

Feasibility Assessment of High-Temperature Superconducting AC Cable Lines Implementation in Megacities

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Abstract : Various variants of technical solutions aimed at improving the reliability of power supply to consumers of 110 kV substation are considered. For each technical solution, the results of calculation and analysis of electrical modes and short-circuit currents in the electrical network are presented. The estimation of electric energy consumption for losses within the boundaries of substation reconstruction was carried out in accordance with the methodology for determining the standards of technological losses of electricity during its transmission through electric networks. The assessment of the technical and economic feasibility of the use of HTS CL compared with the complex reconstruction of the 110 kV substation was carried out. It is shown that the use of high-temperature superconducting AC cable lines is a possible alternative to traditional technical solutions used in the reconstruction of substations.

Keywords : superconductivity, cable lines, superconducting cable, AC cable, feasibility

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