



# Smart metering

The meter cabinet as the metering and communication center

JÜRGEN LASCH – There are two main trends that are changing the way we, as consumers, look at energy. One of these is growing concern about the environment and especially the impact of energy usage. The other is the rise in energy costs, which is leading people to seek ways of consuming less. Both of these effects are changing the way people use energy. Despite good intentions, it is not always easy to link day-to-day actions with their actual energy impact and hence act accordingly. Energy bills are typically received on a monthly basis and it is difficult to distinguish the effects of individual actions or obtain meaningful feedback as to the effectiveness of changes.

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### 1 ABB's electronic domestic supply meter (EDSM)

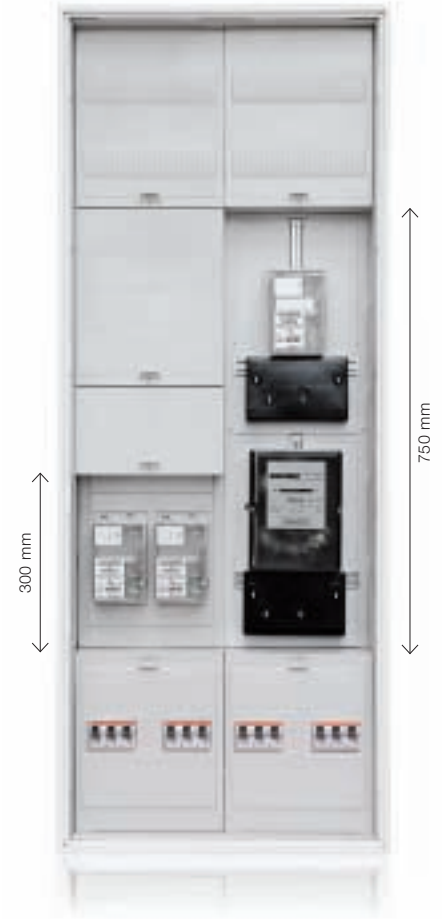
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### 2 More functionality in less space

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### 3 The data gateway

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The energy consumption of the house is presented in an understandable format.

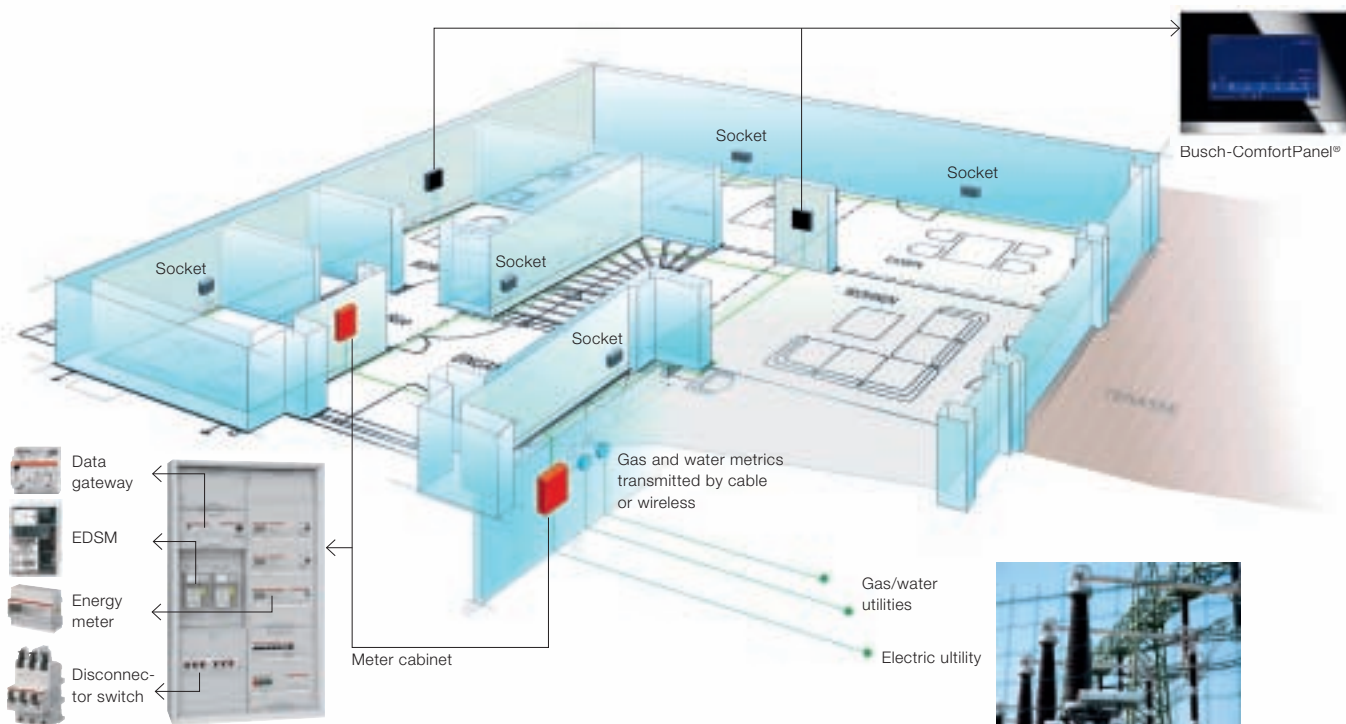
The introduction of so-called smart metering technology is changing this. At the Hanover Trade Fair 2009, ABB presented its electronic meters for domestic supply. In combination with a “data gateway,” such a device enables customers to visualize and track their energy consumption and so identify ways to optimize it. Data is displayed graphically in a format that is simple to understand, enabling consumers to instantly optimize their energy use and immediately see the results of their actions – for example when they install an energy-efficient refrigerator.

