KEEP BALANCE WITH ULTRA-HIGH-CAVITATION HOT RUNNER SYSTEMS

Mold making has always been a strange brew of engineering expertise and artistry. That is especially so in the world of PET preforms, where customers want something that can be turned into a product – the bottle – that combines beauty and strength. Can we extend this observation to hot runner systems? After all, they have a certain skeletal elegance about them. But it is a stretch. Hot runner design is very much a case of form following function, and obtaining that functionality is very much in the hands of the engineers. When it comes to hot runner systems for preform molds holding close to 200 cavities, SIPA has engineering expertise that few can match.

As a demonstration of this, consider that SIPA has just conceived, designed, built and delivered a preform mold with 192 cavities to one of the world's leading PET container makers, based in North America.

Creating a hot runner system that consistently and reliably enables so many cavities to be filled identically, at high speed, without excessive force, is a task that extremely few are capable of handling. Thanks to its Xflow melt distribution system, which is now available for use on GEN 3 (third generation) XFORM 350 and 500 high-performance injection molding machines, SIPA can do it.

The new system incorporates an innovative hot runner manifold design that provides the best balance of melt distribution in the industry. It exhibits the lowest pressure drop ever measured. That is one reason why SIPA can significantly extend the maintenance interval, since wear and tear is reduced. Furthermore, any maintenance required is easy to carry out. Tooling and hot runners R&D team, says: "Xflow technology, which is unique to SIPA, allows us to create very high-cavitation systems without having to compromise on balance, pressure losses, and the formation of acetaldehyde due to polymer degradation. It goes without saying that Xflow can also be applied to molds with more modest levels of cavitation with equally impressive results.

Xflow is extremely efficient and it is scalable according to customer needs." Over the course of the last five years, SIPA has made great

strides in hot runner technology. The first generation of SIPA hot runners depended on a purely mechanical technology for balancing melt flow. Then in 2013, SIPA introduced a new generation of hot runners, which marked a decisive turning point in the approach to flow balance. This is when Xflow first came onto the scene.

The Xflow solution applies the most advanced concepts of polymer fluid dynamics to hot runner engineering. By taking melt rheology aspects into account, it became possible to obtain balancing results quite beyond those of traditional systems. Almost at a stroke, Xflow halved the imbalance in melt flow compared with the first generation. SIPA has since gone further. Third generation hot runner systems, introduced soon after the second generation, incorporate a further evolved version of Xflow that benefits from a total overhaul of the cylinder units, valve guides and nozzles. "When we design Xflow hot runner systems, we now take full consideration of rheological properties all along the many flow paths to the individual cavities," says SIPA team spokesperson. "This is really important, given that these days we are increasingly working on projects where preform walls are thinner than ever before. This means that it is critical for the hot runners to consume as little energy as possible so that the injection unit can push the molten polymer as quickly and efficiently as possible into all the cavities.

"Xflow is without doubt the best solution in this respect. Use of rheological rather than mechanical balancing translates into minimum energy demand and a very low pressure drop. Xflow can be applied to any application to provide the best solution for high-speed injection of critical preforms.

Without Xflow, such results are impossible to achieve."

PETWORK - 192 CAVITIES HOT HALF