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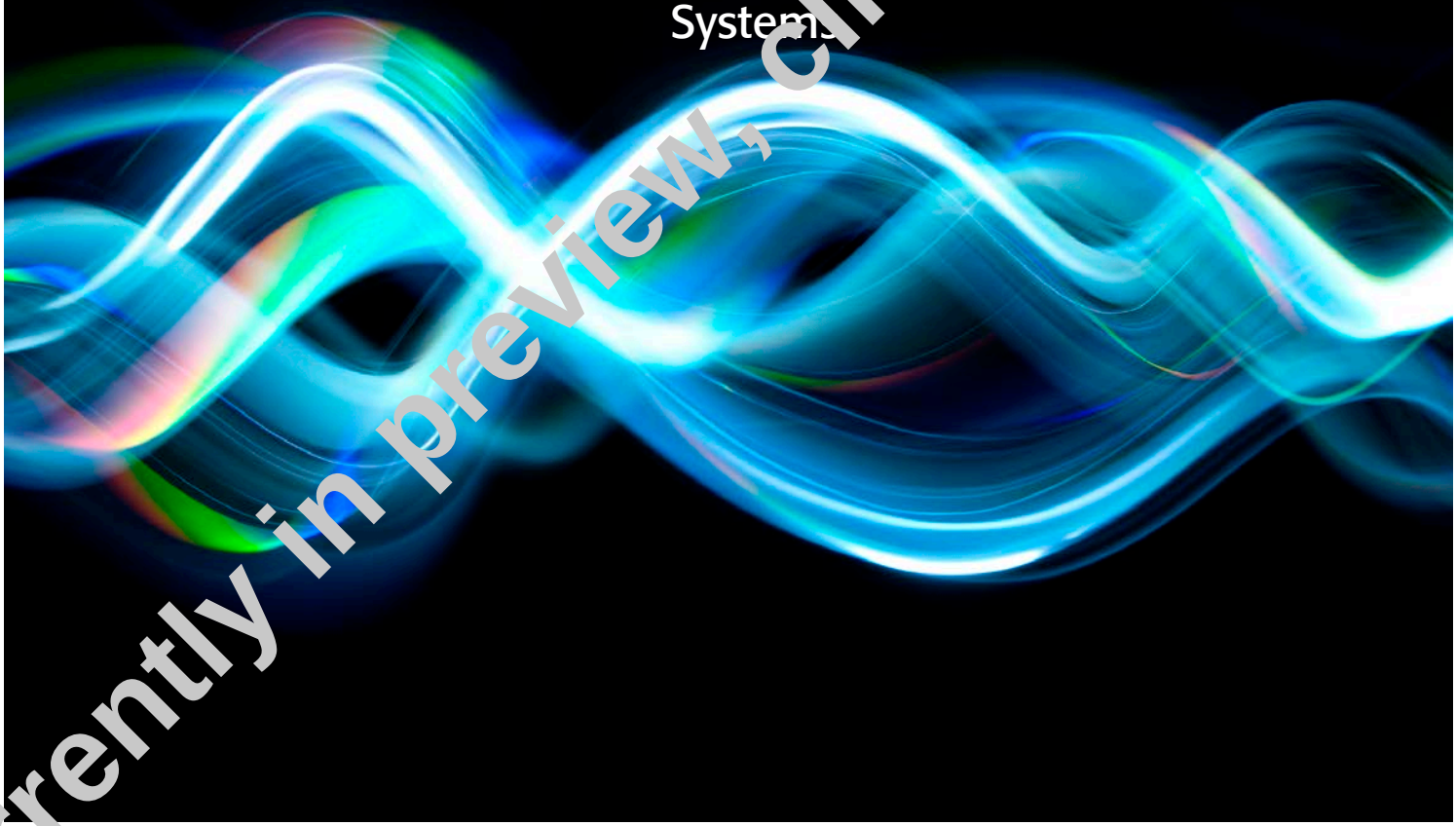
IEEE Std 3003.2™-2014

Recommended Practice for
Equipment Grounding and Bonding
in Industrial and Commercial Power
Systems



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IEEE Recommended Practice for Equipment Grounding and Bonding in Industrial and Commercial Power Systems

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Abstract: The grounding and bonding of equipment in industrial and commercial power systems is covered in this recommended practice. The interconnection and grounding of the non-electrical metallic elements of a system is covered first. This is followed by a discussion of the objectives of equipment grounding and bonding, including minimizing electric shock hazard to personnel, providing adequate current carrying capability for ground faults, and ensuring the timely operation of overcurrent protection.

Keywords: bond, electrode, ground, grounded, grounding, IEEE 3003.2™

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Introduction

This introduction is not part of IEEE Std 3003.2™-2014, IEEE Recommended Practice for Equipment Grounding and Bonding in Industrial and Commercial Power Systems.

IEEE 3000 Standards Collection®

This recommended practice was developed by the Technical Books Coordinating Committee of the Industrial and Commercial Power Systems Department of the Industry Applications Society as part of a project to repackage the popular IEEE Color Books®. The goal of this project is to speed up the revision process, eliminate duplicate material, and facilitate use of modern publishing and distribution technologies.

When this project is completed, the technical material in the thirteen IEEE Color Books will be included in a series of new standards—the most significant of which will be a new standard, IEEE Std 3000™, IEEE Recommended Practice for the Engineering of Industrial and Commercial Power Systems. The new standard will cover the fundamentals of planning, design, analysis, construction, installation, startup, operation, and maintenance of electrical systems in industrial and commercial facilities. Approximately 60 additional dot standards, organized into the following categories, will provide in-depth treatment of many of the topics introduced by IEEE Std 3000™:

— Power Systems Design (3001 series)

— Power Systems Analysis (3002 series)

— Power Systems Grounding and Bonding (3003 series)

— Protection and Coordination (3004 series)

— Emergency, Standby Power, and Energy Management Systems (3005 series)

— Power Systems Reliability (3006 series)

— Power Systems Maintenance, Operations, and Safety (3007 series)

In many cases, the material in a dot standard comes from a particular chapter of a particular IEEE Color Book. In other cases, material from several IEEE Color Books has been combined into a new dot standard.

The material in this recommended practice largely comes from Chapter 2 of IEEE Std 142™-2007 (*IEEE Green Book*™).

IEEE Std 3003.2™

This recommended practice provides fundamental concepts and recommended procedures for equipment grounding of power apparatus, wiring systems, interior and exterior substations, and utilization equipment.

Contents

IEEE Recommended Practice for Equipment Grounding and Bonding in Industrial and Commercial Power Systems

1. Overview

1.1 Scope

This recommended practice covers the grounding and bonding of equipment in industrial and commercial power systems. The interconnection and grounding of the non-electrical metallic elements of a system is covered first. This is followed by a discussion of the objectives of equipment grounding, including minimizing electric shock hazard to personnel, providing adequate current carrying capability for ground faults, and ensuring the timely operation of overcurrent protection.

1.2 General

The practices set forth herein are primarily applicable to industrial, institutional, or commercial power systems.

Where distances or power levels may dictate circuitry and equipment similar to a utility, consideration of utility practices is warranted. In addition to the general technical considerations in the practice of grounding as discussed in this recommended practice, as well as pertinent codes or standards imposed by local