BS EN 9102:2015

Incorporating corrigenda June 2016 and November 2018

BSI Standards Publication

Aerospace series - Quality systems - First article inspection requirements

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National foreword

This British Standard is the UK implementation of EN 9102:2015. It supersedes BS EN 9102:2006, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ACE/1, International and European Aerospace Policy and Processes.

A list of organizations represented on this committee can be obtained on request to its secretary.

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30 June 2016	Form 1 and Form 2 reformatted for clarity
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EUROPÄISCHE NORM

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Série aérospatiale - Systèmes qualité - Exigences pour la revue premier article

Luft- und Raumfahrt - Qualitätsmanagement - Erstmusterprüfung Anforderungen

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European foreword

This document (EN 9102:2015) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this European Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, 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of an identical text or by endorsement, at the latest by June 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

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.

This document supersedes EN 9102:2006.

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

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RATIONALE

This European Standard was revised to emphasize the value of the First Article Inspection (FAI) process to an organization, separate and enhance the planning and evaluation activities, and define Digital Product Definition (DPD) and its relationship to the FAI process. Additional changes to the standard requirements, definitions, and associated notes were incorporated in response to stakeholder needs.

To assure customer satisfaction, aviation, space, and defence organizations must produce and continually improve safe, reliable products that meet or exceed customer and applicable statutory and regulatory requirements. The globalization of the industry and the resulting diversity of regional and national requirements and expectations have complicated this objective. Organizations face the challenge of purchasing products from suppliers throughout the world and at all levels of the supply chain. Industry suppliers and processors face the challenge of delivering products to multiple customers having varying quality requirements and expectations.

The aviation, space, and defence industry established the International Aerospace Quality Group (IAQG) for the purpose of achieving significant improvements in quality and safety, and reductions in cost throughout the value stream. This organization includes representation from companies in the Americas, Asia/Pacific, and Europe. This international standard has been prepared by the IAQG.

This document standardizes FAI process requirements to the greatest extent possible and can be used at all levels of the supply chain by organizations around the world to provide a consistent process and documentation requirements for verification of aviation, space, and defence product. Its use should result in improved quality, schedule, and cost performance by the reduction or elimination of organization-unique requirements and wider application of good practices. While primarily developed for the aviation, space, and defence industry, this European Standard can also be used in other industry sectors where a standardized FAI process is needed.

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1 Scope

1.1 General

This European Standard establishes the baseline requirements for performing and documenting FAI. Should there be a conflict between the requirements of this European Standard and applicable statutory or regulatory requirements, the applicable statutory or regulatory requirements shall take precedence.

1.2 Purpose

The primary purpose of FAI is to validate that product realization processes are capable of producing parts and assemblies that meet engineering and design requirements. A well-planned and executed FAI will provide objective evidence the manufacturer's processes can produce compliant product and that they have understood and incorporated associated requirements. FAI will:

- Provide confidence that the product realization processes are capable of producing conforming product.
- Demonstrate that the manufacturers and processors of the product have an understanding of the associated requirements.
- Provide objective evidence of process capability.
- Reduce potential risks associated with production start-up and/or process changes.
- Provide assurance of product conformance at the start of production and after changes outlined in this European Standard.

An FAI is intended to:

- Reduce future escapes, risks, and total costs.
- Help ensure safety of flight.
- Improve quality, delivery, and customer satisfaction.
- Reduce costs and production delays associated with product nonconformances.
- Identify product realization processes that are not capable of producing conforming product, and initiate and/or validate corrective actions.

1.3 Application

This European Standard applies to organizations that are responsible for producing the design characteristics of the product (i.e., product realization). The organization shall flow down the requirements of this European Standard to suppliers or processors who produce design characteristics.

This European Standard applies to assemblies, sub-assemblies, and detail parts including castings, forgings, and modifications to standard catalogue or Commercial-Off-the-Shelf (COTS) items.

Unless contractually required, this European Standard does not apply to:

- Development and prototype parts that are not considered as part of the first production run.

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- Unique single run production orders, not intended for ongoing production (e.g., out-of-production spares).
- Procured standard catalogue items, COTS, or deliverable software.

2 Normative references

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

EN 9100, *Quality management systems — Requirements for aviation, space and defence organisations*

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

ISO 9000, *Quality management systems — Fundamentals and vocabulary*

NOTE Equivalent versions (e.g., AS, EN, JISQ, SJAC, NBR) of the IAQG standards listed above are published internationally in each IAQG sector.

3 Terms and definitions

An acronym log for this European Standard is presented in Annex A. For the purposes of this European Standard, the terms and definitions stated in ISO 9000 and the following apply:

3.1
attribute data
a result from a characteristic or property that is appraised only as to whether it does or does not conform to a given requirement (e.g., go/no-go, accept/reject, pass/fail)

3.2
baseline part number
this refers to the previous FAI part number or approved configuration, including revision level, to which a partial FAI is performed. An example of an approved configuration could be a part produced, prior to the requirements of this European Standard.

3.3
capability
ability of an organization, system, or process to produce a product that will fulfill the associated design characteristics defined for that product

3.4
Commercial-Off-the-Shelf (COTS) items
commercially available items intended by design to be procured and utilized without modification (e.g., common electronic components)

3.5
deliverable software
embedded or loadable airborne, space borne, or ground support software or firmware components which are part of an aircraft type design, weapon system, missile, or spacecraft

3.6
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 or DPD requirements. These characteristics can be measured, inspected, tested, or verified to determine conformance to the design requirements. Dimensional features include in-process locating features (e.g., target-machined or forged/cast dimensions on forgings and castings, weld/braze joint preparation necessary for

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acceptance of finished joint). Material features or properties may include processing variables and sequences, which are specified by the drawing or DPD (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.

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