SEK Teknisk rapport 50600-99-2

Utgiven	Utgåva	Sida	Ansvarig kommitté
2019-09-18	2	1 (1+23)	SEK TK 215

Datahallsutrymmen och tillhörande system – Del 99-2: Vägledning för miljömässig hållbarhet

Information technology –
Data centre facilities and infrastructures –
Part 99-2: Recommended practices for environmental sustainability
(CENELEC Technical Report 50600-99-2:2019)

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Upplysningar om **sakinnehållet** i rapporten lämnas av
SEK Svensk Elstandard.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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TECHNISCHER BERICHT

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Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 99-2: Empfohlene Praktiken für die Umweltverträglichkeit

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

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European foreword

This document (CLC/TR 50600-99-2:2019) was prepared by the Technical Committee CENELEC TC 215, *Electrotechnical aspects of telecommunication equipment*.

This document supersedes CLC/TR 50600-99-2:2018.

CLC/TR 50600-99-2:2018 has been revised to include the following Environmental Sustainability practices, which were previously contained in CLC/TR 50600-99-1:2018, technically unchanged:

Practice in CLC/TR 50600-99-1 :2018	Practice in CLC/TR 50600-99-2 :2019	Topic
6.18.2	5.1	Life Cycle Assessment
5.18.3	5.4	Environmental Management
5.18.5	6.1.1	Sustainable energy usage
6.18.6	6.1.2	Alternative power generation technologies
6.18.64	6.2.4	Capture rain water
6.18.65	6.2.5	Other water sources
6.18.66	6.2.6	Metering of water consumption
5.18.2	7.1	Consider the embodied energy in devices

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

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

Regarding the structure of the EN 50600 series, see the Introduction.

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 economic 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) security level;

c) physical size;

d) 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 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, consultants, 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 Technical Report, EN 50600 series will comprise the following standards and documents:

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 50600-3-1, *Information technology — Data centre facilities and infrastructures — Part 3-1: Management and operational information.*

EN 50600-4-1, *Information technology — Data centre facilities and infrastructures — Part 4-1: Overview of and general requirements for key performance indicators*

EN 50600-4-2, *Information technology — Data centre facilities and infrastructures — Part 4-2: Power Usage Effectiveness*

EN 50600-4-3, *Information technology — Data centre facilities and infrastructures — Part 4-3: Renewable Energy Factor*

CLC/TR 50600-99-1, *Information technology — Data centre facilities and infrastructures — Part 99-1: Recommended practices for energy management*

CLC/TR 50600-99-2, Information technology — Data centre facilities and infrastructures — Part 99-2: Recommended practices for environmental sustainability

CLC/TR 50600-99-3, Information technology — Data centre facilities and infrastructures — Part 99-3: Guidance to the application of EN 50600 series

