Machining

In Aerospace, May the AS9100 Standard, Specification and Certification Be with You

Holly B. Martin | May 15, 2018

What You Need to Know

The most vital prerequisite for pursuing the AS9100 certification is a full commitment to the culture of quality management.
One of the main benefits of an AS9100 certification is that it opens up access to a huge market with the important side benefit that it brings about structure and organization within the company.
AS 9100 certification requires working with an independent auditor who will assess the organization's conformance to the specific aerospace requirements.
A key quality management issue very relevant to the aerospace supply chain is prevention of counterfeit parts.
The new update of the AS9100 standard to AS9100:2016 requires companies to focus on additional aspects of quality management such as risk analysis and risk mitigation.

For manufacturing shops seeking new areas of profitability, aerospace parts making can be a lucrative market—but it comes with investment, independent auditing and changes in quality management. Read what one company, General Machine-Diecron, gained from the process.

Aerospace manufacturing is a highly regulated and standards-driven industry. The requirements to do business with the large aircraft and defense builders as a subcontracted manufacturer often follow a complex set of rules and audits to clear—often tied directly to the company you seek to do business with. In many cases, certification of standards, such as ISO 9001, and the aerospace version AS9100, are arduous and costly—but many find the opportunity outweighs the effort.

What process can a shop owner expect to go through for certification in the aerospace industry?

According to Rusty Gwyn, president of aerospace subcontractor General Machine-Diecron, the most vital prerequisite for pursuing the AS9100 certification is full, personal commitment of the owners or upper-level management to the culture of quality management.

"You've got to be willing to look inside the four walls of your company, and admit your weaknesses," Gwyn says. "You've got to be willing to share your on-time delivery rate and part quality rate because

that's the first thing a prospective aerospace customer wants to know."

Once the decision is made to go after AS9100 certification, someone at the company who is detail-oriented, structured and has good self-discipline must be designated to head up the effort, he says.

"It is an aggravating process, but there is a value in it," Gwyn says. "As the owner of a company, you have to always be looking five to 10 years down the road, asking how this is going to help the company in the long haul versus what it's going to do for my cash flow next week."

Though one of the main benefits of an AS9100 certification is that it opens up access to a huge market, an important side benefit is that it brings about structure and organization within the company, according to Gwyn.

"Once you decide to walk in that AS9100 quality system mindset, you have to be willing to stick with it and solidify the process," he says. "It's hard sometimes in a small company, where finances are a struggle, but if we compromise the process, we compromise everything."

ISO 9001 and AS9100: Clearing the Confusion

Many people are familiar with the International Organization for Standardization ISO 9001 standard, which specifies certification requirements for quality management systems. The AS9100 standard supplements the ISO 9001 with specific aerospace requirements tailored to the unique nuances faced by the industry, such as prevention and control of counterfeit parts and full traceability throughout the supply chain.

By default, if an organization is certified to AS9100 it is also certified to ISO9001, so it's not a separate process, according to Aaron Troschinetz, general manager, North America, for Smithers Quality Assessments.

To add to the complexity, each standard has now been updated–the ISO 9001 was updated in 2015, so organizations certified to the earlier ISO 9001:2008 standard had to be recertified to the new version, called ISO 9001:2015. Flowing from that update, the AS9100 standard was updated in 2016, so all aerospace manufacturing companies must be transitioned to the AS9100:2016 standard by Sept. 14, 2018.

Once a company completes the AS9100 certification process with an accredited aerospace certification assessor, it will receive a certificate that denotes AS9100:2016 including ISO 9001:2015 requirements, Troschinetz says.

When you get beyond standards' certification in aerospace, there is also on-time delivery pressure. Learn real-world strategies for improving production processes to meet the overwhelming demand.

How to Attain the AS9100 Certification

Achieving the AS9100 certification requires working with an independent auditor who will assess the organization's conformance to the specific aerospace requirements.

"You have to step back and look at the full landscape of the quality management system, all the supporting functions and processes, such as maintenance, to ensure that you have everything taken into account," says Aaron Troschinetz, general manager, North America, for Smithers Quality Assessments.

"If there are any problems found, the assessor will issue nonconformances, which require the organization to bring itself back into conformance," he says.

"The company must then go through their own corrective action process, identify the root cause of the issue, what containments they have to put in place, and then what corrective action they need to take to permanently address the issue and prevent it from recurring," Troschinetz says.

What else do you need to know to become a successful aerospace operation? Get the details on shipping, equipment requirements and much more in our article: "Manufacturing 101: Becoming Part of the Aerospace Industry."

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> Rusty Gwyn
> President, General Machine-Diecron

One quality management issue very relevant to the aerospace supply chain is prevention of counterfeit parts, according to Troschinetz. For example, machine shops need to be able to verify that a grade of steel from a supplier meets the aerospace customer's applicable requirements. To certify that the shop has an appropriate counterfeit parts prevention program in place, an assessor would ask the shop to:

- Show how it put the program into place.
- Show the applicable training for employees.
- Show the controls prior to shipment of parts to the aerospace customer.

Assessing Risk in Quality Management for Aerospace

The new update of the AS9100 standard to AS9100:2016 requires companies to focus on additional aspects of quality management. One big change is the addition of risk analysis and risk mitigation.

"Anytime you change something–buy a new machine, bring on a new supplier–you always want to look at the risk," Gwyn says.

"So when I go out looking for suppliers to paint my parts, or buy my metal from, the first thing I'm going to ask them is, 'What's your on-time delivery rate?' and 'What's your quality score?' because that plays into how well I can perform for the OEMs or some other prime," he says.

"A new risk that companies in the industry are facing is the fact that employees who have worked for 20 to 30 years have a lot of vital 'tribal knowledge' in their heads, so the latest revision of the standard wants companies to document those people and have a backup plan in place in case something were to happen to them," Gwyn says.

Is AS9100 Certification Worth the Effort and Expense?

"If you want to stay a small mom and pop job shop, getting an AS9100 certification is probably not worth it," Gwyn says. "It's not easy, it's not cheap, and it's a sacrifice–you've got to be willing to commit

to it–but if you want to see your company go to the next level, I think it's worth it."

Though the results of AS9100 certification are not quick, according to Gwyn, it sets you apart, so you can start seeing jobs that have a higher cost per hour.

"In the grand scheme of things, for instance doing work for the larger OEMs, which makes thousands of massive airplanes with thousands of machined parts on them, there's a big opportunity out there," he says.

Have you taken the dive into aerospace certification for your shop? What was it like? Be honest.