

0064. Assessment of the LVRT Capability of a Smart DT with OLTC for Renewable Applications

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Introduction

The capability to withstand the Low Voltage Ride Through (LVRT) tests of the control box for a smart distribution transformer (DT), with On Load Tap Changer (OLTC), has been tested under various conditions in the Smart Grids test center Fraunhofer SysTec – IEE. The present project, called INTREPID (INtelligent Transformer for Renewable Energy Prosumers Integration and Deployment), has been selected for the first transnational access call of the ERIGrid consortium.

ERIGrid

The Horizon 2020 Project ERIGrid (GA No. 654113) brings together 18 partners from 11 countries distributed all over Europe with unique and complementary DER research infrastructures and leading expertise in this field.

Test set up

The Device Under Test (DUT) is connected to a 20 kV-grid via the LVRT test container feeding different inverters and a high power load on the LV side.

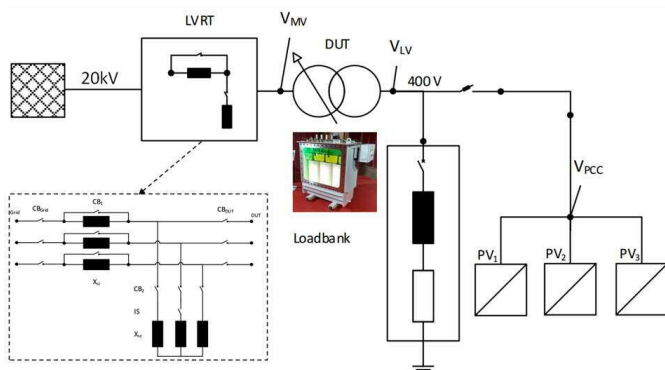


Figure 1. LVRT test general layout with the smart transformer in the Test Bay.

The LVRT test container will generate voltage dips (0.92 to 0 p.u.) at the MV-side of the DUT.



Figure 2. Smart transformer in the Test Bay

Results

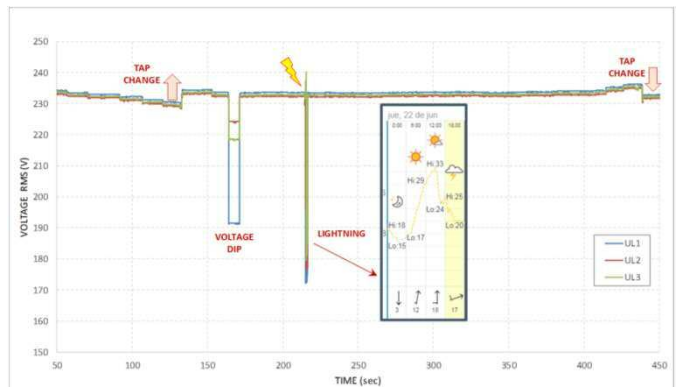


Figure 3. Voltage Dip. Quick operation. 0.9-0.8 p.u.

No operation during voltage dip and correct operation afterwards (2-phases: R,S), despite an unexpected lightning strike. Test was performed during a thunderstorm in Kassel (Fraunhofer IEE).

Conclusions

The capability to withstand the LVRT tests of the control box of a smart DT with OLTC has been tested in the Smart Grid test center Fraunhofer SysTec – IEE.

In addition to the existing test procedures, which are in accordance with best practice, current standards and application requirements, the performed investigations should serve to further develop the grid connection guidelines.