



Meggitt Group Supplier Quality Requirements Document



REVISION HISTORY

Revision	Date	Pages	Description
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1. INTRODUCTION

This Meggitt Supplier Quality Requirements document is applicable to all Suppliers who furnish product, material, processes or services to Meggitt.

The quality system requirements specified herein are intended to form part of Meggitt contract requirements, and are in addition to all other requirements which may need to be complied with by the Supplier, including any legal, regulatory or administrative requirements. For the purposes of this document, a contract exists when the Supplier accepts an obligation to supply products or services to any Meggitt group company, whether under a purchase order, long term agreement or otherwise.

The acceptance by the Supplier of a contract stipulating application of this document (total or partial) indicates acceptance of the content of this document. These requirements are also applicable to the Suppliers sub tier sources and shall be communicated to sub tiers by the Supplier. The Supplier shall be able to provide the relevant evidence of such communication upon Meggitt request.

It is the Suppliers responsibility to ensure it implements any revisions of this document and its content within its own organisation. Meggitt will alert the supplier to any revisions by email.

The Supplier shall acknowledge receipt of this document by sending Meggitt a receipt notice either in writing or via electronic mail.

Document Format

To facilitate its use, this document is organised according to the chapters of ISO9001 Quality Management and AS/EN/JISQ9100 Aerospace Quality Management Standards (chapters 4-8) as published by the International Organisation for Standardisation. This document and presents the Meggitt requirements additional to those Standards.

Wherever the paragraphs or the requirements are not set out in this document, the paragraph and the requirements of the corresponding Standard shall apply in full.

Access

Meggitt shall have the right of access to any Supplier involved with Meggitt product. This shall include access to any applicable documentation. Providing reasonable notice is given, the Supplier shall provide Meggitt Customers (or the Customers' authorised representatives) and / or Regulatory Authorities rights of access to premises where Meggitt work is being performed. Such access shall be used to verify that the Quality activities being undertaken meet the requirements of the Meggitt contract.

Where a Supplier is approved to the AS/EN/JISQ 9100 Standards, then the Suppliers' Online Aerospace Supplier Information System (OASIS) database administrator shall grant Meggitt access rights to certification and assessment results, in the OASIS Database upon request.

Trade Compliance

The Supplier will not release any Technical Data / Drawings supplied by Meggitt to any other party (national or international) without the prior written approval of the Meggitt Trade Compliance Manager for the Meggitt site.

Materials supplied from the USA, the UK and many other Meggitt sites are subject to international trade compliance regulations that must be adhered to, and where required, permission must be obtained from Meggitt for export controlled product.

Meggitt Supplier Quality Requirements

The Supplier shall not purchase materials, components, parts or processes from countries / regions prohibited under export control regulations for use in Meggitt product. A current listing of prohibited countries / regions is available from Meggitt Procurement.

Health, Safety and Environmental

The Supplier shall be committed to providing a safe & healthy work environment to minimise accidents and injuries.

The Supplier should respect the environment and work to minimise waste, prevent pollution and conserve energy. The Supplier should comply with all permits and authorisations including material and waste handling.

Registration to ISO14001 and OHSAS18001 is strongly encouraged.

Terms and Definitions

The terms used are defined in Standards ISO 9000 and AS/EN/JISQ 9100.

Forms and Form Templates

Forms and form templates referenced in this document are available from the applicable Meggitt Procurement department.

Reference Documents

It is the responsibility of the Supplier to ensure that they are working to the latest version of specified Standards referenced within this document as well as contract requirements.

Requests for Meggitt or Meggitt customer specific specifications that are needed shall be requested from the applicable Meggitt Procurement department.

It is the responsibility of the Supplier to obtain copies of non Meggitt documents referred to below. These documents include, but may not be limited to, the following:

- ISO 10012 Requirements for Measurement Processes and Measuring Equipment
- ISO 17025 Requirements for the Competence of Testing & Calibration Laboratories
- AS/EN/JISQ 9100 Requirements for Aviation, Space and Defence Organizations
- AS/EN/JISQ 9102 Aerospace First Article Inspection Requirement
- AS/EN/JISQ 9103 Variation Management of Key Characteristics
- AS/EN/JISQ 9110 Requirements for Aviation Maintenance Organisations
- AS/EN/JISQ 9115 Requirements for Aviation, Space and Defence Organizations-Software
- AS/EN/JISQ 9120 Requirements for Aviation, Space and Defence Distributors
- AS/EN/JISQ 9131 Non-conformance Data Definition and Documentation
- EN 9130 Requirements for Aerospace Record Retention

2. SUPPLIER APPROVAL

All Suppliers entering into contract to supply Meggitt with products and services must first be approved by Meggitt Procurement.

Approved Suppliers and sub-tier Suppliers shall establish, document and maintain a Quality Management System (QMS) that meets the requirements of this document, and that is independently assessed and certified by a certification body. The certification body shall be accredited to provide audit and certification of quality management systems such as ANAB, UKAS etc.

Depending on its business sector, the Supplier shall comply with the requirements of the Standards listed in the table in section 3, Supplier Classification. Additional requirements may apply, and exceptions may be considered at the discretion of Meggitt.

2.1 Supplier Surveillance

Meggitt shall maintain a Supplier scorecard for all key Suppliers. Based on Supplier performance and risk to Meggitt, Suppliers shall be subject to continual surveillance.

Meggitt surveillance of Suppliers shall include as appropriate, onsite audits, assessments or inspections as deemed necessary.

At any time, Meggitt may revoke the approval granted to a Supplier or place conditions on a Supplier's approval.

