

# **WHAT EVERY EMPLOYEE NEEDS TO KNOW ABOUT AS9100**

**A Pocket Guide to the Basics**

First Edition

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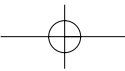
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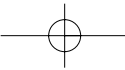
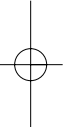
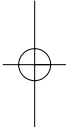
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# THE AS9100 STANDARD

## WHAT EXACTLY IS AS9100?

AS9100 is an international standard containing requirements for establishing and maintaining a **quality management system** for the aerospace industry.



To assure high levels of customer satisfaction, aerospace industry organizations need to produce, and continually improve, safe and reliable products that meet or exceed the requirements of customers and regulatory authorities. 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 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 – AS9100 focuses further “upstream” on the processes – or *how* you produce. AS9100 requires documented systems for controlling the processes you use to develop and produce your products. 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, quality products are consistently provided to the customer on time.

AS9100 includes the requirements of ISO 9001:2000 plus additional requirements for a quality management system for the aerospace industry. It was prepared by SAE International: The Engineering Society for Advancing Mobility in Land, Sea, Air and Space,<sup>®</sup> with support from the ISO technical committee responsible for Quality Management and Quality Assurance, which includes representatives from countries around the world.

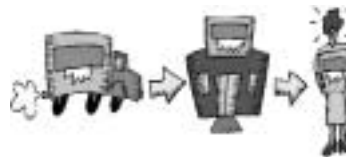


## WHAT IS THE “PROCESS APPROACH”?

**ISO 9000 Quality Management Systems – Fundamentals and Vocabulary** defines a **process** as a “*set of interrelated or interacting activities which transforms inputs into outputs.*” (See figure on next page.)

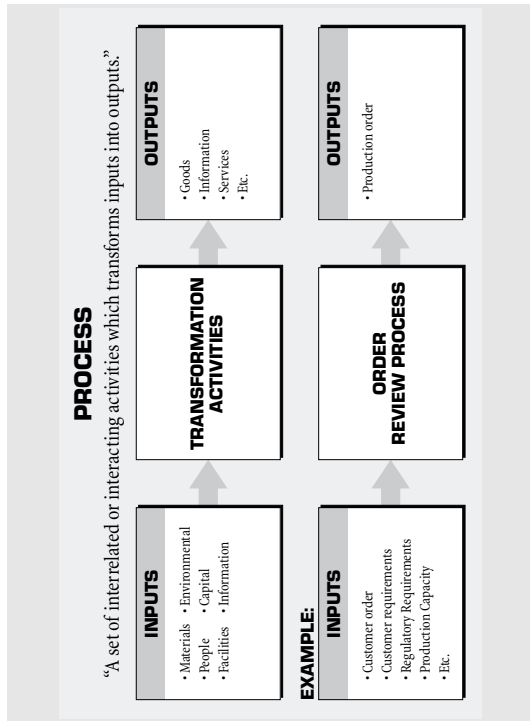
In a company, the output of a process often becomes the input to another “downstream” process. For example, when a customer order is received and reviewed by the Sales Department, the output of the “Sales Order Review Process” may be the generation of a production order, which becomes one of the inputs to the production process.

By identifying and managing all “processes” in your company (and the interactions and handoffs between these processes), your company is embracing the “Process Approach” to management.



# PROCESS

**“A SET OF INTERRELATED OR INTERACTING ACTIVITIES WHICH TRANSFORMS INPUTS INTO OUTPUTS.”**



The AS9100 standard is divided into five main sections that state requirements for the primary process “categories” in your company:

- **Quality Management System processes**, including developing the QMS documentation, documentation control and records control. These “QMS” requirements are found in Clause 4.
- **Management processes**, including planning and management review. These “Management Responsibility” requirements are found in Clause 5.
- **Resource management processes**, including human resources, infrastructure, and the work environment. These “Resource Management” requirements are found in Clause 6.
- **Product realization (production) processes**, including sales order review, product design, purchasing, calibration, and the actual “production” of your product or service. These “Product Realization” requirements are found in Clause 7.
- **Measurement, analysis and improvement processes**, including internal auditing, inspection, testing, and corrective/preventive action. These “Measurement, Analysis & Improvement” requirements are found in Clause 8.

**Principle 3 – Involvement of People:** *People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.*

People should be empowered and held responsible to:

- Solve problems;
- Seek opportunities for personal and organizational improvement;
- Focus on the customer's needs.

**Principle 4 – Process Approach:** *A desired result is achieved more efficiently when activities and related resources are managed as a process.*

Managing a process includes:

- Defining the desired result, such as an assembled component (manufacturing process) or a completed part specification (design process);
- Identifying and measuring process inputs and outputs;
- Identifying and managing handoffs and relationships with other processes;
- Defining responsibilities for managing the process;
- Identifying, providing, and supporting the resources required by the process.

