Combined qualification according to IEC IEEE ICEA of 345 - 400 kV cable components and system

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ABSTRACT
The system approach in IEC Very High Voltage standards and the component approach in IEEE, and ICEA standard lead to different tests and scope of tests to type test a cable system and its components, i.e. cable, joint and GIS termination.

The authors will present the different tests, the requirement levels in the different standards, in view of the validation of the system/component design matching real life operation in the network.

- Installation mechanical stresses
- Operation dielectric and thermomechanical stresses

An envelope qualification scope of tests will be deduced.
Finally, an example of complete qualification will be given for a 345/400 kV cable component and system that meets the requirements of the envelope scope of tests.

KEYWORDS
XLPE Land Cable system, IEC62067 prequalification tests, IEEE 404, IEEE 48, IEEE1300, ANSI/ICEA S-108-720

INTRODUCTION
Globalization of the international market place has shown some limits coming from the environmental impact of transporting heavy item over long distances. For that reason, the construction of a high voltage cable factory in North America became a serious project in the 2010’s.

The purpose of the paper is report how the new factory was qualified for HV cable production together with accessories supplied by its mother company.

The specification for this qualification was encompassing the need to comply with international standards (IEC) as well as with North-American standard (IEEE and ANSI/ICEA). [1]

GENERAL QUALIFICATION PROGRAM
Though the factory in question was mainly oriented to the American HV underground cable market it was obvious that it should also comply with the requirements set forth in IEC 62067. This standard requests a system qualification including as a minimum a prequalification test and a type test.