Characteristics of high-power turbo units mechanical oscillations.

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Generators of modern nuclear power plants with a capacity of 1200 MW are characterized by significant complexity of design and large electromagnetic and mechanical loads. The shaft line of the unit includes seven elements and is characterized by oscillation frequencies varying in the range from 8 to 70 Hz. The parameters of transient processes associated with torsional oscillations of the shafts of turbo-units for three generator models were compared, and it was shown that, under certain mechanical parameters, resonant amplification of oscillations is possible, which is dangerous for the structural elements of the turbo-unit, particularly for the connection between the generator and the exciter, which is taken into account during design.

Key words: synchronous generator, split stator winding, short circuit, shaft oscillations.