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## Ritbet gets huge order right after starting production of Perfect monobases in the Eastern Poland region

Company PPUH Ritbet Sp. z o.o. is already the third manufacturer of high quality precast elements in Poland, who implements a Perfect production system from the Austrian equipment supplier Schlüsselbauer. The family owned company is located in Zwierki, close to the city Białystok and the Belarussian border. After its founding in 1989 the company grew to a real powerful seller in the north-eastern region of Poland. Today the business of the Dabrowski family includes the precast concrete plant, the trading company Technosam with three subsidiaries and a contracting company for the civil engineering sector. In the precast plant Ritbet manufactures only concrete elements for civil engineering work, like concrete manhole components with diameters from 500 to 2000 mm.

To meet the requirements of the market in general and – most of all – to satisfy the individual demands of each single customer, Ritbet works on a continuously improvement of the production and product quality. As monolithic concrete manhole bases are becoming more and more popular in Poland, it was obvious for Ritbet to purchase a new production line, as well to implement an adequate production technology. To host the new Perfect production system from Schlüsselbauer, Ritbet installed a new production hall apart from the existing equipment. During the visit in late 2011, we saw that the area around the production building wasn't finished but the production inside was already quiet busy at that time. The recognition from the customers in the greater surrounding was so positive that after the machines were set up the production was started right away with customized monolithic manhole bases which have been already pre-ordered from the customers. One of the first orders included a huge quantity of 300 customized monolithic manhole bases.

■ Mark Küppers, CPI worldwide, Germany ■

The new production hall has been installed in a generous manner by Ritbet and offers enough space for comfortable handling and even more for an enlargement of the Perfect plant in the future. Connected to the production hall, an office building will be finished shortly. To equip the production facility for manhole bases with its own concreting plant, a new concreting station has been implemented alongside the production hall. Eurostar Concrete Technology delivered a mixer with 1,5 m<sup>3</sup> capacity and four gravel silos with a capacity of 35 m<sup>3</sup> each for the different grain sizes up to 16 mm. The batching plant will be insulated in brief, so that self compacting concrete can

be produced for the manhole base production situated in the tempered hall also when typically chilly weather conditions outside dominate the region in wintertime. Two cement silos have been installed by Zremb. In the long term a conveyor system should be installed, but the present product pouring is done with a bucket and the new Demag crane track.

### Preparation of customized EPS channel configuration

The new plant is divided into two areas, which are separated by constructional elements. In the larger area where the moulds are situated the concrete manhole bases are casted. In the smaller part of the hall the

cutting technology for the preparation of the negative channels is implemented. Before the preparation of these negative mould starts, the configuration of channels and in- and outlets is designed on the computer. With an easy to operate user interface all product parameters of the manhole base like angle of the channel or position of inlets are set. Thus the complete monobase



The new hall which hosts the Perfect production system at Ritbet. Insulation works at the mixing and batching plant were still in progress right after the production start.



Mixer with 1,5 m<sup>3</sup> capacity from Eurostar

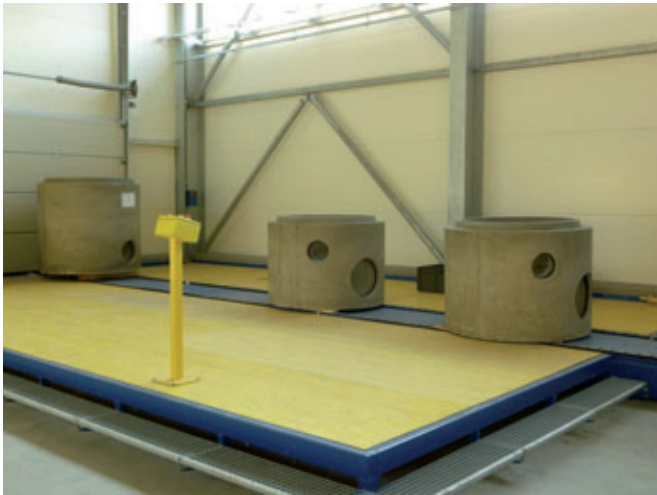
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*Perfect monobases are produced at Ritbet according to numerous orders right from the start*



*A set of various Perfect moulds allows production of up to 33 manhole bases per shift with three different diameters, an extra mould was set in for larger products*



*Large Perfect mould with partial wall thickness reduction elements*



*Three-dimensional saw in operation*

is constructed virtually and visualized as a three-dimensional model on the screen for a final plausibility check. Next, the Perfect software delivers all required work instructions for the different cutting devices.

