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IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications

IEEE Industry Applications Society

Sponsored by the
Petroleum and Chemical Industry Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

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Abstract: Specific test requirements for qualifying electrical resistance trace heating for commercial service are provided in this standard. A basis for electrical and thermal design is included, heating device characteristics are addressed, and installation and maintenance requirements are detailed. Recommendations and requirements for unclassified heating device applications are provided.

Keywords: deicing, design, electrical resistance, floor warming, freeze protection, frost heave, heat tracing, heater, heating cable, heating device, IEEE 515.1, installation, maintenance, snow melting, trace heater, trace heating.

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Introduction

This introduction is not part of IEEE Std 515.1-2012, IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications.

The utilization of electrical resistance trace heating in the commercial construction industry has increased steadily due to the availability of more reliable products and more efficient operation. The need exists for broad-based technical information about electrical resistance trace heating systems. In the construction industry, these systems are used for temperature maintenance of domestic hot water, general freeze protection of piping and drain lines, roof and gutter deicing, snow melting of concrete and asphalt embankments, frost heave protection of freezer floors in cold storage warehouses, and floor warming as an enhancement for the comfort of office personnel. The approval process for these systems provides the basis for this standard.

This standard provides specific test requirements for qualifying electrical resistance heating devices for commercial construction and a basis for electrical and thermal design. Type and routine production tests are outlined in this standard and address such subjects as mechanical durability, resistance to moisture, and electrical and thermal ratings. This standard outlines specific recommendations dealing with the installation of electrical resistance trace heating systems for the intended use.

Contents

IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications

1. Overview

1.1 Scope

This standard provides test criteria to determine the suitability of heating devices and fittings that are used for commercial applications. The standard also includes detailed recommendations for the design, installation, and maintenance of electrical resistance trace heating in these applications.

Commercial applications include installations both inside and outside commercial business buildings, such as office buildings, hospitals, and airports. Typical applications include freeze protection of water pipes; temperature maintenance of hot water piping and other lines and tubing; protection of sprinkler systems; roof, gutter, and pavement deicing; and other applications as shown in Table 1 in 4.1.

Commercial applications involving hazardous (classified) locations shall also meet the relevant hazardous location requirements in IEEE Std 515™ [1] as well as any other applicable codes and standards.

[1] Information on references can be found in Clause 2.