Where required the Supplier shall implement an improvement plan approved by Meggitt, and submit a follow up status report as defined and agreed by Meggitt.

2.2 Changes to the Suppliers Organisation

Suppliers shall notify Meggitt within two (2) working days of any changes in its organisation affecting key management personnel and approvals.

Suppliers shall notify Meggitt of any changes in its organisation affecting manufacturing site location, manufacturing processes, approved sub-tier sources, or other such changes. The list of required information and timeline are defined in section 7.1.4, Control of Work Transfer.

3. SUPPLIER CLASSIFICATION

Meggitt Suppliers are classified as per below:

➤ Proprietary

A Supplier, who designs, fabricates, assembles or tests products using its own engineering specifications and drawings. This classification also includes those Suppliers who supply airborne software and avionics.

Also called 'OEM', 'Make to Spec', 'Build to Spec' or 'Design Supplier'.

➤ Subcontractor

Supplier who fabricates, processes or tests products using Meggitt or Meggitt's customer engineering specifications and/or drawings.

Also called 'Make to Print', 'Build to Print' or 'Producer'.

➤ Manufacturer

A Supplier who produces catalogue items, raw materials, hardware, process materials (chemicals and/or consumables) which meet Meggitt, Meggitt customer or industry Standards and specifications including castings and/or forgings.

➤ Distributor

A Supplier of part or material that conforms to a published specification by an established industry or national authority, and whose characteristics are defined by a text, national/military Standard drawing, or catalogue item.

Also called 'Stockist' or 'Dealer'.

➤ Maintenance & Repair

A Supplier, who repairs, overhauls and/or maintains products in accordance with Original Equipment Manufacturer (OEM), Meggitt, customer or military documents, and under specific approval granted by the applicable Regulatory Agencies and the OEM.

Also called 'Service Provider'.

➤ Non Production

A Supplier of a service or a product which is not part of the end manufactured product and which does not contribute directly to its key characteristics, including but not limited to consumables, tooling and ground equipment.

As a member of the International Aerospace Quality Group (IAQG) and complying with IAQG recommendation, Meggitt recommends every Supplier of products for aerospace applications to be registered to the AS/EN/JISQ9100 series by an accredited Certification Body indicated by IAQG. The scope of the certification shall include the product and / or service provided to Meggitt.

Meggitt Supplier Quality Requirements

The table below identifies the classifications for Meggitt Suppliers, along with the recommended minimum QMS requirements for the respective business sector:

Code	Class	Sector	
		Aerospace / Defence	Other (Inc. Energy / Oil & Gas / Automotive)
A	Proprietary	AS/EN/JISQ 9100	ISO 9001
B	Subcontractor	AS/EN/JISQ 9100	ISO 9001
C	Manufacturer	AS/EN/JISQ 9100	ISO 9001
D	Maintenance	AS/EN/JISQ 9110	ISO 9001
E	Distributor	AS/EN/JISQ 9120	ISO 9001
F	Non Production	ISO 9001	ISO 9001

Note 1

In addition, Regulatory Authority approvals may be required in the applicable sector such as EASA (European Aviation Safety Agency) and FAA (Federal Aviation Administration) etc.

Note 2:

Special processes shall be conducted by an approved NADCAP (National Aerospace and Defense Contractors Accreditation Program) source. Refer to 7.5.2 for an explanation regarding NADCAP approval

Meggitt Supplier Quality Requirements

The requirements below shall apply according to the Supplier class identified on page 8 of this document and are in addition to any quality system the Supplier may have in place:

Requirement	Classification Code					
	A	B	C	D	E	F
4.1	X	X	X	X	X	X
4.2	X	X	X	X		
5.1	X	X	X	X	X	X
5.2	X	X	X	X	X	X
5.3	X	X	X	X	X	X
5.4	X	X	X	X	X	X
5.5	X	X	X	X	X	X
5.6	X	X	X	X	X	X
6.1	X	X	X	X		
6.2	X	X	X	X	X	X
6.3	X	X	X	X	X	
6.4	X	X	X	X	X	
7.1.1	X	X	X			
7.1.2	X	X	X	X	X	
7.1.3	X	X	X	X	X	
7.1.4	X	X	X	X	X	
7.2.2	X	X	X	X	X	X
7.2.3	X	X	X	X	X	X
7.3.1	X					
7.3.2	X					
7.3.3	X					
7.3.4	X					
7.3.6	X					
7.3.7	X					
7.4.1	X	X	X	X	X	X
7.4.2	X	X	X	X	X	X
7.4.3	X	X	X	X	X	X
7.5.1.1	X	X	X	X	X	X
7.5.1.1.1	X	X	X	X		
7.5.1.2	X	X	X	X		
7.5.1.3	X	X	X	X		X
7.5.2	X	X	X	X	X	X
7.5.3	X	X	X	X	X	X
7.5.4	X	X	X	X	X	X
7.5.5	X	X	X	X	X	X
7.6	X	X	X	X		
8.1	X	X	X	X	X	X
8.2.1	X	X	X	X	X	X
8.2.2	X	X	X	X	X	
8.2.3	X	X	X	X		
8.2.4	X	X	X	X	X	X
8.3	X	X	X	X	X	
8.4	X	X	X	X	X	
8.5.2	X	X	X	X	X	X
8.5.3	X	X	X	X		

4. QUALITY MANAGEMENT SYSTEMS (QMS)

4.1 General Requirements

The requirements of AS/EN/JISQ9100 apply for aerospace products.

4.2 Documentation Requirements

4.2.1 General

The requirements of AS/EN/JISQ9100 apply for aerospace products.

