GE
Grid Solutions

CSD100

Point-on-Wave Controller

GE's CSD100 is an advanced **Controlled Switching Device for high voltage AC circuit-breakers**. The ability to mitigate switching transients is becoming a key issue for today's grids as the generated stresses can lead to power quality problems and accelerated aging. The CSD100 provides utilities a cost-effective, streamlined solution to protect utility assets and improve system reliability by minimizing risks and operation costs.

Challenges

As our power systems evolve and we bring more intermittent renewable generation online, these power sources can cause new operational challenges for power system operators including:

- Grid instability
- Daily load variation, requiring reactive power compensation
- Need to transmit large blocks of energy since power sources are often distant from main consumption centers

Challenges with digitization of the grid include:

- Moving toward digital substations
- Acquiring and communicating data from the primary equipment
- Managing and operating substations with large amounts of data

Solution

GE's CSD100 Point on Wave Controller in association with GE's advanced circuit-breakers addresses these challenges by delivering the performance and situational awareness needed to:

- Cost effectively improve a network's power quality and network stability
- Dramatically limit the stresses on critical substation circuit breakers - extending asset life
- Easily integrate into an Asset Performance Management (APM) system and strategy

Reliable and Versatile

- Switching performance evaluation
- High-speed transient recorder
- Multiple load switching
- Built in cyber security features in line with the latest NERC, IEC, and IEEE standards
- Flexible mounting options (DIN Rail or 19" bay mounting)

Safe Connectivity of Intermittent Generation

- Voltage dip reduction
- Transfomer stress limitation

Safe Switching of Reactive Power Compensation

Drastic stress reduction on equipment for compensation:

- Capacitors Bank
- Shunt Reactor

Increased Reliability of Overhead Lines (OHL)

- Secured closing and auto-reclosing
- Improved utilization of overhead lines designs
- Improved operational limits of insulation levels
- Reduction of surge arrestor stress

Advanced Communications

- IEC 61850
- Extensive data acquisition and storage capabilities
- Simplified integration into digital substations and associated secondary systems
- Secure, web-based HMI for situational awareness and simplified operational management

Safe Connection of Renewables to the Grid

Managing the connection to the grid, the CSD100 combined with a properly configured-circuit breaker significantly reduces grid disturbances and allows independent power producers to simplify their switching procedures:

- Limitation of voltage dip at grid connection
- Containment of inrush current at power transformer energization
- Reduced electrical stresses on power transformers, increasing asset life

Safe Switching in Reactive Power Compensation

Capacitor banks and shunt reactors help to stabilize the grid and improve the power factor. Acting as reactive power generators, their switching needs to be controlled precisely to a limit associated electrical transients:

- Significant stress reduction on capacitor banks
- Significant stress reduction on shunt reactors

Optimized Overhead Lines

Generation hubs are often distant from main consumption centers. Large amounts of power are transferred through very long lines. Overvoltage phenomena are generated by switching operations and amplified by the distance. The conventional approach, consisting of adding a pre-insertion resistor to the circuit-breaker, can be effectively replaced by the CSD100. Advantages include:

- Safe auto-reclosing operations
- Reduction of required insulation level
- Compact overhead lines design

Asset Performance Management

With extensive data acquisition and storage capabilities, the CSD100 allows for extensive monitoring and optimized switching to protect equipment. Together, with its digital communication abilities, the CSD100 plays a key role in your Asset Performance Management (APM).

For more information please contact
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