

**WHAT EVERY  
EMPLOYEE NEEDS TO KNOW  
ABOUT THE “NEW”  
AEROSPACE  
STANDARD - AS9100™  
Revision D  
A Pocket Guide to the Basics**

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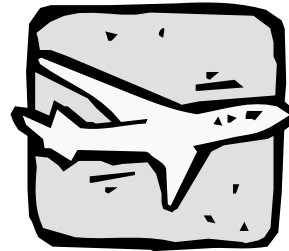
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# THE NEW AEROSPACE STANDARD

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This International Standard is the 2016 revision (Rev, D) of the Aerospace Standard (“AS”) containing requirements for establishing and maintaining a quality management system (QMS). This standard has been revised to follow the new clause structure and requirements of ISO 9001:2015, plus additional requirements for the aviation, space, and defense industries.



To assure high levels of customer satisfaction, these types of organizations need to produce, provide, and continually improve, safe and reliable products and services that meet or exceed the requirements of customers and applicable statutory and regulatory requirements. A quality management system is set up by an organization to achieve high levels of customer satisfaction and continual improvement, focusing on common requirements and the reduction of variation and waste (costs) in the supply chain.

This is done by;

- establishing a quality policy and quality objectives, and
- establishing the means to achieve those objectives.

Rather than specify requirements for your final product — what you produce, or your services — what you provide — this International Standard focuses further “upstream” on the processes — or how you produce or provide quality products and services. This International Standard requires systems for controlling the

processes you use to develop and produce your products and/or deliver your services. This standard is based on the idea that there are certain elements every quality management system must have in place in order to ensure that safe, reliable, quality products and services are consistently provided to the customer on time. It's noteworthy that the requirements in this International Standard are complementary to the customer's requirement for products and services, as well any applicable statutory and regulatory requirements.

This revision (D) of the International Aerospace Standard was prepared by the International Aerospace Quality Group (IAQG), with representatives from aviation, space, and defense companies in the Americas, Asia/Pacific and Europe. Their goal is to advance initiatives that will make significant improvements in quality and reductions in costs throughout the entire aerospace value stream. This new Aerospace Standard is published by SAE, which provides “uniform requirements, practices and methods for quality assurance in aerospace design, development, production, installation and servicing”. AS9100 is a Trademark of SAE.



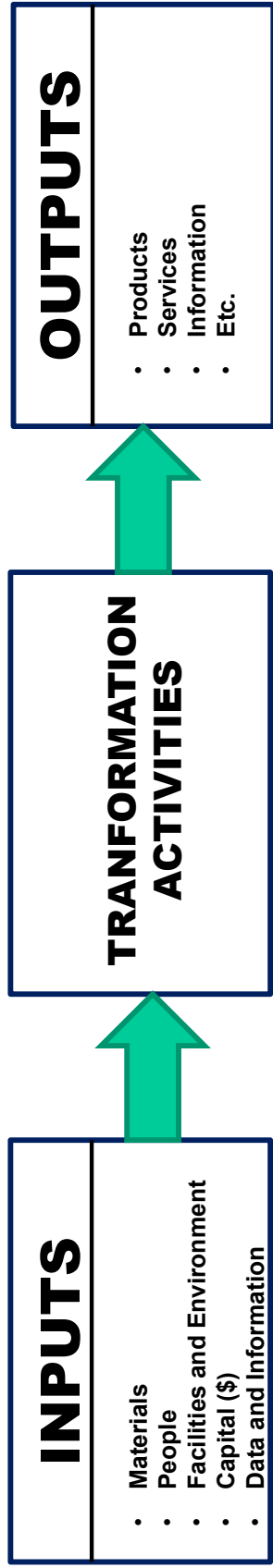
## **CHANGES IN REV. D OF THIS AEROSPACE STANDARD**

The changes made to the previous 9100 standard (Rev. C) in developing Revision D, based on ISO 9001:2015 are noteworthy. Some of the major changes are:

- A need to enhance the use of the process approach to consider both risks and opportunities in managing the processes.
- An increased emphasis on achieving performance and value.
- Consideration of organizational knowledge as a resource to be managed.

