





RAISING THE BAR

in Precision Machining



High-precision contract manufacturing company Allied Technologies International (ATI) specializes in machined parts for customers in various sectors including aerospace, telecommunications, semiconductor, and medical.

Written by Ryan Cartner

Founded in 1992, ATI strategically separated itself from competing contract manufacturers by focusing on Swiss-type machining for turned metal parts. Just like a dowel in a wood lathe, turned metal parts begin as a cylindrical metal bar, which is mounted horizontally and rotated. Tools are pressed against the rotating steel to carve and shape it. With a regular computer numerical control (CNC) lathe, the component is held in place at one end and turned while the cutting tool is moved back and forth along the length of it, shaving it down into the desired shape. Swiss-type turning helps to mitigate a problem inherent to this approach: deflection.

When the tool is closest to the part of the lathe that holds the bar in place, there is no bending, but as it moves further down the length of the piece, any pressure it applies will bend the part more and more. Swiss lathes, so named because they were first developed in Switzerland for machining high precision watch parts, solve this problem by sliding the part forward through a guide bushing so that the tool only ever applies pressure to the part a few millimeters away from where it is most stable. Rather than the tool moving back and forth along the length of the part, the tool stays very close to the bushing, and the part is slid through it instead. This eliminates deflection and results in the ability to machine parts with much tighter tolerances.

ATI was founded to fit into this niche, supporting customers with high-precision turning needs in the United States, and the company has been growing at a rate of between twenty and thirty percent every year for several years. Today, it employs more than fifty people in a state-of-the-art machining facility in Tualatin, Oregon. The company has worked in this location for nearly two decades, expanding numerous times into neighboring buildings. To accommodate its continuing growth, it plans to double its manufacturing space shortly.

From this home base in Oregon, ATI products are exported throughout North America, with some lesser distribution into Europe and Asia. Its products primarily have applications in four industries including aerospace, telecommunications, semiconductor, and medical. The company's aptitude for making ►►



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► high-precision parts has made it a choice supplier of components for projects where accuracy is critical. It is a Tier 1 production supplier for a space exploration company headquartered in the Pacific Northwest, and last November, some of the components it manufactured were sent into space.

Many components for cellular networks have been manufactured by ATI. The company was a vital supporter during the rollout of the 4G network and is currently developing enabling products for 5G. It manufactures products that support clean-room applications in the semiconductor industry, and it is in the process of becoming certified to make parts for high-precision electron microscopes for medical and laboratory applications.

ATI's focus on Swiss-type machining has helped it carve out a niche in the contract manufacturing space with very few rivals. "There are a lot of manufacturing companies out there, but less than five percent of them are ISO9001-2015 certified," says Thomas Isaac, president and chief executive officer of ATI. "Even less are also AS9100 C Revision D certified. We're in a very small group of manufacturers that are both. These standards are tough to get and retain, but our extremely stringent customers are even more challenging."

The ISO certification is an industry standard for quality control, and the AS certification is a similar standard that certifies a company for manufacturing parts at a level of quality suitable for aerospace applications. Acquiring these qualifications is challenging, but it allows companies that have them to rise above the sea of competing manufacturers that do not. When ATI was working through the approval process for these, the auditors returned with five findings that the company quickly corrected to become certified.

Even though its manufacturing processes met the strict standards for ISO and AS approval, audits from some of the company's most stringent customers returned with more than twenty items they wished to see upgraded. This demonstrates the demanding expectations of some of the customers that have come to trust ATI as a partner and the quality and precision of its manufacturing.

Contract manufacturing is about being nimble and reactive to customer needs. ATI runs continuously, six days a week, and that translates to an unrivaled responsiveness to emergency demands. "This happens all the time in manufacturing," says Isaac, "when a customer thinks they have enough stock but realizes they're short on something and that they need it within a day or two. Having those three shifts and support staff across all of them really enables us to react to these things quickly and support our customers so that production continues."

