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IEEE Std 3007.3™-2012

Recommended Practice for Electrical Safety in Industrial and Commercial Power Systems

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IEEE Recommended Practice for Electrical Safety in Industrial and Commercial Power Systems

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Abstract: All aspects of electrical safety in industrial and commercial power systems are covered. This recommended practice provides personnel with guidelines for understanding the fundamental concepts of the hazards of electricity along with safety-related activities associated with the operation and maintenance of in-plant electrical power distribution systems.

Keywords: electrical hazards, electrical safety program, electrical safety-related maintenance, fire protection, grounding, IEEE 3007.3, personal protective equipment, safe electrical work practices, safety single-line diagram

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Introduction

This introduction is not part of IEEE Std 3007.3-2012, IEEE Recommended Practice for Electrical Safety in Industrial and Commercial Power Systems.

IEEE Std 902™-1998 [B27], also known as the *IEEE Yellow Book*™, has been an excellent resource for engineering, management, safety professionals, and maintenance personnel since it was published.[a] The entire IEEE Color Books® series is in the process of being revised and reorganized into numerous "dot" standards, under the 3000 series of standards, with the *IEEE Yellow Book* being divided into three such "dot" standards. The new "dot" standards for operations and management, maintenance, and safety are as follows:

— IEEE Std 3007.1™-2010 [B29]

— IEEE Std 3007.2™-2010 [B30]

— IEEE Std 3007.3™-2012 (this standard)

IEEE Color Book reorganization

The thirteen recommended practices, known as the *IEEE Color Books*, have been industry-proven tools specifically developed for engineers, involved in all facets of industrial and commercial power systems, for many years. This set of recommended practices covers the many varied subjects dealing with all aspects of industrial and commercial power systems, including: analyzing, planning, calculating, coordinating, protecting, and assuring the safety of the power systems elements, equipment, and systems.

In 2002, the Industrial and Commercial Power Systems (I&CPS) Department of the Industry Applications Society (IAS) and the IEEE Standards Association (SA) initiated a major project to reorganize the IEEE Color Books series of standards. The primary goal of the project is to split up the recommended practices into a series of "dot" standards, such as IEEE Std 3007.1-2010 [B29], to allow each technical topic to be developed and balloted individually. A secondary goal of the project is to eliminate duplicate material that presently exists in the Color Book standards.

The decision to reorganize the Color Books standards was largely driven by the difficulty that exists today to review, revise, and ballot large standards (the "books") in a timely manner. Technical material presented in smaller documents (via "dot" standards) can be more effectively and efficiently managed, and will facilitate more frequent updating.

The thirteen Color Books standards are being reorganized into a larger introductory book (the "base" book), plus approximately 60 individual "dot" standards covering various technical topics.

Much of the general power-systems information will be assembled into the new "base" book that will serve as a launching point to jump into the more detailed specifics of industrial and commercial power systems. Working Group subject matter experts are providing and maintaining the technical content and are focused on those areas that are changing with new technologies, while allowing the more basic areas to remain stable.

IEEE Std 3007.3-2012 provides a recommended practice for electrical safety of industrial and commercial power systems. It is likely to be of greatest value to the power-oriented engineer with limited experience in this area. It can also be an aid to all engineers responsible for the operation and maintenance of industrial and commercial power systems.

[a] The numbers in brackets correspond to those of the bibliography in Annex A.

Due to the vital importance of electrical safety when working with industrial and commercial power systems, IEEE Std 3007.3-2012 provides more in-depth information to help ensure the safety of personnel working with electrical systems and equipment.

This standard is organized as follows:

Clause 1: Overview

Clause 2: Normative references

Clause 3: Definitions, acronyms, and abbreviations

Clause 4: Introduction to electrical safety

Clause 5: Establishing an electrical safety program

Clause 6: Providing and maintaining electrically safe facilities

Clause 7: Safe electrical work practices

Clause 8: Protective equipment, tools, and methods

Clause 9: Safety of use of electrical equipment

The new IEEE Std 3007.3-2012 provides a recommended practice for electrical safety of industrial and commercial power systems.

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IEEE Recommended Practice for Electrical Safety in Industrial and Commercial Power Systems

1. Overview

1.1 Scope

This recommended practice covers all aspects of electrical safety in industrial and commercial power systems. It provides personnel with guidelines for understanding the fundamental concepts of the hazards of electricity along with safety-related activities associated with the operation and maintenance of in-plant electrical power distribution systems.

1.2 General

An electrical safety program should address the needs of all employees, contractors, and visitors present at a facility. The size of the program depends upon the size and nature of the company, both in the number and complexity of facilities, and the number of personnel involved with electrical work. The guidance in this recommended practice presents the overall picture and expects that companies will consider their own specific needs. The program should be as simple and easy to understand as possible. At the same time, however, it should cover all the needs of each member of the organization.

An electrical safety program should define its objectives. The program objectives should consider the following: