

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Steam turbines –
Part 1: Specifications**

**Turbines à vapeur –
Partie 1: Spécifications**





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CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references	10
3 Terms and definitions	11
3.1 Turbine types.....	11
3.2 Methods of initial steam admission.....	13
3.3 Interfaces and terminal conditions.....	13
3.4 Speeds	16
3.5 Powers	17
3.6 Steam flow rate and steam rate.....	18
3.7 Heat rates	18
3.9 Operational regimes (modes).....	19
3.10 Methods of load variation	19
3.11 Operational life	20
3.12 Control and protection.....	20
4 Guarantees.....	21
4.1 General.....	21
4.2 Thermal performance guarantees	21
4.2.1 Performance codes.....	21
4.2.2 Turbine plant thermal efficiency or heat rate or steam rate	21
4.2.3 Output or steam flow capacity.....	22
4.2.4 Auxiliary plant power	22
4.2.5 Steam tables	22
4.2.6 Tolerances	22
4.2.7 Ageing	23
5 Product safety	23
5.1 General.....	23
5.2 Risk assessment.....	23
5.2.1 General	23
5.2.2 Limits of the assessments.....	23
5.2.3 Definition of hazards to be considered	24
5.2.4 Hazard identification	24
5.2.5 Risk estimation	24
5.3 Risk reduction.....	25
5.4 Interface descriptions.....	25
5.5 Documentation.....	26
6 Operation and maintenance	26
6.1 Normal operation	26
6.1.1 General	26
6.1.2 Start-up categories	26
6.1.3 Specification of load collective.....	26
6.1.4 Start-up time.....	27
6.1.5 Steam generator characteristics	27
6.1.6 Expected load operation	27
6.1.7 Turbine by-pass system.....	28

6.1.8	Auxiliary steam	28
6.2	Limits of variation of parameters from rated conditions	28
6.2.1	General	28
6.2.2	Initial pressure	29
6.2.3	Initial and, where applicable, reheat temperature	29
6.2.4	Turbine exhaust pressure/temperature	31
6.2.5	Speed	32
6.3	Abnormal operation	32
6.3.1	Cases	32
6.3.2	Limitations from abnormal turbine operation	32
6.3.3	Boundary conditions at abnormal turbine operation	32
6.4	Installation conditions	33
6.4.1	Indoor/outdoor	33
6.4.2	Seismic condition	33
6.5	Maintenance	33
6.6	Operating instructions	33
7	Components	34
7.1	Materials, construction and design	34
7.2	Parts subject to high temperatures	34
7.2.1	Unstressed parts	34
7.2.2	Stressed parts	34
7.3	Casings and pedestals	34
7.4	Rotors	34
7.4.1	Balancing	34
7.4.2	Critical speeds	34
7.4.3	Overspeed	35
7.4.4	Short-circuit and other abnormal torque loads	35
7.4.5	Shaft train	35
7.5	Valves	36
7.6	Main bearings and housings	36
7.7	Cylinder and interstage glands	36
7.8	Thermal insulation	36
7.9	Welding	36
8	Foundations and buildings	37
9	Extractions, bleeds and exhausts	37
9.1	General	37
9.2	Requirements on steam parameters and volume flow	38
9.3	Design of steam outlets	38
9.4	Limits of supply	38
9.5	Boundary conditions for guarantees	39
9.6	Protection devices against backflow of water and steam	39
9.6.1	Water ingress from the feedwater heating system or other condensation systems	39
9.6.2	Preventing steam backflow to steam turbine to avoid overspeed	40
9.6.3	Unwanted steam from cold reheat system	40
10	Turbine auxiliary systems	41
10.1	General	41
10.2	Lubricating oil	41
10.3	Control fluid	42

10.4	Sealing system for rotor and valve glands	42
10.5	Drains	42
10.6	Vents	42
10.7	Turning gear	43
10.8	Piping	43
11	Automation	43
11.1	General.....	43
11.2	General requirements in relation to the steam turbine automation system	43
11.2.1	Environmental conditions.....	43
11.2.2	Electromagnetic compatibility	44
11.2.3	Requirements as to hardware and software design	44
11.2.4	Tests of the steam turbine automation system	45
11.3	Turbine Control System (TCS)	46
11.3.1	General	46
11.3.2	Functional requirements as to governing system.....	46
11.3.3	Speed and load adjustments.....	47
11.3.4	Controller characteristics	47
11.3.5	Performance characteristics	47
11.3.6	Valve testing control	48
11.3.7	Facilities	48
11.3.8	Control functions for auxiliary systems.....	48
11.3.9	Monitoring functions and/or informative messages.....	49
11.4	Steam turbine protection	49
11.4.1	Functional requirements for protection.....	49
11.4.2	Requirements as to the design of the protection system	51
11.5	Instrumentation	52
11.5.1	General	52
11.5.2	Standard instruments.....	52
11.5.3	Turbine supervisory instrumentation (TSI)	52
11.5.4	Additional instruments	53
11.5.5	Test measuring points	53
12	Other devices for protection of the turbine and of interfacing systems	54
12.1	Low-pressure casing and condenser pressurization	54
12.2	Valve casing pressurization	54
13	Vibration.....	54
13.1	General.....	54
13.2	Vibration measured at the bearing housing	54
13.3	Vibration measured at the shaft	54
14	Noise.....	54
14.1	General.....	54
14.2	Noise emitted by the steam turbine	55
14.3	Noise level in the vicinity of the turbine unit	55
15	Tests	55
15.1	General.....	55
15.2	Testing of pressurized components.....	55
15.3	Performance tests.....	55
15.4	Test results and data	56
16	Delivery and installation.....	56

