

# How EN 9110 and the ICOP Scheme can support effective management of maintenance organisations

Part 1 – The EN 9110 and MDM.055

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## About IAQG



The **International Aerospace Quality Group (IAQG)** is a cooperative global industry body that brings aviation, space and defense companies together to deliver more value at all levels of the supply chain

- Today, 69 member companies, with commonly shared supplier base worldwide, have pledged to work together towards a leaner and more efficient supply chain for the benefit of all
- IAQG comprises 3 sectors:
  - Americas (AAQG) – North, Central & South America
  - Europe (EAQG) - Europe, Middle East, Russia & Africa
  - Asia-Pacific (APAQG) - Asia and Oceania





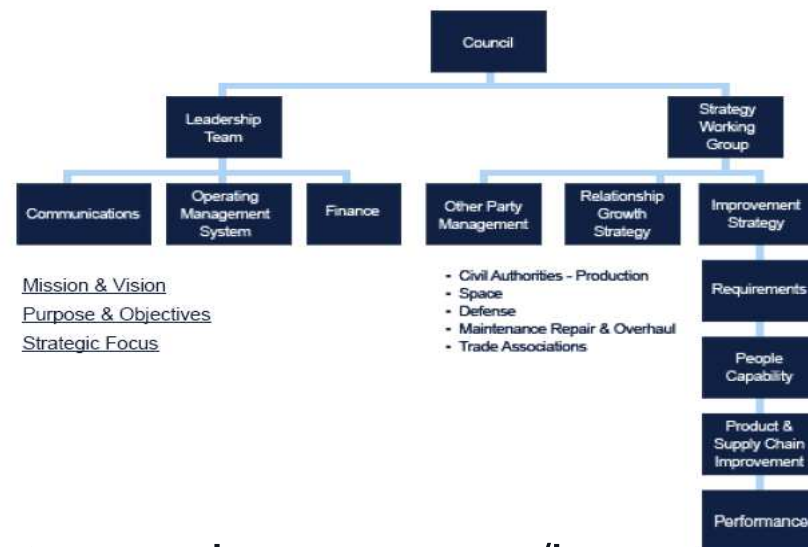
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**Organization**  
 The IAQG is a cooperative global organization that brings aviation, space and defense companies together to deliver more value at all levels of the supply chain.

**9100, 9110, 9120, 9101 Published - Click here for Deployment Support Materials**

- Quick Links**

  - [Members Only](#)
  - [OASIS Database](#)
  - [9100 Deployment Support Materials](#)
  - [IAQG Sanctioned Aerospace Auditor Transition Training Support Material](#)
  - [Supply Chain Management Handbook \(SCMH\)](#)
  - [Americas Aerospace Quality Group \(AAQG\)](#)
  - [Asia-Pacific Aerospace Quality Group \(APAQG\)](#)
  - [European Aerospace Quality Group \(EAQG\)](#)



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More information at: [www.iaqg.sae.org/iaqg](http://www.iaqg.sae.org/iaqg)

- Establishes, develops and maintains industry standards which focus on Quality Management System (QMS)
  - 9100 – Quality Management Systems - Requirements for Aviation, Space and Defense Organisations
  - 9110 – Quality Management Systems - Requirements for Aviation Maintenance Organisations
  - 9120 – Quality Management Systems - Requirements for Aviation, Space and Defense Distributors
  - 9101 – Quality Management Systems - Audit Requirements for Aviation, Space, and Defense Organizations





## Harmonization of Requirements



- Before IAQG implementation:
  - Organisations have in place different Quality Management System (QMS) requirements that implies
  - Numerous independent audits shall be conducted to monitor compliance with all applicable requirements
- After IAQG implementation:
  - An unique set of QMS requirements, fully harmonized worldwide through the IAQG 9100 series (9100, 9110 & 9120) standard and used within the Aviation, Space & Defense Supply Chain
  - Certification of organisations which comply with the IAQG 9100 series standard, controlled by the Industry Controlled Other Party (ICOP) scheme





