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Guide for computer-based control for hydroelectric power plant automation

Guide pour l'automatisation des centrales hydroélectriques à l'aide de systèmes
de commande informatiques

[IEC 62270:2013](#)

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Abstract: The application, design concepts and implementation of computer-based control systems for hydroelectric power plant automation is addressed. Functional capabilities, performance requirements, interface requirements, tradeoffs, and hardware considerations and operator training are discussed, including typical application examples.

Keywords: 62270, applications, computer-based control systems, functional capabilities, hardware considerations, hydroelectric power plant automation, hydroelectric power station, IEEE 1249™, interface requirements, operator training, performance requirements, recommendations

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IEEE INTRODUCTION

This introduction is not part of IEEE Std 1249, Guide for Computer-Based Control for Hydroelectric Power Plant Automation

This document is a guide for the power industry for the automation of hydroelectric power plants using computer-based controls. The document was prepared by the Working Group on Computer-Based Control for Hydroelectric Power Plant Automation of the Hydroelectric Power Subcommittee of the Energy Development and Power Generation Committee of the IEEE Power and Energy Society (PES).

Automation of hydroelectric generating plants has been a proven technology for many years. However due to the relative simplicity of the control logic for hydroelectric power plants, the application of computer-based control on hydro power plants lagged, as compared to applications on thermal generating stations. With the advent of economic, computer-based control systems in the 1980s, installations of these systems in hydroelectric power plants has proceeded at a rapid pace worldwide, for both new installations and rehabilitation of control systems in existing plants. Since preparation of the original guide, significant changes in technology and application criteria have occurred. The purpose of this revision is to address these changes and to harmonize this guide with a companion document, IEEE Std 1010™, IEEE Guide for the Control of Hydroelectric Power Plants.

The guide is directed to the practicing engineer who has some familiarity with computer-based control systems. It contains references and definitions for use with the guide. Clauses addressing functional capabilities, software, security, system integration, system architecture, data bases, user and plant interfaces, system performance, back-up capabilities, support systems, testing and acceptance criteria and system management are contained in the guide.

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This second edition cancels and replaces the first edition published in 2004. This edition constitutes a technical revision.

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

- a) update of system architecture aspects, with different process control system configurations;
- b) update of communications, user and plant interfaces aspects;
- c) suppression of case studies, because of the quickness of evolution of the technology;
- d) complete review of the bibliography, making mention of many IEC and IEEE standards as new references;
- e) addition of a new informative Annex B on legacy control systems.

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