

# PRECISION SENSORS

# QUALITY ASSURANCE MANUAL

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**CONTROL PAGE**

**QUALITY SYSTEM MANUAL**

**Manual Number: 1**

**Issued To: AS / ISO Management Representative**

This manual is Controlled

# PRECISION SENSORS HISTORY

## Precision Sensors Division of United Electric Controls Corporation.

Precision Sensors (PSI) was founded over 40 years ago to service the needs of aerospace and defense customers. PSI became part of the United Electric Controls Company (UEC) in 1989. PSI operates from a 10,000SF facility in Milford, CT. The facility houses primary machining, assembly, and clean room operations as well as engineering, quality assurance, marketing, customer service, materials, purchasing, manufacturing and production engineering.

Precision Sensors (PSI) is a vertically integrated supplier of pressure, vacuum, liquid level, flow, altitude/airspeed switches and sensors to aerospace, military and semiconductor process markets. Like all UEC businesses, PSI delivers fundamental value in the form of cost effective, reliable threshold detection products that are use to protect people, equipment and processes. PSI has the in-house capability to produce primary and secondary parts and assemblies for 75% percent of its product line. Specialty machining to achieve a 5Ra finish on wetted surfaces for UHP products is mostly performed by outside suppliers. PSI develops its own products fast and efficiently, and considers itself a time to market leader. Customers acknowledge that PSI products are the "best in their class".

PSI has received source delegation (ship to stock) and supplier certification awards from leading aerospace/defense companies. Leading semiconductor equipment manufacturers have designated PSI as their "first choice" for pressure and vacuum switches.

# **PRECISION SENSORS QUALITY POLICY**

Precision Sensors promises our customers that we will distinguish ourselves as a supplier of first rate solutions, high quality products and prompt services.

This goal will be achieved through continuous improvement of the Quality Management System and

***“A United Commitment to Quality”***

## **PRECISION SENSORS QUALITY OBJECTIVES**

- 1) Reduce customer returns, deemed Precision Sensors responsibility, to less than 1%.
- 2) Improve employee productivity 10%.
- 3) Improve on time delivery by 25%.

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Tim Straub, Vice President & General Manager

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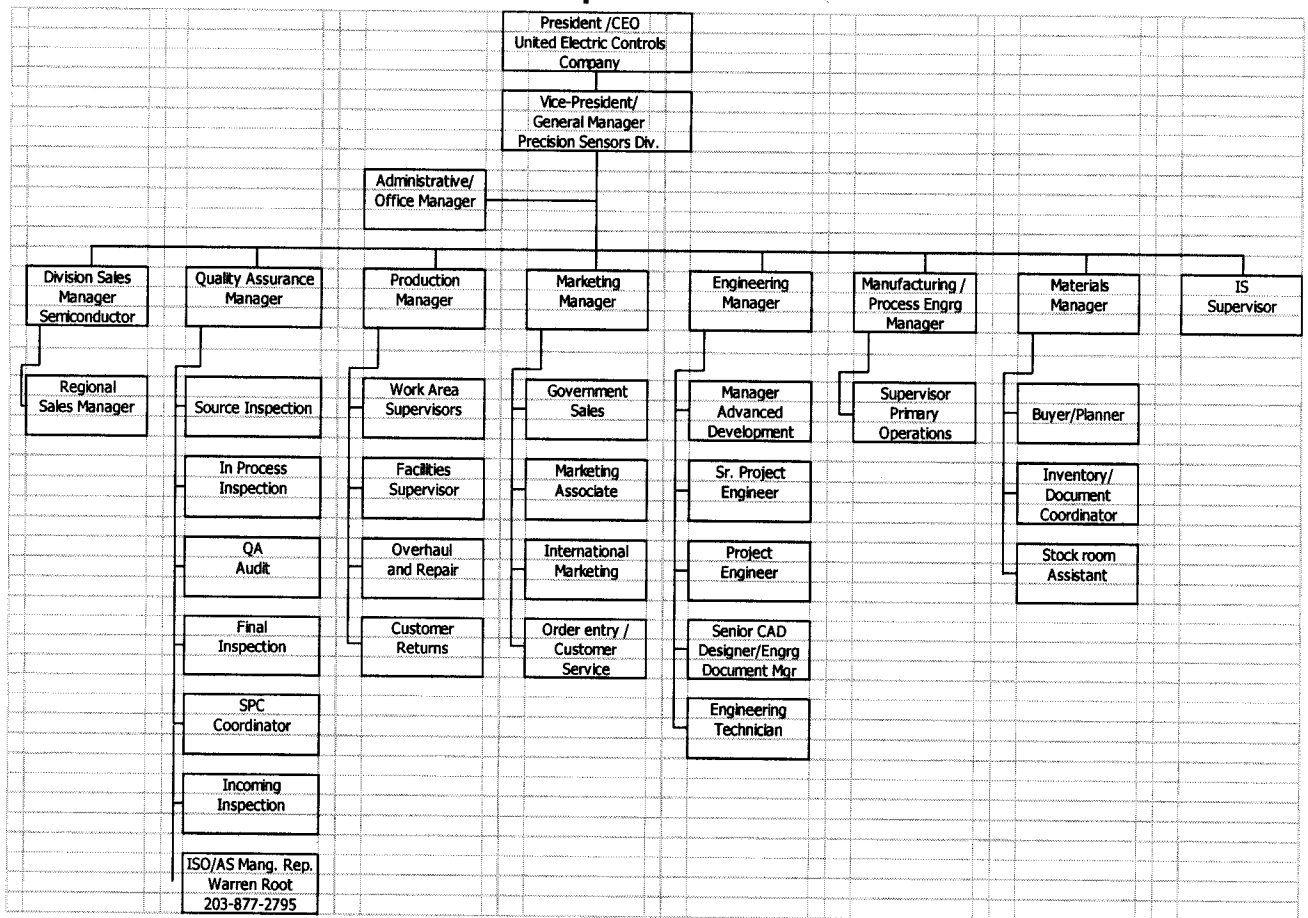
Warren Root, Quality Assurance Manager

