

 | Brochure

Advanced Distribution Management Systems

Overview

The electrical distribution system operators of today face an increasing set of demands and expectations from customers, regulators and public officials to improve safety, reliability and efficiency of the distribution system while providing timely and reliable data about power system conditions and power outages. Meeting these demands now and into the future requires a modern, integrated and real-time solution built specifically for distribution system operations.

Spectra™ is a real-time integrated solution for advanced distribution management. **Spectra** enables utilities to improve system reliability, efficiency and safety while providing timely and reliable information to internal and external stakeholders. Incorporating a full suite of advanced applications, **Spectra** represents a comprehensive and modern solution for the challenges facing today's distribution system operators and a robust real-time platform for each utility's future roadmap and vision.

Spectra enables distribution operators to:

- Model and manage the distribution network
- Monitor and control the power system
- Manage planned and unplanned outages
- Dispatch crews and manage field work
- Analyze and optimize the operation of the network
- Integrate renewable and distributed generation

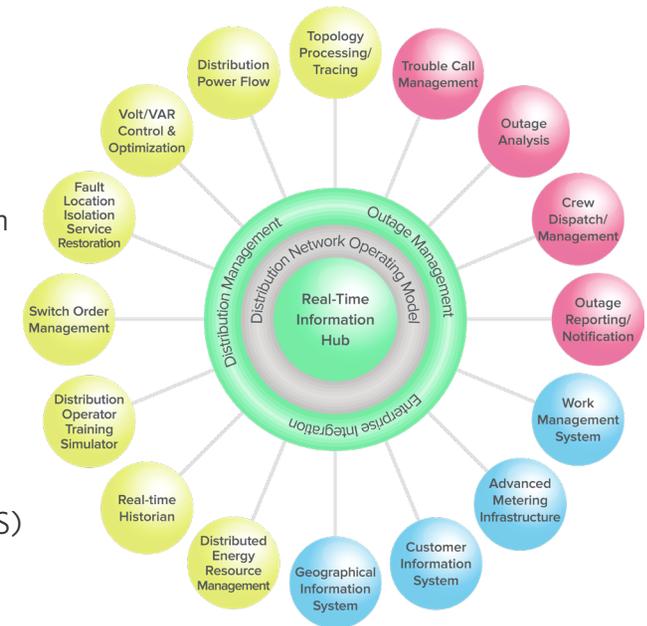
Spectra encompasses a complete and integrated set of functions and applications that operate on a common network model and are accessible through a common, seamless user interface with a standardized look and feel. **Spectra** provides in-depth situational awareness, real-time monitoring and control, advanced analysis applications and centralized distribution automation.





The **Spectra** suite offers the following modular applications:

- Distribution Network Operating Model (DNOM)
- Distribution Topology Processing (DTP)
- Distribution Power Flow (DPF)
- Short Circuit Analysis (SCA)
- Distribution State Estimator (DSE)
- Volt/VAR Control/Optimization (VVC/VVO)
- Fault Location, Isolation and Service Restoration (FLISR)
- Optimal Feeder Reconfiguration (OFR)
- Switching Order Management (SOM)
- Outage Management System (OMS)
- Distribution Operator Training Simulator (DOTS)
- Short Term Load Forecast (STLF)
- Load Management (LM)
- Load Shed (LS)
- Historian (HIS)
- Demand Response Management System (DRMS)
- Distributed Energy Resource Management System (DERMS)
- Enterprise integration with GIS, CIS, AMI, IVR, WMS and others



Spectra is built on a real-time, high-performance and secure platform to meet the evolving needs of utilities for advanced smart grid capabilities. The benefits of the **Spectra** solution include:

- *Real-time integrated solution:* Built on a real-time SCADA platform using a common architecture, technology and user interface, it enables integrated advanced applications on a single network model by combining real-time data, electrical network data and connectivity data.



- *Efficient maintenance and support:* Logical design using open technologies reduces training, integration, support and maintenance costs, and enables flexible authority and role management.
- *Comprehensive security:* Provides integrated security architecture with support for real-time and corporate access.
- *Centralized distribution automation:* Provides automated applications to reduce losses, maintain power quality, improve reliability and reduce peak demand.
- *Improved reliability:* Improved situational awareness as well as applications to automatically respond to outages, minimizing the number of customers impacted.
- *Improved safety:* Increased visibility of the network status, integrated switching and tagging, and a single network model reduce chances for unsafe conditions.
- *Improved operations efficiency:* Provides simulation and analysis tools to help operators evaluate and validate options against current and future conditions to make better decisions.

