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Calculation of the Vibration Behaviour of the End Windings of Large Hydrogenerators

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Abstract

Winding overhangs of electrical machines require special attention with respect to their complex geometry and load situation. A proper mechanical support has to be designed ensuring minimal stress and relative movement while allowing sufficient access for cooling air. ANDRITZ HYDRO has developed a parameterised calculation program package allowing a time-efficient but accurate estimation of natural frequencies and eigenmodes as well as deformations and stresses during normal operation and failure conditions. The electrical as well as the mechanical models are built upon finite elements. Both the calculation models and the analysis process and results for a large pumped-storage hydro generator are outlined.