

ESTIMATION PECULIARITIES OF EXTERNAL POLYMER INSULATION RELIABILITY OF GAS-FILLED INSTRUMENT TRANSFORMERS

The method for estimating the parameters of theoretical distributions for calculating the indicators of operational reliability is proposed. The authors propose a method for estimating the parameters of theoretical distributions for calculating the indicators of the operational reliability of a solid insulating structure of high-voltage devices, which is a supporting insulating cover for high voltage instrument transformers filled with gas as an insulating liquid. This technique makes it possible to estimate the parameters of a new distribution law, which is chosen on the condition that it does not contradict the existing distribution law with its known parameters. The developed technique makes it possible to obtain the values of the indicators of the operational reliability of high-voltage equipment by determining the parameters of theoretical distributions, if the developer is the data of experimental studies or statistical information as a result of monitoring the operation of insulating structures, taking into account the actual operating conditions of such high-voltage devices. This makes it possible to take into account the influence of external factors and performance characteristics inherent in instrument transformers, both current and voltage. In the proposed methodology, as an example, a supporting insulating casing is considered, which is during operation in the most unfavorable conditions, such as external pollution, humidification, overvoltage, etc. The theoretical conclusions are confirmed by the results of calculations using the example of the design of a current transformer of the ТОГ-362 series. A more accurate determination of the effectiveness of the proposed method for predicting the parameters of theoretical distribution laws can be achieved by performing an additional series of calculations and experimental tests of specific insulating structures. Thus, it was concluded that it is possible to use the results obtained to assess the operational reliability of both gas-filled instrument transformers and similar high-voltage equipment.