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Vattenturbiner – Provning av reglersystem

*Hydraulic turbines –
Testing of control systems*

Som svensk standard gäller europastandarden EN 60308:2005. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60308:2005.

Nationellt förord

Europastandarden EN 60308:2005^{*)}

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- **IEC 60308, Second edition, 2005 - Hydraulic turbines - Testing of control systems**

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EUROPEAN STANDARD

EN 60308

NORME EUROPÉENNE

EUROPÄISCHE NORM

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**Hydraulic turbines –
Testing of control systems
(IEC 60308:2005)**

Turbines hydrauliques –
Essais des systèmes de régulation
(CEI 60308:2005)

Wasserturbinen –
Prüfung von Regelsystemen
(IEC 60308:2005)

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CENELEC

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

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Foreword

The text of document 4/199/FDIS, future edition 2 of IEC 60308, prepared by IEC TC 4, Hydraulic turbines, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60308 on 2005-05-01.

The following dates were 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) 2006-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2008-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60308:2005 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60041 (mod)	1991	Field acceptance tests to determine the hydraulic performance of hydraulic turbines, storage pumps and pump-turbines	EN 60041	1994
IEC 60193	1999	Hydraulic turbines, storage pumps and pump-turbines - Model acceptance tests	EN 60193	1999
IEC 60545	- ¹⁾	Guide for commissioning, operation and maintenance of hydraulic turbines	-	-
IEC 61362	1998	Guide to specification of hydraulic turbine control systems	EN 61362	1998
IEC 61000-4-2	- ¹⁾	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995 ²⁾
IEC 61000-4-3	- ¹⁾	Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2002 ²⁾
IEC 61000-4-6	- ¹⁾	Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	-	-
ISO 4406	1999	Hydraulic fluid power - Fluids - Method for coding the level of contamination by solid particles	-	-

1) Undated reference.

2) Valid edition at date of issue.

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INTRODUCTION

The control functions of water turbines have undergone far-reaching changes and at the same time gained in importance during the last few decades. This is shown in the fact that a new standard has been developed: i.e. IEC 61362.

HYDRAULIC TURBINES – TESTING OF CONTROL SYSTEMS

1 Scope and object

This International Standard deals with the definition and the characteristics of control systems and is the basis for tender documents and technical tenders. It is not limited to the actual controller tasks but also include other tasks which may be assigned to a control system, such as for instance sequence control tasks, safety, provision for the actuating energy.

The testing of control systems for hydro turbines can generally fulfil the following tasks:

- verification of system characteristics as per contract specification;
- verification of general proper functioning in the workshop and/or on site;
- tests to prove the fulfilment of guarantees;
- assessment of the actual state of an existing control system with regard to the question of repair or replacement.

This standard covers the following systems:

- speed, power, opening, water level and flow control for all turbine types;
- electronic, electrical and fluid power devices;
- safety devices;
- start-up, shutdown devices etc.

2 Normative references

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

IEC 60041:1991, *Field acceptance tests to determine the hydraulic performance of hydraulic turbines, storage pumps and pump-turbines*

IEC 60193: 1999, *Hydraulic turbines, storage pumps and pump-turbines – Model acceptance tests*

IEC 60545, *Guide for commissioning, operation and maintenance of hydraulic turbines*

IEC 61362: 1998, *Guide to specification of hydraulic turbine control systems*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

ISO 4406: 1999, *Hydraulic fluid power – Fluids – Method for coding the level of contamination by solid particles*