



1 Synchronous measurement systems can be installed in transformer substations to detect their current state precisely.

2 Installation of a GPS antenna for a phasor measurement unit.

Images: Dr. Thoralf Winkler, Fraunhofer IFF

MONITORING, CONTROLLING AND PROTECTING ELECTRIC POWER GRIDS

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... to guarantee certainty of supply and reliability

The make-up of power producers and loads in the electrical grid and thus also the challenges to maintain the stability of the grid and the quality of supply are changing. As nuclear energy is phased out, the German government is promoting renewable energies supplied to high medium and low voltage grids, which, unlike conventional power plants are volatile and distributed. Grids originally planned for distributed top-down supply are facing new demands. Power supplied by photovoltaic systems and wind turbines can reverse energy flows and grids may not be designed to transport such energy. This can entail problems complying with the voltage range and frequency band or even cause equipment such as lines and transformers to overload locally.

Our developments contribute to smart grids, which are in need of innovative monitoring, control, protection and infra-structural concepts.

Your Benefits

- Our services enable you to
- keep an eye on the current state of your electrical grid,
 - assure grid quality and
 - ensure equipment is protected.

Profit from Our Services

We provide the following related services:

- Development and implementation of innovative concepts monitor, control and protect grids (online)
- Planning and optimization of the placement and installation of measuring points in the grid
- Planning and performance of evaluations of grid quality with the aid of digital instruments

The Fraunhofer IFF additionally provides coaching and consulting throughout the process of designing and equipping electrical grids with metering, control and protection systems.

Development and Implementation of Innovative Concepts for (Online) Grid Monitoring, Control and Protection

The capability to monitor and control grids opens other options. Novel protection concepts based on synchronous measurements, such as early detection, incident prevention strategies, fault identification or optimized root cause analysis of faults, become feasible. We can develop innovative grid monitoring, control and protection concepts with you and implement them in your grid.

Planning and Optimization of the Placement and Installation of Measuring Points in the Grid

The ICT structure and the placement of measurement systems in the grid for maximum observability with a minimum of equipment play an important role in the optimal configuration of the complete system. We plan and optimize the placement and installation of measuring and evaluation points.

Planning and Performance of Evaluations of Grid Quality with the Aid of Digital Instruments

Existing grid structures can be evaluated with the aid of ICT based, time synchronous instrumentation and analyzed for potential weaknesses. In addition, information on grid quality at different nodes can also be delivered and the influence of renewable power plants can be evaluated. We plan and take related measurements to evaluate quality.

Our Expertise Is Your Edge

We have the latest commercially available components and apply state-of-the-art measurement systems. We incorporate the latest research findings in our services.

Please contact us if you are interested in our services for electric power grid monitoring, control and protection. Our experts would be happy to provide you assistance.