Jakob Stockschläder GmbH & Co.KG, 56299 Ochtendung, Germany

Jasto renews plant equipment for concrete block production

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Jasto produces an extensive range of lightweight concrete masonry blocks, chimney systems and concrete products. The company put a new production plant for concrete products into operation in June 2017. The blocks for the garden and landscape construction segment are now manufactured using modern technology from Masa and Eirich. Product changes can be carried out much quicker than before.

Jakob Stockschläder GmbH & Co. KG, or Jasto for short, is one of the traditional companies from the German pumice stone industry. Based at the source of the volcanic raw material in the Neuwied Basin, lightweight concrete blocks with pumice as the aggregate have been produced in Ochtendung since 1949. The company is managed today by Ralf Stockschläder, who took over the family-owned company in the late 1990s from his father Jakob, the company founder. Jasto initially concentrated on products for wall construction, later adding chimney systems. Jasto divided the products into the construction world and chimney world segments.

This alignment expanded noticeably in 2003, when Ralf Stockschläder supplemented the existing Jasto product groups by the garden world, which dedicated itself from then on to the manufacture of concrete blocks for the garden and landscape construction segment. Shortly afterwards, Jasto expanded the in-house equipment by the first paving stone aging system (pan mill system) and a fully automatic paving stone shotblasting system. This allowed the concrete paving stone products from the garden world to be finished to order. The introduction of the garden world proved to be the right decision for Jasto, because demand for the company's garden and landscape construction products has continually risen since the extension of the product range. This provided Jasto's customers with the advantage of being able to procure all products for the shell construction and structuring of the exterior layout around the house from a single source.

In recent years the factory site in Ochtendung has witnessed an extensive renewal of the production plants. In the period from 2013 to 2014, Jasto built one of the most modern block

The new Masa XL 9.1.

The main components of the XL 9.1: The compaction unit is located between the two filling units for core and facing concrete.

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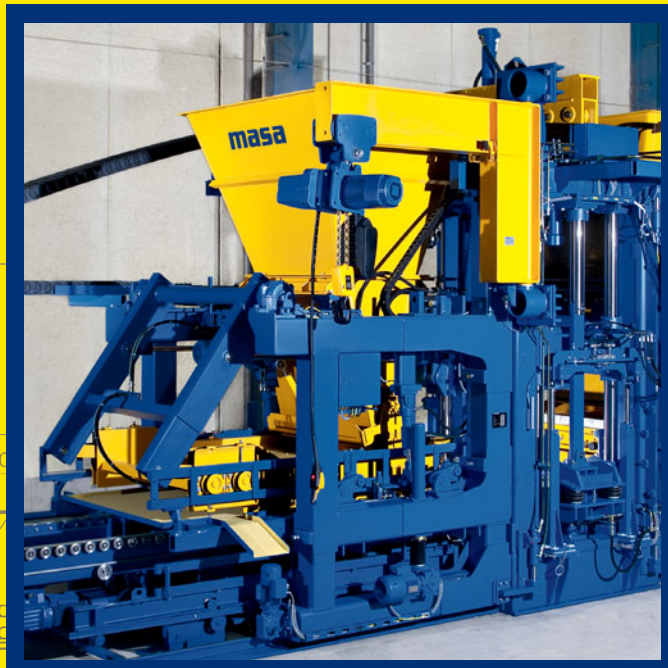

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The concrete is discharged from the block making machine's storage silo into the core concrete feed box.

The concrete blocks can be brushed off if necessary after leaving the block making machine.

making plants for masonry and chimney blocks in Germany. Even then the heart of the plant was a block making machine from the well-respected machine manufacturer Masa. Jasto succeeded in almost doubling the production capacity in this area with the new building and the extension of the drying chambers in 2016.

Encouraged by the success of the investments, Ralf Stockschläger also decided to comprehensively renew the garden and landscaping construction production. It was not least the high demand for Jasto products that made this step appear expedient. However, an increase in capacity was not the only goal that Jasto attached to the building measure. It was equally important to the company to install a more economical production system and to guarantee optimum quality of the concrete products with the most modern technologies available.

The work began in November 2016 with the dismantling of the old plant. The company invested a great deal of energy in advance into bridging the construction period, filling up stocks as far as possible. During the reconstruction, part of the production was additionally relocated to the masonry block plant.

Following a running-in time of about four weeks, the new block making plant began with regular production in three-shift operation in June 2017. The work was completed with the enclosure of the complete garden and landscaping plant, including silo area. This ensures that all work steps in the production process are protected against the direct influences of the weather.

New technologies for concrete block production

At the centre of the new plant stands a Masa block making machine version XL 9.1, like the one already acquired for the masonry block production. However, the current model includes several new technologies that the manufacturer has only integrated since the bauma 2016. The machine procures the concrete from two Eirich mixers for core and facing concrete. Moreover, the production line encompasses silo and

The complete manufacturing process is controlled and monitored by software from Bikotronic.

Following the period in the drying chamber, the blocks are brushed off once again and are then ready to be palletised.

dosing plants, which Jasto has developed in cooperation with a renowned plant manufacturer. The dye dosing system was converted to mineral-based granulated dyes. This allows the reliable reproduction of the currently much-in-demand nuanced mixed dyes.