4.2.2 Quality Manual

The requirements of AS/EN/JISQ9100 apply for aerospace products.

4.2.3 Control of Documents

- Where Meggitt modifies a document referenced within the contract, the Supplier shall take the appropriate actions to ensure that the modification is applied in accordance with the contractual provisions and inform Meggitt of its application.
- Corrections to documents must be recorded, dated and traceable to the originator (e.g., signature, stamp, etc.). All amendments shall be made by a single line through the original text using black permanent ink, in such a way as to leave the original text legible. A stamp, signature (or electronic equivalent) and date shall be placed adjacent to an amendment.

4.2.4 Control of Records

- Records shall be made available to Meggitt and their customers, within one (1) business day of a request.
- Records shall be kept for the Life of Product (LOP) plus ten (10) years (EN9130 shall be referenced to identify the type of document to be retained).
- Some records including those pertaining to rotating engine parts shall be retained indefinitely.
- No records should be disposed of without written approval by Meggitt.
- Records shall be stored in secure areas to prevent damage and deterioration and ensure ease of retrieval. Backup copies shall be stored in a separate facility.
- All data that is stored by electronic means shall be secure, regularly backed up, supported by a disaster recovery procedure that is defined, documented, implemented and regularly audited for compliance.
- In the event of Supplier closure, insolvency or similar event, or termination or expiry of the contract, all pertinent records shall be supplied to Meggitt.

5. MANAGEMENT RESPONSIBILITY

5.1 Management Commitment

The requirements of AS/EN/JISQ9100 apply for aerospace products.

5.2 Customer Focus

- ▶ The Supplier shall ensure that product conformity and on-time delivery to Meggitt is measured and appropriate action, including notification to Meggitt, is taken when Supplier senior management become aware that planned results are not being, or will not be, achieved.

5.3 Quality Policy

The requirements of AS/EN/JISQ9100 apply for aerospace products.

5.4 Planning

The requirements of AS/EN/JISQ9100 apply for aerospace products.

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

- ▶ The Supplier shall define the personnel responsible for product quality and ensure that they have the authority to take all actions necessary, including interrupting production to correct quality problems, organisational co-operation and unrestricted access to top management to resolve quality issues.

5.5.2 Management Representative

The requirements of AS/EN/JISQ9100 apply for aerospace products.

5.5.3 Internal Communication

The requirements of AS/EN/JISQ9100 apply for aerospace products.

5.6 Management Review

The requirements of AS/EN/JISQ9100 apply for aerospace products.

6. RESOURCE MANAGEMENT

6.1 Provision of Resources

- Any changes in resources that may affect the services provided to Meggitt shall be reported to Meggitt.

6.1.1 Organisational Structure

- The Supplier shall make available to Meggitt an Organisational diagram with job roles to include: Engineering, Quality, Manufacturing Engineering, Production and Warehousing.

6.2 Human Resources

6.2.1 General

The requirements of AS/EN/JISQ9100 apply for aerospace products.

6.2.2 Competence, Training and Awareness

- The Supplier shall establish a documented procedure for identifying training needs, achievement and review of competence of all personnel performing work directly or indirectly affecting conformity of product or production process requirements
- The Supplier shall maintain a complete and up to date description of the organisation structure, and job roles and skill requirements for personnel.
- A skills matrix for all personnel performing work directly or indirectly affecting product conformity (operators/Inspectors/others) shall be established and maintained. This shall also cover temporary and contract personnel.
- Maintain records of training and competence for the period that the relevant employee remains within the Suppliers organisation and for three (3) years after leaving.
- Eye examinations, including visual acuity and colour vision, shall be administered by a medically qualified / trained person to all individuals performing visual inspection and/or other product acceptance activities that require visual acuity. This shall be conducted on an annual basis.

6.3 Infrastructure

- The Supplier shall establish a Business Continuity Plan to identify, analyse, evaluate and mitigate risks associated with business continuity addressing:
 - Product, facility or individual skill
 - Access to alternative production facilities
 - Critical points of failure
 - Action plans and timescales for business recovery
 - Procedures to follow in the event of an emergency

6.4 Work Environment

- The Supplier shall maintain its workplace in a state of order, cleanliness and repair consistent with the product and production process needs. This should include process improvement tools such as 6S (Six-S) and visual management for workplace organisation improvement.
- Product verification activities that require accurate visual verification shall be conducted in lighting conditions that provide a white light intensity of not less than 1100 LUX.

7. PRODUCT REALIZATION

7.1 Planning for Product Realization

7.1.1 Project Management

- ▶ The Supplier shall implement a policy and processes to control the whole product lifecycle. Consideration should be given as a minimum to the following:
 - Sales, Inventory and Operations Planning (SIOP)
 - Master Production Schedule (MPS)
 - Material Requirements Planning (MRP)
- ▶ A process to plan and manage production capacity shall be maintained and take into account availability of personnel, equipment and all customers' demand.
- ▶ The Supplier shall, when requested, submit a Product Quality Plan which shall be approved by Meggitt prior to delivery of any product.

7.1.2 Risk Management

- ▶ A risk management policy shall be adopted using appropriate risk management tools in order to meet Meggitt expectations. Meggitt may review this process at any time.
- ▶ The Supplier shall employ a business risk assessment process, the output of which will be used as part of its Business Continuity Plan.
- ▶ The Supplier shall demonstrate how pro-active obsolescence management is implemented, controlled and monitored. This shall be an integral part of the design, development, manufacturing and product support processes, and shall be detailed when requested in an agreed Obsolescence Management Plan.

