SGB-SMIT orders test campaign on wind turbine transformers

05 June 2018, 17:57

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The SGB-SMIT Group is a producer of a wide range of power and distribution transformers. The Group sells its products worldwide for various applications, including in the wind industry.

Transformers in multi-megawatt wind turbines are critical components just like the gearbox, generator or convertor. The transformer is one of the first components to detect if electric power is flowing. Correct operation under all possible conditions is therefore of the utmost importance for the energy production of the turbines.

That is why SGB-SMIT ordered its transformer prototypes to be tested at OWI-Lab. During the tests in a climate chamber, the transformer can be exposed to the extreme temperatures and correlating pressure and thermo-mechanical stresses of arctic conditions. The climate chamber is indeed a test chamber where climatological circumstances can be applied in a controlled environment.

In the test programme of the OWI-Lab climate chamber, it was possible to verify whether the transformers can, in these extreme circumstances, be connected to the high-voltage network and whether the electrical isolation system and the materials used are appropriate for the relevant temperature specifications. Finally, the test programme can show at which rate the power can be

increased in case of a cold-start-up scenario and check whether the wind turbine can be ramped up to full-load within four hours.

Reliable testing

In order to get a detailed insight and proof of the reliability of prototype developments, a transformer prototype was installed in the same harsh circumstances. Besides tests under climatological circumstances, the testing facility of OWI Lab can also provide the necessary voltages and currents and thus conduct a total system test as if the wind turbine transformer were installed in Canada or Scandinavia.

“Testing the performance of components in extreme conditions is an essential step forward for the next generation wind turbines to go global in a sustainable and reliable way", said Jan Declercq, head of R&D at transformer supplier SGB-SMIT.

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