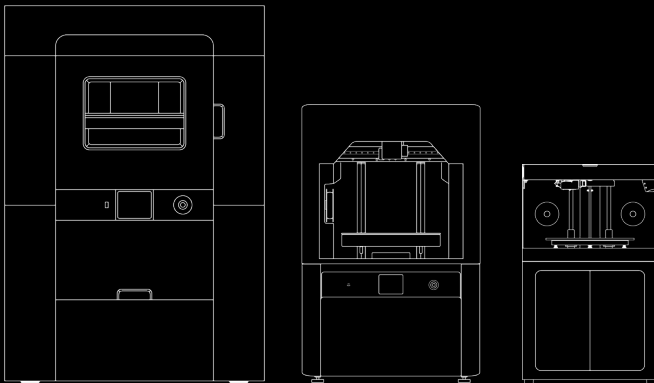


Custom Push-Plate

Food and Beverage/Packaging Industry
Additive Manufacturing Application Spotlight



Industry: Food & Bev / Packaging
Application: Packaging Custom Push-Plate
Technology: FX20™, FX10™, X7™
Materials: Onyx®, Aramid Fiber (Kevlar®), Smooth TPU 95



Custom Push-Plates

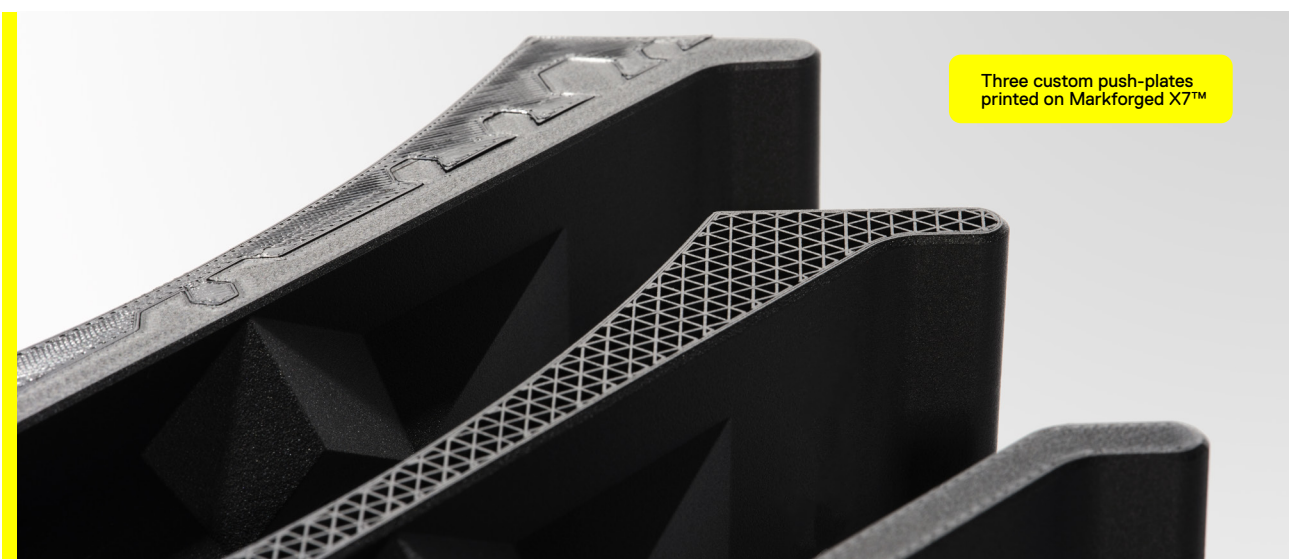
On a packaging line, production teams specify and deploy pushers for a range of purposes—diverting and sorting, rejecting, inserting and feeding, lane switching, and more—and similarly these projects involve a range of approaches to prepare and install them. Increasingly, factories are called on to operate with more agility in terms of both what they are producing and when, and meeting these new demands can boost the level of automation introduced on a factory line, including the need for custom pusher components. Additive manufacturing expands the options for how production teams are able to produce custom pusher components onsite, helping them resolve challenging pusher placements, unique product contact surfaces/angles, and other objectives.

These parts grant teams the flexibility to improve pusher performance in hours not days, without introducing further delays to wait for the shipping and testing of specialized components or conventional custom parts development cycles. With each success, the team adds approved, validated designs back into their digital warehouse, ready to be fabricated again with the click of a button. And this is done without adding significantly to physical inventory requirements.

The process steps to create additive manufactured pusher components:

- Determine which elements will resolve the issue and the custom parts requirements.
- Modify existing designs / create new geometry in CAD.
- Produce strong, reliable custom push-plates and mounting adapters on-demand using industry-grade composite Onyx®.
- For added strength, include Continuous Fiber Reinforcement (CFR) to achieve metal-strength parts. Include Aramid Fiber (Kevlar®) CFR for added impact resistance.
- Iterate and optimize part performance using the Simulation feature in the Digital Forge™.

“Engineering, design, production & maintenance teams produce strong, reliable custom push-plates and mounting adapters on-demand using additive manufacturing.”



Design Process

The production team produced three variant custom rejection pusher-plates based on the same custom mounting points: flat, curved, and a hybrid push-plate that incorporates a Smooth TPU 95A impact-dampening pad to the product-contact surface. All three were 3D printed and mounted the same day as their need was identified, and each are free from hardware that might scratch the product. The team then evaluated which angle and surface strategy worked best to resolve the product line in this case, and they have access to all three options for future custom push-plate deployments.



“Additive manufacturing expands the options for how production teams are able to produce custom pusher components onsite, helping them resolve challenging pusher placements, unique product contact surfaces & angles, and other objectives.”

ROI Highlights

1. Produce a custom push-plate or mounting adapter for a pusher system in hours to solve a problem your teams identify today.
2. Resolve a broad sweep of potential parts with additive manufacturing, instead of investing in costly and wasteful one-off tooling for each case.
3. Reduce the need to procure and store a backlog of specialized pusher system components you might rarely if ever need, without costing your team the advantages to solve unexpected problems.

© Copyright Markforged 2024. Markforged, Inc., Waltham, MA 02451 USA, the Markforged name and logo are registered trademarks of Markforged Inc., in several jurisdictions worldwide. As noticed, other product names may be trademarks of Markforged Inc. A current list of trademarks for Markforged, its subsidiaries or affiliates is available upon request to legal@markforged.com. This document is current as of the initial date of publication and may be amended by Markforged at any time. Not all offerings are available in every country in which Markforged operates. The case studies, performance data, and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions. THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. Markforged products are warranted according to the terms and conditions of the agreements under which they are provided.