

[Home](#) > ISO and the Aviation Industry: A Case Study in What the ISO Standards are Worth.



In a Nutshell: ISO certification is becoming more popular in the aviation community. ISO stands for International Organization for Standardization and is a non-governmental organization comprised of the national standards bodies of 149 countries from all regions of the world. The 9000 family of certification covers quality management standards and the 14000 family covers environmental management standards.

Last year FlightWorks, a charter and aircraft management company headquartered in Atlanta, Georgia earned ISO 9001:2000 certification through an independent auditing firm, Vehicle Certification Agency, North America (VCA), located in Northville, Michigan. Aviation Maintenance visited with FlightWorks to learn more about the ISO certification process and the results of implementing and achieving the certification.

Overview

As outlined in my best-selling ISO book in the 1990s, ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. Note: *ISO collaborates closely with various agencies and technical committees, such as the International Electro-technical Commission (IEC) on all matters of electro-technical standardization.*

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting. International Standard ISO 5843-5 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

Established in 1947, ISO/TC 20 is one of the most prolific ISO technical committees in international standardization. With nearly 600 published standards developed under the broad umbrella of the committee and its subcommittees, ISO/TC 20 maintains a significant, relevant presence in the aerospace industry. ISO/TC 20 is a Technical Committee (TC) of the

International Organization for Standardization (ISO), responsible for developing and maintaining standards for aircraft and space vehicles. Specifically, the committee covers the standardization of materials, components and equipment for construction and operation of aircraft and space vehicles, as well as equipment used in the servicing and maintenance of these vehicles. ISO/TC 20 works to ensure that internationally accepted standards exist for the design, construction, test and evaluation, operation, air traffic management, maintenance, and disposal of components, equipment and systems of aircraft and space vehicles, including issues related to safety, reliability and the environment. And as required, produce, maintain and assure these standards are produced cost effectively and correspond to users' and market needs and to support the technical projects of the sector.

ISO/TC 20 provides a forum for the work of ten dynamic subcommittees¹:

- ISO/TC 20/SC 1, Aerospace electrical requirements
- ISO/TC 20/SC 4, Aerospace fastener systems
- ISO/TC 20/SC 6, Standard atmosphere
- ISO/TC 20/SC 8, Aerospace terminology
- ISO/TC 20/SC 9, Air cargo and ground equipment
- ISO/TC 20/SC 10, Aerospace fluid systems and components
- ISO/TC 20/SC 13, Space data and information transfer systems
- ISO/TC 20/SC 14, Space systems and operations
- ISO/TC 20/SC16, Unmanned aircraft systems
- ISO/TC 20/SC17, Airport infrastructure

Facts and figures

- 36 participating and observing member countries
- 597 published standards, as of Q4 2014
- 110 active work items under development
- Multiple committee and subcommittee plenary meetings held worldwide
- Participation includes the biggest industry players in the commercial supply chain

Scope

The work program of ISO/TC 20 and its subcommittees includes the entire spectrum of aerospace industry for the design, manufacture, test, evaluation, operation and maintenance of components, equipment and subsystems for general aviation, commercial aircraft and space systems. ISO/TC 20 also serves the military aerospace market to the extent that military aerospace products can utilize commercial aerospace standards.

Coordination and Cooperation

As most industries rely on multiple standards bodies and consortia to develop standards, specifications, and recommendations to meet the needs of developers and consumers, ISO/TC 20 works closely with several of

¹ Also included in this discussion is the International Standard [ISO 5843-5](#), that was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*. It states that [ISO 5843](#) will consist of the following parts, under the general title *Aerospace — List of equivalent terms*. [ISO 5843](#) establishes a list of equivalent terms used in the field of aerospace construction. This part of [ISO 5843](#) gives those terms relating to environmental and operating conditions for aircraft equipment. In addition to terms used in the three official ISO languages (English, French and Russian), this part of [ISO 5843](#) gives the equivalent terms in the German language; these are published under the responsibility of the member body for Germany, F.R. (DIN). However, only the terms given in the official languages can be considered as ISO terms: *Part 1: Aerospace electrical equipment; Part 2: Aerospace rivets; Part 3: Aerospace bolts and nuts; Part 4: Flight dynamics; Part 5: Environmental and operating conditions for aircraft equipment; Part 6: Standard atmosphere; Part 7: Aircraft cargo; Part 8: Aircraft reliability; Part 9: Aircraft; Part 10: Aircraft structure.*

these organizations to ensure interoperability and avoid duplication of work. ISO/TC 20 members also have close ties to governments and industry associations to ensure a comprehensive perspective of the industry's needs and demands.

