

XVENT TAKES THE PRESSURE OFF BLOW MOLDING

SIPA has developed an innovative new method to help bottle makers produce complex shapes more easily and with less blow pressure, all without having to make any changes to the container design.

Using the patent-pending XVENT method, SIPA incorporates special designs of vents into body and base molds used on reheat stretch-blow molding machines. XVENT makes it possible to use between 10 and 20% lower air pressure than with standard technology, without affecting productivity or the specification of the bottle.

When a preform is blown into a bottle, all the air already in the mold obviously needs to be expelled as quickly as possible so that the bottle takes on the

exact dimensions of the mold. Some of the air escapes through

the split line and the tiny gaps between the mold for the base





and the two body mold halves, but these fissures on their own are not enough. For this reason, virtually all molds now incorporate numerous venting holes in well-defined positions to allow the passage of air to the exterior of the mold.

These vents are made simply by drilling small holes into the molds in what are considered to be the most critical areas. These holes vary in size, and the smaller they are, the more are needed. From a mold construction point of view, it is better to have fewer, larger holes, but this can lead to clearly visible marks that spoil the esthetics of the bottle.

So to enhance the ability of the bottle to take on the exact shape of the mold, without its esthetics being spoiled, new types of vents are needed. The same argument also applies to special designs of container where conventionally positioned holes are inappropriate. The question is, where should these vents be positioned for best effect, and how should they be designed? The answer is XVENTs.

XVENTs are very narrow circumferential channels, machined into the surface of the mold

in the most critical areas and camouflaged by features in the bottle. These channels lead air to holes drilled into the channels as well as to the gaps between the mold sections; the lay-out of the channels and the positioning of the holes are calculated for each individual mold design, so not as many holes are needed as with traditional technology, and they have smaller diameters.

The strategic positioning of vents – the air flow channels and the holes – in the most critical areas helps ensure that the air between the bottle wall and mold surface is exhausted as efficiently as possible. This permits a better formation of complex shapes and allows a reduction of blow pressure during bottle production.

The challenge for SIPA's technical team was to be able to calculate where to apply the vents to ensure a good formation of all the details in a bottle: sharp edge, logos, tight angles, special base design, and so on. To reduce the level of blowing air pressure required, the vent configurations need to be optimized in critical zones, and these differ from one bottle design to the next. This is why separate studies are done for

every new design, in collaborative efforts between the bottle producing customer and the mold designer.

In a series of trials, SIPA experts were able to achieve improved performance in terms of pressure, productivity, energy saving, for the production of plastic containers blown on all types of stretch-blow molding machines. The trials were done on different bottle and base shapes, geometries, sizes and final application (carbonated soft drink bottles with petaloid bases, mineral water bottles with flat bases, and so on).

