

## **Comparison of the effect of series and shunt compensation devices on the transient stability limit.**

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The article is devoted to a comparative assessment of the effectiveness of FACTS devices in terms of their impact on the transient stability of parallel operation of generators of an electric power system in short circuits. The estimation based on the calculation of the transient stability limit at the first angle swing in the simplest scheme of an electric power system (power plant – transmission line – infinite bus system). The values of the stability limit are determined in per units of the transfer capability of transmission line external to the power plant, which is assumed to be equal to one. Static synchronous compensator (STATCOM) – a shunt-connection device and static synchronous series compensator (SSSC), which is a serial connection device, are considered as power mode control devices. The objects of the study are a turbogenerator with a capacity of 800 MW and a capsule hydrogenerator with extremely unfavorable electromechanical parameters (increased inductances, reduced mechanical inertia constant). Based on the simplest analytical evaluation and calculations of limits, it is shown that serial devices with the same converter power have a noticeably greater efficiency (30–50 %) in terms of increasing the stability limit.

*Key words: transient stability, stability limit, static synchronous compensator, static synchronous series compensator.*