Speed and Flexibility using a 2-Stage Approach

ISO/TC 20 is constantly evaluating the aerospace industry to make sure its standards are delivered to market in a timely manner and meet immediate industry demands. Standards are also developed to address the impact of emerging technology that may lead to future standardization work in the aerospace arena.

Stage 1: Determine what is needed, how long it will take, and who is needed to best generate the changes.

ISO 5843 establishes a list of equivalent terms used in the field of aerospace construction. This part of ISO 5843 gives those terms relating to environmental and operating conditions for aircraft equipment. NOTE: in addition to terms used in the three official ISO languages (English, French and Russian), this part of ISO 5843 gives the equivalent terms in the German language; these are published under the responsibility of the member body for Germany, F.R. (DIN). However, only the terms given in the official languages can be considered as ISO terms.



Profile: FlightWorks Intl: The decision to adopt ISO standards came from the top executive management, and falls into line with 3 primary concerns of FlightWorks: safety, planning for growth, and positioning ourselves as the most customer-focused company in the industry, <according to John Hatfield, director of operations>.

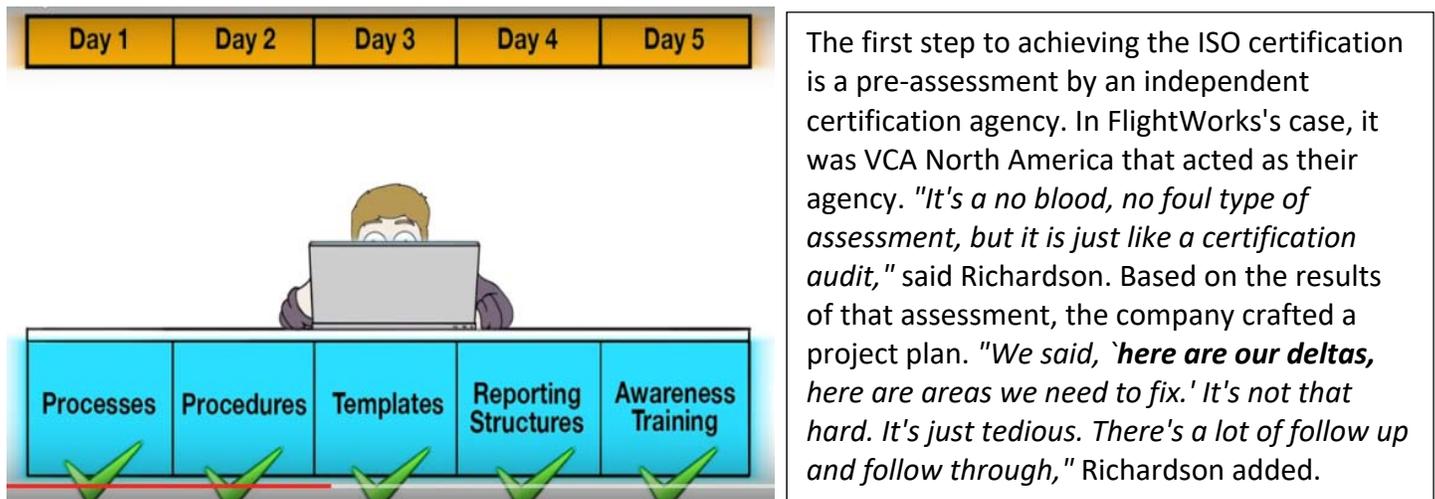
They employed an integrated ISO9000 combined with ISOTC 20 to put into place processes that verify that they were doing what we said they were doing; and if not, where to adjust or fine-tune operations so that we can better do that? With this integrated certification they have not only ISO certification, but they have committed to have an outside auditor verify adherence to processes. And it requires companies to keep on top of it, to consistently meet or exceed it.

