SEK Teknisk rapport 50600-99-1

Utgiven	Utgåva	Sida	Ansvarig kommitté
2018-10-17	2	1 (1+53)	SEK TK 215

Datahallsutrymmen och tillhörande system – Del 99-1: Vägledning för energihushållning

Information technology –
Data centre facilities and infrastructures –
Part 99-1: Recommended practices for energy management
(CENELEC Technical Report 50600-99-1:2018)

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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.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

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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TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/TR 50600-99-1

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Supersedes CLC/TR 50600-99-1:2017

English Version

Information technology - Data centre facilities and infrastructures - Part 99-1: Recommended practices for energy management

Technologies de l'information - Installations et infrastructures de centres de traitement de données - Partie 99-1 : Pratiques recommandées relatives à la gestion énergétique

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 99-1: Empfohlene Praktiken für das Energiemanagement

This Technical Report was approved by CENELEC on 2018-06-26.

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

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SEK Teknisk Rapport 50600-99-1, utg 2:2018

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European foreword

This document (CLC/TR 50600-99-1:2018) has been prepared by CLC/TC 215 “Electrotechnical aspects of telecommunication equipment” in conjunction with the Directorate-General Joint Research Centre (DG JRC) of the European Commission (EC).

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 supersedes CLC/TR 50600-99-1:2017.

CLC/TR 50600-99-1:2018 includes the following significant technical changes with respect to CLC/TR 50600-99-1:2017 which it supersedes:

— by updating to recently agreed energy management practices and aligns with the 2018 edition of the EU Code of Conduct for data centres Best Practices document.

This document aligns with the Best Practices document of the Code of Conduct for Data Centre Energy Efficiency (CoC) scheme operated by the DG JRC and continues to be prepared by data centre experts from operators, vendors, consultants, academics, professional and national bodies.

The publication of this Technical Report is intended to integrate recommended Practices of energy management into the EN 50600 series developed by CLC/TC 215 and also to widen accessibility and increase participation in the CoC scheme by ensuring translation of the Best Practices into multiple languages.

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*.

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

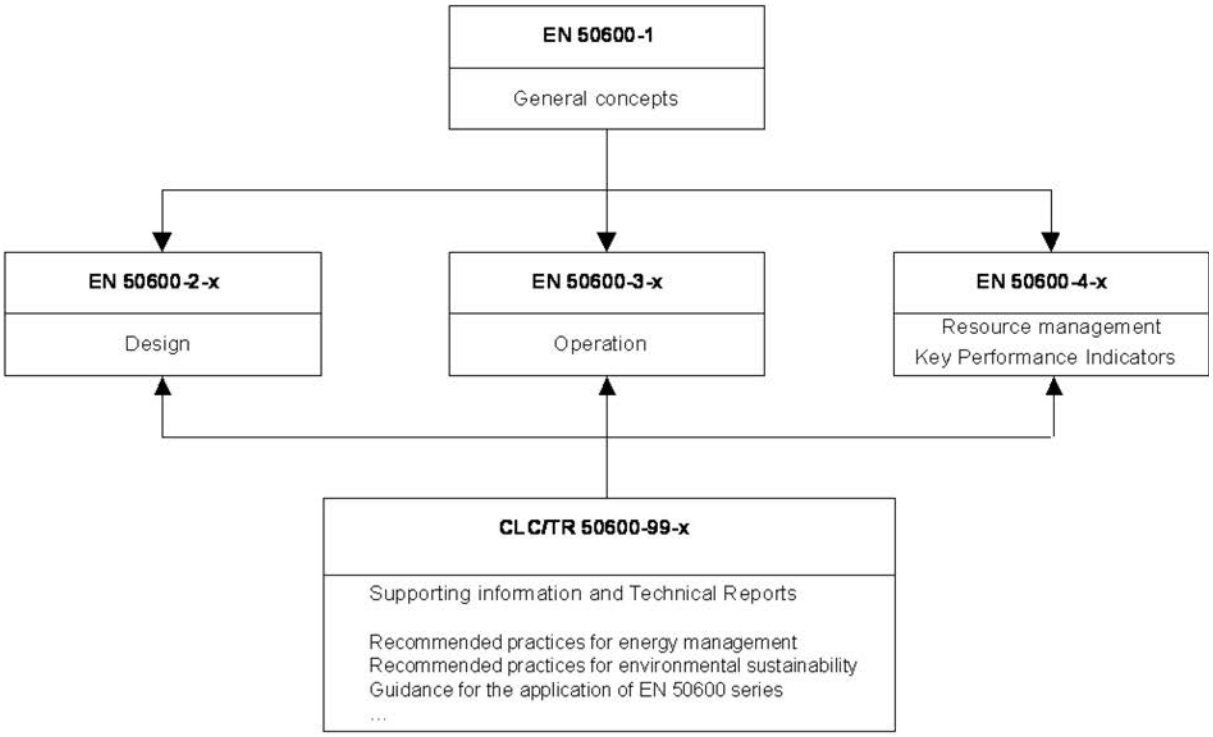

Figure 1 — Schematic relationship between the EN 50600 series of documents

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.

The Directorate-General Joint Research Centre (DG JRC) of the European Commission operates a Code of Conduct for Data Centre Energy Efficiency (CoC) scheme. In support of the scheme, a “best practices” document has been established by DG JRC. To enhance the visibility, these Best Practices have been converted in this Technical Report to create recommended Practices for improving the energy management (i.e. reduction of energy consumption and/or increases in energy efficiency) of data centres.

The areas addressed are:

— physical building;

— mechanical and electrical equipment;

— computer room;

— cabinets/racks;

— ICT equipment;

— operating systems;

— virtualization;

— software;

— business practices.

The Practices are separated into Expected Practices as referenced in the CoC (see Clause 5) and other Practices which can be employed as optional or alternative solutions in particular cases (see Clause 6). Practices under consideration for the next or future revision/amendment of this Technical Report are included in Clause 7. During the maintenance of this Technical Report, the Practices of Clauses 6 and 7 might be augmented and others might migrate into Clause 5.

The Practices listed in Clauses 5, 6 and 7 are referenced as x.18.yyy where x is the clause number, 18 refers to the 2018 publication of this document and yyy is a sequential number starting within each clause. Also included is the CoC BP reference (as used in 2017) in order to provide an audit trail. Future versions of this document will use these references to track changes in the Practices, provide a historic record and to simplify translation of the document.

Customers or suppliers of information and communication technology (ICT) services might also 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 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;

— provides a common terminology and frame of reference for describing an energy management practice, avoiding doubt or confusion over terminology.

1 Scope

This document is a compilation of recommended Practices for improving the energy management (i.e. reduction of energy consumption and/or increases in energy efficiency) of data centres. It is aligned with the EU Code of Conduct for Data Centre Energy Efficiency (CoC) scheme operated by the Directorate-General Joint Research Centre (DG JRC) of the European Commission (EC).

It is recognized that the Practices included might not be 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 50600-1:2012, *Information technology — Data centre facilities and infrastructures — Part 1: General concepts*

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