Energisation of Wind Turbine Transformers with an Auxiliary Generator in a Large Offshore Wind Farm Under Islanded Operation - DTU Orbit (19/08/2019)

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The prospective inrush currents during the energization of wind turbine transformers in a large offshore wind farm during islanded operation were estimated by time-domain simulations covering different energizing scenarios. In this way, worst case procedures could be identified. The energization of the farm was carried out by an auxiliary diesel-driven synchronous generator placed on the offshore platform. The available information from all of the components and excitation control was implemented in PSCAD-EMTDC. The results from the simulations were compared with the capability curves and current limits of the synchronous generator. Based on the worst possible transformer energization scenario, an optimized procedure to reduce the loading of the auxiliary generator during transient conditions has been proposed based on the reduced generator terminal voltage, automatic voltage regulator parameters, and reactive power compensation element switching at the offshore platform.

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