

# What is AS9100?

WHITE PAPER

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# Executive summary

Are you in the aerospace industry and trying to figure out what AS9100 Rev D is, and specifically, how it is different from ISO 9001? If so, then this white paper will give you an overview of this important standard and how it can benefit your organization.

## The simple, but important basics of AS9100 Rev D

Both AS9100 and ISO 9001 are standards that include requirements for implementing a Quality Management System (QMS) in your organization. The format of the AS9100 standard is based on the ISO 9001 requirements as they were updated in 2015 (as detailed below), so it is easiest to understand the ISO 9001:2015 standard first.

ISO 9001 is an internationally recognized standard for Quality Management Systems that is published by ISO (the International Organization for Standardization). Its requirements are recognized around the world as an acceptable basis for implementing a QMS, and it was last updated in 2015, so it is referred to as ISO 9001:2015.

While the ISO 9001 standard is generally accepted by any industry around the world, AS9100 is specifically aimed for aerospace companies. What

the International Aerospace Quality Group (IAQG) has done is take the ISO 9001:2015 requirements in their entirety and add to them a set of specific aerospace Quality Management System requirements to create AS9100 Rev D. These additions in the AS9100 Revision D standard appear in bold and italics in the IAQG document. There are more than 17,000 companies registered to AS9100 worldwide as of March 2017.

In addition to AS9100, there are two other sets of requirements for different types of aerospace companies: AS9110 for the QMS of aerospace maintenance organizations and AS9120 for the QMS of aerospace stockist distributors. In addition, there are supporting documents in the AS 9100 family to help with implementing the QMS requirements: AS9101 is an audit checklist and assessment document, AS9102 is a guidance document for performing aerospace first article inspections, and AS9103 gives guidance for managing key characteristic variation.

# QUALITY MANAGEMENT

## What is a Quality Management System?

In explaining AS9100, the term “Quality Management System” has been used. A Quality Management System is a collection of the company policies, processes, documented procedures, and records that define how the company will operate in order to satisfy customers by providing them with products and services according to previously agreed specifications. You need to tailor the QMS to the needs of your company, and the AS9100 standard gives you a set of guidelines to ensure that you don’t miss any important elements so that your aerospace QMS can be successful.

### Recent changes in AS9100 Rev D

There were a number of major changes in the AS9100 standard in order to align with the new release of ISO 9001:2015.

**Structure** - With the latest revision, AS9100 has been aligned with Annex SL, the document that the ISO created to govern the structure of all of the management system documents that it releases, bringing the requirements more closely in line with the Plan-Do-Check-Act cycle. Inclusion of the Annex SL document also provides easier integration with other management systems, such as ISO 14001 and ISO 27001.

**Organizational context & interested parties** - The new standard insists that the organization understand the internal and external issues that affect the QMS (the context), as well as the parties who are interested in the organization’s ability to deliver quality products and services. Understanding the context that the QMS functions

within, as well as the needs and expectations of interested parties, is necessary to ensure that you can meet all of your obligations within the QMS. For more information, read this article: [AS9100: Understanding the requirements of context of the organization](#).

**Risk-based thinking** - While operational risk management was already included in AS9100, the new revision includes additional requirements to identify and address the risks and opportunities that are present for the QMS. Operational risk management is still included, and you can find out more here: [5 key elements of risk management in AS9100 Rev D](#).

**Deleted and added requirements** - While some requirements—such as mandatory documents and preventive actions—were removed, there was one main addition obliging companies to have a process for identifying and addressing counterfeit parts. Find out more about counterfeit parts and the other aerospace- specific terms in: [Five special aerospace terms in AS9100 Rev D](#).



# What is the structure of **AS9100 Rev D**?

AS9100 Rev D follows the same structure as the new ISO 9001:2015 standard, so it is split into 10 sections, with the first three being introductory and the last seven containing the requirements for implementing the QMS. Here is what those seven sections are about:

**Section 4: Context of the organization** - This first section includes all the requirements for identifying the context of your organization, who your interested parties are and what their needs include, and what the scope of your QMS will be. Understanding your organization better will give you a firm foundation for your QMS. For more information, read this article: [AS9100: Understanding the requirements of context of the organization](#).

