

## **Investigation of the influence of errors in overhead transmission line per unit length parameters on the results of steady-state performance and short-circuit currents calculations.**

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Determination of overhead lines' per unit length impedances is one of the key steps accompanying steady-state performance and short-circuit currents calculations. These impedances depend on many factors, such as tower construction, climate, earth properties, etc., which are difficult to accurately account for and require the use of complex mathematical methods. For this reason, various assumptions are used in practice to simplify expressions for overhead transmission line positive and zero sequence impedances. The article provides a quantitative estimation of the errors formed by application of the simplified expressions for the overhead line positive and zero sequence per unit length impedances at a frequency 50 Hz in a wide range of changes in various characteristics and physical properties of overhead transmission lines. A practical example shows the effect of these errors on the results of steady-state performance and short-circuit currents calculations.

*Key words: overhead transmission line, conductor, ground wire, ground resistivity, impedance, positive sequence, zero sequence, Carson's integral, short circuit.*