

REFILLABLE BOTTLES NEED
LIGHTWEIGHTING TOO



All around the world, interest is growing in the substitution of single-use plastics containers by ones that can be reused and refilled many times. As long as they can make a minimum number of trips, refillables can provide an economically viable alternative to one-way PET bottles and they can provide an economic, lighter and shatter-proof alternative to the original multi-trip glass bottles.

Because they are designed to last longer, these sorts of containers generally need to be more robust and heavier, but just as is the case with one-way types, there is an important need to keep their weight as low as possible.

Mexican container maker Mega Empack is one of the latest packaging companies to take advantage of SIPA's expertise, not only in producing refillable large PET containers and preforms, but also in helping to design products that are high in performance but low in weight. Over the years, SIPA has amassed a considerable amount of experience in designing such types of bottles.

Mega Empack (part of the Bepensa group that has activities in

Marco Antonio Romero Rugarcia, Gerente de Negocio at Mega Empack.





beverage production and distribution as well as in chemicals, various types of industrial and automotive equipment, and logistics) is an important supplier of bottles to The Coca-Cola Company. Its latest production line, inaugurated this February, is now running with refillable PET bottles, with inline production of preforms and bottles. Depending on bottle size, output can be well over 4000 bottles per hour.

The preforms are produced on a third-generation SIPA XFORM 500/48, while containers are blown on an SFL4-4XL. SIPA developed new fewer than five formats of lightweight bottles for Mega

Empack. SIPA was given the task of developing bottles that needed to withstand durability tests, carried out in the lab and also in real-life conditions, which ensure they can withstand multiple washing cycles, just like glass bottles. Washing was carried out at up to 60°C in alkaline conditions of up to pH 14, for as long as half an hour each time. Lab tests involved putting the bottles through 25 cycles.

At the same time, MegaEmpack wanted to use bottles that were lighter than versions already on the market. And since the bottles are mainly used for carbonated soft drinks or sparkling water, they had to resist internal pressures

and stress cracking, and have good thermal stability.

Two sizes of preform were designed, one weighing 93g for 1.5-L bottles and another weighing 119g for 2.0- and 2.5-L bottles (SIPA and Mega Empack continue to collaborate on a further weight reduction for the 2.0-L version). Both are characterized by low ovality and good concentricity and perpendicularity.

The preforms are blown in molds that have a special copper alloy in the champagne-bottle-style base, to enhance cooling; while the body is heated to around 85°C, the base (and the neck) are cooled to around 12°C.

