SLOVENSKI STANDARD
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Informacijska tehnologija - Naprave in infrastruktura podatkovnega centra - 2-1. del: Konstrukcija stavbe

Information technology - Data centre facilities and infrastructures - art 2-1: Building construction

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 2-1: Gebäudekonstruktion

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ICS:

35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general
35.110	Omreževanje	Networking
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

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Information technology - Data centre facilities and infrastructures - Part 2-1: Building construction

To be completed

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 2-1: Gebäudekonstruktion

This draft European Standard is submitted to CENELEC members for CENELEC enquiry.
Deadline for CENELEC: 2013-03-01.

It has been drawn up by CLC/TC 215.

If this draft becomes a European Standard, CENELEC 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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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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62 **Foreword**

63 This document (prEN 50600-2-1:2012) has been prepared by CLC/TC 215 "Electrotechnical aspects of
64 telecommunication equipment".

65 This document is currently submitted to the Enquiry.

66 This document has been prepared under a mandate given to CENELEC by the European Commission
67 and the European Free Trade Association.

Introduction

The unrestricted access to internet-based information demanded by the information society has led to an exponential growth of both internet traffic and the volume of stored/retrieved data. Data centres are housing and supporting the information technology and network telecommunications equipment for data processing, data storage and data transport. They are required both by network operators (delivering those services to customer premises) and by enterprises within those customer premises.

Data centres need to provide modular, scalable and flexible facilities and infrastructures to easily accommodate the rapidly changing requirements of the market. In addition, energy consumption of data centres has become critical both from an environmental point of view (reduction of carbon footprint) and with respect to economical considerations (cost of energy) for the data centre operator.

The implementation of data centres varies in terms of:

a) purpose (enterprise, co-location, co-hosting, or network operator facilities);

b) physical size;

c) accommodation (mobile, temporary and permanent constructions).

The needs of data centres also vary in terms of availability of service, the provision of security and the objectives for energy efficiency. These needs and objectives influence the design of data centres in terms of building construction, power distribution, environmental control and physical security. Effective management and operational information is required to monitor achievement of the defined needs and objectives.

This series of European Standards specifies requirements and recommendations to support the various parties involved in the design, planning, procurement, integration, installation, operation and maintenance of facilities and infrastructures within data centres. These parties include:

1) owners, facility managers, ICT managers, project managers, main contractors;

2) architects, building designers and builders, system and installation designers;

3) facility and infrastructure integrators, suppliers of equipment;

4) installers, maintainers.

At the time of publication of this European Standard, EN 50600 series will comprise the following standards:

– EN 50600-1: Information technology – Data centre facilities and infrastructures – Part 1: General concepts;

– EN 50600-2-1: Information technology – Data centre facilities and infrastructures – Part 2-1: Building construction;

– EN 50600-2-2: Information technology – Data centre facilities and infrastructures – Part 2-2: Power distribution;

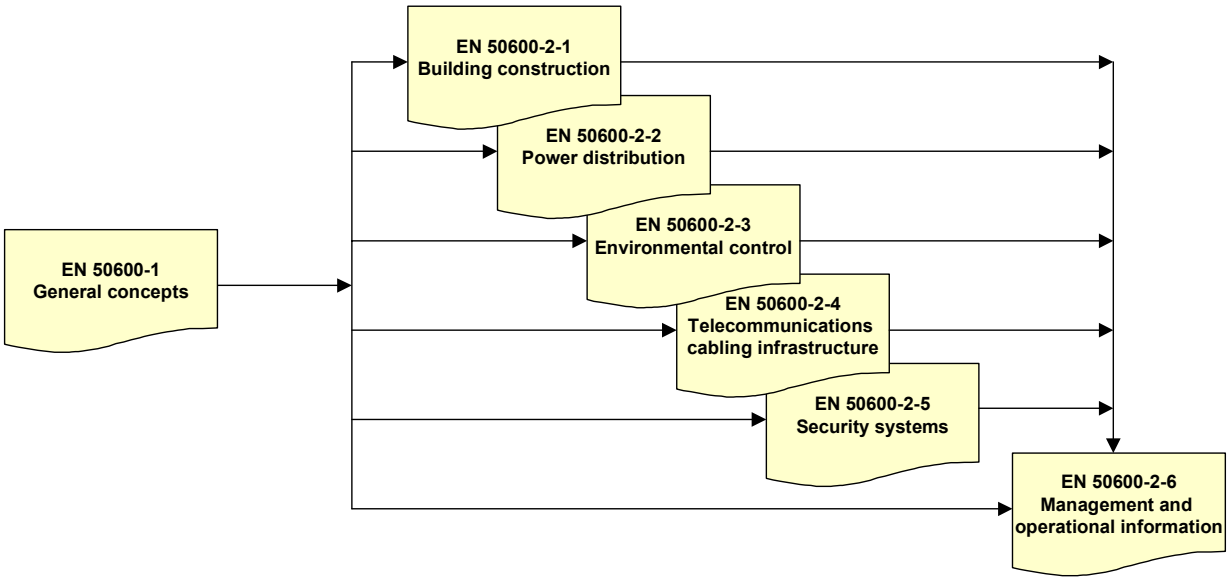
– EN 50600-2-3: Information technology – Data centre facilities and infrastructures – Part 2-3: Environmental control;

– EN 50600-2-4: Information technology – Data centre facilities and infrastructures – Part 2-4: Telecommunications cabling infrastructure;

– EN 50600-2-5: Information technology – Data centre facilities and infrastructures – Part 2-5: Security systems;

– EN 50600-2-6: Information technology – Data centre facilities and infrastructures – Part 2-6: Management and operational information.