7.1.3 Configuration Management

- ▶ Suppliers, as part of their engineering manual or procedures, shall establish a configuration management system to ensure:
 - Technical and administrative functions identify, document, control, report and validate the physical and functional characteristics of a product.
 - Engineering definition of products and their change history are known at any point in time and can be provided to Meggitt upon request.
 - Verification that all aspects of a change have been assessed for completeness.
- ▶ Suppliers shall establish procedures to identify, document, review, approve and control all changes and modifications.

7.1.4 Control of Work Transfer

- ▶ The Supplier shall plan and manage work transfers in a controlled manner so that the product conforms to requirements during and after the temporary or permanent transfer of the following types:
 - From the Suppliers facility to another facility
 - From the Suppliers facility to a subcontractor / sub-tier supplier
 - From a subcontractor / sub-tier supplier to the Suppliers facility
 - From one subcontractor / sub-tier supplier to another subcontractor / sub-tier supplier
 - Any transfer of work within the Suppliers facility that could have an effect upon the continuity of supply or Quality of the product (dependant on risk)
- ▶ The Supplier shall also consider the intent of this clause for significant changes to their ERP/ MRP system that would affect or disrupt continuity of supply to Meggitt.
- ▶ The Supplier shall manage the risk in accordance with clause 7.1.2 of this document and notify and submit six (6) months in advance to Meggitt Procurement for approval: A description of and timing plan for the proposed change, supported by mitigation plans that shall eliminate any Quality, Delivery or Cost implications to Meggitt.

- The supplier shall as a minimum, make available the following before and after the transfer;
 - Description of the new location, with general layout and pictures or floor plan
 - A list of parts involved in the transfer
 - Timeline and plan for each step of the transfer
 - Last Article Inspection plan from the current location
 - A full First Article Inspection Report plan prior to first production in the new location
- This activity shall be at the Suppliers cost, and an agreed minimum safety stock will be guaranteed to cover the transition period.
- The Supplier may only proceed with the work transfer (source change) when a response has been received from their Meggitt Purchasing contact on Form **XXX**, and the Supplier shall comply with requirements specified in the response.
- A single point of contact shall be identified by the Supplier and shall regularly inform Meggitt of progress, key risks and associated mitigation plans.
- The Supplier shall ensure delivery performance is protected during and after any work transfer.

7.2 Customer Related Processes

7.2.1 Determination of Requirements Related to the Product

The requirements of AS/EN/JISQ9100 apply for aerospace products.

7.2.2 Review of Requirements Related to the Product

- Verbal agreements or instructions shall under no circumstances be construed as approval or authorisation to proceed.

7.2.3 Customer Communication

- The Suppliers management representative shall be the principal link between the Supplier and Meggitt Quality. This representative shall be the authorised contact on all matters affecting the quality and delivery of product shipped to Meggitt.
- Changes that may affect either quality or delivery must be documented and communicated to the applicable Meggitt Quality and/or Procurement representative prior to the change being made.
- All communications between the Supplier and Meggitt shall be written in the English language.

7.3 Design and Development

7.3.1 Design and Development Planning

- The Supplier shall maintain mechanisms, establish structured project teams, and/or demonstrate practices that consider the cross-functional nature of the product design throughout the product lifecycle.
- The Supplier shall maintain a current and approved Design and Development Quality Plan where required by Meggitt. This shall include a Software Quality Plan when the product contains software.

7.3.2 Design and Development Inputs

- The Supplier shall review all design specifications, requirements, drawings, statutory requirements, and quality requirements for completeness and confirm that there are no omissions. Any omissions identified must be advised to Meggitt in writing. It is the Suppliers responsibility to mitigate any product design specific requirements omissions.

7.3.3 Design and Development Outputs

- The design and development outputs will include the Design Failure Mode Effect Analysis (DFMEA) for the product produced by an appropriate cross function team.
- The DFMEA will be used to identify any critical risk items, including identification of key characteristics, overall product performance, and product weight (mass) and determine and record specific actions to be taken for these items.
- The design and development output shall consist of the necessary configuration and the design features of the product including manufacturing and assembly data necessary to enable the Suppliers cross functional team to prepare the initial Process Failure Mode Effect Analysis (PFMEA) to confirm manufacturability of the design.
- Sole source and proprietary products/process used or bought by Meggitt suppliers shall be communicated to and approved by Procurement.

7.3.4 Design and Development Review

- The Supplier shall perform technical reviews of all product and outputs from their Design and Development process.
- Design Reviews are only considered to be closed when all actions are completed and documents have been approved.
- Examples of reviews to be conducted include but are not limited to:
 - Preliminary Design Review (PDR)
 - Critical Design Review (CDR)
 - Test Readiness Review (TRR)
 - Production Readiness Review (PRR)
 - Qualification Review (QR)
- Records of all Reviews shall be made available to Meggitt.
- Meggitt may request attendance at any of the above reviews.

7.3.5 Design and Development Verification

The requirements of AS/EN/JISQ9100 apply for aerospace products.

7.3.6 Design and Development Validation

The Supplier shall prepare and submit to Meggitt the following where applicable:

- Qualification Programme Plan (QPP) - a plan for the qualification of each individual part number.
- Qualification Test Procedure (QTP) - document that describes all tests / verification to be performed in order to demonstrate the compliance of the part number to its design requirements.
- Qualification Test Report (QTR) - report of the result(s) of each QTP.
- Declaration of Design and Performance (DDP) - preliminary or final document to summarise the test, verification and results which declare the status of a part number with any applicable limitations.
- Acceptance Test Procedure (ATP) - details testing methods employed during series manufacture to verify product compliance and based on those utilised during validation of the product.