The channel preparation system includes a set of hot wire cutting saws which cut the EPS elements to required length and shape automatically. The complete channel configuration is realized when the single parts are combined. The set of cutting devices contains a two-dimensional saw which prepares EPS parts in specified length and height by simple horizontal or vertical cuts. Side channels are cut on the three-dimensional saw according to the diameter of the main channel. After this widely automated preparation, the single EPS elements are glued together. A laser system installed above the working station shows the correct assembling of the parts and provides an assistance and quality control for the worker at the same time.

In the next step the completed negative channel is positioned on the berm saw. Here the incline of the berm is adjusted to the standard incline of 5 % which fits exactly to the steel mould. Subsequently the verges of the channel parts are cut according to the diameter of the manhole base. Now also the outer diameter of the negative channel fits exactly to the steel mould. Both stations are equipped with laser units which show the correct positioning of the EPS-parts and serve as an inline quality control.

Finally the holeformers for the required pipe connections are fixed on the verges of the channels. Now the negative channel is completed. The holeformers are prefabricated and available from stock. In many cases holeformers with mounted gaskets are used. These integrated gaskets are cast in just like the complete channel in one pour. This means that the gaskets are really integrated into the surrounding concrete

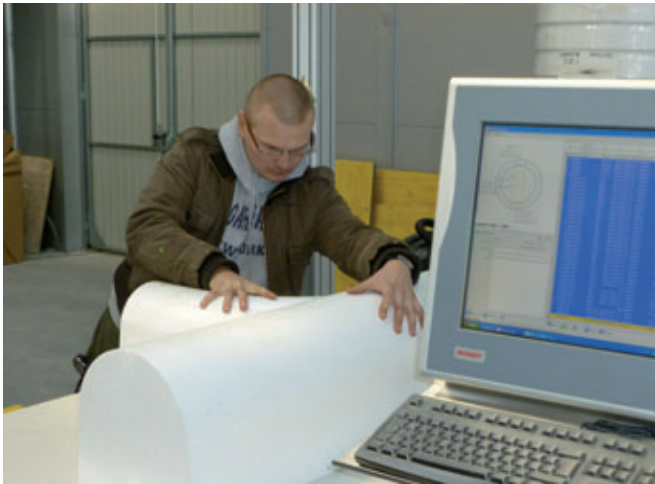
and that their position is immovable after the concreting.

The finished negative channels are put into the steel moulds now and fixed with several magnets to protect them from floating during the pouring process.

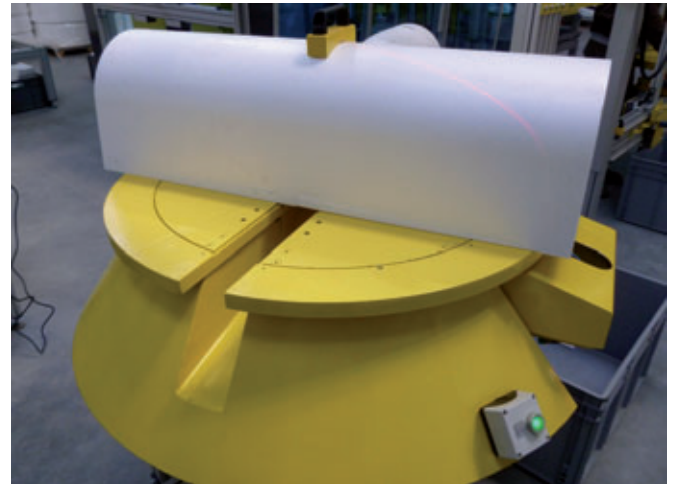
**Concrete manhole bases with gradations – exemplary in this region**

In total Ritbet started production with steel moulds for the production of up to 33 manhole bases per shift with diameters of 1000, 1200 and 1500 mm. In addition a special mould with a diameter of 2000 mm has been installed. But this mould differs from the typical Perfect moulds regarding set up and handling. Perfect monobases can be produced with different wall thicknesses from 150 to 380 mm. With easy adjustments in the moulds the all over height of the monobases may vary from 700 to 1600 mm.





