

Azoth

Azoth Uses RIZE AM to Transform Supply Chain From Order On Demand to Make On Demand

CHALLENGES

PSMI wanted to find a better solution for sourcing machine spare parts. Orders are traditionally very costly due to small-batch quantities, and needed quickly. Parts can be difficult to source because they are old and OEMs have gone out of business or parts became obsolete and prints do not exist.

SUMMARY

PSMI created a wholly-owned subsidiary, Azoth, to provide its customers with on-site AM solutions. Azoth partnered with RIZE to build digital tool cribs. Manufacturing parts together on demand eliminates bottlenecks and saves money.

RESULTS

- Reduced some part costs by as much as 98%
- Cut lead times by as much as 8 weeks
- Ink marking capability ensures full traceability
- Safe, easy production of industrial parts provides compliance with plant safety policies

Headquartered in Saline, MI, USA, global subtractive solutions leader [PSMI](#) (Production Services Management Inc.), operates tool cribs in over 250 industrial manufacturing sites worldwide. Their customers include many of the largest automotive and industrial equipment manufacturers in the world.

The visionary company noted enormous challenges sourcing machine spare parts. Parts become costly since they are small-batch orders that the customer requires quickly and often unexpectedly. These types of parts are not prioritized in traditional manufacturing shops. Prices are also high because prints do not exist or are difficult to locate, especially when a supplier has gone out of business.

Azoth has identified a solution to these challenges using additive manufacturing. “We have a void in our supply chain and we really see additive manufacturing helping to fill that void,” said Scott Burk, President of PSMI. “The void exists for customers that need special one-off parts that the traditional tool and die shop would charge a lot of money for because they need to strip down and rebuild a machine to make those parts. Those usually take six to eight weeks or more in lead time, and the price is usually exorbitant.”

Following a comprehensive review of industrial 3D printers, PSMI selected RIZE™ as its first technology partner.

Within three months, the Azoth team was supplying RIZIUM™ parts to its existing customers, executing the business model they envisioned and generating income. RIZE is a key partner for Azoth's and PSMI's AM initiatives.

“Production staff are always trying to put out a fire when a line goes down due to a part failure,” said Scott. “In many cases, these widgets are so important that if one breaks, it can send an entire factory home. But now, using RIZE additive manufacturing technology, we can manufacture a range of parts they need in that facility on demand. Having RIZE 3D printers on site can mean the difference between having a one-off or small-batch part available in eight hours vs. eight weeks for machined parts.”

Scott added, **“Using RIZE 3D printers this way enables us to add more value for our customers and become more valuable to them.** Right now, someone comes to one of our cribs wanting something and we have to begin the ordering process. With RIZE, not only can we provide the part faster, it gives us an opportunity to work with our customers on site to optimize the design of specialty and custom components. We're completely changing the concept of the supply crib.”

Why RIZE

Scott and his team selected the RIZE™ ONE 3D printer primarily for its safe process and materials that enable it to be used in their customers' plants, most of whom have strict safety and compliance standards. And, given that RIZE ONE is PSMI's first 3D printer, they were also impressed with how simple and easy it is to learn and operate compared to other systems. RIZE also enables customers to get a part in hand 50% faster than any other additive manufacturing system to keep the plant running due to minimal post-processing following printing.

Moreover, RIZE's ability to produce accurate, complex parts with best-in-class Z-strength, with low moisture absorption and high chemical resistance, means it can be used for a wide range of functional applications in customers' plants and to produce parts that can't be manufactured by machining.

Another unique capability of RIZE 3D printers that caught the attention of the PSMI/Azoth team is the ink marking capability that enables users to print immutable part numbers, instructions, logos and even QR/bar codes on parts for traceability, authenticity and compliance.

Said Scott, “Today's process for finding a legacy part is going into an archive to try to find the part information. Then, we make sure that part information is correct and reverse engineer it with a tool and die shop because the company that made the machine and its spare part are long gone. With a QR code embedded within the 3D printed part, I can scan that part and know every little detail, what iteration it is, when the last time we made it was, etc. All of that can be easily put on that QR code. Now, that information is never lost.”