- *Improved energy efficiency:* Automated applications to reduce losses and peak demand.
- *Management of distributed energy resources (DERs):* Modeling, monitoring, management and control of renewable and distributed generation, energy storage, microgrids and other DER types.

Using our open interfaces and many open APIs, as well as our SCADA, DMS and OMS applications, companies obtain the greatest possible return on investment while effectively automating distribution operations and preparing for the transition to a fully integrated and automated distribution business.

Examine why many distribution companies around the world are selecting OSI technology to run their distribution operations.

Modules

Spectra eMap™

DMS Representation and Visualization

Spectra eMap is the operational model of the distribution system and the fundamental component of DMS, OMS and other applications. It provides real-time connectivity models and advanced visualization to enable operators to monitor and control the distribution system while making operational decisions.

Spectra DMS™

Distribution Management System

Spectra DMS encompasses a comprehensive and integrated set of powerful, electric and distribution system management solutions accessible through a common user interface. Spectra DMS monitors the performance of the distribution system, enabling users to anticipate and respond to potential overloading and under-voltage situations with the best solutions—before they become critical.

Electra OMS™

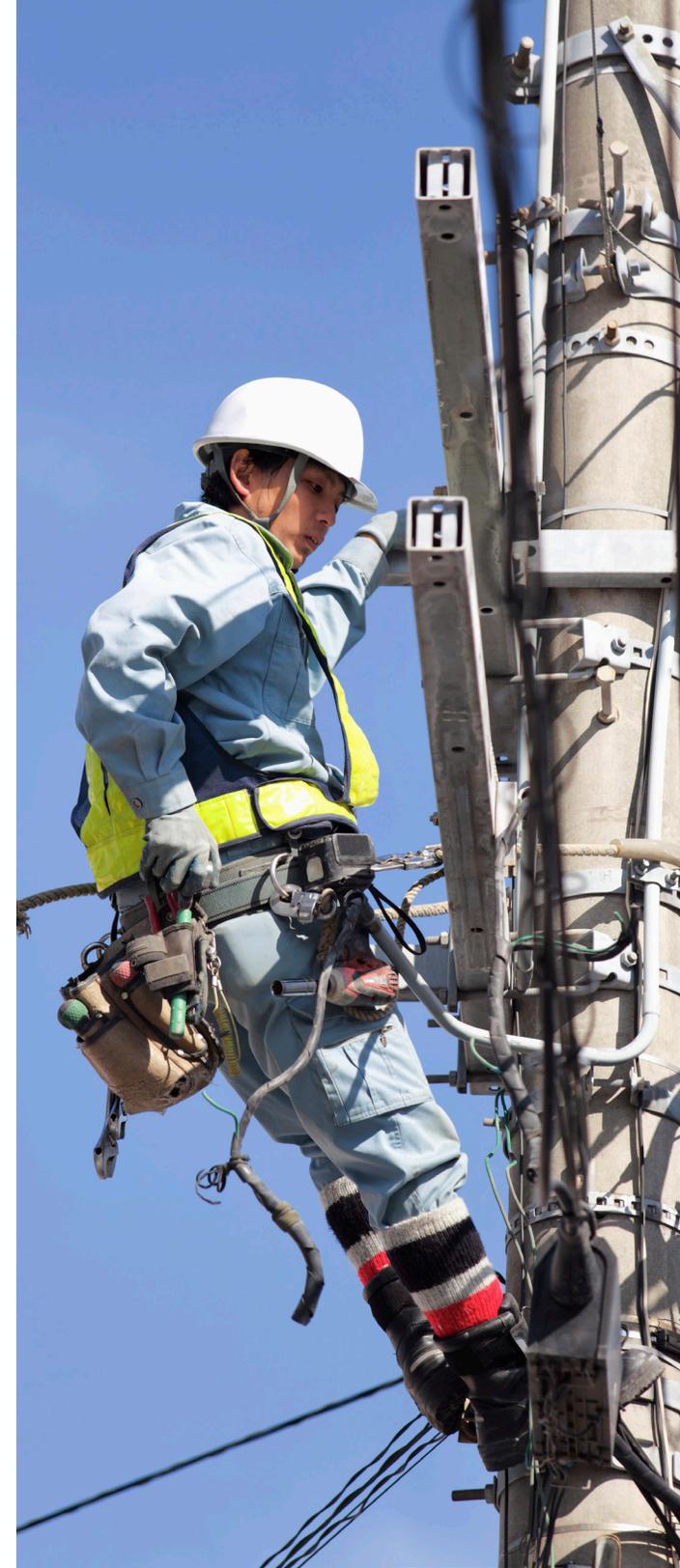
Outage Management System

Electra OMS is a next-generation, state-of-the-art outage management solution that empowers utilities to better manage outage response times and keep customers, management and regulators well informed about the scope, status and forecast of restoration efforts while improving overall system reliability. **Spectra OMS** also enables the assignment of work to field technicians.

