



SLOVENSKI STANDARD
SIST EN 9102:2009
01-september-2009

Aeronavtika - Sistem vodenja kakovosti - Prvi pregled vzorcev

Aerospace series - Quality systems - First article inspection

Luft- und Raumfahrt - Qualitätsmanagementsysteme - Erstmusterprüfung

Série aérospatiale - Systèmes qualité - Revue premier article

Ta slovenski standard je istoveten z: EN 9102:2006

[SIST EN 9102:2009](https://standards.iteh.ai/catalog/standards/sist/09f1ded1c-fa69-4f5a-a39e-d77ada4d0a8f/sist-en-9102-2009)

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ICS:

03.120.10	Vodenje in zagotavljanje kakovosti	Quality management and quality assurance
49.020	Letala in vesoljska vozila na splošno	Aircraft and space vehicles in general

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 9102

April 2006

ICS 03.120.10; 49.020

English Version

Aerospace series - Quality systems - First article inspection

Série aérospatiale - Systèmes qualité - Revue premier
article

Luft- und Raumfahrt - Qualitätsmanagement -
Erstmusterprüfung

This European Standard was approved by CEN on 28 October 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard (EN 9102:2006) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

In December 1998, the Aerospace Industry has established the International Aerospace Quality Group (IAQG) with the purpose of achieving significant improvements in quality and reductions in cost throughout the value stream.

This organization, with representation from Aerospace companies in Americas, Asia and Europe and sponsored by SAE, SJAC and AECMA has agreed to take responsibility for the technical contents of this standard.

This standard was reviewed by the Domain Technical Coordinator of AECMA-STAN's Quality Domain.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

EN 9102:2006 (E)**1 Scope****1.1 General**

This standard establishes requirements for performing and documenting the First Article Inspection (FAI).

1.2 Purpose

The purpose of the First Article Inspection is to give objective evidence that all engineering, design and specification requirements are correctly understood, accounted for, verified, and recorded. The purpose of this standard is to provide a consistent documentation requirement for aerospace components FAI.

1.3 Convention

The following convention is used in this standard.

- The words “shall” and “must” indicate mandatory requirements.
- The word “should” indicates mandatory requirements with some flexibility allowed in compliance methodology. An organization is permitted to show that its approach meets the intent of the requirement and this standard.
- Words “typical”, “example” or “e.g.” show suggestions given for guidance only.
- “Notes” are used for additional clarification.

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2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 9103, *Aerospace series — Quality management systems — Variation management of key characteristics.*

EN 9131, *Aerospace series — Quality management systems — Nonconformance documentation.* ¹⁾

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1**attribute data**

result from a characteristic or property that is appraised only as to whether it does or does not conform to a given requirement (for example, go/no-go, accept/reject, pass/fail, etc.)

3.2**deliverable software**

embedded or loadable airborne, space borne or ground support software components that are part of an aircraft type design, weapon system, missile or spacecraft

¹⁾ Published as AECMA Prestandard at the date of publication of this standard.

3.3**design characteristics**

those dimensional, visual, functional, mechanical, and material features or properties, which describe and constitute the design of the article as specified by drawing requirements

These characteristics can be measured, inspected, tested, or verified to determine conformance to the design requirements. Dimensional features include in-process locating features such as target-machined (or forged/cast) dimensions on forgings and castings, and, weld/braze joint preparation necessary for acceptance of finished joint. Material features or properties may include processing variables and sequences, which are specified by the drawing (e.g., heat treat temperature, fluorescent penetrant class, ultrasonic scans, sequence of welding and heat treat). These provide assurance of intended characteristics that could not be otherwise defined.

3.4**drawing requirements**

requirements of the drawing (including parts lists), specification, or purchasing document to which the article is to be made

These include any notes, specifications, and lower-level drawings invoked.

3.5**first article inspection (FAI)**

complete, independent, and documented physical and functional inspection process to verify that prescribed production methods have produced an acceptable item as specified by engineering drawings, planning, purchase order, engineering specifications, and/or other applicable design documents

3.6**first article inspection report (FAIR)**

forms and package of documentation for a part number or assembly, including FAI results, as per this standard

3.7**first production run parts**

first group of one or more parts that are the result of a planned process designed to be used for future production of these same parts

Prototype parts, or parts built using methods different from those intended for the normal production process, shall not be considered as part of the first production run.

