



Zenith Maschinenfabrik GmbH, 57290 Neunkirchen, Germany

Hagemeier fit for the future with a new concrete block production facility

■ Mark Küppers, CPI worldwide, Germany

Hagemeier GmbH Betonsteinwerke can look back on a company history spanning 70 years now. Hagemeier manufactures an extensive range of concrete products for gardening and landscaping at two sites, in Papenburg and in Moormerland-Neermoor where the main office is also located. Trading with natural stone products for garden design is an additional mainstay of their business. The quality of Hagemeier products has always been held in high esteem and the company is very well positioned, particularly in the private sector. Investment is regularly made at both sites in modernising system technology in order to guarantee this quality on an ongoing basis. As the concrete block-making machine in operation over a period of decades at the Moormerland-Neermoor site utilised relatively small production boards, Hagemeier decided on investing in a completely new concrete block production facility. Their goal was to ramp up production substantially at this site with a high-performance concrete block machine and considerably bigger production pallets and thus further expand their market share. Zenith Maschinenfabrik GmbH supplied the concrete block production line, for which a new hall was erected especially. Zenith's machine and other technology were not the only defining factor. Zenith has also maintained excellent contact over a number of years with the employees at Hagemeier, who enjoy a high level of confidence, as Mr Uwe Wiltfang, who was appointed managing director at Hagemeier in 2012, was able to confirm.

Hagemeier GmbH Betonsteinwerke are a family-run business with 25 employees and a clear focus on quality. Production is carried out mainly to order with a marked concentration on Colormix products, whose share is 70 to 80%. The firm's own trucking company, which has belonged to Hagemeier since last year, ensures that products can be supplied without hitch to their customers.

One special feature at Hagemeier must surely be the great flexibility of their workforce. For example, nearly all employees possess a forklift licence and can take care of duties both inside and outside the production hall. This means that the production process is guaranteed to run smoothly practically all the time.

70 years of quality from Hagemeier

In 1948, Hagemeier & Co. KG was founded as a company by Hermann Eduard Hagemeier. He operated as a building materials merchant together with an associate in Aschendorf (Ems). The company branched out in subsequent years into gravel extraction from the firm's own quarry in Wippingen (Emsland). The coarse sand extracted there found its way into all work with concrete in civil and hydraulic engineering, as well as road construction and was delivered directly by truck to all construction sites in the surrounding region.

In addition to this, the company was representative of Piesberger Steinindustrie, formerly the largest quarrying operation in Europe, for an area from Meppen to the East Frisian Islands. Deliveries totalling more than 50,000 tonnes of carbon quartzite rock in the most varying of granulation sizes were undertaken at this time.

After a time, first steps were taken towards manufacturing concrete products in a small affiliated concrete production facility. Concrete products, such as sewage pipes, floodgates, kerbstones and flagstones, were manufactured for civil and road engineering purposes under the name of Durilit.

The family business began with the setting up of a production facility for concrete paving blocks and kerbstones in Neermoor in 1965. In the following years, Hagemeier became established as supplier of concrete pavers and kerbstone systems and was continuously able to increase production figures. In 1975, the capacities in the Neermoor factory were



The Hagemeier production site with the new production hall adjacent to the old hall (left)



Aggregates are transported directly from a feed hopper by a double conveyor belt made by VHV Anlagenbau into the silo level



The mixers are filled by means of bucket elevators



A Kübat concrete transport system with a double bucket conveyor transports concrete to the block-making machine



People make molds



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[programming]

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approaching their limits. This led the company to decide on constructing a modern concrete production facility in the industrial port of Papenburg.

Work commenced on the erection of an entirely new concrete block factory at the Neermoor site in 2016. This began production in the spring of 2017. Concrete paving blocks are now manufactured there in diverse shapes and colours according to the latest standards. Existing storage areas were expanded to a generous 50,000 m² in the course of this new development.

