Big deal: working at large diameters

Infrastructure projects such as stormwater management systems are helping to propel the need for large-diameter pipe – which must be produced accurately and efficiently

IMAGE: TECNOMATIC

Main image: Tecnomatic has supplied an extrusion line – with two Zeus Evo series extruders – to help a manufacturer make pipe up to 1600mm

Events such as extreme weather are just one example of driving force behind the need for large diameter pipe – as infrastructure projects such as storm management systems become more prevalent. At the same time, producers of this type of pipe are conscious of the need to maintain manufacturing efficiency at all times.

Tecnomatic of Italy has supplied an extrusion line – to make polyethylene (PE) pipes with diameters up to 1600mm – to a leading European pipe manufacturer. The line brings together two Zeus Evo series gearless extruders with Tecnomatic's Venus 1600 die-head, to make large-diameter, thick-walled pipe with high precision and output efficiency.

An updated screw design helps to improve material flow plasticisation and reduce energy consumption. The new optimised spiral feeding bush ensures a smooth, consistent material feed, minimising fluctuations and raising homogeneity – a critical factor for producing large-diameter pipes with uniform wall thickness. Together, the two extruders have a combined output of almost 2,000 kg/h, which enables high-speed production of large-diameter pipes.

Each extruder has a gravimetric dosing system with three separate components for precise dosing and weight control. It ensures that material feed and pipe weight are tightly regulated, allowing for high accuracy across each run. Precision dosing helps maintain product consistency, which is vital for large-diameter pipes – where wall uniformity helps meet quality and performance standards.

The line also includes a redesigned Venus 1600 double-spiral die-head. It is engineered specifically for this type of pipe and uses innovative mechanical and thermal centring solutions to ensure optimal thickness uniformity with very high wall dimensions.

The double-spiral design promotes even material flow, reducing the risk of thickness inconsistencies. The centring system provides a two-fold approach: mechanical adjustments align the die-head for correct positioning; and thermal control ensures temperature stability within the die. This allows precise, on-the-fly adjustments to maintain pipe centring and thickness uniformity under varying production conditions.

An extended vacuum zone – with a length over 20m – provides rapid, effective cooling, which is essential for maintaining pipe shape and structural integrity during high-speed production. The optimised vacuum design helps the line achieve higher production rates without affecting quality.

The line's downstream pipe-handling systems include a 12-caterpillar haul-off and knife cutting unit that work in sync with the line's output capacity. This reduces the risk of deformation and maintains the pipe's roundness and clean cutting finish, says Tecnomatic. ›