**Section 5: Leadership** - Implementing these requirements helps the leadership of your organization to focus on customers and improving customer satisfaction. The requirements necessitate that your senior leadership team

establish and communicate the quality policy, a policy that will become the focus for your QMS improvements. Senior leaders also need to assign the organizational roles, responsibilities, and authorities for the QMS, ensuring that resources are adequately assigned.

**Section 6: Planning** - This section addresses the need to understand and plan action to address the risks and opportunities that are applicable to the company's QMS. This allows you to set quality objectives for improvement and plan for changes. Learn more with: [How to define quality objectives in AS9100](#).

**Section 7: Support** - This section contains all of the requirements about resources, including human resources, infrastructure, competence, communication, and documented information needed to support the QMS processes and your people.

**Section 8: Operation** - This section includes all of the requirements for the processes that are necessary to design, create, preserve, and deliver your products and services. This includes aerospace-specific requirements regarding risk management, configuration management, product safety, and control of key characteristics, as well as additions to design and development and nonconforming output requirements.

**Section 9: Performance Evaluation** - Having a QMS requires that you have a way to evaluate its performance, including internal audits and management reviews, so that you know that processes are performing as expected and that any improvement activities you are implementing are actually leading to improvement.

**Section 10: Improvement** - One of the main benefits of implementing a QMS is to find improvements in your company, and the requirements in this section pertaining to continual improvement and corrective actions are

designed to help you find long-term benefit from your QMS. To learn more, see: [Corrective actions vs. continual improvement in AS9100](#).

These requirements follow a standard Plan-Do-Check-Act cycle which, if used properly, is known for its ability to find and sustain lasting improvements within your business processes. This can most easily be seen in the use of the quality objectives in the QMS. You may choose to plan to reduce your scrap rates by 8% in a year by changing a certain process; you will then make the changes to the process that were identified to make the scrap reduction. After implementing the change, you may check the new scrap rate and find that it has been reduced by 7%; you could then either accept this rate or act to make further changes to the process and reduce the scrap rate even further.

To find out more about the changes in AS9100 Rev D, see this infographic: [AS9100 Rev D vs Rev C: What has changed?](#)



# AS9100 Rev D as a Business Management System

If you look closely at the requirements of AS9100 Rev D, you will find that there is a lot more involved than just the processes that the quality department needs to do. AS9100 Rev D includes all of the requirements that you need to run your business in such a way that you provide quality products and services and strive to improve customer satisfaction. Additional requirements include design of products and services, management of purchasing, operational risk management, and process improvement.

Within the AS9100 Rev D requirements are all the requirements needed to manage your organization, including all processes needed to manage resources and top management processes. The QMS scope includes every part of

the business, from sales, through planning and implementing, to delivery of products and services. In some advanced companies, their system of doing business is their Business Management System, and the term “quality” isn’t used. Why have a second set of processes that are outside of the management system you have put in place?

The QMS, as defined by AS9100 Rev D, is a framework that can be used to help your company improve on all of the processes that it does. The flexible requirements in the standard can be implemented to meet the unique needs of your organization, and to help focus the efforts of your employees towards meeting the needs of customers, increasing customer satisfaction, and driving improvements.



# Why is AS9100 important, and how can it benefit your organization?

Your customers want to know that you are taking the steps necessary to improve the quality of your products and services and to enhance customer satisfaction; implementing a QMS according to the requirements of AS9100 can do just that. By managing, controlling, and auditing your own processes, as well as having an outside certification body verifying that your QMS meets the requirements, your customers can know that everything is well in hand.

As the internationally recognized standard for aerospace Quality Management Systems, AS9100 is based on seven quality management principles that are recognized as being necessary to make a Quality Management System work. Your customers will be content to know that your QMS is also based on these principles. To find out more

about these principles, which are also applicable to ISO 9001, see this article on: [Seven quality management principles behind ISO 9001 requirements](#).

One of the biggest benefits of AS9100 certification is that every certified company must be included on the Online Aerospace Supplier Information System (OASIS) maintained by the IAQG. This is a searchable database that is available for any company in the aerospace industry that is looking at supplier selection and surveillance, and includes not only information about each company, but also contact information for purchasing. Since OASIS is used by the industry to find suppliers, you should consider this to be a free marketing tool for your company, used throughout the aerospace industry.