# PROCESS

“A set of interrelated or interacting activities which transforms inputs into outputs.”



# EXAMPLE



## **THE QUALITY MANAGEMENT PRINCIPLES**

Like ISO 9001:2015, this new Aerospace Standard is based on seven principles that are key to the success of your quality management system. These principles are important since they can help your company in achieving its intended performance and quality success.

### **Principle 1 — Customer Focus**

Your company needs to focus on its customers (and other interested parties) to understand what the customer needs and expects from your products and services, including price, delivery, warranty, etc., leading to high levels of customer satisfaction.

### **Principle 2 — Leadership**

Your company's top management needs to:

- Establish a quality policy and quality objectives that are consistent with the mission and strategic direction of your company.
- Provide the human resources, facilities, and work environment needed to provide a quality product and or service.
- Demonstrate a commitment to education and training, continual improvement, and the success of the QMS.

### **Principle 3 — Engagement of People**

People at all levels of your company need to be competent, empowered, and be engaged in preventing and solving problems, and recognized for their efforts in achieving performance and success of the QMS.

## WHAT DOES BEING “REGISTERED” MEAN?

Companies may be “registered” (or “receive certification”) to Rev. D of this International Standard by applying to a registrar and paying a registration fee. A registrar is a company that will audit your company’s quality management system to see if it is meeting all the necessary requirements.

All companies will be registered to Rev. D of this International (Aerospace) Standard. If certain aspects of this standard do not apply to your company (for example, if your company doesn’t develop its own product designs), your company would exclude those requirements from the scope of its registration, as documented in the Quality Manual (See the next section on “The Documentation System”).



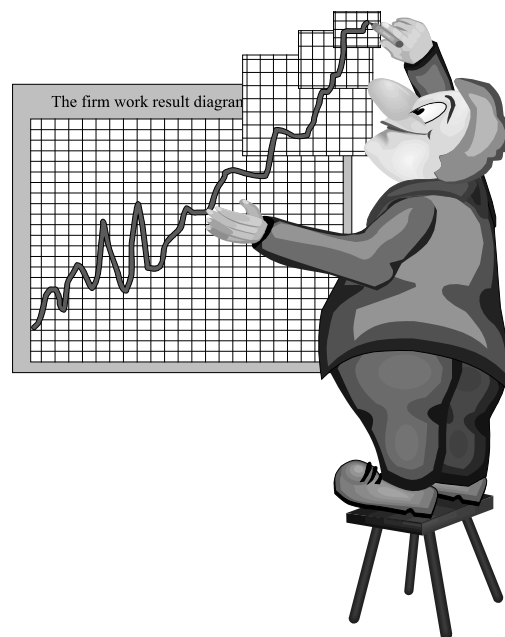


## WHY WOULD MY COMPANY WANT TO BE REGISTERED?

A major reason that most companies want to become registered is that their customers are demanding it. Registration of your QMS assures your customers that your company has the ability to provide quality products and/or services on time. Some of the other benefits a company might expect to see include:

- Competitive advantages in marketing an improved “quality” image.
- Better performance of internal operations (less scrap / rework).
- Better quality.
- Fewer customer audits.
- A stronger focus on customer satisfaction and continual improvement.
- Better documentation and company-wide communication.
- Reduced costs.

And all of the above changes can lead to higher levels of financial security for the company and its employees.



# THE DOCUMENTATION SYSTEM

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## WHAT ARE THE DIFFERENT TYPES OF DOCUMENTATION?

It is likely that one of the major changes your company will go through is to review and possibly improve its documentation system. Rev. D of The Aerospace Standard requires that companies have documented information required by this International Standard, and by what they feel is necessary for the effective operation of the QMS.