7.3.7 Control of Design and Development Changes

- Design and development changes including software shall be identified and records maintained.
- Following the agreement of a production baseline, defined at the CDR, all changes are to be identified and classified as follows:
 - Class 1 (major) - change/modification, which affects the operational performance, interchangeability, fit, form or function.
All class 1 (major) change/modification requests shall be submitted to and approved by Meggitt prior to incorporation.
Class 1 changes shall result in a change of Supplier part number. This includes software.

- Class 2 (minor) - all changes that cannot be defined as major, and include changes to improve manufacturability and yield.
For class 2 (minor), a Supplier can use their own change request form. The form shall contain sufficient information to define the proposed change.
Meggitt shall be forwarded all class 2 changes for review prior to implementation.
- For all changes and prior to any change, the risk of the change shall be assessed by the cross functional team by updating the D/PFMEA to assess the change risk.

7.4 Purchasing

7.4.1 Purchasing Process

- When specified on the drawing or contract, Suppliers must use only sources approved by Meggitt or Meggitt customer to perform special processes or procure raw material.
- The Supplier shall be responsible for the quality of all products purchased from sub-tier Suppliers, including Meggitt or Meggitt customer sources.
- The Supplier shall monitor subcontractor / sub-tier Supplier performance through the following indicators:
 - Delivered product quality
 - Customer returns
 - Delivery schedule performanceThis shall include taking appropriate corrective action with poorly performing subcontractor / sub-tier Suppliers.
- The Supplier shall demonstrate risk management in the selection and monitoring of subcontractors and sub-tiers.
- The Supplier shall implement appropriate controls for counterfeit parts prevention to assure product origin and conformance to Meggitt requirements and related engineering drawings.
- Additional Purchasing Requirements for Distributors:
 - Products shall only be purchased from approved Distributors, when full traceability can be demonstrated back to the original manufacturer.
 - Original manufacturers' Certificate of Conformance shall be made available.

7.4.2 Purchasing Information

- The Supplier shall ensure that the Purchasing information / documentation communicates (flows down) the Suppliers requirements and Meggitt's requirements to all subcontractors / sub-tier Suppliers.
- Where Meggitt owns the design of a product being purchased from a Supplier who further subcontracts all or portions of that work, the Suppliers purchase order must state that the products are for Meggitt "end use" and must be controlled per applicable purchase order requirements, including any trade control requirements.

7.4.3 Verification of Purchased Product

Inspection – Material / Special Process

- Suppliers must provide raw materials test reports / certification results / laboratory analysis requirements (e.g., tensile strength, stress rupture, hardness, chemical composition, etc.), as defined by the product definition and/or the purchase order.
- Where the Supplier utilises test reports to verify purchased product, the data in those reports shall be acceptable per applicable recognised specifications.
 - The Supplier shall periodically validate test reports for raw material. This shall be conducted by a source independent to that of the source testing of the material to assure the material is in conformance.
 - Personnel responsible for the review of material and special process test reports shall be trained to interpret and evaluate test results for the purpose of ensuring that all drawing and/or specification requirements of the product are met.

Inspection - General

- When sample inspection is undertaken as a means of component verification / inspection, this may only be undertaken when the requirements of section 8.2.4 (Monitoring and Measurement of Product) have been met.

Source Inspection

- Meggitt retains the right to perform Source Inspection at the Suppliers facility or at its sub-tier Suppliers facility. Meggitt may assign its Quality representative to be located at the Suppliers and sub-tier Suppliers facility at any time during the life of the contract.
 - Meggitt Source Inspection does not supplement or replace the Suppliers own inspection system.
 - The Supplier shall give Meggitt a minimum of seven (7) days' notice of the date of inspection where Source Inspection is a requirement of the contract.
 - When Source Inspection is required, the Supplier and sub-tier Supplier shall make available to the Meggitt Quality representative such area, facilities, equipment, inspection records, or other assistance requested in the course of verifying product conformance to requirements.
 - In the event Source Inspection is invoked as a result of an identified Supplier product issue or nonconformity, then the inspection and associated actions shall be at the Suppliers cost.

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

7.5.1.1 Production Process Verification

- The Supplier shall plan, conduct and record FAI (First Article Inspection) according to AS/EN/JISQ 9102 or any other applicable Standard according to sector. A full or partial FAI shall be performed for affected characteristics when any of the following occurs:
 - Change in design
 - Change in manufacturing source(s), processes, inspection method(s), and locations of manufacture, tooling or materials.
 - Change in numerical control program or translation to another media.
 - Any other event, which may adversely affect a manufacturing process.
 - Suspension of production for two years or as specified by the customer.
- A replication of product part marking (via photograph or sample) that represents production marking must be included within the FAI Report.
- The Supplier is responsible for ensuring completion of the FAI Report for all finished part characteristics generated by sub-tier Suppliers.
 - Where the Meggitt contract refers to PPAP (Product Part Approval Process) then the processes and procedures of Aerospace APQP (Advanced Product Quality Planning) Manual SCMH (Supply Chain Managers Handbook) Section 7.2.3 APQP Phase 4 Elements 4.01 through 4.09 are required at the submission level as stipulated by the Meggitt Contract.

7.5.1.1.1 Process Flow Diagram

- The Supplier shall prepare a Process Flow Diagram for the product to be manufactured and/or assembled. The complete flow from material receipt to preparation of dispatch documentation shall be shown. A separate Process flow diagram is required for each out located process. The process flow diagram shall show:
 - Inspection Points
 - Process machinery, tooling, assembly stations, test benches, stores for sub-assemblies, rework area(s). Plant numbers or machine ID shall be included for all prime equipment.
 - First Pass Yield data collection points.
 - Identification of potential bottlenecks.

