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ACCEPTANCE TESTS FOR CO2-LASER BEAM MACHINES FOR HIGH QUALITY WELDING AND CUTTING - PART 1: GENERAL PRINCIPLES, ACCEPTANCE CONDITIONS (ISO 15616-1:2003)

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Acceptance tests for CO2-laser beam machines for high quality welding and cutting - Part 1: General principles, acceptance conditions (ISO 15616-1:2003)

Essais de réception des machines de soudage et de coupage de qualité par faisceau laser CO2 - Partie 1: Principes généraux et conditions de réception (ISO 15616-1:2003)

Abnahmeprüfungen für CO2-Laserstrahlanlagen zum Qualitätsschweißen und Schneiden - Teil 1: Grundlagen, Abnahmebedingungen (ISO 15616-1:2003)

This European Standard was approved by CEN on 21 November 2002.

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 Management Centre 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 Management Centre has the same status as the official versions.

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Contents

Foreword

This document (EN ISO 15616-1:2003) has been prepared by Technical Committee CEN/TC 121, "Welding", the secretariat of which is held by DS, in collaboration with ISO/TC 44 "Welding and allied processes".

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of an identical text or by endorsement, at the latest by September 2003, and conflicting national standards shall be withdrawn at the latest by September 2003.

This European Standard "*Acceptance test for CO_2 – laser beam machines for high quality welding and cutting*" consists of the following Parts:

— *Part 1: General principles, acceptance conditions.*

— *Part 2: Measurement of static and dynamic accuracy.*

— *Part 3: Calibration of instruments for measurement of gas flow and pressure.*

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

1 Scope

This Part of this European Standard is applicable to CO_2-laser beam machines for welding and cutting in two operating directions (2D).

The main purpose of this standard is to provide requirements for acceptance testing of CO_2-laser beam machines prior to or during installation at the user's premises. The acceptance tests are used to document the ability of CO_2-laser beam machines to produce welded joints and cuts of consistent quality.

This standard is intended to be used for preparation of the technical specification for CO_2-laser beam machines for high quality welding and cutting in two operating directions (2D). This standard specifies basic requirements. Additional tests and requirements may be specified in the technical specification for the CO_2-laser beam machine.

NOTE 1 The technical specification for the CO_2-laser beam machine usually forms a part of the contract and it is agreed by the parties concerned (the manufacturer of the CO_2-laser beam machine and the customer/user).

NOTE 2 The requirements may be too stringent for non-high quality cutting.

However, the standard may also be used for testing as part of maintenance, as appropriate.

If modifications are made to a CO_2-laser beam machine (rebuilding, repairs, modifications to the operating conditions etc.) that may have an effect on the acceptance testing, repeat test may be necessary covering the machine parameters affected by such modifications.

If a CO_2-laser beam machine that has already been accepted is dismantled (e.g. in order to change its location) such tests may involve verification according to the requirements in 6.4 as a minimum.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 60204-1, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997).*

EN ISO 11145:2001, *Optics and optical instruments — Lasers and laser-related equipment — Vocabulary and symbols (ISO 11145:2001).*

EN ISO 11146:1999, *Lasers and laser-related equipment — Test methods for laser beam parameters — Beam widths, divergence angle and beam propagation factor (ISO 11146:1999).*

EN ISO 11554, *Optics and optical instruments — Lasers and laser-related equipment — Test methods for laser beam power, energy and temporal characteristics (ISO 11554:1998).*

EN ISO 11670, *Lasers and laser related equipment — Test methods for laser beam parameters — Beam positional stability (ISO 11670:1999).*

EN ISO 15616-2, *Acceptance tests for CO_2-laser beam machines for high quality welding and cutting — Part 2: Measurement of static and dynamic accuracy (ISO 15616-2:2003).*