Large supply area and extensive product portfolio

The core area supplied by Hagemeyer is situated in the western part of Lower Saxony, from the North Sea coast down to Lingen. Hagemeyer offer their customers an extensive range of products for garden and landscaping construction work. These include various kerbstone systems, functional as well as decorative paving blocks, natural stone products for garden design, eco-friendly pavers and special road sealing products, such as "farmer slabs". These farmer slabs measuring 120 x 80 x 12 cm have been specifically designed for country and forest operations as well as for tree nurseries and horticultural undertakings. Amongst other things, they are a meaningful supplement to field path slabs and are employed e.g. for constructing rural roads or as silo slabs. Their great deadweight of 277 kg means that these slabs can be highly loaded yet remain secure. The farmer slab is a variable system that can be easily removed at a later date if necessary.

Cutting-edge concrete production as the basis for high-class end products

Hagemeyer has built a complete new concrete block production facility, including state-of-the-art technology for core and facing concrete, at its site in Moormerland-Neermoor. Aggregates are transported directly from a feed hopper at ground level by means of a double conveyor belt made by VHV Anlagenbau into the silo level and discharged into the appropriate silos there. The aggregate dosing system also comes from VHV Anlagentechnik. These system components were carried over from the old production line.

Once dosed, the aggregates travel via a conveyor belt to one of the two bucket elevators, which in turn fill the facing or core concrete mixers. The mixing tower including bucket elevators was supplied by Wiggert, as was the new core concrete mixer as well. A new Eirich mixer produces the facing concrete.

A Granumat 4.0 pigment dosage system from Huntsman, stemming from the old production line, ensures precise colour dosage. A Kübat concrete transport system with a double bucket conveyor transports the concrete to the block-making machine.

Zenith 1500 single pallet concrete block machine

Zenith supplied and installed a comprehensive package of products at Hagemeyer in Moormerland-Neermoor.

Zenith 1500 single pallet concrete block machine

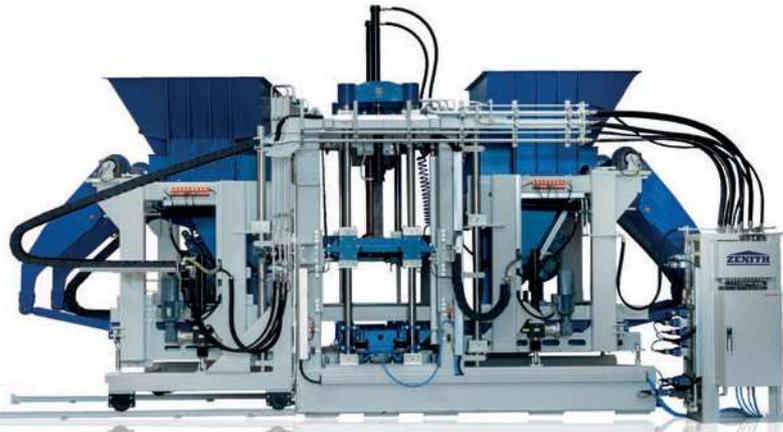
The new Zenith 1500 Single Pallet Machine, already in operation in numerous countries, opens up a wide range of production options. It can manufacture both niche articles and products for garden and landscape construction, such as paving blocks, kerbstones and masonry blocks.



The Zenith 1500 is directly visible from the control stand



The Zenith 1500 with servo-vibration and automated mould-changing system manufactures a very great variety of products at Hagemeyer



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The concrete block machine has been equipped with UltraDynamic, a newly developed vibration technique, whose vibration force can be regulated electronically

Its design engineers were particularly concerned with ensuring low-maintenance, trouble-free production processes. The consistent use of bolted connections allows all wear parts to be exchanged easily in a short time. The bolted design of the vibration table, motor crossbeam and frame side parts enables the machine to be tailored to a customer's actual production conditions.

The concrete block machine has been equipped with UltraDynamic, a newly developed vibration technique, whose vibration force can be regulated electronically. Carbide tipped Contex wear liners ensure operations are carried on with the minimum of wear.

The Zenith 1500 with servo-vibration and automated mould-changing system at Hagemeyer manufactures a very great variety of products on Duroboard production pallets measuring 1,400 x 1,100 x 50 mm from Assyx. They are thus approximately double the size of the production boards from the old production machine. Assyx production pallets feature glued laminated timber cores completely enveloped in polyurethane. The glued laminated timber core is dimensionally stable, very resistant to bending but nonetheless light. The enveloping jacket is airtight and watertight, as well as very resistant to impacts and abrasion whilst coping with both weather and temperature conditions well.

