
**Information technology — Data
centres — Impact of the ISO 52000
series on energy performance of
buildings**

*Technologies de l'information — Centres de données — Impact de la
série ISO 52000 sur la performance énergétique des bâtiments*





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Foreword

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 39, *Sustainability, IT and data centres*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

It is recognized that no “free” energy exists, even if certain processes or technical solutions are implemented in data centres, whose names can potentially suggest that energy is free (e.g. renewable energy, “free” cooling with air or water, geo-cooling, etc.).

In particular:

- even if the cost of certain renewable energy sources is low compared to non-renewable sources, there are still costs associated with the use or implementation of renewable energies such as transport and/or storage;
- some energy-efficient solutions implemented in data centres can also have other capital and operational energy costs;
- the remaining energy going out of a subsystem of a data centre, if not evaluated inside or outside the data centre boundary, is lost; every effort in order to minimize these losses results in improved energy efficiency of the data centre.

Regulatory frameworks exist (for example, in the European Union) which request primary energy assessment and that the energy consumption of computer rooms included in commercial or residential buildings can be assessed within primary energy as part of the overall energy consumption for these types of buildings.

The common objective of the key performance indicators (KPI) specified in the ISO/IEC 30134 series is the efficient or effective use or utilization of energy and other resources.

The ISO 52000 series defines methods and tools to assess the energy performance of buildings (EPB), routing and energy balance, together with greenhouse gas emissions.

These methods and tools are to be used (when mandatory) for mixed use buildings that include a data centre or server room in their premises. They can also be used in the case of stand-alone data centres.

Information technology — Data centres — Impact of the ISO 52000 series on energy performance of buildings

1 Scope

This document proposes elements for the expression of energy production, storage, reuse and consumption in reference to primary energy in data centres, taking into account both the elements needed for energy assessment and the concepts developed in the framework of the ISO 52000 series for energy performance of buildings (EPB).

This document:

- provides the main definitions and concepts from the ISO 52000 series needed to make a primary energy assessment for data centres;
- provides approaches for discriminating true sources of energy used by a given data centre;
- compares, where relevant, the terms used in both the ISO/IEC 30134 series and ISO 52000 series and provides explanations on the use of factors for converting final or delivered energy to primary energy which take a different approach in each series (and how to move from one to the other);
- illustrates the impact of using the EPB approach on data-centre-energy-related key performance indicators (KPIs), both in general and by the provision of examples;
- provides known sources of weighting or conversion factors to be used when there are no recognized or agreed local factors applicable to the studied data centre energy performance assessment.

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.

ISO/IEC 30134 (all parts), *Information technology — Data centres key performance indicators*

ISO/IEC 22237 (all parts), *Information technology — Data centre facilities and infrastructures*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in the ISO/IEC 30134 series and the ISO/IEC 22237 series and the following apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1.1

assessment boundary

boundary where the delivered and exported energy are measured or calculated

[SOURCE: ISO 52000-1:2017, 3.4.2]