A Borouge newsletter for the pipe industry

BorPipe

www.borouge.com ▫ Issue 35, January 2015

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Borouge and Lucky International support the PE pipe industry in Nepal

A technical review of peel testing modern 3 Layer PE coatings for steel pipelines

Borouge sponsors the 5th KEBS International Pipe Conference in Nairobi, Kenya

"Greening the Desert" in Abu Dhabi using irrigation systems produced from Aquility™ LE3406

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to both the coating company and pipeline owner in the form of easily processed materials with a wide operating window and by providing an extremely durable protective coating in very tough environments.

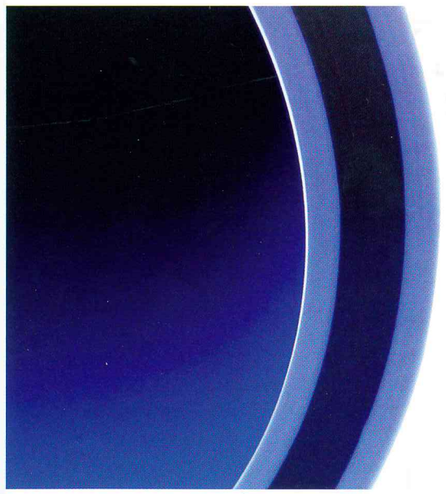
Borcoat 3LPE systems

Borouge supply a wide range of PE and PP materials for the protection of both onshore and offshore steel pipelines. Table 1 summarises the most popular products within the PE range, including the higher performance top coat Borcoat™ HE3450-H, which has been especially developed for the higher temperatures and corrosive soils in the Middle East and Asia.

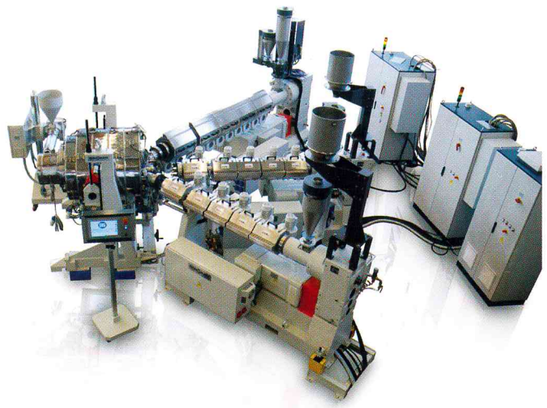
Borcoat top coat materials are pre-compounded black bimodal High Density PE (HDPE), which provide the optimum balance between the strength and hardness of the coating, weathering resistance and the ease of processing. The adhesives are grafted Medium Density PE (MDPE) materials, which have excellent bonding and flow properties. In combination these materials provide excellent protection against handling and installation damage and long term corrosion.

If you want to know more about this or any other steel pipe coating question, please contact your local Borouge representative or mail Chanchal direct on **chanchal.dasgupta@borouge.com**

Muna Noor and Tecnomatic develop a new high security multilayer pressure pipe range



Wall structure with blue HSCR PE100 material for inner layer and standard PE100 for the core



The design layout of the three extruders from Tecnomatic

Muna Noor is to launch a range of multilayer pressure pipes ideally suited to the poor and stony soils of Oman and many other countries in the Middle East. By utilising High Stress Crack Resistance (HSCR) PE 100 materials such as BorSafe™ HE3494-LS-H from Borouge in the inner and outer layers of a multilayer pipe they can offer maximum security against point loads and any surface damage occurring during installation. The pressure pipe range from 250 to 1200mm in diameter has been developed by Muna Noor and Technomatic under a technology license from Wavin Overseas BV from The Netherlands. These multilayer pipes are used extensively in Europe for installations using trenchless techniques or where no imported backfill is used. By using the material dug from the trench the installers are able to reduce the costs and the environmental impact of bringing sand or other backfill materials to the site.

The wall of the pipe is made up of three layers equal to 25%, 50% and 25% of the total thickness. The outer and inner layers are produced from HSCR PE100 materials and the core from a standard PE100 material. This requires three separate extruders and for the installation in Muna Noor's new plant at Sohar Tecnomatic recommended two Vega 60.37 machines for the inner and outer layers and one Vega 90.37 for the core layer. These extruders are capable of a combined total output of 2,000kg per hour with an excellent melt homogenisation. They are well proven and have been part of the Tecnomatic product range for several years and are characterised by low energy input thanks to an optimised screw design and the use of AC motors. The extruders also have grooved feed zones for excellent production output, the latest generation of gearbox and an industrial PC for extrusion process control with remote assistance using energy monitoring modules via the internet.

The key component in any multilayer pipe production line is the die head. For this Tecnomatic developed the VENUS MULTI 1,200mm die head, which is of based on a three spiral design to ensure the optimal melt flow for a wide range of thickness ratios. The die-head is compact with a low pressure build-up and consequent energy savings. It covers the full size range from 250 to 1,200mm, producing three diameters per die-set for sizes up to 800mm using the classic draw-down mode and for larger sizes, it uses the swelling mode for a better control of wall thickness distribution and pipe ovality. The die-sets comprise of two parts with a small end ring to define the gap of the die, permitting a rapid size change and adjustment.

The successful Tecnomatic, Muna Noor and Wavin Overseas team

A Pipe Air Cooling (PAC) system provides intensive cooling of the inner pipe surface by sucking air in the opposite direction to extrusion. By forcing the air flow it ensures uniform cooling around the pipe and through the wall thickness, decreasing the differences in the pipe solidification rate and reducing the residual internal stresses. This also has the benefit of reducing the wall thickness eccentricity and ovality whilst providing the opportunity to have a short line or to obtain higher output compared to a standard line without inner cooling.

The complete extrusion line is synchronised using gravimetrics on each extruder to maintain a continuous raw material feed and to record variations in mass throughput, thereby ensuring a perfect control of the weight per meter and wall thickness distribution. The system works in connection with a 16 sensor ultrasonic system to check the perfect conformity of product parameters to the given standards for wall thickness distribution, interior and exterior diameter, ovality and eccentricity.

All the companies involved in the project expressed a high degree of satisfaction for the quality of the results since the first trial. This new product range will offer design and operational engineers in the Middle East additional security for pipelines that are often installed in demanding conditions.