Implementation of the parametric variation method in an EMTP program

The paper presents an algorithm for- and shows the implementation of a method to perform parametric variation studies using electromagnetic transients programs applied to an offshore wind farm. Those kind of studies are used to investigate the sensitivity of a given phenomena to variation of parameters in an electric system. The proposed method allows varying any parameter of a circuit, including the simulation settings and exploits the specific structure of the ATP-EMTP software. In the implementation of the method, Matlab software is used to control the execution of the ATP solver. Two examples are shown, for both time domain and frequency domain studies, where the sensitivity of maximum overvoltages at transformer terminals and the admittance resonances in a radial of an offshore wind farm to a change of the collection grid cable parameters is investigated.