

## **Use of a static synchronous series compensator to increase the efficiency of parallel operation of power grid.**

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The article considers the use of a static synchronous series compensator (SSSC) for solving problems of optimal power distribution over parallel electric networks of various voltage classes and limiting current overloads of power transmission lines, and provides considerations for choosing the rated power of the SSSC in an equivalent design scheme containing parallel overhead lines of 500 and 220 kV. Based on the calculations of the steady-state modes, it is shown that due to the introduction of an additional regulating EMF of the SSSC, a redistribution of power flows between the 500 and 220 kV networks can be achieved, leading to a reduction in losses. Based on the calculations of transients under various perturbations, it is shown that the appropriate control of the SSPC can be used to ensure the exclusion of current overload of power transmission lines in post-accident modes. The following disturbances are considered: short circuits on the 500 kV lines with their subsequent disconnections, and weakening of parallel connections.

*Key words: electric power system, power transmission line, static synchronous series compensator.*