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Development of Rotational Speed Control Equipment And Brake Equipment for 300MVA Pulse Generator

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For supplying enough power for 2M-HL Tokamak, a new 300MVA pulse generator has been developed, the new generator with 400 tons of rotor to stored energy will be driven by an 8500kW asynchronous motor . In order to reduce the large starting current, a high voltage variable frequency converter has been developed as the starting device because of the large inertia. Liquid resistors in series with motor rotor as the standby starting equipment has been developed. Two sets of equipment start the generator through the switch . In this paper, a simulation model of the high voltage variable frequency converter is built by the MATLAB/SMULINK. Calculation are made for motor rotor series of liquid resistors. The maximum series resistors , the starting current and starting time are obtained.

The working speed of 300MVA generator is 500RPM. It costs more than one hour to stop freely the unit. So a energy-consumed braking equipment and mechanical braking equipment are developed. These two equipments are analyzed in this paper. The braking resistor, excitation current and braking time are calculated. the mechanical brake pressure and brake time are calculated also.

During the debugging the unit, the actual running data and calculation data are compared. The analysis and calculation are more conform to the actual running situation.

Eligible for student paper award?

No

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