

## AS9100D / ISO9001 Quality Systems Manual

### 1.0 Scope

This manual describes the quality management system of Pyramid who manufactures products that exist aboard Spacecraft, Satellites, Launch Vehicles, Aircraft, Ships, Ground Vehicles, and submarines. The MIL-STD-1750A Processors from Pyramid are used in the Military market in a significant number of Military and Space applications which include:

- Flight Control Systems
- Navigation
- Communications
- ECM
- Weapons Control
- Command and Control Display Systems
- Ground Support and Test Systems

This manual is established to:

- Define Pyramid's Quality Policy.
- Establish the quality system that conforms to the requirements of ISO 9001:2015 and AS9100D Quality Management Systems. Hereafter, ISO 9001:2015 may be referred to as ISO 9001 and AS9100D as AS9100.

### 2.0 Normative Reference

Defined in the Standards listed below.

### 3.0 References

- ISO 9001:2015 Quality Management System Standard
- AS 9100 D Aerospace Standard

### 4.0 Context of the Organization

#### 4.1 Understanding the Organization and its context

Pyramid has determined external and internal issues that are relevant to its purpose and its strategic direction and affect its ability to achieve the intended result(s) of its quality management systems which include:

- Meeting customer requirements in services.
- 100% on time.
- Achieve defect free operations.

For a list of these issues see [Risks and Opportunities - Assessments of Defined Processes](#).

#### 4.2 Understanding the needs and expectations of interested parties



The external and internal parties are also defined on the [Risks and Opportunities - Assessments of Interested Parties](#).

Issues	Interested Party	Requirements
<b>Safety</b>	OSHA (Ext) Employees (Int)	Compliance with safety regulations. Work in a safe environment
<b>Environmental</b>	CA EPA (Ext)	Compliance with California EPA.
<b>Labor regulations</b>	CA Dept. of Labor (Ext.)	Meet the state and federal labor related regulatory requirements.
<b>Customer requirements</b>	Customer (Ext)	Accurate and timely delivered products.
<b>ROI, Profitability</b>	Parent Company (Ext)	Meet planned Sales and Cost forecasts.
<b>Productivity, Moral, Absenteeism</b>	Staff (Int.)	Efficient, accurate and timely products, motivated staff, low turnovers, low rate of absenteeism
<b>Instructions provided to external providers</b>	Material Suppliers, QMS Technical Advisor, Calibration Agencies	Accurate and timely delivered external provider products and services
<b>Internal Auditing</b>	Consultants (Ext)	Conduct effective internal audits as per the audit plan
<b>COVID-19</b>	CDC (Ext) / Pyramid Employees (Int)	Adherence to CDC requirements to prevent exposure to Covid 19 virus

Pyramid monitors and reviews information about its interested parties and their relevant requirements during management reviews.

#### 4.3 Determining the scope of the quality management system

Pyramid was formed in January 2003 through the acquisition of all the product lines from Performance Semiconductor. These product lines included the MIL-STD-1750A Processor family and the complete family of SRAMs previously offered by Performance Semiconductor. All products previously supported by Performance Semiconductor are being supported now by Pyramid. The Pyramid part numbering scheme is identical to the part numbers previously used by Performance Semiconductor.

Since its inception, Pyramid has expanded both product lines to include additional products and has added products in the EEPROM and Logic arena as well. The markets addressed by Pyramid include both Military and Commercial markets, and products are offered across Commercial, Industrial and Military Temperature ranges. The management of Pyramid has extensive experience in the various technologies and manufacturing requirements of these product lines.

Pyramid has determined the boundaries and applicability of the quality and environmental management systems to establish its scopes as stated below:

#### Pyramid's QMS Scope:



*Manufacturer of Semiconductor products for the Aerospace, Military and Commercial Industries.*

Currently Pyramid Semiconductor is not developing any new products and does not handle any customer properties. Therefore, Section 8.3 and 8.5.3 are not applicable to the scope of this Quality System.

#### **4.4 Quality management system and its processes**

**4.4.1** Pyramid has established, implemented, maintains and continually improves a quality management system, including the processes needed and their interactions, in accordance with the requirements of this International Standard.

***Pyramid's QMS also addresses customer and applicable statutory and regulatory QMS requirements.***

Pyramid has determined the processes needed for the quality management system and their application throughout Pyramid, see [Defined Processes Matrix](#), and will:

- Determine the inputs required and the outputs expected from these processes.
- Determine the sequence and interaction of these processes as indicated on the following diagram: [Sequence and interactions](#)
- Determine and apply the criteria and methods (including monitoring, measurements, and related performance indicators) needed to ensure the effective operation and control of these processes, see Defined Processes Matrix.
- Determine the resources needed for these processes and ensure their availability- see the Defined Processes Matrix.
- Assign the responsibilities and authorities for these processes- see the Defined Processes Matrix and relevant position descriptions.
- Address the risks and opportunities as determined in accordance with the requirements of 6.1, see [Defined Processes Risks and Opportunities Assessments](#) and [Interested Parties Risks and Opportunities Assessments](#) using the FMEA methodology;
- Evaluate these processes and implement any changes needed to ensure that these processes achieve their intended results.
- Improve the processes and the quality management system.

**4.4.2** To the extent necessary, Pyramid Semiconductor will:

- Maintain documented information to support the operation of its processes.
- Retain documented information to have confidence that the processes are being carried out as planned.

***Pyramid has established and maintains this quality manual that includes:***

- A general description of relevant interested parties (see 4.2).
- The scope of the quality management system, including boundaries and applicability (see 4.3).
- A description of the processes needed for the quality management system and their application throughout Pyramid.
- The sequence and interaction of these processes.
- Assignment of the responsibilities and authorities for these processes.



Pyramid ensures control over any outsourced process. The outsourced processes include Metal Finishing, Second Party Auditing and Calibration. Type and extent of control to be applied to these outsourced processes are defined within this quality management system, see The [Approved Vendor List](#) and [Vendor Evaluation Procedure](#).