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Paul Zaczkowski, Production Manager

Q347 10/03

# ORGANIZATIONAL CHART



## **EIGHT QUALITY MANAGEMENT PRINCIPLES AS A BASIS OF ISO9001**

**CUSTOMER FOCUS:** An organization depends on their customers and should therefore understand current and future needs. An organization should also meet customer requirements and strive to exceed customer expectations.

**LEADERSHIP:** Leadership establishes unity of purpose and direction. Strong leadership creates and maintains an operating environment in which people can become fully involved in achieving organizational objectives.

**INVOLVEMENT:** People at all levels are the essence of an organization. Full involvement enables their abilities to be used for the organization's benefit.

**PROCESS APPROACH:** A desired result is achieved more efficiently when activities and related resources are a managed process.

**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.

**CONTINUAL IMPROVEMENT:** Continual improvement of the organization's overall performance should be a permanent objective of the organization.

**FACTUAL APPROACH TO DECISION-MAKING:** Effective decisions are based on the analysis of the data and information.

**MUTUALLY BENEFICIAL SUPPLIER RELATIONSHIPS:** An organization and its suppliers are independent and a mutually beneficial relationship enhances the ability of both to create value.

These eight quality management principals form the basis for the quality management system standards within the ISO 9000 family.

Source ANSI/ISO/ASQ Q9000-2000

## PROCESS APPROACH

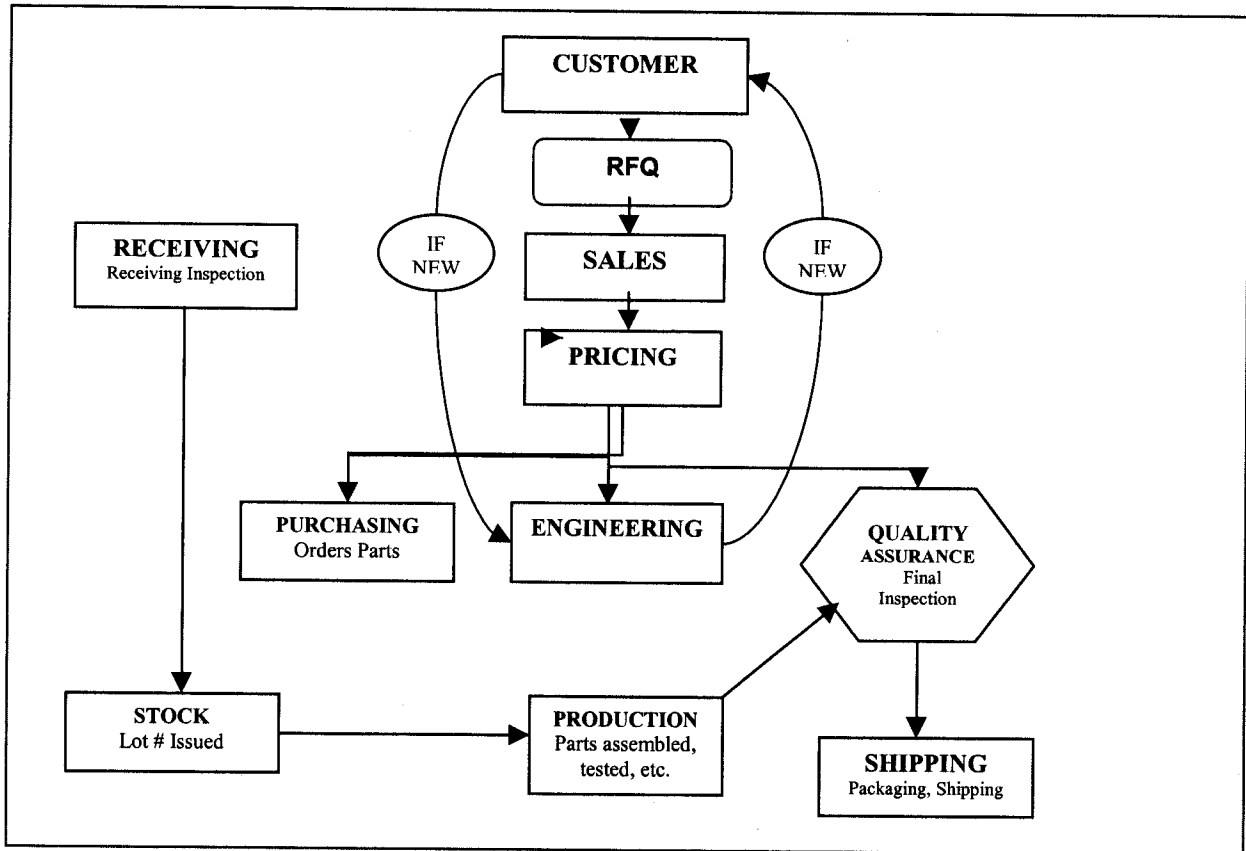
The basic requirement of a quality management system is that the organization must identify and manage the family of processes needed to ensure conformity. The quality management system ensures compliance of the quality policy and quality objectives are met. Organizations should not lose sight of these basic concepts. It is too easy to get so absorbed in documenting a system that the basic concept is lost. While documentation is important, the organization's primary emphasis should be on developing and implementing effective quality management system processes.

