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IEEE Guide for the Commissioning of Electrical Systems in Hydroelectric Power Plants

IEEE Power and Energy Society

Developed by the
Energy Development and Power Generation Committee

IEEE Std 1248™-2020
(Revision of IEEE Std 1248-1998)

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Energy Development and Power Generation Committee
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Abstract: Inspection procedures and tests for use following the completion of the installation of components and systems through to commercial operation are provided. This guide is directed to plant owners, designers, and contractors involved in the commissioning of electrical systems of hydroelectric plants.

Keywords: commissioning, electrical systems, hydroelectric power plant, IEEE 1248, testing

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Introduction

This introduction is not part of IEEE Std 1248-2020, IEEE Guide for the Commissioning of Electrical Systems in Hydroelectric Power Plants.

This document is a guide for the commissioning of electrical equipment in a hydroelectric power plant. The document was prepared by the Working Group on Power Plant Commissioning of the Hydroelectric Subcommittee of the IEEE Energy Development and Power Generation Committee of the IEEE Power Engineering Society (PES).

The group was formed at the 1990 IEEE PES Summer Meeting to provide guidance in the commissioning of electrical equipment in a hydroelectric facility. The commissioning includes the installation of a new power plant, the rehabilitation of an existing power plant, or the upgrading of equipment in an existing power plant.

The group was reformed at the 2013 PES annual meeting to review and revise the guide for current technology and practices.

This guide is intended to be used as a reference document for practicing engineers in the hydroelectric industry.

The guide includes an index of systems, equipment, and tests that provide information on the checkout and commissioning of electrical equipment in a hydroelectric power plant.

Members of the working group represent a cross section of the hydroelectric industry, including power plant owners, designers, and equipment manufacturers.

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IEEE Guide for the Commissioning of Electrical Systems in Hydroelectric Power Plants

1. Overview

1.1 Scope

This guide describes tests performed and provides processes to be followed during the commissioning of electrical and control systems in hydroelectric plants. Guidance for methods to be used, organization, and execution of the testing are provided. While the guide does not provide prescriptive procedures that are plant and equipment specific, tests are described along with reference standards for more information. The commissioning of electrical equipment may be for a new hydroelectric plant installation; rehabilitation of an existing hydroelectric plant; or replacement and upgrade of existing electrical equipment.

1.2 Purpose

This guide is directed to hydroelectric plant owners, operators, designers, and contractors involved in the commissioning of electrical equipment and systems of hydroelectric plants. This guide suggests inspections and tests to be used following the completion of the installation of components and systems through commercial operation. Minor adaptions may be required for particular corporate structures and philosophies.

1.3 Organization

This guide was developed to assist engineers involved in the commissioning of electrical equipment in regard to the following:

— Specific electrical equipment tests

— Testing program for placing the equipment in operation

The commissioning of electrical equipment may be for the following:

— A new hydroelectric plant installation;