The concrete block machine is housed in a sound insulating enclosure made by Rotho. The Zenith 1500 is directly visible from the control stand; all production stages on the wet and dry sides can be followed and managed via a visualisation screen.

Filler box for core concrete and facing concrete

The concrete is transferred to the Colormix bucket conveyor from the Kübat double conveyor, whereby facing concrete is always transported in the front bucket and core concrete in the rear bucket. The concrete block machine is then loaded from this Colormix system.



The special Colormix system consists of one bucket for core concrete and three buckets secured in a frame for facing concrete of differing colour mixes

Special version of the Colormix system

The special Colormix system consists of one bucket for the core concrete and three buckets for facing concrete of differing colour mixes. All buckets can travel on tracks above the silos. The three facing concrete buckets are each equipped with three gates for dosing colour mixes. The slide gates can be opened individually or together. Each bucket has been additionally fitted out with three load cells, so that it is possible to determine a bucket's filling level and output of facing concrete at any time. The most varied effects can be attained in mixing colours thanks to individual configuration options. All settings can be saved in a recipe and be retrieved at any time.

Transport to the drying chamber

Production pallets bearing their fresh products are transported by the mobile elevator to the elevating frame. Their speed is controlled electronically via screen visualisation in the control room. The products are then brought from the elevating frame into the drying chamber with the aid of a finger car unit.



Fresh products on the wet side



The drying chamber and rack system were supplied by Rotho

Side-shift system

A side-shift station is located immediately behind the concrete block machine. This feature can shift reject products and any remaining residual concrete, should the machine run empty, sideways from the system using a pushing device.

Block brush

A block brush is employed to clean block surfaces. This brush unit has a spiral shape with nylon wires and direct-drive, helical geared motor. The block brush can also be adjusted infinitely variably in height by means of a manually operated spindle.

Drying chamber with 16 levels

The drying chamber and rack system plus the air circulation system were also supplied by Rotho. Theoretically, up to 5,184 production pallets can be stored in its 18 chambers each with 16 levels and each level deep enough for 18 pallets. The curing system has been designed and insulated, including the transfer table area, as a large-scale climatic chamber. The heat and moisture out of the blocks from the hydration process are exploited and the Rotho air circulation system creates a uniform climate. The air circulation system is set up modularly.

Double-deck elevating platform

The Zenith elevating platform runs fully automatically and is synchronised at all levels for paving block products and at every second level for high products. Double decking is possible on 16 levels so that up to 32 production pallets can be inserted and then transferred to the finger car unit.

Finger car turntable and support arm adjustment

The fully automated Zenith finger car unit for transporting fresh products from the elevating platform into the rack and hardened products from the rack to the lowering platforms is made up of one upper and one lower carriage. Its support



The fully automated Zenith finger car unit transports products from the elevating platform into the rack and from the rack to the lowering platforms



Theoretically, up to 5,184 production pallets can be stored in 18 chambers each with 16 levels and each level deep enough for 18 pallets



The second lowering platform functions as an intermediate storage point or else as a bypass for inserting and mixing products from various concrete batches



The block removal device and the block doubling device work with electricity and are equipped with 4-sided servo-motor driven grabs



The automated turner makes it possible to utilise both sides of the pallets that have previously been vacuumed and cleaned



Depending on need, the pallet bundling finger car unit brings the production pallets to an intermediate storage rack or to the concrete block machine on the wet side

arm adjustment allows pallets to be utilised very well. In a similar way to the elevating platform, only every second level is filled if the products are high.

Two double-deck lowering platforms

There are two Zenith lowering platforms on the dry side. One lowering platform works fully automatically with the same product-related occupancy of each level as with the elevating platform. The second lowering platform functions as an intermediate storage point or else as a bypass for inserting and mixing products from various concrete batches.

Fully automated, electric packaging system

The production pallets with their loads are removed from the lowering platforms using electrically driven roller conveyors. The production pallets with their products are then transferred to the mobile elevator and synchronised individually.



Finished block packages before being removed to outside storage

Block removal device and block doubling device

The block removal device and the block doubling device also work with electricity. They are equipped with the same four sided servo-motor driven grabs that are in use in the packaging machine.