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

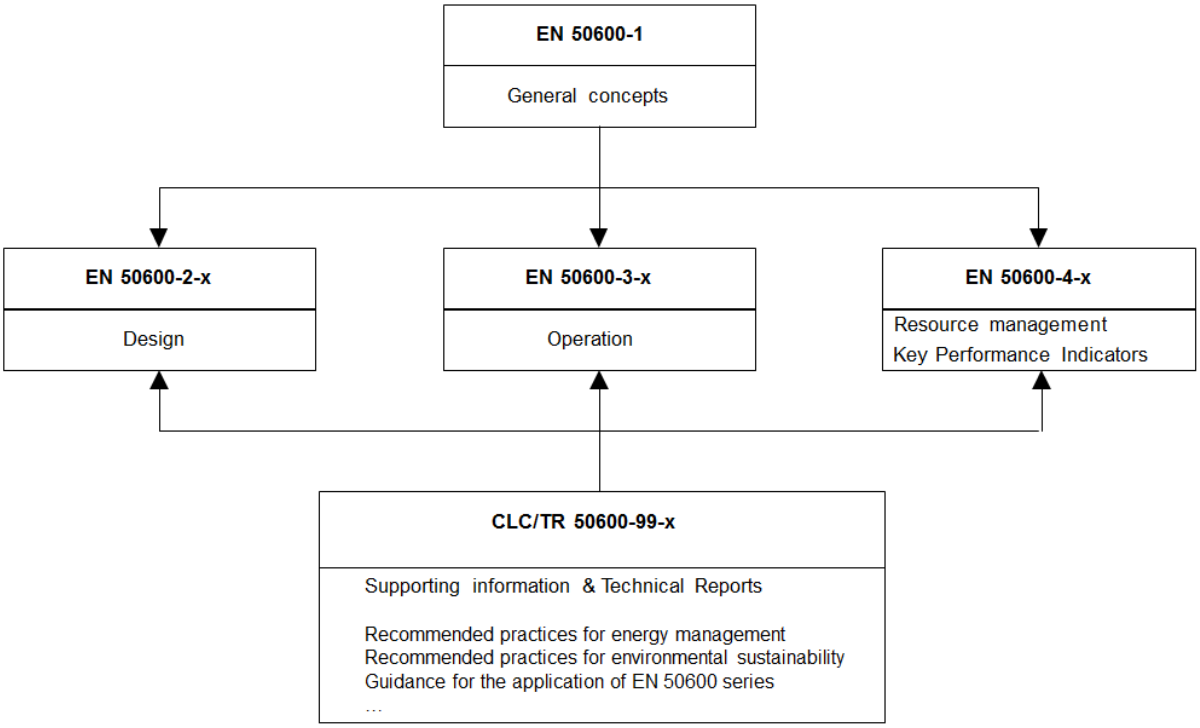

Figure 1 — Schematic relationship between the EN 50600 series of documents

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

EN 50600-3-X documents specify requirements and recommendations for data centre operations, processes and management.

EN 50600-4-X documents specify requirements and recommendations for key performance indicators (KPIs) used to assess and improve the resource usage efficiency and effectiveness, respectively, of a data centre.

This Technical Report is a compilation of recommended practices for improving the environmental sustainability of data centres.

This document considers that environmental sustainability of a data centre comprises three key areas:

— energy use;

— embodied impact of information and communication technology (ICT) equipment and mechanical and electrical systems;

— source energy mix of the above (i.e. amount of renewable content).

The recommended practices for improving the environmental sustainability of data centres relating to operational energy use of a data centre (i.e. reductions of energy consumption and/or improvements of energy efficiency, re-use of energy and use of renewable energy) are detailed in CLC/TR 50600-99-1.

However, any recommendations of CLC/TR 50600-99-1 that have applicability beyond energy management and concern environmental sustainability will be included in this document. The long-term objective is to avoid unintentional duplication of recommended practices in the two documents.

This document provides recommended practices to:

- assess and implement improvements to the environmental sustainability in data centres, by means of Life Cycle Assessment (LCA);
- assist the industry in taking steps towards more sustainable behaviour.

Customers or suppliers of information and communication technology (ICT) services possibly find it useful to request or provide a list of the practices of this Technical Report that are implemented in a data centre to assist in the procurement of services that meet their environmental or sustainability standards.

This Technical Report also acts as an education and reference document to assist data centre operators in identifying and implementing measures to improve the energy management of their data centres.

1 Scope

This document is a compilation of recommended practices for improving the environmental sustainability of both new and existing data centres. Environmental impacts consider not just those associated with electricity but also water usage and other pollutants.

It is recognized that the practices included are not universally applicable to all scales and business models of data centres or be undertaken by all parties involved in data centre operation, ownership or use.

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.

EN 50600 (all parts), *Information technology — Data centres facilities and infrastructures*

EN 50600-2-3, *Information technology — Data centre facilities and infrastructures — Part 2-3: Environmental control*

EN 50600-3-1, *Information technology — Data centre facilities and infrastructures — Part 3-1: Management and operational information*

EN 50600-4-3, *Information technology — Data centre facilities and infrastructures — Part 4-3: Renewable Energy Factor*