

Enhancing Power System Resilience through Advanced Transformer Protection Techniques

Ms. Chinmayi Satish Thakare¹, Mr. Rupesh Rajabhau Borkhade², Mr. Yash Raju Shendre³

B.E. Electrical Engineering Final Year^{1,2}

B.E. Electrical Engineering Third Year³

Jawaharlal Darda Institute of Engineering and Technology, Yavatmal, Maharashtra, India
cthakare002019@gmail.com, rupeshborkhade25@gmail.com, shendreyash9@gmail.com

Abstract: *This research paper explores modern techniques for enhancing transformer protection in power systems, addressing challenges like overloading and faults. The study advocates for the integration of intelligent electronic devices, artificial intelligence, and predictive analytics to create adaptive protection schemes. Simulation studies demonstrate the superiority of these approaches, emphasizing improved reliability, reduced downtime, and enhanced grid resilience. The findings contribute valuable insights for power system operators and engineers seeking to fortify electrical grids in the face of evolving challenges.*

Keywords: Transformer protection, Power system resilience, Intelligent electronic devices (IEDs), Artificial intelligence (AI), Machine learning, Deep learning, Adaptive protection schemes, Fault detection, Overloading, Predictive analytics, Real-time monitoring, Sensor networks, Communication protocols, Simulation studies, Grid resilience, Electrical infrastructure, Preventive measures, Economic benefits, Operational benefits, Case studies.

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