## What are the benefits of implementing AS9100?

Based on internationally recognized quality management principles, AS9100 is designed to help you to implement a Quality Management System that has been shown to provide these benefits:

**Improved customer satisfaction** - By focusing your efforts on understanding customer requirements and meeting customer needs, the satisfaction of your customers will improve. Higher customer satisfaction leads to greater customer loyalty, which is good for your business.

**Improved decision making** - By involving top management within your Quality Management System, and basing your decisions on evidence rather than vague notions and attitudes, you can improve how you make decisions. Better decisions mean better allocation of resources, which in turn can lead to lower costs.

**Better efficiency** - By using the process approach to better understand the processes used to provide your products and services, as well as taking an overall system view of how these processes interact, you can not only work to make each process better, but also to reduce inefficiency when products and information flow between processes.

**Employee engagement** - When you have an emphasis on meeting customer needs, improving your system and processes, and increasing customer satisfaction, your employees will have a

focus for their work. Who is better at understanding the processes to try to make them better than the people who work on them? And, this engagement can improve employee morale and workplace satisfaction.

**Better relationships with suppliers** - Improving the relationships with your suppliers can bring many benefits as you work towards improving the satisfaction of your customers. In partnership with your suppliers, you can find ways to make your purchased products and services less expensive, delivered faster, and better suited to your needs. Overall, this can save time and money for both you and your suppliers.

**Make improvement part of your daily business** - Continual improvement, making the Quality Management System better incrementally over time, is so ingrained in the AS9100 standard that this can become second nature in your organization. When this happens, you can have the entire workforce involved in finding ways to make your processes better, less costly, and more efficient—which is an improvement for everyone.

Along with these benefits, AS9100—as the internationally recognized standard for aerospace Quality Management Systems—will give you an improved image to your customers, who understand that managing the quality of your products and services is critical for overall business success.



## Common Myths

As with other Quality Management Systems, there are many myths around the QMS created by AS9100 Rev D. Is there any truth to these myths? Here are six of the most common myths and some explanations for them, so you can decide for yourself:

**1) AS9100 tells us how to do our job** - This is probably the most common myth. Sometimes, people are even told that AS9100 requires their process to be done in a specific way, but what people don't tend to realize is that the requirements of AS9100 don't describe the "how" of a process, just what needs to be done. So, for instance, AS9100 will state that the performance evaluation must include customer satisfaction, but you can assess this in any way you see fit.

**2) AS9100 isn't for our size of company** - People will often say: "AS9100 is just for large aerospace companies," or, "This is not for service-based companies." In reality, the requirements were designed for any organization in any type of business. As per the scope of AS9100, if you want to consistently provide products and services that meet customer requirements, and enhance customer satisfaction while improving your processes, then AS9100 Rev D is applicable to you.

**3) AS9100 is just for the quality department** - As has already been stated, AS9100 touches every aspect of the business and, in many ways, is a Business Management System rather than just dealing with product and service quality.

**4) Everything needs a document** - This is an understandable misconception because when the first QMS requirements were introduced, the mantra of "Write what you do and do what you write" was pervasive. This has changed drastically, and now the mantra is closer to "Document what you need to document to prevent process non-conformances." It is up to you to decide how and what to document in many cases.

**5) AS9100 just costs too much** - It is true that implementing a QMS is not free, and there are many levels of cost associated with the upkeep and maintenance of the QMS. However, if you implement the requirements of AS9100 Rev D in such a way that you focus on increasing customer satisfaction and drive continual improvement in your company, you will find that the resource savings you realize can be a great return on investment.

**6) Before we certify, we need to have everything perfect** - If this were true, how could you even meet the AS9100 Rev D requirements of continually improving your QMS? It is true that all of your company processes need to be identified, implemented, and monitored in order to be ready for certification, but this is to allow you to identify problems for correction as well as areas for improvement. For all of these reasons, the other myth that is associated with this one: "It will take years to implement AS9100," is also false.

While other myths are also out there, these are probably the most common complaints you will hear when you are trying to convince others of the benefits of implementing AS9100 Rev D. Your ability to disprove these myths can go a long way toward getting people on board with your implementation, and even enthusiastic to help.