A spindle with mechanical synchronisation channels power to the grab. The block removal device pushes the products together and removes them at the same time from a production pallet. The block doubling device in the next station downstream takes a complete layer of blocks from a production pallet and places them down on the block layer of the following production pallet in the next machine cycle.

Production pallet turner

The automated turner makes it possible to utilise both sides of the pallets that have previously been vacuumed and cleaned. The relevant extraction unit was also supplied by Zenith. The pallet turner has been integrated into the mobile elevator on the dry side. Production pallet infeed and discharge are carried out using the carrier arms of the mobile elevator.

Transport pallet stacker

The wooden transport pallets, on which block packages are stacked, are accessed and inserted individually. Every individual transport pallet is centred and pushed under the packaging grab. An intermediate storage track for pallets fed from outside ensures that there are sufficient reserves of such transport pallets.

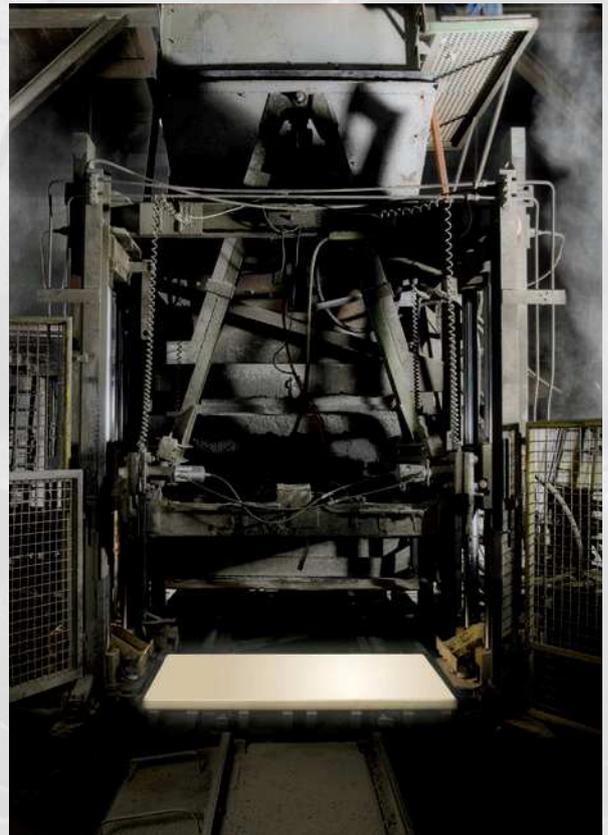
Products to be finished later by a Lammer ageing drum in the outside area are not stacked on pallets. Stacks solely composed of concrete blocks are formed with these products which are then wholly seized and removed with the grab of the forklift operating in the outside area.

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Finger car unit for bundling production pallets

Production pallets are automatically stacked at the end of the mobile elevator. As soon as a stack of 28 production pallets has been created, this pallet stack is transported via a chain conveyor with intermediate storage to the transfer point for the pallet bundling finger car unit. Depending on need, this brings the stack to an intermediate storage rack or to the concrete block machine on the wet side.

Intermediate storage rack for production pallets with stacking and destacking units

The production pallet storage rack was also supplied by Rotho and possesses a capacity for 2,700 production pallets. To compensate for cycle time differences or waiting times between the wet and dry sides, production pallets can be removed from the rack and brought to the destacking unit in front of the machine or else fed from the stacking unit into the rack.

Packaging System

A horizontal strapping unit for individual layers of blocks has been installed on the dry side. One other horizontal unit plus a vertical strapping unit for block packages, in the form of a mobile grate-belt conveyor, have been set up above the block packaging line. The fully automated foil applicator upstream positions foil on the packages. Cyklop supplied the packaging systems.

Fit for the future

With the new concrete block production facility, the Hage-meier family business has taken a major step towards equipping the company to face future challenges. Growth is the objective they are pursuing - but not at the expense of the accustomed Hage-meier quality. The new concrete block machine brings this goal closer. Output has indeed been increased substantially whilst, at the same time, the company's high standards of quality for concrete products have been fully met. ■



The firm's own trucking company, which has belonged to Hage-meier since last year, ensures that products can be supplied without hitch to their customers



Watch a video of the new concrete block line at Hagemeyer. Simply scan in the QR code with your Smartphone; the video will appear directly.

FURTHER INFORMATION



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