AspenTech Microgrid Management System™ (MMS)

Power Reliability for Energy-Intensive Companies

Power grids are evolving, expanding and becoming increasingly dynamic. Centralized electricity generation has given way to distributed energy resources, smart grids and the increasing popularity of microgrids. Companies are installing more electricity generation—both in capacity and types—and as a result need a system capable not only of managing their production, but also balancing and optimizing generation versus load, to help ensure power reliability, load flexibility, reduced emissions and maximum return on investment.

AspenTech's Standard and Advanced Microgrid Management System offerings bring innovative software solutions to the market, based on more than 30 years of electric utility software experience. Built on top of the AspenTech OSI monarch SCADA™ platform, which is installed at over 400 utilities worldwide, AspenTech MMS ensures power reliability and helps optimize your on-site energy system. Leveraging decades of power utility industry experience and cybersecurity knowhow, AspenTech MMS brings functionality, flexibility and scalability to the microgrid challenge.

AspenTech Standard MMS Features

- Real-time control, visualization, trending, alarming and dashboard reporting of the electrical grid, to ensure reliability and incident response.
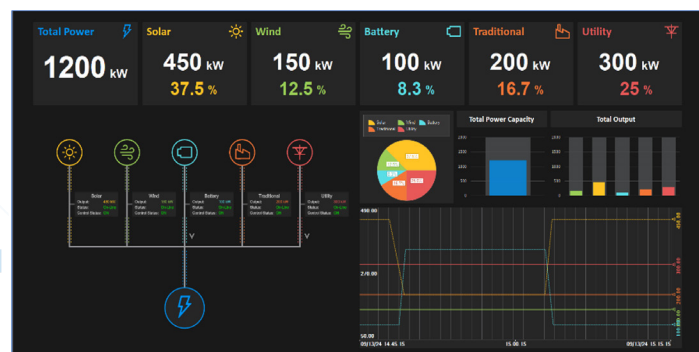

Figure 1. Sample microgrid dashboard display providing an overview of all generation and storage sources.

Figure 2. Detailed displays of renewable generation assets, including real-time values, trends integrated with historical data and alarm conditions..

- Optimization of renewables together with traditional electrical generation and battery storage.

- Forecast and scheduling to enable peak shaving, generation/load balancing, smart inverter control and optimized battery charging/discharging.

- Visual and responsive data historian and reporting.

The ability to control all devices from any point in a microgrid allows the system to take advantage of all the benefits offered by microgrids. The ability to island and disconnect from the grid, as well as reconnect in a safe and consistent manner, provides increased power reliability, asset continuity and considerable versatility to assist the grid during high demand or large outage events.

Combining control with advanced forecasting techniques opens the door to optimizing energy performance within the microgrid. AspenTech Standard MMS features robust AI (a machine learning-based, neural network forecasting algorithm) to create load and generation forecasts that become more accurate as more data is processed. Load and generation forecasts can be created for up to 35 days going forward. The forecast algorithm output allows the MMS to utilize different optimization algorithms to minimize emissions and/or electricity costs and schedule assets for automatic dispatch.

Easy to View and Manage Power—Including Renewables

A major challenge for any facility using renewable energy is how to account and plan for instances when production exceeds consumption. AspenTech Standard MMS addresses this challenge by providing the ability to either sell excess power back to the utility, or schedule battery storage so that the excess power can be used later when renewable generation is low.

A key component of any SCADA environment is the ability to visualize and monitor the grid. Resources can be modeled in geographic, asset layout and one-line views for clear topological understanding of the electric network and asset risk.

The SCADA system also provides real-time alarming and trending in customizable dashboards, ensuring complete electrical network awareness. These views can be accessed locally and controlled by on-site operators, or remotely as an enterprise view in centralized command centers. This enables operators to monitor the health of renewables, batteries or any other generation source that can improve overall asset performance and responsiveness.

AspenTech Standard MMS also includes a high-speed data historian that helps improve real-time operations by integrating historical and real-time data on operator screens, generate web-based reports, and provide access to historical data from standard viewing and analysis tools such as Microsoft Excel and Microsoft Power BI.

There are several architectural options to choose from as well. The production system, which contains all of the applications, can be **redundant or non-redundant** depending on your system availability needs. There is also an option to add a **program development server (PDS)** that is a non-production environment to replicate the production system, allowing customers to test changes and patches prior to applying them to the production system. Finally, there is an option for a **dedicated web server on a DMZ** for authorized users to view system data from any browser-enabled device outside of the secure control system network.

AspenTech Advanced MMS Capability

AspenTech Advanced MMS provides the same functionality as AspenTech Standard MMS, with additional capabilities for customers with more complex systems, and those requiring direct participation in the electrical market to sell back excess generation. AspenTech Advanced MMS is also aimed at companies needing models that support microgrids covering assets across a regional circuit or large geographic areas, to support larger-scale generation and captive transmission in remote areas. The full AspenTech Digital Grid Management (DGM) suite is available to meet these needs.

Flexible, Sustainable Solution for All Industries

AspenTech MMS offers solutions for microgrid customers of all different sizes and complexities, enabling you to:

- Increase power reliability

- Accelerate your net-zero journey and reduce your carbon footprint through managing the integration of new green energy and storage

- Maximize ROI by improving situational awareness to drive desired outcomes and electrical market participation

- Enhance cybersecurity to protect all sources and users across the network

Whether you are an energy-critical asset owner, a systems integration company delivering complete microgrid solutions or an engineering organization designing industrial and commercial microgrids, AspenTech can configure a Microgrid Management System that fits your needs.

Now that you've made the investment in power independence and security, leverage AspenTech software to protect and maximize it.