## Collaborative Relationship



- The IAQG has collaborative relationships with Industry, Authorities, Contracting Agencies and Oversight Bodies where QMS issues and objectives are brought forth for resolution and mutual agreement
  - **Civil Authorities – Production:** Working together with the international aviation authorities to enable local design, production and certification with global acceptance
  - **International Space Forum:** Working together with industry to achieve standards and a certification scheme that can be effectively and efficiently used by space organisations
  - **Defense:** Coordination with NATO and defense organisations to adopt simpler, common standards
  - **Maintenance, Repair & Overhaul:** Working together with industry towards recognition of IAQG standards and effective industry use, application, and certification to improve aviation safety, product quality, and efficiency of the MRO industry
  - **Trade Associations:** Establish relationships with other aviation industry Trade Associations whose purpose and objectives are to overlap those of the IAQG

- IAQG launched the MRO Relationship Growth Strategy Stream in late 2008
  - It was perceived that significant benefits could be achieved through expanded IAQG engagement/cooperation with stakeholders
  - To have organisations working together on common initiatives
  - For the benefit of MRO Industry and associated stakeholders
  - With the aim to improve business performance, particularly in the field of Quality Management efficiency and Air Transport safety



## Collaborative Relationship



- Stakeholders dealing with MRO business
  - Civil Aviation Authorities
  - Defense Industry and Associated Authorities
  - Airlines
  - Maintenance Repair & Overhaul Service Providers
  - Trade Associations
  - IAQG Member Companies
  - IAQG Strategy Streams and Teams
  - Certification Bodies (CBs)





- **Strategic Purpose:**
  - Recognition of the IAQG 9110 as an industry accepted QMS standard for MRO organisations
  - Improvement of the aviation safety and quality efficiencies within the MRO industry
  - Reduction of the number of redundant/overlapping audit activities conducted by both NAA and Organisations
- **Process:**
  - Provide stakeholders' awareness of the 9110 QMS standard and the ICOP process; promote and encourage its use and application
  - Review stakeholders' comments for incorporation in 9110 future revisions
  - Cooperate with stakeholders for the benefit of safety and industry effectiveness
  - Share and promote industry best practices

- The EN 9110 standard is based on ISO 9001 QMS platform and supplemented by applicable 9100 aviation, space, and defense industry requirements
- Specific aviation maintenance industry requirements were added to address the demanding regulatory requirements associated with aviation safety and product airworthiness
- Some of the enhancements, new requirements, and areas of emphasis in the revised EN 9110:2009 standard include:
  - Counterfeit and suspected unapproved parts
  - Human factors
  - Safety Management System
  - Technical data
  - Project management
  - Risk management

- The EN 9110 robust quality system ensures:
  - Proper controls to build customer and regulatory confidence
  - The airworthiness, integrity and safety of the products released back to service
- The EN 9110 standard management system includes
  - Initial components required for implementing a Safety Management System
  - The establishment and maintenance of safety policy and safety objectives with the primary concern being the overall aviation system safety



- The MDM.055 shall require organisations to establish, implement and maintain a Management System (MS) that includes:
  - Clearly defined lines of responsibility and accountability throughout the organisation, including a direct safety accountability of the accountable manager
  - A description of the overall philosophies and principles of the organisation with regard to the safety policy
  - The identification, evaluation and the management of aviation safety hazards entailed by the activities of the organisation
  - Personnel trained and competent to perform their tasks



- The MDM.055 shall require organisations to establish, implement and maintain a Management System (MS) that includes (continued):
  - Documentation of all management system key processes, including a process for making personnel aware of their responsibilities, and its amendment procedure
  - A function to monitor compliance of the organisation with the relevant requirements, including a feedback system of findings to the accountable manager , to ensure effective implementation of corrective actions as necessary
- The next slides show, for each of the above element, the relevant interfacing EN 9110 requirement





- The MDM.055 shall require

**Clearly defined lines of responsibility and accountability throughout the organisation, including a direct safety accountability of the accountable manager**

- The EN 9110 prescribes

5.5 Responsibility, authority and communication

5.5.1 Responsibility and authority

Top management shall ensure that responsibilities and authorities are defined and communicated within the organization.