One of ATI's main customers in California was doing some assembly work when it was faced with a shortage of a component. It identified the problem at the end of the workday on a Wednesday and called ATI to see if there was any way the company could help. The customer was scheduled to begin assembly on Friday and fully expected to be late as a result of the shortage. An ATI representative took the call, and managers hit the manufacturing floor immediately, verified that all the necessary materials were available, and adjusted the lineup so that the parts could be run during the night shift.

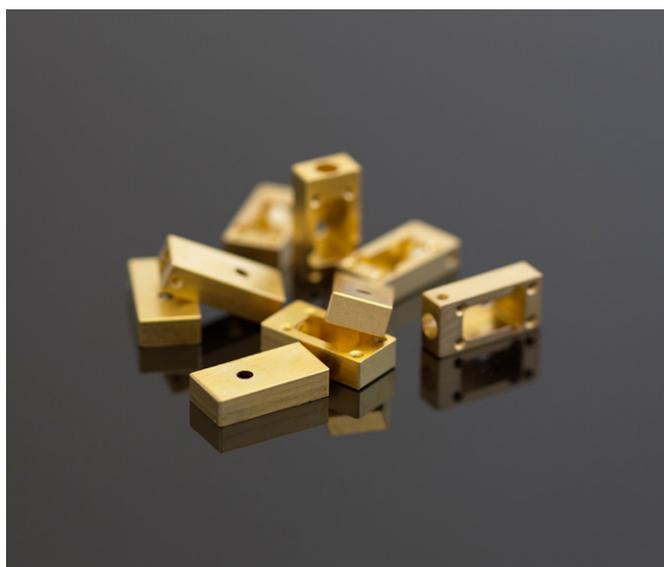
To complicate matters, these parts needed to be plated which is an entirely separate process that ATI has done through a partner. It had the plating expedited and returned by late Thursday evening and then drove the parts to a UPS drop-off location, just making the cut-off. The customer had the parts early Friday morning.

Another major customer needed a quick turnaround on a mechanically complex part. ATI delivered the component, helping the client meet its schedule, and the engineer who designed the component was so impressed that he drove from Seattle to Portland to shake the hands of the people who pulled it off. This capacity to react to customer demand has made ATI a standout choice for many customers with challenging needs.

While most machining companies are run by machinists with limited overall business and management experience, Isaac brings to ATI a fifteen-year career in management with General Electric, and many of the processes and systems in place at ATI arise from that expertise. Central to the ATI strategy is a focus on empowering employees so that they have the freedom to shine and to make an impact on the overall success of the company.

Hiring the right people and giving them room to succeed has been a factor in ATI's continued success. The company gives employees the metrics and freedom to make decisions about the technologies that they think will make the company successful. "If an employee says that a machine upgrade or process change will increase our throughput or eliminate waste, we have a dialogue as a team and in many instances, we take a bet on these ideas and monitor results. These are the kinds of bets we want to keep making. When it doesn't work out, we learn from it. The key is making sure that we don't repeat the same mistakes."

Having enough confidence in its workforce to empower them to drive investment has worked well. The company considers it an important differentiator that it will not hesitate to invest in technology, people, and processes so that it can continue



to improve its operation. The leadership is always listening to feedback and measuring its performance against other manufacturing and even non-manufacturing companies. Taking lessons from other industries and applying them has proven to be a highly advantageous approach. In one case, the company improved its throughput by upwards of twenty-eight percent without any additional resource costs.

For most manufacturing companies, finding the right people to bring on board is the most significant challenge in the current economic climate. ATI has been combating this problem by bringing in entry-level workers right out of school, training them, and promoting from within. This helps to alleviate the labor shortage and builds a tight team of people who are loyal and committed to the success of the company.

ATI's leadership believes that the push toward automation will accelerate, and so the company is investing heavily in automation and analytics for the shop floor. This will help find talent and increase consistency in production. "ATI has an excellent growth history and even better growth prospects looking forward," says Isaac. "We're enabling this by investing in cutting-edge technology and empowering the right employees." ■



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