

Main image: Tecnomatic has set up a continuous BiAx pipe extrusion at its factory in Italy

IMAGE: SABIC

At a stretch: advances in oriented pipe technology

Industry partners are attempting to commercialise 'oriented polyolefin pipe', while efforts continue to expand industrial opportunities for PVC-O pipe

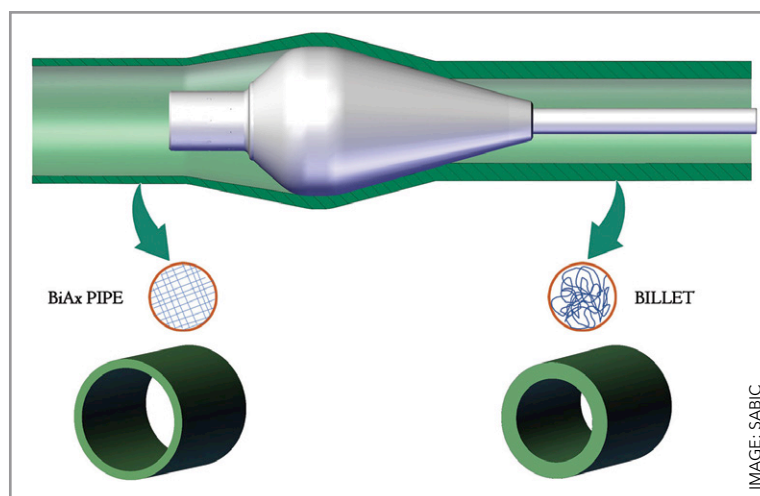
Oriented pipe is most commonly made from PVC - in the form of PVC-O pipe. However, there are plans to introduce another type of oriented pipe to the market.

Materials supplier **SABIC**, machinery manufacturer **Tecnomatic** and pipe maker **Aquatherm** are involved in a project to commercialise 'oriented polyolefin pipe' - or 'BiAx' pipe. The process involves extruding a relatively small, thick-walled pipe from PE or PP - then drawing it over a heated mandrel. This converts it into a larger diameter pipe with thinner walls. The partners say that the biaxial stretching gives it a higher burst strength than conventional pressure pipe - which could allow a 30% saving in material use.

SABIC, which heads the project, says BiAx pipe will offer "substantial improvements over incumbent polyolefin pipes across the entire range of performance criteria". These include: higher resistance against internal pressure; better resistance to slow-crack growth - allowing trenchless pipe installation; a smooth inner wall - which reduces the energy needed for pumping; and higher abrasion resistance.

In addition, the pipes - made from 'optimised formulations' of PE and PP - also promise better resistance to disinfectants, a lower coefficient of linear thermal expansion (CLTE) and better low-temperature impact strength.

Tecnomatic has set up a continuous BiAx pipe extrusion line for evaluation, trials and process optimisation, using SABIC resins. The pipes are



extruded conventionally, then drawn over the heated mandrel - and stretched in two directions to improve their mechanical properties.

It is a standard extrusion line, but with extra "dedicated machinery" to stretch the pipe biaxially, says Tecnomatic.

"Compared to a traditional line, the most important modification is the BiAx device - and our process know-how," said Massimiliano Vailati, sales director at Tecnomatic. "The heated mandrel is a crucial part. It stretches the pipe in two directions, and at the right temperature."

He says that Bi-Ax pipe will not be in direct competition with other types of pipe - such as PVC-O - but will be appropriate for end uses such as potable water and sanitation.

"Applications can be the same as for standard

Above:
A heated mandrel converts a plastic 'billet' into BiAx pipe

IMAGE: SABIC

pipe - but the improved resistance to pressure and slow crack growth makes it perfect for trenchless installation," he said.

SABIC has filed two recent patents in this area, which explain some of the details behind the technique. One focuses on the use of PE, while the other deals with PP.

SABIC has described the BiAx project as "a new concept". It says collaboration will "accelerate time to market" - but has not specified when this might happen.