
Ohranjanje kulturne dediščine - Smernice za izboljšanje energetske učinkovitosti zgodovinskih stavb

Conservation of cultural heritage - Guidelines for improving the energy performance of historic buildings

Erhaltung des kulturellen Erbes - Leitlinien für die Verbesserung der energiebezogenen Leistung von historisch, architektonisch oder kulturell wertvollen Gebäuden

Conservation du patrimoine culturel - Principes directeurs pour l'amélioration de la performance énergétique des bâtiments d'intérêt patrimonial

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Conservation of cultural heritage - Guidelines for improving the energy performance of historic buildings

Conservation du patrimoine culturel - Principes directeurs pour l'amélioration de la performance énergétique des bâtiments d'intérêt patrimonial

Erhaltung des kulturellen Erbes - Leitlinien für die Verbesserung der energiebezogenen Leistung historischer Gebäude

This European Standard was approved by CEN on 20 February 2017.

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EN 16883:2017 (E)**European foreword**

This document (EN 16883:2017) has been prepared by Technical Committee CEN/TC 346 “Conservation of Cultural Heritage”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

The European building stock represents an important cultural and material resource. Some buildings are of heritage significance due to their historical, architectural or cultural values; this standard refers to them as historic buildings. Due to climate change and associated political goals, the need to reduce greenhouse gas emissions (mainly CO₂) associated with energy use in buildings is evident. A challenge is to reduce energy demand and greenhouse gas emissions without unacceptable effects on the heritage significance of the existing built environment. This aspect distinguishes working with historic buildings from working with the building stock in general. Appropriate procedures are needed to improve energy performance in historic buildings. This European Standard provides guidelines for such a procedure. It complements existing standards on energy performance for the building stock in general by focusing on aspects particular to historic buildings and showing how existing standards can be applied appropriately.

Historic buildings are material manifestations of immovable tangible cultural heritage. They are of heritage significance to present and future generations. Heritage significance is a combination of all heritage values assigned to a building and its setting. Heritage values can be of an aesthetic, historic, scientific, cultural, social or spiritual nature, which can include architectural, artistic, economic, social, symbolic, technological and material aspects. Historic buildings in the sense of this standard do not necessarily have to be statutorily designated as cultural heritage.

This European Standard is designed to be used by building owners, authorities and professionals involved in the conservation and refurbishment of historic buildings. The standard aims at facilitating the sustainable management of these buildings by integrating measures for energy performance improvements and reduction of greenhouse gas emissions, with the adequate conservation of the buildings. Generally, the guidelines will be applicable to a wide range of buildings where special considerations are needed in order to find a sustainable balance between the use of the building, its energy performance and its conservation.

This European Standard should assist users in applying existing standards in the field of energy efficiency to the special conditions of historic buildings. It presents a systematic approach, or procedure, to facilitate the best decision in each individual case. This standard does not presuppose that all historic buildings need energy performance improvements.

EN 16883:2017 (E)

1 Scope

This European Standard provides guidelines for sustainably improving the energy performance of historic buildings, e.g. historically, architecturally or culturally valuable buildings, while respecting their heritage significance. The use of this standard is not limited to buildings with statutory heritage designation, it applies to historic buildings of all types and ages.

This European Standard presents a normative working procedure for selecting measures to improve energy performance, based on an investigation, analysis and documentation of the building including its heritage significance. The procedure assesses the impact of those measures in relation to preserving the character-defining elements of the building.

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.

EN 15603, *Energy performance of buildings - Overall energy use and definition of energy ratings*

EN 16096, *Conservation of cultural property - Condition survey and report of built cultural heritage*

EN 16247-2, *Energy audits - Part 2: Buildings*

3 Terms and definitions

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For the purposes of this document, the following terms and definitions apply.

3.1 Terms related to buildings

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3.1.1

alteration

change in *condition*, beneficial or not, intentional or not

[SOURCE: EN 15898:2011, 3.2.4]

3.1.2

building

construction as a whole, including its *building envelope* and all *technical building systems*, for which energy is used to condition the indoor climate, to provide domestic hot water and illumination and other services related to the use of the *building*

Note 1 to entry: The term can refer to the building as a whole or to parts thereof that have been designed or altered to be used separately.

[SOURCE: CEN/TR 15615:2008]

3.1.3

building element

major functional part of a *building*

EXAMPLE Foundation, floor, roof, heating system.

[SOURCE: ISO 6707-1:2014, 5.5.4, modified – Deleted “services” and added “heating system” in example]

3.1.4**building envelope**

building elements that separate the interior of the *building* from the outdoor *environment*

[SOURCE: Directive 2010/31/EU, 2(7), with modifications]

3.1.5**building fabric**

construction products that are fixed to the *building* in a permanent manner, so that the dismantling of the product changes the performance of the *building* and the dismantling or replacement of the product constitute construction operations

[SOURCE: EN 15643-1:2010, 3.4]

3.1.6**condition**

physical state of a *building* at a particular time

Note 1 to entry: Assessment of the state of a building depends on the context and thus on the reason why the assessment is being made.

[SOURCE: EN 15898:2011, 3.2.1, modified - Replaced “object” with “building”]

3.1.7**condition survey**

inspection to assess *condition* (standards.iteh.ai)

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[SOURCE: EN 15898:2011, 3.6.4]

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3.1.8**environment**

natural, man-made or induced external or internal conditions that can influence performance and use of the whole or part of a *building*

[SOURCE: ISO 6707-1:2014, 10.3]

3.1.9**environmental control**

management of one or more factors of the *environment*

Note 1 to entry: This applies to temperature, relative humidity, light, pollution, etc.

[SOURCE: EN 15898:2011, 3.4.3]

3.1.10**historic building**

building of *heritage significance*

Note 1 to entry: A historic building does not necessarily have to be statutorily designated as cultural heritage.

