AEROSPACE STANDARD

AS13003

Issued 2015-02

Measurement Systems Analysis Requirements
for the Aero Engine Supply Chain

RATIONALE

The aerospace industry is heavily reliant on inspection to ensure that parts and assemblies delivered to the purchaser meet drawing requirements. There are many differing requirements across the aero engine supply chain, therefore, this standard is intended to harmonize these requirements into a single approach.

The determination of what needs to be inspected is covered in a separate standard AS13002.

This standard defines the essential requirements to establish acceptable measurement systems (for variable and attribute features) for use on aero engine parts and assemblies.

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1. SCOPE

This standard defines the minimum requirements for conducting Measurement Systems Analysis (MSA) for variable and attribute assessment on characteristics as defined on the drawing or specification. It does not define the detailed analytical methods for each type of study as these can be found in existing published texts (see Section 2 for guidance).

1.1 Purpose

The aerospace industry is highly reliant on inspection to ensure that parts and assemblies meet drawing requirements. Ensuring that measurement systems are capable and repeatable is vital to the effectiveness of the inspection process.

The purpose of this document is to define the application of appropriate measurement system analysis tools and the acceptance criteria to be applied by the Aero Engine Manufacturers Supply Chain. It shall also provide guidance on the efficiency of application (read across) and mitigation strategies for non-capable measurement systems.

This standard defines the MINIMUM acceptance limits for measurement systems analysis. The purchaser may require different acceptance standards for specific applications.

There may be situations where alternative measurement systems analysis needs to be deployed. These should be agreed between the supplier and the specific purchaser prior to approval.

Case studies are included to provide practical examples of the application of these methods and further reading is also provided in Section 2.

2. REFERENCES

2.1 Applicable Documents

The latest issue of SAE publications shall apply. Nothing in this document shall supersede applicable laws and regulations unless a specific exemption has been obtained. The documents listed below are intended to support the requirements of this document and provide guidance on conducting MSA studies.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

2.1.2 Automotive Industry Action Group (2010). Measurement System Analysis, 4th ed., Detroit, MI.

2.1.3 ASTM E2782, Standard Guide for Measurement Systems Analysis.

2.1.4 Wheeler, D. J. and Lyday, R. W., Evaluating the Measurement Process, SPC Press, Inc., Knoxville, TN, 2006.

2.1.5 "Evaluating the Measurement Process III - Using Imperfect Data" by Donald Wheeler.

2.1.6 Minitab support documentation – www.minitab.com