ELNIK SYSTEMS

Confidence. Trust. Respect.

AZOTH

Success Story

The Partnership Forged Between Azoth 3D, Elnik Systems & DSH Technologies Enables a Bright Future for Metal Additive Manufacturing

Introduction

Since its founding in 2017, Azoth 3D has been at the forefront of scaled metal additive manufacturing in the United States. As one of the first U.S.-based binder jetting contract manufacturers, the company has built its reputation on delivering high-quality, end-use metal components at production scale, serving demanding industries including automotive, medical, defense, and consumer products.

From the beginning, Azoth 3D understood that additive manufacturing would not replace traditional manufacturing overnight but instead complement it. By combining deep roots in high-volume industrial manufacturing with advanced metal additive processes, Azoth carved out a unique niche: producing small, complex metal components at scale, with the surface finish, density, and reliability required for real-world applications.

Central to that success has been Azoth 3D's long-standing partnership with Elnik Systems, a leading manufacturer of batch furnaces and sintering solutions, and DSH Technologies, a globally respected authority that offers partnership style support in powder metallurgy, debind/sinter processes, and workflow optimization. Together, the three companies have built a relationship grounded in trust, technical excellence, and a shared commitment to long-term growth.

Cody Cochran
Co-Founder & GM
Azoth 3D

Cody Cochran is the Co-Founder and General Manager of Azoth 3D, a leading independent manufacturer specializing in metal additive manufacturing of small, complex parts. Since launching Azoth in 2017, he has led the company's growth into a recognized innovator in sinter-based additive manufacturing, overseeing its technology portfolio, building the team, and driving adoption across automotive, medical, and defense industries.

A Mechanical Engineering graduate with honors from Kettering University, Cody has worked in over 25 manufacturing facilities across three countries, focusing on lean manufacturing and technology development. He co-founded Azoth to revolutionize supply chains through on-demand digital inventory powered by additive manufacturing. Under his leadership, Azoth has expanded from polymer printing to advanced binder jet and lithography-based metal technologies.

Cody serves as a Director on MPIF's AMAM Board and an Advisor to SME's Additive Manufacturing Technical Community.

Challenge

Azoth 3D was founded by engineers with extensive experience in traditional manufacturing, working with major industrial OEMs in automotive, medical, and heavy equipment industries. According to Cody Cochran, General Manager and Co-Founder of Azoth 3D, that background shaped the company's approach from day one.

"We came from high-volume industrial manufacturing," Cochran explains. "We understand cutting tools, abrasives, cost reduction, and production efficiency. When we looked at 3D printing in 2017, we didn't see it as a replacement, we saw it as complementary."

Early on, Azoth focused on polymer additive manufacturing and digital inventory concepts like "Take One, Make One" (TOMO). But customers quickly began asking a bigger question: How do we bring metal into this model?

Binder jetting emerged as the answer. The technology offered the surface finish, dimensional detail, and throughput necessary to make metal additive viable for production, not just prototyping. Azoth launched as the first binder jetting contract manufacturer in the U.S., initially working with D2 tool steel before expanding into stainless steels, titanium, and high-temperature alloys like MAR247. However, scaling binder jetting for real-world applications introduced a critical challenge: **sintering.**

Azoth's customers, particularly in automotive, medical, and defense, required ultra-pure, corrosion-resistant parts that could pass stringent testing, including salt spray testing, cyclic life testing, and regulatory qualification. Achieving those results consistently across multiple materials demanded more than just equipment; it required deep metallurgical expertise and absolute control over the debinding and sintering process.

> **"In automotive production of 316L, a key aspect is the sintering cycle. You need ultra-purity parts to pass strict corrosion requirements. If we had a different furnace, we may not have passed those tests. You need an all-metal retort and the right atmospheric controls, otherwise, corrosion becomes a real risk."**
>
> Cody Cochran, Azoth 3D

Equipment Solution

As Azoth evaluated its sintering strategy, the company quickly realized that a one-size-fits-all approach would not work. With multiple materials, eight stainless steel profiles, titanium, MAR-247, and more, each requiring unique sintering recipes, flexibility was paramount.