*Easy assembly of EPS parts as instructed by the perfect software*



*Incline of the berm is prepared by a half-turn of the berm saw.*

Before the EPS negative channels are set into the moulds, each mould is opened by taking apart the two semi-shells. All surfaces of the mould which may be in contact with concrete later on are coated with release agent. Now the negative channel is placed on the core of the mould and fixed with magnets. The EPS negative channels require a small portion of release agent only because of its smooth surface. If the manhole base has to be built with additional gradations, which are typically for the Eastern Poland region, holeformers are placed exactly to that position in the mould where the gradation has to be in the precast element. Additionally also sleeves for a later assembly of step rungs can be fixed on the core of the mould. Now the mould preparation is finished, the mould is closed and ready for pouring.

Pouring of concrete happens with usage of selfcompacting concrete (SCC) out from a bucket moved by crane – as already mentioned – and without further compaction. A worker takes care of the filling height in the mould and doses the concrete quantity manually. After pouring the concrete manhole bases the products cure in the mould without further intervention. The monobases harden bottom up compared to the later installation position.

The next day the moulds are opened and the monolithic manhole bases are demoulded with a lifting and turning device which is part of the Perfect production system. The product are flipped over 180 degrees and placed on a conveyor belt on the margin of the pro-

duction hall. The turning device is likewise manipulated with the new Demag crane track (12.5 t) which also led to enthusiasm because of its precise operation from the very first day.

After the easy done unplugging of the EPS-parts from the monobase the step rungs are mounted. Then the finished monobase leaves the production hall on the conveyor belt and it is driven to the outside stock yard by a fork lift. The low volume EPS elements are shred and the recycling material is collected in bags.

#### **Business forecasts show expansion**

From the very first day the new production of concrete manhole bases started, Ritbet is affirmed regarding the investment decision. The considerable number of orders of customized monobases which could be received in the meanwhile allows a promising forecast for the development of this business. But nevertheless there are still some obstacles to work on for Ritbet. To come to an exhaustive acceptance of the new product quality a general mind change regarding quality standards would be appreciated all over the country. Sometimes some kind of traditional mentality from purchasers side resists technical innovations like the customized Perfect monobase. Regarding such obstacles Ritbet is aware of the need a longterm and ongoing information and conviction campaign but is willing to face this challenge with unrestricted belief of its own new



*In-line-quality check by laser*



*Gaskets mounted on the holeformer mean dense pipe connections in the precast product*



Negative EPS channel positioned in the steel mould with a gradation typically for the region

Pouring with bucket and crane track



Finished manhole base with mounted step



Labelled with an easy to read data sheet Perfect monobases are leaving the production hall

capabilities. Nobody at Ritbet has a doubt that monolithic manhole bases might not be the state of the art at the Polish market in the future. So the plan for Ritbet is to deliver these new monobases and of course also conventional products from the companies range throughout the whole North-Eastern region in Poland. Shipments to other countries like Belarus are not planned today but might be an option for the future also.

With the installation of the new production hall and the production in general Ritbet rises the number of employees from a workforce of 20 people today to around 35 in the near future. This rise relates to all sectors of the company including production, planning and sales. Especially the team which has to work with the new Perfect production technology will be augmented as the workers entrusted with the new system today had to care about other tasks in the company before. Beside the convincing quality of the products Ritbet is aware of another advantage of the new system. Regarding motivation of existing and new workers the Perfect production technology provides a better, healthier working environment to the employees because of the total prevention from noise in daily production.



Founder Ryszard Tadeusz Dabrowski and his son Tomasz Dabrowski are very satisfied with the everyday product quality as well as with the excellence of their new Perfect production system

#### FURTHER INFORMATION

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