³ feed silo and transported from there via two 800 mm wide conveyor belts (34 and 22 m long) to the highest level of the mix-

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The elevator can accept 23 underlay boards, which are then taken over by the Hess finger car and driven into the rack system from Rotho.



The rack system was conceived as an open-plan solution and fitted precisely inside the hall.

ing tower, which is integrated in the hall. The steel construction of the conveyor belts is galvanised; the belts themselves are roofed over for protection against the weather. The aggregates are fed into the respective silos via a rotary distributor belt. Four concrete silos are available in Bornhöved, two of them with a double outlet. The level in the silos is monitored by laser.

The aggregates are dosed by means of two weighing wagons (one for the facing concrete mixer, the other for the core concrete mixer), which are frequency controlled. The dosing from the silos onto the weighing wagon takes place by means of dosing shutters and dosing belts. After taking on board all the aggregates for a mixing

process, the weighing wagon transfers its contents to one of the two lifting buckets that bring the material to the two mixers. There is also a possibility to empty silos, e.g. for a change of aggregate, via the lifting buckets. To do this the lifting buckets, after being fed, drive from the dosing area to the next level, stop there and discharge their contents into a special collecting container.

Fibre-glass cement silos

ubo installed three silos made of fibre-glass for the storage of cement (1 x 60 t, 2 x 90 t). The complete handling of the aggregates, the dosing technology and the cement storage were planned, manufactured and installed on site by ubo Engineering according to the customer's

requirements. For the mixing equipment, control system and concrete transport, ubo relied on well-known suppliers, whose components were integrated into the overall package.

A Haarup 3000 L countercurrent mixer was installed for the core concrete and a Haarup 750 L countercurrent mixer for the facing concrete. The Haarup mixers have a wear-resistant design. The combination of rotating mixing stars with fast rotating mixing paddles ensures an intensive mixing process in short periods of time. In ubo Engineering's concept, water and cement are guided downwards into the mixer. According to ubo this is supposed to accelerate the mixing process, cause less dirt and keep the tools cleaner.



Directly after the separation the two transport lines of the two lowerators join together to form a single line.



In this station the stones are pushed together on the underlay board.



Double layers are packed on wooden Euro-pallets to form stone packages.



The empty underlay boards are cleaned, turned and stacked, after which the finger car either places them in the board buffer rack or takes them to the concrete block making machine.

All mixing and dosing processes are controlled by the Sauter controller, including the dosing equipment for pigments integrated by the customer and operated with pigments from Scholz. All of the control cabinets for the entire mixing tower are installed in a central switchgear room and from here all of the fully automatic processes can be followed as necessary on the monitor.

High-performance concrete block production with the Hess RH 1500-3 MVA

The mixers discharge downwards onto conveyor belts, which carry the fresh concrete into the storage containers for the core or facing concrete respectively. A Hess RH 1500-3 MVA in a fast version with preci-

sion control was installed at Lithonplus in Bornhöved. The RH 1500-3 MVA is a very powerful machine that was developed for high-performance. Despite short cycle times the machine is characterised by a gentle movement process. This is achieved through special control technology and hydraulics. The intelligent interaction of these components thereby guarantees the reliable and

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The finished stone packages are finally strapped horizontally and vertically and then transported into the outdoor area of the hall.

very productive manufacturing of concrete elements.

The complete plant is equipped with an acoustic enclosure, adjacent to which the control room stands. Every production sequence of the concrete block making machine can be directly observed from the control room through large windows. The operator can follow all current production sequences on monitors, from the concrete production to the packaging.

Lithonplus chose the Assyx Duro board for the underlay boards. A total of 5,700 underlay boards are in circulation, of which 2,800 can be temporarily stored in a board buffer rack with its own finger car. At the end of the dry side the cleaned boards are stacked and can then be stored automatically in the board buffer or transported to the board separating unit in front of the concrete block making machine on the wet side.

Fast mould change

The concrete block making machine at Lithonplus is equipped with a special fast mould change system. The mould that is no longer required is driven out of the machine

by a mould transport wagon and taken out of the production line behind the enclosure. Accordingly, a new mould is placed on the mould transport wagon in front of the enclosure; the wagon drives the mould directly into the machine, where it is automatically inserted.