The German Federal Government has made the introduction of smart meters mandatory in Germany from 2010. With the introduction of the electronic domestic supply meter (EDSM) → 1 and its integrated mounting and contact device (BKE-I), ABB is offering innovative approaches to metering and distribution. The new technology makes it possible to build meter boards that are even more compact than the present ones → 2. Moreover, existing meter boards can be retrofitted with an adapter (BKE-A), easing the transition to EDSMs.

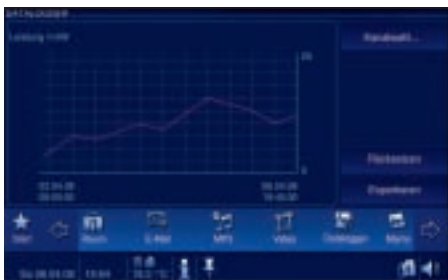
ABB's EDSMs are easy to install and set a new and forward-looking standard for domestic meters. They create a basis for smart metering and make it possible to

not only use energy efficiently but also save money in a deregulated energy market. In combination with a data gateway → 3, they provide a complete solution for smart metering. Besides electricity, the gateway can monitor and visualize the consumption of other resources (such as water, gas or heat) and so represent an integrated and complete metering platform → 4. Data from the gateway can be presented to the building's residents in many different ways, for example on a PC, a mobile phone or a Busch-ComfortPanel® → 5. The data gateway also forwards this data to the suppliers. The additional devices needed for this are housed in the meter cabinet beside the smart electricity meter, thus turning this cabinet into a communication center.

Once such a meter is installed, the long-standing requirement for a utility employee to visit the site regularly and manually take a reading becomes history. The utility can periodically calculate consumption by remotely accessing the electronic meter. For the consumer, the energy consumption of the house is presented in an understandable format and at any time. Residents can thus influence their energy usage much earlier. Detailed analysis can even help reveal any damage to the network or hidden “power hogs.”



5 Consumption data display on a Busch-ComfortPanel



Electronic domestic supply meters (EDSMs)

EDSM facts for measuring active energy for meter reading purposes (billing) in single and dual-rate design:

- Designed according to VDN specification "Elektronische Haushaltszähler," Version 1.0.2
- Simple installation and replacement of meter
- Single or dual-rate meters
- With internal real-time clock
- Highly resistant to interference from magnetic fields
- Smart-metering ready

A more equal distribution of energy consumption can be achieved throughout the day and indeed the week.

Smart meters have an important part to play in a future in which consumers will have more freedom to choose their energy supplier. In a household equipped with a smart meter, power can be instantly and remotely shut off when an account is cancelled. Once the technology is ubiquitous, energy suppliers will increasingly offer time-dependent rates. Consumers will thus be encouraged to use high-energy appliances such as washing machines at low-rate times. In this way, a more equal distribution of energy consumption can be achieved throughout the day and indeed the week. This will lessen the need for costly peak load generation, and ultimately relieve energy suppliers by reducing the grid management workload that would otherwise be caused by increased use of renewable energies.

See also "The colors of intuition" on the following pages of this edition of *ABB Review*.

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