

HELM™ Tools Enhance Grid Reliability and Security



Smarter Applications for Better Electric Grid Management

As our grid environment becomes ever more complex and uncertain, operators need load-flow results they can always trust. To meet this need, Battelle and Gridquant are bringing new decision-making tools to grid operators. The proprietary HELM™ (Holomorphic Embedding Load-Flow Method) suite of grid management tools provides accurate, reliable data under even high-stress conditions. Battelle utilizes HELM™ transmission grid management tools to help you:

- Preserve power quality
- Increase security and operational efficiency
- Reduce blackouts and power disturbances

The HELM™ Advantage

Current grid management systems are based on iterative methods of load-flow and state estimation that require some prior knowledge of grid conditions. These traditional methods result in model fidelity deterioration as the transmission system approaches voltage collapse—and therefore are not reliable when most needed. The HELM™ platform utilizes advanced grid management algorithms that allow operators to accurately monitor and control the power grid under all operating conditions. The HELM™ tools enable:

- Increased asset and capacity utilization
- Enhanced grid reliability
- Reduced operating and management expenses
- Automated decision support, even in the presence of grid disturbances
- Enhanced real-time monitoring and control

Detect Errors in Model and
SCADA Data ▶

Identify and Solve
Limit Violations ▶

Perform Contingency Analysis ▶

Develop and Assess
Restoration Plans ▶

Grid Solutions ▶

Put the people of Battelle to work for you. Today.

800.201.2011
solutions@battelle.org
www.battelle.org

What Can Battelle Do For You?

The HELM™ platform provides real-time and off-line applications for transmission grid management. Battelle is Gridquant's exclusive representative for HELM™ consulting services in the U.S. and Canada. Let Battelle help you by applying these tools to your existing grid management processes.

Detect Errors in Model and SCADA Data

Using the HELM™ tools, Battelle can help Control Center operators and managers make faster decisions under complex, high-utilization conditions. The platform builds "model-based" rather than "rule-based" views of the grid to facilitate the visualization of the whole grid. This allows operators to detect errors in the model and Supervisory Control and Data Acquisition (SCADA) data and prepare "hit lists" of high-probability target areas to investigate and resolve.

Identify and Solve Limit Violations

Battelle helps your operators and managers develop, test and continuously improve their Operation Limit Violation Solving Procedures against a changing landscape of threats. The HELM™ Limit Violation Solver application identifies limit violations and calculates correct load flows to the collapse point. Then, it provides a series of model-based maneuver recommendations and action steps for resolution.



Perform Contingency Analysis

With the HELM™ Contingency Analysis tool, Battelle assists your operators in accurately assessing the security of the system when there is a loss of one or more network elements. We help you develop plans to swiftly react and "re-dispatch" the system using this model-based intelligent application.

Develop and Assess Restoration Plans

The HELM™ platform's Restoration Plan Development and Assessment decision support tool facilitates dynamic restoration of operations to their normal state in the event of a blackout or other disruptive disturbance. The tool allows operators to set constraints such as equipment limits and power restoration priority for hospitals and emergency service operations.

Grid Solutions

In addition to the HELM™ platform, Battelle provides many other products and services for the power transmission, distribution, and equipment industries, including:

- Active Demand Management Solutions
- Distribution System Modeling and Simulation
- Grid Analytics and Visualization
- Equipment Design, Material Selection, and Lifecycle Analysis

Ready To Get Started?

Contact Battelle to see the HELM™ grid management tools in action. The people of Battelle can help you develop a customized solution or set up a system test today.

About Gridquant | Gridquant Inc. develops and deploys tools to help manage our increasingly complex electrical grids. Utilizing the patented Holomorphic Embedding Load-Flow Method (HELM™) algorithm, Gridquant has developed breakthrough capabilities for operating the transmission grid, even in the most stressed states.

Battelle
The Business of Innovation

About Battelle

Battelle is the world's largest independent research and development organization, providing innovative solutions to the world's most pressing needs through its four global businesses: Laboratory Management; National Security; Energy, Environment and Material Sciences; and Health and Life Sciences. We advance scientific discovery and application by conducting \$6.5 billion in global R&D annually through contract research, laboratory management and technology commercialization.