**Principle 5 – System Approach to Management:** *Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.*

To apply this principle, your company should:

- Identify and develop the system of processes that affect a particular objective;
- Understand how processes relate to each other in the system;
- Establish measures to drive continual improvement.

**Principle 6 – Continual Improvement:** *Continual improvement of the organization's overall performance should be a permanent objective of the organization.*

Continual improvement includes actions to improve:

- Product features and characteristics (making a better product);
- Process effectiveness and efficiency (to do it with fewer resources, quicker, and make it "right the first time").

**Principle 7 – Factual Approach to Decision Making:** *Effective decisions are based on the analysis of data and information.*

Decisions should not be made based on guesses, hearsay, or personal opinion, but on hard data. As it is often said, "In God we trust, all others bring data."

**Principle 8 – Mutually Beneficial Supplier Relationships:** *An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.*

Your company is dependent upon its suppliers to provide a quality product or service to your customers. Developing "win-win" relationships with key suppliers helps to ensure and improve supplier quality, reliability, and timeliness.



**WHAT DOES BEING “REGISTERED” MEAN?**

Companies may be “registered” (or “receive certification”) to AS9100 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.

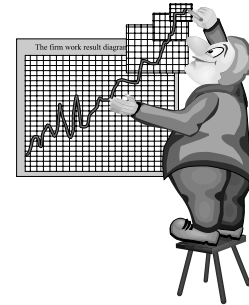
If your company doesn’t develop its own product designs, your company would *exclude* those requirements from the scope of its registration.

**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 to AS9100 assures your customers that you have a quality management system with the ability to produce, and continually improve, safe, reliable products 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 company-wide communication
- Decreased costs
- Better documentation (see “What’s the value of all this documentation?”)

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



**CLAUSE**

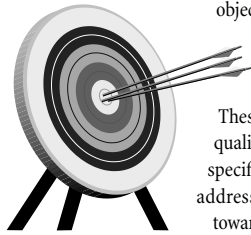
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**MANAGEMENT RESPONSIBILITY**

**CLAUSE 5.4 PLANNING**

**Essence of the clause:** Management must establish, track, and update measurable quality objectives throughout the company. Management must also plan and dedicate sufficient resources to develop and maintain the quality management system, achieve the quality objectives, and continually improve.

**Who's most involved:** Top management (of almost every department)



This clause requires your company to develop quality objectives (goals) at various areas in the company. The objectives need to have measurable targets and be consistent with the quality policy.

These quality objectives can relate to the quality management system itself or to specific products or projects, and should address customer expectations. Progress towards these objectives must be tracked.

The quality management system itself must be planned in order to achieve the quality objectives within a defined timeframe. Planning must also ensure that the integrity of the quality management system is maintained when changes occur. Additional planning requirements (for production processes) are found in Clause 7.1.

**CLAUSE**

**5**

**MANAGEMENT RESPONSIBILITY**

**CLAUSE 5.5 RESPONSIBILITY, AUTHORITY AND COMMUNICATION**

**Essence of the clause:** Responsibility and authority for the quality management system and its processes must be defined. Methods for communicating important information about the quality management system must be in place.

This clause is broken up into sub-clauses to address these issues.

**Who's most involved:** All departments

**5.5.1 Responsibility and Authority**

Management must define who has authority and responsibility for all activities affecting quality in the company (often covered in job descriptions or procedures). Everyone must understand what his or her responsibilities are in order to produce a quality product.

**5.5.2 Management Representative**

Top management must assign a "management representative" who has the responsibility and authority to:

- Implement the requirements of AS9100;
- Report back to management on the performance of the quality management system; and
- Promote awareness of customer requirements throughout the company.
- Resolve matters pertaining to quality.

**CLAUSE**

**5**

**MANAGEMENT RESPONSIBILITY**

Management then assesses this information to determine what action plans to follow related to continual improvement and resource needs.



**CLAUSE**

**6**

**RESOURCE MANAGEMENT**

**CLAUSE 6.1 PROVISION OF RESOURCES**

**Essence of the clause:** Resources must be determined and provided to successfully implement and continually improve the quality management system and to enhance customer satisfaction.

**Who's most involved:** Management (of almost every department)

This clause requires your company to determine and provide the resources required by your quality management system, including human resources, infrastructure, and work environment.

Specific requirements related to these resources are detailed in clauses 6.2, 6.3, and 6.4.

**CLAUSE**

**6**

**RESOURCE  
MANAGEMENT**

**CLAUSE 6.2 HUMAN RESOURCES**

**Essence of the clause:** All personnel at your company must have the competence and training they need to produce a quality product, and you must have the records to prove it.

