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## Europe must speed up to reach targets

The share of renewables in the European energy mix is increasing dramatically, but the corresponding development of the energy infrastructure, particularly in the distribution network, is lagging sorely behind. If these trends continue, we may be heading for a (CO<sub>2</sub>-free) train wreck in the not-so-distant future.

**W**hen discussing the European Union's 20-20-20 goals, it is often forgotten that the renewables target is 20% renewable energy in "final energy consumption", that means about 35% renewables in electricity generation. While not all Member States are on track to meet those goals, there have been significant gains particularly in the areas of wind and solar power. In 2009, the UCTE forecast that wind power would increase to over 165 GW in Europe by 2020. In its latest Renewable Energy Progress Report, the European Commission sees a current surplus in photovoltaic electricity production over planned levels: 35 TWh were forecast compared to the current 46 TWh. In one hour on the 15th of April this year, Germany already had a record 22,400 Megawatts – the equivalent of about 20 nuclear power plants – of solar power being blasted into the grid. That record is expected to be broken this summer with a projected 27,000 MW.

While those numbers may make some people happy, solar power from "tropical" Germany and Danish wind are wreaking havoc on the electricity exchanges as wholesale electricity prices are sent tumbling – even into negative numbers – and generation companies are taking conventional capacity off-line, capacity that may be sorely needed later on.

The best way to make the most efficient use of this influx of renewable energy, for society, the environment and the market,

is to have an energy infrastructure that can manage the integration of distributed generation (DG), whether that be through Virtual Power Plants (VPP) or active distribution system management. As most of the distributed generation will be connected to the medium and low voltage network, that is a good place to start.

Residential demand is usually the highest in the evenings when the sun does not shine, but on sunny or windy days DG from rooftop solar panels or small wind farms usually produce more electricity than is needed. When DG production exceeds local consumption or when consumption and production are out of synch, network limits will be exceeded and it will need to be re-enforced. This can be done one of two ways: conventionally with more "copper and steel", or through adding more intelligence to the system.

Right now, the network operators have no way of acquiring data from DG, but as the amount of distributed generation increases, the network operator will need to monitor, supervise and control power flows and voltage. Any such system will need the monitoring functionalities from smart meters and smart grid sensors.

VPPs can help regulate the electricity fed into the network from DG and at the same time the technology facilitates demand-side response measures, thus ensuring that DG is used most efficiently. The backbone is the communications networks used to support smart metering, and the meter

data management (MDM) is crucial commercially for the system by verifying participation in demand response measures or supply of DR power into the network.

But if smart metering is so important to making the distribution network more capable of handling the large increase in distributed generation – and there are a host of other benefits to the energy supply system, both commercial and operational, from smart metering, why is Europe lagging behind? In comparison with the rate at which renewables have increased in Europe, investment in smart grids is woefully inadequate, representing only 10% of the smart grids investment worldwide.

According to the European Commission, the number of smart meters in Europe will need to increase from 45 million today to 250 million by 2020. More significantly investment in smart metering will need to increase four to five fold from the current 1 billion to 4-5 billion in just the next two to three years!

As the global leader in smart metering solutions, Landis+Gyr does not see the necessary investments in smart metering technology on the immediate horizon in Europe. Let alone at the rate needed to equip 80% of European households with smart meters, as the 3rd Energy Package foresees.

If Europe does not get moving with smart metering, the foundation for a robust smart grid will not be laid, and all that time, effort and money in trying to achieve the renewables target could be wasted ◀◀

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