



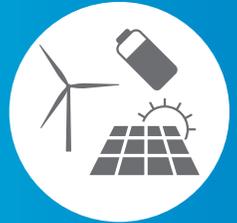
Digital Energy

Advanced Energy Management System (AEMS)

Realtime Shutdown & Restoration Manager (RTSRM)

ARE YOU PREPARED TO QUICKLY RESTORE YOUR POWER GRID OR SAFELY MANAGE THE EVER-INCREASING NUMBER OF SWITCHING ORDERS?

GE's Realtime Shutdown & Restoration Manager application enables transmission utilities to plan and validate switching order plans and also accelerate the power grid restoration after planned and unplanned outages



BUSINESS CHALLENGE

Switching order planning and validation are regular activities inside every transmission control room. Utilities generally rely on offline tools for planning switch orders completely decoupled from their SCADA/EMS. Also unplanned and planned outages play a key aspect in the control room. Usually, operators rely on extensive and comprehensive pre-defined set of instructions to restore the grid.

In both situations, operators rely on procedures that were defined for typical cases without real-time awareness. Many times, outaging or restoring the grid can take longer due to the discrepancies between the planned grid and its real state.

REAL RESULTS

Model Size

No. of Buses: ~5,500

Outage Plan

Largest Autogenerated Outage Plan for Severe Weather-driven Outage: ~ < 10 secs, > 2,300 Steps, > 1,000 CBs, 3.5 Million people affected by Outage

Restoration Plan

Avg. Autogeneration Time for CAT-II Type Plan (Cranking Path Plan): ~ < 1 sec

Avg. Autogeneration Time for CAT-III Type Plan (Bulk Area Plan): ~ < 17 secs (Restored - UNs: 58, LDs: 59, LNs: 119)

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OVERVIEW

Leveraging real-time data and the real state of the grid, Real-time Shutdown & Restoration Manager defines the best set of actions for planned outages and grid restoration

Realtime Shutdown & Restoration Manager was conceived to minimize the impacts of planned & un-planned outages and accelerate the restoration time of disconnected assets. RTSMR delivers:

- Real-time Monitoring
 - Key equipment monitoring
 - System disturbance monitoring
 - Island monitoring
- Planning, Prediction & Execution
 - Import all existent outage, restoration, mitigation, switch order and clearance plans
 - Auto-generation of outage, restoration and mitigation plans
 - Predictive base-case and contingency assessment of plans
 - Study autopilot for incremental steady state validation of plans
 - Realtime autopilot of incremental dynamic validation of plans
 - Automated assessment report generation



Realtime Shutdown & Restoration Manager
Autopilot Plan Validation dashboard presenting the real-time performance of RTSRM

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