

# INTERNATIONAL STANDARD



**Hydraulic turbines, storage pumps and pump-turbines – Rehabilitation and performance improvement**



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references .....	10
3 Terms, definitions and nomenclature .....	10
4 Reasons for rehabilitating.....	12
4.1 General.....	12
4.2 Reliability and availability increase.....	14
4.3 Life extension and performance restoration.....	14
4.4 Performance improvement .....	14
4.5 Plant safety improvement.....	14
4.6 Environmental, social and regulatory issues.....	15
4.7 Maintenance and operating cost reduction .....	15
4.8 Other considerations.....	15
5 Phases of a rehabilitation project.....	15
5.1 General.....	15
5.2 Decision on organization.....	17
5.2.1 General .....	17
5.2.2 Expertise required .....	17
5.2.3 Contract arrangement.....	17
5.3 Level of assessment and determination of scope .....	18
5.3.1 General .....	18
5.3.2 Feasibility study – Stage 1.....	19
5.3.3 Feasibility study – Stage 2.....	19
5.3.4 Detailed study.....	19
5.4 Contractual issues .....	23
5.4.1 General .....	23
5.4.2 Specification requirements.....	24
5.4.3 Tendering documents and evaluation of tenders .....	24
5.4.4 Contract award(s) .....	25
5.5 Execution of project .....	25
5.5.1 Model test activities .....	25
5.5.2 Design, construction, installation and testing .....	25
5.6 Evaluation of results and compliance with guarantees.....	26
5.6.1 General .....	26
5.6.2 Turbine performance evaluation.....	26
5.6.3 Generator performance evaluation.....	27
5.6.4 Penalties and/or bonuses assessment.....	27
6 Scheduling, cost analysis and risk analysis .....	27
6.1 Scheduling.....	27
6.1.1 General .....	27
6.1.2 Scheduling – Assessment, feasibility and detailed study phases.....	28
6.1.3 Evaluating the scheduling component of alternatives .....	28
6.1.4 Scheduling specification and tendering phase .....	29
6.1.5 Scheduling project execution phases .....	29
6.2 Economic and financial analyses .....	29

6.2.1	General .....	29
6.2.2	Benefit-cost analysis.....	30
6.2.3	Identification of anticipated benefits.....	31
6.2.4	Identification of anticipated costs and benefits.....	32
6.2.5	Sensitivity analysis .....	33
6.2.6	Conclusions.....	34
6.3	Risk analysis.....	34
6.3.1	General .....	34
6.3.2	Non-achievement of performance risk.....	34
6.3.3	Risk of continued operation without rehabilitation .....	35
6.3.4	Extension of outage risk .....	35
6.3.5	Financial risks .....	35
6.3.6	Project scope risk .....	36
6.3.7	Other risks.....	36
7	Assessment and determination of scope of the work.....	37
7.1	General.....	37
7.2	Assessment of the site.....	37
7.2.1	Hydrology .....	37
7.2.2	Actual energy production .....	38
7.2.3	Environmental, social and regulatory issues .....	38
7.3	The assessment of the turbine .....	39
7.3.1	General .....	39
7.3.2	Turbine integrity assessment.....	39
7.3.3	Residual life.....	52
7.3.4	Turbine performance assessment.....	61
7.4	The assessment of related equipment .....	83
7.4.1	General .....	83
7.4.2	Generator and thrust bearing.....	84
7.4.3	Turbine governor.....	84
7.4.4	Turbine inlet and outlet valves, pressure relief valve.....	85
7.4.5	Auxiliary equipment.....	85
7.4.6	Equipment re-erection, dismantling and maintenance .....	86
7.4.7	Penstock and other water passages .....	86
7.4.8	Consequences of changes in plant specific hydraulic energy (head) .....	86
7.4.9	Grid integration.....	87
8	Hydraulic design and performance testing options .....	87
8.1	General.....	87
8.2	Computational hydraulic design .....	88
8.2.1	General .....	88
8.2.2	The role of CFD.....	88
8.2.3	The process of a CFD cycle.....	89
8.2.4	The accuracy of CFD results.....	89
8.2.5	How to use CFD for rehabilitation .....	90
8.2.6	CFD versus model tests.....	91
8.3	Model tests .....	91
8.3.1	General .....	91
8.3.2	Model test similitude .....	92
8.3.3	Model test content .....	93
8.3.4	Model test application.....	93

