

Masa GmbH, 56626 Andernach, Germany

# Kost-Bet puts additional concrete block making machine into operation

In summer 2009, Masa AG received an order from the Kost-Bet company to deliver a complete block making machine to Alexandria (Konopiska) in Poland. This plant is already Kost-Bet's second Masa plant. The company, which was established in 1998, has developed within the last few years into one of the largest suppliers of decorative paving and garden construction products in the south of Poland. In the course of a further expansion, the company intends to gain further market shares in future. The main products are paving stones of all kinds in different colours, multicolour stones, brims and kerbstones and other garden construction products, all of which meet very high quality requirements.

Due to positive experiences with Masa AG with the first block making machine, it was an easy decision for Kost-Bet to purchase another Masa plant of the type XL 9.1. Kost-Bet was convinced by the high machine quality and Masa's good service, as well as the high availability of the plant.

The mode of function of this modern concrete block making machine is briefly described below.

## Mixing and dosing plant

The material is supplied to the dosing plant from a total of 5 delivery silos. The various raw materials are weighed and afterwards

filled directly into the mixer elevators. Further components such as cement and other additives are fed to the mixer via screw conveyors.

The quadruple dye dosing unit doses the liquid dye into the mixer according to the recipe. Special scales are used for weighing liquid additives. Both the dyes and the additives as well as the corresponding dosing equipment were supplied entirely by the Remei company.

The Masa PH 1500/2250 and S 350/500 high performance mixers produce high concrete quality for all quality classes with short mixing times. A particularly homogeneous mixing effect is achieved by compulsory mixing using the countercurrent principle with mixing tool movement at several levels. These practically proven plants excel because of their energy efficiency and low maintenance requirements. Water dosing is completely automatic. A virtually unlimited number of mixture recipes can be developed and stored. After mixing, the concrete is transported by a bucket track system to the concrete silos of the block making machine.

## Block making machine

As in 2006 this new works had to fulfil the following conditions:

- The manufactured products meet the high quality requirements
- Paving stones can be produced in various forms and colours.
- All products for garden and landscaping, especially paving and kerbstones can be produced.

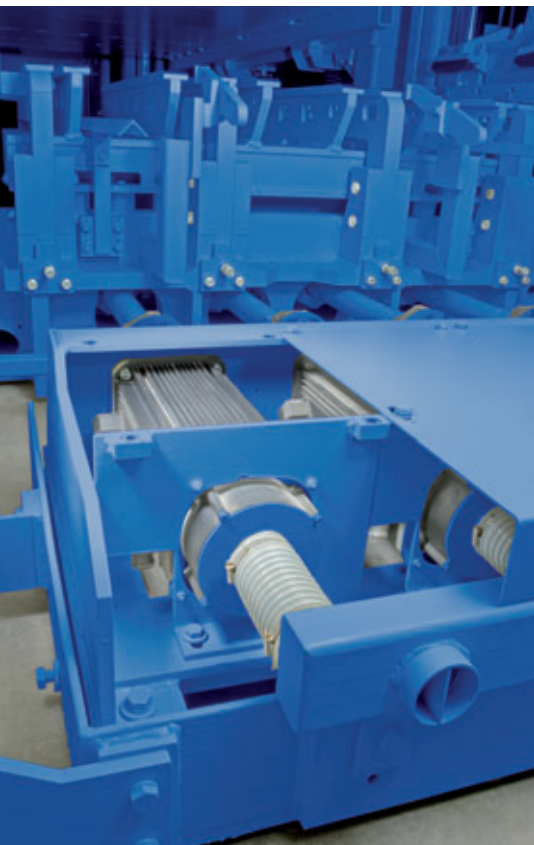
As with the first block making machine, the Masa XL 9.1 S block-making machine (S = fast version) was selected with a board size of 1400 mm x 1100 mm. Kost-Bet decided to produce on steel underlay boards with a thickness of 14 mm.

The type XL 9.1 block making machine is a stationary, fully automatic universal block making machine for the mass production of concrete blocks from lightweight and heavy concrete and is the top model in Masa AG's range of block making machines. The machine is comprised of a three-part machine frame: the central part with vibrating table, and the core concrete and facing concrete filling stations. These filling sections can be opened separately, so that the machine is much more accessible for cleaning and maintenance.