Clause 4.1 requires that processes be developed and implemented to make up the overall system. It also requires that the processes be managed and continually improved. These improvement activities must include the monitoring, measurement and analysis of these processes.

Precision Sensors needs to consider the following activities:

1. The identification of processes and their interrelationships, sequences and interactions.
2. The establishment of criteria and means to effectively operate, monitor, measure, analyze and control the process.
3. The improvement of the Quality Management System's effectiveness including improvements to the process.
4. The achievement of the Quality Management System processes outsourced to another organization that affect product conformity.

# PRECISION SENSORS MAP OF SALES PROCESS



## Precision Sensors Sales Process

1. a. New Product Customer inquiry, drawing, spec., etc. Assuming that we can do it, Engineering responds by creating a drawing for the customer to review (usually within twenty four hours)
- b. Regular Product Customer sends RFQ Pricing checks and/or updates Pricing. Sales sends Quotes with P & D to customer.
2. Upon acceptance of drawing/quote, customer issues purchase order.
3. Sales reviews orders and enters them into the computer. The following things are automatically created:
  - a. Sales Order is printed and distributed to Purchasing, Engineering and Quality (Quality is also given a copy of the P.O. to review.).
  - b. Acknowledgement is printed and mailed to the customer.
  - c. A "work order" which tells purchasing what parts need to be ordered/machined, etc.
4. Purchased and machined parts are inspected and issued to stockroom where a lot number is issued for traceability.