#### ***5.5.1.1 Accountable manager***

***Top management shall appoint a manager with corporate authority to ensure that all necessary resources are obtained to complete and finance any required maintenance in accordance with all organization, customer and authority requirements.***

- **The EN 9110 prescribes (5.5 Responsibility, authority and communication - Continued)**

### 5.5.2 Management representative

Top management shall appoint a member of the organization's management who, irrespective of other responsibilities, shall have responsibility and authority that includes:

- a) ensuring that processes needed for the quality management system are established, implemented and maintained;
- b) reporting to top management on the performance of the quality management system and any need for improvement;
- c) ensuring the promotion of awareness of customer requirements throughout the organization and
- d) *the organizational freedom and unrestricted access to top management to resolve quality management and safety issues.***





## MDM.055 Elements and EN 9110 Requirements



- **The MDM.055 shall require**

**A description of the overall philosophies and principles of the organisation with regard to safety, referred to as the safety policy**

- **The EN 9110 prescribes**

5 Management responsibility

5.1 Management commitment

Top management shall provide evidence of its commitment to the development and implementation of the QMS and continually improving its effectiveness by:

- a) communicating to the organisation the importance of meeting customer as well as statutory and regulatory requirements;





## MDM.055 Elements and EN 9110 Requirements



- **The EN 9110 prescribes (5 Management responsibility - Continued)**
  - b) establishing the quality policy;
  - c) ensuring that quality objectives are established;
  - d) conducting management reviews;
  - e) ensuring the availability of resources;
  - f) establishing the safety policy; and***
  - g) ensuring that safety objectives are established.***



- The EN 9110 prescribes (5 Management responsibility - Continued)

### 5.4.3 Safety objectives

*Top management shall ensure that safety objectives, including those needed to meet requirements for product [see 7.1, g)], are established at relevant functions and levels within the organization. The safety objectives shall be measurable and consistent with the safety policy.*

**NOTE:** *The safety objectives should be incorporated into the safety management system, when implemented by the organisation.*







## MDM.055 Elements and EN 9110 Requirements



- **The EN 9110 prescribes (5 Management responsibility - Continued)**

### ***5.7 Safety policy***

***Top management shall ensure that the safety policy:***

- a) is appropriate to the purpose of the organisation;***
- b) includes a commitment to comply with requirements and continual safety improvement;***
- c) provides a framework for establishing and reviewing safety objectives;***
- d) is communicated and understood within the organisation; and***
- e) is reviewed for continuing suitability.***



- The MDM.055 shall require

**The identification of aviation safety hazards entailed by the activities of the organisation, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness**

- The EN 9110 prescribes (7 Product realization)

### *7.1.1 Project management*

*As appropriate to the organization and the product, the organisation shall plan and manage product realization in a structured and controlled manner to meet requirements at acceptable risk, within resource and schedule constraints.*



- **The EN 9110 prescribes (7 Product realization - Continued)**

### ***7.1.2 Risk management***

***The organisation shall establish, implement and maintain a process for managing risk to the achievement of applicable requirements that includes, as appropriate, to the organisation and the product:***

- a) assignment of responsibilities for risk management;***
- b) definition of risk criteria (e.g., likelihood, consequences, risk acceptance);***
- c) identification, assessment, and communication of risks throughout product realization;***
- d) identification, implementation, and management of actions to mitigate risks that exceed the defined risk acceptance criteria; and***
- e) acceptance of risks remaining after implementation of mitigating actions.***





## MDM.055 Elements and EN 9110 Requirements



- The MDM.055 shall require

**Maintaining personnel trained and competent to perform their tasks**

- The EN 9110 prescribes (6.2 Human resources)

6.2.2 Competence, training and awareness

The organization shall:

- a) determine the necessary competence for personnel performing work affecting conformity to product requirements;
- b) where applicable, provide training or take other actions to achieve the necessary competence;
- c) evaluate the effectiveness of the actions taken;





## MDM.055 Elements and EN 9110 Requirements



- **The EN 9110 prescribes (6.2 Human resources - Continued)**
  - d) ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives;
  - e) maintain appropriate records of education, training, skills and experience (see 4.2.4);
  - f) ensure that personnel performing maintenance services and release of articles are qualified and certified in accordance with authority and customer contract requirements; and***
  - g) establish and maintain a training program (initial and recurrent training) to ensure that personnel performing maintenance tasks remain current in terms of procedures, human factors, technical knowledge, and applicable authority requirements.***