“A continuous furnace wouldn’t make sense for us,” Cochran explains. “With that many materials and machine systems, batch furnaces with all-metal retorts were the highest priority. Purity of hydrogen matters. Atmospheric control matters.”

Azoth evaluated best-in-class furnace suppliers and relied heavily on industry testimonials and peer recommendations. Time and again, the feedback pointed in the same direction: **Elnik Systems.**

"What does the industry say? High Praise. Medical implant production, aerospace regulations, defense applications, Elnik has a strong reputation across all industries."

Cody Cochran, Azoth 3D

The Elnik 3000 Series Industrial Batch Furnace is the most versatile tool in the MIM or Sinter-Based AM. Capable of processing a wide range of alloys with reliable, repeatable, and scalable results.

www.Elnik.com

Process Solution

Beyond equipment performance, Azoth was also building a young, fast-growing team. Support and proximity mattered just as much as furnace design.

“Elnik’s locality and support network gave us confidence,” Cochran adds. “We weren’t just buying a furnace, we were building a capability.” production environments with confidence.
That capability was further strengthened through DSH Technologies, which played a pivotal role in process development and metallurgical education.

“DSH took support to another level,” Cochran says. “They would take our green parts and run them in their furnaces ahead of purchase. They helped us develop material recipes and profiles. That level of support builds trust, especially for a small, growing team.”

DSH’s hands-on approach bridged a critical gap between mechanical engineering and metallurgy, enabling Azoth to push binder jetting into production environments with confidence.

“Bryan Sherman at DSH has been a mentor to us,” Cochran explains. “He’s world-class at taking mechanical engineers and turning them into junior metallurgists with a focus on the process. That’s well beyond a capital asset, that’s a partner.”

Bryan Sherman
Chief Metallurgist
DSH Technologies

Bryan Sherman, Chief Metallurgist at DSH Technologies, is a process expert in metal injection molding (MIM), additive manufacturing (AM), process improvement, debinding, and sintering. Bryan has 25+ years of technical experience in MIM equipment manufacturing and application development. He leverages his deep materials science knowledge to solve complex problems related to high-temperature metal processing and energy efficiency.

Bryan has worked at a variety of MIM parts manufacturing companies and was a key contributor to one of the largest captive MIM parts makers on the US East Coast. He has co-authored 5 patents in Powderflo Technology with Allied Signal and holds a BASc in Material Science and Ceramic Engineering at Penn State University.

Results

Since implementing Elnik Systems furnaces and working closely with DSH Technologies, Azoth 3D has seen measurable and meaningful results across quality, uptime, and business growth. From an operational standpoint, Elnik's furnace design has delivered exceptional reliability.

"The machine design is clever enough that we haven't had a whole lot of downtime," Cochran notes. "We've been fully operational with zero major service issues, no spare parts crises."

That reliability directly translates into customer confidence, especially in high-stakes markets like automotive and defense. In one notable automotive application involving 316L stainless steel, Azoth successfully passed corrosion testing that may not have been possible with alternative furnace technologies.

"If we had a different furnace, we may not have passed," Cochran says plainly.

Equally important, the support from DSH and Elnik has empowered Azoth to pursue new business aggressively. "With DSH support, we've never been afraid to go after business," Cochran explains. "We've grown with confidence because we know we have strong partners. We've won business with that philosophy."

That confidence extends beyond current materials. As Azoth develops new material systems, particularly in titanium and high-temperature alloys, the same support structure continues to accelerate innovation and reduce risk.

