Analysis and location of partial discharges in power transformers by means of electrical methods

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Abstract:
Considering the number of failures in high voltage power transformers caused by problems in bushing and winding insulation, it is important to study means for diagnosing incipient failures, to avoid long unavailability periods and its consequences. The aim of this work is to study detection and measurement procedures, concerning the evaluation of position of partial discharge inside the transformer, in order to evaluate the degree of danger for the equipment. The methodology is based on a noninvasive measurement of partial discharges from the transformer bushing. The position of the partial discharge source is estimated considering the transformer winding model, and the measurement and proper evaluation of the response to the partial discharge pulses. By means of a proper modeling, measurement and interpretation, the localization of the problem can be performed. For the measurements, the conventional detection technique proposed by IEC 270 Standard was used.