PD CLC/TR 50600-99-2:2018

BSI Standards Publication

Information technology - Data centre facilities and infrastructures

Part 99-2: Recommended practices for environmental sustainability

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee TCT/7, Telecommunications - Installation requirements.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Published by BSI Standards Limited 2018

ISBN 978 0 539 00018 4

ICS 35.020; 35.160; 35.110

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 August 2018.

Amendments/corrigenda issued since publication

Date	Text affected

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TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/TR 50600-99-2

August 2018

ICS 35.020; 35.110; 35.160

English Version

Information technology - Data centre facilities and infrastructures - Part 99-2: Recommended practices for environmental sustainability

Technologies de l'information - Installations et infrastructures des centres de traitement de données - Partie 99-2 : Pratiques recommandées en faveur de la durabilité environnementale

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 99-2: Empfohlene Praktiken für umweltbezogene Nachhaltigkeit

This Technical Report was approved by CENELEC on 2018-07-09.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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Ref. No. CLC/TR 50600-99-2:2018 E

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Contents Page

European foreword 3
Introduction 4
1 Scope 7
2 Normative references 7
3 Terms, definitions and abbreviations 7
3.1 Terms and definitions 7
3.2 Abbreviations 8
4 Environmental sustainability 9
4.1 General 9
4.2 Life cycle assessment 9
4.3 Data centre boundaries 10
5 Recommended practices for processes 11
6 Recommended practices for source energy mix 13
6.1 General 13
6.2 New facilities 14
6.3 Existing facilities 15
7 Recommended practices for embodied impact of ICT equipment 16
8 Recommended practices for embodied impact of mechanical and electrical systems 19
8.1 New facilities 19
8.2 Existing facilities 20
Annex A (informative) Examples of simplified LCA metrics 21
A.1 Direct Material Input of a Data Centre (DC-DMI) 21
A.2 Data Centre Cumulative Energy Demand (DC-CED) 21
A.3 Data Centre Carbon Footprint (DC-CF) 22
A.4 Support, data and further information 22
Bibliography 23

Documents
Document Sharing Hub

Full document details: PD CLC/TR 50600-99-2:2018

European foreword

This document (CLC/TR 50600-99-2:2018) was prepared by the Technical Committee CENELEC TC 215, *Electrotechnical aspects of telecommunication equipment*.

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.

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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;*

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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.

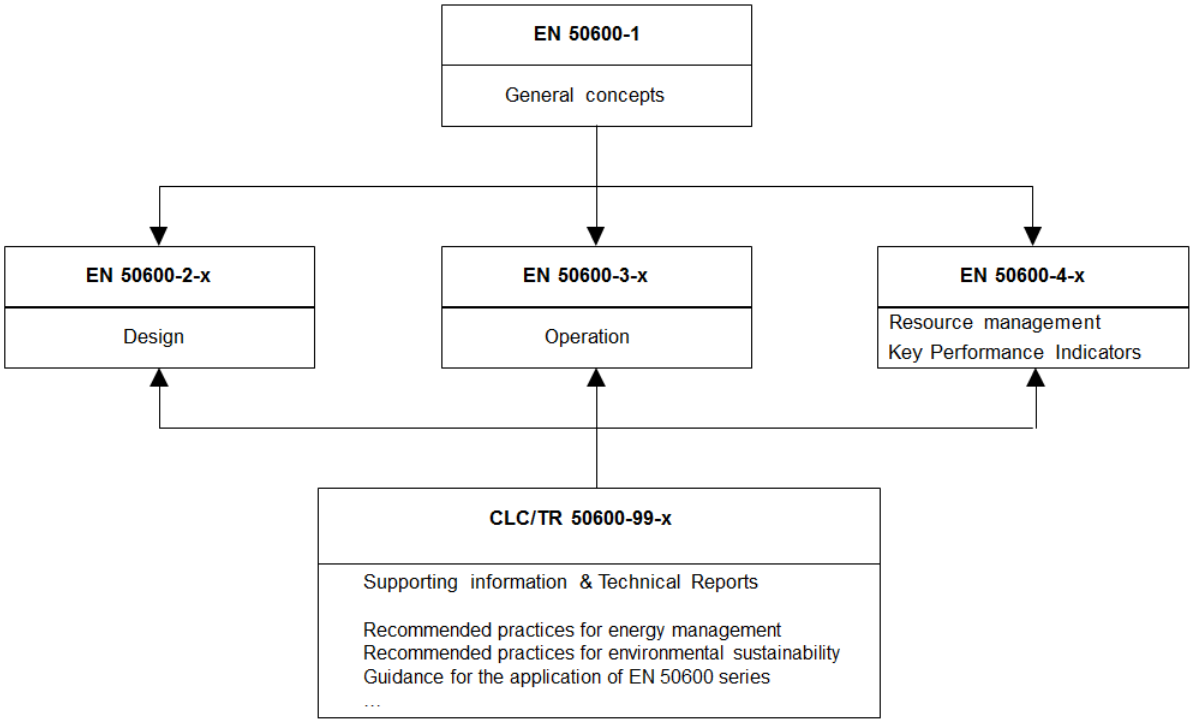

Figure 1 — Schematic relationship between the EN 50600 series of documents

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.

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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.

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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 recognised 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*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at **http://www.electropedia.org/**
- ISO Online browsing platform: available at **http://www.iso.org/obp**

3.1.1
embodied impact
environmental impact caused pre- and post-use, including during manufacture and disposal

3.1.2
energy efficiency
measure of the work done (as a result of design and/or operational procedures) for a given amount of energy consumed

[SOURCE: CLC/TR 50600-99-1:2018, 3.1.12]

3.1.3
energy management
combination of reduced energy consumption and increased energy efficiency, re-use of energy and use of renewable energy

Note 1 to entry: See also EN 50600-3-1 for another definition of energy management.

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