Smarten up your last mile
Solutions for smart metering and distribution network automation

Answers for energy.
Heading into the age of smart, transparent, and versatile power grids

Due to the worldwide skyrocketing demand for electrical energy, managing power transmission and distribution has become one of today’s most complex challenges: Additional capacity for the cost-effective and environmentally compatible delivery of electrical power needs to be created in order to meet the growing demands of changing societies. Renewable energy and distributed generation are gaining ground, and they need to be hooked up to the grid. And we all have to contribute our share to the mitigation of climate change.

Most power grids, however, designed and built decades ago, are struggling to cope with these new challenges. Meeting these new challenges requires a smart transformation.

Rather than a static, centralized network, the grid of the 21st century is a flexible, living, and proactively operating infrastructure. That’s why it’s called the Smart Grid.

The Smart Grid is characterized by bi-directional data communication among all relevant users of the energy conversion chain. The result is a participatory network in which consumers, utilities, and service providers share responsibilities and benefits.

Smart metering makes the benefits of the Smart Grid tangible

Smart metering, capable of bi-directional data communication, connects the consumers to the Smart Grid, thus underpinning the new relationship between consumer and producer. The benefits are mutual:

Consumers can monitor and optimize their energy consumption based upon the real-time price of energy and individual needs. Utilities have at their fingertips the information they need to keep the power supply much more in line with actual demand, which enables precise customer analytics and segmentation, and makes possible the creation of new business models. Data provision and detailed reporting, for example, can be a service that meets the demand of both power suppliers and consumers.

Siemens, the world’s only integrated technology company spanning the entire energy conversion chain, works across all businesses and technology interfaces with a comprehensive line of products, solutions, and services, supplying complete solution packages for smart metering and distribution network automation.
Meeting consumer demand and staying ahead of the market

Many consumers today have a clear vision of what they want and how much they are willing to pay for it. Within the framework of the liberalized energy markets, energy retailers and distribution network operators (DSOs) need to address this attitude change in order to maintain a competitive edge. That’s where smart metering offers the greatest benefits.

Smart metering makes it possible to understand new customer behaviors and react quickly. Customer analyses and segmentation based on precise consumption data help assess the customer base and provide the basis for new energy-related products.

Benefits

- Precise customer billing based on flexible tariffs and accurate information on the amount of electricity, water, and gas actually being used
- Real-time consumption information that helps monitor and optimize distribution processes
- Potential to influence demand by pricing signals or direct load management
- Substantial savings in automated customer processes and faster problem resolution
- High quality data at point of use enables local energy management
Good reasons to go smart

Whatever the economic, social, and political framework may be, the introduction of smart metering is sure to bring a number of opportunities. Without doubt, smart meters will become increasingly standardized in major world regions, with energy consumers becoming accustomed to open data access to manage the energy consumption within their households.

Keeping up with the times

Smart metering requires an Advanced Metering Infrastructure (AMI) for full-scale bi-directional data communication to be in place in order to unfold its full potential. Siemens has an extensive partnership program with Meter Data Management System (MDMS) segment leaders. This enables it to provide truly versatile solutions capable of supporting multiple communications technologies and multiple meter vendors. This relationship supports customers who want to leverage the full benefit of accessing and disseminating metering data. Combining Siemens industry and operational expertise with state-of-the-art MDMS software provides customers a scaleable, flexible AMI foundation. The Meter Data Management solutions from Siemens deliver ongoing cost improvement while supporting enhanced functionality into the future. Recent legislation in many countries is driving the development of this infrastructure. It is clearly driven by the idea that smart metering enables consumers to respond to their own energy usage. This is expected to increase sensitivity to energy wastage and, consequently, lead to energy savings and a reduction of the per-capita carbon footprint.

Staying ahead of the market

The implementation of a smart metering solution includes highly attractive options for utilities and power retailers. High-quality data can be used to segment the consumer base, enabling power retailers to offer better targeted tariffs. Real-time pricing or active load control can be used to reduce high-cost consumption. Moreover, outage detection and power restoration and verification will be improved. The bi-directional communications network will pinpoint outages precisely, thus enabling field engineers to be efficiently deployed to correct the problem – a major contribution to the reduction of internal costs.

Partnering with Siemens

Siemens offers complete solution packages for smart metering and distribution network automation. The proven and tested Siemens solutions make it easy to have an AMI running in shortest time and switch to smart metering in order to reap the benefits of trendsetting Smart Grid technology.
Siemens and Vector Group, New Zealand’s largest energy distributor, have created a joint venture to provide independent smart metering services to around 800,000 gas and electricity customers throughout New Zealand and Australia.

The New Zealand joint venture, AMS, provides a complete service package including field work and data management to all retailers in this competitive market.

By choosing best-of-breed technologies and combining these with unique process expertise, AMS is able to deliver innovative energy offerings that capture the value of smart metering.

AMS represents a unique synergy of smart metering experience, combining Siemens’ worldwide technical and operational expertise with Vector’s local market experience. The result: thought leadership, transition, and technology, all combined within a single smart metering scheme operated on behalf of the customers.

The scheme supports cutting-edge technology to deliver bi-directional, near real-time control across the metering park supporting gas and electricity meters. Through an in-house automation network using Zigbee radio, AMS delivers comprehensive customer services, including in-home energy information, demand management, and consumption data. At the heart of the scheme are the metered data and asset management systems. These automated systems drive the data services and field services that enable distributors and retailers to deliver innovative energy solutions to their customers.

Other convincing references

- **Arbon Energie, Switzerland**
  Integrated complete solution for the automated metering and management of the distribution network.

- **a2a, Milan, Italy**
  Comprehensive smart metering rollout and service provision.

- **Energie AG Oberösterreich, Austria**
  Energie AG is the number one infrastructure group in Upper Austria. To ensure the economic success due to the optimization of existing operation processes and development of new fields of business, Siemens has been awarded to build an integrated complete solution for the automated metering and management of the distribution network. The system processes data from 500,000 electricity meters. The most important reasons for implementing an AMI system for Energie AG are:
  - automation of metering processes
  - automation of the distribution network incl. transformer stations
  - replacement of ripple control system
  - additional services (integration of meters of other media, home automation)
  - recording of the customer supply
  - open for existing/future communications standards
  - full integration into Smart Grid concepts

Smart metering benefits both utilities and consumers, and quickly delivers outstanding results.

Tried and tested: smart metering from Siemens