**Development of Digital Twin Technology for Power Transformer Diagnostics Based on the Partial Discharges Method**

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[**Abstract**](https://ieeexplore.ieee.org/document/10515321)

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**Abstract:**

Recently, the partial discharges method has been actively developed for the diagnosis of power transformers. Relatively recently, the partial discharge method began to be used in digital twin technologies. To effectively solve these problems in order for diagnose the insulation of power transformers, it is necessary, using special software and hardware systems, localize partial discharges from various sources and, based on their characteristics, determine the pre-breakdown situation. In order to distinguish partial discharges from other spark discharges, it is necessary to construct so-called amplitude-phase diagrams. At this stage, there are difficulties due to interference, so they usually resort to special reference voltage sources, which, in turn, are difficult to use practically for diagnosing a power transformer. This publication proposes to extract information about the reference signal and construct amplitude-phase diagrams based on the same data sources using a telescopic antenna specially modified for these purposes.

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**I. Introduction**

As it is known, the functional condition of power equipment is determined by the condition of all its components, primarily by the state of insulation. Digital twin technologies in relation to power transformers require the effective a model containing criteria for assessing the condition of main components and parts of the power transformer [1].

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