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Gas turbine applications — Requirements for power generation

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 192, *Gas turbines*.

Introduction

This International Standard provides technical information to be used for the procurement of gas turbines and the associated gas turbine systems for power generation by a Purchaser from a Contractor.

It provides a basis for the submission of tenders in line with the different environmental and safety requirements. It also specifies, wherever possible, criteria to establish whether these are met.

It defines a standard framework for dealing with questions of fuel and other matters, such as the minimum information to be provided by both the Purchaser and the Contractor. It does not, however, purport to include all necessary information for a contract and each gas turbine installation should be considered in its entirety. Attention is drawn to the need for technical consultation between the Purchaser and the Contractor to ensure compatibility of equipment being supplied, particularly where the responsibility for supply may be divided.

Because of the very widely varying operating modes for gas turbines in practice, distinct categories of operating modes are specified with which a “standard” rating can be associated. These ratings are made on the basis of the ISO standard ambient reference conditions.

Gas turbine applications — Requirements for power generation

1 Scope

This International Standard specifies the minimum technical and documentation requirements for the evaluation and procurement of gas turbine systems for electrical power generation.

It applies to simple cycle and combined cycle gas turbines for both onshore and offshore applications, where applicable. It also applies to gas turbines used in cogeneration (see ISO 11086:1996, Annex B). Testing of the gas turbine in combination with a generator is included in the scope.

It is not applicable to gas turbines used for all types of propulsion including aircraft, mobile barges, floating production vessels and marine propulsion applications and microturbines.

This International Standard defines the requirements for gas turbine power generation from an international perspective based on the content of existing, recognized ISO and IEC standards to the greatest extent practical. Nonetheless, it is recognized that within the industry other codes or standards are used, some of which are included in the text of this International Standard. The use of other such codes and standards is permissible provided an appropriate and acceptable level of requirements, functional design and safety is achieved and agreement has been reached for their use between the Purchaser and Contractor and such use is suitably documented.

Consideration should be given to applying/using standards in the following hierarchical order: international; regional; national; local.

This International Standard identifies the requirements for both the Purchaser and Contractor attributable to the design and procurement of a gas turbine power generation package.

The defined requirements apply to the scope of supply, except where excluded, encompassing the following equipment and the associated selected options, located within the power generation package, (see 3.14), listed below:

— gas turbine package;

— load shaft coupling and clutch, as applicable;

— air inlet system;

— exhaust system;

— fuel equipment;

— control equipment;

— electrical equipment;

— additional auxiliary systems, including starting, lubrication, barring, compressor wash, pipework, drains and vents;

— fire and gas protection;

— cooling water equipment.

Where applicable to the integrity of the gas turbine package, the interface and applicable design requirements are included for equipment, utilities and supplies that interface with the power generation package.

The following equipment is excluded from the scope of supply, but references are included where required for interface or performance measurement:

— generator and auxiliary systems, except the module control option;

— steam turbine and auxiliary systems;

— equipment external to the power generation package.

Data sheets in Annex A of this International Standard are provided for defining requirements and exchanging information between the Purchaser and the Contractor.

The Purchaser fills in the data sheets for the tender and forwards them to the Contractor. The Contractor responds by completing the applicable data sheets for their tender.

Annex A identifies the different types of data sheets and how they are to be used.

Where the Contractor does not comply with a selected requirement of this International Standard, this is detailed as an exception, referencing the applicable clause and describing the deviation and any alternatives available in a document listing all the exceptions taken.

Where the text in this International Standard requests procedures and operating, maintenance and commissioning manual information or equipment that would require the disclosure/supply of proprietary information/equipment which the Contractor is not prepared to release, such exceptions are listed. Where this situation exists, the Contractor will be prepared to release appropriate personnel and equipment to undertake all the tasks that otherwise would be undertaken by the Purchaser.

A bullet ● at the beginning of a paragraph in the text of this International Standard indicates an optional requirement (see A.3).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 128-1, *Technical drawings — General principles of presentation — Part 1: Introduction and index*

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

ISO 1940-1:2003, *Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances*

ISO 2314:2009, *Gas turbines — Acceptance tests*

ISO 2409, *Paints and varnishes — Cross-cut test*

ISO 2533, *Standard Atmosphere*

ISO 2592, *Determination of flash and fire points — Cleveland open cup method*

ISO 2909, *Petroleum products — Calculation of viscosity index from kinematic viscosity*

ISO 2954, *Mechanical vibration of rotating and reciprocating machinery — Requirements for instruments for measuring vibration severity*

ISO 3016, *Petroleum products — Determination of pour point*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3448, *Industrial liquid lubricants — ISO viscosity classification*