Note 2 to entry: Historic buildings are a specific form of objects, as defined in EN 15898:2011, 3.1.3.

EN 16883:2017 (E)**3.1.11****intervention**

action that results in a physical change of a *building*

Note 1 to entry: Intervention constitutes an alteration.

3.1.12**refurbishment**

modification to an existing *building* in order to bring it to an improved, acceptable *condition*

Note 1 to entry: Refurbishment does not necessarily respect the construction techniques, material or heritage significance of a building and is therefore not necessarily a conservation action.

Note 2 to entry: Refurbishment is an *alteration and an intervention*.

[SOURCE: EN 15643-1:2010, 3.55, modified – Deleted “and improvement” and added “improved” and note 1 and note 2 to entry]

3.1.13**repair**

actions applied to a building or part of it to recover its functionality and/or its appearance

Note 1 to entry: Repair is a conservation action only if it respects heritage significance and is based on evidence.

[SOURCE: EN 15898:2011, 3.5.10, modified – Replaced “object” with “building” and in note 1 to entry “restoration” with “conservation” and “significance” with “heritage significance” and deleted note 2 to entry]

3.1.14**sustainability**

ability of a system to be maintained for the present and future generations

Note 1 to entry: In this context “system” comprises environmental, social, cultural and economic aspects.

[SOURCE: EN 15643-1:2010, 3.67, modified – Added “cultural” to note 1 to entry]

3.1.15**technical building system**

technical equipment for heating, cooling, ventilation, humidity control, hot water, lighting or for a combination thereof

[SOURCE: EN 15643-1:2010, 3.70, modified – Added “humidity control” and deleted note 1 to entry]

3.2 Terms related to heritage**3.2.1****authenticity**

extent to which the identity of a *building* matches the one ascribed to it

Note 1 to entry: The concept of authenticity is not to be confused with the concept of originality.

[SOURCE: EN 15898:2011, 3.1.7, - Replaced “object” with “building”]

3.2.2**character-defining elements**

materials, forms, location, spatial configurations, uses and cultural associations or meanings that contribute to the *heritage significance* of a *historic building*, which must be preserved in order to retain its *heritage significance*

[SOURCE: Standards and Guidelines for the Conservation of Historic Places in Canada, p. 253, modified - Replaced “heritage value” with “heritage significance”, “historic place” with “historic building”, “retained” with “preserved” and “preserve” by “retain”]

3.2.3**compatibility**

extent to which one material can be used with another material without putting *heritage significance* or stability at risk

[SOURCE: EN 15898:2011, 3.3.3, modified – Replaced “significance” with “heritage significance”]

3.2.4**conservation**

measures and actions aimed at safeguarding a *historic building* while respecting its *heritage significance*, including its accessibility to present and future generations

[SOURCE: EN 15898:2011, 3.3.1, modified – Replaced “cultural heritage” with “historic building” and “significance” with “heritage significance”. Note 1, 2, 3 and 4 to entry are deleted]

3.2.5**conservation planning**

management tool for the development and coordination of *conservation* measures and actions

Note 1 to entry: An outcome can be a “Conservation Plan”

[SOURCE: EN 15898:2011, 3.6.2]

3.2.6**cultural heritage**

entities of *heritage significance* to present and future generations

[SOURCE: EN 15898:2011, 3.1.1 modified – Replaced “tangible and intangible entities” with “entities” and “significance” with “heritage significance”]

3.2.7**damage**

alteration that reduces *heritage significance* or stability

Note 1 to entry: Stability can be physical, chemical, biological, etc.

Note 2 to entry: Although damage has negative connotations, it can sometimes be viewed as broadening heritage significance.

[SOURCE: EN 15898:2011, 3.2.7 modified – Replaced “reduces significance” with “reduced heritage significance” in the definition and in note 2 to entry “significance” with “heritage significance”]

EN 16883:2017 (E)**3.2.8****deterioration**

gradual change in *condition* that reduces *heritage significance* or stability

Note 1 to entry: This term can also refer to the process itself.

Note 2 to entry: The term “decay” is sometimes used as a synonym.

Note 3 to entry: For movable heritage, the French term “détérioration” is also used to describe a complete and sudden worsening of condition.

[SOURCE: EN 15898:2011, 3.2.8, modified – Replaced “significance” with “heritage significance”]

3.2.9**heritage significance**

combination of all the *heritage values* assigned to a *building and its setting*

[SOURCE: EN 15898:2011, 3.1.6, modified – Added heritage to the term, replaced “values” with “heritage values” and “object” with “building” and added “and its setting”]

3.2.10**heritage value**

aspect of importance that individuals or society assign(s) to a *building*

Note 1 to entry: Heritage values can be of aesthetic, historic, scientific, cultural, social or spiritual nature. These types of heritage values include various aspects, for example: architectural, artistic, economic, symbolic, technological, use, etc.

Note 2 to entry: The heritage assigned value can change according to circumstance, e.g. how the judgement is made, the context and the moment in time. Value should always be indicated by its qualifying type.

[SOURCE: EN 15898:2011, 3.1.5, modified – Added heritage to the term, replaced “object” with “building” and changed note 1 to entry by replacing “values” with “heritage values” and note 2 to entry by replacing “the assigned value” with “heritage assigned value”]

3.2.11**integrity**

extent of physical or conceptual wholeness of a *building*

[SOURCE: EN 15898:2011, 3.2.3, modified – Replaced “object” with “building”]

3.2.12**reversibility**

extent to which an *intervention* can be undone without *damage* to the *building*

[SOURCE: EN 15898:2011, 3.3.2, modified – Replaced “treatment” with “intervention and “object” with “building”]