Background: Mark Richardson, director of customer service for FlightWorks², came from the telecom industry and was already familiar with ISO certification through his former employer. He was tasked with overseeing much of the ISO certification process, although more than half of the consultant process was already complete upon his arrival. *"This is normally a two-year process and we did it in one and a half years. Our goal was to get it done. It was a high priority,"* Richardson said. *"Things rolled pretty smoothly. We had strong leadership pushing this through. Everybody was highly engaged in getting this done."*

² Based upon the Aviation Today Network Interview http://www.aviationtoday.com/regions/usa/Why-ISO_86.html.

Stage 2A: Writing Processes, procedures, templates, reporting structures, and awareness training. This includes two assessment visits, which are commonly referred to as Stage 1 and Stage 2 Audits. People are trained to do the internal audit to determine if the QMS as written matches the standard as required. The final Stage 2 Assessment .

At that point processes were flow-charted. One area FlightWorks needed to focus on was records management. *"Record keeping is always an issue. We have to keep so much as required by the FAA and government entities,"* Richardson said. That can breed the habit of keeping everything, which isn't the goal either. So from the guidance of both the FAA regulations and the certification agency, documentation and record keeping standards were detailed and put into a specific procedure.



Stage 2B: As part of Stage Two, a **One-Day Management Review is done.** This is a regular look at all aspects of your system, to ensure that the ISO standard ties in to your business goals and customer satisfaction demands, audits and feedback issues. Much of the certification process is about building a system and documenting that system or procedure. Everything the company does is subject to scrutiny during the documentation process. *"We document how we book a trip," said Flightworks' Richardson. "If [part of the procedure] says 'send a fax' and we now use email, I say fix it. This document needs to be changed to the exact process so there is accountability. It's a detailed process but invisible. It should be: this is our process, not -- this is an ISO document."*

During the period between the pre-assessment and the actual certification audit, the company normally focuses on working towards the audit. *"During that process we came up with things the auditor didn't. I'm supposed to be harder than the auditor,"* said Richardson. Between surveillance and registration there is usually little or no contact. Once the processes were identified and documented, the official audit took place over two days, with two auditors in FlightWorks's case. FlightWorks's audit occurred in March 2005 and the company received its ISO certifications at that time, and have followed this through to ISO9000:2015.

"The benefit is, it really set us apart," said Hatfield. *"Very few aviation companies are ISO certified. We are in an elite class. We care about the way we do our business and hold ourselves accountable to that through a third-party vendor. We say we do it, the proof's in the pudding. The auditor says we do it. No excuses."³*

³ Ibid

When we did this, our expectations were: branding ourselves to a much higher standard, higher quality control, and an internal and external roadmap for training, validation, and accountability," Hatfield said. "It forces us to continually look at ourselves and our effectiveness to set our own bar. Part of certification and registration is that you can't set the bar and leave it. It's how did you continually improve?"

Part of FlightWorks's motivation to get the certification was growth plans. *"We have doubled our operations in the last year. We needed a systematic approach to deal with growth,"* he said. In addition, the company recently opened a new facility in Manassas, Virginia with hangar space for aircraft charter and management and office space. FlightWorks is also moving into security and government operations at Manassas. Page 5

A View from the Top

"From the owner's perspective ISO is a different level," said Hatfield. *"To be ISO compliant, registered, it's more than a patch on your sleeve, it's in your blood. It's highly recognized in the corporate world that our customers come from." He added that high-level customers from large corporations were impressed that FlightWorks had achieved the certification. "It had the 'Wow' effect. A couple of clients, as soon as we told them, they said 'Wow.' They know right away what ISO is. Some of our clients are Fortune 50 companies who use ISO as well,"* he said.⁴

Len Beauchemin, vice president, technical services, said he viewed the ISO certification with a technical background. *"Even when you evolve from a technical role [into management] you never get away from the concept of the value that tools bring. I view this as a tool I can use in the management process. I said 'Let's look at this tool with a maintenance hat,"* said Beauchemin. *"You can use it to produce a higher quality product, to be more efficient, and for continual learning. I'm big on interpersonal skills and team interaction."*⁵

This system demands a connection to the rest of the organization and causes me to have interface. It is a living document and like any tool you must send it out for recalibration." In the case of ISO certification it is continually being tweaked to maintain the system and incorporate any changes to the processes. "If there aren't that many maintenance organizations that have selected this program," he said, *"it's because they haven't done a good evaluation. This can only be good for those that want to excel professionally and grow the maintenance end of their business,"* Beauchemin said the benefits of the ISO system include that it produces a better physical product, improves communications with customers, and it improves systems and processes. *"ISO demands structure,"* he added.⁶

Beauchemin said that he had heard people at other companies say they don't see the value of ISO certification. "I think if someone says that they don't see the value of it or we just got a bunch of manuals out of it, then they haven't looked at it right," he said. "ISO asks for a check-and-balance system. There is more acceptance to communication and I see it when we debrief on discrepancies."

