

Project Title: Investigation and Testing of Cybersecurity in Protective Relay System of Smart Power Distribution Grid.

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1. Project Overview

Protective relays play a critical role in the power system at all levels, from generation, transmission, to distribution. Because they control the actuation of circuit breakers, relays must operate flawlessly, with high security and speed. History has shown that major cascading outages (for example 2003 in US-Canada and 2006 in Europe), have involved mis-operation or mis-coordination of protective relays [1-9]. Such vulnerability could be exploited in relays with communication and control access. A cyber-attack could alter internal settings, coordination, communication, and control of protective relaying systems to trip circuit breakers causing cascading system-wide failures. The goal of this project is to investigate and test cybersecurity for optimal reclosing of circuit breakers with a view to building a resilient and reliable smart power distribution grid.