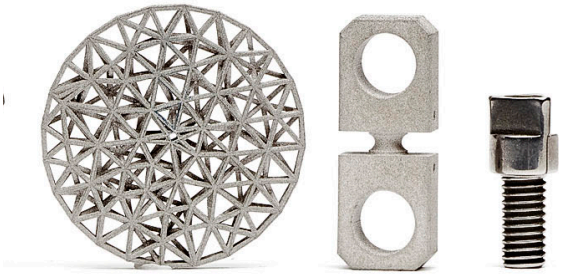
Stainless Steel 316L Gear Shifter

"Confidence. Trust. Respect. Loyalty isn't tied to cost or lead time. It's built on the team and the support. I don't worry about which furnace I'm getting next, it's just about the size."

Cody Cochran, Azoth 3D

Looking Forward

Today, approximately 80% of Azoth 3D's historical production volume has been stainless steel. But the future looks different.

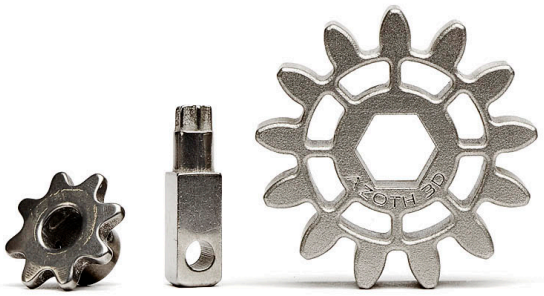


"Titanium is the future," Cochran says. "Medical devices, surgical tooling, implants, those markets are growing fast."

Over the next five years, Azoth plans to evolve into a true one-stop shop for titanium manufacturing, launching titanium injection molding alongside metal additive manufacturing. The company is also expanding into high-heat rotary components using MAR247, combining binder jetting, heat treatment, and machining under one roof.

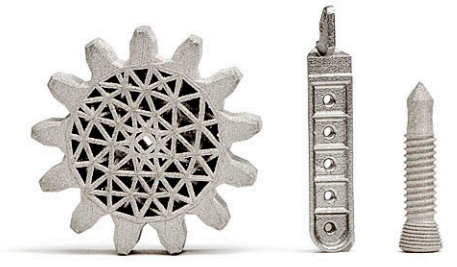
With certifications including ISO 9001, ISO 13485, ITAR, and CMMC compliance, Azoth is well-positioned to serve regulated industries at scale. Looking at the broader industry, Cochran sees metal additive manufacturing entering a critical phase.

"Additive needs to outcompete casting, MIM, and machining, or complement them," he says. "This is still manufacturing, and manufacturing is consolidating. That creates opportunity."



As the next generation of engineers enters the workforce already fluent in 3D printing, Azoth believes metal additive will follow a similar path to polymer technologies, democratizing access to production-grade parts while integrating seamlessly with traditional manufacturing.

At the center of that evolution will be sintering expertise, process control, and trusted partnerships.



"It's all going to converge on how well you can sinter," Cochran concludes. "That's why Elnik and DSH aren't just suppliers to us, they're part of our foundation."

About Elnik Systems
Elnik Systems is the global leader in industrial debinding and sintering process equipment. Since 1969, Elnik Systems has been a pivotal partner supporting the international growth of metal injection molding and metal additive manufacturing with advanced debinding and sintering furnaces. Elnik's engineering excellence and continued commitment to quality and innovation complements the advanced manufacturing requirements in aerospace, defense, healthcare, consumer markets, and other critical industries working with a range of low and high temperature alloys. With 100+ partners and 700+ projects completed worldwide, Elnik continues to be a global leader by remaining customer centric and more than just a furnace company.

About DSH Technologies
DSH Technologies, an Elnik Systems company, provides comprehensive metallurgical guidance, process improvement, testing, toll debinding & sintering services for Metal Injection Molding (MIM) and sinter-based additive manufacturing (AM). DSH Technologies is technology agnostic and works with parts makers, OEM's, feedstock suppliers and researchers to further educate and improve the industry.
Your Partner in MIM/AM.

Learn More and Visit Us at www.DSHTech.com.

Learn More!

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