



## A NEW GENERATION OF SIPA PREFORM MOLD HOT HALVES

Hot halves have been given a thorough revision in the latest generation - the third - of SIPA injection molds for PET preforms. New technical features include the incorporation of Xflow technology to produce a considerable enhancement in flow throughout the mold, creating a better balance and reducing pressure drops. SIPA has made considerable improvements to its hot-runner technology since it introduced its first generation of three-plate layouts for the XFORM injection molding system just three years ago. With each new generation, flow has become more balanced and AA levels have fallen.

### XFLOW FOR BETTER BALANCE

With the introduction of the second generation of XFORM hot

runner systems, SIPA moved from a purely mechanical procedure for balancing flow (also used on PPS systems) to one incorporating Xflow technology, immediately improving flow balance by some 50%. Xflow makes use of the very latest concepts in polymer fluid dynamics to allow SIPA engineers to develop new design solutions that take greater account of melt rheology and so arrive at flow balances in the mold that are almost impossible to reach with traditional calculation systems.

### FILLING VERY THIN CAVITIES

When designing Xflow hot runners, SIPA's engineers take into consideration various inherent aspects of pressure drop. "These days, we are increasingly confronted with projects where it is necessary to

produce preforms that are thinner than ever," says Andrea Cavalet, Global Engineering Manager Injection Molds & Hot Runners. "So we need hot runners that consume as little energy as possible during injection, enabling the injection unit to push the melt as fast as possible into those very thin-wall cavities." Xflow is the best system currently available for making this possible. By creating a so-called "rheological balance," it minimizes the energy required for melt injection; the pressure drop along the flow path is the lowest that can currently be achieved.

"Xflow can be adapted to any application, providing excellent results in high-speed injection of critical preforms. No other system makes this possible," says Andrea Cavalet.





### ALREADY IN ITS THIRD GENERATION

Last year, SIPA took another important step forward in mold design, with the introduction of the third generation of XFORM hot runners. These incorporate a further developed version of Xflow, which uses a totally new design of the cylinder group, valve guides and nozzles.

Third generation nozzles have an improved temperature profile and reduced pressure drop.

Ease of maintenance has been improved, since it is now easier to remove nozzle inserts in install new ones; in addition, the performance of the nozzle tip over its guaranteed five million cycle lifetime has been improved.

Various stem diameter options are available, and with the use of newly-developed ways of defining the best injection gate diameter for a particular preform thickness, gate quality is improved and cycle time reduced.

### EASE OF MAINTENANCE

Maintenance intervals on SIPA molds have always been longer than on rival systems, at five million cycles (assuming standard running conditions and resin).

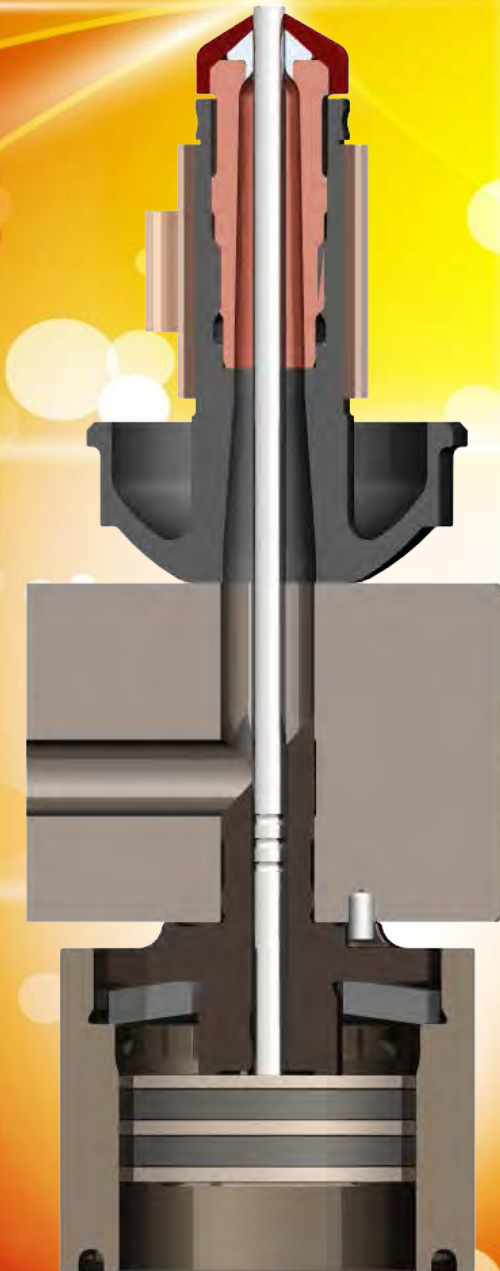
## TECHNICAL WINDOW - GEN. 3 HOT RUNNERS

Until now, SIPA has offered a special system to remove powder created by valve movements. But a new valve drive system on SIPA molds, which makes use of a new thermal profile in the valve bushing, produces no formation of powder at all, providing a further guarantee of long life.

With the new "Generation 3" cylinder, maintenance is simpler than ever: cylinder and piston removal are easier, since no tools are needed, and removal of valve stems is more straightforward.

Sealing components last longer and there is no wear on the piston due to tilting. SIPA's third generation piston is the only one in the PET market that has two seals rings: these provide extra control over the piston alignment, virtually eliminating the tilting issue and wear on the piston.

The new hot halves are compatible with standard cold halves and equipment used in the PET preform production sector. They use the same mechanical and electrical interfaces and same hot runner thickness, providing extra flexibility in use.



*Generation 3 hot runner stack: cylinders valve bushing and nozzles.*