



1 Test stand.

2 Conformance test of a measuring instrument.

Images: Dr. Thoralf Winkler,  
Fraunhofer IFF

## CONFORMANCE AND QUALITY TESTING PLATFORM

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### ... for smart grid equipment

The upgrading of grids is creating new requirements in power transmission and distribution. Among others, one basic cause for this is the increasing supply of power from renewable energy sources and the opportunity to involve small producers and controllable loads in the grid. Grid structures will therefore also have to be modified in the future for changing power flows. A grid structure supplied by a few central power plants in which large power lines run through the countryside and branch into smaller and smaller lines up to the end customer is dominant at present. In the future however, large quantities of power will also be supplied at a grid's terminals. This will translate into new requirements on both a grid's expansion and its control and operation.

The foundation of reliable grid operation is exact knowledge of the grid's current state and the processes running in it. Novel high-precision instrumentation time synchronized by GPS, such as phasor measurement units (PMU), monitor and protect power grids. When such instruments are being developed and optimized, it is important that their functions operate in conformance with standards and are compatible with one another. Extensive metrological tests are necessary to verify these properties. In close contact with our clients, we develop test stands on which conformance with particular standards in effect can be verified and also certified in collaboration with testing organizations. If so arranged, measurements can be taken during development in order to implement new functions in instruments, for instance.

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### **Your Benefit**

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Our services enable you to boost the quality of your products by ensuring they operate in conformance with effective standards and guidelines.

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### **Profit from Our Services**

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We can provide you the following related services:

- Measurement architecture specifications
- Test stand construction
- Test procedure development
- Measurements

Of course, we can also provide you support from development through complete certification in collaboration with testing and certification organizations.

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### **Measurement Architecture Specifications**

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Together with their clients, the Fraunhofer IFF's experts develop the measurement architecture required for measurement and certification. This includes supplying equipment for test stands, providing referenced measurement signals and taking reference measurements in the accuracy class required in each case. We design test stands based on users' specifications.

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### **Test Stand Construction**

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Once the measurement architecture has been agreed upon, a test stand is built. Together with such research partners as Otto von Guericke University's Department of Electric Power Grids and Alternative Electrical Power Sources, the Fraunhofer IFF guarantees the expertise to construct reliable and precise test stands. Design and operation are documented in a form meeting certification standards. As far as agreed upon and necessary, DIN ISO 9001 standards are verified and compiled for clients.

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### **Test Procedure Development**

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Existing standard routines cannot always be run when novel instrumentation is being developed. In consultation with our clients, we develop test procedures that are required and suited to verify their products' conformance. We have many years of experience in this field and thus the expertise necessary to test and certify any client's products effectively.

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### **Measurements and Certification**

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The Fraunhofer IFF's experts will take measurements for our clients that support or conclude development or are even for certification. Our experience guarantees that contracted measurements are completed successfully and we provide clients consulting whenever modifications are necessary.

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### **Our Expertise Is Your Edge**

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We have the latest commercially available instrumentation and apply state-of-the-art measurement systems. We incorporate the latest research findings into our work. Through our work on national and international committees, we are always aware of the latest in standardization.

Please contact us if you are interested in learning more about our services for conformance and quality testing for smart grid equipment. Our experts would be happy to provide you assistance.