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Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks —

Part 4: Internal electro-optical distance-ranging method

Pétrole et produits pétroliers liquides — Jaugeage des réservoirs cylindriques verticaux —

Partie 4: Méthode par mesurage électro-optique interne de la distance

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 7507-4 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 2, *Measurement of petroleum and related products*.

This second edition cancels and replaces the first edition (ISO 7507-4:1995), which has been technically revised.

ISO 7507 consists of the following parts, under the general title *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks*:

— *Part 1: Strapping method*

— *Part 2: Optical-reference-line method*

— *Part 3: Optical-triangulation method*

— *Part 4: Internal electro-optical distance-ranging method*

— *Part 5: External electro-optical distance-ranging method*

Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks —

Part 4:
Internal electro-optical distance-ranging method

1 Scope

This part of ISO 7507 specifies a method for the calibration of vertical cylindrical tanks having diameters greater than 5 m by means of internal measurements using an electro-optical distance-ranging (EODR) instrument, and for the subsequent compilation of tank capacity tables.

The method is suitable for tanks tilted up to a 3 % deviation from the vertical, provided that a correction is applied for the measured tilt as described in ISO 7507-1:2003, Clause 11.

This part of ISO 7507 also applies to tanks with floating roofs or internal floating blankets.

2 Normative references

The following referenced documents are indispensable for the application 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 7507-1:2003, *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 1: Strapping method*

IEC 60825-1:2007, *Safety of laser products — Part 1: Equipment classification and requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7507-1 and the following apply.

3.1
reference target point
fixed point clearly marked on a fixed point within the tank, e.g. on the inside surface of the tank shell wall

3.2
slope distance
distance measured from the electro-optical distance-ranging instrument to a target point on any given course of the tank shell wall

3.3
target point
one of a series of points on the inside surface of the tank shell wall to which slope distance, and vertical and horizontal angles are measured by use of the electro-optical ranging instrument