EDF POWER NETWORKS LAB

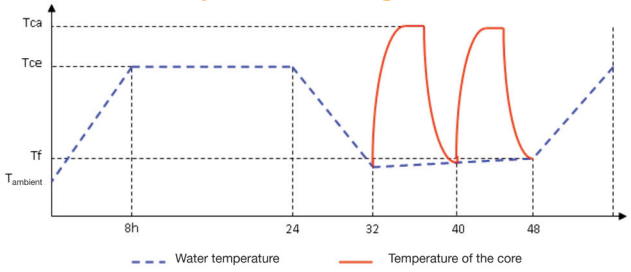
ROBUSTESS TESTS

Test bench for accelerated ageing on MV accessories.

This test is dedicated to MV joints, transitions and derivations.

The objective of the test is to evaluate the dielectric strength of the accessories after a prolonged stay under water and subjected to current cycles simulating the daily cycles of the network. In addition, the presence of the accessory under 1 meter of water makes it possible to highlight the possible defects of sealing. The water is also subjected to 48 hours temperature cycles to accelerate the ageing of the components of the accessory.

Detail of the thermal cycles during the robustness test:



Representation of a thermal cycle

Tca: core heating temperature (95 ± 5 °C).

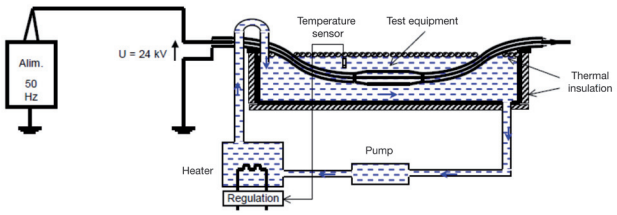
Tce: water heating temperature (75 ± 5 °C).

Tfe: water temperature after cooling (< 40 °C).

Tamb: ambient temperature.

Each cycle lasts for 48 hours and is divided into two phases: heating the water at 80 °C. for 24 hours, cooling the water for 8 hours and finally heating the core over two 8-hour cycles.

The current test bench for carrying out the robustness test consists of:



Schematic diagram of the test facility

A tank allowing the immersion of the tested materials under 1.0 (± 0.1) m,

A system for heating and cooling the water,

A heating system for cables,

An industrial frequency voltage source of 24 kV (2Uo).

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A constantly evolving test equipment

The test bench has been built in 2009. Since 2013, the facility has a dedicated MV source and a fully autonomous SCADA, thus allowing easier real-time monitoring of all the critical parameters over the entire duration of ageing. Moreover since 2018, the facility has also a dedicated LV source.

This test bench belongs to Enedis.

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