sodastream®

ISRAEL

SODASTREAM COLLABORATES WITH PTI AND SIPA TO PRODUCE NEW GENERATION TRITAN™ BOTTLES

SodaStream, a leading manufacturer of in-home carbonations systems, is known for marketing products which transform tap water into flavored or unflavored sparkling soda water at the touch of a button. In fact, the lifestyle enhancement company believes that “Planet Earth needs less waste and more sparkle.”

However, global success was not enough for SodaStream. The company knew it had to continue evolving to satisfy changing consumer needs. One of those needs was providing consumers with a sturdy, refillable container that would handle high dishwasher temperatures and accommodate high-pressure filling, as well as offer clarity and dent/scratch resistance.

Several years ago, SodaStream turned to PTI to assist them in engineering a solution that would delight its customers.

PARTNERING WITH PTI TO DEVELOP THE PREFORM

The process began with SodaStream working directly with Eastman Chemical to identify a Tritan™ resin grade that would deliver the necessary properties. It was important that the resin have amorphous glass-like clarity without crystallinity and haze.

The resin also had to show some strain-induced crystallization to accommodate reheat stretch blow molding.

The next part of the of the process was figuring out how to develop a preform that could be commercially blow molded. It was important to understand how the Tritan™ grade was going to be reheated because it needed to be approximately 30C hotter than PET to make the plastic preform malleable enough for blow molding.

That’s when the company approached PTI to assist them in developing the right preform.

After performing multiple blow molding and performance simulations, PTI determined that an 83g Tritan™ preform would be able to deliver optimum performance. This represented a 15% weight reduction from SodaStream’s existing 1L PET container. (Part of the weight savings is attributed to Tritan™ ’s lower specific gravity.)

Prototyping trials and performance evaluations were conducted to ensure application pressure safety, and a sidewall thickness of a minimum 0.7mm which was required for package integrity after being subject to multiple pressurization cycles. The Tritan™ material required higher stretch ratios and reheat temperatures compared to PET, which proved challenging for injection and reheat cycle times.

SIPA ADDS CUSTOM BOTTLE MANUFACTURING SOLUTION

The thick-walled plastic container meant challenges in both injection and blow molding. In order to blow mold a blemish-free container, special care has to be taken during the manufacturing process so that preform scuffing is minimized when the preforms are transported from injection to blow molding.
SIPA was able to engineer a blow molding machine with enough lamp power to heat a very thick preform close to 140C without having to carry over the heat of injection for blow molding.
This also eliminates scrap that had been generated when the blow molding line went down inadvertently. (Hundreds of preforms had been rendered useless each time because they could not be reheated back to the desired blow temperature).

The production process is composed by 3 steps, perfectly engineered to work synchronized as one.

PREFORM MANUFACTURING

The system that SIPA developed starts with an XFORM 350/48 Gen4 preform injection molding unit. This can produce several different types of preform both in PET and in Tritan™ .

Once molded on the XFORM, preforms are automatically taken out by a robot fitted with a “cool pick plate” and transferred to a stabilization station, where they remain for several cycles.

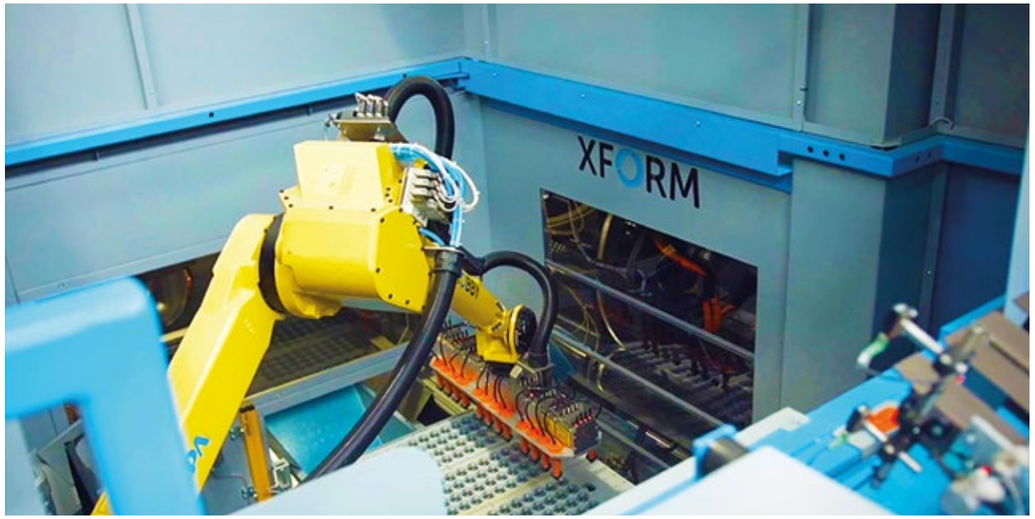
PREFORM TRANSFER

They are then picked up by a second robot, a six-axis anthropomorphic type fitted with special end-of-arm tooling equipped with vacuum suction, and immediately transferred to a SIPA SFL 6/6 EVO linear stretch-blow molding machine.

BOTTLE BLOWING

Here, the bottles are formed and then transferred using star wheels for 100% in-line scanning with a camera to ensure their quality. All of this happens in an uninterrupted process, running at a rate of 3000 bottles/h.

The knowledge and expertise that SIPA and PTI have under one global roof and the high level of flexibility provided were key factor for the success of this unique solution. The complete system involves a high degree of technical complexity that goes well beyond what is normal in the many systems SIPA and PTI have developed over many years for production of single-use PET bottles.



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