5. A "pick list" is printed, kit pulled, parts, assembly instructions and drawings are issued to the floor for production.
6. Parts assembled, tested and submitted to inspection. Work is logged on an assembly time and inspection record.
7. Parts are marked/labeled.
8. Final Inspection Complete parts are inspected I.A.W. customer drawing/PSI product drawing and a Certificate of Compliance is made.
9. Parts are boxed and shipped per customer's requirements.
10. Sales retains copies of the following in the sales order:
  - Packing Slip
  - Invoice
  - Final Sheets
  - Assembly and Test Record
  - Pick List

## SUMMARY OF CHANGES

Revision / DCN #	Change(s)	Effective Date	Approved by
QAM 001 03-022	Original	October 20, 2003	Warren Root
QAM 002 03-028	<p>Added to 4.1 <i>"Where an organization chooses to outsource..."</i>; Added to 4.3 ref. to document ES12; qualified servicing exclusion in 4.2.2 to read 7.5.1.5 (from 7.5); Added to 7.3.1 <i>"Precision Sensors defines the different design and development tasks to be carried out..."</i>; Identified in 7.4.3 how controls over outsourcing will be applied; and added to 8.2.4 <i>"When key characteristics have been identified, they are monitored and controlled."</i> as per documentation audit. Removed reference to SAE AS9100 Rev. level in 4.1</p>	Nov. 17, 2003	Warren Root
QAM 003 03-033	<p>Revised 8.2.1 See Record Copy</p>	December 10, 2003	Warren Root

## 4.0 Quality Management System

**4.1 General requirements:** Precision Sensors has established, documented, implemented and maintains a Quality Management System and continually improves its effectiveness in accordance with the requirements of SAE AS9100.

Precision Sensors:

- a) identifies the processes as needed for the Quality Management System,
- b) determines the sequence and interaction of these processes,
- c) determines the criteria and methods required for ensuring the effective operation and control of these processes,
- d) ensures the availability of resources and information necessary to support the operation and monitoring of these processes,
- e) measures, monitors and analyzes these processes, and
- f) implements action necessary to achieve planned results and continual improvement of these processes.

Precision Sensors shall manage these processes in accordance with the requirements of the SAE AS9100 international standard.

**Where Precision Sensors chooses to outsource any process that affects product conformity with requirements, Precision Sensors will ensure control over such processes. Control of such outsourced processes are identified within the quality management system.**

### 4.1.1 Precision Sensors' Quality System consists of four levels:

#### **Level One:** The Quality Manual

The Quality Manual describes the corporate Quality Policy and the structure and methods for maintaining the system. The Quality Manual will include the quality system Standard Operating Procedures.

#### **Level Two:** The Standard Operating Procedures (SOP) Manual.

The SOP manual is a set of procedures that describes the overall activities that relate to those sections that require SOPs.

#### **Level Three:** Work Instructions

Work Instructions describe in detail how particular tasks are performed. These instructions are required where the absence of such instructions would adversely affect the quality of the product or service.

#### **Level Four:** Records, tags and forms

Records and forms are used to provide evidence that the system has been implemented. Tags and labels are used as methods of identification.

## 4.2 Document requirements

**4.2.1 General:** Precision Sensors Quality Management System documentation shall include

- a) documented statements of a Quality Policy and Quality Objectives,
- b) a Quality Manual,
- c) documented procedures required by this International Standard,
- d) documents needed by the organization to ensure the effective planning, operation, and control of its processes, and
- e) records required by this International Standard, and
- f) quality system requirements imposed by the applicable regulatory authorities.

Precision Sensors shall ensure that personnel have access to Quality Management System documentation and are aware of relevant procedures. Customer and/or regulatory authority representatives shall have access to Quality Management System documentation.

**4.2.2 Quality Manual:** This manual is issued to describe the Quality Management System and related processes employed in all operations by Precision Sensors. This manual and the systems and processes it describes serve to:

- ensure conformance to customer requirements
- implement Precision Sensors' Quality Policy and Quality Objectives
- address the intent and requirements of AS9100

The scope of this manual includes requirements for controlling the following:

- Controlled documents
- Records
- Management responsibility (including an organizational chart, quality policy and quality objectives)
- Quality planning
- Responsibility of authorities
- Customer focus and customer satisfaction
- Resource management and provisions
- Training and skills requirements
- Infrastructure and work environment
- Product realization
- Production control
- Quality Assurance testing
- Internal Auditing
- Control of Measuring Devices (calibration)
- Control of Nonconforming Product
- Data Analysis
- Continuing Improvement
- Corrective and Preventive Action
- A process approach to quality
- References to supporting second-level documentation, as applicable.