

Fri 27.01.12 10:13

Snapshots Make Power Grid More Efficient

Siemens wants to use snapshots of the power grid to help make it more stable. Power snapshots from smart meters by Siemens provide synchronous grid information with maximum precision from the low-voltage grid, data that can serve as a basis for analyzing these grids in cities and communities.



Analysis of the collected data makes it possible to use the grid infrastructure more efficiently and to better integrate electric vehicles or the feed-in of power from photovoltaic systems, for example. Siemens developed the power snapshot analyses (PSSA) in collaboration with the Austrian Institute of Technology and several grid operators in Austria. The project received financing from Austria's Climate and Energy Fund.

In the coming years, the growing number of decentral and fluctuating renewables-based energy sources feeding into the grid, and electric vehicles and electric heating systems will pose an enormous challenge for the power transmission and distribution networks. To estimate how many feed-in sources and how many users a local grid can handle, model simulations are conducted. These models used to be very rudimentary, so big safety margins had to be planned in. For more accurate simulations, detailed data on the low-voltage grids is needed.

That's why developers from Siemens Austria developed the PSSA, with which the smart meters in local grids were equipped. These meters don't only record energy-use data; they also generate real-time and synchronous displays of voltages in the local grids at points in time that are critical for the grid technology. The accuracy of the data is unprecedented because the load variations of the phases and the ground return conductor are also recorded. This information on the actual conditions in the grid enables grid operators to more efficiently use the available infrastructure. To compensate for power consumption peaks, the operators can for example take load groups like electric heating systems or heat pumps offline without compromising end users' convenience. The data also can be used to estimate investment costs for expansions of grid infrastructure.

PSSA will be launched on the market before the end of 2012. Siemens smart meters, which are already being used by many customers, can be equipped with this additional function by means of a firmware download without disturbing the validity of the meters' calibration.