

## Considerations when designing preforms

# Progressive preforms

Producing the perfect preform is part of a work in progress; a circular and sustainable preform that allows consumers to enjoy convenience and brands to reduce their environmental impact needs stakeholders across the packaging value chain to take responsibility for their sphere of influence. For preform producers, understanding that their sphere of influence is active on both macro and micro levels means that producing the perfect preform is an exciting challenge.



When it comes to develop preforms, global plastic packaging producer Retal draws in experts from design, recycling and production. These experts come both from within the company and from its vast network of multinational food and beverage brands. The core of a perfect preform lies in valuing the circularity of plastics packaging, states the company: rather than seeing the preform as a one-use unit, it should be seen as a potential source of ongoing value.

To realise the preform design, Retal takes advantage of the latest CAD software from Dassault Systèmes, augmented with bespoke patches, to allow them to create precise information regarding performance relating to the distribution of the thickness and stretch ratio of the bottles without needing to produce a physical product. Designer Andzejus Buinovskis says, "Having 3D models of the preform and a bottle, we can simulate different stretch blow moulding settings, including preform temperature distribution, stretch rod movement, pre-blow and final blow pressure variations. It is a powerful tool that saves considerable time and money associated with prototyping. In one case, stretch blow moulding and top load simulations with two preforms of the same weight but different geom-

etry showed us that one preform will produce a better, stronger bottle."

### Design to recycle

Practical advantages that contribute to the circularity and sustainability of its preforms, and to improve its overall environmental footprint have also to be taken into account. "Design to recycle" is increasingly important, with a crucial understanding that by designing products that can be easily and effectively recognised, directed to their corresponding recycling stream without disrupting the recycling process or hindering the quality of the recycled material collection. Light-weighting preforms means that less raw material is used to produce containers for the same volume of liquid/product, which also makes them cheaper to transport, reducing carbon emissions.

Retal is committed to integrating design to recycle principles internally and by engaging with customers to raise awareness to ensure that its preforms can

be turned into more easily recyclable PET bottles which is also reflected by a membership in the design for recycling platform RecyClass. The aim of this initiative is to improve the design of plastic packaging so that is more easily recyclable into high-quality recyclates which can be reused again and again. RecyClass' Chairman Paolo Glerean says, "We created our platform with a goal of harmonising the recyclability information across the plastics industry; we found that many actors of the plastics value chain, such as brands, converters and producers were keen to do more to make sure their products were in line with circular economy, yet the overwhelming and differing amount of information, on what is recyclability, is what made this task overly complicated. In our RecyClass tool, the A-F ranking provides a clear, reliable classification for plastic packaging, with clear suggestions on how to improve recyclability, in case there is room for improvement."

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