SLOVENSKI STANDARD
oSIST prEN ISO 15927-2:2007

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Higrotermalne karakteristike stavb - Raļunanje in predstavitev klimatskih podatkov - 2. del: Urni podatki za naļrtovanje obremenitve ohlajevanja (ISO/DIS 15927-2:2007)

Hygrothermal performance of buildings - Calculation and presentation of climatic data - Part 2: Hourly data for design cooling load (ISO/DIS 15927-2:2007)

Wärme- und feuchteschutztechnisches Verhalten von Gebäuden - Berechnung und Darstellung von Klimadaten - Teil 2: Stundendaten zur Bestimmung der Kühllast (ISO/DIS 15927-2:2007)

Performance hygrothermique des bâtiments - Calcul et présentation des données climatiques - Partie 2: Données horaires pour la charge de refroidissement de conception (ISO/DIS 15927-2:2007)

Ta slovenski standard je istoveten z: prEN ISO 15927-2

ICS:

07.060	Geologija. Meteorologija. Hidrologija	Geology. Meteorology. Hydrology
91.120.10	Toplotna izolacija stavb	Thermal insulation

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EUROPEAN STANDARD

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English Version

Hygrothermal performance of buildings - Calculation and presentation of climatic data - Part 2: Hourly data for design cooling load (ISO/DIS 15927-2:2007)

Performance hygrothermique des bâtiments - Calcul et présentation des données climatiques - Partie 2: Données horaires pour la charge de refroidissement de conception (ISO/DIS 15927-2:2007)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 89.

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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (prEN ISO 15927-2:2007) has been prepared by Technical Committee CEN/TC 89 "Thermal performance of buildings and building components", the secretariat of which is held by SIS, in collaboration with Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment".

This document is currently submitted to the parallel Enquiry.

DRAFT INTERNATIONAL STANDARD ISO/DIS 15927-2

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Hygrothermal performance of buildings — Calculation and presentation of climatic data —

Part 2:
Hourly data for design cooling load

Performance hygrothermique des bâtiments — Calcul et présentation des données climatiques —

Partie 2: Données horaires pour la charge de refroidissement de conception

ICS 07.060; 91.120.10

ISO/CEN PARALLEL ENQUIRY

This draft International Standard is a draft standard developed within the European Committee for Standardization (CEN) and processed under the CEN-lead mode of collaboration as defined in the Vienna Agreement. The document has been transmitted by CEN to ISO for circulation for ISO member body voting in parallel with CEN enquiry. Comments received from ISO member bodies, including those from non-CEN members, will be considered by the appropriate CEN technical body. Should this DIS be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

In accordance with the provisions of Council Resolution 15/1993 this document is circulated in the English language only.

Conformément aux dispositions de la Résolution du Conseil 15/1993, ce document est distribué en version anglaise seulement.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

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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 15927- 2 was prepared by Technical Committee CEN/TC 89, *Thermal performance of buildings and building components*, in cooperation with Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*.

ISO 15927 consists of the following parts, under the general title *Hygrothermal performance of buildings — Calculation and presentation of climatic data*:

— *Part 1: Monthly means of single meteorological elements;*

— *Part 2: Hourly data for design cooling load;*

— *Part 3: Calculation of a driving rain index for vertical surfaces from hourly wind and rain data;*

— *Part 4: Hourly data for assessing the annual energy use for heating and cooling;*

— *Part 5: Data for design heat load for space heating;*

— *Part 6: Accumulated temperature differences (degree days).*

Introduction

The choice of design load for space cooling is a matter of balancing user needs against cost. On the one hand, users expect a cooling system to maintain the internal temperatures needed for health and comfort; on the other hand very high cooling loads can arise from extreme meteorological conditions. It is usually uneconomic to design cooling systems for rare extremes, as this leads to high capital cost and, usually, to lower operational efficiency of the system. The highest cooling loads occur with a combination of high daily mean dry bulb temperature and dewpoint temperature, high daily total irradiation, low daily swing in temperature and low wind speed. Data is therefore needed on the values of these parameters when they are occurring in combination at specific return periods.

Hygrothermal performance of buildings — Calculation and presentation of climatic data — Part 2: Hourly data for design cooling load

1 Scope

This standard gives the definition and specifies methods of calculation and presentation of the monthly external design climate to be used in determining the design cooling load of buildings and the design of air conditioning systems.

Depending on the building type a range of parameters, can be used to define the individual days of hourly or three-hourly data in each calendar month that impose a cooling load likely to be exceeded on 5 %, 2 % and 1 % of days.

The parameters that shall always be used in the selection are dry bulb temperature and total global solar irradiation (or sunshine hours). The daily swing in dry bulb temperature, dewpoint temperature and wind speed and any other parameters relevant to particular buildings may also be included.

Hourly peak values of dry bulb temperature and dewpoint temperature are needed for the design of air conditioning systems.

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 15927-1, *Hygrothermal performance of buildings - Calculation and presentation of climatic data – Part 1: Monthly means of single meteorological elements*

World Meteorological Organisation: *Guide to Meteorological Instruments and Methods of Observation. 6th Edition, WMO – No. 8, 1996.*

3 Terms, definitions, symbol and units

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15927-1 and the following apply.

3.1.1
hourly value
average of instantaneous values of a parameter measured during an hour or value observed at a particular moment (e.g. on the hour)

NOTE Hourly values can be estimated by interpolation from data measured at three hour intervals.

3.1.2
daily mean value
average of 24 hourly values or eight 3-hourly values of a parameter during a day from 0000 to 2300

3.1.3
dry bulb temperature
air temperature measured in a thermometer screen or with similar shielding from solar radiation

3.1.4
daily swing in dry bulb temperature
difference between the maximum and minimum dry bulb temperatures in one day

3.1.5
dewpoint temperature
temperature to which air is cooled to become saturated with the same water vapour content

3.1.6
global solar irradiation on a horizontal surface
total solar energy falling on a horizontal surface in a given period

NOTE Global solar irradiation is the sum of the direct and diffuse solar irradiation received by the surface in the period.

3.1.7
summer external design day
day from any calendar month with a specified return period for extreme values of the significant meteorological parameters, for example: temperature, temperature swing, dewpoint temperature, solar irradiation and wind speed

3.2 Symbols and units

Symbol	Quantity	Unit
$\hat{I}_s$	daily total solar irradiation	kWh/m^2/d
$\hat{h}_s$	daily total sunshine hours	h
$\bar{p}$	daily mean of a parameter p	
p_x	value of a parameter that is exceeded on x % of days	
v	wind speed	m/s
θ	dry bulb temperature	°C
θ_d	dewpoint temperature	°C
θ_{sw}	daily swing in dry bulb temperature	K

4 Method of determination

4.1 Sources of data

Hourly files of meteorological data containing at least the dry bulb temperature and global solar irradiation or sunshine hours, for at least 10 years shall be analysed. Other parameters, such as dewpoint temperature, the daily swing in temperature and wind speed, may be included if design days are needed for specific purposes. The parameters used shall be fully reported.