



# A BOTTLE

## EVERYONE IS FAMILIAR WITH

Soft drinks, fruit juices and mineral water: they can all be packaged practically and easily in **PET bottles**. Once the bottles are empty, they are disposed of and can be either recycled or burned with other residual wastes. Their uses are practical, yet their fabrication is complex and challenging. **BALINIT coatings from Oerlikon Balzers** establish the prerequisites for efficient production.

The victory march of PET bottles began about 30 years ago. They get their name from the polyethylene terephthalate of which they are made. This material's formability is the foundation for a production process whose first step entails the fabrication of a blank known as a "preform". In the second step, the blank is put into a production machine where the stretch blow molding method is used to form it into the shape of a bottle.

PET bottles have today become commonplace. Just as with many other items in the consumer goods sector, however, they too are subject to high cost pressure. Consequently, their production must be streamlined to make it as efficient as possible. Likewise their

recycling must be done consequently, for example through deposit systems.

### **Fast Cycle Times as a Factor for Success**

This can be accomplished only through the use of extremely complex tooling technology. MHT Mold & Hotrunner Technology AG is a specialist in tools used in the manufacture of PET preforms. Fast cycle times and high throughput quantities really matter. In a production step that lasts only five seconds, their tools allow the manufacture of up to 192 preforms for PET bottles.

With its international reach, the firm supplies its products to manufacturers of beverage packaging as well as of con-

tainers for the food and pharmaceutical industries. For these customers, cycle times reduced by only fractions of a second mean significant cost advantages in their mass production processes. This is why MHT designs its tools and parts with a special focus on enabling the most efficient operation and the fastest manufacturing processes possible. The coating technologies provided by Oerlikon Balzers play a significant role here.

“Uncoated cores have long since ceased to be an option for us. The improvement in production quality is absolutely sensational,” says Klaus Wegmann, MHT Plant Manager.

What’s more, the wear-reducing coatings also increase the service life of tools used in mass production operations. “This enables us to achieve optimal results in these applications – which are the fruit of a good 20 years of outstanding collaboration with Oerlikon Balzers,” says Christian Wagner, Chief Executive Officer, MHT.

### **The Right Coating: Resistant to Extreme Stresses**

The production process, with injection pressures of 500 to 1,000 bar, is repeated millions of times over. The stress to which the tools are subjected is commensurate. The preform contours are achieved by the core, a key component that shapes the internal contours and the neck ring (the bottle neck and the threads for the screw cap).

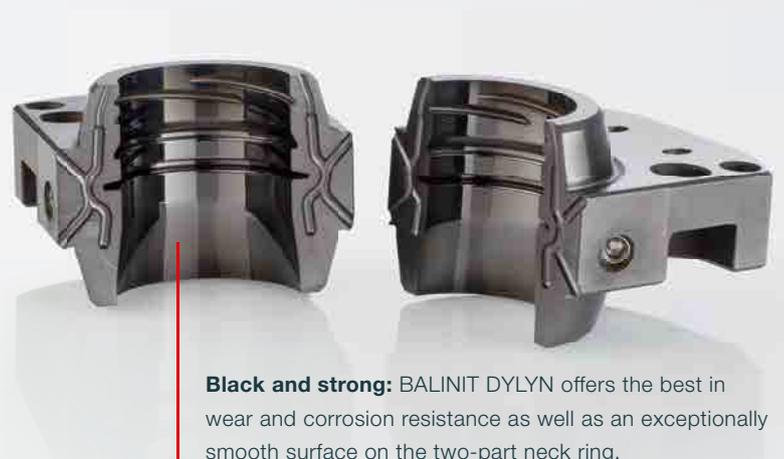
This is where the advantages of BALINIT DYLYN come to the fore: The silicon-infused DLC →



**Always with best practice in mind:** Christian Wagner, CEO MHT, (l.) and Michael Bilo from Oerlikon Balzers with BALINIT-coated mold cores.

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**Klaus Wegmann**  
Plant Manager, MHT



**Black and strong:** BALINIT DYLYN offers the best in wear and corrosion resistance as well as an exceptionally smooth surface on the two-part neck ring.

(Diamond-Like Carbon) coating offers the best in wear and corrosion resistance as well as an exceptionally smooth surface in the injection molding process. This ensures better interplay between the parts on the neck ring, reduces friction, and facilitates cleaning and the removal of deposits or build-ups that result from the increasing use of additives in the plastic.

When high-end results are in demand, BALINIT DYLYN is also used for the cores. The standard approach for these, however, is a titanium nitride coating, BALINIT A. This coating improves the removal behavior of the preform, protects the special microstructure of the component and offers protection against the sometimes high mechanical stresses that result from cleaning, all with no difficulties.

Find out more about our BALINIT coatings:

[www.oerlikon.com/en/balinit](http://www.oerlikon.com/en/balinit)



Mold & Hotrunner Technology AG was founded in 1996 and manufactures high-precision injection molding tools and hot runners for the packaging industry. The company delivers tools with up to 192 cavities for all notable machine types for the manufacturing of PET preforms. 140 employees work at the main headquarters near Frankfurt (Germany) as well as at locations in the USA, Brazil and China.

[www.mht-ag.de](http://www.mht-ag.de)

Injection molding tools of MHT don't just look high tech; their design also facilitates high productivity.

