

Monolithic Precision-Fit Manhole Bases and Superstructures in Consistent Quality for Large-Scale Production

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“Laying a solid foundation for manhole production for the decades to come.” This is one way to describe the strategic objective that the owners of Israeli precast component manufacturer Sela Concrete Products Ltd. have been focusing on for many years. The company recently fitted out a new production location for manhole components with the aim of setting new standards in the country, in terms of both capacity and product quality. The plan was to be able to produce large quantities of manhole risers and cover plates in a standardized process and monolithic manhole bases were to be produced in a new concrete quality and equipped with all the pipe connections and relevant channels at the factory. The new process is intended to eliminate any adjustments that were often required on the construction site in the past by ensuring that all lines are precisely positioned and have the right inclination.

The solution for combining these two different requirements was discovered during multiple visits to various factories around Europe. It became clear that combining a manhole riser machine with direct vibration of climbing aids and a system for manufacturing mould-hardened manhole bases from Schlüsselbauer Technology was already a tried-and-tested solution on the market. Sela then set about comprehensively testing this combination and defined their own specification requirements for the production technology as a whole.

The Naot Hovav site is located around 60 miles southwest of Jerusalem and represents a milestone in Sela’s evolution as a company. A large redevelopment area provided the ideal conditions for production and storage, for which space was simply too limited at the existing site in Ashkelon. The collaboration between Sela and Schlüsselbauer Technology had a

Production of a channel negative on the Perfect system; the image shows the complete channel with multiple pipe connections.





The completed channel with pipe connection parts is assembled in a casting mould. The mould is then ready for the SCC to be poured.

clear goal right from the start—to design a groundbreaking manhole plant for Israel. While the main aim for Perfect manhole base production was to provide flexibility in operating the moulds and demoulding the mould-hardened products using a hydraulic turning gripper, the handling in the manhole riser production area had to be fully automated. A Transexact automatic crane is therefore used to move fresh products and products that are hardened on the bottom pallet. The palletizing process is also fully automated and involves removing the products from the pallet and moving them to the outdoor area in stacks. The bottom pallets are automatically cleaned and oiled using a sponge and no spray.

Unlike in manhole riser production, manhole bases are manufactured at the hardening location. An indoor crane is used to move the concrete bucket over the assembled mould and it takes just a few moments to fill the SCC into the mould. The manhole base is then removed from the mould using a hydraulic turning gripper the day afterwards. After being turned into the installation position, the EPS moulded parts are removed and the manholes are moved into the storage area using the forklift. The standard wall thickness for manhole bases is 150 mm for products DN1000, DN1250, and DN1500. Manholes with thicker walls are also manufactured for all nominal widths, so that all required pipes can be connected regardless of diameter, position, and slope. Cover plates DN1250 and DN1500 are also produced mould-hardened.

The production process for the channels is also equally efficient for all nominal widths. The channels are produced in the required height and inclination, and are composed of straight or curved precast moulded parts. The final step is then to secure the moulded parts in the manhole structure, so that the required pipe connections can be moulded, with or without



The hydraulic turning gripper is used to demould Perfect manhole bases from the moulds and turn them into the installation position.

gasket. The channel negative that is produced in just a few steps is then placed in the casting mould and attached to the outer moulds using magnets. A release agent applied by sponge is equally suitable for all parts and materials—gaskets, EPS channels, steel mould—and also contributes to the surface quality of the finished manhole component.

The production process for manhole risers of nominal widths 800, 1000, 1250, and 1500, and cover plates DN1000 is significantly more automated. Set rings are inserted for the corresponding products and are then also transported back to the production machine by the automatic crane. The step rungs are also automatically transferred to the vibrating core. The worker feeds the device with the parts and the rest of the process is handled by the machine. As well as the palletizing and stacking of the products, the inner and outer labeling of the products is fully automated, until they are outside the hall on the outfeed conveyor ready to be transported to the storage area.



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The Magic system for mass production of manhole risers with nominal widths of 800, 1000, 1250 and 1500 mm.

This new production technology means Sela now has the most modern manhole component plant in the entire Mediterranean area in terms of production capacity and component quality. This represents a key step in the company's evolution within the country, in terms of its growth and potential for further development in the coming decades.



The curing area for standardized manhole risers with the Transexact automatic crane.

It goes without saying that the long-term collaboration with Schlüsselbauer Technology, from the initial concept to the installed system, has also laid a solid foundation for a successful partnership that will last for years to come and benefit both partners. Ben Tshuva, CEO of Sela, had the following to say:

"We've been searching for a versatile production unit for multiple product heights for all diameters from 800 to 1500 mm." "Schlüsselbauer has been a highly reliable and professional partner throughout all project phases from the initial planning through to final implementation."

"As such, we knew that Schlüsselbauer was also the right partner for us to lay a solid foundation for our manhole production for decades to come."



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As well as the actual production, the palletizing of the products, and the cleaning and oiling of the pallets are all fully automated.