

Hess Group, 57299 Burbach-Wahlbach, Germany

Siprem invests in the third factory in southern Italy

After the great success of its first two factories, the Italian company Siprem is expanding its capacity with another plant in Matera. The company is focusing on excellent quality and wants to set itself apart from the regional market in southern Italy, which has so far been fighting over customers, especially in terms of prices. For the third plant, Siprem has chosen machines and systems from Hess Group to achieve this goal. The core of the new factory is the concrete block machine RH 2000-3 MVA.

Siprem S.r.l. ("Italian Society of Prefabrication and Assembly") was founded in 1993 with a very specific purpose: to mark a turning point in the history of precast in southern Italy, bringing in the innovative technologies that were already present in central and northern Italy. This company is the fulfillment of the wishes and hopes of the founder, Rocco Molinari, who in 1974, after working for several years in Düsseldorf, Germany, opened a small company in the southern Italian province of Matera, producing concrete vineyard poles for the surrounding area with a very artisanal process. In 1981, the year of his death, his two sons, Michele and Domenico, decided to carry on the company. They expanded and diversified the production, specializing in the construction of precast elements for buildings and warehouses, and together with Foresi Prefabbricati and Michelangelo Molinari as partners they founded Siprem S.r.l..

Immediately after its establishment, the company bought and renovated an unused plant in Grottole (MT) to set up the first production line for the construction of precast concrete elements. One hundred thousand square meters of surface, twenty thousand of which are covered, have since been used there for the production and storage of pillars, bridge beams, tiles and infill panels that form reliable and innovative state-of-the-art construction systems. In a very short time, the newly born Siprem established itself in a disruptive way in a market that had been flattened by obsolete construction systems and was no longer keeping up with new technological and regulatory developments.

Inspired by the success of the first factory, Siprem decided to expand its portfolio with small and medium-sized concrete products by investing in a second plant in 2006. Since the demand for construction projects has grown significantly at this time, this opened new market segments for the company.

The second plant measures fifty thousand square meters of surface, ten thousand of which are covered, where concrete building blocks, pipes of all sizes, manholes, rainwater channels and fences are manufactured.



From left to right: Domenico Molinari (Technical Director), Michele Molinari (CEO), Michelangelo Molinari (Purchasing Manager).

A new plant in Matera: focus on quality

In the reference market, southern Italy, there were already manufacturers in the field of paving with self-locking concrete units. However, the severe economic crisis that hit the sector since the end of the 1990s strongly influenced the price competition. Also, the lack of investment since that time has greatly affected growth in the market. Ultimately, it was the quality of the products that suffered the most. Therefore, Siprem faced the challenges of counteracting this development.

While most manufacturers in these regions seek to establish themselves through ever-lower prices, Siprem instead focuses on the diversification of the highest quality products. After careful evaluation, Siprem chose machine manufacturer Hess Group as its partner to implement its plans. The German company was entrusted with the design and construction of the new plant, which is now equipped with over sixty molds to produce solid pavers, slabs, and blocks.

Following the vision of its founders to keep striving for innovation and cutting-edge systems, the company inaugurated its third plant in 2019 in the city of Matera very famous worldwide for the "SASSI" UNESCO Heritage. There, another pre-cast concrete manufacturer closed its factory and Siprem's management decided to take this plant over and re-equip it. In this way, the company invested in a strategically important

position that also covers the neighboring regions very well. The new forty-five thousand square meters of space, ten thousand of which are covered, again expanded the product range. Here the manufacturer produces sustainable solutions for the design and furnishing of outdoor areas. With the new plant, Siprem focuses on architecturally sophisticated concrete pavers, slabs and blocks that replicate natural stone in shape and color.

