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IEEE Guide for Maintenance, Operation, and Safety of Industrial and Commercial Power Systems

Sponsor

Power Systems Engineering Committee
of the
Industrial and Commercial Power Systems Department
of the
IEEE Industry Applications Society

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Abstract: Guidelines for the numerous personnel who are responsible for safely operating and maintaining industrial and commercial electric power facilities are provided. This guide provides plant engineers with a reference source for the fundamentals of safe and reliable maintenance and operation of industrial and commercial electric power distribution systems.
Keywords: electrical hazards, electrical maintenance, electrical safety program, fire protection, grounding, infrared, inspection, maintenance, operation protective devices, record keeping, safety single-line diagram, testing

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Introduction

(This introduction is not a part of IEEE Std 902-1998, IEEE Guide for Maintenance, Operation, and Safety of Industrial and Commercial Power Systems.)

The purpose of this document is to provide guidelines for the numerous personnel who are responsible for operating industrial and commercial electric power facilities.

The Working Group on a Guide for Operation, Maintenance, and Safety of Industrial and Commercial Power Systems was formed in 1981. It was sponsored by the Industrial and Commercial Power Systems Engineering Committee of the IEEE Industry Applications Society through the Safety, Operations, and Maintenance Subcommittee. The requirements of the then-new Occupational and Safety Health Act (OSHA, a U.S. law) and the limited information that was generally offered at that time were prime driving forces. The first task of the Working Group, a formidable task, was to agree on a scope that would produce a publication of reasonable size. The final product provides basic philosophies and approaches to problems without going into great detail on any one aspect of the subject.

The Working Group recognizes the international applicability of this guide. The Working Group also recognizes that this first edition of the guide refers to some practices that are U.S. oriented. As a practical matter, the consensus was to publish this edition now and to start the first revision promptly, with international content. The Working Group and the Safety, Operations, and Maintenance Subcommittee have committed to incorporating international information in the first revision.

Over the years, a great many people have contributed to the development of this guide. The names of these contributors, to the extent known, are listed below. Undoubtedly, some names have been missed. We extend our apologies to those people for such inadvertent oversight.

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Chapter 1
Overview

1.1 Introduction

Even with the best design and equipment, the expected safety and reliability performance of a power system is largely dependent on the quality and capability of its operation and maintenance. Optimizing maintenance and operation often can be the most cost-effective approach in improving system performance.

The phrase “industrial and commercial power systems” covers a broad spectrum. At one end of this spectrum is the large, industrial complex that can justify a staff of highly-skilled and knowledgeable maintenance and operation personnel. At the other end of this spectrum is the small, simple system in which the owner may have little or no electrical expertise.

The objective of this guide is to provide plant engineers with a reference source for the fundamentals of safe and reliable maintenance and operation of industrial and commercial electric power distribution systems. These fundamentals are independent of system size or complexity. The most effective utilization of the information contained in this guide would be its inclusion in a long-term maintenance and operation strategy that is tailored to the individual needs of each power system.

The fundamental elements include

a) Maintenance, operation, and safety considerations in system design;
b) Development of a maintenance and operations strategy to ensure long-term reliability;
c) Development of record-keeping and documentation files;
d) Development and implementation of testing and inspection methods;
e) Development of procedures for auditing maintenance and operation performance;
f) Development of procedures to ensure personnel safety.