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IEEE Guide for Temporary Protective Grounding Systems Used in Substations

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IEEE Power and Energy Society

Developed by the
Substations Committee

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(Revision of IEEE Std 1246-2011)

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Abstract: The design, performance, use, testing, and installation of temporary protective grounding systems, including the connection points, as used in permanent and mobile substations, are covered in this guide.

Keywords: grounding, IEEE 1246™, personnel safety, protective grounding, safety, temporary grounding, ultimate rating, withstand rating

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Introduction

This introduction is not part of IEEE Std 1246-2020, IEEE Guide for Temporary Protective Grounding Systems Used in Substations.

Practices for applying temporary protective grounds (TPGs) in substations vary from company to company. These practices have come from a number of documents, such as ASTM F855, IEC 61230, and IEEE Std 1048™, as well as from field experience derived from line maintenance practices. This guide was developed to consolidate into one document all the necessary information for the company to develop sound personnel safety grounding practices in substations. The guide provides information on the physical construction, application, and testing of TPGs as they are used in substations.

This revision emphasizes the electromechanical forces present with high short-circuit currents and with high current offset (asymmetry). In recent tests, these forces were found to have a significant impact on the ability of a complete TPG assembly, including attachment points, to successfully handle these high short-circuit currents. It also introduces a new method for determining the TPG impedance (length and cable size) for use in determining the current through the worker for an accidental energization.

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1. Overview

1.1 Scope

This guide covers the design, performance, use, testing, and installation of temporary protective grounding (TPG) systems, including the connection points, as used in permanent and mobile substations.

1.2 Purpose

This guide suggests good practices, technical information, and safety criteria to assist in the selection and application of temporary protective grounding systems, including the connection points, as used in permanent and mobile substations.

1.3 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (shall equals is required to). [1, 2]

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (should equals is recommended that).

The word may is used to indicate a course of action permissible within the limits of the standard (may equals is permitted to).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (can equals is able to).

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is

[1]The use of the word *must* is deprecated and cannot be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.
[2]The use of *will* is deprecated and cannot be used when stating mandatory requirements; *will* is only used in statements of fact.