

## **ABSTRACT**

### **Predictive Maintenance of Transformers using Machine Learning**

Electrical transformers are indispensable in the seamless transmission and distribution of electricity; however, they are not immune to faults. Such malfunctions, though infrequent, can lead to substantial repair costs and more critically, to significant downtime in power systems. Consequently, there is a pressing need to seek maintenance alternatives that go beyond traditional approaches. This research delves into the application of Machine Learning (ML) methods for the early detection of transformer faults. Leveraging a dataset enriched with seven vital indicators of transformer health, various ML algorithms were meticulously evaluated. The results of this study reveal that the Random Forest algorithm surpasses others in predicting faults with the greatest accuracy, demonstrating its potential as a reliable tool for predictive maintenance in the power industry.

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