

IEEE Standard for High-Potential Test Requirements for Excitation Systems for Synchronous Machines

IEEE Power and Energy Society

Sponsored by the
Energy Development and Power Generation Committee

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(Revision of
IEEE Std 421.3-1997)

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Abstract: High-potential test voltages for excitation systems used with synchronous machines are established. Test voltages are established based on whether equipment is connected to the exciter power circuit or is electrically isolated from the exciter power circuit.

Keywords: dielectric testing, excitation systems, IEEE 421.3™, test voltages

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Introduction

This introduction is not part of IEEE Std 421.3™-2016, IEEE Standard for High-Potential Test Requirements for Excitation Systems for Synchronous Machines.

This standard defines high-potential test requirements for excitation systems for synchronous machines. IEEE Std 421.3™ establishes test voltages for the exciter output circuit and for all other circuits electrically isolated from the exciter output circuit. This standard was written to agree with existing standards as much as possible but expands the test voltages to account for stresses associated with high ceiling exciters.

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1. Overview

1.1 Scope

This standard applies to high-potential testing of complete excitation systems and their components for synchronous machines. The components of the excitation system are described in IEEE Std 421.1TM [B2].¹ Auxiliary devices connected to either the input or output side of the rectifier bridge are exposed to similar excitation system stresses and are included in the requirements of this standard. Examples of such devices include temperature indicators, transducers, meters, field circuit breaker, discharge resistor, crowbar, etc. This standard does not cover the synchronous machine field winding.

1.2 Purpose

The purpose of this standard is to provide requirements and specific directions for the high-potential testing of complete excitation systems and their components using the most recent information manufacturers have made available.

¹ The numbers in brackets correspond to those of the bibliography in Annex B.