self-healing
smart grids

An open, scalable and sustainable Smart Grid solution

Smart distribution technologies are central to achieving the benefits the smart grid has to offer and to meeting the EU's so-called 20/20/20 targets. These targets call for a 20% reduction in EU greenhouse gas emissions from 1990 levels; an increase in the share of EU energy consumption produced from renewable resources to 20%; and a 20% improvement in energy efficiency in the EU, all by 2020. Power disturbances and anomalies create high losses to the economy. Being able to decrease these events through an intelligent network that includes a self-healing process and voltage regulation means significant cost savings can be achieved.

Atos Worldgrid offers a highly modular solution that features complete automated supervision, distributed controls, refined security features and multi-device, multi-fluid and multi-supplier possibilities. Smart Metering with Atos Smart Grid Suite (ASGS) and Distribution/ Outage Management Systems with Lynx are implemented first.

Smart Metering and data communication

Without widely deployed, automatic metering systems and associated meter data management, the smart grid cannot exist. An Automated Meter Management (AMM) system must ensure two-way communication with meters and include secure, encrypted and reliable communication protocols. This forms the foundation of the smart grid.

Distribution and outage management

Minimizing non-delivered energy is key to achieving cost savings and improving the quality of delivery. Distribution Management Systems (DMSs) provide real-time responses to outages and faults. A self-healing functionality allows power disturbances to be instantly detected and handled with minimal customer impact.

Assured power supply quality

Distributed power generation is increasingly deployed via Low Voltage (LV) feeders. Any injection of energy can seriously disturb the voltage map and make it hard to keep the voltage level within authorized limits. The Smart Metering infrastructure enables voltage values to be collected at each metering point. As a result, the concentrator (K+) located in the Secondary Substation is able to determine the voltage profile of the feeder at any point and identify whether voltage magnitudes are within authorized limits. Based on this, and because the concentrator is 'intelligent', a dedicated algorithm is run that is able to send set points to the PV panels' inverters to adjust the voltage level from the VAR injection.

K+

Primary Substation

M   M   M

PV installation

Atos
Worldgrid
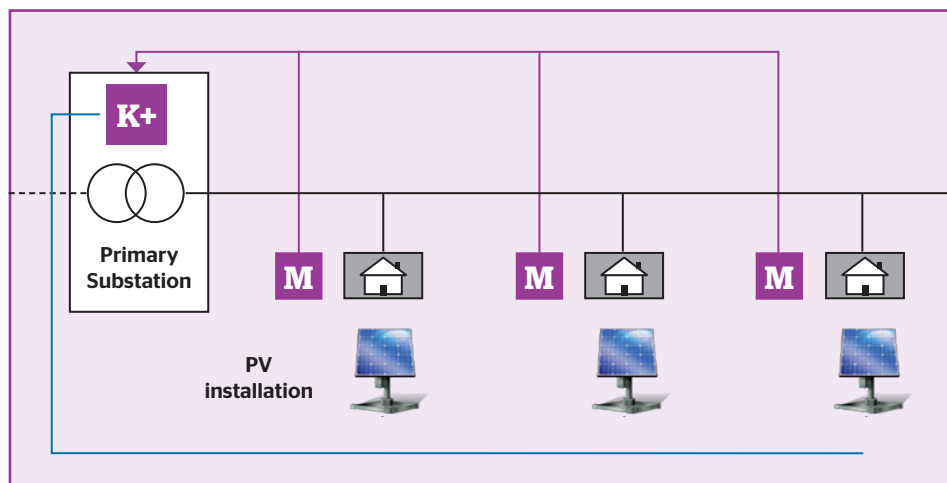
Advanced self-healing

Detection and localization of issues (short circuit, open phase, etc.) in Medium Voltage (MV) feeders is currently only possible using the fault detectors installed in a limited number of Secondary Substations (the number is limited due to the cost of the equipment).

