

P1732

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Type of Project: New IEEE Standard

PAR Request Date: 28-May-2015

PAR Approval Date: 26-Oct-2015

PAR Expiration Date: 31-Dec-2019

Status: PAR for a New IEEE Standard

1.1 Project Number: P1732

1.2 Type of Document: Recommended Practice

1.3 Life Cycle: Full Use

2.1 Title: Recommended Practice For Space Charge Measurements In High Voltage Direct Current Extruded Cables For Rated Voltages Up To 550 kV

3.1 Working Group: Working Group for HVDC cable systems (cables, joints and terminations) (DEI/SC/HVDC cable systems) (DEI/SC/HVDC WG)

Contact Information for Working Group Chair

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Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Dielectrics and Electrical Insulation Society/Standards Committee (DEI/SC)

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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 12/2015

4.3 Projected Completion Date for Submittal to RevCom: 05/2016

5.1 Approximate number of people expected to be actively involved in the development of this project: 15

5.2 Scope: This standard recommends best practices for the measurement of space charges in full-size High Voltage Direct Current (HVDC) extruded cables. By "full-size cables" it is meant those cables that are actually installed in the field in order to realize power links. Focus is on poling time, depolarization time, heating and cooling of specimens. Particular reference is made to space charge measurements to be carried out during load cycle qualification tests (either prequalification or type test load cycles). The ultimate goal of this standard is not checking the compliance with any maximum acceptable limit of either space charge or electric field, but rather assessing the variation of the electric field profile in the cable insulation wall during load cycle qualification tests.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: This document will not include a purpose clause.

5.5 Need for the Project: Recently, many High Voltage Direct Current (HVDC) cable systems with extruded insulation have been installed worldwide, since extruded cable systems have several advantages over traditional Mass Insulated Non-Draining cable systems.

Unfortunately, extruded insulation for HVDC cables is strongly affected by trapped space charge. For this reason, various space charge measurement methods have been set up over the last decades.

Focus has been particularly on thin, small size specimens for Research and Development purposes, while much less attention has been paid to space charge measurements in full-size cables.

On the other hand measurements in full-size cables are much more relevant to practical cable systems, making it possible to replicate the conditions experienced when the cable is loaded in service.

Measuring space charge in full-size cables is not easy, due to inherent experimental difficulties mainly associated with thick insulation.

However, space charge measurements on large HVDC extruded cables have been reported to be satisfactorily performed since the 1990s. In addition, space charge measurements on full-size HVDC extruded cable loops have been and are being performed in some laboratories worldwide for qualification tests in the framework of HVDC extruded cable link projects of major significance. These space charge measurements rely on project-dependent agreements between cable manufacturers and the customers, since a standard procedure is still missing. This project aims at filling this remarkable gap.

5.6 Stakeholders for the Standard: utilities
cable manufacturers
power system engineers
high voltage test laboratories
research institutes
universities

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes (Item Number and Explanation):