OpenGIS™

Geographical Information Systems Interface

OpenGIS provides a standard configuration interface to the utility's GIS system to retrieve network model and system maps (electrical, geographical, other information). **OpenGIS** APIs are designed to enable interfacing to common GIS products and can be tailored to specific needs. **OpenGIS** supports incremental updates to the model on a periodic basis, such as daily or weekly.



Spectra DPF™

Distribution Power Flow

Spectra DPF provides operators with visibility into the electrical state of the distribution system. **Spectra DPF** features a robust, three-phase unbalanced power flow algorithm that calculates real-time voltage and loading violations, as well as situations nearing operational limits. **Spectra DPF** can also be executed in study mode to simulate what-if scenarios.

Spectra SCA™

Short-Circuit Analysis

Spectra SCA analyzes faults in radial or looped feeders and calculates per-phase values for fault conditions, including fault contributions from motors and distributed generation (DG) sources. It can be used in a real-time model to query the fault capacity at selected points or in study mode to analyze the currents and voltages in all parts of the network given fault conditions.

Spectra DSE™

Distribution State Estimator

Spectra DSE is a robust, high-performance application that calculates per-phase values for the entire distribution network in real time. It takes into account all available measurements, including redundant or partial measurements. As the number and variety of real-time data increases, **Spectra DSE** provides a more accurate network state for advanced DMS applications.

Spectra VVC™

Volt/VAR Control/Optimization

Spectra VVC empowers utilities to reduce system losses, release system capacity, improve voltage levels and implement conservation voltage reduction (CVR) with intelligent and optimal management of reactive resources. It monitors distribution system voltage profiles and power flows, and controls capacitor banks, voltage regulators and LTCs to achieve the desired objectives.

Spectra FLISR™

Fault Location, Isolation and Service Restoration

Spectra FLISR enables utilities to reduce outage duration and avoid loading and voltage violations when restoring faults. **Spectra FLISR** utilizes fault data and the real-time network model to locate faults and determine the switching steps required to isolate faulted distribution system equipment and restore service to un-faulted sections of the system.

Spectra FR™

Feeder Reconfiguration

Spectra FR is an advanced switching solution that determines optimal load transfer to improve the overall performance of the distribution system. **Spectra FR** enables operators to respond quickly with switching solutions to relieve overload situations and minimize damage to system assets, correct unacceptable voltage conditions and improve customer service.





OpenSTLF™

Short-Term Load Forecasting

OpenSTLF is a simple and reliable short-term load forecasting tool that relies on neural-network techniques to predict loads with extraordinary accuracy. **OpenSTLF** supports multiple load areas or feeders and has the capability to forecast up to 35 days into the future. A feature-rich user interface is supported, consisting of various tabular and graphical representations.

OpenSOM™

Switch Order Management

OpenSOM provides the tools necessary to formulate safe and effective switching procedures interactively using the graphical user interface, enabling the operator to verify actions in study mode before the order is dispatched. **OpenSOM** provides configurable templates to support various switch order types and utility practices.

OpenLM™

Load Management

OpenLM is a comprehensive, web-enabled application for implementing effective load management strategies for electric distribution systems. **OpenLM** will calculate a strategy to curtail an expected load peak and avoid excess demand and energy charges from power-supplying resources.

OpenDR™

Demand Response

OpenDR is a complete demand response management application for managing consumer loads for electric distribution systems. It uses various objective functions to optimize the level of demand response implemented and remotely control customer loads to achieve the best operational constraints related to voltage and reactive profiles and/or economics of supplied power.

About Open Systems International

Open Systems International (OSI)—headquartered in Minneapolis, Minnesota—provides open, state-of-the-art and high-performance automation solutions to utilities worldwide. OSI's solutions empower its users to meet their operational challenges, day in and day out, with unsurpassed reliability and a minimal cost of technology ownership and maintenance.

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