New generation BorECO™ BA2000 polypropylene pipe material delivers on both infrastructural and environmental goals

Case Study

In addition to the necessary installation of new pipelines, the renovation of existing ageing networks is recognised as being an issue of increasing importance within many European countries. Reducing leakages, protecting scarce groundwater resources from contamination and the overall need for durable, sustainable waste water solutions are vital tasks that have all progressively moved up the agenda of network owners. This new prioritisation is being reflected in the Czech Republic by the bordering municipalities of Ivancice and Oslavany, with populations of approximately 9,500 and 4,600 respectively, in the south Moravian region. Working together they have initiated a programme to upgrade and enlarge their sewage network.

Reliable plastics solutions replace traditional materials

The municipalities have set a number of objectives to be achieved by this joint project, such as the reduction of leakages and risk of groundwater pollution from the existing system. This will be accomplished by replacing ageing concrete pipes which have corroded and cracked, as well as by extension of the waste water network to connect an additional 15% of households. Consequently, the quality of water discharged from the waste water treatment plant serving the area will be improved. The project will require 26km of new sewerage pipelines, of which 17km will be main sewer and 9km new household connections to it. In addition to improving the living environment for inhabitants, the package of measures being undertaken will also contribute to an improvement in the water quality of the Oslava, Jihlava and Rokytná rivers that run through the municipalities.

Plastic pipes in extremely challenging geological conditions

As the design and engineering consultant to the project, Aqua Procon, s.r.o. identified important considerations to be given in the development of a sustainable waste water system solution. Historically the area had been a centre for the underground mining of both copper and coal. And, while all mining activity had ceased in the 1980s, it had left a legacy of ground movement which would have implications for pipe selection. To accommodate this geological condition the pipe material would need to exhibit toughness, flexibility and durability in order to assure a long, problem-free service life.

To fulfil these requirements the network owners chose a polypropylene (PP) pipe solution from the leading Czech pipe producer, ELMO-PLAST, a.s.* The company's EM-LINE PP SN16 solid wall pipe was selected: DN315 – DN600mm for the main sewer lines and DN150 – DN200mm for the domestic connections. ELMO-PLAST's EM-LINE PP pipe is based on BorECO™ BA2000, a high molecular weight PP from Borealis. "I prefer BorECO BA2000 over mineral filled PP grades," says ELMO-PLAST owner, Mr. Martinek. "Its high crystallinity provides a perfectly balanced combination of mechanical properties and its high modulus of 2000MPa enables the production of heavy duty pipes with no need for mineral fillers."

Additionally, as a high molecular weight, low melt-flow block copolymer, BorECO BA2000 runs very easily on existing pipe extrusion equipment and, therefore, its adoption does not involve the pipe maker in any additional capital investment.

Generating long-term network owner confidence

The high stiffness of BorECO BA2000 is combined with excellent impact performance. These characteristics are complemented by outstanding resistance to corrosion, abrasion and chemicals, providing pipes with the long-term durability to last for generations. Furthermore, pipe systems made from BorECO BA2000 have a high structural integrity while allowing their flexibility to withstand ground movements without being compromised.

* Founded in 1996, ELMO-PLAST, a.s. is a private company located in Alojzov, Czech Republic. The business is specialised in the production of PP solid wall and corrugated pipes for gravitational sewerage systems and PE pipes and fittings for pressure drinking water and pressure sewage systems, as well as PE-based conduits and watering systems.

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visit www.borealisgroup.com and www.borouge.com

Borealis AG · IZD Tower
Wagramer Strasse 17-19 · A-1220 Vienna · Austria
Tel +43 1 22 400 000 · Fax +43 1 22 400 333

Borouge Pte Ltd · Sales and Marketing Head Office
1 George Street 18-01 · Singapore 049145

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