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IEEE Guide for the Installation of Fire-Rated Cables Suitable for Hydrocarbon Pool Fires for Critical and Emergency Shutdown Systems in Petroleum and Chemical Industries

IEEE Power and Energy Society

Sponsored by the
Insulated Conductors Committee

and the

IEEE Industry Applications Society

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Abstract: Information on the installation of fire-rated, power, control, and instrumentation cables suitable for hydrocarbon pool fires, as typically used in petroleum, chemical, and similar plants, offshore marine platforms, in emergency and safety shutdown systems are provided in this installation guide.

Keywords: cable, circuit integrity, conductor, emergency isolation valves, emergency shutdown, fire rated cable system(FRCS), fire-safe, furnace, hydrocarbon pool fire, hydrocarbons, IEEE 1810™ mineral insulated cables (MI), motor operated valves (MOV), Polymeric fire rated cable, safety shutdown systems, shake and bake, wire

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Introduction

This introduction is not part of IEEE Std 1810-2017, IEEE Guide for the Installation of Fire-Rated Cables Suitable for Hydrocarbon Pool Fires for Critical and Emergency Shutdown Systems in Petroleum and Chemical Industries.

IEEE Std 1810™ is a guide for fire rated cables that are installed in Hydrocarbon Pool Fire (HPF) areas. The considerations for a successful cable system installation in HPF areas are based on the selection of cable trays, conduits, cable glands and all other related hardware that may be exposed to the HPF conditions. IEEE Std 1810 does not discuss regular installation practices that are mandated by a local governing body, or common cable requirements such as wet location, sunlight resistant, operating temperature etc. The information in this guide discusses the differences between regular cable installations and installations that may see HPF rapid rise 1093 °C (2000 °F) temperature and heat flux conditions. The use of materials that will not melt in the fire can be found throughout the guide. The fire rated cables need to be installed as tested in the HPF cable test to improve the survivability of the fire rated cable system under HPF conditions. The selection of a fire rated cable is only part of the fire rated cable system consideration. Many ideas in this guide are based of API 2218 and IEEE Std 1717™.[1] This guide addresses only fire rated cables installation; it does not address all other consideration for fire proofing that can be found in API 2218 or other recommended practices, standards, guides, etc. The design considerations in this guide may also be useful in other areas exposed to fire conditions which may not be as severe as those found in hydrocarbon pool fires.

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

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