Welcome to the future of energy infrastructure

We live in a world of constant change ...

In our dynamic and global economy, companies and customers are communicating in new ways. Markets and politics, industries and consumer behavior are all in the process of adapting to new realities. Globalization and urbanization, and demographic and climate change are some of the megatrends we will have to find answers to.

In a world where most of the population lives in urban areas, sustainable technologies for metropolitan centers and urban infrastructures are becoming more and more important. Siemens is providing some of those answers: answers for infrastructure and cities.

... where energy meets intelligence ...

Power producers, grid operators, industrial companies, multi-utilities, cities, and rail operators need to adapt to changing business environments and become more efficient and more reliable. Energy businesses around the world are reviewing their value chains in response to changing regulatory and consumer requirements.

To minimize the amount of energy, emissions and revenue wasted in transmission and distribution, we will have to maximize the intelligence we put into our energy systems. That’s why smart infrastructure grids will be a substantial, if not decisive, part of tomorrow’s energy distribution.

... and power grids become smart grids.

Based on decades of proven expertise and a unique global execution footprint, Siemens offers an open and flexible architecture of answers with the industry’s most comprehensive smart grid portfolio: the Siemens Smart Grid Suite. The Suite enables a multitude of customized solutions for smarter infrastructure grids and introduces unforeseen opportunities to stabilize systems, develop new business models and optimize energy trade. Together with customers and partners, Siemens has started to transform “smart grid” from a buzzword into a business model – and establish new ways of providing constant energy in a world of constant change.

The Siemens Smart Grid Suite is the industry’s only end-to-end portfolio which takes into account all dimensions of smart grid solutions from state-of-the-art field equipment to automation technologies, and from innovative IT to consulting tools and first-class service.

The power of industry

First and foremost, a power supply system for large industrial consumers has to always meet the demand for energy, and needs to function reliably around the clock. At the same time, any such system also has to cope with mounting cost pressure by way of consistent load optimization, as well as controlling the autonomous supply of an entire plant.

Spectrum Power™ from Siemens is all set to meet this challenge. It is a fully integrated, customizable control center technology for managing energy networks of any size. The system excels in its proven reliability and safety, as well as by being geared towards future developments.

Spectrum Power™ ensures a reliable power supply for industrial estates as well as for such industries as mining, pulp and paper, oil and gas, chemical, steel, and many more besides.

Since it supports a wide range of protocols, Spectrum Power™ enables secure, readily available communication in a variety of environments.

For example, protection devices based on IEC 61850 can be connected directly, thus minimizing the need for configuration, while the ICCP (Inter-Control Communications Protocol) interface forms the basis for standardized communication with other control centers or a hierarchical control center network.

Industrial and building control can also be effortlessly integrated, for instance via an OPC (Openness Productivity Collaboration) interface, as can rectifier systems and emergency backup generators.
An industrial-sized solution ...

... for intuitive navigation
Because its user interface is based on Microsoft® Windows®, Spectrum Power™ has been seamlessly integrated into Windows processes. The familiar navigation means the entire system can be intuitively operated, while a freely configurable menu bar and support for multiscreen systems further facilitate operation. The entire network structure and its individual elements are graphically represented on a world map, with zooming, panning, and decluttering all available for fast orientation. User guidance, including easy navigation between world maps, lists, and application windows, also makes for smooth and error-free operation.

... for intelligent information management
Thanks to SCADA (Supervisory Control And Data Acquisition), all essential functions of Spectrum Power™ can be accessed directly via the world maps and are documented in an easy, secure, and precise manner. In addition, a case study allows for the reconstruction of past situations, as well as the simulation of planned actions online.

A sophisticated alarm management system will immediately inform the operator of any critical situations – by text message or voice mail if necessary – so that countermeasures can be initiated without delay. All the information acquired can be stored in a flexible archive system in compliance with documentation requirements, which facilitates the detailed analysis of any event or scenario at a later date. Standardized interfaces, as well as several calculation and aggregation algorithms, are available for further data processing.

... for analysis and optimization
Spectrum Power™ provides a Distribution Network Applications Suite for enhanced reliability and efficiency. Operators can make more informed decisions based on an accurate analysis of the current and planned state of the network. In the event of an electrical fault, the most probable cause is highlighted, and the software guides the operator through the entire fault isolation and service restoration process. Similarly, the system supports operators in adhering to the limits for distribution feeder equipment loading and voltages, and in minimizing outages.

... for onboard load management
Spectrum Power™ features integrated load management, allowing existing energy contracts to be optimally exploited through switchable load and power generation. This means added value in real terms, since it removes the need to purchase expensive excess quantities. Spectrum Power™ can generate the necessary switching commands automatically, or suggest cost-optimized switching when manually operated.

... for data engineering
The central configuration tool for all components, the Information Model Manager (IMM), has an intuitive GUI, allowing world maps and network data to be registered in a single step. Moreover, recurring structures can be stored as patterns, while special editors enable the tabular processing of large amounts of data. The consistent use of open interfaces ensures easy migration from existing systems.

All configuration changes are organized as individual jobs that are validated according to a set of rules, thus guaranteeing the highest possible level of security and reliability. Furthermore, any such changes can be undone at any time, and are only activated when the job is transferred to the real-time system.

... for security and protection
Spectrum Power™ makes use of hardware redundancy and constant server monitoring to ensure critical processes are available at any given time. The system can also use redundant channels with automatic channel switching for communication with telecontrol devices. Specialized tests performed on a regular basis guarantee the utmost IT security and represent another measure to ensure constant availability. This is why Spectrum Power™ is fully protected against external attacks.

... for future flexibility
The open, modular structure of Spectrum Power™ not only facilitates its seamless integration into an existing IT infrastructure, it also allows for regular upgrades in the form of additional features. Finally, the consistent implementation of international standards, such as IEC 61850, IEC 61970, XML and ODBC, means Spectrum Power™ is just as prepared for any challenges tomorrow may bring.

Spectrum Power™
- ensures a secure power supply for large industries to guarantee the highest production output
- features standardized, robust, secure and easy-to-use technology geared towards future developments
- reduces costs through intelligent load management

... for maximum efficiency
The big benefits for big business

Spectrum Power™ provides a comprehensive set of functions for requirements in energy generation, network operations management and communications.

Benefits of Siemens network control systems for large industrial consumers:
- Utmost reliability plus tried-and-tested security
- Open and future-proof architecture
- Impressive engineering concept
- Intuitive operability
- Seamless integration with Microsoft® Windows®
- Integrated load management
- Straightforward archiving
- Comprehensive alarm system

A constant partner in a world of constant change

For a long time now and all over the world, Siemens has been known for finding smart solutions for strong partners in energy industries – Spectrum Power™ solutions are one striking example of this.

Benefits from unrivaled experience when working with Siemens:
- 160 years of experience in power engineering
- Support in over 90 countries
- Over 1,600 network control systems installed worldwide
- Leading innovator in energy automation
- Vertical integration through standardization (IEC, CIM)
- Powerful products, applications and solutions with clear-cut migration and innovation strategies