

CUSTOMER

CNC-AUTOMATION WÜRFEL

COMPANY INTRODUCTION

CNC-Automation Würfel is a medium-sized company located in Singen, Germany, that specializes in robot automation and offers personalized service in manufacturing, process automation, and optimization.

If a customer has a part that they would like picked, cleaned, or polished, CNC-Automation Würfel would immediately create a system layout and then build it, put it into operation, and carry out final inspections in house. Services also include putting it into operation at the customer's site and potentially carrying out continued maintenance on the robots.

3D PRINTING ADOPTION

The company started using 3D printing technology in 2017 to see how it could be implemented in their own systems. They printed components that were previously made using a milling cutter or lathe, which meant high costs and long lead times. The new 3D printing technology allowed for faster and more agile production. They also printed prototypes to test systems operations. CNC-Automation Würfel's printing business has grown steadily since the implementation of 3D printing. From originally receiving one to two orders a month, they now receive between 10 and 20.

INDUSTRY SEGMENT: Parts providers

INDUSTRY SUB-SEGMENT: CNC Machines manufacturers

WHY 3D PRINT

"We are able to now to print parts that weren't possible before. What else could we make? Whatever our resources allow. I'm thinking now...well, the things that we've printed, they could also be made using other procedures. It would be more costly, and perhaps only possible in multiple parts, but they could be made. And with the printer, we were able to manufacture them as one part."



WHY HP MJF

"HP MJF is better and more optimal for our needs, uses a better material, and doesn't require as much maintenance as the 3D printer we had until now."

—Lars Weiß, Sales Manager,
CNC-Automation Würfel

JIGS, FIXTURES AND TOOLS

ROBOT ARM GRIPPER

APPLICATION VERTICAL: Industrial

INDUSTRY SUB-SEGMENT: Machinery equipment | Robots

CNC-Automation Würfel's robots generally don't just pick up from one conveyor belt or location, but from many conveyor belts and/or locations, so their robots need several gripping systems, such as a multi-gripper or a changeover station. But in this instance, the customer wanted everything to be done using a single multi-direction gripper, so they now have three pairs of gripping fingers at the front of the robot to grip the items properly. However, producing a gripper adapter with a milling cutter or lathe is extremely difficult as it requires a lot of knowledge in this area and prompts questions such as:

- How can I design this component so that it can also be milled?
- What does the component need to tolerate?
- How does the tubing need to be positioned, and what are the pneumatics like?

Because CNC-Automation was only able to position these on the outside of the component or on this gripper adapter, the process required tubing add-ons so that it didn't snap or tear.

To make the entire process shorter and more straightforward, and maybe even less complex from a design perspective, they said, "Let's make this gripper adapter using a 3D printer." Ultimately it came down to three models, ranging from round to angled. They were then strutted to the final product, which is now used on three of the company's automation systems. This gripper adapter looks like a strutted box section that has the screw connections, bores for pneumatic connections, and blow-off valves in it, and with a flexibility that would not have been possible with milling. In fewer than two days, they designed a simple component in line with their needs.

TIME REDUCTION

The original process from design to the finished component used to take eight to 10 weeks. Using HP Multi Jet Fusion technology, that process has been reduced to only two days, a time reduction of approximately two months.

COST SAVINGS

The 3D printed part costs approximately 200€, and the design process costs totaled between 1.500€ and 2.000€. The original part made with traditional processes used to cost three times more. In the end, there is a 66% cost reduction using HP MJF technology and the other design processes needed to 3D print the final part.