Jasto uses the Eirich D23 mixer with a capacity of 3000 litres for the core concrete and the type RV16 with 900 litres for the facing concrete. The D23 mixer, which was premiered at the bauma 2016, features a rotating mixing star and a high-performance pin-type agitator for particularly good homogeneity of the concrete mixture and short mixing times. This technology is generally only used for those facing concretes whose production is more demanding. The fact that Jasto also uses this technology for core concrete is a peculiarity. Many other companies use simpler mixing systems instead, such as pan mixers, trough mixers or planetary mixers. Jasto has chosen to go its own way here to ensure the best possible quality of the core concrete.

The Eirich mixers are designed for a rapid, trouble-free work process. They feature a moisture measuring system with base probe, automatic central lubrication and regular recording of the state of drives and bearings. The special technology, which is based among other things on the rotary mixing vessel, also allows the homogeneous manufacture of smaller batches.

The pavers are stored on wooden pallets and provided with a protective film.

After the mixing of the core and facing concrete, the Masa block making machine takes over. The main components of the XL 9.1 are the filling units for core and facing concrete, each with a feed box, and the compaction unit placed in between. The concrete is discharged evenly from the block making machine's storage silo into the core concrete feed box. The feed box drives into the compaction unit and pours the core concrete into the stone mould. The actual process of

Interlocking paving is one of Jasto's most important concrete block products.

With different colour variants, the Jasto quarry stone wall can resemble the look of various types of natural stone.

moulding the blocks then takes place in the compaction unit. The second unit, which consists of the facing concrete silo and feed box, brings the facing concrete to the pre-compacted core. Subsequently, both components are compacted through a combination of vibration, which is generated by vibrating motors and induced via a vibrating table, and a tamper head from above. The built-in innovative amplitude measurement allows the homogeneity of this compaction process to be checked on the spot.

Masa presented this innovative compaction technology at the bauma 2016 and it is being used for the first time at Jasto. It is known as "amplitude-controlled vibration". It performs a vibration analysis at all four corners of the steel plate on which the block mould is placed. Apart from the compaction due to pressure from above onto the fresh concrete in the block moulds, the main compaction takes place by means of the vibration of this steel plate. The more evenly the compaction energy is distributed over the entire area, the more even the quality of the concrete products will also be, for example the pavers that are produced on this plate. The measurement and calibration of the vibration procedure at all four corners of the plate allows fine tuning of the compaction process.

Like the mixers, the production machine from Masa features technology that enables fast product changes. An automatic work process simplifies and accelerates the exchange of moulds.

Some components of the existing concrete block production, such as the conveyor belts and the palletiser, were integrated into the new plant. The machines for the downstream finishing of the products will also continue to be used in their present form.

Digital control from the silo to the palletiser

A central control software controls and monitors the production process. The software for the dosing and mixing comes from Bikotronic and was specially designed for the manufacture of concrete products on such plants. Conversely, the software for the control of the actual block-making machine and the connected components comes from Masa. All steps, from the dosing of the raw materials and the manufacture of the mixtures for the core and facing concretes through to the moulding and compaction of the blocks in the Masa block making machine and the palletising on the dry side, are controlled and monitored centrally from a control room. Since the two software packages are linked, the entire process can be co-ordinated centrally from a single control room. This control room is glazed to a large extent and allows an unhampered view inside the machine booth and over the dry side of the plant. Video cameras for evaluating the block surface are to be installed in a later work step. The switchboxes and the entire electronics are neatly bundled inside a container, which is also from Masa and is known as the Powertainer.

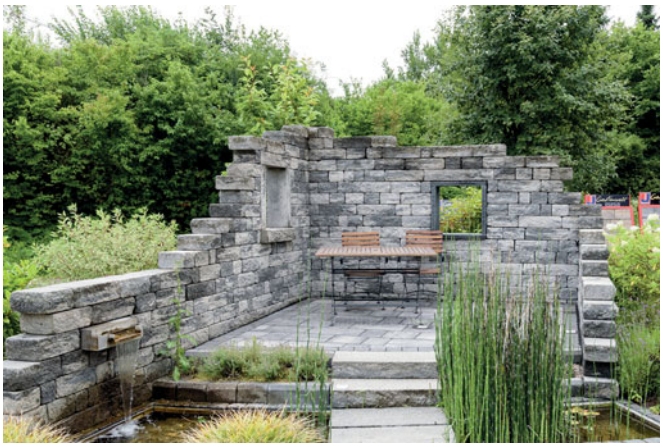
Quality assurance by man and machine

The parameters for the individual production steps are logged continuously and can therefore always be retraced later on. Moreover, the gross density of the concrete is checked at regular intervals and adjusted to the target value if necessary. At the end of the day, however, it is always people who have the last word: once the blocks have passed through the dry side, the final inspection is performed by the Jasto employees. Only after that are the blocks taken to the palletiser and placed in the storage yard for delivery.