All of these capabilities, at the lowest total cost of ownership, combined with a highly-responsive



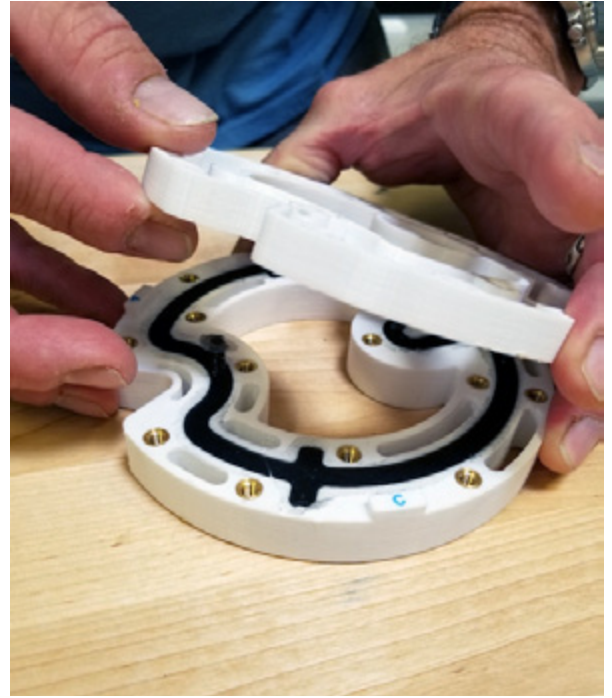
and easy-to-work-with RIZE team, sealed the deal.

Applications

Azoth engineers design and reverse engineer a wide range of functional service parts, from kitting trays and pulleys to molds, tooling and machine spares. For example:

Mold for Custom Polyurethane Seal

Azoth designed a mold with unusual geometry for a custom polypropylene seal in SOLIDWORKS, printed it on a RIZE™ ONE 3D printer and prepared the mold with several heat-set threaded brass inserts used in the base. The low surface tension of RIZE's RIZIUM™ material meant that no mold release was needed before casting. Conventional molds require cleaning and frequent re-application of silicone release agents. As a result, the mold was ready for testing in one day at a cost of \$30 vs. \$4,000 and 6-8 weeks for a machined mold.

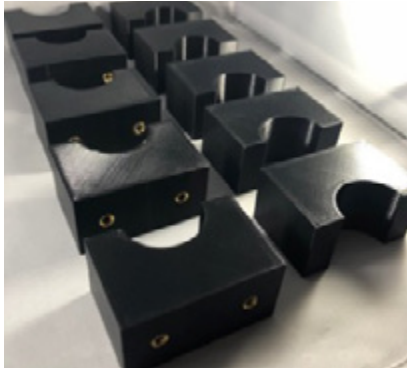


Drilling Template

Azoth used RIZE ONE to produce a drilling template for a customer that designs and builds tooling, gages, CMM fixtures and machine details to make the process faster, easier and more accurate. The template was completed in less than two hours. They also printed the part number directly onto the part for quick identification.

Gage

The Azoth team used RIZE to produce gages with pressed-in threaded inserts to orient parts correctly for the gage manufacturer. They were able to cut the lead time for this part from 5 weeks to just 1 week.



Torque Gun Holder

Knowing they could significantly cut inventory costs for the customer, Azoth began producing torque gun holders for assembly components on RIZE ONE. Instead of stocking the component at a cost of \$200 per part and with a lead time of 4 weeks, they use RIZE to print the part on demand in one day at a cost of \$45 per part, cutting the cost and lead time each by 4X.



Stamping Fixture

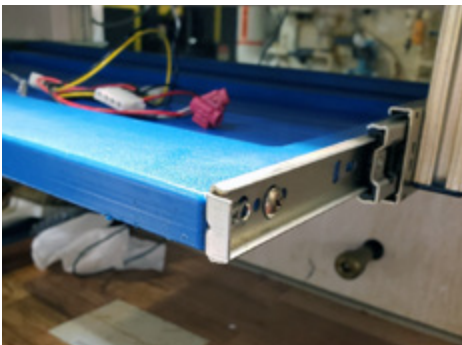
The inventory of fixtures used to hold stamping components and similar parts at one of their global automotive manufacturer's assembly plants were manufactured using traditional means. However, in time, some of the parts, such as the stamping component, did not have a supplier. Sourcing a new supplier and manufacturing the part



required long lead times. Azoth reverse engineered the parts, printed them on the RIZE ONE 3D printer and delivered them in less than 48 hours vs. the 6 weeks previously required. In addition to time savings, Azoth was able to eliminate shelves stocked full of this type of tooling and replace it with a new system, TOMO (take one, make one), reducing costs by 70% per part.