- Identification of operator skills sets.
- Capacity Plans for any equipment(s) not dedicated to the production of Meggitt product.
- The process flow steps shall be designated in such a way that they can be cross referenced to the PFMEA.

7.5.1.2 Control of Production Process Changes

- Persons authorised to perform changes/amendments to production processes / documentation shall be named, authorised, and documented as responsible.
- In all cases hand written changes should be avoided. If unavoidable an amendment shall be made by a single line through the original text using black permanent ink, in such a way as to leave the original text legible. A stamp, signature (or electronic equivalent) and date shall be placed adjacent to an amendment. See section 8.5.3 in reference to PFMEA requirements.
- Correction fluid shall not be used.

7.5.1.3 Control of Production Equipment, Tools and Software Programs

- The Supplier shall have a system for the management of pre-production and production tooling, jigs and fixtures including identification, protection, storage, tool life and modification.
- The Supplier shall identify key process equipment and provide resources for machine / equipment maintenance to develop an effective planned total preventative maintenance system. This shall:
 - Utilise predictive maintenance methods to continually improve the effectiveness and efficiency of production equipment.
 - Have a measurement system in place for downtime, planned versus unplanned, etc.
 - Ensure that preventive maintenance schedules are current, and reflect all machines / equipment.

7.5.1.4 Post-Delivery Support

The requirements of AS/EN/JISQ9100 apply for aerospace products.

7.5.2 Validation of Processes for Production and Service Provision

- Suppliers and sub-tiers shall ensure that any Special Processes carried out internally or externally under the scope of NADCAP accreditation are carried out by NADCAP accredited processors unless otherwise agreed by Meggitt.
- For Special Processes – NADCAP is applicable for designed Aerospace products and suppliers / sub-tier suppliers providing design and make activities in support of the final OE Customer.
- The NADCAP program is administered by the Performance Review Institute (PRI), a division of SAE. A list of the Special Processes and any updates / revisions can be found here: https://shop.sae.org/servlets/index?PORTAL_CODE=PRI or <http://www.pri-network.org/>.
- Special Process audits shall be scheduled through the Suppliers audit plan.

7.5.3 Identification and Traceability

- All products are to be identified and traceable in accordance per drawing / design documentation or as agreed with Meggitt.
- The traceability system employed shall reduce the probability of the need to conduct a full product recall in the event of product noncompliance.
- Traceability shall be maintained for all product throughout production (including product quantities, split orders, nonconforming product etc.) from raw material to finished product.
- The Supplier shall manage and record the serial numbers or batch numbers of the products, if such numbers are provided by Meggitt or Meggitt customer. In particular, the Supplier must ensure that it implements a methodology for preventing the generation of duplicate numbers.
- Traceable items that for reason of size and/or application do not allow the part number and serial number identification shall be individually packaged and identified by an appropriate label.

7.5.4 Customer Property

- The Supplier shall ensure that Meggitt owned tooling, jigs and fixtures are adequately registered, maintained with the period status given on request. The Jigs and Fixtures shall be identified and controlled at all times.
- The Supplier shall return all documents, records, gauging, stamps, tooling or other Meggitt supplied equipment, materials or product upon written notification from Meggitt or when business with Meggitt has ceased.

7.5.5 Preservation of Product

- The Supplier shall establish a process to detect and prevent Foreign Object Debris - Damage (FOD). The process shall contain the following elements as a minimum:
 - Production FOD process review
 - Training of applicable personnel in FOD prevention
 - Material handling and product protection
 - Tool / hardware accountability
 - Lost items search and documentation process
 - Physical entry control into FOD critical areas
 - Inspection for foreign objects
- Exposed pipe ends, electrical connectors, coaxial cable and exposed openings are to be sealed externally, where possible, to prevent contamination.
- Products that are (or contain) Electrostatic Sensitive Devices (ESD) shall be clearly marked accordingly and packaged in accordance with national and international specifications.
 - ESD products shall only be removed from protective packaging in an ESD protected area. This includes Goods Receiving and final inspection.
- Limited life materials are to be identified and controlled so that 'out-of-life' materials are not used.
 - Material with a limited life shall be delivered to Meggitt with a minimum of 75% of its life remaining, or as formally instructed by Meggitt.
- The Supplier shall document details of the packing procedures, illustrations of internal packaging / product support and specify the materials to be used. The preparation of these procedures shall ensure appropriate packaging for sensitive product and no inclusion of prohibited packing materials.

7.6 Control of Monitoring and Measuring Equipment

- Calibration Systems shall meet the applicable requirements of ISO 10012, ISO 17025 or ANSI/NCSL Z540.
- The Supplier shall ensure that all measuring devices have been tested for Repeatability & Reproducibility (R&R) in line with Meggitt MSA (Measurement System Analysis) requirements.

8. MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.1 General

- The Supplier shall implement Standard Quality management methods for product and process improvements such as 5 Why, Ishikawa (Fishbone diagram), 8D or 7-step, 6S, and PFMEA, and ensure personnel are suitably trained in their use.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

- The Supplier shall:
 - Monitor quality and delivery performance using key performance indicators
 - Ensure 100% quality performance Parts Per Million (PPM) and 100% on-time and in-full (OTIF) delivery performance is achieved
 - Take appropriate corrective actions when quality or delivery performance is not being achieved,
 - Immediately notify their Meggitt Purchasing contact when delivery schedules are not being achieved and submit a recovery plan,
 - Monitor the implementation of improvement plans and evaluate the effectiveness of the results.
 - Prepare for and participate in performance reviews conducted periodically by Meggitt.