Individual underlays boards with fresh products can be removed from the line behind the concrete block production for quality checking. Concrete residues on underlay boards after the emptying-out of the machine can still be tipped off before the elevator. These concrete residues are transported out of the hall on a conveyor belt and collected outside in a container.

Two lowerators on the dry side

The elevator can accept 23 underlay boards, which are then taken over by the Hess finger car and driven into the rack system from Rotho. The rack system was conceived as an open-plan solution and fitted precisely inside the hall. The Rotho circulation provides for a homogeneous climate in the entire rack system.

The hardened products are transferred by the same finger car to two lowerators on the dry side. Directly after the separation

the two transport lines of the two lowerators join together to form a single line. Apart from good buffering, the use of two lowerators allows above all the mixing of underlay boards with products from various concrete batches. This can be advantageous, especially with colourmix products, since it caters for the later appearance of the installed stones. The colourmix products, which are manufactured in accordance with a new concept by Hess, are in great demand on the market.

The underlay boards with the hardened products then pass through a visual quality inspection in which an employee can exchange the products that don't meet the high requirements directly on the underlay board. The dry side operates very quickly: the cycle time is less than 8 seconds in optimum operation.

In the next station the stones are pushed together on the underlay board. Depending on the product, the layer doubler then goes to work, taking a complete layer from every second underlay board and placing it on top of the stone layer on the adjacent board. Double layers are thus created on every second underlay board, which are



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A robot crane takes up the stone packages together with the wooden pallet and sets them down alternatively on the buffer conveyors arranged symmetrically on the left and right. In the process the stone packages are doubled, which means that two complete stone packages are always placed one on top of the other.



The fork-lift truck that takes the stone packages to the outdoor storage area is equipped with a double fork with which it can take two double packages at once, i.e. a total of four stone packages.

then taken up by a servo packet assembler. The empty underlay boards are cleaned, turned and stacked, after which the finger car either places them in the board buffer rack or takes them to the concrete block making machine.

Two buffer belts in the outdoor area

The double layers are then packed on wooden Euro-pallets to form stone packages. For this a wooden Euro-pallet is first taken from a wooden pallet buffer and automatically set down on a further conveyor belt. This conveyor belt is set at an angle of 90° to the previous conveyor belt

on which the underlay boards are transported. The finished stone packages are finally strapped horizontally and vertically and then transported into the outdoor area of the hall.

Here a robot crane takes up the stone packages together with the wooden pallet and sets them down alternatively on the buffer conveyors arranged symmetrically on the left and right. In the process the stone packages are doubled, which means that two complete stone packages are always placed one on top of the other.

The fork-lift truck that takes the stone packages to the outdoor storage area is

equipped with a double fork with which it can take two double packages at once, i.e. a total of four stone packages.

In the normal case only three employees are required for the total production: the machine operator, the quality control employee and the fork-lift truck driver. ■

A video of the new Lithonplus plant can be found here:



www.cpi-worldwide.com/cpi-tv/video/hess

Simply scan the QR code with your smartphone and watch the video!

FURTHER INFORMATION



Lithonplus GmbH & Co. KG
Zentrale
Schwegenheimer Straße 1a
67360 Lingenfeld, Germany
T +49 6344 9490
F +49 6344 949125
info@lithonplus.de
www.lithonplus-steinmanufaktur.de

Lithonplus GmbH & Co. KG
Werk und Vertriebsbüro Bornhöved
Segeberger Landstraße 35-37
24619 Bornhöved, Germany
T +49 4323 805400
F +49 4323 8054010



HESS Group GmbH
Freier-Grund-Straße 123
57299 Burbach-Wahlbach, Germany
Phone +49 2736 4976776
Fax +49 2736 4976620
info@hessgroup.com
www.hessgroup.com



ubo Engineering b.v.
Banningstraat 3b,
3769 Soesterberg, Netherlands
T +31 346 351774
F +31 346 351384
mail@ubo.nl
www.ubo.nl