## **5.0 Leadership**

### **5.1 Leadership and commitment**

#### **5.1.1 General**

Top management has demonstrated leadership and commitment with respect to the quality management system by:

- Taking accountability for the effectiveness of the quality management system.
- Ensuring that the quality policy and quality objectives are established for the quality management system and are compatible with the context and strategic direction of Pyramid.
- Ensuring the integration of the quality management system requirements into Pyramid's business processes.
- Promoting the use of the process approach and risk-based thinking.
- Ensuring that the resources needed for the quality management system are available.
- Communicating the importance of effective quality management and of conforming to the quality management system requirements.
- Ensuring that the quality management system achieves its intended results.
- Engaging, directing, and supporting persons to contribute to the effectiveness of the quality management system.
- Promoting improvement.
- Supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

#### **5.1.2 Customer focus**

Top management demonstrated leadership and commitment with respect to customer focus by ensuring that:

- Customer and applicable statutory and regulatory requirements are determined, understood, and consistently met.
- The risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed.
- The focus on enhancing customer satisfaction is maintained.
- Product and service conformity and on-time delivery performance are measured and appropriate action is taken if planned results are not, or will not be, achieved.

#### **5.2.1 Quality Policy**

The executive management of Pyramid is committed to quality and has established the following quality policy statement:



*Pyramid Semiconductor is dedicated to providing products and services which meet customer and applicable requirements, on time delivery and to the continual improvement of the effectiveness of its quality management system.*

## 5.2.2 Communicating the Quality Policy

The quality policy will:

- Be available and maintained as documented information
- Be communicated, understood, and applied within Pyramid
- Be available to relevant interested parties, as appropriate.

## 5.3 Organizational Roles, Responsibilities and Authorities

Top management will ensure that the responsibilities and authorities for relevant roles are assigned, communicated, and understood within Pyramid on Organization Chart and relevant Position Descriptions.

Top management will assign the responsibility and authority for:

- Ensuring that the quality management system conforms to the requirements of this International Standard.
- Ensuring that the processes are delivering their intended outputs.
- Reporting on the performance of the quality management system and on opportunities for improvement, in particular to top management.
- Ensuring the promotion of customer focus throughout Pyramid.
- Ensuring that the integrity of the quality management system is maintained when changes to the quality management system are planned and implemented.

The Vice President of Operations has been appointed as the management representative, who will have the responsibility and authority for oversight of the above requirements.

The management representative will have the organizational freedom and unrestricted access to top management to resolve quality management issues.

## 6.0 Planning

### 6.1 Actions to address risks and opportunities

6.1.1 When planning for the quality management system, Pyramid will consider the issues referred to in 4.1 and the requirements referred to in 4.2 and determine the risks and opportunities that need to be addressed to:

- Give assurance that the quality management system can achieve its intended result(s);
- Enhance desirable effects.
- Prevent, or reduce, undesired effects.
- Achieve improvement.

The FMEA methodology will be used to assess risks and opportunities with RPN values of greater than 100 triggering mitigating actions.



### 6.1.2 Pyramid will plan:

- Actions to address these risks and opportunities.
- How to:
  - Integrate and implement the actions into its quality management system processes (see 4.4).
  - Evaluate the effectiveness of these actions.

Actions taken to address risks and opportunities will be proportionate to the potential impact on the conformity of products and services.

## 6.2 Quality objectives and planning to achieve them

6.2.1 Pyramid has established quality objectives at relevant functions, levels and processes needed for the quality management system.

The quality objectives are:

- Consistent with the quality policy.
- Measurable.
- Compliant to applicable requirements.
- Relevant to conformity of products and services and to enhancement of customer satisfaction.
- Monitored.
- Communicated.
- Updated as appropriate.

The following quality objectives are applicable to Pyramid operations:

- ***Pyramid will meet our customers' and regulatory requirements.***
- ***Pyramid will strive to achieve zero defects.***
- ***Pyramid will strive to be 100% on-time in delivery of products.***

The following key performance indicators (KPIs) are applicable to Pyramid

- ***Defective returns as a percentage of revenue***
- ***Internal errors (Initial group A) as percentage of samples***
- ***Percent of products delivered on-time***

Annual goals for the above KPIs are set during management reviews and performance against these goals are assessed during subsequent management meetings. Pyramid maintains documented information on the quality objectives.

6.2.2 When planning how to achieve its quality objectives, Pyramid will determine:

- What will be done.
- What resources will be required.
- Who will be responsible?
- When it will be completed.
- How the results will be evaluated.



## 6.3 Planning of changes

When Pyramid determines the need for changes to the quality management system, the changes will be carried out in a planned manner.

Pyramid will consider:

- The purpose of the changes and their potential consequences.
- The integrity of the quality management system.
- The availability of resources.
- The allocation or reallocation of responsibilities and authorities.

## 7.0 Support

### 7.1 Resources

#### 7.1.1 General

The organization will determine and provide the resources needed for the establishment, implementation, maintenance, and continual improvement of the quality management system.

Pyramid will consider:

- The capabilities of, and constraints on, existing internal resources.
- What needs to be obtained from external providers.

#### 7.1.2 People

Pyramid will determine and provide the persons necessary for the effective implementation of its quality management system and for the operation and control of its processes.

#### 7.1.3 Infrastructure

Pyramid will determine, provide, and maintain the infrastructure necessary for the operation of its processes and to achieve conformity of products and services.

**NOTE:** Infrastructure can include:

- a) buildings and associated utilities.
- b) equipment, including hardware and software.
- c) transportation resources.
- d) information and communication technology.

#### 7.1.4 Environment for the operation of processes

Pyramid will determine, provide, and maintain the environment necessary for the operation of its processes and to achieve conformity of products and services.

**NOTE:** A suitable environment can be a combination of human and physical factors, such as:

- Social (e.g., non-discriminatory, calm, non-confrontational);
- Psychological (e.g., stress-reducing, burnout prevention, emotionally protective);



- Physical (e.g., temperature, heat, humidity, light, airflow, hygiene, noise).

These factors can differ substantially depending on the products and services provided.

