

# CONTENTS

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## **ABSTRACT**

The IoT Integrated Real-Time Transformer Health Monitoring and Protection System is an innovative solution designed to address the critical challenges associated with transformer failures in power distribution networks. Transformers are indispensable components in electrical grids, and their failure can lead to significant power outages, economic losses, and safety hazards. Traditional monitoring methods are often manual, periodic, and reactive, making them inadequate for modern power systems. This project leverages Internet of Things (IoT) technology to enable real-time monitoring of key transformer parameters, including temperature, humidity, voltage, current, frequency, and oil quality. By integrating advanced sensors, microcontrollers, and cloud-based platforms, the system provides continuous data visualization, real-time alerts, and automated protection mechanisms. The proposed solution not only enhances the reliability and efficiency of transformers but also reduces maintenance costs and downtime. This project demonstrates the transformative potential of IoT in modernizing power systems and aligns with the global shift toward smart grids and Industry 4.0.