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IEEE Guide for Motor-Operated Valve (MOV) Motor Application, Protection, Control, and Testing in Nuclear Power-Generating Stations

IEEE Power and Energy Society

Sponsored by the
Nuclear Power Engineering Committee

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Abstract: Motors used to drive valve operators in nuclear power-generating stations are discussed. Guidelines to evaluate the adequacy of motors used to drive valve operators; to provide recommendations for motor application; and to provide methods for protection, control, and testing of motors used for valve operation are presented.

Keywords: generating stations, IEEE 1290, motor application, motor control, motor protection, motors, motor testing, nuclear power, nuclear power-generating stations, valve operation, valve operators, valves

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Introduction

This introduction is not part of IEEE Std 1290-2015, IEEE Guide for Motor-Operated Valve (MOV) Motor Application, Protection, Control, and Testing in Nuclear Power-Generating Stations.

Motor-operated valves (MOVs) have historically presented both electrical and mechanical problems to the engineering community. Since a complete evaluation of MOV applications requires both electrical and mechanical disciplines, no one existing document covers MOVs in a comprehensive manner. As a result, MOV applications are evaluated using a wide array of existing standards and other documents. Thus, it is difficult to assemble all the supporting material to address all issues relating to MOVs and valve actuator motors (VAMs).

This guide provides references to other published documents as applicable. This guide presents issues and suggestions for consideration in the application, protection, control, and testing of VAMs. It specifically attempts to cover topics not found in existing IEEE, or other easily accessible, documents. This guidance is an accumulation of recommendations and suggested solutions to problems based on experience.

The reader is cautioned to use this guide in conjunction with applicable IEEE documents and new solutions to VAM problems that are continually evolving. Due to the dynamic nature of issues concerning MOVs, this document cannot be all-inclusive, and the user should search for information and solutions beyond this document.

Limit and torque switch settings have also presented problems to the engineering community. Their settings are dependent upon many complex factors. Guidance for setting these devices is outside the scope of this document, but this will be considered for a future revision.

This guide is presented in a logical progression of topics, their interrelationships, and their complexities.

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IEEE Guide for Motor-Operated Valve (MOV) Motor Application, Protection, Control, and Testing in Nuclear Power-Generating Stations

1. Overview

1.1 Scope

This guide applies to motors used to drive valve operators in nuclear power-generating stations.

1.2 Purpose

This guide presents guidelines to evaluate the adequacy of motors used to drive valve operators; to provide recommendations for motor application; and to provide methods for protection, control, and testing of motors used for valve operation.