### **7.1.5 Monitoring and measuring resources**

#### **7.1.5.1 General**

Pyramid will determine and provide the resources needed to ensure valid and reliable results when monitoring or measuring is used to verify the conformity of products and services to requirements.

Pyramid will ensure that the resources provided:

- Are suitable for the specific type of monitoring and measurement activities being undertaken.
- Are maintained to ensure their continuing fitness for their purpose.

Pyramid will retain appropriate documented information as evidence of fitness for purpose of the monitoring and measurement resources.

#### **7.1.5.2 Measurement traceability**

When measurement traceability is a requirement, or is considered by Pyramid to be an essential part of providing confidence in the validity of measurement results, measuring equipment will be:

- Calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; when no such standards exist, the basis used for calibration or verification will be retained as documented information.
- Identified to determine their status.
- Safeguarded from adjustments, damage or deterioration that would invalidate the calibration status and subsequent measurement results.

Pyramid will establish, implement, and maintain a process for the recall of monitoring and measuring equipment requiring calibration or verification.

Pyramid will maintain a register of the monitoring and measuring equipment. The register will include the equipment type, unique identification, location, and the calibration or verification method, frequency, and acceptance criteria.

**NOTE:** Monitoring and measuring equipment can include, but are not limited to: test hardware, test software, automated test equipment (ATE), and plotters used to produce verification data. It also includes personally owned and customer supplied equipment used to provide evidence of product and service conformity.

Calibration or verification of monitoring and measuring equipment will be carried out under suitable environmental conditions (see 7.1.4).

Pyramid will determine if the validity of previous measurement results has been adversely affected when measuring equipment is found to be unfit for its intended purpose and will take appropriate action as necessary.





### 7.1.6 Organizational knowledge

Pyramid will determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services.

This knowledge will be maintained and be made available to the extent necessary.

When addressing changing needs and trends, Pyramid will consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates.

**NOTE 1** Organizational knowledge is knowledge specific to Pyramid; it is generally gained by experience. It is information that is used and shared to achieve Pyramid's objectives.

**NOTE 2** Organizational knowledge can be based on:

- Internal sources (e.g., intellectual property; knowledge gained from experience; lessons learned from failures and successful projects; capturing and sharing undocumented knowledge and experience; the results of improvements in processes, products and services).
- External sources (e.g., standards; academia; conferences; gathering knowledge from customers or external providers).

### 7.2 Competence

Pyramid will:

- Determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system, see Position Descriptions.
- Ensure that these persons are competent based on appropriate education, training, or experience.
- Where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken,
- Retain appropriate documented information as evidence of competence.

**NOTE:** Consideration should be given for the periodic review of the necessary competence.

**NOTE:** Applicable actions can include, for example, the provision of training to, the mentoring of, or the re-assignment of currently employed persons; or the hiring or contracting of competent persons.

### 7.3 Awareness

Pyramid will ensure that persons doing work under Pyramid's control are aware of:

- The quality policy.
- Relevant quality objectives.
- Their contribution to the effectiveness of the quality management system, including the benefits of improved performance.
- The implications of not conforming to the quality management system requirements.
- Relevant quality management system documented information and changes thereto.
- Their contribution to product or service conformity.
- Their contribution to product safety.



- The importance of ethical behavior.

## 7.4 Communication

Pyramid will determine the internal and external communications relevant to the quality management system, including:

- On what it will communicate.
- When to communicate.
- With whom to communicate.
- How to communicate.
- Who communicates.

**NOTE:** Communication should include internal and external feedback relevant to the quality management system.

## 7.5 Documented information

### 7.5.1 General

Pyramid's quality management system will include:

- Documented information required by this International Standard.
- Documented information determined by Pyramid as being necessary for the effectiveness of the quality management system.

**NOTE:** The extent of documented information for a quality management system can differ from one organization to another due to:

- The size of organization and its type of activities, processes, products, and services.
- The complexity of processes and their interactions.
- The competence of persons.

### 7.5.2 Creating and updating

When creating and updating documented information, Pyramid will ensure appropriate:

- Identification and description (e.g., a title, date, author, or reference number).
- Format (e.g., language, software version, graphics) and media (e.g., paper, electronic).
- Review and approval for suitability and adequacy.

**NOTE:** Approval implies authorized persons and approval methods are identified for the relevant types of documented information, as determined by Pyramid.

See Control of Documents Procedure

### 7.5.3 Control of documented information

**7.5.3.1** Documented information required by the quality management system and by this International Standard will be controlled to ensure:

- It is available and suitable for use, where and when it is needed.



- It is adequately protected (e.g., from loss of confidentiality, improper use, or loss of integrity).

**7.5.3.2** For the control of documented information, the organization will address the following activities, as applicable:

- Distribution, access, retrieval, and use.
- Storage and preservation, including preservation of legibility.
- Control of changes (e.g., version control);
- Retention and disposition.
- Prevention of the unintended use of obsolete documented information by removal or by application of suitable identification or controls if kept for any purpose.

Documented information of external origin determined by Pyramid to be necessary for the planning and operation of the quality management system will be identified as appropriate and be controlled.

Documented information retained as evidence of conformity will be protected from unintended alterations.

When documented information is managed electronically, data protection processes will be defined (e.g., protection from loss, unauthorized changes, unintended alteration, corruption, physical damage).

**NOTE:** Access can imply a decision regarding the permission to view the documented information only, or the permission and authority to view and change the documented information.

See Control of Records procedure

## **8.0 Operation**

### **8.1 Operational planning and control**

Pyramid has planned, implemented, and controls the processes (see 4.4) needed to meet the requirements for the provision of products and services, and to implement the actions determined in Clause 6 by:

- Determining the requirements for the products and services.

**NOTE:** Determination of requirements for the products and services should include consideration of:

- Personal and product safety.
- Producibility and inspectability;
- Reliability, availability, and maintainability.
- Suitability of parts and materials used in the product.
- Selection and development of embedded software.
- Product obsolescence.
- Prevention, detection, and removal of foreign objects.
- Handling, packaging, and preservation.
- Recycling or final disposal of the product at the end of its life.



- Establishing criteria or:
  - The processes.
  - The acceptance of products and services.

