

Masa GmbH, 56626 Andernach, Germany

Mii Dvir is represented in Ukraine with a showcase plant

Since the beginning of the 1990s, Mii Dvir (at that time known as "Magik"), has been active in the Ukrainian market. When the company was established, it initially specialized in the production of concrete blocks. Later, the production of paving stones and other concrete products was set up, which is their main business today. On a 120,000 m² production area with three modern production lines, 11,000 m² of high-quality, yet affordable products are produced every day. The company attaches particular importance to the continuous development of production technologies and the modernization of production-supporting processes. With the recent investment in a high-performance production line delivered from the German manufacturer Masa GmbH, Mii Dvir was able to make a big leap forward.

Many milestones of the company Mii Dvir are marked by considerable determination and foresight. Starting by manually producing paving stones and other concrete products Mii Dvir found itself needing to invest in automatic production lines to increase their capacity after only a few years. In 2004 the company invested in its own railroad cargo depot near the production site to provide optimal logistics for the supply of raw materials.

Due to the undeveloped raw material market in Ukraine, Mii Dvir made the strategic decision in 2009 to build its own processing plant for materials such as gravel or sand. Three HAVER NIAGARA screening machines, two SBM stone crushers, one CDE EvoWash fine materials classification systems were installed. The materials are sieved, crushed and



Mii Dvir's modern production facility in Ukraine



The demolition work progresses

classified into different grain groups. The material is also washed to separate fine raw materials, such as clay or other contaminants. The processing plant for raw materials provides Mii Dvir with huge advantages over competitors, as it allows them to buy wider range of raw materials, out of which specific types of material can later be extracted. This is particularly important in the Ukrainian market, as the quality of the material supplied may fall below the minimum requirements. Additionally, the supply of specific grain groups is limited in the local market, so Mii Dvir has to produce the required grain groups on its own. With this investment, Mii Dvir is now able to supply itself with a wider range of materials that are of higher quality than those readily available to the rest of the market.

Since 2011 highly qualified engineers and technicians who monitor the requirements to produce concrete products with guaranteed quality are working in their own measuring laboratory.

The first stage of investment and the first project with Masa GmbH, was completed in 2014 with the installation and commissioning of the new automatic Masa dosing and mixing plant. The resulting concrete quality exceeded all expectations. Especially the Masa Mixer S 350/500 with rotating trough and stationary twister which produces high quality concrete for face mix production.

In 2019, the second investment stage was completed with the commissioning of the Masa concrete block production plant XL 9.1. Mii Dvir thus increased its total production capacity to up to 300,000 m² per month.

Challenges

Mii Dvir's biggest challenge was to prepare the site for the new Masa production line. Outdated production lines had to be replaced by new ones without affecting the existing building. After the temporary production shutdown on the 30th of

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Masa Concrete Block Making Machine XL 9.1



Freshly produced paving stones

November 2018, only one month was left to prepare the site for the installation of the Masa plant, which should start in the beginning of January 2019. The disassembly included both, two old Multilayer Machines (which at that time still accounted for 50% of the production capacity) and the previous curing chamber. For the installation of the new production line, all old machine parts and waste had to be removed residue-free. A particularly tricky task was to lower the foundation 70 cm below the existing level. All demolition work was completed by the 16th of December, after which the foundation work began. 1150 m³ of concrete was effectively poured in less than 2 weeks, with foundation work getting completed on the 26th of December.

Concrete block production with high quality standards

The plant contains the Masa block production machine XL 9.1 with face mix concrete filling unit and an amplitude-controlled vibration as a reliable and technically perfected main component. Precision is an important subject for Masa. That is why the machine is equipped with a solid frame construction with four hard-chromed guide columns (ø 120 mm) for exact parallel positioning of the mold and compaction head, a forcibly synchronized mold guidance for exact demolding of the products and an integrated height limiter function for height-accurate production. The XL 9.1 is also equipped with a fully automatic mold change, which simplifies and significantly accelerates the set-up times. Level measurement in the face mix concrete filling box is done by laser. The "Factory Automation System Tool" developed by Masa enables uniform operation and visualization of all system components.



