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IEEE Guide for Online Monitoring of Large Synchronous Generators (10 MVA and Above)

IEEE Power and Energy Society

Sponsored by the
Electric Machinery Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

IEEE Std 1129™-2014

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Approved 27 March 2014

IEEE-SA Standards Board

Abstract: The guidelines for online monitoring of large synchronous generators are described in this guide. High-level discussions of each of the proposed monitoring methods, and recommended threshold values, whenever there is a general agreement on those values, are included in this standard. Instrumentation that is clearly understood to belong to the protection scheme of the generator (e.g., differential protection) is not covered by this guide.

Keywords: flux, frequency, generators, IEEE 1129™, online monitoring, partial discharge, PD, probe, real-time monitoring, resistance temperature detector, RTD, TC, thermocouple, voltage

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

PDF: ISBN 978-0-7381-9019-8 STD98589
Print: ISBN 978-0-7381-9020-4 STD98589

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Introduction

This introduction is not part of IEEE Std 1129™-2014, IEEE Guide for Online Monitoring of Large Sychronous Generators (10 MVA and Above).

The purpose of this guide is to revive, expand, and update the expired IEEE Std 1129™-1992, IEEE Recommended Practice for Monitoring and Instrumentation of Turbine Generators. However, while the original standard scope only covered cylindrical-rotor machines, this expanded version of the standard also includes salient-pole generators.

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IEEE Guide for Online Monitoring of Large Synchronous Generators (10 MVA and Above)

1. Overview

1.1 Scope

This document describes guidelines for online monitoring of large synchronous generators with ratings of 10 MVA and above. The scope includes generators with salient-pole rotors as well as generators with cylindrical rotors.

This standard also provides basic information on the various online monitoring techniques described as well as recommended threshold values for initiating a remedial or compensating action, whenever those values are typical within the power generation industry.

This standard does not cover those instruments that are clearly associated with the protection scheme of the generator, such as: differential, out-of-step, over/under frequency, and so forth.

1.2 Purpose

The purpose of this guide is to

a) Describe mechanisms of degradation and applicable monitoring devices.

b) Describe methods available for online monitoring of large synchronous generators included within the scope of this standard.