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## Veneta Manufatti in Cemento starts production of wet cast monolithic manhole bases

The spring of 2011 saw the start-up of another production system not too far from Venice, to produce individual monolithic concrete manhole parts using the Perfect process. In the family-run business VMC Srl., Veneta Manufatti in Cemento, in picturesque Resana, they had spent a long time working on processes to produce precision prefabricated components. Alongside the requirement to come up with new manufacturing technology that could also produce a new range of products, it was primarily quality aspects based on the end product that were taken as the basis for the decision to invest. In any case, the aim was to produce wet cast products, completely cured in the mould and thereby guarantee a reliable level of high component quality. Also, the manufacturing technology to be used was to be tried and tested and able to deliver the expected high standard of manhole components in everyday production. VMC put a considerable amount of time and effort into testing the actual product quality expected. Over several months components were repeatedly purchased from different manufacturers. These manhole bases were not used just to test market acceptance in Veneto; in fact, the company was able to get a consistent picture of the actual quality available without depending on the opinions of third parties or on an assessment of product samples, as they are plugged time and again at trade fairs or displayed in glossy brochures.



*VMC has been producing monolithic Perfect manhole bases since the spring of 2011 in this adapted hall section*

The history of the production operation at VMC Veneta Manufatti in Cemento goes back to 1960. The company founded by Sergio Micheletto has over the years built a name for itself in the market for prefabricated components parts for sewer infrastructure with a broad range of products that stands for quality, professional care and particularly for attention to customer needs. The product range has gradually expanded over the decades to include concrete pipes of different design in sizes from DN200 to DN1200 (OG pipes, S+S pipes, pipes with flat base, drainage pipes), road gully parts, tanks, manholes, cover plates, small-scale wastewater treatment plants, grease traps and special components

Nowadays Paolo Micheletto, the sole owner, is responsible for the company policy of this 20-man operation. With entrepreneurial vision, he made the decision for the new production technology to bring his production into line with Italian and European standards. In the current project, the rectangular components used widely in manhole applications are consistently complemented with circular and oval manhole components, while, in contrast to other users of the Perfect manufacturing system - some of whom were personally consulted ahead of the decision to go for this technology by Paolo Micheletto - there are special requirements in VMC's market.



*The quality of the wet cast components is evident – immaculate surface from the channel base through to the spigot.*



*A distinctive feature at VMC: oval manhole bases (800/1200 mm)*



*Alongside the Perfect manhole bases, the manhole structures – circular and oval – have the same concrete quality.*

The technical design of sewage pipes in the Veneto region is marked by two main regional features. On the one hand, the region is densely populated with town and city boundaries often running into each other across tens of kilometres. This population density increasing over a long time and the typical layout of those old Italian towns with picturesque narrow streets, creates considerable

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*At VMC hot wire cutting is used to cut the material-saving EPS-mould parts to suit your project requirements; the picture shows the saw for shaping the berms.*



*Manhole covers are also produced in the new production process.*

difficulties for drain builders. The lines and manhole structures must be of sufficient size to keep the operation going, but they must at the same time be designed to save as much space as possible to fit alongside other infrastructure lines like drinking water, telecommunications or gas. Against this background, VMC, in close cooperation with some reputable operators of infrastructure networks like ETRA, developed a new component. With an oval manhole cross-section with a width of 800 mm and a length of 1,200 mm, the accessibility of the system is guaranteed and the space required also reduced. Accordingly, the oval manhole base as well as the manhole structure must show the same features.

In addition to the problem of space, those responsible for wastewater infrastructure have another headache - the high ground-water level. There are repeatedly problems in the region with leaky manhole structures and serious ground water entry. A new programme of components had to be applied here too and offers opportunities to get this problem under control. When it comes to

manhole bases then, VMC goes for variable installation heights, which, depending on the requirements of the project, can be up to 1,500 mm. The manhole top structures (monolithic cones or risers) also have the same flexibility as the bases. With installation heights of up to 1,500 mm and cast integrated seals, one carefully sealed joint is enough to create a manhole structure with a total height of up to 3,000 mm and this is ideal in terms of compliance with regional requirements. VMC manhole components come in the sizes DN 1000, DN1200 and DN1500.

