



SLOVENSKI STANDARD
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Peltonove vodne turbine - Prezemni preskusi modela

Pelton hydraulic turbines - Model acceptance tests

iTeh STANDARD PREVIEW
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Turbines hydrauliques Pelton - Essais de réception sur modèle

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

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OF INTEREST TO THE FOLLOWING COMMITTEES: TC 2, TC 114	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
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TITLE:

Pelton hydraulic turbines - Model acceptance tests

PROPOSED STABILITY DATE: 2026

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321 INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PELTON HYDRAULIC TURBINES – MODEL ACCEPTANCE TESTS

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FOREWORD

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 329 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international
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360 International Standard IEC 63461 has been prepared by IEC technical committee 4: Hydraulic
 361 turbines.

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

FDIS	Report on voting
x/xxx/FDIS	x/xxx/RVD

363

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

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

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

- 370 • reconfirmed,

- 371 • withdrawn,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

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PELTON HYDRAULIC TURBINES – MODEL ACCEPTANCE TESTS

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381 **1 Scope**

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

383 This document applies to models of prototype machines either with unit power greater than
384 5 MW . Full application of the procedures herein prescribed is not generally justified for
385 machines with smaller power and size. Nevertheless, this document may be used for such
386 machines by agreement between the purchaser and the supplier.

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

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

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

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

397 The main objectives of this document are:

- 398 – to define the terms and quantities used;
- 399 – to specify methods of testing and of measuring the quantities involved, in order to ascertain
400 the hydraulic performance of the model;
- 401 – to specify the methods of computation of results and of comparison with guarantees;
- 402 – to determine if the contract guarantees that fall within the scope of this document have been
403 fulfilled;
- 404 – to define the extent, content and structure of the final report.

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

- 406 – guarantees for prototype hydraulic performance, computed from model test results
407 considering scale effects;
- 408 – guarantees for model hydraulic performance.

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

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

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

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

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

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

424 **2 Normative references**

425 The following documents are referred to in the text in such a way that some or all of their content
426 constitutes requirements of this document. For dated references, only the edition cited applies.
427 For undated references, the latest edition of the referenced document (including any
428 amendments) applies.

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

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

433 ISO 2533:1975, *Standard atmosphere*

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

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

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

439

440 **3 Terms, definitions, symbols and units**

441 **3.1 General**

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

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

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

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

- 449 • IEC Electropedia: available at <http://www.electropedia.org/>
- 450 • ISO Online browsing platform: available at <http://www.iso.org/obp>

451 **3.2 General terminology**

452 **3.2.1** 453 **point**

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

457 **3.2.2** 458 **test**

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

461 **3.2.3**

462 **hydraulic performance**

463 all performance parameters attributable to the machine owing to hydrodynamic effects

464 **3.2.4**

465 **main hydraulic performance data**

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

468 **3.2.5**

469 **additional data**

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

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

474 **3.2.6**

475 **guarantee**

476 specified performance data contractually agreed to

477 **3.2.7**

478 **measurand**

479 quantity subjected to measurement