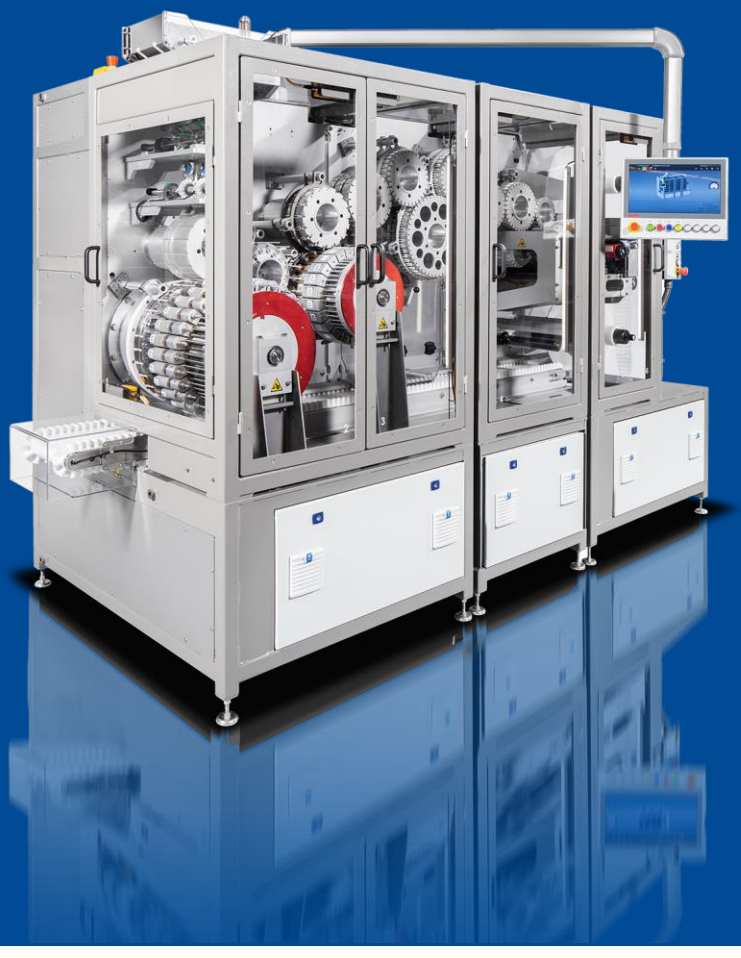
FORWARD AM
Innovating Additive Manufacturing

BASF
We create chemistry

Improving Specialized Packaging Machines with 3D Printed Parts

Series-grade material & optimized design meet process & chemical resistance requirements



OVERVIEW

Tembo produces customized processing machines, in this application for detergent tab production, that need to meet specific customer requirements. They used simulation to develop a design for higher throughput that could only be produced with 3D printing. Additive Manufacturing enables the cost-effective, small batch production of these complex and unique components that go beyond traditional manufacturing. In collaboration with rpm GmbH and utilizing BASF Forward AM's Ultrasint® PP 1400 Black, Tembo achieved the required dimensional accuracy and reliable output of these critical production parts. The chemical resistance properties of the Polypropylene material were also a key requirement to make this application a success.

QUICK FACTS

Material:
Ultrasint® PP 1400 Black

Technology:
SLS

Partner:
rapid product manufacturing GmbH

Tembo

Beginning as a small tobacco factory in Kampen, NL, Tembo has evolved over four generations and spanning 100 years to become a specialist group of companies, bound by sustainable development, and built to meet the needs of an ever-changing global marketplace. It is a dynamic group of companies building long-term relationships with customers, suppliers, stakeholders, and other business partners.

Although culturally and geographically diverse, Tembo is united in a common goal: to provide customers with industry leading manufacturing solutions and services.

TEMBO.EU

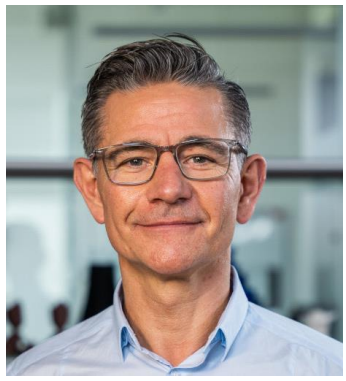
Material provides excellent chemical resistance

0.3 tolerances achieved within production

1000 tabs produced every 10 seconds

Challenge: Produce small batches of complex parts for specialized packaging machines that meet precise tolerances and chemical resistance requirements

Tembo originally designed this application with a resin material that was unable to withstand the long-term exposure to the enzymes used during the packaging process. The team decided to switch from a soft to hard material, and together with rpm, Forward AM and Tembo they adjusted the designs and production to match the part requirements. They performed eight design optimizations with the Ultrasint® PP 1400 Black and optimized heat distribution during printing to achieve the required accuracy to produce these superior parts. This innovative material enables repeatable production and possesses the required chemical resistance for this critical application.



"As a launch partner with BASF Forward AM for PP 1400 Black, we had early access to this material that proved to be the perfect solution for this machine part for Tembo. Forward AM introduced us to this industry-grade material and then worked hand-in-hand with our team to optimize our production and environmental parameters to achieve the precise tolerances required for this project. We are sure that combining series production workflows like rpm's with performance materials like PP 1400 Black will continue opening industrial applications to additive manufacturing."

-- Dr. Jörg Gerken, Technical Director
rpm rapid product manufacturing GmbH

Challenge: Ensure repeatability and consistent quality in a 3D printing process

rpm implements a meticulous pre-production workflow including the pre-scaling and calibration of the machine to achieve the desired tolerances and consistent quality. Ultrasint® PP 1400 Black, along with part design optimization and GOM scanning of all parts, ensures that dimensional accuracy is achieved to not endanger the high-volume production in the Tembo machines. SLS technology also provided the ability to produce parts in small batches for each machine sale to reduce risk and inventory costs for Tembo while still allowing delivery on short timelines. Part of the post-processing workflow also includes a 100% removal of SLS powder using an automatic de-powdering system with a specific and validated program for this series to ensure that no contamination arrives in the production system.

Learn more about Ultrasint® PP 1400 Black:

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