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## Study on thermal stability of transformer under external thermal disturbance

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In recent years, the application of superconducting technology in electrical field is becoming more and more popular and the HTS transformer has become a hot topic because of its small size, light weight and low loss. The thermal stability is a critical issue for the application of the HTS transformer. In order to study the temperature characteristic, a 500 kVA HTS transformers is designed. Firstly, we design a two-dimensional axisymmetric model of the HTS transformer and the current distribution and temperature distribution of the transformer winding are simulated based on finite element method (FEM). A thermal disturbance is then applied to the transformer and study the minimum quench energy (MQE) and the quench propagation velocity (QPV) of the HTS transformer. The thermal stability of transformer is studied by changing thermal disturbance and applied current.

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