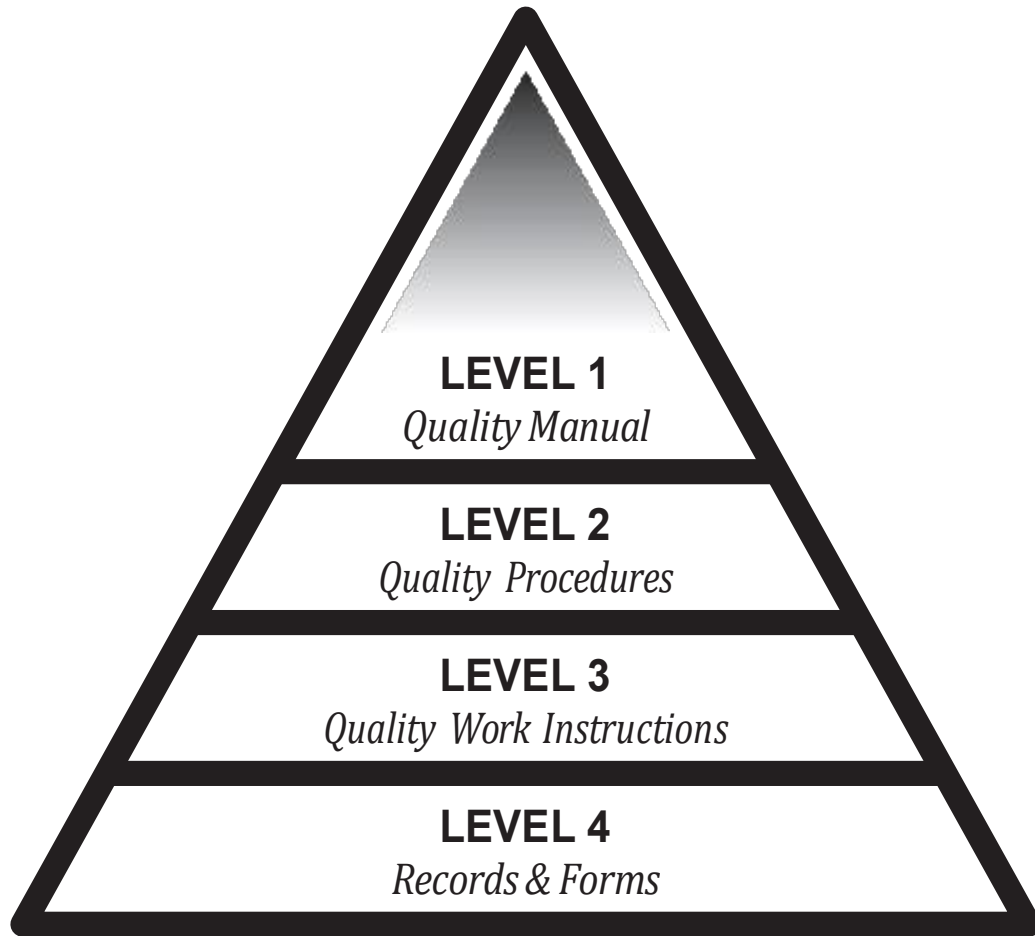
Rev. D of this International Standard is less prescriptive than the previous editions, and no longer requires that a company have documentation in the structure of a quality manual, quality procedures (and work instructions), and records. Although no longer required, many companies will continue to use this structure since each type of document serves a different and useful purpose.

### 1. Quality Manual

The quality manual describes your company's quality management system (QMS). This documented information includes the scope, boundaries, and applicability of the QMS, addressing the products and services, and the organization's approach to meeting customer's needs. It includes a description of the core processes, how these processes interact and apply to meeting customer's needs, and the relevant interested parties. The quality manual likewise describes the company's quality policy and who is responsible and authorized to manage the system of interrelated processes comprising the QMS. The quality manual is typically 30 to 50 pages long and is usually written with the direct involvement of top management and input from all levels of the organization.

## HOW IS THE DOCUMENTATION SYSTEM STRUCTURED?

You can visualize the structure of the QMS documentation described above as a pyramid with four levels:



**LEVEL 1**

ADDRESSES QUALITY POLICY, ORGANIZATIONAL STRUCTURE, MANAGEMENT RESPONSIBILITIES, ETC.

