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Estimating the damping properties of generating unit using experiment data.

At the present time the complex generating unit models with a great number of parameters are implemented for the emergency control of power systems. This parameters identification problem is challenging one. State-of-the-industry measurement devices allows to calculate electrical parameters during electromechanical disturbances. That is why one can use simplified generating unit models, which parameters can be calculated using field measurements. In particular generating unit damping properties may be estimated. The proposed method involves the synchronous machine damping power estimation by means of the measurements approximation during dynamic disturbances. This value allows to determine the generating unit capability to damp power system oscillations. The method was examined in MATLAB Simulink and by means of JSC «STC UPS» electrodynamical model. One can apply obtained results in the power system emergency control and in a wide variety of problems relating to dynamic transients calculation and analysis.

Key words: damping power, synchronizing power, adaptive model, simplified synchronous machine model, synchrophasor measurements.

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