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**Influence of a synchronous machine rotor circuits magnetic coupling on its transient processes.**

It is shown that an important factor specifying the transient process of the synchronous machine during disturbances, is taking into account of mutual induction in the leakage flow path between the field winding and the equivalent damping circuits of the generator. A refined equivalent circuit which includes explicitly the specified mutual induction of rotor circuits is justified. The calculation result compared with the field tests of the model generator and industrial turbine generator T3ΦΠ - 220.

*Key words: synchronous machine, equivalent circuit, mutual induction rotor circuits, transient processes.*

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