

■ Masa AG, 56626 Andernach, Germany

Supply of a complete block production plant to Minsk, Belarus

The company UDMS, Minsk (Belarus), a state-run manufacturer of concrete products, decided on comprehensive modernisation of the existing block production plants. For the Directors of UDMS – Mr. Metelitsa and Mr. Odericho – it was clear that this area of the company should be

replaced by state-of-the-art production technology according to the most modern standards. This was to be carried out while retaining the existing conditions. The order for this demanding project was placed with the company Masa AG.

Masa AG supplied a complete turnkey plant, consisting of a complex silo installation, a mixing installation with two horizontal mixing mills, a double bucket conveyor, the block production machine and also the complete handling for the finished products on the dry side.

In addition, all the block manufacturing moulds as well as the necessary wooden base planks were included in the scope of the delivery.

After the complete plant was able to be installed at the end 2005, it successfully started production towards the end of the winter at the start of 2006. The majority of the production consists of paving blocks of all kinds in different colours and other kerbstones and garden products.

Mixing and dosing plant

The fully-automatic material feed system of the dosing system is implemented by means of a feed silo, a bucket conveyor and various conveyor and distribution belts. In the dosing system, aggregates from a total of 6 material silos with a total capacity of 480 m³ are dosed.

The different grades of sand are weighed from the material silos and a charging scale (4,000 kg or 2,800 l) and are then filled into the mixer elevators. Further components such as cement and other aggregates are fed directly to the mixer.

In order to ensure that the high-performance block manufacturing machine is constantly supplied with green concrete, careful planning of the mixer capacity and performance of the mixer was of vital importance. In addition, it was necessary



The aggregates are weighed and filled into the mixer elevators from the charging scale

to ensure that Colormix products could be produced.

Therefore, two Masa horizontal power mixers of Type HPM 1500/2250 and HPM 500/750 were selected for the manufacture of core and fair-faced concrete.

Masa concrete mixers mix excellent qualities of concrete with short mixing times and have only a low energy requirement. Through the forced mixing using the counterflow principle with optimum agitator movement in several planes, particularly even mixing is achieved. Water dosing is completely automatic.

The dosing and mixing plant is controlled with a control unit developed by Masa on

the basis of the Siemens S7. User-friendly operation is computer controlled via a Windows interface and a touch screen monitor. A virtually unlimited number of mixture recipes can be developed and stored.

When the concrete has been fully mixed, it is taken up by the bucket conveyor and transported to the block production machine. Corresponding to the circumstances in the factory, the bucket conveyor leading to the block production machine runs past the new shelving system.

The two buckets, each with a capacity of 3000 l can supply either the core concrete silo or the 3 fair-faced concrete silos (Multicolor) of the block forming machine. Integration of this concrete transportation

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- Concrete blocks
- Concrete slabs
- Aerated concrete blocks
- Sand lime bricks

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We are well experienced in this area as are our customers. And this is the solid foundation from which we will address the requirements of the future.

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Two Masa horizontal power mixers take over the production of core and fair-faced concrete, which is then transported to the block production machine by means of a bucket conveyor.



The Record 9001 VB block-making machine is completely insulated for reasons of noise protection.

equipment into the existing location presented a particular challenge for the project planning team at Masa AG.

The block production machine

For the Deputy Director, Alexandr Odericho, it was particularly important to receive a machine which is able to achieve the very highest product quality combined with consistently high daily production volumes. Paving slabs and blocks, kerbstones and also all other gardening and landscaping products had to be produced to a consistently high quality.

For these reasons, UDMS decided in favour of the Masa block-making machine Record 9001 VB with a pallet size of 1400 mm x 1100 mm. UDMS uses wooden pallets of 45 mm thickness.

The Record 9001 VB is a stationary, fully-automatic universal block-making machine for mass production of concrete blocks of low and high-density concrete and is one of the top models from the Masa AG stone-making machine range.

A particular feature of the Record 9001 VB is its heavy and robust construction. The patented vibration unit with amplitude regulation means that the strength and frequency of the vibration units can be adjusted continuously and independently

of one another. In this way, all types of cement-bound moulded bricks of low- and high-density concrete, such as hollow blocks, solid blocks, edge paving, paving stones etc. can be manufactured in heights of 40 – 500 mm.

The colour mixtures can be optimally controlled because of the 3 upstream silos, leading to superb appearance and reproducible colour distribution in the finished product, where the colours can be controlled and positioned exactly.

The Colormix range can be manufactured so as to be ready for laying, as the colour distribution is given on each production board.

The machine functions are carried out by means of highly-dynamic, maintenance-free proportional valves with integrated electronics. Machine control is carried out on a decentralised basis by means of Profibus.

The PC-controlled process visualisation enables a very good overview of the machine and plant functions, which can be displayed on the PC screen at a central control console.

The complete block-making machine was encapsulated in an insulated soundproof cabin, which was also supplied by Masa AG.

Product handling

The concrete blocks produced by the plant are transported to the lifting rack by means of free lift conveyor. In addition to an automatic device for pushing off the blocks, a concrete washing-out station is also integrated into the transport line. Here, the stones can be washed out with two oscillating high-performance nozzle rails. Superb washing results are achieved.

The concrete blocks are stored in the shelving units for hardening by means of a fully-automatic moving platform, which is rotatable.

The shelving units from H&S were supplied as a closed system with recirculating air equipment, achieving optimum drying with minimum expenditure of energy. Masa AG was also responsible for supply and erection of the complete housing for the shelving units on site.

