

Determination of marginal active power flows using probabilistic approaches.

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A methodology has been developed for the calculation of the static stability limits in interconnected power system transmission corridors (controlled sections), taking into account the random nature of the factors influencing their (limits) values.

A variant of implementing the discussing in paper methodology has been developed. It is based on the calculation model for electromechanical transient processes (Eurostag software). It additionally allows the automatic identification of hazardous power transmission corridors. This helps to exclude certain calculation results where limits are reached out of the considered transmission corridors but in others. In addition, it ensures methodically accurate accounting of the response of automatic excitation regulators when changing operating modes.

Automation tools (for practical use) have been developed to manage calculations for steady-state conditions and electromechanical transient processes. These tools can reduce labor intensity and the influence of the «human factor» when determining the set of influencing factors and their combinations on static stability limits through transmission corridors.

Key words: static stability limits, statistical tests methods (Monte-Carlo methods), probability, influencing factors, dynamic weighting, correlation coefficients.