Reliability-Based Dynamic Line Rating System

Next generation transmission line dynamic rating and forecasting system using real-time measured conductor data combined with reliability-based methods

The SMARTLINE™ dynamic line rating (DLR) system uses reliability-based rating and forecasting techniques, and real-time conductor and weather data. Compared to conventional dynamic line rating (DLR) methods, SMARTLINE ratings are developed by actively learning how the conductor behaves with regard to conductor temperature, weather, current, and the conductor’s exact clearance-to-ground. Using reliability-based methods, SMARTLINE’s ratings demonstrate clearance compliance in addition to traditional thermal limit compliance. The result are true capacity limits and reliable capacity forecasts. SMARTLINE eliminates fixed-capacity transmission assets, and replaces them with a living set of transmission pathways whose capacities reflect real-time conditions. SMARTLINE is key to a true “smart” transmission grid.

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Recognize Extreme Events
Extreme events, such as severe ice loading or emergency loading conditions, are recognized and the resulting changes in conductor behavior are automatically incorporated in SMARTLINE’s ratings.

Eliminate Transmission Constraints & Congestion
SMARTLINE ratings can be used to eliminate or reduce congestion costs. The combination of actual conductor measurements and learning over time produce ratings that are reliable and dependable.

Critical Span Measurements
The SMARTLINE system uses data from Lindsey TLM conductor monitors which maybe placed on all critical spans on a transmission line. The measurement of actual critical span clearance makes obsolete the need to use data from several spans away to infer critical span clearance.

Clearance Monitoring
The SMARTLINE system is the first and only ratings solution based on directly monitored clearances by the Lindsey TLM conductor monitor. SMARTLINE ratings are based on continuous geospatial clearances; a requirement of legal and safety standards. Clearance compliance to standards is directly monitored and conductor behavior is learned and understood.

Computing Requirements
The SMARTLINE system supports flexible hosting options. Host in a secured virtual environment, or integrate into an existing IT environment.