**NOTE:** According to the nature of the product and depending on the specified requirements, statistical techniques can be used to support:

- Process control.
  - Selection and verification of key characteristics.
  - Process capability measurements.
  - Statistical process control.
  - Verification.
  - Failure mode, effects, and criticality analysis.
- Determining the resources needed to achieve conformity to the product and service requirements and to meet on-time delivery of products and services.
  - Implementing control of the processes in accordance with the criteria.
  - Determining, maintaining, and retaining documented information to the extent necessary:
    - To have confidence that the processes have been carried out as planned.
    - To determine the conformity of products and services to their requirements.
  - Determining the processes and controls needed to manage critical items, including production process controls when key characteristics have been identified.
  - Engaging representatives of affected organization functions for operational planning and control.
  - Determining the process and resources to support the use and maintenance of the products and services.
  - Determining the products and services to be obtained from external providers.
  - Establishing the controls needed to prevent the delivery of nonconforming products and services to the customer.

**NOTE:** One method to achieve operational planning and control can be through using integrated phased processes

As appropriate to Pyramid, customer requirements, and products and services, Semiconductor will plan and manage product and service provision in a structured and controlled manner including scheduled events performed in a planned sequence to meet requirements at acceptable risk, within resource and schedule constraints.

**NOTE:** This activity is generally referred to as project planning, project management, or program management.

The output of this planning will be suitable for Pyramid operations.

**NOTE:** As an output of this planning, documented information specifying the processes of the quality management system and the resources to be applied to a specific product, service, project, or contract can be referred to as a quality plan.

Pyramid will control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

Pyramid will ensure that outsourced processes are controlled (see 8.4).

Pyramid will establish, implement, and maintain a process to plan and control the temporary or permanent transfer of work, to ensure the continuing conformity of the work to requirements. The process will ensure that work transfer impacts and risks are managed.

**NOTE:** For the control of work transfer from Pyramid to an external provider, or from an external provider to another external provider, see 8.4. For the control of work transfer from one organization facility to another, or from an external provider to Pyramid, see 8.5.

### 8.1.1 Operational Risk Management

Pyramid will plan, implement, and control a process for managing operational risks to the achievement of applicable requirements, which includes as appropriate to Pyramid and the products and services:

- Assignment of responsibilities for operational risk management.
- Definition of risk assessment criteria (e.g., likelihood, consequences, risk acceptance).
- Identification, assessment, and communication of risks throughout operations.
- Identification, implementation, and management of actions to mitigate risks that exceed the defined risk acceptance criteria.
- Acceptance of risks remaining after implementation of mitigating actions.

See the risk assessment conducted for processes for the provision of products using the FMEA methodology.

**NOTE 1:** While clause 6.1 addresses the risks and opportunities when planning for the quality management system of the organization, the scope of this clause (8.1.1) is limited to the risks associated to the operational processes needed for the provision of products and services (clause 8).

**NOTE 2:** Within the aviation, space, and defense industry, risk is generally expressed in terms of the likelihood of occurrence and the severity of the consequences.

See Operational Risk Management Matrix using the FMEA methodology with RPN>100 as threshold for taking mitigating actions.

### 8.1.2 Configuration Management

Pyramid will plan, implement, and control a process for configuration management as appropriate to the organization and its products and services to ensure the identification and control of physical and functional attributes throughout the product lifecycle. This process will:

- Control product identity and traceability to requirements, including the implementation of identified changes.
- Ensure that the documented information (e.g., requirements, verification, validation, and acceptance documentation) is consistent with the actual attributes of the products and services.

### 8.1.3 Product Safety

Pyramid will plan, implement, and control the processes needed to assure product safety during the entire product life cycle, as appropriate to Pyramid and the product.



**NOTE:** Examples of these processes include:

- Assessment of hazards and management of associated risks (see 8.1.1).
- Management of safety critical items.
- Analysis and reporting of occurred events affecting safety.
- Communication of these events and training of persons.

#### **8.1.4 Prevention of Counterfeit Parts**

Pyramid will plan, implement, and control processes, appropriate to Pyramid and the product, for the prevention of counterfeit or suspect counterfeit part use and their inclusion in product(s) delivered to the customer.

**NOTE:** Counterfeit part prevention processes should consider:

- Training of appropriate persons in the awareness and prevention of counterfeit parts.
- Application of a parts obsolescence monitoring program.
- Controls for acquiring externally provided product from original or authorized manufacturers, authorized distributors, or other approved sources.
- Requirements for assuring traceability of parts and components to their original or authorized manufacturers.
- Verification and test methodologies to detect counterfeit parts.
- Monitoring of counterfeit parts reporting from external sources.
- Quarantine and reporting of suspect or detected counterfeit parts.

### **8.2 Requirements for products and services**

#### **8.2.1 Customer communication**

Communication with customers will include:

- Providing information relating to products and services.
- Handling enquiries, contracts, or orders, including changes.
- Obtaining customer feedback relating to products and services, including customer complaints.
- Handling or controlling customer property.
- Establishing specific requirements for contingency actions, when relevant.

#### **8.2.2 Determining the requirements for products and services**

When determining the requirements for the products and services to be offered to customers, Pyramid will ensure that:

- The requirements for the products and services are defined, including:
  - Any applicable statutory and regulatory requirements.
  - Those considered necessary by Pyramid.
- Pyramid can meet the claims for the products and services it offers.
- Special requirements of the products and services are determined.
- Operational risks (e.g., new technology, ability, and capacity to provide, short delivery time frame) have been identified.

All new products are assessed for operational risks utilizing the FMEA methodology.



### **8.2.3 Review of the requirements for products and services**

**8.2.3.1** Pyramid ensures that it has the ability to meet the requirements for products and services to be offered to customers. Pyramid conducts a review before committing to supply products and services to a customer, to include:

- Requirements specified by the customer, including the requirements for delivery and post-delivery activities.
- Requirements not stated by the customer, but necessary for the specified or intended use, when known.
- Requirements specified by Pyramid.
- Statutory and regulatory requirements applicable to the products and services.
- Contract or order requirements differing from those previously expressed.