8.2.2 Internal Audit

- The Supplier shall establish a system to appropriately manage an internal audit programme that includes product and process audits, to verify compliance on products and processes related to Meggitt delivered product.
- The audit programme shall be prioritised based on product and process risk.
- The programme shall ensure all Meggitt products are audited at identified intervals and at appropriate stages of production using a sample product that has been selected at random from the current production process.
- Auditors shall be independent of the function being audited, and shall be suitably trained and experienced.

8.2.3 Monitoring and Measurement of Processes

- The Supplier shall use the PFMEA to manage product and process improvements / changes using a cross functional team.

8.2.4 Monitoring and Measurement of Product

Inspection

- All product characteristics shall be 100% inspected at appropriate stages of the process.
- Inspection plans shall be utilised as requested by Meggitt
 - Inspection plans will be in a format that is approved and agreed by Meggitt.
 - Typically these will be requested on complex machined parts, castings and any other parts deemed necessary by Meggitt.
- Reduced and Sampling inspection can only be introduced if the requirements of the sub sections below (“Reduced Inspection” or “Sample Inspection”) are met, and approval is given by Meggitt.
- Personnel performing product verification / inspection activities shall be appropriately trained and competent.
- Personnel involved in Final Inspection shall be independent of the manufacturing process.

Reduced Inspection

- The Supplier may only apply reduced inspection of variables and formed characteristics when:

- Process stability and capability can be demonstrated during product verification activities.
- Control methods such as control of process settings, tooling, Standard processes and/or mistake proofing have been introduced.
- The proposed sample size, verification method of the product characteristic and/or formed characteristic has been documented in a control plan.
- The control plan has been submitted to, and approved by Meggitt Quality.
- Reduced Inspection is not permitted on any FAI product, key characteristics or acceptance testing.

Sample Inspection

- The Supplier may only introduce sample inspection as means of product acceptance when:
 - Process stability and capability can be demonstrated during product verification activities.
 - The proposed sample size and verification method of each product characteristic has been documented in a control plan.
 - The control plan has been submitted to, and approved by Meggitt Quality.
- Sample Inspection is not permitted on any FAI product, key characteristics or acceptance testing.
- Results shall be recorded when identified on the product drawing, for all key characteristics and whenever a Coordinate Measuring Machine (CMM) is the method of inspection. Results shall be made available to Meggitt.

Operator Certification

- Where the Supplier has an Operator Certification program, this shall be documented, and where requested this shall be made available to Meggitt for approval.

Stamp Control

- The Supplier shall maintain a procedure for effective control and administration of inspection stamps. Inspection stamps means all stamps authorised within the Suppliers quality system, including electronic acceptance media.
 - The procedure shall provide that stamps lost or withdrawn from use shall be quarantined for a defined period of time of not less than six (6) months.
 - If signatures are used instead of stamps, a record of the authorised signatures with the person's position shall be part of the documented procedure.
 - Where applicable, this procedure must also provide for security controls for electronic signatures (i.e. passwords, etc.).

Variation Management

- The Supplier shall have a process to determine product and process Key Characteristics (KCs)
 - Key Characteristics shall be clearly identified on drawings and production documentation as applicable.
 - This includes KCs designated by Meggitt.
- The Suppliers shall establish process capability using representative data gathered in time sequence from three or more concurrent batches / lots containing a combined total of at least twenty-five (25) products.
- The Supplier shall ensure that a process using variable data can demonstrate process capability of Cpk (Process Capability Index) ≥ 1.33 or as specified by Meggitt.
- Records of measurements shall be retained and provided to Meggitt as requested.

Release Inspection

- The Supplier shall have a process to ensure release documentation meets Meggitt requirements. This shall include:
 - Training of all personnel involved in the release of product.

- Providing two (2) copies of release documentation. One (1) inside and one (1) outside the packaging.
- The Supplier shall provide a Certificate of Conformance (C of C) with the following annotated statement:
'THESE PRODUCTS HAVE BEEN MANUFACTURED, INSPECTED, TESTED AND UNLESS OTHERWISE STATED ABOVE CONFORM IN ALL RESPECTS WITH THE PURCHASE ORDER REQUIREMENTS.'
- The C of C shall contain the following information as a minimum:
 - Unique traceable document reference number
 - Suppliers name, address and telephone number
 - Delivery address
 - Country of Origin for the parts being supplied
 - Meggitt purchase order number (including purchase order item number)
 - Description of the product (per purchase order number)
 - Part number, including drawing revision status (per purchase order number)
 - Quantity
 - Date of despatch
 - Conformance / compliance statement per above
 - Signature of person authorised to release the product to the customer (an Electronic signatures shall be accepted)
- Additional information as applicable shall include:
 - FAI Report reference
 - Concession / Production Permit reference
 - Traceable reference (serial, batch, lot, heat, cast numbers - as applicable)
 - ATP reference
 - Raw material certificate reference
 - Hazardous substances / safety data sheet reference
 - Shelf life information
 - Customers specific requirements
- The responsible Quality representative shall sign the C of C (Quality stamp and initials are also acceptable). Electronic signature is acceptable providing the Supplier has documented procedures.

8.3 Control of Nonconforming Product

Containment

- The Supplier shall establish a method of detecting product and process non-conformance, and this shall include:
 - Containing nonconformities by segregating the product or process to prevent its unintended use or delivery.
 - Taking necessary actions to contain the effect of the nonconformity on other processes or products at Supplier or sub-tiers.
- Non-conforming parts, with their associated documentation and identification (e.g. Red label or tag) are to be held in a quarantine area until an approved, written disposition is given by the relevant engineering authority.