Deployment of Smart Metering devices such as smart concentrators (K+) located in Secondary Substations offers an opportunity to expand one's view over the distribution network. Smart Meters provide concentrators with information about LV feeders. When there is a fault in an MV feeder, the concentrator detects the impact on the LV feeder's electric magnitudes. Using this information, which is sent to the SCADA DMS, the fault is located more accurately by the Self-Healing application.
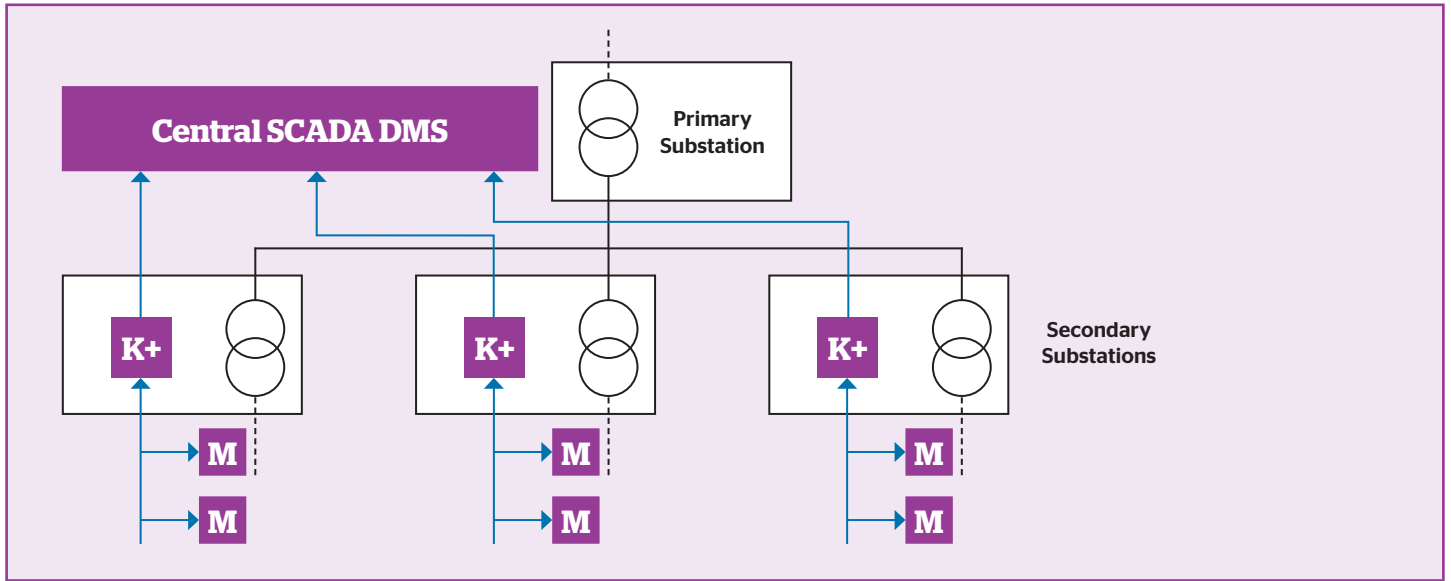
A Smart Grid solution and complete IT integration

We designed a Smart Grid solution that would set new standards in the market while still being able to easily interface with existing software. The solution provides standard web services which can be used by tools that are already available (SCADA Distribution Automation Systems, Meter Data Management Systems, GIS, etc.) and can be upgraded with the addition of relevant functions. Web-oriented and based on users' profiles, the solution ensures data security. Users are also offered an easy-to-use dedicated screen that can be customized. Embedding intelligence, the concentrator K+ is a key element for a scalable management of Microgrids.

Our scope of services

- ▸ A comprehensive software package
- ▸ A specialist integration team to customize the solution to meet your precise needs
- ▸ Supporting services (Audit, consulting, expertise, change management, Project Quality Control, Project management, Support, Guarantee, etc)
- ▸ End-to-end BPO capacity to process and manage your specific business activity
- ▸ Complete roll-out services
- ▸ Independent test laboratory to qualify devices

For more information, please contact: atosworldgrid@atos.net