This review will be coordinated with applicable functions of Pyramid.

If upon review Pyramid determines that some customer requirements cannot be met or can only partially be met, Pyramid will negotiate a mutually acceptable requirement with the customer.

Pyramid ensures that contract or order requirements differing from those previously defined are resolved.

The customer's requirements are confirmed by Pyramid before acceptance, when the customer does not provide a documented statement of their requirements.

**NOTE:** In some situations, such as internet sales, a formal review is impractical for each order. Instead, the review can cover relevant product information, such as catalogues.

**8.2.3.2** Pyramid will retain documented information, as applicable:

- On the results of the review.
- On any new requirements for the products and services.

### **8.2.4 Changes to requirements for products and services**

Pyramid ensures that relevant documented information is amended, and that relevant persons are made aware of the changed requirements, when the requirements for products and services are changed.

## **8.3 Not Applicable**

## **8.4 Control of externally provided processes, products and services**

### **8.4.1 General**

Pyramid will ensure that externally provided processes, products and services conform to requirements.

Pyramid will be responsible for the conformity of all externally provided processes, products, and services, including from sources defined by the customer.



Pyramid will ensure, when required, that customer-designated or approved external providers, including process sources (e.g., special processes), are used.

Pyramid will identify and manage the risks associated with the external provision of processes, products, and services, as well as the selection and use of external providers.

Pyramid will require that external providers apply appropriate controls to their direct and sub-tier external providers, to ensure that requirements are met.

Pyramid will determine the controls to be applied to externally provided processes, products and services when:

- Products and services from external providers are intended for incorporation into Pyramid's own products and services.
- Products and services are provided directly to the customer(s) by external providers on behalf of Pyramid.
- A process, or part of a process, is provided by an external provider as a result of a decision by Pyramid.

Pyramid will determine and apply criteria for the evaluation, selection, monitoring of performance, and re-evaluation of external providers, based on their ability to provide processes or products and services in accordance with requirements. Pyramid will retain documented information of these activities and any necessary actions arising from the evaluations.

**NOTE:** During external provider evaluation and selection, Pyramid can use quality data from objective and reliable external sources, as evaluated by Pyramid (e.g., information from accredited quality management system or process certification bodies, external provider approvals from government authorities or customers). Use of such data would be only one element of an organization's external provider control process and Pyramid remains responsible for verifying that externally provided processes, products, and services meet specified requirements.

#### **8.4.1.1 Pyramid will:**

- Define the process, responsibilities, and authority for the approval status decision, changes of the approval status, and conditions for a controlled use of external providers depending on their approval status.
- Maintain a register of its external providers that includes approval status (e.g., approved, conditional, disapproved) and the scope of the approval (e.g., product type, process family).
- Periodically review external provider performance including process, product and service conformity, and on-time delivery performance.
- Define the necessary actions to take when dealing with external providers that do not meet requirements.
- Define the requirements for controlling documented information created by and/or retained by external providers.

#### **8.4.2 Type and extent of control**

Pyramid will ensure that externally provided processes, products and services do not adversely affect Pyramid's ability to consistently deliver conforming products and services to its customers.

Pyramid will:





- Ensure that externally provided processes remain within the control of its quality management system.
- Define both the controls that it intends to apply to an external provider and those it intends to apply to the resulting output.
- Take into consideration:
  - The potential impact of the externally provided processes, products and services on Pyramid's ability to consistently meet customer and applicable statutory and regulatory requirements.
  - The effectiveness of the controls applied by the external provider.
  - The results of the periodic review of external provider performance (see 8.4.1.1 c).
- Determine the verification, or other activities, necessary to ensure that the externally provided processes, products and services meet requirements.

Verification activities of externally provided processes, products, and services will be performed according to the risks identified by Pyramid. These will include inspection or periodic testing, as applicable, when there is high risk of nonconformities including counterfeit parts.

**NOTE 1:** Customer verification activities performed at any level of the supply chain does not absolve Pyramid of its responsibility to provide acceptable processes, products, and services and to comply with all requirements.

**NOTE 2:** Verification activities can include:

- Review of objective evidence of the conformity of the processes, products, and services from the external provider (e.g., accompanying documentation, certificate of conformity, test documentation, statistical documentation, process control documentation, results of production process verification and assessment of changes to the production process thereafter).
- Inspection and audit at the external provider's premises.
- Review of the required documentation.
- Review of production part approval process data.
- Inspection of products or verification of services upon receipt.
- Review of delegations of product verification to the external provider.

When externally provided product is released for production use pending completion of all required verification activities, it will be identified and recorded to allow recall and replacement if it is subsequently found that the product does not meet requirements.

When Pyramid delegates verification activities to the external provider, the scope and requirements for delegation will be defined and a register of delegations will be maintained. Pyramid will periodically monitor the external provider's delegated verification activities.

When external provider test reports are utilized to verify externally provided products, Pyramid will implement a process to evaluate the data in the test reports to confirm that the product meets requirements. When a customer or organization has identified raw material as a significant operational risk (e.g., critical items), Pyramid will implement a process to validate the accuracy of test reports.

### **8.4.3 Information for external providers**

Pyramid will ensure the adequacy of requirements prior to their communication to the external provider.



Pyramid will communicate to external providers its requirements for:

- The processes, products, and services to be provided.
- The approval of:
  - Products and services.
  - Methods, processes, and equipment.
  - The release of products and services.
- Competence, including any required qualification of persons.
- The external providers' interactions with Pyramid.
- Control and monitoring of the external providers' performance to be applied by Pyramid, see [Supplier Evaluation](#) Pyramid.
- Verification or validation activities that Pyramid, or its customer, intends to perform at the external providers' premises.
- Design and development control.
- Special requirements, critical items, or key characteristics.
- Test, inspection, and verification (including production process verification).
- The use of statistical techniques for product acceptance and related instructions for acceptance by Pyramid.
- The need to:
  - Implement a quality management system.
  - Use customer-designated or approved external providers, including process sources (e.g., special processes).
  - Notify Pyramid of nonconforming processes, products, or services and obtain approval for their disposition.
  - Prevent the use of counterfeit parts (see 8.1.4).
  - Notify Pyramid of changes to processes, products, or services, including changes of their external providers or location of manufacture, and obtain Pyramid's approval.
  - Flow down to external providers applicable requirements including customer requirements.
  - Provide test specimens for design approval, inspection/verification, investigation, or auditing.
  - Retain documented information, including retention periods and disposition requirements.
- The right of access by Pyramid, their customer, and regulatory authorities to the applicable areas of facilities and to applicable documented information, at any level of the supply chain.
- Ensuring that persons are aware of:
  - Their contribution to product or service conformity.
  - Their contribution to product safety.
  - The importance of ethical behavior.