3.8**multiple characteristics**

identical characteristics that occur at more than one location (e.g. "4 places") but are established by a single set of drawing requirements. (e.g., rivet hole size, dovetail slots, corner radii, chemical milling pocket thickness)

3.9**product**

result of a process, which in the context of this standard includes finished detailed parts and assemblies. It also includes forgings and castings

3.10**reference characteristics**

characteristics that are used for "information only" or to show relationship

These are dimensions without tolerances and refer to other dimensions on the drawing.

3.11**standard catalogue hardware**

part or material that conforms to an established industry or national authority published specification, having all characteristics identified by text description, national/military standard drawing, or catalogue item

EN 9102:2006 (E)**3.12****variables data**

quantitative measurements taken on a continuous scale

For example, the diameter of a cylinder or the gap between mating parts.

4 Applicability

This standard applies to assemblies sub- assemblies, and detail parts including castings and forgings. This standard applies to organizations that are responsible for producing the design characteristics of the product. The organization shall flow down the requirements of this standard to suppliers who produce design characteristics.

This standard does not apply to procured Standard catalogue hardware or Deliverable software.

5 Requirements**5.1 Part requirements**

The organization shall perform FAI on new product representative of the First Production Run.

NOTE 1 For assemblies, the assembly level FAI shall be performed on those characteristics specified on the assembly drawing.

NOTE 2 The organization shall not use prototype parts, or parts manufactured using methods different from those intended for the normal production process, for the FAI. This standard may be used to verify conformance of a prototype part to design requirements.

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5.2 Evaluation activities

The organization should conduct the following activities in support of FAI.

- 1) Review documentation for the manufacturing process (e.g., routing sheets, manufacturing/quality plans, manufacturing work instructions, etc.) to make sure all operations are complete as planned.
- 2) Review referenced exhibits supporting the FAI (e.g., inspection data, test data, Acceptance Test Procedures, etc.) for completeness.
- 3) Review nonconformance documentation (if any), for completeness.

NOTE EN 9131 may be used as a guidance

- 4) Review material certifications for compliance, as applicable.
- 5) Verify that approved Special Process sources are used (as applicable), and that the manufacturing planning/routing document calls out the correct specification.
- 6) Verify that Key Characteristic requirements have been met, as applicable (see EN 9103 for guidance).
- 7) Verify part specific gages and/or tooling are qualified and traceable, as applicable.
- 8) Verify that every design characteristic requirement is accounted for, uniquely identified and has inspection results traceable to each unique identifier.

5.3 Partial or re-accomplishment of First Article Inspection

The FAI requirement, once invoked, shall continue to apply even after initial compliance.

The FAI requirements may be satisfied by a partial FAI that addresses differences between the current configuration and prior approved configurations. When a partial FAI is performed, the Organization shall complete only the affected fields in the FAI forms. FAI requirements may also be satisfied by previously approved FAI performed on identical characteristics of similar parts produced by identical means. When FAI requirements (partial or complete) are satisfied in this manner, identify the approved configuration in the index of part numbers on Form 1.

The organization shall perform a full FAI, or a partial FAI for affected characteristics, when any of the following events occurs:

- 1) A change in the design affecting fit, form or function of the part.
- 2) A change in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling or materials, that can potentially affect fit, form or function.
- 3) A change in numerical control program or translation to another media that can potentially affect fit, form or function.
- 4) A natural or man-made event, which may adversely affect the manufacturing process.
- 5) A lapse in production for two years or as specified by the customer.

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5.4 Nonconformance handling

The FAI is not complete until the organization closes all nonconformances affecting the part and implements corrective actions. The organization shall re-do an FAI for those affected characteristics and shall record the results.

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5.5 Documentation

5.5.1 Forms

The Annex A of this standard contains forms that comply with the documentation requirements of this standard. Each field in the forms is designated with a unique reference number. Each field is also identified as:

- **(R)** Required: This is mandatory information.
- **(CR)** Conditionally Required: This field must be completed when applicable. (i.e. when there exists a Customer requirement, then this field must be filled in)
- **(O)** Optional: This field is provided for convenience.

Forms contained in the Annex A should be used to document the results of the FAI.

NOTE 1 The fields in the forms are colour-coded for convenience. Use of black-and-white forms is acceptable.

Forms other than those contained in the Annex A may be used, however they must contain all “Required” and “Conditionally Required” information and have the same field reference numbers.

All forms shall be completed either electronically or in permanent ink.

All forms shall be completed in English or in a language specified by the customer.

NOTE 2 Continuation sheets using the same form are acceptable or insert additional rows if completing electronically.