

SS 664 : 2020
(ICS 27.015; 71.100.20)

SINGAPORE STANDARD

**Code of practice for long-term measurement of
compressed air system energy efficiency**



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The content of this Singapore Standard was approved on 27 October 2020 by the Environment and Resources Standards Committee (ERSC) under the purview of the Singapore Standards Council.

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Emerson Automation Solutions
G-Energy Global Pte Ltd
Ingersoll Rand Singapore Enterprises Pte Ltd
LJ Energy Pte Ltd
MSD International GmbH
Nanyang Technological University

*National Environment Agency
National University of Singapore
The Institution of Engineers, Singapore
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Foreword

This Singapore Standard was prepared by the Working Group on Long-term Measurement of Compressed Air System Energy Efficiency set up by the Technical Committee on Energy under the purview of ERSC.

The standard aims to promote a systematic approach in measuring the energy efficiency of compressed air systems. Establishing a standardised measurement methodology will encourage the adoption and development of more energy efficient industrial equipment and systems in Singapore.

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

ISO 5725-1:1994	Accuracy (trueness and precision) of measurement methods and results – Part 1: General principles and definitions
ISO 11011:2013	Compressed air – Energy efficiency – Assessment
ISO 50001:2018	Energy management systems – Requirements with guidance for use
SS 591:2013	Code of practice for long term measurement of central chilled water system energy efficiency (incorporating Corrigendum No.1)

Permission has been sought from ISO to reproduce the definition for “Accuracy” from ISO 5725-1:1994, “Compressed air system” from ISO 11011:2013, and “Energy consumption” and “Energy performance” (without notes to entry) from ISO 50001:2018.

Acknowledgement is made for the use of information from the above publications.

This standard is expected to be used by industrial facilities with compressed air systems, contractors, energy services companies, equipment manufacturers and suppliers, and system designers.

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

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- 1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as “Mature Standards”. Mature Standards will not be subject to further review, unless there are requests to review such standards.*
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Code of practice for long-term measurement of compressed air system energy efficiency

1 Scope

This standard specifies the requirements and recommendations for instrumentation to capture relevant process parameters, their installation, commissioning, operational monitoring and maintenance in order to perform continuous and long-term measurement of compressed air system energy efficiency.

This standard also:

- a) specifies the acceptable uncertainty levels for continuous measurements for the proper efficiency rating of the compressed air system and equipment;
- b) specifies the parameters and performance indicators for continuous measurements; and
- c) gives guidelines on the development of useful formats for data collection and presentation.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61869-2	Instrument transformers – Part 2: Additional requirements for current transformers
IEC 61869-3	Instrument transformers – Part 3: Additional requirements for inductive voltage transformers
IEC 61869-5	Instrument transformers – Part 5 Additional requirements for capacitor voltage transformers
IEC 62053-22	Electricity metering equipment - Particular requirements - Part 22: Static meters for AC active energy (classes 0,1S, 0,2S and 0,5S)
ISO 10790:2015	Measurement of fluid flow in closed conduits – Guidance to the selection, installation and use of Coriolis flowmeters (mass flow, density and volume flow measurements)
ISO 14511:2019	Measurement of fluid flow in closed conduits – Thermal mass flowmeters