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## Condron Concrete enters new territory in Ireland with wet-cast, monolithic concrete manhole bases

A trend, that has its roots in Germany and France and which is continuously expanding since 2005, is now making an impact on the 'green island' Ireland, too. Condron Concrete Ltd. is the first concrete plant in the Republic of Ireland to start the production of wet-cast, monolithic Perfect-concrete manhole bases. Due to the decision for the Perfect Manufacturing system from Schlüsselbauer Technology, Condron is now able to offer its customers customized manhole bases with individually tailored channel configurations that are made in only one pour.

The quality of manhole structures in general and of manhole bases in particular has to improve. And there are many reasons why. On the one hand, channel network operators are more and more unsatisfied with on-site concreted manholes that are often made under time pressure. Unfortunately, a lack of quality and unwanted deviations of channel configurations are often the result of similar methods. On the other hand, requirements for concrete manhole elements delivered from precast plants are also rising. The tightness of pipe connections and the whole components are pre-conditions to be accepted as a reliable supplier in the long run. Furthermore, aspects like durability and short-term availability are in demand too. The most practicable solution consists of an economic industrial manufacturing process with consistent high product quality.



Overview Condron Concrete Ltd. plant in Tullamore, Co. Offaly, Ireland



The traditional Irish company is 100% private-owned and produces concrete pipes and components for sewage- and water drainage systems.



*Pre-integrated lifting anchors for safe handling of the manhole base on the building site.*

### Perfect manufacturing system from Schlüsselbauer Technology

The Perfect manufacturing system developed by Schlüsselbauer Technology conforms to the latest accepted state of the art to produce custom-made wet-cast monolithic concrete manhole bases. Right now, the system is successfully used by more than 35 companies world-wide. On the one hand, the durability of the elements benefits from the hydraulically ideal moulding of the channel. Due to the usage of precisely shaped negative mould channels, the Perfect system allows full variability of the angle and incline of all out- and inlets. Thus, the overall hydraulic is optimized which leads to better flow behaviour and less sediments throughout the entire channel. As a result, maintenance cycles become shorter and corrosion is limited. On the other hand, the durability profits from beneficial concrete characteristics. The usage of easy or self compacting flowing concrete from strength category C40/50, entirely without vibro compaction, ensures consistent packing tightness of the components monolithic structure. Thus, roughness of the surface and depth of water penetration are minimized that both contribute to an estimated product lifetime of more than 100 years. The establishment of an automated mass production of manhole bases with individ-

ual pipe connections and channel configurations is one main goal from Condron in order to satisfy specific customer requirements in the short term.

Condron Concrete Ltd. was founded in 1969 by John Condron and has remained family-owned since that time. The traditional Irish company is situated near Tullamore Co.Offaly and produces concrete pipes and components for sewage and water drainage systems as well as concrete roof tiles including accessories.

The two companies Condron and Schlüsselbauer have shared an intensive cooperation for several years. In the past, production plants for manhole rings, covers and pipes have successfully been implemented together.

With the Perfect manhole manufacturing system, Condron Concrete enters in a new territory, as this is the premiere in producing wet-cast monolithic concrete manhole bases from flowing concrete. Until now, only dry concrete was used for the production of different kinds of components, starting from manhole covers up to large concrete pipes.

From now on, the positive characteristics of self compacting concrete will be used. For example, manhole bases made with the Perfect system, allow a depth of water penetration of not more than 10 mm in the wetted area. This is far under the allowed maximum of 50 mm, based on DIN standard 1045:1988-07 (reference.: KIWA MPA Bautest GmbH).

One main concern for Condron was to produce high quantities of manhole bases with different diameters and heights in an economical and mostly automated process. That's why the scope of supply of the Perfect manufacturing system included tailor-made steel moulds that are now used to produce monolithic concrete manhole bases in diameters of 1200 and 1500 mm. The height of the manhole components differs from 700 up to max. 1000 mm, respectively from 700 up to 1100 mm and can be easily adapted in the mould apparatus.

### Tailored channels due to Perfect moulding program

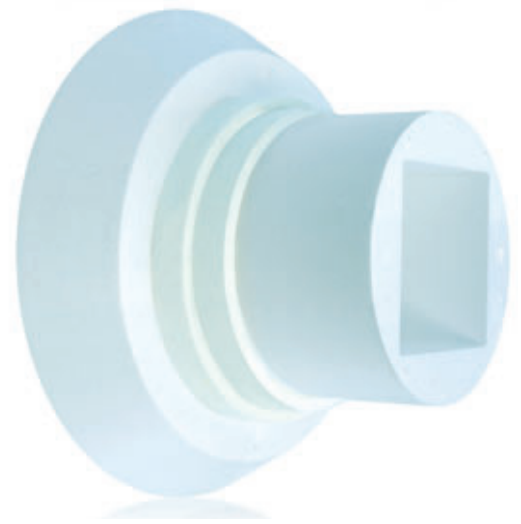
An elaborated moulding program is characteristic for the Perfect manufacturing system. Prefabricated elements made from



*The Perfect manufacturing systems allows the production of all requested pipe-diameters from DN100 up to DN1000.*



Computer-controlled hot wire cutters are used for the exact tailoring of the negative moulds.



Exactly tailored pipe connection negative mould made from polystyrene rigid foam.

polystyrene rigid foam, like arcs, straight lines or pipe connection moulds can be easily fixed together to one single negative mould unit. The few necessary cuttings are done by a sophisticated and computer-controlled hot wire technology.

In this way, all pipe and channel diameters from DN100 to DN1000 can be made with only a minimum of forming material input. It allows the easy production of all channel configurations that are required by communal sewage systems in only one manhole base. Any requested changes of direction, diameters, multiple outlets or differing heights of the berm can be considered too. The result is optimized flow behaviour throughout the whole channel, whereby areas of congestion and unwanted turbulences are avoided.

The individually tailored channel components made from polystyrene rigid foam are then glued together to one single unit by a Condron employee. He is supported by a positioning laser, which allows a parallel quality control in addition. The finished negative channels are placed into the steel moulds afterwards. Pipe connection negative moulds with integrated seals could also be optionally used.

### Monolithic manhole bases made in one pour

Afterwards it needs just one work step to fill in the fluid concrete for bottom, wall and

berm into the steel moulds. In this way, complete manhole bases are produced in only one pour! The monolithic concrete manhole bases cure in the mould and can be demoulded the following day. First the two-part outer mould is pulled apart; afterwards the component is taken out by a gripper, turned 180° and is set down in the end. Following up, the negative channels and connection forming parts are removed from the manhole base by an employee using simple tools. At Condron, all removed polystyrene rigid foam parts are hacked by a shredder which was also delivered by Schlüsselbauer and to be recycled afterwards.

### Individuality and short delivery time

All manhole bases made by Condron are produced in only one pour and combine the consistent high quality and the accuracy of connections. The Perfect manufacturing system gives Condron the ability to produce various kinds of concrete manhole bases with different diameters, building heights or any individual channel configurations or pipe connections in a short space of time. Thereby, the company closes a gap that is so far open in the Irish civil engineering market.

Looking at the first results, it's no wonder, that local reactions are enthusiastic, like CEO John Condron points out: "By choosing the Perfect technology from Schlüsselbauer we are entering a new age of man-

hole production. We are happy that we can now offer our customers high quality concrete manhole bases that are made in only one pour. In particular, the fast, individual and very economic manufacturing method is an essential advantage for us. ■

### FURTHER INFORMATION



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