Apart from this continuous local quality assurance, the properties of the finished concrete blocks are also subject to regular in-house and external monitoring on the basis of the applicable standards and rules. This monitoring is carried out by the Neuwied Material Testing and Research Institute (MPVA).

Concrete products from the garden world

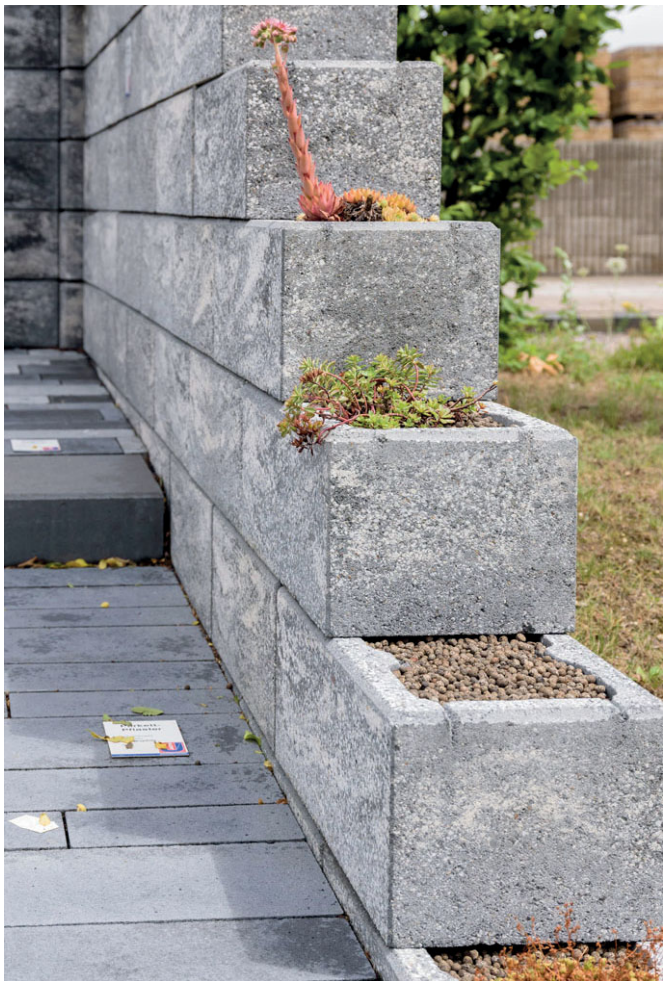
Jasto manufactures a whole series of concrete products for garden and landscape construction on the new plant. In addition to pavers and slabs for paths, these include blocks for garden walls, embankment stones and further supplementary products. The various pavers play the largest role at Jasto.



Many examples of the uses of the garden and landscape construction products can be found in the Jasto show park.

The Trendline wall combines the static versatility of a formwork block with an appealing look.

Among the most important pavers is the interlocking paver. This much-in-demand paver is characterised by lateral spacing cams. In the installed condition these cams interlock and prevent the paving elements moving with respect to one another. This interlocking function gives the paving its name. At the same time the cams act as integrated spacers for a 3 mm compulsory joint all round. In practice this is an important step towards simple, rule-compliant installation.
In addition to the rather functionally related pavers, products for a sophisticated garden ambience also run on the new plant. The different quarry stone walls bear a remarkable resemblance to natural stone walls. They can be used for a wide variety of purposes on account of their appealing look. This look largely resembles the natural model. On account of their size raster, however, such quarry stones can be installed more quickly and effectively. They are resistant to frost and efflorescence, which is not always the case with expensive natural stone.
However, quarry stone walls are just one example of high quality "decorative walls" in garden and landscape construction. In the formwork block segment, too, there is a current



Trendline wall with coloured core concrete, here in the colour variant "nuanced anthracite-white".

product line from Jasto that meets high requirements: the Trendline wall.
Trendline is a garden wall for houses in a modern building style with plain, straight structures. Face-milled blocks with a very low height tolerance of ± 1 mm are used for the wall. The Trendline blocks considerably simplify bricklaying: Height differences, such as those common with the conventional manufacturing tolerances of such garden walls, no longer need to be carefully compensated.

Successful cooperation

With the new block making plant and the upstream mixers, Jasto is able to supply its customers with products with a very high and homogeneous compaction as well as high dimensional accuracy. This extraordinary quality is combined with great flexibility. Through the extensive automation of the concrete and mould changes, products can also be produced profitably in smaller batches.
However, the advantages of the new block making plant extend even further. With a significantly lowered energy consumption, it contributes to improved energy efficiency of the entire production. The saving of energy in comparison with the old plant is 34% for 1 cubic meter of blocks (pavers). Jasto's managing director Ralf Stockschläder regards that not only as an economic benefit, but also a contribution to the environmental protection, just like the fact that Jasto procures its entire power requirement from a supplier that works 100% with renewable energies.
With a volume of around 2.5 million euros, the project is the largest single investment in the company's history so far. It is for the time being the highlight of a long-standing cooperation between Jasto and Masa. The two companies are practically neighbours. The Jasto plant in Ochtendung and the Masa site in Andernach are only a few kilometres apart. Both companies are important economic factors and employers in the rather thinly populated Volcanic Eifel region. ■

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