## How to get **management** on board

While it might be possible to get AS9100 certification without top management involvement, maintaining and improving your QMS will be next to impossible without their support. When it comes to management review, resource management, and applying those resources to properly discover root cause and initiate corrective actions and continual improvement activities, you will find that your QMS will falter without proper support from top management. In fact, a management representative for the QMS is still needed in the requirements of AS9100 Rev D, so this support is necessary. Find out more in: [Is the management representative still required in AS9100 Rev D?](#)

So, ensure that you sell the idea to management before you go too far by talking to them in terms of dollars and cents. While it may be difficult to put a value on the return on investment that implementing AS9100 Rev D presents, it can help to know the benefits of the QMS and find ways to equate the continual improvement activities that will result with the cost and resource savings that could be realized.



# What is needed for AS9100 implementation and certification?

Implementation of AS9100 Rev D has become simplified, because the standard has been put in the same order as the steps you need to take:

- 1) Identify your context and define your scope.
- 2) Define the quality policy, along with the roles & responsibilities.
- 3) Identify your risks and opportunities and set your improvement objectives and plans.
- 4) Ensure that you have the support resources in place for the QMS.
- 5) Set up all of your operating processes and procedures.
- 6) Determine how you will evaluate performance and set up these processes.
- 7) Set up processes to find and maintain improvements.

Your documented information can be created internally by people in your company, or you can get help by hiring a consultant or purchasing standard documentation. To see samples of documentation, visit this [free AS9100 downloads](#) page.

After you have implemented all of the requirements of the AS9100 standard, and operated your management system for a set amount of time in order to accumulate records of your activities, the auditors from your chosen certification body will verify your system and give you a certificate showing that your management system meets all of the requirements.

For more information on implementing AS9100 Rev D, see this article on [13 Implementation steps for AS9100 Rev D](#), and this graphical representation of the implementation process: [AS9100 Rev D Implementation Diagram](#).



# AS9100 certification: How does it work?

Certification allows your customers to know that they do not need to audit your QMS on their own, because you have a registered third-party certification body that has already audited your system against the AS9100 requirements and certified that your QMS is compliant. After you have implemented the QMS processes, but before the certification body auditors come to assess your system, you will need to operate your QMS for a period of time. The reason you need to operate your QMS is to allow you to do the following important activities before certification:

**Internal audits** - Your internal audit process allows you to check that all of your processes are meeting the planned arrangement, and if not, to find the root causes of any problems and correct them. This can help to find and correct any hidden weaknesses in your QMS.

**Management reviews** - As part of their commitment to the QMS, management needs to

review the system to ensure that it is effectively and efficiently implemented. This allows them to appropriately assign resources.

**Corrective action** - When problems are found in your QMS while performing day-to-day activities, you need to find the root cause and correct it so that the problem will not recur.

The certification body process is divided into two stages:

**Documentation Audit (Stage One)** - In this phase, the auditors will review your QMS and ensure that your documentation meets the requirements of AS9100.

**Certification Audit (Stage Two)** - In this step, the auditors will conduct interviews with employees and review records in order to determine that the evidence provided shows that your QMS processes are giving results that match the planned arrangements for each process.



# Maintaining the QMS after the consultant is gone

It can be overwhelming to think about creating all of the processes and documentation necessary for a QMS. This is why many companies turn to an experienced consultant for help. If you are choosing to enlist the help of a consultant to give you the experienced guidance to implement AS9100, you will need to consider what you will do when the consultants' time is up. It may seem difficult to educate yourself on everything you need to know for implementing AS9100 Rev D

within your organization, but remember that you will have to do this eventually, because the consultant will have to leave at some point.

What is to be done? Ensure that you learn as much as you can during implementation so that when the consultant is no longer there to help you, you already know what you need to know to keep your QMS maintained and improving without this expensive outside help.

# Conclusion

AS9100 Rev D has made a great impact in the aviation, space, and defense industry by aligning the many different quality management requirements that customers previously imposed and allowing companies to have one Quality Management System that is applicable to all customers. AS9100 Rev D will undoubtedly be an important tool throughout the industry for achieving high levels of customer satisfaction for years to come.

With the latest release of AS9100 Rev D, companies now have even more flexibility in how they implement the processes that they use to deliver products and services that meet customer and regulatory requirements and drive improvements in their everyday activities. Improving your processes to better meet customer needs is, after all, the most effective way to use the QMS to ensure that your company is successful in the long run.

# References

[9100Academy](#)

## Sample AS9100 documentation

Here you can download a preview of the [AS9100 Rev D Documentation Toolkit](#). This will allow you to see a sample of the policies and procedures required to implement the AS9100 standard.



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