## **8.5 Production and service provision**

### **8.5.1 Control of production and service provision**

The operations managers prepares the work order package which may include the routing traveler; setup sheets; blue prints; hard copy of the tool path (tools and fixtures); operation sheets and any inspection sheets and provides the package to the machine operators. The traveler identifies the part number, revision level, operations sequence, inspection points, any special



work instructions, quantity, and any fallouts. Machine operator will sign off the completion of each operation sequence on traveler.

Pyramid will implement production and service provision under controlled conditions, such controlled conditions will include, as applicable:

- The availability of documented information that defines:
  - The characteristics of the products to be produced, the services to be provided, or the activities to be performed.
  - The results to be achieved.

**NOTE 1:** Documented information that defines characteristics of products and services can include digital product definition data, drawings, parts lists, materials, and process specifications.

**NOTE 2:** Documented information for activities to be performed and results to be achieved can include process flow charts, control plans, production documents (e.g., manufacturing plans, travelers, routers, work orders, process cards), and verification documents.

- The availability and use of suitable monitoring and measuring resources.
- The implementation of monitoring and measurement activities at appropriate stages to verify that criteria for control of processes or outputs, and acceptance criteria for products and services, have been met.
  - Ensuring that documented information for monitoring and measurement activity for product acceptance includes:
    - Criteria for acceptance and rejection.
    - Where in the sequence verification operations are to be performed.
    - Measurement results to be retained (at a minimum an indication of acceptance or rejection).
    - Any specific monitoring and measurement equipment required, and instructions associated with their use.
  - Ensuring that when sampling is used as a means of product acceptance, the sampling plan is justified based on recognized statistical principles and appropriate for use (i.e., matching the sampling plan to the criticality of the product and to the process capability).
- The use of suitable infrastructure and environment for the operation of processes.

**NOTE:** Suitable infrastructure can include product specific tools (e.g., jigs, fixtures, molds) and software programs.

- The appointment of competent persons, including any required qualification.
- The validation, and periodic revalidation, of the ability to achieve planned results of the processes for production and service provision, where the resulting output cannot be verified by subsequent monitoring or measurement.

**NOTE:** These processes can be referred to as special processes (see 8.5.1.2).

- The implementation of actions to prevent human error.
- The implementation of release, delivery, and post-delivery activities.
- The establishment of criteria for workmanship (e.g., written standards, representative samples, illustrations).



- The accountability for all products during production (e.g., parts quantities, split orders, nonconforming product).
- The control and monitoring of identified critical items, including key characteristics, in accordance with established processes.
- The determination of methods to measure variable data (e.g., tooling, on-machine probing, inspection equipment).
- The identification of in-process inspection/verification points when adequate verification of conformity cannot be performed at later stages.
- The availability of evidence that all production and inspection/verification operations have been completed as planned, or as otherwise documented and authorized.
- The provision for the prevention, detection, and removal of foreign objects.
- The control and monitoring of utilities and supplies (e.g., water, compressed air, electricity, chemical products) to the extent they affect conformity to product requirements (see 7.1.3).
- The identification and recording of products released for subsequent production use pending completion of all required measuring and monitoring activities, to allow recall and replacement if it is later found that the product does not meet requirements.

#### **8.5.1.1 Control of Equipment, Tools, and Software Programs**

Equipment, tools, and software programs used to automate, control, monitor, or measure production processes will be validated prior to final release for production and will be maintained.

Equipment validation takes place via a Preventive Maintenance Program using the Pyramid Equipment PM Log Sheet.

Tools and Fixtures are inspected and cleaned prior to putting them back on shelves.

Software programs transferred to CNC machines are validated by offset trial runs to ensure that the programmed pattern follows the operation sheets.

Storage requirements will be defined for production equipment or tooling in storage including any necessary periodic preservation or condition checks.

#### **8.5.1.2 Validation and Control of Special Processes**

At this, Pyramid does not outsource any special processes but if in the future any product is sent out for special processing, a C of C will be required. For processes where the resulting output cannot be verified by subsequent monitoring or measurement, Pyramid will establish arrangements for these processes including, as applicable:

- Definition of criteria for the review and approval of the processes.
- Determination of conditions to maintain the approval.
- Approval of facilities and equipment.
- Qualification of persons.
- Use of specific methods and procedures for implementation and monitoring the processes.
- Requirements for documented information to be retained.

#### **8.5.1.3 Production Process Verification**

Pyramid will implement production process verification activities to ensure the production process is able to produce products that meet requirements.



At this time Pyramid does not perform any First Article Inspection but in the future if required, will perform FAIs as per customer requirements.

**NOTE:** These activities can include risk assessments, capacity studies, capability studies, and control plans.

Pyramid will use a representative item from the first production run of a new part or assembly to verify that the production processes, production documentation, and tooling are able to produce parts and assemblies that meet requirements. This activity will be repeated when changes occur that invalidate the original results (e.g. engineering changes, production process changes, tooling changes).

**NOTE:** This activity can be referred to as First Article Inspection (FAI).

Pyramid will retain documented information on the results of production process verification.

### **8.5.2 Identification and traceability**

Pyramid will use suitable means to identify outputs when it is necessary to ensure the conformity of products and services.

At this time, 100 % of the materials use in customer products are supplied by the customer and are identified by customer names and work order numbers.

Pyramid will maintain the identification of the configuration of the products and services to identify any differences between the actual configuration and the required configuration.

