

### SLOVENSKI STANDARD oSIST prEN IEC 63132-5:2022

01-maj-2022

### Navodila za postopke vgradnje in tolerance hidroelektričnih strojev - 5. del: Turbine z žarnicami in generatorji

Guide for installation procedures and tolerances of hydroelectric machines - Part 5: Bulb turbines and generators

# iTeh STANDARD

### PREVIEW

Lignes directrices des procédures et tolérances d'installation des machines hydroélectriques - Partie 5: Turbines bulbes et alternateurs

Ta slovenski standard je istoveten z: EN IPrEN IEC 63132-5:2022

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2022

ICS:

27.140 Vodna energija

Hydraulic energy engineering

oSIST prEN IEC 63132-5:2022

en

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### 4/432/CDV

### COMMITTEE DRAFT FOR VOTE (CDV)

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IEC TC 4 : HYDRAULIC TURBINES			
SECRETARIAT:	SECRETARY:		
Canada	Mrs Christine Geraghty		
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD:		
	Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.		
FUNCTIONS CONCERNED:	NDAKD		
	GUALITY ASSURANCE SAFETY		
SUBMITTED FOR CENELEC PARALLEL VOTING	NOT SUBMITTED FOR CENELEC PARALLEL VOTING		
Attention IEC-CENELEC parallel	ls.iteh.ai)		
The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this <u>Committee Pract</u> for Vote (CDV) is submitted for parallel voting. <u>https://standards.iteh.ai/catal</u>	<u>C 63132-5:2022</u> og/standards/sist/d1a00628-		
The CENELEC members are invited to yote through the CENELEC online voting system.	a28/osist-pren-iec-63132-5- 22		

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TITLE:

Guide for installation procedures and tolerances of hydroelectric machines - Part 5: Bulb turbines and generators

PROPOSED STABILITY DATE: 2025

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$\begin{array}{c} 110\\ 111 \end{array}$			FORE\	WORD	
$112\\113\\114\\115\\116\\117\\118\\119\\120\\121$	1)	all national electrotechr international co-operation this end and in addition Technical Reports, Pub Publication(s)"). Their pre- in the subject dealt wit governmental organization	echnical Commission (IEC) is nical committees (IEC Nation of all questions concerning to other activities, IEC publicly Available Specification eparation is entrusted to tech h may participate in this p runs liaising with the IEC also rganization for Standardizati wo organizations.	onal Committees). The ob standardization in the electr lishes International Standard s (PAS) and Guides (her nical committees; any IEC N reparatory work. Internatior participate in this preparati	ject of IEC is to promote ical and electronic fields. To ds, Technical Specifications, eafter referred to as "IEC ational Committee interested nal, governmental and non- on. IEC collaborates closely
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147	Т	he text of this guide is	s based on the following	documents:	
			FDIS	Report on voting	
			XX/XX/FDIS	XX/XX/RVD	
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Full information on the voting for the approval of this guide can be found in the report on voting indicated in the above table.

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

152 A list of all parts in the IEC 63132 series, published under the general title *Guidance for* 153 *installation procedures and tolerances of hydroelectric machines*, can be found on the IEC 154 website. IEC CDV 63132-5/Ed1 © IEC 2022 - 6 -

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

- 158
- 159 reconfirmed,
- withdrawn,
- 161 replaced by a revised edition, or
- 162 amended.
- 163

164 IMPORTANT – The "colour inside" logo on the cover page of this publication indicates that it 165 contains colours which are considered to be useful for the correct understanding of its content

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# 168GUIDE FOR INSTALLATION PROCEDURES AND TOLERANCES OF169HYDROELECTRIC MACHINES-

### Part 5: Bulb turbines and generators

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### 173 **1 Scope**

The purpose of this guide is to establish, in a general way, suitable procedures and tolerances for the installation of bulb turbine and generator. This guide presents a typical assembly and whenever the words "turbine" and "generator" are used in this part, it refers to bulb turbine and generator. There are many possible ways to assemble a unit. The size of the machine, the design of the machine, the layout of the powerhouse, the sequence of concreting or the delivery schedule of the components are some of the elements that could result in additional steps, or the elimination of some steps and/or assembly sequences.

181 It is understood that a publication of this type will be binding only if, and to the extent that, 182 both contracting parties have agreed upon it.

183 The guide excludes matters of purely commercial interest, except those inextricably bound up 184 with the conduct of installation. It also excluded to specifications of the civil works but this 185 aspect of the work should be taken into consideration during the assembly of the units.