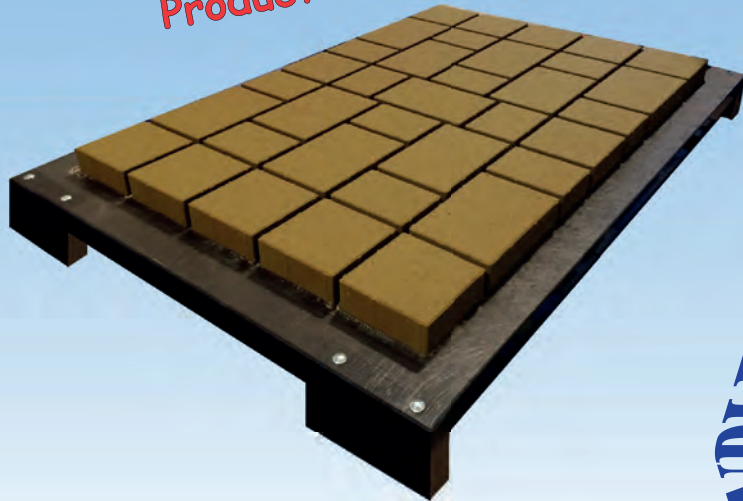
Storage and retrieval of the concrete blocks in the curing chambers

The freshly produced concrete blocks run through an integrated quality control system. By knowing various parameters, the density of the blocks can be determined. The weight of the products is measured by taking the difference between the weight of an empty pallet and the total weight of the production pallet with fresh products on it. The electronic weighing device for the empty production pallets is installed in the production pallet feed of the block making machine and determines the weight via load cells. The electronic weighing device for full production pallets is installed in the walking beam conveyor of the wet side. The non-contact height measuring system by R & W monitors the stone height via a laser giving plant personnel real time feedback of the products they are producing. The downstream visual quality assurance ensures that only high-quality products are fed into the curing process, which is supported by a tilting device for products that do not meet the required standard. In the Ukraine, Mii Dvir also plays a pioneering role with the use of a QA system and consistently pursues high-quality standards.



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The curing area is designed for a capacity of 4800 production pallets. The upstream and downstream handling components - elevator, finger car with turning device and lowerator - can easily operate the curing chambers with the selected configuration (13 t; 20 floors and 330 mm floor height) and in combination with the Masa system control software. The curing process is supported by the integrated Masa ventilation system: By creating uniform climatic conditions in the curing chamber, the curing time of the products in the chamber and the occurrence of primary efflorescence can be reduced.

After curing, the products are transported to the Cuboter via a walking beam conveyor. The completely servo-controlled, extremely robust Masa packaging system takes one single stone layer from the walking beam conveyor and creates stone cubes on the subsequent cube conveyor. For many years now, Masa has attached great importance to creating a cubing solution that is energy efficient and maintains a low operating cost, two characteristics of the Masa Cuboter. The customer benefits significantly from this well elaborated solution, which also requires little maintenance.

In order to be able to guarantee professional storage later on, a vertical strapping machine and a foil wrapping machine are used to secure the stone packs. Labels are automatically created and attached to the side to identify the cubes.

Process optimizing storage system for production pallets

The empty and cleaned production pallets are returned to the block production machine via cross transport. The removal grab with horizontal turning device, installed directly on the cross conveyor, takes into consideration the possibility of storing production pallets. The grab removes two production pallets at one time from the cross transport and transport them via the track in portal design to the storage areas or to the transfer area for external feeding/removal of the production pallets by forklift. The storage areas can accommodate a total of up to 114 production pallets and the transfer position fits up to another 12. This means that the wet and dry sides can work relatively independently of each other, which increases system efficiency and availability.

Preview: Ukrainian market for paving stones

Ukraine is one of the largest countries in Europe in terms of surface area, and a large part of the population lives near major cities and in the countryside. The increasing popularity of concrete products and an increasing demand for paving stones is currently outpacing production capacity. Mii Dvir's production runs 24 hours a day, 7 days a week, and all the products they produce are currently completely sold. Customers are mainly commercial customers and municipalities



Kerbstones on doubled production pallets

who require large quantities of products and fast delivery. Thanks to Mii Dvir's company policy, this can be achieved without compromising the quality of the products. This flexibility is one of the company's most important competitive advantage.

In recent years, the popularity of Color-Mix technology and the production of large-size paving stones have increased. Mii Dvir expects multi-color, high quality products to be in high demand in Western Ukraine and has therefore decided to make another round of investments, this time in the Masa Multi-Color System. A buffer fork carriage, a 4-sided centering and various packaging components will also soon complement the production line in the next round of plant modifications.

Conclusion

Mii Dvir recognized since the beginning of the cooperation that Masa GmbH is highly professional in project planning and providing extensive support during and after the execution of the project. The Masa team has once again demonstrated its ability to work quickly and efficiently and to understand the needs of its customers. With Masa GmbH, Mii Dvir was able to complete the challenging projects on time and starts production ahead of schedule. ■



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