The inter-relationship of the standards within the EN 50600 series is shown in Figure 1.



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112 **Figure 1 – Schematic relationship between the EN 50600 standards**

113 EN 50600-2-X standards specify requirements and recommendations for particular facilities and
114 infrastructures to support the relevant classification for “availability”, “physical security” and ‘energy
115 efficiency enablement” selected from EN 50600-1.

116 This European Standard addresses the building design of data centres; it addresses security issues from
117 a constructional point of view, whereas EN 50600-2-5 specifies the pertinent security system
118 requirements of those facilities and infrastructures (in accordance with the requirements of EN 50600-1).

119 This European Standard is intended for use by and collaboration between architects, building designers
120 and builders, system and installation designers.

121 This series of European Standards does not address the selection of information technology and network
122 telecommunications equipment, software and associated configuration issues.

1 Scope and conformance

1.1 Scope

A data centre's primary function typically is to house large quantities of computer and telecommunications hardware which affects the construction, operation, and physical security. Most of the data centres may impose special security requirements. Therefore, the planning of a data Centre by the designer and the various engineering disciplines that will assist in the planning and implementation of the design of the data centre i.e. electrical, mechanical, security, etc. shall be carried out in cooperation with the IT and telecommunications personnel, network professionals, the facilities manager, the IT end users, and any other personnel involved.

This European Standard specifies general aspects for the design and specification of a data centre as a physical facility. It focuses on the selection of an appropriate site and the general construction and architectural elements of a data centre building. Some reference will be made to related factors to be considered, as the purpose of the architectural elements and building technology systems of a data centre is to provide a physical envelope and an environment that meets the needs of the information and telecommunication technology and its users.

1.2 Conformance

For a data centre to conform to this European Standard:

a) its location shall have been selected following a site assessment as required in Clause 4;

b) it shall comply with the site requirements of Clause 5;

c) it shall meet the building construction requirements of Clause 6 in case the data centre is realised in a building;

d) it shall meet the building configuration requirements detailed in Clause 7;

e) it shall meet the fire protection requirements of Clause 8;

f) it shall meet the quality construction measures of Clause 9;

g) local regulations, including safety, shall be met.

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 1047-1:2005, *Secure storage units – Classification and methods of test for resistance to fire – Part 1: Data cabinets and diskette inserts*

EN 1627:2011, *Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Requirements and classification*

EN 12825:2001, *Raised access floors*

EN 15004-1, *Fixed firefighting systems – Gas extinguishing systems – Part 1: Design, installation and maintenance (ISO 14520-1)*

EN 50174-2, *Information technology – Cabling installation – Part 2: Installation planning and practices inside buildings*

EN 50174-2:2009/A1:2011+AC:2011, *Information technology – Cabling installation – Part 2: Installation planning and practices inside buildings*

FprEN 50600-1:2012 [1], *Information technology — Data centre facilities and infrastructures – Part 1: General concepts*

EN 50600-2-5 [2], *Information technology — Data centre facilities and infrastructures – Part 2-5: Security systems*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in FprEN 50600-1:2012 and the following apply.

3.1.1
access floor
system consisting of completely removable and interchangeable floor panels that are supported on adjustable pedestals, pedestals connected by stringers to allow access to the area beneath

3.1.2
access provider
operator of any facility that is used to convey telecommunications signals to and from a customer premises

3.1.3
cabinet
enclosed construction for housing closures and other information technology equipment

[SOURCE: EN 50174-1:2009, 3.1.4]

3.1.4
conduit
part of a closed wiring system of generally circular cross section for insulated conductors and/or cables in electrical or communication installations, allowing them to be drawn in and/or replaced

[SOURCE: IEC 60050-826:2004, 826-06-03, modified]

3.1.5
demarcation point
point where the operational control or ownership changes

3.1.6
pathway
defined route for different media between identified points

Note 1 to entry: Examples for media are bus bars, cables, conduits, ducts, pipes.

3.1.7
plenum
compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system

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1) To be published.

2) Under consideration.

3.1.8
information technology
telecommunications
branch of technology concerned with the transmission, emission and reception of signs, signals, writing, images and sounds; that is, information of any nature by cable, radio, optical or other electromagnetic systems

Note 1 to entry: The term telecommunications has no legal meaning when used in this document.

[SOURCE: EN 50173-1:2011, 3.1.43]

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply:

AC Alternating Current

DC Direct Current

EIA Environmental Impact Analysis

HVAC Heating, Ventilation, Air Conditioning

IT Information Technology

UPS Uninterruptible Power Supply

4 Location

4.1 Assessment of site

Selecting the site for a data centre can incorporate the search for an appropriate “green field” site for the construction of a new data centre or the evaluation of an existing building on a site for its suitability as a data centre. A number of factors shall be considered when selecting a site:

a) geographical location (see 4.2);
b) natural environment (see 4.3);
c) adjacencies (see 4.4);
d) infrastructural factors (see 4.5):
e) budgetary factors such as site costs and cost to bring utilities to the site (see 4.6).

Personnel factors (operational personnel, security personnel) are not covered in this clause.

4.2 Geographical location

Where data centres are to be constructed above 3 000 m, appropriate de-rating of power supply, power distribution and environmental control equipment shall be applied.

4.3 Natural environment

The data centre should be isolated from negative environmental influences, including but not limited to the following:

a) flooding (outside of 100-year flood hazard areas);
b) active seismic zones (no evidence of earthquakes greater than Richter Scale 3 for 5 years);