

How IML 'Cuts the Mustard' in Germany

The lightweighting advantages of in-mold labeling in times of soaring resin costs are highlighted by the experience of Germany's largest mustard maker. Develey Senf & Feinkost GmbH of Unterhaching/Munich wanted to update its container with a handy yogurt-style cup design. Develey

wanted a lighter package that would maintain rigidity and be more recyclable and faster to mold.

The firm worked with custom molder Weidenhammer Plastic Packaging, Swiss moldmaker Kebo, IML system supplier Waldorf Technik, and machine maker Demag Plastics Group (now part of Sumitomo) to create a system that produces thin-walled polypropylene cups with nearly full-wrap-around labels in a cleanroom environment at 35 million units/yr. It is Europe's first plastic cup with an IML paper label and tamper-evident ring.

The old cup received a PP label in a secondary operation. It was 0.57 mm thick and weighed 9.0 g without the label. The new cup is 0.39 mm thick and weighs 7.2 g without the label—a 20% reduction. Despite the thinner wall, the cup is stiffer and more stable than its predecessor. Cycle time of the old cup in a six-cavity tool was 4.3 to 4.4 sec. The new cup runs in eight cavities and a cycle of 4.5 to 4.6 sec—a 25% to 30% boost in productivity. The cups are molded on a 350-ton Demag El-Exis S 350-810-1450 hybrid electric/hydraulic machine.

"The concept was to reduce the wall thickness to just 0.39 mm including the label, and cut container weight by 2 grams while maintaining a tolerance of $\pm 2\%$," says Kebo project manager Thomas Fehr. Develey also wanted a more recyclable cup to reduce or eliminate costs arising from Germany's DSD recycling program. The option to use a paper label could save an additional 10% to 15% in costs. The label does not surround the cup entirely, but leaves a gap that allows users to see the amount of mustard remaining. The rough-



Develey Senf updated a 35-million-unit/yr mustard cup to a lighter, thinner-walled IML package with a paper label and tamper-evident ring.

ness of the paper label prevents stacked cups from sticking together.

The eight-cavity IML tool is smaller than the previous six-cavity mold and was designed to handle either paper or plastic labels. The tool has thin vacuum channels to hold statically charged paper or polymer labels in the correct position. The tool is designed to maintain label registration within 1 micron, says Fehr. Molding with paper or plastic labels also requires an optimized hot-runner system.

The label-placement system from Waldorf Technik is accurate to ± 0.2 mm over all eight cavities says CEO Wolfgang Czizegg. The labels are sucked onto dummy cores by special vacuum grooves. The system picks up labels from a two-level label magazine

(four from each level). Label insertion and part removal takes only 1.5 sec. A safety mechanism ensures that all eight cores receive a label or it halts the cycle.

By Mikell Knights, Senior Editor

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Waldorf Technik GmbH C. KG,
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