SLOVENSKI STANDARD
oSIST prEN IEC 63461:2023

01-julij-2023

Peltonove vodne turbine - Prevzemni preskusi modela

Pelton hydraulic turbines - Model acceptance tests

Turbines hydrauliques Pelton - Essais de réception sur modèle

Ta slovenski standard je istoveten z: **prEN IEC 63461:2023**

ICS:

27.140	Vodna energija	Hydraulic energy engineering

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4/460/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 63461 ED1**	
DATE OF CIRCULATION: **2023-05-05**	CLOSING DATE FOR VOTING: **2023-07-28**
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IEC TC 4 : HYDRAULIC TURBINES	
SECRETARIAT: Canada	SECRETARY: Mrs Christine Geraghty
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 2,TC 114	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☒ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
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This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of

- any relevant patent rights of which they are aware and to provide supporting documentation,
- any relevant “in some countries” clauses to be included should this proposal proceed. Recipients are reminded that the enquiry stage is the final stage for submitting "in some countries" clauses. See AC/22/2007.

TITLE:

Pelton hydraulic turbines - Model acceptance tests

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PELTON HYDRAULIC TURBINES – MODEL ACCEPTANCE TESTS

FOREWORD

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International Standard IEC 63461 has been prepared by IEC technical committee 4: Hydraulic turbines.

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

FDIS	Report on voting
x/xxx/FDIS	x/xxx/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.

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,

371 • withdrawn,
372 • replaced by a revised edition, or
373 • amended.

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PELTON HYDRAULIC TURBINES – MODEL ACCEPTANCE TESTS

1 Scope

This document applies to laboratory models of any type of Pelton hydraulic turbine.

This document applies to models of prototype machines either with unit power greater than 5 MW . Full application of the procedures herein prescribed is not generally justified for machines with smaller power and size. Nevertheless, this document may be used for such machines by agreement between the purchaser and the supplier.

This document excludes all matters of purely commercial interest, except those inextricably bound up with the conduct of the tests.

This document is concerned with neither the structural details of the machines nor the mechanical properties of their components, so long as these do not affect model performance or the relationship between model and prototype performances.

This document covers the arrangements for model acceptance tests to be performed on Pelton turbines to determine if the main hydraulic performance contract guarantees (see 8.2) have been satisfied.

It contains the rules governing test conduct and prescribes measures to be taken if any phase of the tests is disputed.

The main objectives of this document are:

– to define the terms and quantities used;

– to specify methods of testing and of measuring the quantities involved, in order to ascertain the hydraulic performance of the model;

– to specify the methods of computation of results and of comparison with guarantees;

– to determine if the contract guarantees that fall within the scope of this document have been fulfilled;

– to define the extent, content and structure of the final report.

The guarantees can be given in one of the following ways:

– guarantees for prototype hydraulic performance, computed from model test results considering scale effects;

– guarantees for model hydraulic performance.

Moreover, additional performance data (see 9) can be needed for the design or the operation of the prototype of the hydraulic machine. Contrary to the requirements of Clauses 7 related to main hydraulic performance, the information of these additional data given in Clause 9 is considered only as recommendation or guidance to the user (see 9.1).

It is particularly recommended that model acceptance tests be performed if the expected field conditions for acceptance tests (see IEC 60041:1991) would not allow the verification of guarantees given for the prototype machine.

The method for performance conversion from model to prototype needs to be clearly defined in the main hydraulic performance contract.

This document may also be applied to model tests for other purposes, i.e. comparative tests and research and development work.

If model acceptance tests have been performed, field tests can be limited to index tests (see IEC 60041:1991).

If a contradiction is found between this document and any other document, this document prevails.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 test to determine the hydraulic performance of hydraulic turbines, storage pumps and pump-turbines*

ISO 2186:2007, *Fluid flow in closed conduits – Connections for pressure signal transmissions between primary and secondary elements*

ISO 2533:1975, *Standard atmosphere*

ISO 4185:1980, *Measurement of liquid flow in closed conduits – Weighing method*

ISO 4287:1997, *Geometrical Product Specifications (GPS) – Surface texture: Profile method – terms, definitions and surface texture parameters*

ISO 8316:1987, *Measurement of liquid flow in closed conduits – Method by collection of the liquid in a volumetric tank*

3 Terms, definitions, symbols and units

3.1 General

For the purposes of this document, the following common terms, definitions, symbols and units apply. Specialized terms are explained where they appear.

Clarification of any term, definition or unit of measure in question shall be agreed to in writing by the contracting parties in advance of the test.

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.2 General terminology

3.2.1
point
value established by one or more consecutive sets of readings and/or recordings at unchanged operating condition and settings, sufficient to calculate the performance of the machine at this operating condition and these settings

3.2.2
test
collection of points and results adequate to establish the performance of the machine over a specified range of operating conditions

3.2.3
hydraulic performance
all performance parameters attributable to the machine owing to hydrodynamic effects

3.2.4
main hydraulic performance data
subset of the hydraulic performance parameters, i.e. power, discharge and/or specific hydraulic energy, efficiency, steady-state runaway speed and/or discharge

3.2.5
additional data
subset of hydraulic performance data which can be determined for information on the model (see 9)

Note 1 to entry: However, the prediction of the corresponding prototype data is less accurate than that achievable for the main hydraulic performance data, owing to application of approximate similarity rules.

3.2.6
guarantee
specified performance data contractually agreed to

3.2.7
measurand
quantity subjected to measurement