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Non-destructive testing — Leak testing — Tracer gas method

Essais non destructifs — Contrôle d'étanchéité — Méthode par gaz traceur

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Foreword

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This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 6, *Leak testing*.

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Non-destructive testing — Leak testing — Tracer gas method

1 Scope

This document describes the techniques to be applied for the detection of a leak, using a tracer gas and a tracer gas specific leak detector.

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 20484, *Non-destructive testing — Leak testing — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20484 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/

4 Principles of detection

A partial pressure difference of tracer gas is created across the boundary of the object to be tested. The tracer gas, having passed through the leak, is revealed by its physical or chemical properties. Chemical detection is generally based on reactions that cause a local colour change (the object surface shall therefore be visible).

Detection based on physical properties usually involves a sensor, for example:

— a mass spectrometer, tuned for the specific tracer gas used (generally helium-4);

— an alkali ion diode, for halogen gas, and electron-capture equipment (i.e. for SF_6);

— a Pirani gauge, for tracer gas with thermal conductivity different from that of the ambient atmosphere;

— a photometer, with band-pass filter in the frequency range of the tracer gas absorption or emission.

These types of detection generally give an electrical signal which varies with the tracer gas partial pressure.

The reference conditions should be selected and agreed between a leak tester and a customer. The reference conditions should be clearly stated and claimed by a leak tester in the test report (see Clause 10).

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