According to VCA North America, developing and implementing a structured management system based on a recognized model such as ISO 9001 should promote the objective assessment of process efficiency. *"I'm a process person,"* Beauchemin said. *"Success comes from process. If you don't have the right process, that can get to be a problem. [ISO] gives security to know you have a system in place. Whether or not you use it is up to you. You have a tool to help drive the process. I sleep well at night. In the end if I get run over by a truck*

⁴ Ibid

⁵ See the Rusty Rentsch on the Aviation News website at: rusty.rentsch@aia-aerospace.org; or reach out to Andy Dryden, ISO Central Secretariat at dryden@iso.org.

⁶ Ibid.

tomorrow, the business won't suffer, it will go on based on the processes set in place. The goal is to make the processes a company habit with the result being continual improvement.”

FlightWorks's dedication to achieving ISO certification took effort and commitment. But the employees all agree that the process was well worth it. *"It's great to work for a company that purchases the best tool to help the company manage our business,"* said Beauchemin. *"It was a financial choice that took considerable effort to implement. This affects people and money. It's an effective system."*⁷

Summary

In a highly competitive marketplace such as aviation – one that is changing at the speed of light -- businesses are looking for ways to deal with change and help their business grow. According to sources such as VCA North America: *the drive towards achieving global competitiveness, coupled with the relentless pressure to put in place and maintain continuous improvement programs, impel [businesses] to install effective quality management systems that enable them to achieve these demanding objectives.*

ISO certification can help with achieving whatever business objectives a company has. The certification is broken down into various sections:

- Quality management system
- Management responsibility
- Resource management
- Product realization
- Measurement, analysis, and improvement

The certification process involves a thorough evaluation of processes within those areas, an evaluation of any problem areas, and the implementation of corrective and preventive actions to those processes to promote improvement. Strengths and weaknesses are identified and opportunities for improvement are suggested.

To achieve ISO 9001:2000: 2015 certification in conjunction with ISO TC20. it is necessary to demonstrate:

- Objectives are set to achieve the company policy and the needs of the customers
- Performance against the objective is measured with actions taken and shortfalls identified
- Processes are developed and followed to support the performance objectives
- A quality management system is developed that provides for continual improvement in performance.



Sources:

- 1- **An Interview** with Aerospace Chairman Rusty Rentsch
- 2- **The ISO Guide for Aviation & Aerospace**, by Frank Voehl et. Al.
- 3- **The ISO 9000 Implementation Guide**, by Frank Voehl & Peter Jackson

⁷ Ibid. Also see The ISO Guide for Aviation & Aerospace, by Frank Voehl and Rusty Rentsch, SPC Press, 2016.

ISO Resources

QualTec Quality Services (Qualitation) <phone # 0845 600 6975>

Now known as a part of The British Quality Centre at www.qualitation.co.uk

International Organization for Standardization

44 22 749-0111

www.iso.org

Vehicle Certification Agency North America

248-468-0151

www.vcana.com

BSi Management Systems

703-437-9000

www.bsiamericas.com

Quality Applications, Inc.

888-582-2826

www.qualityapplications.com

ADC

www.adc.com

952-938-8080

Perry Johnson Registrars

www.pjr.com

248-358-3388

Dekra Registrars

Selected Aviation Clients with ISO Certification Include:

- ✓ Executive Jet Management
- ✓ Arnoni Aviation
- ✓ AirLiance Materials
- ✓ EADS Sogerma Barfield
- ✓ Mxi Technologies
- ✓ FlightWorks
- ✓ Lockheed Martin

100%
first time success rate
achieving ISO certifications
for its clients
in over 17 years
of operation

