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Additive manufacturing - System performance and reliability - Acceptance tests for laser metal powder-bed fusion machines for metallic materials for aerospace application (ISO/ASTM 52941:2020)

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| Standard on kättesaadav Eesti Standardikeskusest. | The standard is available from the Estonian Centre for Standardisation. |

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ICS 25.030

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EUROPEAN STANDARD

EN ISO/ASTM 52941

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Additive manufacturing - System performance and reliability - Acceptance tests for laser metal powder-bed fusion machines for metallic materials for aerospace application (ISO/ASTM 52941:2020)

Fabrication additive - Performance et fiabilité du système - Essais de réception pour machines de fusion laser sur lit de poudre pour les matériaux métalliques pour l'application aérospatiale (ISO/ASTM 52941:2020)

Additive Fertigung - Systemleistung und Betriebssicherheit - Abnahmeprüfung von pulverbettbasierten Laserstrahlanlagen für metallische Werkstoffe für Luft- und Raumfahrtanwendungen (ISO/ASTM 52941:2020)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO/ASTM 52941:2020) has been prepared by Technical Committee ISO/TC 261 "Additive manufacturing" in collaboration with Technical Committee CEN/TC 438 "Additive Manufacturing" the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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

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Endorsement notice

The text of ISO/ASTM 52941:2020 has been approved by CEN as EN ISO/ASTM 52941:2020 without any modification.

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Foreword

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This document was prepared by ISO/TC 261, *Additive manufacturing*, in cooperation with ASTM F 42, *Additive Manufacturing Technologies*, on the basis of a partnership agreement between ISO and ASTM International with the aim to create a common set of ISO/ASTM standards on additive manufacturing.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Additive manufacturing — System performance and reliability — Acceptance tests for laser metal powder-bed fusion machines for metallic materials for aerospace application

1 Scope

This document specifies requirements and test methods for the qualification and re-qualification of laser beam machines for metal powder bed fusion additive manufacturing for aerospace applications.

It can also be used to verify machine features during periodic inspections or following maintenance and repair activities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 11146 (all parts), *Lasers and laser-related equipment — Test methods for laser beam widths, divergence angles and beam propagation ratios*

ISO 11554, *Optics and photonics — Lasers and laser-related equipment — Test methods for laser beam power, energy and temporal characteristics*

ISO/ASTM 52900, *Additive manufacturing — General principles — Part 1: Fundamentals and vocabulary*

ISO/ASTM 52921, *Standard terminology for additive manufacturing — Coordinate systems and test methodologies*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/ASTM 52900, ISO/ASTM 52921 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

scanning speed

relative linear speed of the laser beam movement in the plane of the build platform (working plane)

3.2

warm-up time

time from switching on the machine until the build cycle can be started, as specified by the machine manufacturer

3.3

feeding platform

platform that moves incrementally to supply powder to the *powder spreading device* (3.4)