



**SLOVENSKI STANDARD**  
**kSIST FprEN 14037-4:2015**

**01-december-2015**

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**Prosto obešene grelne in hladilne površine za vodo s temperaturo do 120 °C - 4.  
del: Predizdelane stropne sevalne plošče za ogrevanje prostora - Preskusna  
metoda za določitev hladilne moči**

Free hanging heating and cooling surfaces for water with a temperature below 120°C -  
Part 4: Pre-fabricated ceiling mounted radiant panels - Test method for cooling capacity

An der Decke frei abgehängte Heiz- und Kühlflächen für Wasser mit einer Temperatur  
unter 120 °C - Teil 4: Vorgefertigte Deckenstrahlplatten zur Raumheizung -  
Prüfverfahren für die Kühlleistung

Panneaux rayonnants de chauffage et de rafraîchissement alimentés avec une eau à  
une température inférieure à 120 °C - Partie 4: Méthode d'essai pour la détermination de  
la puissance de rafraîchissement des panneaux rayonnants préfabriqués

**Ta slovenski standard je istoveten z: FprEN 14037-4**

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**ICS:**

91.140.10	Sistemi centralnega ogrevanja	Central heating systems
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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**FINAL DRAFT**  
**FprEN 14037-4**

September 2015

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ICS 91.140.10; 91.140.30

English Version

## Free hanging heating and cooling surfaces for water with a temperature below 120°C - Part 4: Pre-fabricated ceiling mounted radiant panels - Test method for cooling capacity

Panneaux rayonnants de chauffage et de rafraîchissement alimentés avec une eau à une température inférieure à 120 °C - Partie 4: Méthode d'essai pour la détermination de la puissance de rafraîchissement des panneaux rayonnants préfabriqués

An der Decke frei abgehängte Heiz- und Kühlflächen für Wasser mit einer Temperatur unter 120 °C - Teil 4: Vorgefertigte Deckenstrahlplatten zur Raumheizung - Prüfverfahren für die Kühlleistung

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 130.

If this draft becomes a European Standard, 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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (FprEN 14037-4:2015) has been prepared by Technical Committee CEN/TC 130 “Space heating appliances without integral heat sources”, the secretariat of which is held by UNI.

This document is currently submitted to the Unique Acceptance Procedure.

The European Standard EN 14037, *Free hanging heating and cooling surfaces for water with a temperature below 120°C*, consists of the following parts:

- *Part 1: Prefabricated ceiling mounted radiant panels for space heating - Technical specifications and requirements;*
- *Part 2: Prefabricated ceiling mounted radiant panels for space heating - Test method for thermal output;*
- *Part 3: Prefabricated ceiling mounted radiant panels for space heating - Rating method and evaluation of radiant thermal output;*
- *Part 4: Prefabricated ceiling mounted radiant panels for space heating - Test method for cooling capacity;*
- *Part 5: Open or closed heated ceiling surfaces - Test method for thermal output.*

## **Introduction**

This European Standard results from the recognition, that heated and chilled ceiling radiant panels falling into the field of application hereinafter stated are traded on the basis of their thermal output. For evaluating and comparing different heated and chilled ceiling surfaces it is therefore necessary to refer to a heating stipulated value.

As installations with ceiling mounted radiant panels can also be used in practice for space cooling, it is necessary to have a test method for evaluating the cooling capacity. Installations with different free hanging heating and cooling surfaces need, for the use of space heating a test method for evaluating the heating output. The test method differs from the method for ceiling mounted radiant panels.

## 1 Scope

This European Standard defines the technical specifications and requirements for the definition of the cooling capacity of pre-fabricated ceiling mounted radiant panels according to the specifications of FprEN 14037-1:2015, 3.3.1. The test according to this standard requires the measurement of the thermal output according to FprEN 14037-2:2015 of the model.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

FprEN 14037-1:2015 *Pre-fabricated ceiling mounted radiant panels for space heating - Technical specifications and requirements*

FprEN 14037-2:2015 *Pre-fabricated ceiling mounted radiant panels for space heating - Test method for thermal output*

EN ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in FprEN 14037-1:2015 and the following apply.

### 3.1

#### **water temperature rise**

temperature difference between the outlet and inlet water temperature of the cooling appliance

### 3.2

#### **standard temperature difference for the cooling capacity of ceiling mounted radiant panels**

reference room temperature 32°C and mean water temperature 17 °C, determined temperature difference 15 K

### 3.3

#### **nominal temperature difference**

determined temperature difference 8 K between room temperature and mean water temperature

### 3.4

#### **indirect cooling surface (dry surface)**

portion of the cooling surface of the panel which is in contact with air only (e.g. radiant sheet between the tubes)

### 3.5

#### **direct cooling surface (wet surface)**

portion of the cooling surface of the panel which is in contact with the water

### 3.6

#### **standard cooling capacity**

cooling capacity at standard temperature difference and standard air pressure

**FprEN 14037-4:2015 (E)****3.7****nominal cooling capacity**

cooling capacity at nominal temperature difference 8 K

**3.8****characteristic equation**

equation that gives the thermal cooling capacity as a function of the temperature difference at constant water flow rate

**3.9****modular cooling capacity**

cooling capacity of one module calculated from the cooling capacity of the active length of a ceiling mounted radiant panel

**3.10****standard modular cooling capacity**

cooling capacity of one module at standard conditions

**3.11****nominal modular cooling capacity**

cooling capacity of one module at nominal temperature difference

**4 Symbols and units**

For the purposes of this document, the symbols and units given in FprEN 14037-1:2015 and the following apply.

**Table 1 — Symbols and units**

No.	Quantity	Symbol	Unit
1	Constant of the characteristic equation of the active length	$K_{\text{Cact}}$	-
2	Exponent of the characteristic equation of the active surface	$n_{\text{Cact}}$	-
3	Heat transfer coefficient (air-insulation-wall)	$u$	W/(m <sup>2</sup> K)
4	Total heat flow in all enclosure walls	$\Phi_{\text{B}}$	W
5	Standard modular cooling capacity	$\Phi_{\text{CLS}}$	W/m
6	Measured cooling capacity of a ceiling mounted radiant panel	$\Phi_{\text{Cme}}$	W
7	Nominal cooling capacity of a ceiling mounted radiant panel	$\Phi_{\text{CN}}$	W
8	Standard cooling capacity of a ceiling mounted radiant panel	$\Phi_{\text{CS}}$	W
9	Total thermal output of simulators	$\Phi_{\text{S}}$	W
10	Nominal temperature difference (8 K) of a ceiling mounted radiant panel when cooling	$\Delta T_{\text{cn}}$	K
11	Standard temperature difference (15 K) of a ceiling mounted radiant panel when cooling	$\Delta T_{\text{cs}}$	K