**Who's most involved:** All departments and especially Human Resources

People performing work affecting product quality must be qualified to perform that work based on appropriate education, training, skills, and/or experience.

This clause also requires your company to establish methods for:

- Identifying competency needs for its personnel;
- Providing required training (both on-the-job and off-the-job);
- Evaluating training effectiveness;
- Ensuring personnel are aware of the effects of their actions on quality and how they contribute to the quality objectives; and
- Maintaining education, experience, training, and qualification records for all personnel.

**CLAUSE**

**6**

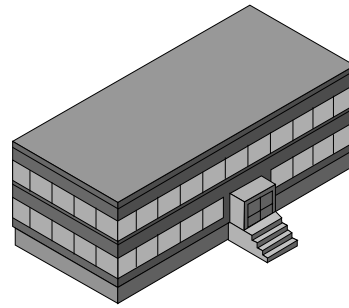
**RESOURCE  
MANAGEMENT**

**CLAUSE 6.3 INFRASTRUCTURE**

**Essence of the clause:** Your company must determine, provide and maintain the infrastructure needed to produce a quality product or service.

**Who's most involved:** Management (of almost every department)

Buildings, workspace, equipment, hardware, software, and supporting services must be provided to the extent necessary to produce a quality product or service. These facilities must also be maintained, usually through a preventive maintenance program. (See Clause 7.5.1)



Auditors will take notes frequently, but you shouldn't let this make you nervous. Many of the notes they take will just be general observations; they will also note positive points. And even when they write down nonconformities, remember... auditors are looking for problems with the **quality management system**, not with the staff!



## HOW DO I PREPARE FOR AUDITS?

**1** Your main responsibility in preparing for audits is to know and follow your job requirements. This means being familiar with the documentation in your area and how to use it. This does **not** mean **memorizing** the information in your documentation. After all, that's why it was written down in the first place – so that employees would have something to refer to when they need it in their jobs.

**2** Be able to show that you can “navigate” through the documentation system. You should be able to find the procedures or work instructions that would be needed for different situations that might occur in your job.

**3** Also, check your work area. Do you have any documentation that may be obsolete and needs to be removed? Do you have any “personal” documentation that you've been relying on to do your job? If so, this documentation should become part of the formal quality management system for a number of reasons:

- It may be helpful to others in the same job.
- It may be crucial for ensuring your job can still be carried out if you're absent.
- To ensure it stays up-to-date.

**4** Finally, be prepared for how to answer an auditor's questions (see the next section).



### HOW DO I ANSWER AN AUDITOR'S QUESTIONS?

The best guideline for answering an auditor's questions is sometimes a surprise to people... Simply be polite and honest. In general, the auditor is not out to trick or deceive you, so you should return the favor. There are a few other tips you should know when talking to auditors:

- When talking to an **internal auditor**, you should feel free to offer any information on the subject being addressed that you feel is important, even if it's not specifically asked for. Your internal auditors are there to help improve the system for everyone. Don't be afraid to ask the internal auditor a question or ask for advice.
- When talking to a **third-party auditor** (your registrar's auditor), you should still be honest, but **only answer their question**. There is no need to volunteer information with third-party auditors.
- **Never lie** to an auditor... They often know the right answer before they ask the question.
- Answer the auditor's question directly and with confidence when you know the answer.

If you don't feel very confident about answering a question, you can:

- Tell the auditor you don't understand the question, and ask him or her to restate it.
- Take the time to find the answer in your area's quality procedures or work instructions. (Remember, that's what they're there for!)
- Ask someone else, such as your manager, for help in answering the question (especially if you feel the question falls outside your job responsibilities).

Remember that the auditors want you to succeed. They are not "out to get you."

### WHAT IF WE DON'T PASS THE REGISTRATION AUDIT?

There are basically three things that can happen in a registration audit:

- 1 Your company may "pass" the audit (in official language, your company will be "recommended for registration"), in which case the company will receive its official registration in about a month.
- 2 Your company may be told that a follow-up visit must be scheduled and that if corrective action on all nonconformities found during the audit is successfully completed by that visit, registration will be issued.
- 3 Your registrar may find that your company has quite a bit of work to do before it will be ready for registration, and another registration audit will have to be scheduled.



In all cases, the registration auditor will report all findings to your management before he or she leaves, so that your company knows where it stands.

### HOW OFTEN ARE WE GOING TO BE AUDITED?

Each type of audit will have its own schedule. Often companies will have more frequent internal audits than third-party audits, especially during the early stages of AS9100 implementation. These early audits help employees become more comfortable with the audit process, eliminate any problems in the quality management system, and thus help ensure the company will "pass" the registration audit.

Some general guidelines for the timing of quality audits follow:

#### Internal Audits

**Frequency:** AS9100 requires that audits be scheduled based on the sta-