

Zero Tolerance

INDUSTRY	Consumer Packaged Goods
APPLICATION	End-Use Parts
LOCATION	Detroit, MI
CUSTOMER SINCE	2021
PRINTERS	X7, Mark Two
MATERIALS	Onyx FR



THE CUSTOMER

Zero Tolerance, LLC is a Michigan-based plastic injection mold machine shop working with customers in the defense, medical, consumer goods, automotive, and electronics industries. Started in 2011, the company offers EDM, CNC machining, injection molding, and additive manufacturing services.

“My advice to other machine shops is to try it. You will be amazed how useful additive manufacturing can be. We’re so happy we did.”

STEVE MICHON

PRESIDENT AND OWNER OF
ZERO TOLERANCE, LLC

THE OPPORTUNITY

Steve Michon, President and Owner of Zero Tolerance, LLC has always been committed to investing in the highest performance technology to stay competitive and provide his customers with the best solutions.

Zero Tolerance was selected to receive a free Markforged X7 3D printer as part of Project DIAMOnD from Automation Alley, an Industry 4.0 knowledge center based in Michigan. This initiative, funded by Oakland County, MI, distributed over 300 Markforged 3D printers to create the country’s largest distributed 3D printing network. Using Eiger 3D printing software for slicing, storing and printing parts, each 3D printer is connected to a centralized, secure cloud network. In exchange for Markforged 3D printers, participating manufacturers such as Zero Tolerance will print parts for emergency aid, such as PPE, when called upon.

“This new technology challenged us to think differently about our approach to manufacturing. We were used to removing material with subtractive manufacturing, so we had to think backwards.”

STEVE MICHON

PRESIDENT AND OWNER OF
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THE CHALLENGE

Zero Tolerance had a job requiring them to load 8 brass inserts into a 275° mold, one-by-one. It was incredibly time consuming as well as a burn hazard. This manual process was yielding inconsistent cycle times, averaging around 45 seconds. Zero Tolerance wanted a solution that enabled them to load all eight inserts into the tool at once, reducing cycle times and increasing part production.

Their first thought was to robotically load the inserts into the tool. However, they were uncertain the job would be lucrative enough to justify the cost of the robot. They had designed an end of arm tooling solution a year before they called the “claw” which would enable them to load all inserts into the tool at once. However, due to the complexity of manufacturing it with traditional methods and the cost associated with a robot, Zero Tolerance never actually made it. They decided this would be the perfect project to test on their new 3D printer.



THE SOLUTION

Because the “claw” had originally been designed as an end of arm tooling feature, there was some redesign necessary to create a hand-held version.

The original claw was redesigned to make the handle more ergonomic. The first claw they produced was prototyped and printed on their Markforged X7 3D printer, out of Onyx. After inserting approximately one million parts and almost a year later, the eight fingers on the claw only recently needed to be replaced.

The overall cycle time has been reduced by 19-20 seconds, which has increased production by 50%.

The faster cycle times allow Zero Tolerance to finish orders more quickly, gives them more of an opportunity to run other jobs in the press, cuts back on employee hours needed to run those parts, while eliminating the burn hazard.

Zero Tolerance has now created three different versions of the “claw” that are used for three different molds they run in-house and have even produced “claws” for other machine shops who have submitted purchase orders.



The Future

With their latest addition of a Markforged Mark Two printer, Zero Tolerance reinforces their commitment to invest in the highest performance technology to achieve quality products, quickly, and efficiently.

“Seeing the enormous impact that the ‘claw’ has made to our injection molding department’s productivity, we are excited to explore all the capabilities additive manufacturing has to offer, Our goal is to increase the use of 3D printing in every aspect of our manufacturing, including 3D printing with metal.”

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