The core of the new plant: the RH 2000-3 MVA

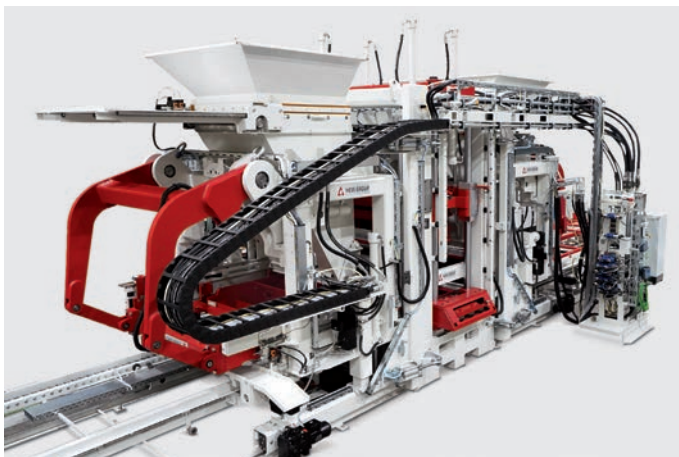
Hess Group supplies the Multimat RH 2000-3 MVA a block machine that is fully capable to fill in the requirements necessary to make high-quality landscaping products.

All production starts at the batching and mixing plant, where the aggregates, water and cement are processed and transformed into concrete. Once homogeneously mixed, a load of concrete is then transported by two separate flying buckets into the RH 2000-3 MVA machine supplied by Hess Group. The Block Machine is placed in a completely soundproofed machine cabin adjacent to the control room and cabinet room.

The high-performance hydraulics with the M-version (Multi axes control) is installed in the separate sound-proof room to reduce the noise and control the temperature. From the control room, the operators can control every aspect of the man-



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ufacturing process through touch screens and keyboards. The filler boxes are filled with concrete by an electromechanically driven silo flap, which are controlled by a laser level measurement system that ensures repeatable filling of the filler box. It is guided cleanly and with low vibration in forklift profiles using combination rollers and is equipped with a plastic/steel brush for cleaning the tamper head. The filler box is moved by a very stable double rocker arm, which is driven by two synchronized cylinders.

Siprem has chosen non-stick linings in the machine silo on both the coarse and face mix sides. The tamper head can be cleaned with a cross scraper and/or a rotating tamper head brush mounted on the filler box. If any coarse mix concrete material sticks to the tamper head, this will be removed and the facing layer will not be affected. These prevent material from sticking, ensuring that no concrete deposits can negatively affect product quality. The coarse mix silo has 2 outlets to enable dosing the concrete faster and more evenly in the filler box. The coarse mix part is movable to have better access to all machine parts for maintenance and cleaning.

For multicolored quality products, Hess Group mounted a colormix device on the face mix silo. It consists of an additional silo extension to increase the silo capacity and an electrically driven sliding plate. The face mix filler box equipped with a driven planning roller ensures that the face mix concrete will be evenly filled in the mould.

The planning roller is rotating inwards when the filler box is moving back, stuffing concrete in the cavity. The roller is not running over the mould but is 'floating' over it. The gap between the mould and the roller is big enough not to damage the roller but small enough to influence the filling process. After compaction, the product has ideal compaction, ensuring the quality for secondary processing if required.

The machine has a core pulling device and hydraulic control for molding functions. This allows more complex stone shapes to be produced, e.g. formwork blocks.

The machine operator can load a recipe from a database in which the corresponding production parameters, such as vibration times, forces and speeds, are listed for each product. These data are taken over by the machine and the conveyors. Therefore, there is the opportunity to handle sensitive products more slowly and carefully.

The freshly made products are conveyed by a belt conveyor into the elevator. Each board with products is assigned an ID in the concrete block machine, which is tracked throughout the entire production process. This means that all production parameters can be recorded in production statistics and subsequently evaluated.

Siprem is not only paying attention to the appearance of the products but the density is also checked immediately after production. The weight of the production board is taken immediately before and after the making process of the products. The height is extremely accurate taken by the linear measuring device on both sides of the tamper head. The difference in weight of the production board is product weight, combined with the product height and the product shape the density can be calculated. The product height is backed up by an additional laser height measuring system above the wet site conveyor. Products that do not meet the quality requirements can be automatically sorted out by a pneumatic dump station. Paying attention to small details enables Siprem to make high-quality products.

After quality assessment of the products, the finger car picks up a full rack from the elevator and carefully transports the fresh product to the curing chambers. The finger car from Hess Group is designed for twenty-two storeys with a load of 14 tons. The positioning of the finger car is controlled with a laser system for the upper and lower car units.