8.3.5	Model test location .....	95
8.4	Prototype performance test .....	96
8.4.1	General .....	96
8.4.2	Prototype performance test accuracy .....	97
8.4.3	Prototype performance test types .....	97
8.4.4	Evaluation of results .....	98
9	Specifications .....	99
9.1	General .....	99
9.2	Reference standards .....	99
9.3	Information to be included in the tender documents .....	100
9.4	Documents to be developed in the course of the project .....	101
Annex A (informative) Check-list for evaluation of existing turbine .....		103
Annex B (informative) Assessment examples .....		136
B.1	General .....	136
B.2	Runner (applicable to Francis, Kaplan, propeller and Pelton) .....	136
B.2.1	Documentation – available data .....	136
B.2.2	Design review .....	137
B.2.3	Inspection items .....	137
B.2.4	Assessment of inspection results .....	138
B.2.5	Current condition assessment .....	140
B.2.6	Scope of work .....	140
B.3	Stay ring .....	142
B.3.1	Documentation – available data .....	142
B.3.2	Design review .....	142
B.3.3	Inspection items .....	142
B.3.4	Assessment of inspection results .....	143
B.3.5	Current condition assessment .....	143
B.3.6	Scope of work (possible action to be taken) .....	144
B.4	Guide vanes .....	144
B.4.1	Documentation – available data .....	144
B.4.2	Design review .....	145
B.4.3	Inspection items .....	145
B.4.4	Assessment of inspection results .....	146
B.4.5	Current condition assessment .....	147
B.4.6	Scope of work .....	147
B.5	Real life example: Pelton runner with severe crack .....	148
B.5.1	Data of the Pelton runner .....	148
B.5.2	Fatigue analysis .....	148
B.5.3	Fracture-mechanics analysis .....	150
B.5.4	Results for the Pelton runner .....	150
Annex C (informative) Checklist for evaluation of related equipment .....		152
Bibliography .....		156
Figure 1 – Flow diagram depicting the logic of the rehabilitation process .....		16
Figure 2 – Critical zones for cracks “A” and “B” in Pelton runner buckets .....		51
Figure 3 – Bathtub curve .....		53
Figure 4 – Process of residual life estimation .....		54
Figure 5 – Schematic behaviour for the different stages in the fatigue process .....		55

Figure 6 – Start-up and full load strain gauge signal on Francis blade.....	60
Figure 7 – Relative efficiency versus relative output – Original and new runners.....	63
Figure 8 – Relative efficiency versus output – Original and new runners – Outardes 3 generating station .....	64
Figure 9 – Efficiency and distribution of losses versus specific speed for Francis turbines (model) in 2005 .....	65
Figure 10 – Relative efficiency gain following modification of the blades on the La Grande 3 runner, in Quebec, Canada.....	67
Figure 11 – Potential efficiency improvement for Francis turbine rehabilitation.....	71
Figure 12 – Potential efficiency improvement for Kaplan turbine rehabilitation .....	72
Figure 13 – Cavitation and corrosion-erosion in Francis runner.....	74
Figure 14 – Back side erosion of the entrance into a Pelton bucket.....	75
Figure 15 – Leading edge cavitation erosion on a Francis pump-turbine caused by extended periods of operation at very low loads.....	76
Figure 16 – Severe particle erosion damage in a Francis runner .....	78
Table 1 – Expected life of a hydropower plant and its subsystems before major work .....	13
Table 2 – Typical routine inspections .....	41
Table 3 – Example of a rating system for the inspection results .....	58
Table 4 – Example of a typical list of turbine components for Francis and Kaplan with different weight factors $X_1$ to $X_7$ based on relative importance .....	59
Table 5 – Example of rating of a single component assessment including three assessment criteria .....	59
Table 6 – Francis turbine potential efficiency improvement (%) for runner profile modifications only .....	66
Table 7 – Potential impact of design and condition of runner seals on Francis turbine efficiency with new replacement runner or rehabilitated runner (%) .....	69
Table 8 – Potential total gain in efficiency from the replacement of a Francis turbine runner including the blade profile improvements, the restoration of surface condition and the reduction of seal losses .....	69
Table 9 – Potential additional efficiency improvement by rehabilitation/replacement of other water passage components on a Francis turbine (%) .....	70
Table A.1 – Assessment of turbine embedded parts – Stay ring .....	103
Table A.2 – Assessment of turbine embedded parts – Spiral or semi-spiral case .....	104
Table A.3 – Assessment of turbine embedded parts – Discharge ring .....	105
Table A.4 – Assessment of turbine embedded parts – Draft tube .....	107
Table A.5 – Assessment of turbine non-embedded, non-rotating parts – Headcover .....	109
Table A.6 – Assessment of turbine non-embedded, non-rotating parts – Intermediate and inner headcovers .....	112
Table A.7 – Assessment of turbine non embedded, non-rotating parts – Bottom ring .....	113
Table A.8 – Assessment of turbine non embedded, non-rotating parts – Guide vanes.....	115
Table A.9 – Assessment of turbine non embedded, non-rotating parts – Guide vane operating mechanism.....	117
Table A.10 – Assessment of turbine non embedded, non-rotating parts – Operating ring ....	118
Table A.11 – Assessment of turbine non embedded, non-rotating parts – Servomotors.....	119
Table A.12 – Assessment of turbine non embedded, non-rotating parts – Guide bearings.....	120