Pyramid will identify the status of outputs with respect to monitoring and measurement requirements throughout production and service provision.

When acceptance authority media are used (e.g., stamps, electronic signatures, passwords), Pyramid will establish controls for the media.

Pyramid will control the unique identification of the outputs when traceability is a requirement and will retain the documented information necessary to enable traceability.

**NOTE:** Traceability requirements can include:

- The identification to be maintained throughout the product life.
- The ability to trace all products manufactured from the same batch of raw material, or from the same manufacturing batch, to the destination (e.g., delivery, scrap);
- For an assembly, the ability to trace its components to the assembly and then to the next higher assembly.
- For a product, a sequential record of its production (manufacture, assembly, inspection/verification) to be retrievable.

### **8.5.3 Property belonging to customers or external providers- Not Applicable**

Currently, Pyramid is not handling any property belonging to customers or external providers

#### **Preservation**

Pyramid will preserve the outputs during production and service provision, to the extent necessary to ensure conformity to requirements.



**NOTE:** Preservation can include identification, handling, contamination control, packaging, storage, transmission or transportation, and protection.

Preservation of outputs will also include, when applicable in accordance with specifications and applicable statutory and regulatory requirements, provisions for:

- Cleaning.
- Prevention, detection, and removal of foreign objects.
- Special handling and storage for sensitive products.
- Marking and labeling, including safety warnings and cautions.
- Shelf-life control and stock rotation.
- Special handling and storage for hazardous materials.

#### **8.5.4 Post-delivery activities**

Pyramid will meet requirements for post-delivery activities associated with the products and services.

In determining the extent of post-delivery activities that are required, Pyramid will consider:

- Statutory and regulatory requirements.
- The potential undesired consequences associated with its products and services.
- The nature, use and intended lifetime of its products and services.
- Customer requirements.
- Customer feedback.
- Collection and analysis of in-service data (e.g., performance, reliability, lessons learned).
- Control, updating, and provision of technical documentation relating to product use, maintenance, repair, and overhaul.
- Controls required for work undertaken external to Pyramid (e.g., off-site work).
- Product/customer support (e.g., queries, training, warranties, maintenance, replacement parts, resources, obsolescence).

When problems are detected after delivery, Pyramid will take appropriate action including investigation and reporting.

**NOTE:** Post-delivery activities can include actions under warranty provisions, contractual obligations such as maintenance services, and supplementary services such as recycling or final disposal.

#### **8.5.5 Control of changes**

Pyramid will review and control changes for production or service provision, to the extent necessary to ensure continuing conformity with requirements.

Persons authorized to approve production or service provision changes include the Operations Manager and the Sr. Machinist.

**NOTE:** Production or service provision changes can include the changes affecting processes, production equipment, tools, or software programs.

Pyramid will retain documented information describing the results of the review of changes, the person(s) authorizing the change, and any necessary actions arising from the review.



The ECN form is used to process production or service changes.

### **8.6 Release of products and services**

Pyramid will implement planned arrangements, at appropriate stages, to verify that the product and service requirements have been met.

The release of products and services to the customer will not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, as applicable, by the customer, see position descriptions for the Operations Manager and Sr. Machinist who have the authority to release products.

Pyramid will retain documented information on the release of products and services. The documented information will include:

- Evidence of conformity with the acceptance criteria.
- Traceability to the person(s) authorizing the release.

When required to demonstrate product qualification, Pyramid will ensure that retained documented information provides evidence that the products and services meet the defined requirements.

Pyramid will ensure that all documented information required to accompany the products and services are present at delivery.

### **8.7 Control of nonconforming outputs**

Pyramid will ensure that outputs that do not conform to their requirements are identified and controlled to prevent their unintended use or delivery, see Control of Nonconforming Products.

**NOTE:** The term “nonconforming outputs” includes nonconforming product or service generated internally, received from an external provider, or identified by a customer.

Pyramid will take appropriate action based on the nature of the nonconformity and its effect on the conformity of products and services. This will also apply to nonconforming products and services detected after delivery of products, during or after the provision of services.

Pyramid’s nonconformity control process will be maintained as documented information including the provisions for:

- Defining the responsibility and authority for the review and disposition of nonconforming outputs and the process for approving persons making these decisions.
- Taking actions necessary to contain the effect of the nonconformity on other processes, products, or services.
- Timely reporting of nonconformities affecting delivered products and services to the customer and to relevant interested parties.
- Defining corrective actions for nonconforming products and services detected after delivery, as appropriate to their impacts (see 10.2).

**NOTE:** Interested parties requiring notification of nonconforming products and services can include external providers, internal organizations, customers, distributors, and regulatory authorities.



Pyramid will deal with nonconforming outputs in one or more of the following ways:

- Correction.
- Segregation, containment, return or suspension of provision of products and services.
- Informing the customer.
- Obtaining authorization for acceptance under concession by a relevant authority and, when applicable, by the customer.

Dispositions of use-as-is or repair for the acceptance of nonconforming products will only be implemented:

- After approval by an authorized representative of Pyramid
- After authorization by the customer, if the nonconformity results in a departure from the contract requirements.

Product dispositioned for scrap will be conspicuously and permanently marked, or positively controlled, until physically rendered unusable.

Counterfeit, or suspect counterfeit, parts will be controlled to prevent reentry into the supply chain.

Conformity to the requirements will be verified when nonconforming outputs are corrected.

**8.7.1** Pyramid will retain documented information that:

- Describes the nonconformity.
- Describes the actions taken.
- Describes any concessions obtained.
- Identifies the authority deciding the action in respect of the nonconformity.

## **9.0 Performance evaluation**

### **9.1 Monitoring, measurement, analysis and evaluation**

#### **9.1.1 General**

Pyramid will determine:

- What needs to be monitored and measured.
- The methods for monitoring, measurement, analysis and evaluation needed to ensure valid results.
- When the monitoring and measuring will be performed.
- When the results from monitoring and measurement will be analyzed and evaluated.

Pyramid will evaluate the performance and the effectiveness of the quality management system.