The curing chambers, arranged on 11 lanes with 22 levels, can contain up to 5000 steel plates with a total capacity of



Concrete block machine
RH 2000-3 MVA

over 3150 tons of products. An insulated structure covers the curing racks including elevator, lowerator, finger car and buffer racks. Probes and sensors ensure control of the temperature and moisture of the air inside the whole area to ensure the best conditions for the curing process. The air circulation ensures that we have a constant temperature in

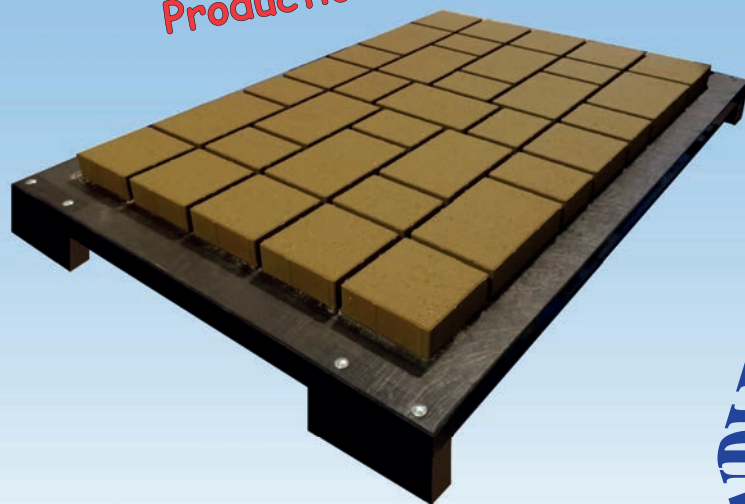
the drying chamber at a steady humidity rate in a range of 80-95%.

In order to always be able to guarantee a high production rate, the Siprem plant has a buffer rack on the wet and dry sides. This allows optimal use of the finger car and increases the overall performance of the plant.



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Packaging on the dry side at Siprem: product squeezer, doubler, and cuber



Board buffer finger car with turning device

The plant has been designed to always maintain high output. To achieve this, it is important to minimize unnecessary waiting times. This has also been considered in the packaging process. On the dry side, an electric block squeezer and a doubler have been installed before the cuber. One of the first newly designed fully electric Hess cubers with a gripper driven by linear cylinders was used at Siprem. The block squeezer and the block doubler are also driven completely electrically and are thus particularly energy-efficient compared to a hydraulic drive. The production and packaging times are therefore reduced to a minimum and the whole plant runs at an impressive speed without the quality of the products being penalized in any way.

The packaging line is entrusted to an intelligent line equipped with pallet magazine, strapping machines, wrapping machine and a labeling printer which communicate with the plant of Hess Group by exchanging production signals.

The wet line is disconnected from the dry line by using a buffer finger car with a buffer rack that can hold up to 2160 pieces, ensuring autonomy and continuity production of the wet and dry side, thus eliminating any interference.

The overall plant design is aiming to increase the production efficiency and throughput volume while improving quality standards across a wide range of innovative products.



The dry side with curing chamber in the background

To achieve this high standard, Siprem held on to its key concepts: production technologies and product innovation. New design and product solutions such, were tested many times, new high-tech production equipment was installed and "Industry 4.0" type integrated management systems were implemented by the Hess Software engineers.

Careful selection of aggregates, high-strength types of cement, additives, and pigments, enables the company to produce high-quality precast concrete products in all shapes and sizes at its new plant. The highly qualified personnel continuously tests and optimizes reliability and durability in its own laboratory to guarantee not only unique design possibilities but also the best quality. The easy-to-lay pavers, slabs and blocks offer a total of hundreds of solutions and combinations for individual outdoor spaces.

After more than twenty years of activity, Siprem can satisfy all the needs of customers and designers, offering a wide range of products and roofing systems suitable for any type of use: Agricultural, Commercial, Industrial and Services. The third factory in Matera supplied by Hess Group has further increased the range of products, so the company is optimistic about the future. The use of the latest technologies, with a focus on innovation and state-of-the-art systems, not only results in very high product quality but in the long term will distinguish Siprem as one of the most dynamic and competent companies in the field of prefabrication in the whole of Southern Italy. ■



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