**LEVEL 2**

GIVE ACTIVITY "STEPS" AND ASSIGNED RESPONSIBILITIES ADDRESSING **WHO** DOES **WHAT**, **WHEN**, AND **WHAT DOCUMENTATION**

**LEVEL 3**

DETAIL METHODS AND GUIDELINES ADDRESSING **HOW** TO PERFORM THE TASK

**LEVEL 4**

CONTAIN EVIDENCE AND CONTROL MECHANISMS TO SHOW COMPLIANCE AND RESULTS

# THE REQUIREMENTS OF THE “NEW” AEROSPACE STANDARD

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## WHAT DOES EACH CLAUSE MEAN?

The following are short descriptions of each of the major “sub-clauses” of Rev. D of this International Standard. Each section below contains an explanation of the “essence of the clause” (or what it really means) and a list of the departments that are most affected by the clause, followed by some of the more important details of what’s required by each clause.

Remember that some of the requirements may not apply to your company, depending on how the QMS was defined to meet the context and strategic purpose of your company.

*Note: The clause numbers start with “4” because the requirement clauses begin in the fourth section of the new Aerospace Standard. The first three clauses cover the standard’s scope, references, and terms and definitions.*



## CLAUSE

# 5

## LEADERSHIP

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- Showing leadership and commitment to customer focus by understanding and meeting your customers' needs and expectations, as well as any statutory and regulatory requirements that relate to your products and processes (for example, requirements related to safety, emissions, hazardous materials, etc.).
- Measuring the performance of the quality management system (on-time delivery, quality products and services, customer satisfaction, etc.) and taking appropriate action if performance targets are not, or will not be, met.



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**CLAUSE 8.1 OPERATION PLANNING AND CONTROL**

**Essence of the clause:** Your company must plan its “production” processes to ensure they can be operated consistently and result in a quality product or service.

**Who’s most involved:** Manufacturing Engineering and Production or Operations Departments.

In planning and controlling its processes, your company needs to address:

- Determining specific requirements for the products and services.
- Defining criteria to determine process performance and for monitoring, inspection and test activities to ensure a quality product and service.
- Determining the resources needed to meet all product and service requirements. (See Clause 7.1)
- Determining and implementing controls over the processes to meet the criteria, including any critical items with key characteristics.
- Determining and implementing any changes needed in the processes.
- Determining the processes and control needed for the use and maintenance of the products and services.

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**CLAUSE 9.1 MONITORING, MEASUREMENT, ANALYSIS  
AND EVALUATION**

**Essence of the clause:** Your company needs to determine how to monitor and measure the performance of the QMS and customer satisfaction, and then evaluate the data and information to determine the need for improvements.

**Who's most involved:** Managers in all departments (The Quality Department is often responsible for coordinating these activities.)

**9.1.1 General**

Your company needs to determine the what, when, and how to monitor and measure the performance of the QMS, and the when and how these results need to be analyzed and evaluated. In essence, your company must perform regular and thorough “check-ups” to identify any problems in adhering to the QMS, and to check if the system is really “working” to provide quality products and services. Records documenting the results of these activities need to be maintained.

# CLAUSE

# 10

# IMPROVEMENT

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Examples of improvement are simple corrections, corrective actions, continual or breakthrough changes, and organizational changes.

## CLAUSE 10.2 NONCONFORMITY AND CORRECTIVE ACTION

**Essence of the clause:** When a nonconformity occurs, including a customer complaint, your company needs to take corrective action to eliminate the cause(s) of the nonconformity by making corrections to the QMS.

**Who's most involved:** Managers and personnel of almost every department.

Notice the difference between this clause and clause 8.7 (Control of Nonconforming Outputs). Control of nonconforming output is about putting defective product or service right; corrective action is about putting the quality management system right.

In general, the need for corrective action may be triggered by:

- Findings from internal or third-party audits.