If a decision is made to scrap parts, prior to final disposal, propriety parts shall be defaced in such a way that it precludes any possibility of reuse or rework. Any special considerations on non-conforming product imposed by Meggitt or by their customer shall be adhered to.
- The Supplier must notify Meggitt immediately (not to exceed 24 hours or the next business day), in writing, when a nonconformity is discovered in the Suppliers manufacturing processes or components / assemblies for a product already delivered. This notification shall include as a minimum:
 - A clear description of the nonconformity
 - Affected part number, serial number, batch number, heat lot, manufacturing date etc.
 - Delivered quantity

- Purchase Order
- Containment Plan including Corrective Action(s)
- Deviations (Concession / Production Permit)
- If information is not yet determined, notify immediately with detail to follow.
- The Supplier shall have a process for the control of Concessions and Production Permits (Deviations). This shall include training of personnel in the role and responsibility they play in the process of control of concessions and permits.
 - Concession - is a temporary / conditional permission granted to use or release a limited quantity of material, detail parts or assemblies already manufactured which do not strictly comply with the approved drawings and/or specifications.
 - Production Permit - is a temporary / conditional permission granted, in advance of manufacture, to use materials or to make detail parts or assemblies which differ from the approved drawings and/or specifications.
- Only when a Supplier is responsible for the design and the non-conformance is classed as minor, can the Supplier disposition products, using their own non-conformance system, which shall include:
 - If a major concession (affecting form, fit and function, airworthiness, safety, strength, life, interchangeability, maintenance, reliability and/or appearance that may cause the user concern over its serviceability) is required it shall be approved before delivery by Meggitt. It shall be on Meggitt format unless agreed otherwise.
 - Minor concessions shall not be submitted for approval but shall be kept and made available for review by Meggitt.
- Unless otherwise formally agreed, nonconforming product, under cover of concession, shall not be delivered until the concession has been formally accepted by Meggitt.

Meggitt Returned Product

- The Supplier shall have a process for the control of customer (Meggitt) returned product identified as Non-Conforming Product.
- Suppliers shall be notified of identified product non-conformity by a Supplier Corrective Action Report (SCAR) or equivalent.
- If the Supplier does not agree with the Meggitt non-conformity report issuance, the Supplier shall inform Meggitt within two (2) working days after receiving the notification. Otherwise, the Supplier is deemed to have accepted the responsibility for non-conformity report.
- The Supplier shall respond to the non-conformity per section 8.5.2.
- This process shall include returned items dispositioned as Fault Not Found (FNF); in particular those which have been returned on more than one occasion.

Note: Meggitt will not accept redelivery of any product which fails at a Meggitt facility and has been returned to the Supplier on more than one occasion for the same non-conformity.

8.4 Analysis of Data

- The Supplier shall maintain an active Lessons Learned Improvement Process and utilise a database of products, known capabilities, identified non-conformity and lessons learned for the purpose of continuous improvement.
- When required by Meggitt, the Supplier shall provide the appropriate quality data (charts, indicators, acceptance rate, shop findings, etc.) that demonstrates the Suppliers internal quality performance and the corrective actions taken in order to prevent impacts at Meggitt.

8.5 Improvement

8.5.1 Continual Improvement

The requirements of AS/EN/JISQ9100 apply for aerospace products.

8.5.2 Corrective Action

General

- The Supplier shall have a robust problem resolution process to protect Meggitt and its customers and resolve problems in an effective way, which includes verification of the corrective action and prevents recurrence.
- The Supplier shall use error proofing methods in their corrective action process.
- The Supplier shall establish a customer protection plan to ensure continuity of supply while non-conformances are being investigated.
- Personnel involved in the process shall be suitably trained in the applicable Quality methods.
- The Supplier shall review / update the Process Failure Mode Effects and Analysis (PFMEA) and the Control Plan when corrective action has been identified.

Nonconformities identified by Meggitt

- Nonconformities identified by Meggitt may include product, process and audit nonconformity.
- The Supplier shall ensure that Meggitt requested corrective actions are responded to in the required time frame. The response shall meet the following timelines:
 - Containment at the Suppliers and/ or Meggitt facility – 2 working days
 - Root cause analysis and action plan – 20 working days
 - Corrective actions implementation – 60 working days
- Where requested, the Supplier shall document all actions on the Meggitt 7 Step investigation form.
- Where a Suppliers quality performance is not meeting required targets, Meggitt shall initiate interaction with the Supplier to identify required corrective actions and improvements. This may include request for a formal action plan and/or an onsite assessment.

8.5.3 Preventive Action

Failure Mode Effect Analysis (FMEA)

- The Supplier shall use a cross functional team to conduct Process FMEA in advance of producing product.
- The Supplier shall demonstrate appropriate action has been taken to eliminate or reduce the chance of a failure mode occurring.
- The Supplier shall ensure that the PFMEA process for production is updated regularly and considers:
 - New component or part
 - New, changed or improved process/sub-process
 - New, changed or improved subcontracting activity
 - Meggitt requirements
 - Manufacturing yield data and failure mode occurrence changes
 - New failure mode
- All PFMEA activity shall have a feedback to the DFMEA as required.
- The Supplier shall demonstrate that high risk failure modes determined from the PFMEA are addressed in the Control Plan. Where appropriate risk mitigation cannot be provided, this shall be communicated to Meggitt in a timely manner.