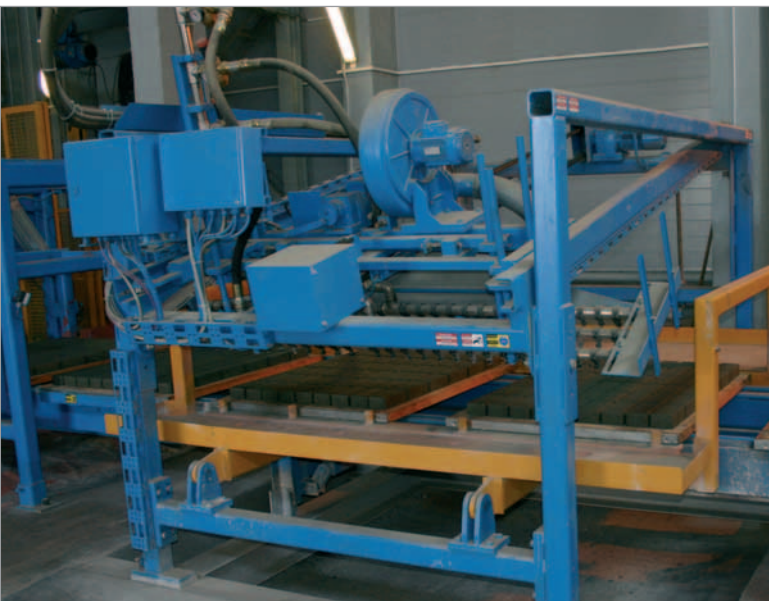
After the drying process the blocks are taken out of the shelving to the dry side. For this purpose, the moving platform transports the dried blocks to a descending rack.

Behind the descending rack, the layers of blocks are transported back to the packet assembling area, where the blocks are automatically made into packets.



Curing / drying chambers

Safe in storage, rugged in use, flexible design



The stones can be washed out with oscillating high-performance nozzles on the online washing equipment

This return transport is implemented in the form of a finger feed, with reversible catches. The feed is driven by means of a twin-action lifting cylinder. The equipment includes an automatic centering device, in which the stones are centred on the board from four sides.

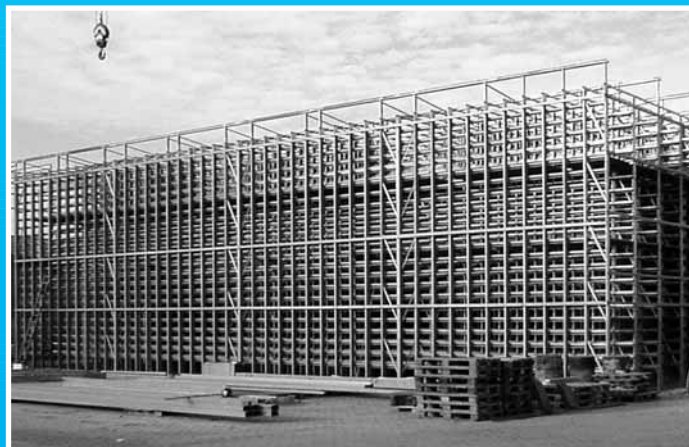
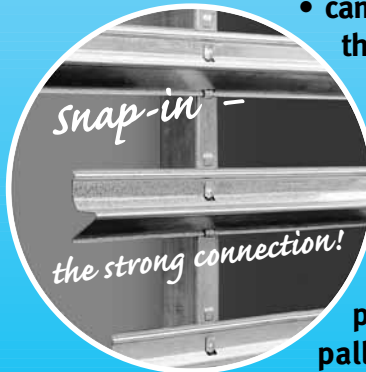


The H&S shelving units were supplied in the form of a closed system with recirculating air equipment



Here are the facts – the HS modular system

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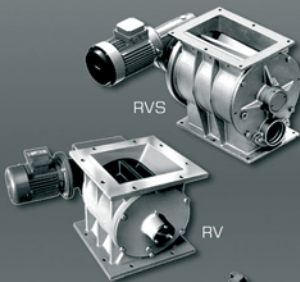


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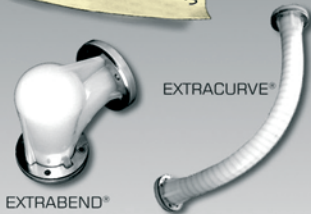
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The finished block packets are taken to the storage area outside by fork lift trucks

The basic structure of the packet assembling equipment consists of a portal frame of robust profile steel. The distortion free mechanism is driven by a toothed rack and a frequency-controlled special gear motor. The rise and lower movement is carried out by twin-action lifting cylinder. The grab and cramp equipment, which can be rotated by 360° is in the form of a hydraulically-driven four-sided cramping device.

Following the packet assembly, the packets can be taped round horizontally and vertically and wound with film. The packeted products are then transported outside by means of a plate conveyor. Fork lift trucks then take the packets and transport them to the storage area.

Conclusion

The plant supplied to UDMS was designed and built taking into consideration the very latest technical features and the requirements placed on a concrete factory. The plant can be operated efficiently with a total of four operators per shift, who are responsible for operating the machine itself, quality control and removal of the products.

The quality produced with the new block-making plant is clearly improved, while

the volumes produced have increased many times over. This means that UDMS today has one of the most efficient block-making plants in the region of Minsk in Belarus.

Further information:



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