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IEEE Standard for Hydraulic Turbine and Generator Shaft Couplings and Shaft Runout Tolerances

IEEE Power and Energy Society

Sponsored by the
Energy Development & Power Generation Committee

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USA

IEEE Std 810™-2015
(Revision of
IEEE Std 810-1987)

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Abstract: The dimensions for all types of shaft couplings and shaft runout tolerances for hydraulic turbines and generators are included in this standard. Shafts and couplings included in this standard are used for both horizontal and vertical connections between generators and turbines in hydroelectric installations.

Keywords: coupling, generator, generator/motor, IEEE 810™, manufacturing, runout, shaft, tolerance, turbine

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Participants

This standard was prepared by a Working Group of the Hydroelectric Power Subcommittee of the IEEE Energy Development and Power Generation Committee to be used as a reference document for practicing engineers in the hydroelectric power industry. Members of this Working Group represent a cross section of the hydroelectric power industry, including power plant owners, designers, and equipment manufacturers. At the time this IEEE standard was completed, the Hydroelectric Power Subcommittee—Turbine and Generator Shaft Working Group had the following membership:

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The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

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Introduction

This introduction is not part of IEEE Std 810-2015, IEEE Standard for Hydraulic Turbine and Generator Shaft Couplings and Shaft Runout Tolerances.

This standard has been developed to provide requirements to users in specifying dimensions and tolerances for hydraulic machinery shaft systems for hydroelectric plant owners, operators and designers for the disassembly and re-assembly of hydroelectric machinery. This revised standard uses the International System of Units (SI) for units of measurement. Much of the hydroelectric machinery constructed or in operation in North America prior to 1990 had shaft systems constructed according to the dimensions and tolerances using the U.S. customary units of measurement. Annex A provides units of measurement that support these legacy systems.

Contents

IEEE Standard for Hydraulic Turbine and Generator Shaft Couplings and Shaft Runout Tolerances

1. Overview

This standard applies to the dimensions for all types of shaft couplings and shaft runout tolerances for hydraulic turbines and generators. Shafts and couplings included in this standard are used for both horizontal and vertical connections between generators and turbines in hydroelectric installations.

This standard does not include data on shaft stress limits, materials, or bolt tensioning

For historical purposes, the legacy shaft dimensional requirements of superseded IEEE Std 810-1987 are included in Annex A for use by hydroelectric plant owners, operators, and designers involved in the disassembly and re-assembly of hydraulic turbines and generators. These legacy systems, primarily installed in North American facilities, generally employ U.S. customary units of measurement.

1.1 Scope

This standard applies to the dimensions for all types of shaft couplings and shaft runout tolerances for hydraulic turbines and generators. Shafts and couplings included in this standard are used for both horizontal and vertical connections between generators and turbines in hydroelectric installations.