Besides the solution for these two basic problems, a major focus for VMC is the quality of the concrete used and also the durability of their final product. In the past, the company consistently stood out from the competition with solutions that were well thought-out and carefully implemented in production and with the Perfect production system now installed, justice is fully done to this philosophy. All Perfect products are manufactured by VMC with self-compacting concrete of class C60/75. While the

quality of the concrete per se already represents a significant difference compared to average components, the mould-cured design of these components, once again clearly sets the VMC range apart from what is on offer from the competition. In close cooperation with the University of Padua (Centre of Comprehensive Research for Studying Cement Materials and Hydraulic Binders Scientific Director: Prof. Gilberto Artioli, Responsible for VMC expertise: Dr. Michele Secco) a formulation for self-compacting concrete with high resistance to sulphate attack was developed. This concrete corresponds to exposure class XC4-XD3-XA3 according to UNI 11104, the Italian standard UNI 9156 and UNI EN 206-1. In the spring of 2011, the national collateral standard UNI 11385 also came into force, increasing the requirements for components in general. In addition to the requirements on components however, the responsibility for a corresponding static execution of civil engineering constructions increases gradually on the part of the planning and construction companies.



*The channel sections are cut with hot wire and the negative channels are put together within a few minutes.*



Both circular and oval manholes come with integrated seals.



Sergio and Paolo Micheletto with Engineer Gianmarco Simioni and other staff involved in the Perfect project.

With the Perfect manufacturing technology, VMC has found an ideal method of meeting the requirements it has placed on itself. The EPS moulded sections that can be cut to individual requirements, can be processed just as easily for oval manholes as for circular manholes. Likewise integrated seals can be used in equal measure for all important pipe connections in both types of manhole. In the already limited space in many component assemblies, this further simplifies things for contracting companies and also saves them time. Along with the seal incorporated in the manhole structure, sources of installation errors and subsequent claims are thus already minimised in the concrete plant. As well as the homogeneous structure of monolithic components, it was essential for VMC, to create smooth homogeneous surfaces not only for the outer and inner walls of the manhole components. The berms and especially the channel surfaces must have a smooth concrete surface without any subsequent processing in the manufacturing process. In the summer of 2011,

staff from VMC will be at several events to let representatives of local councils, construction companies and engineering consultants know about the essential product features and benefits of the new components.

An existing section of the production hall was adapted for the installation of the Perfect plant in Resana and now with 14 casting moulds, all the components of the new manhole system can be manufactured from the start at VMC. Months down the line from the decision to invest at the start of the year, the emphasis and the positive energy, now that the Perfect system is being introduced, are almost tangible. After a detailed consideration of all options, for which after the bauma 2010 exhibition, a longer period had been estimated, the implementation phase of the plant now follows in an even shorter time frame. In the spring of 2011, VMC's technology partner, the Austrian manufacturer Schlüsselbauer, was asked to make the manufacturing technology available within a few months. The start-up likewise had to be done in an extremely tight time frame like the production of the first components. These were already earmarked for a building project in the region and had to be delivered on time and in the quality agreed. Although for Paolo Micheletto this meant the manageable part of the start-up of the new production, compared to the testing of the concrete quality in practical operation on the part of VMC, the short period from the assembly of the first component through to the plant being ready for production and the production of the first pre-sold concrete manhole base hugely impressed him.

Finally, to the comparatively small company, specialising in high-quality precast concrete products and its owner Paolo Micheletto can be attested that investment

decisions are rarely so well-founded, as in this case. From the specification of requirements in terms of product quality and productivity, the procurement of components – independent by the supplier of production engineering – to test the everyday quality of products, including the test market, right through to the organisation of the start-up, at VMC extremely professional planning and implementation were evident right from the start.



A concrete bucket brings only concrete of the class C60/75 into the casting moulds for the Perfect products.

#### FURTHER INFORMATION



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