

Rotating electrical machines —

Part 3: Specific requirements for turbine-type synchronous machines

ICS 29.160.20

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Power Electrical Engineering Standards Policy Committee (PEL/-) to Technical Committee PEL/1, upon which the following bodies were represented:

- Association of Consulting Engineers
- Association of Electrical Machinery Trades
- Electricity Association
- Engineer Surveyors Section of the MSF
- Engineering Equipment and Materials Users' Association
- ERA Technology Ltd.
- Health and Safety Executive
- Institution of Incorporated Executive Engineers
- Institution of Plant Engineers
- Ministry of Defence
- Power Generation Contractors' Association (BEAMA Ltd.)
- Rotating Electrical Machines Association (BEAMA Ltd.)
- UK Offshore Operators' Association

This British Standard, having been prepared under the direction of the Power Electrical Engineering Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 August 1992

© BSI 03-1999

First published November 1973
Second edition July 1988
Third edition August 1992

The following BSI references relate to the work on this standard:
Committee reference PEL/1
Draft for comment 84/20480 DC

ISBN 0 580 20809 5

Amendments issued since publication

Amd. No.	Date	Comments
9035	July 1996	Indicated by a sideline in the margin

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	2
Text of EN 60034-3	3
National annex NA (informative)	Inside back cover

National foreword

This British Standard has been prepared by Technical Committee PEL/2 (formerly PEL/1) and is the English language version of EN 60034 *Rotating electric machines — Part 3:1995 Specific requirements for turbine-type synchronous machines* published by the European Committee for Electrotechnical Standardization (CENELEC). It was derived by CENELEC from IEC 34-3:1988 published by the International Electrotechnical Commission (IEC). It supersedes BS 5000-2:1988 which is withdrawn.

As a consequence of implementing the European Standard, this British Standard has been renumbered as BS EN 60034-3:1996, and any reference to BS EN 60034-3:1995 should be read as reference to BS EN 60034-3:1996.

Editorial corrections to the text of IEC 34-3 have been incorporated at the appropriate places and are indicated by a side line in the margin.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 14, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

English version

Rotating electrical machines Part 3: Specific requirements for turbine-type synchronous machines

(IEC 34-3:1988)

Machines électriques tournantes
Partie 3: Règles spécifiques pour les
turbomachines synchrones
(CEI 34-3:1988)

Drehende elektrische Maschinen
Teil 3: Besondere Anforderungen an
Dreiphasen-Turbogeneratoren
(IEC 34-3:1988)

This European Standard was approved by CENELEC on 1995-09-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of the International Standard IEC 34-3:1988, prepared by SC 2A, Turbine-type generators, of IEC TC 2, Rotating machinery, was approved by CENELEC as HD 53.3 S1 on 1990-12-10.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60034-3 on 1995-09-20.

The following date was fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-10-01

Annexes designated “normative” are part of the body of the standard. In this standard, Annex ZA is normative. Annex ZA has been added by CENELEC.

Contents

	Page		Page
Foreword	2	Section 3. Air-cooled machines	
Section 1. Scope		18 Power factor	3
1 Scope	3	19 Short-circuit ratio (see also Sub-clause 16.1)	6
Section 2. General		20 Machine cooling	6
2 General rules	3	21 Temperature of primary coolant	6
3 Rated voltage	3	22 Temperature detectors	6
4 Rated speed	3	23 Air coolers	6
5 Ranges of voltage and frequency	3	Section 4. Hydrogen-cooled or Liquid-cooled machines	
6 Direction of rotation	3	24 Hydrogen pressure in the casing	6
7 Stator winding	3	25 Power factor	6
8 Machine rated field current and voltage	4	26 Short-circuit ratio (see also Sub-clause 16.1)	6
9 Machine insulation	4	27 Machine housing and cover plates	7
10 Insulation against shaft current	4	28 Stator winding terminals	7
11 Overspeed test	4	29 Temperature of primary coolants, temperatures and temperature rises of the machine	7
12 Critical speeds	4	30 Altitude	7
13 Capability diagram	4	31 Temperature detectors	7
14 Overcurrent requirements	4	32 Gas or liquid coolers	7
15 Sudden short-circuit	5	33 Auxiliary system	8
16 Short-circuit ratio and direct axis transient and sub-transient reactances	5	Section 5. Turbine-type machines driven by combustion gas turbines	
17 Mechanical strength concerning number of starts for normal generators	6	34 Service conditions	8
		35 Rating and capabilities	9
		36 Rating plate	10
		37 Temperature tests	10
		38 Operation as a synchronous compensator	10
		Annex ZA (normative) Normative references to international publications with their corresponding European publications	14
		Figure 1 — Operation over ranges of voltage and frequency	11
		Figure 2 — Typical capability diagram	12
		Figure 3 — Typical generator capability curves	13