

## GUJARAT POWER RESEARCH & DEVELOPMENT CELL GUJARAT URJA VIKAS NIGAM LTD

The GPRD Cell has introduced a unique remotecontrolled and monitored system for HT shuntconnected capacitor banks using master and slave controllers. The master controller communicates the total feeder KVAR requirement to a central server, while the slave controller sends local KVAR data based on node voltage.

The system's software optimizes capacitor bank operation (225/450/600 KVAR) by balancing both local and total KVAR needs. In case of communication failure, the banks operate independently. This approach enhances capacitor utilization and reduces VAR, leading to improved feeder performance.

A Remotely Controllable Capacitor Bank System for Var Compensation of Feeder

## **Features**

- Total Var of the feeder is compensated using multiple capacitor banks with different ratings (150, 225, 450, and 600 kVAR) and Optimized placement of capacitor banks based on local parameters and historical load demand of the feeder for precise VAR compensation
- IoT-based Master and Slave controllers for realtime monitoring and control
- Web-based dashboard for remote management and data visualization
- Efficient, coordinated operation of all capacitor banks to optimize power factor correction and minimize line losses
- Remote control and monitoring capabilities for enhanced system management
- Fail-safe operation with autonomous control during communication failures

## Benefits

- Var compensation and power factor improvement for the entire radial feeder, leading to more efficient power distribution
- Extended operation life of capacitor banks through optimized central control and coordination
- Reduction in loading of Feeders, resulting in reduced technical losses
- Improved voltage profile across the radial feeder, ensuring consistent power quality for consumers
- Enhanced consumer satisfaction through reliable and stable voltage delivery

Patent No-488254