Shelf Cap

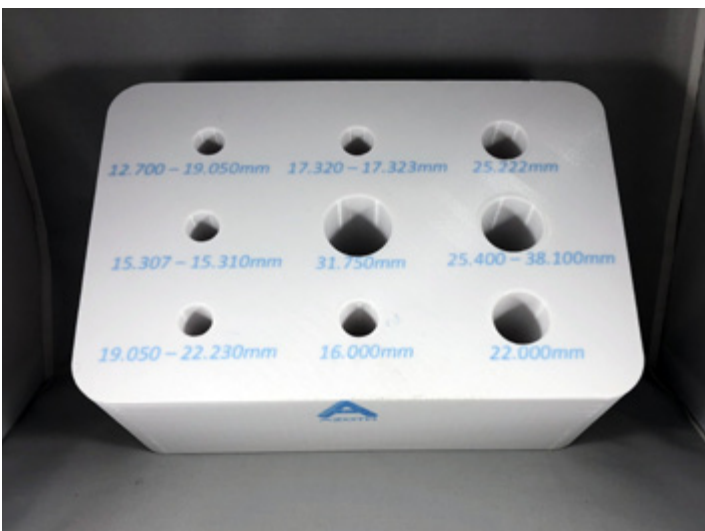
Safety is a corporate imperative at many manufacturing plants and all incidents are escalated quickly and taken very seriously. A safety incident occurred at a customer plant, where an employee injured himself on the corner



of a desk. Azoth provided a solution using RIZE. They designed and mass-produced shelf caps that protect employees from sharp corners and delivered the parts to the plant within 48 hours.

Precision Arbor Holder

An automotive manufacturing plant needed a precision arbor holder. When their supplier quoted \$2,700 for the part with a 6-week lead time, Azoth used RIZE ONE to manufacture an 8"x9"x4" arbor holder for \$370 and delivered it to the customer in just one week. In Addition, RIZE ONE enabled them to print the arbor sizes next to the corresponding holes for easy identification and the Azoth logo for branding.



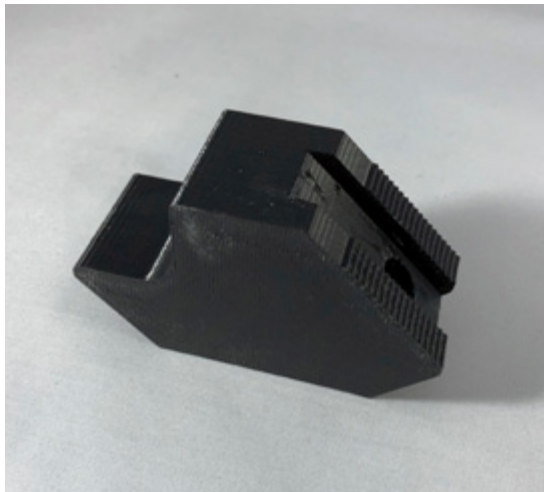


Pulley

A pulley in an air spindle gage bench failed at one of Azoth's industrial manufacturing customers. Rather than find a supplier for this difficult-to-replace component and face a lead time of 6 weeks, Azoth printed a fully functional replacement pulley on their RIZE ONE 3D printer in less than a day, quickly restoring the air spindle gage bench to operation. Azoth improved the part to mitigate failure and, since there is no value to stocking spares, Azoth can cut inventory costs for their customer by printing the part on demand.

Gripper Fingers

Azoth designed gripper fingers for part moving to streamline production at one of their aerospace customer's plants. The 3D printed gripper fingers included part orientation detail and neodymium magnets pressed into the parts to assist in the location of the detail. Using



RIZE ONE, Azoth reduced the cost of the part by 50% and can deliver the part quickly enough to reduce the stocking quantity to one piece.

“The RIZE printer has already been so helpful,” said Scott. “We’ve been finding a lot more uses we didn’t even think about. We will be ahead of the curve, proving the Digital Tool Crib concept with RIZE.”