PREFORMS FOR ODD-SHAPED BOTTLES GET PREFERENTIAL HEATING TREATMENT

High-speed production of asymmetric containers with uniform wall thicknesses is possible with the use of Preferential Heating on SIPA's SFR rotary stretch-blow molding machines.

Bottles for such applications as beauty & cosmetics, squeezable sauces and salad dressings often have non-round shapes, while numerous containers for household products have integral handles to make it easier to use trigger sprays. All of these products are of course created from circular preforms.

A standard stretch-blow molding machine with a conventional oven can provide differential heating in the vertical direction – but what it cannot do is heat different parts of the circumference to different temperatures. So when it comes to blowing a symmetric preform into an asymmetric bottle, some parts of the wall end up thinner than others. Sometimes that can be tolerated, sometimes not.

For those applications where an even wall distribution around the circumference of asymmetric bottles is critical, SIPA offers Preferential Heating, PH. This is ideal where the ratio between the large and the small sides of a container is greater than 2:1.

What makes SIPA's PH ovens different from conventional ones has to do with the way the preforms rotate as they pass through them – or rather the way they do not rotate. The ovens have two distinct zones. In the first, in seven sections, they provide penetration heating, just like any normal oven. Here, the preforms rotate as usual, reaching a certain minimum temperature around their circumference. In the second, two-zone preferential heating section, the preforms stop rotating (both sections use individually-controllable infrared lamps on both sides). The obvious consequence of this is that certain parts of the circumference come out of the oven hotter than others. These are the parts that under normal conditions would stretch less in the blow mould.

Using a standard heating process on a complex container would result in premature cooling of material that is stretched less, causing areas of over-thickness on the finished container. This problem is overcome with PH.

SFR units with up to six cavities can currently be equipped with Preferential Heating. The SFR6 unit can produce up to 1800 bottles per cavity per hour and accepts preforms with bodies up to 150 mm in height and 38 mm diameter, and with neck heights up to 25 mm. SIPA is currently considering providing the PH option on SFR8 units as well.