INTERNATIONAL STANDARD

ISO 18566-2

First edition
2017-06

Building environment design — Design, test methods and control of hydronic radiant heating and cooling panel systems —

Part 2: Determination of heating and cooling capacity of ceiling mounted radiant panels

Conception de l'environnement des bâtiments — Conception, méthodes d'essai et contrôle des systèmes de panneaux hydroniques radiants de chauffage et de refroidissement —

Partie 2: Détermination de la capacité de chauffage et refroidissement des panneaux radiants montés au plafond

Reference number
ISO 18566-2:2017(E)

© ISO 2017



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Symbols ... **1**
5 Test booth ... **1**
5.1 Radiant temperature asymmetry ... 1
5.2 Temperature measuring points ... 2
5.3 Verification of test installation, repeatability and reproducibility ... 3
6 Test ... **4**
6.1 General ... 4
6.2 Test method ... 4
6.3 Dimension and construction of the test samples ... 5
6.4 Selection of the models to be tested for determining the thermal output of a type ... 6
6.5 Manufacturer documents for the test samples ... 6
6.6 Arrangement of the sample in the test booth ... 6
6.7 Test procedure ... 6
6.7.1 Test ... 6
6.7.2 Mass flow ... 7
6.7.3 Test temperature — Heating case ... 7
6.7.4 Test temperature — Cooling case ... 7
6.7.5 Steady-state conditions ... 7
6.7.6 Correction due to the air pressure ... 8
6.7.7 Results of measurement — Characteristic equation ... 8
6.7.8 Testing of mean surface temperature and the emissivity of the panel ... 9
7 Test report ... **11**
Annex A (informative) **Tables of the test report for heating and cooling** ... **13**
Annex B (informative) **Cooling load simulators — Arrangement in space, measuring points** ... **15**
Bibliography ... **17**

© ISO 2017 – All rights reserved

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, 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 205, *Building environment design*.

A list of all parts in the ISO 18566 series can be found on the ISO website.

© ISO 2017 – All rights reserved

Introduction

The radiant heating and cooling system consists of heat emitting/absorbing, heat supply, distribution, and control systems. Typical applications are low temperature radiant heating and high temperature radiant cooling. They are classified as embedded radiant heating and cooling systems and prefabricated radiant heating and cooling panel systems.

While ISO 11855 is for embedded radiant heating and cooling systems without an open air gap, ISO 18566 is for radiant heating and cooling panel systems with an open air gap. Because the system specifications for ISO 18566 are different from those of ISO 11855, it was necessary to develop separate ISO standards regarding the design and test methods of the cooling and heating capacity and control.

ISO 18566-1 specifies the comfort criteria, technical specifications and requirements which should be considered in the manufacturing and installation of radiant heating and cooling systems. ISO 18566-2 provides the test facility and test method for heating and cooling capacity of ceiling mounted radiant panels. ISO 18566-3 specifies the design considerations and design processes of ceiling mounted radiant panels. ISO 18566-4 addresses the control of ceiling mounted radiant heating and cooling panels to ensure the maximum performance which was intended in the design stage when the system is actually being operated in a building.

ISO 18566 does not cover the panels that are embedded into the ceiling, wall or floor structure.

This document deals with the determination of heating and cooling capacity of ceiling mounted radiant panels. In Clause 5, the boundary conditions for the heating and cooling capacity test are described. In Clause 6, the test chamber and the output from the test are defined.

This document is partly based on EN 14240, EN 14037 and ASNI/ASHRAE Standard 138.

© ISO 2017 – All rights reserved

Building environment design — Design, test methods and control of hydronic radiant heating and cooling panel systems —

Part 2: Determination of heating and cooling capacity of ceiling mounted radiant panels

1 Scope

This document defines technical specifications and requirements of free hanging (suspended) heating and dry cooling only surfaces with an air gap between construction and the emitter (not embedded) with or without an insulation fed with water at temperatures below 120 °C connected with a centralized heating and/or cooling supply source intended to be installed in buildings.

Ceiling mounted radiant panels covered by this document are limited to a width from 0,3 m up to 1,5 m.

This document also defines the additional common data that the manufacturer provides to the trade, in order to ensure the correct application of the products.

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/IEC 18566-1, *Building environment design — Design, test methods and control of hydronic radiant heating and cooling panel systems — Part 1: Definition, symbols, technical specifications and requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18566-1 apply.

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

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

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

4 Symbols

For the purposes of this document, the symbols in ISO 18566-1 apply.

5 Test booth

5.1 Radiant temperature asymmetry

The booth for testing ceiling mounted radiant panels shall be constructed in a way that all six surrounding surfaces can be chilled.

© ISO 2017 – All rights reserved