

**SS 564 : Part 1 : ~~2013~~
2020**

(ICS 13.020.10; 33.020; 35.020)

SINGAPORE STANDARD

~~Green~~ Sustainable data centres

– Part 1 : Energy and environmental management systems

Published by



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Aurecon Singapore (Pte.) Ltd
Building and Construction Authority
DSCO Group Pte Ltd
Hewlett-Packard Asia Pacific Pte Ltd
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Foreword

This Singapore Standard was prepared by the ~~Green Data Centre Standards Working Group of the Green IT~~ Technical Committee on Green Information Technology under the purview of ITSC.

SS 564 was developed to help data centres improve their sustainability, thereby enhancing their competitiveness.

SS 564 comprises the following two parts under the ~~IT Standards Committee~~ general title,

'Sustainable data centres': Part 1: Energy and environmental management systems

Part 2: Guidance for energy and environmental management systems

Part 1 This standard is a revision of ~~the 2010 edition of SS 564 which was modelled after a draft of the international~~ : Part 1 : 2013 to align the standard to the requirements of the latest ISO 50001 on energy management. ~~This revision~~ and other related ISO standards on other sustainability indicators, and to incorporate additional feedback from users. The list of recommended indicators has ~~sought to align the requirements of SS 564 with the published ISO 50001.~~ also been updated.

While ISO 50001 is a generic standard for organisations to manage their energy use, SS 564 has been developed specifically for data centres. The alignment of the standards will reduce duplicated efforts for organisations seeking compliance to both standards.

~~This revision also incorporated relevant feedback and findings from the users of SS 564 : 2010. The recommended metrics have been updated, e.g. environmental metrics have been introduced in the revised edition to reflect the impact of data centre operations. In addition, a set of energy distribution factor metrics has been suggested for the data centres to track other significant energy usages apart from ICT equipment.~~

~~A guidance document will also be developed to help users implement energy and environmental management systems. With the development of this guidance document, SS 564 will now comprise the following two parts under the general title, 'Singapore Standard for green data centres':~~

~~Part 1: Energy and environmental management systems~~

~~Part 2: Guidance for energy and environmental management systems~~

~~SS 564 was developed to help data centres reduce energy consumption and operating costs, thereby enhancing their competitiveness. The standard provides guidelines~~ specifies requirements for organisations to establish the policies, systems and processes necessary to improve the ~~energy efficiency~~ sustainability of their data centres and ~~to lessen the~~ their impact on the environment.

~~SS 564 : Part 1~~ It comprises three key ~~components~~ parts:

- (i) A certifiable, management system which provides data centres with a recognised framework as well as a logical and consistent methodology to achieve ~~energy efficiency~~ sustainability and continuous improvement in this area. The standard ~~also addresses significant environmental impact if applicable. It~~ is modelled after established international management system standards, and is based on the Plan-Do-Check-Act continual improvement framework.
- (ii) Recommended ~~metrics~~ indicators for data centres to measure and track their ~~performance in energy efficiency and environmental impact (if applicable)~~, sustainability and identify potential areas for improvement.

- (iii) A set of best practices covering ~~the management of mechanical and electrical systems, IT cooling, data centre power equipment and data centre design~~ other equipment, ICT equipment and services, and data centre building and monitoring / measurement practices, which data centres can ~~choose to adopt~~, depending on their needs and requirements. The best practices are technology dependent and will be reviewed and updated as part of the maintenance cycle of the standard.

Part 2 is a revision of SS 564 : Part 2 ~~offers guidelines to help users adopt~~ : 2013. It provides explanations and ~~meet~~ advice on how to implement the requirements ~~in~~ of the revised Part 1. ~~It is~~ Where relevant, examples are given for illustration. It will serve as a guide, but will not ~~intended to be~~ part of the certifiable requirements for a ~~green~~ sustainable data centre under SS 564.

This standard is expected to be used by data centre operators, consultants, vendors and certification bodies.

The following sections of this standard have been adapted and reproduced with permission from the organisations ~~given~~ below:

- ~~Clause 5~~ Clauses 4 to 10
-- ~~ISO 50001:2011~~ : 2018 – *Energy management systems – Requirements with guidance for use* – International Organization for Standardization

- Annexes A to E
 - *Self-benchmarking guide for data centres: Metrics, benchmarks, actions*, July 2009 – Lawrence Berkeley National Laboratory
 - ~~2010~~2018 ~~Best-practices~~ *Practice Guidelines for the European Union EU Code of Conduct on Data-centres (Centre Energy Efficiency Version-2 9.1.0-0)*, November 2009, 2018, by Mark Acton, Paolo Bertoldi, John Booth, Liam ~~Newcome~~ Newcombe, Andre Rouyer and ~~Anson Wu~~ Robert Tozer – the Joint Research Centre (JRC), European Commission ~~DG~~ JRC

~~— Green Data Centre Design Best Practices, Version 0.1, September 2009 – IBM Global Services~~

In preparing this standard, reference was also made to the following documents:

- *ISO/IEC 30134-2 Information technology – Data centres – Key performance indicators – Part 2: Power usage effectiveness (PUE)*
- *ISO/IEC 30134-3 Information technology – Data centres – Key performance indicators – Part 3: Renewable energy factor (REF)*
- *ISO 14001:2004 : 2015 Environmental management systems – Requirements with guidance for use*
- *SS 577 : 2012 Water efficiency management systems – Requirements with guidance for use*
- *The Green Grid 2011 white paper #35 Water Usage Effectiveness (WUE™): a green grid data centre sustainability metric*
- *Carbon Usage Effectiveness (CUE): A Green Grid Data Centre Sustainability Metric*, December 2010
- *High-Performance Buildings for High-Tech Industries – Data Centres website (<http://hightech.lbl.gov/datacenters/datacentres.html>)*, Lawrence Berkeley National Laboratory

~~• *The Green Grid Data Centre Power Efficiency Metrics: PUE and DCiE*, October 2007 – The Green Grid~~

~~• *Carbon Usage Effectiveness (CUE): A Green Grid Data Center Sustainability Metric*, December 2010 – The Green Grid~~

~~• *Electronics Disposal Efficiency: An IT Recycling Metric for Enterprises and Data Centers*, March 2012 – The Green Grid~~