## Technical characteristics of the XL 9.1:

- Machine is of a particularly heavy, stable design (Total weight over 40 t)
- Extra-long guide bearing on the tamper and mould.
- Fully automatic mould change (< 10 minutes) including automatic vertical adjustment of core and facing filling sections
- Manufacturing of building blocks, retaining wall elements and dry wall stones with precise heights.
- 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.
- S-package (fast): higher pump output, additional hydraulic accumulator, V-belt conveyor with integrated lowering device, laser measurement of core and facing concrete level

Instead of the usual stepless rpm control of the vibration table the machine is fitted with a amplitude controlled vibration system (Servo-Vibration), which allows for stepless matching of the actual compression forces to the needs specified by the product. Different forces can be generated in the case of pre, intermediate and main vibrati-



Servo-vibration

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Servo packet assembler

on, an amplitude change can even be made during production. The rugged and simple design of the vibration system guarantees their long lifetime.

The inevitable noise emissions in the vicinity of the block making machine are reduced by the hydrauliner concept. For this purpose, the machine hydraulics are integrated into a specially adapted 40' sea container. Depending on other measures, a considerable reduction in noise emissions can be achieved here. Masa AG is catering to the ever increasing trend towards noise reducing measures with this series standard concept.

### Product handling

The concrete blocks produced by the machine are transported to the lifting rack by means of a lowering device and a lift and carry conveyor. The concrete blocks are placed into the shelving installation for curing by a fully automatic transfer table (22 levels, level spacing: 320 mm) in a rotatable version. The shelving installation was realised on-site in the form of a closed system with recirculating air equipment. This ensures optimised drying with a minimum expenditure of energy.

After the drying process the blocks are taken out of the shelving to the dry side. For this purpose, the transfer table transports the dried blocks to a descending rack. From here, the layers of blocks are transported back to the packaging system, where the blocks are automatically assembled into packets. Return transport is by a lift and carry conveyor. The drive is in each case provided by a geared servo-motor.

The basic structure of the packaging device consists of a portal frame of robust profile steel. The warp-resistant chassis as well as the lifting and lowering movement are each driven by toothed belts and geared servo-motors. The 360° rotatable gripping and clamping device takes the form of an electrically driven four-sided clamp (servo-clamp).

After packaging, the packets are strapped horizontally and vertically. The packaged products are transported by a slat conveyor to the outdoor area. They are then taken by fork-lift truck to the storage yard. Masa AG has very recently changed its plants in particular from hydraulic to servo-drive technology. The plants are thus more environmentally friendly than conventional hydraulic plants, since the use of hydraulic oils and the associated environmental impacts can



Cable routing via cable trays

be dispensed with for the most part. In an international comparison, Masa AG is placing a considerably higher emphasis on environmental friendliness with this solution than other manufacturers of block making machines.

### Control and operation

The plant is controlled by a controller developed by Masa on the basis of the S7, with PC and touch-screen monitor. As is usual for Masa, the control cabinets of all controllers are pre-installed in a 'powertainer', a specially adapted 40" sea container. This is advantageous in that the installation of the plant is accelerated and the control cabinets are housed protectively in a climatized room.

Profibus systems network the decentralised S7 plant controller. Functions can be selected and data input directly using the colour display touch screen. The visualisation software supplied has simple graphical function displays, a user guide and unlimited recipe management. The built-in statistics program records all operating data, which can be transferred to external PCs.

Kost-Bet is the first Polish company to benefit from yet another innovative concept from Masa AG. Instead of the otherwise usual cable conduits that have to be installed by the customer in the foundation slab, in which the electrical power cables are then laid, Masa installed cable trays with this plant. The laying of the cables thus no longer causes any extra expenditure for Kost-Bet. Besides that, the cables are much easier to access and to exchange if necessary.

### Conclusions

Kost-Bet will in future continue successfully along the road they have chosen with a versatile range of high quality products. This is guaranteed by the plants supplied by Masa, which are designed and built taking into account the latest technical aspects and demands placed on a concrete plant. Kost-Bet thus has one of the most modern and effective block making machines in Poland at its disposal. ■

### FURTHER INFORMATION

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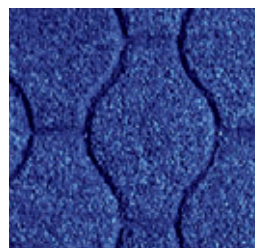
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