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Space product assurance - Verification and approval of automatic machine wave soldering

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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# EN 16602-70-07

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Supersedes EN 14612:2003

English version

# Space product assurance - Verification and approval of automatic machine wave soldering

Assurance produits des projets spatiaux - Validation et approbation du brasage automatique à la vague

Raumfahrtproduktsicherung - Verifikation und Zulassung von Maschinenschwalllötverfahren

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# Foreword

This document (EN 16602-70-07:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-70-07:2014) originates from ECSS-Q-ST-70-07C.

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of an identical text or by endorsement, at the latest by April 2015, and conflicting national standards shall be withdrawn at the latest by April 2015.

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 14612:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any EN covering the same scope but with a wider domain of applicability (e.g. : aerospace).

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# Introduction

Wave soldering is regarded as a critical process that can find limited application during the assembly of components on to printed circuit boards (PCBs) intended for spacecraft. The preferred procedure is by manual soldering to the requirements of ECSS-Q-ST-70-08. Generally the small number of identically designed circuits does not warrant the setting up of unique machine parameters for each individual layout.

When wave soldering is identified as a suitable alternative to manual soldering for use in the customer's projects, it can be essential to follow the steps outlined in this document before the final customer's approval is granted. The sequence of main events is shown in Figure 4-1. Each step is fully completed and the details recorded, so that a dossier is compiled for each manufacturer's assembly line. All dossiers are kept updated by the approval authority and serve as a reference for the approval authority's Project Engineers.

A general qualification is not granted for wave soldering. Wave soldering lines that have been previously verified (see also clause 5.2) can be also approved for use on named projects, but this depends entirely on the specific project requirements. Project process approval is requested, as for all materials and critical processes, by means of ECSS-Q-ST-70.

# 1
# Scope

This specification defines the basic requirements for the verification and approval of automatic machine wave soldering for use in spacecraft hardware. The process requirements for wave soldering of double-sided and multilayer boards are also defined.

This standard may be tailored for the specific characteristic and constrains of a space project in conformance with ECSS-S-ST-00.

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# Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this ECSS Standard. For dated references, subsequent amendments to, or revision of any of these publications do not apply. However, parties to agreements based on this ECSS Standard are encouraged to investigate the possibility of applying the more recent editions of the normative documents indicated below. For undated references, the latest edition of the publication referred to applies.

| EN reference | Reference in text | Title |
|---|---|---|
| EN 16601-00-01 | ECSS-S-ST-00-01 | ECSS system - Glossary of terms |
| EN 16602-10-09 | ECSS-Q-ST-10-09 | Space product assurance – Nonconformance control system |
| EN 16602-70 | ECSS-Q-ST-70 | Space product assurance - Materials, mechanical parts and processes |
| EN 16602-70-08 | ECSS-Q-ST-70-08 | Space product assurance - Manual soldering of high-reliability electrical connections |
| EN 16602-70-10 | ECSS-Q-ST-70-10 | Space product assurance - Qualification of printed circuit boards |
| EN 16602-70-28 | ECSS-Q-ST-70-28 | Space product assurance - Repair and modification of printed circuit board assemblies for space use |