186 Wherever the guide specifies that documents, drawings or information is supplied by a 187 manufacturer (or by manufacturers), each individual manufacturer will furnish the appropriate 188 information for their own supply only

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191 There are no normative references in this document 132-5:2022

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### 1933Terms and definition

- 194 No terms and definitions are listed in this document.
- 195 ISO and IEC maintain terminological databases for use in standardization at the followingaddresses:
- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp
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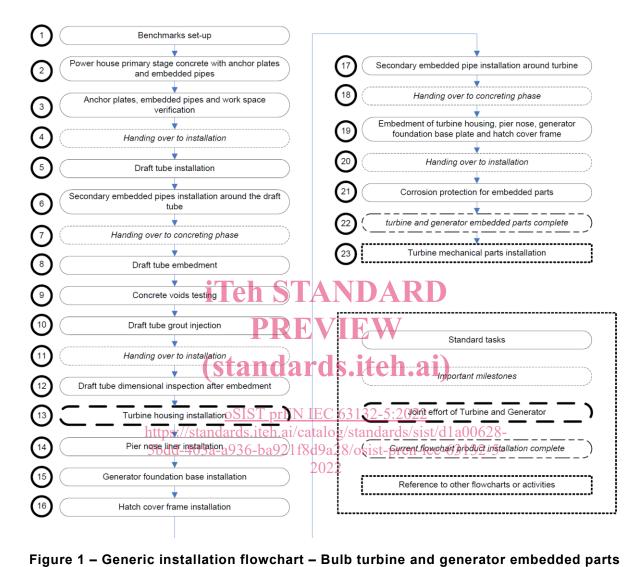
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#### 201 **4** Installation flowchart

#### 202 4.1 Turbine and generator embedded parts

203 Figure 1 shows generic installation flowchart for bulb turbine and generator embedded parts.



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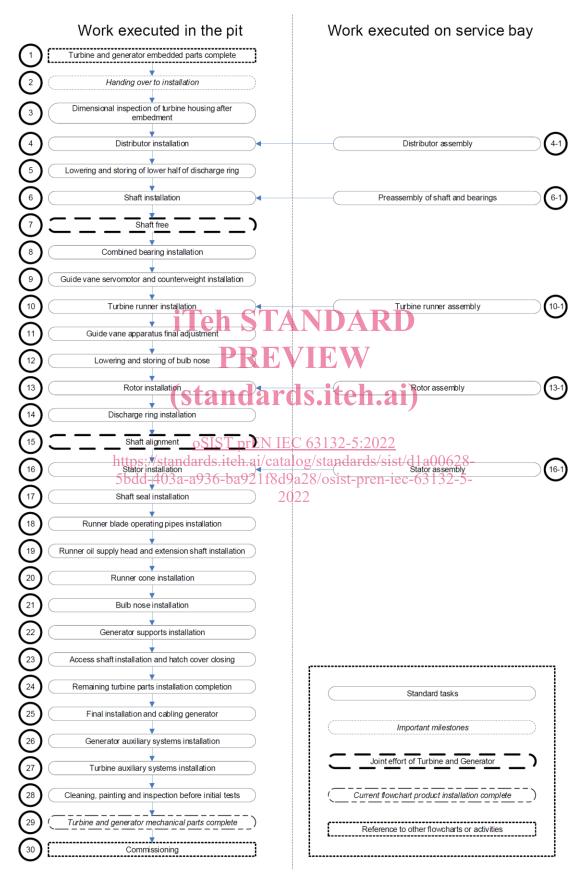
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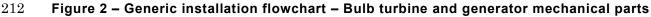
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#### 209 **4.2** Turbine and generator mechanical parts

Figure 2 shows generic installation flowchart for bulb turbine and generator mechanical parts.



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- 214 **5 Steps**
- 215 5.1 Turbine and generator embedded parts
- 216 **5.1.1** Step 1: Benchmarks set-up
- a) Objective of work in the step
- 218 Set-up benchmarks to be used for starting proper installation of the turbine and
   219 generator.
- b) Explanation of work
- Sufficient benchmarks should be provided to establish the unit centreline, axis and elevation.
- 223 c) Recommendations
- 224 N/A
- 225 d) Additional Information

Depending on the project delivery system (EPC, Design Build, etc.), the benchmarks or their reference points could be provided by the owner, civil contractor, etc. Whoever provides the benchmarks or reference points is responsible to make sure they are correct.

- The benchmark type (x, y, z coordinates, defining axis and elevations, etc.) should be agreed to prior to the work commencing.
- The turbine supplier should take care to transfer the necessary benchmarks throughout the erection and/or concreting processes so that the benchmarks remain accessible as the unit is assembled.
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### (standards.iteh.ai)

- 2355.1.2Step 2: Powerhouse primary stage concrete with anchor plates and embedded236pipes
- a) Objective of work in the step <u>oSIST prEN IEC 63132-5:2022</u> https://standards.iteh.ai/catalog/standards/sist/d1a00628-
- Install primary embedded 3pipes 2 anchor 2 plates and steel foundations in the correct locations.
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- 240 b) Explanation of work
- 241 Install the primary embedded pipes and supporting systems.
- Install the foundation components of the draft tube liner, servomotor, stay columns and pier nose.
- 244 c) Recommendations

Different designs require different tolerances; therefore, it is recommended that the turbine supplier should provide the tolerances. It is considered as a best practice to perform:

- Non-destructive tests as applicable (i.e. Visual inspections, pressure tests of the piping, test of welding seams).
- Measures to prevent the concrete from entering the pipes or contaminating the
   machined surfaces of foundations during concreting.
- 251 d) Additional Information

The contract should define which party is responsible to install the primary embedded pipes and/or the foundation components of draft tube liner, servomotor, stay columns and pier nose.

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