Pyramid will retain appropriate documented information as evidence of the results.

#### **9.1.2 Customer satisfaction**

Pyramid will monitor customers' perceptions of the degree to which their needs and expectations have been fulfilled.





**NOTE:** Examples of monitoring customer perceptions can include customer surveys, customer feedback on delivered products and services, meetings with customers, market-share analysis, compliments, warranty claims and dealer reports.

Information to be monitored and used for the evaluation of customer satisfaction will include, but is not limited to, product and service conformity, on-time delivery performance, customer complaints, and corrective action requests. Pyramid will develop and implement plans for customer satisfaction improvement that address deficiencies identified by these evaluations and assess the effectiveness of the results.

Pyramid evaluates its customer satisfaction on an annual basis utilizing the following formula:

Customer Satisfaction Rate= 100%-( % of defective products returns+ % of late deliveries+ % of orders which received a customer complaint+ % of orders requesting a corrective action requests)

Pyramid's customer satisfaction target is to achieve an annual overall score of >90%

The customer satisfaction result is used as a measurement indicator for the Planning and Contract Review processes and its effectiveness assessed during the annual mgmt review meetings.

### 9.1.3 Analysis and evaluation

Pyramid will analyze and evaluate appropriate data and information arising from monitoring and measurement.

**NOTE:** Appropriate data can include information on product and service problems reported by external sources (e.g., government/industry alerts, advisories).

The results of analysis will be used to evaluate:

- Conformity of products and services.
- The degree of customer satisfaction.
- The performance and effectiveness of the quality management system.
- If planning has been implemented effectively.
- The effectiveness of actions taken to address risks and opportunities.
- The performance of external providers.
- The need for improvements to the quality management system.

**NOTE:** Methods to analyze data can include statistical techniques.

### 9.2 Internal audit

Pyramid will conduct internal audits at planned intervals to provide information on whether the quality management system, see the Internal Audit Procedure:

- Conforms to:
  - Pyramid's own requirements for its quality management system.

**NOTE:** Pyramid's own requirements should include customer and applicable statutory and regulatory quality management system requirements.

- The requirements of this International Standard.
- Is effectively implemented and maintained.



**NOTE:** When conducting internal audits, performance indicators can be evaluated to determine whether the quality management system is effectively implemented and maintained.

#### 9.2.1 Pyramid will:

- Plan, establish, implement, and maintain an audit program(s) including the frequency, methods, responsibilities, planning requirements and reporting, which will take into consideration the importance of the processes concerned, changes affecting Pyramid, and the results of previous audits.
- Define the audit criteria and scope for each audit.
- Select auditors and conduct audits to ensure objectivity and the impartiality of the audit process.
- Ensure that the results of the audits are reported to relevant management.
- Take appropriate correction and corrective actions without undue delay.
- Retain documented information as evidence of the implementation of the audit program and the audit results.

### 9.3 Management review

#### 9.3.1 General

VP of Operations and other Key employees will review Pyramid's quality management system, at least once per year, to ensure its continuing suitability, adequacy, effectiveness, and alignment with the strategic direction of Pyramid.

#### 9.3.2 Management review inputs

The management review will be planned and carried out taking into consideration:

- The status of actions from previous management reviews.
- Changes in external and internal issues that are relevant to the quality management system.
- Information on the performance and effectiveness of the quality management system, including trends in:
  - Customer satisfaction and feedback from relevant interested parties.
  - The extent to which quality objectives have been met.
  - Process performance and conformity of products and services.
  - Nonconformities and corrective actions.
  - Monitoring and measurement results.
  - Audit results.
  - The performance of external providers.
  - On-time delivery performance
- The adequacy of resources.
- The effectiveness of actions taken to address risks and opportunities (see hl);
- Opportunities for improvement.

#### 9.3.3 Management review outputs

The outputs of the management review will include decisions and actions related to:

- Opportunities for improvement.



- Any need for changes to the quality management system.
- Resource needs.
- Risks identified

Pyramid will retain documented information as evidence of the results of management reviews.

## **10.0 Improvement**

### **10.1 General**

Pyramid will determine and select opportunities for improvement and implement any necessary actions to meet customer requirements and enhance customer satisfaction.

These will include:

- Improving products and services to meet requirements as well as to address future needs and expectations.
- Correcting, preventing, or reducing undesired effects.
- Improving the performance and effectiveness of the quality management system.

**NOTE:** Examples of improvement can include correction, corrective action, continual improvement, breakthrough change, innovation, and re-organization.

### **10.2 Nonconformity and corrective action**

**10.2.1** When a nonconformity occurs, including any arising from complaints, Pyramid will:

- React to the nonconformity and, as applicable:
  - Take action to control and correct it.
  - Deal with the consequences.
- Evaluate the need for action to eliminate the cause(s) of the nonconformity, in order that it does not recur or occur elsewhere, by:
  - Reviewing and analyzing the nonconformity.
  - Determining the causes of the nonconformity.
  - Determining if similar nonconformities exist, or could potentially occur.
- Implement any action needed.
- Review the effectiveness of any corrective action taken.
- Update risks and opportunities determined during planning, if necessary.
- Make changes to the quality management system, if necessary.
- Flow down corrective action requirements to an external provider when it is determined that the external provider is responsible for the nonconformity.
- Take specific actions when timely and effective corrective actions are not achieved.

Corrective actions will be appropriate to the effects of the nonconformities encountered.

**10.2.2** Pyramid will retain documented information as evidence of:

- The nature of the nonconformities and any subsequent actions taken.
- The results of any corrective action.

See Corrective Action Procedure



Pyramid will maintain documented information that defines the nonconformity and corrective action management processes.

### **10.3 Continual improvement**

Pyramid will continually improve the suitability, adequacy and effectiveness of the quality management system.

Pyramid will consider the results of analysis and evaluation, and the outputs from management review, to determine if there are needs or opportunities that will be addressed as part of continual improvement.

Pyramid will monitor the implementation of improvement activities and evaluate the effectiveness of the results.

**NOTE:** Examples of continual improvement opportunities can include lessons learned, problem resolutions, and the benchmarking of best practices