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Non-destructive testing — Infrared thermographic testing — General principles

Essais non destructifs — Essais thermographiques infrarouge — Principes généraux

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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.

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 8, *Thermographic testing*.

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Introduction

The industrial applications of infrared thermographic testing in non-destructive testing (NDT) are growing, along with a remarkable improvement in thermographic technologies. The effectiveness of any application of infrared thermographic testing depends upon proper and correct usage of the method. The purpose of this document is to provide general principles for infrared thermographic testing in order to promote the correct and effective application of a variety of industrial NDT, such as in power plants, buildings and structures, electronic instruments and industrial materials.

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Non-destructive testing — Infrared thermographic testing — General principles

1 Scope

This document provides general principles for infrared thermographic testing in the field of industrial non-destructive testing (NDT).

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 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 10878, *Non-destructive testing — Infrared thermography — Vocabulary*

3 Terms and definitions

For the purposes of this document the terms and definitions given in ISO 10878 apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Infrared thermographic testing personnel

Personnel who are responsible for conducting infrared thermographic testing (TT) shall meet the following criteria.

a) TT personnel shall have an adequate knowledge of the basics of infrared measurement and heat-transfer engineering as required by ISO 9712.

b) The TT personnel's visual acuity and colour vision shall meet the requirements of ISO 9712.

5 Infrared thermographic testing equipment

5.1 Infrared camera

Each infrared camera has different properties and functions, such as the type of infrared detecting device, the spatial resolution (instantaneous field of view, effective pixels), temperature range, temperature resolution, temperature accuracy, frame time, exposure time, detection wavelength range, cooling method, scanning method, and the visible image display and recording function. It is necessary to ensure that an infrared camera with appropriate properties and functions with appropriate temperature calibration to meet the purpose of the testing is used.

If necessary, various devices that can be attached to the infrared camera such as wavelength filters, attenuation filters, replacement lenses, monitors, computers and software for data collection and processing, and infrared-reflecting mirrors may be used.

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