16.1	Transport to site and temporary protection	56
16.2	Erection and commissioning	56
17	Design information to be supplied by the purchaser	56
17.1	General.....	56
17.2	Characteristics of the turbine and its accessories.....	56
17.3	Steam and water conditions	57
17.4	Conditions for condensers and coolers (where this equipment is within the supplier's scope of supply).....	58
17.5	Information on regenerative feedwater heating.....	58
17.6	Applications: installation and mode of operation.....	59
17.7	Foundations	60
17.8	Terminal points	60
17.9	Delivery site conditions	60
17.10	Tests	61
17.11	Automation system	61
17.12	Documentation.....	61
17.13	Quality measures	61
17.14	Participation in risk assessment.....	61
18	Design information to be provided by the supplier.....	61
18.1	General.....	61
18.2	Piping	62
18.3	Thermal expansion	62
18.4	Information on regenerative feedwater heating.....	62
18.5	Pipe connections	62
18.6	Time schedule	62
18.7	Auxiliary media and electrical supply	62
18.8	Turbine foundations	62
18.9	Instrumentation and control.....	63
18.10	Heat emissions	63
Annex A (informative)	Welding of stationary components of steam turbines	64
A.1	General.....	64
A.2	Principles for design, qualification and execution of welding	64
A.3	Welding supervision, welding personnel.....	66
A.4	Testing	67
A.5	Documentation.....	67
Bibliography	68
Figure 1	– Condensing steam turbine interfaces	14
Figure 2	– Extraction steam turbine interfaces	14
Figure 3	– Single shaft combined cycle with multi casing steam turbine interfaces	15
Table 1	– Permissible variations for rated pressure.....	29
Table 2	– Permissible temperature variations for rated temperature up to 566 °C	30
Table 3	– Permissible temperature variations for rated temperature higher than 566 °C up to 630 °C	31
Table 4	– Environment classes	43
Table 5	– Controller droop and dead band characteristics.....	47

Table 6 – Maximum load non-linearity and load stability.....	48
Table A.1 – Correlation between function and foreseeable risk potential and manufacturer's quality requirements according to ISO 3834	65
Table A.2 – Correlation of structural integrity and quality levels	65
Table A.3 – Qualification of welding procedures (WPQR) for processes 111, 14, 12, 13, 15, 51 (electron beam welding), 52 (laser welding)	66

INTERNATIONAL ELECTROTECHNICAL COMMISSION

STEAM TURBINES –**Part 1: Specifications****FOREWORD**

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International Standard IEC 60045-1 has been prepared by IEC technical committee 5: Steam turbines.

This second edition cancels and replaces the first edition published in 1991. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Scope clarification and boundaries of applicability;
- b) general update to state-of-the-art technology;
- c) integration of product safety: Clause 5;
- d) integration of automation, incorporating the former annex on electronic governors: Clause 11;
- e) Informative Annex A on welding added.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
5/231/FDIS	5/232/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60045 series, published under the general title *Steam turbines*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The first edition of IEC 60045 was issued in 1931. Subsequent revisions were made, the last being in 1991. In daily practice this document has added tremendous value throughout the years giving guidance in the tendering processes for steam turbines worldwide. Intensive development has resulted in new specific application requirements, the availability of more highly rated turbines, and tremendous advances in automation and control. The new revision of this document was consequently driven by the motivation to close the gap to available technology and a wish to provide a single standard valid for a wide range of industrial and utility steam turbine applications.

Specifically, in the beginning of the 21st century renewable energy sources are rapidly taking shares on the electricity market and steam turbines play an important role in the shift of energy systems:

- They are key components for new power plant concepts as for concentrated solar power (CSP), for geothermal power or in combined heat and power applications;
- They are requested to provide flexible thermal backup power generation with high efficiency (combined cycle) to compensate the increased volatility of the electrical grids;
- Higher steam parameters are technically viable and contribute to more efficient utilisation of energy sources and investments.

In the area of automation and controls the integration of relevant safety standards was necessary and a complete new Clause 5 is dedicated to this. Also, automation itself has formed its own Clause 11 integrating the former aspects of governing, controls, instrumentation and protection paving the way towards digitalization of power plants.

The overall structure of the document is intentionally kept close to the former revision to promote seamless application of the document.

Wherever practicable, this document takes into account the scope for applying to smaller turbines developments originally intended for larger machines, without implying that such applications would always be necessary or advantageous.