Table A.13 – Assessment of turbine non embedded, non-rotating parts – Turbine shaft seal (mechanical seal or packing box) .....	122
Table A.14 – Assessment of turbine non embedded, non-rotating parts – Thrust bearing support.....	122
Table A.15 – Assessment of turbine non embedded, non-rotating parts – Nozzles .....	123
Table A.16 – Assessment of turbine non embedded, non-rotating parts – Deflectors and energy dissipation .....	124
Table A.17 – Assessment of turbine rotating parts – Runner .....	125
Table A.18 – Assessment of turbine rotating parts – Runner .....	128
Table A.19 – Assessment of turbine rotating parts – Runner .....	130
Table A.20 – Assessment of turbine rotating parts – Turbine shaft.....	131
Table A.21 – Assessment of turbine rotating parts – Oil head and oil distribution pipes .....	132
Table A.22 – Assessment of turbine auxiliaries – Speed and load regulation system (governor).....	133
Table A.23 – Assessment of turbine auxiliaries – Turbine aeration system.....	134
Table A.24 – Assessment of turbine auxiliaries – Lubrication system (guide vane mechanism) .....	135
Table C.1 – Assessment of related equipment – Governor.....	152
Table C.2 – Assessment of related equipment – Generator and thrust bearing.....	153
Table C.3 – Assessment of related equipment – Penstock and turbine inlet valves .....	154
Table C.4 – Assessment of related equipment – Civil works .....	155
Table C.5 – Assessment of related equipment – Crane, erection equipment .....	155

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HYDRAULIC TURBINES, STORAGE PUMPS AND PUMP-TURBINES –  
REHABILITATION AND PERFORMANCE IMPROVEMENT**

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International Standard IEC 62256 has been prepared by IEC technical committee 4: Hydraulic turbines.

This second edition cancels and replaces the first edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- Tables 2 to 23 modified, completed and moved to Annex A;
- 7.3.2:
  - subclauses moved with text changes;
  - new subclauses on temperature, noise, galvanic corrosion, galling and replacement of components without assessment;
- 7.3.3: complete new subclause on residual life;
- Tables 29 to 32 moved to Annex C;

- new Annex B with assessment examples.

The text of this standard is based on the following documents:

FDIS	Report on voting
4/323/FDIS	4/326/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

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## INTRODUCTION

Hydro plant owners make significant investments annually in rehabilitating plant equipment (turbines, generators, transformers, penstocks, gates etc.) and structures in order to improve the level of service to their customers and to optimize their revenue. In the absence of guidelines, owners may be spending needlessly, or may be taking unnecessary risks and thereby achieving results that are less than optimal. This document is intended to be a tool in the optimisation and decision process.

Edition 1 of this International Standard was based on the IEA document *Guidelines on Methodology for Hydroelectric Francis Turbine Upgrading by Runner Replacement*.

# HYDRAULIC TURBINES, STORAGE PUMPS AND PUMP-TURBINES – REHABILITATION AND PERFORMANCE IMPROVEMENT

## 1 Scope

This document covers turbines, storage pumps and pump-turbines of all sizes and of the following types:

- Francis;
- Kaplan;
- propeller;
- Pelton (turbines only);
- bulb turbines.

This document also identifies without detailed discussion, other powerhouse equipment that could affect or be affected by a turbine, storage pump, or pump-turbine rehabilitation.

The object of this document is to assist in identifying, evaluating and executing rehabilitation and performance improvement projects for hydraulic turbines, storage pumps and pump-turbines. This document can be used by owners, consultants, and suppliers to define:

- needs and economics for rehabilitation and performance improvement;
- scope of work;
- specifications;
- evaluation of results.

This document is intended to be:

- an aid in the decision process;
- an extensive source of information on rehabilitation;
- an identification of the key milestones in the rehabilitation process;
- an identification of the points to be addressed in the decision processes.

This document is not intended to be a detailed engineering manual nor a maintenance document.

## 2 Normative references

There are no normative references in this document.

## 3 Terms, definitions and nomenclature

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>