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Production End-of-Arm Tooling

Food and Beverage/Packaging Industry Application Spotlight

End-of-Arm Tooling

Addressing the escalating challenges posed by the Food Manufacturing Industry's rapidly expanding SKUs and frequently updated packaging can be an exasperating endeavor for manufacturing teams. How can teams maximize performance and agility on each line when the equipment utilized last month may not align with the packaging of the upcoming version launching next month? How can they achieve faster changeovers to accommodate mixed packaging and the demand-driven supply chain's agility? Production-ready additive manufactured (AM) End-of-Arm Tooling (EOAT) offers a solution by enabling teams to consolidate and tailor end-effector solutions while simultaneously cutting costs and lead times.

Industrial composite 3D printers simplify the fabrication of robust parts on demand at the point of need, bypassing the extended development cycles and high expenses associated with conventional custom part machining. Moreover, the capability to adjust a design for lightweight while retaining metal-like strength through continuous fiber reinforcement presents an opportunity to customize designs for added functionality.

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PRODUCTION END-OF-ARM TOOLING

Additional features like vacuum systems, sensor mounting, and cable routing can be seamlessly integrated into the design of the additive-manufactured EOAT part itself.

This integration not only minimizes the risk of entanglement or collision with other components of the work environment but also reduces potential downtime. Lighter parts are also compatible with smaller robots, enabling manufacturing teams to deploy automation modules to any position on the line using collaborative robots.

Additive manufacturing empowers teams to maintain operational continuity and produce necessary parts directly on the factory floor. With additive manufacturing, teams can:

- Design custom parts to tackle challenges encountered on the factory floor.
- Achieve intricate geometries using industry-grade materials like Markforged e Onyx® micro-carbon fiber-filled nylon.
- Fabricate lightweight composite parts with metal-like strength using Continuous Fiber Reinforcement (CFR).
- Access authenticated additive-manufactured EOAT parts from the digital inventory as the need arises.

Custom Vacuum Grippers printed on the Markforged X7

Design Process

During the final packaging phase, a suction gripper is utilized on a production line to transfer unit containers into the retail packaging box. Since the spacing between the grips varies based on the latest product and box shape, the manufacturing team can dynamically adjust the gripper's length using additively manufactured (AM) End-of-Arm-Tooling (EOAT) without unnecessary weight. Producing the part in-house eliminates delays associated with waiting for a custom part to be shipped by the supplier. Consequently, utilizing Onyx for part fabrication results in quicker production, reduced overall costs, and lighter loads on the packaging robot.

Key ROIs

1. Achieve production in a matter of hours instead of weeks typically needed for conventional custom parts manufacturing.
2. Expand your digital inventory of solutions to expedite changeovers even further

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