## MDM.055 Elements and EN 9110 Requirements



- The MDM.055 shall require

**Documentation of all management system key processes, including a process for making personnel aware of their responsibilities, and its amendment procedure**

- The EN 9110 prescribes (4 Quality management system)

### 4.2 Documentation requirements

#### 4.2.1 General

The quality management system documentation shall include:

- a) documented statements of a quality policy and quality objectives;
- b) a quality manual;
- c) documented procedures and records required by this International Standard;
- d) documents, including records, determined by the organization to be necessary to ensure the effective planning, operation, and control of its processes; *and*
- e) documented statements of a safety policy and safety objectives.***

***The organization shall ensure that personnel have access to, and are aware of, relevant quality management system documentation and changes.***

- **The MDM.055 shall require**

**A function to monitor compliance of the organisation with the relevant requirements. Compliance monitoring shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary**

- **The EN 9110 prescribes (8 Measurement, analysis and improvement)**

### **8.2.2 Internal audit**

The organisation shall conduct internal audits at planned intervals to determine whether the quality management system:

- a) conforms to the planned arrangements (see 7.1), to the requirements of this International Standard and to the quality management system requirements established by the organisation, and
- b) is effectively implemented and maintained

**NOTE 1 Planned arrangements include contractual and regulatory requirements.**

- **The EN 9110 prescribes (8 Measurement, analysis and improvement - Continued)**

An audit programme shall be planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency and methods shall be defined. The selection of auditors and conduct of audits shall ensure objectivity and impartiality of the audit process. Auditors shall not audit their own work.

A documented procedure shall be established to define the responsibilities and requirements for planning and conducting audits, establishing records, and reporting results.

Records of the audits and their results shall be maintained (see 4.2.4).

The management responsible for the area being audited shall ensure that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes.

Follow-up activities shall include the verification of the actions taken and the reporting of verification results (see 8.5.2).

# EN 9110 Current and Future state



- The EN 9110:2012 revision, in addition to the EN 9110:2009 takes into account
  - Embodiment of EASA feedback and comments to assist in the recognition of the 9110 standard by NAAs
  - Inclusion of definitions to address other stakeholder needs
  - Clarification of existing requirements to resolve interpretation issues
  - Incorporation of editorial corrections
- Once the draft standard was balloted, additional stakeholder feedback was provided; some of these proposed changes have been retained for future revisions

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ICS:		
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<p style="text-align: center;"><b>ENGLISH VERSION</b></p> <p style="text-align: center;"><b>Quality Management Systems Requirements for Aviation Maintenance Organizations</b></p> <p style="text-align: center;"> <small>Systèmes de management de la Qualité Exigences pour les Organismes d'Entretien de l'Aéronautique</small> <span style="float: right;"><small>Qualitätsmanagementsysteme Anforderungen für Luftfahrt-Wartungsfirmen</small></span> </p> <p><small>This "Aerospace Series" Prestandard has been drawn up under the responsibility of ASD-STAN (The AeroSpace and Defence Industries Association of Europe - Standardization). It is published for the needs of the European Aerospace Industry. It has been technically approved by the experts of the concerned Domain following member comments. Subsequent to the publication of this Prestandard, the technical content shall not be changed to an extent that interchangeability is affected, physically or functionally, without re-identification of the standard. After examination and review by users and formal agreement of ASD-STAN, it will be submitted as a draft European Standard (prEN) to CEN (European Committee for Standardization) for formal vote and transformation to full European Standard (EN). The CEN national members have then to implement the EN at national level by giving the EN the status of a national standard and by withdrawing any national standards conflicting with the EN.</small></p> <p style="text-align: center;"><b>NOTE</b> This standard is technically equivalent to AS9110</p>		
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- The detailed project for the IAQG 9100:2015 Series standards launched in October 2012
  - The 9100 is based on ISO 9001 and is thus affected by the ISO TC176 revision activity (ISO 9001 next revision is scheduled for the year 2015)
  - 9110 is based, in turn, on the IAQG 9100 standard, and will require revision in parallel with the 9100 standard revision activity
  - 9110 revision activity will ensure extensive stakeholder involvement by use of a project management approach to solicit input and consider and address stakeholder needs
  - The IAQG 9100 Series standards are planned for project completion in late 2015 early 2016



# Thank you for your Attention



# Questions

