

M.O.E.

For a sustainable future
CERTIFICATION • MEASUREMENT • INSPECTION



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PURPOSE OF THE COMPANY

Our overarching purpose is to make the **largest and most meaningful contribution** possible to the reliability of electrical supply and thus ensure the sustainability of the energy transition.

OUR MISSION

The **energy transition** is essential in times of limited resources and incalculable risks of other technologies and entails a great responsibility for current and future generations.

Decentralized generation plants pose a challenge for energy supply grids and must therefore contribute to ensuring grid stability. By testing the electrical and mechanical properties of generation units and plants, as well as other relevant components, we make our contribution, pursuing the goal of the highest possible reliability and quality.

Our core business areas include the accredited areas of **certification, measurement and inspection**. Since the introduction of the guidelines for the certification of generation plants with regard to grid integration, we have been supporting their implementation.

We have established ourselves as a highly qualified **center of expertise at home and abroad** with a broad range of services and have the necessary accreditations, approvals and recommendations in all areas.

FACTS

Founding
2009

Company headquarters
Itzehoe

Other locations
Hamburg, Kiel, Flensburg



Managing Director
Jochen Möller, Tobias Busboom

Company size
over 110 qualified employees

Accredited according to
DIN EN ISO/IEC 17020 (Inspection body)
DIN EN ISO/IEC 17025 (Testing laboratory)
DIN EN ISO/IEC 17065 (Certification body)

Measuring point according to
§ 29 b Federal Immission Control Act

CERTIFICATION

We are a certification body accredited according to DIN EN ISO / IEC 17065 in the **field of grid integration and system services**, offering the highest level of expertise and quality in unit, system and component certification. This expertise has been demonstrated in more than 2,300 grid connections for wind turbines, photovoltaic systems, internal combustion engines (emergency power, biogas, cogeneration plants), storage systems, and other types of generation.

System certification

The system certificate is a prerequisite for obtaining grid connection. This confirms to the system operator and the grid operator that grid-compliant operation of the system is possible. At the conclusion of the certification process, we issue the power generation plant Declaration of Conformity, which certifies the correct implementation of the planning documents.

Unit certification

We certify power generation units (PGUs), storage systems, and consumers such as combined heat and power plants, inverters, wind turbines, battery storage systems, electrolyzers, heat pumps and e-mobility in accordance with applicable grid connection guidelines. The basis is a measurement of the PGU's electrical properties and an evaluation based on a manufacturer's declaration and a simulation model. We offer the complete verification process, ensuring no interface losses.

Component certification

We test and certify essential components of a generating system, such as PGU and power plants controllers, protective relays, and compensation systems, in accordance with applicable grid connection guidelines. The assessment is based on measurements of the electrical properties, a manufacturer's declaration, and a simulation model. We offer complete verification without interface losses. With the component certificate (equipment certificate), manufacturers and operators receive proof that the properties and functions of their components comply with the technical guidelines. This makes unit and system certification much easier and ensures smooth integration into the energy system.

Individual verification procedure

For power generation units (PGUs) where standardized certification procedures are not applicable, we offer the individual verification procedure according to VDE-AR-N 4110. This procedure is particularly suitable for systems with individual generating units that do not have standard unit certificates. The verification of grid conformity is project-specific and includes the tests from the unit and system certification as well as the declaration of conformity. With our expertise in the individual verification procedure, we support ensuring the grid conformity of individual generating systems and enabling a trouble free grid connection.

Grid operator services

Process support during the application and operating permit process: We offer comprehensive support during the application process, e.g. reviewing the construction planning, grid compatibility, and prototype conformity. During the operating permit process, we review system certificates and declarations of conformity and ensure that all requirements are met. Specialized measurements of grid disturbances, such as harmonics or flicker, can assist in troubleshooting. During the operational phase, we provide support by reviewing supporting documentation.

MEASUREMENT

Acoustic measurements and forecasts

To protect the environment, the Federal Immission Control Act (BImSchG) specifies limits for noise emissions and immissions, which must be adhered to by wind turbines and combined heat and power units, and industrial facilities, for example. We are accredited as a testing laboratory for the determination of noise from technical systems and are also designated as a measuring body in accordance with Section 29b of the BImSchG.

Measurement of electrical properties

On-site measurements can be used to verify the electrical properties of generating units and systems, such as harmonic measurements. These measurements can provide the necessary data and conformities for certification and the individual verification procedure.

INSPECTION

Electrical components

The system operator is responsible for ensuring that electrical systems and equipment are inspected at specific intervals to ensure they are in proper working order. Our inspection body is accredited according to DIN EN ISO/IEC 17020. This means that we guarantee the highest level of expertise and maximum quality in the field of inspections as standard. Accreditation as an inspection body includes the inspection of generating plants with regard to conformity assessment for the system certificate and the metrological verification of protective devices at all voltage levels. We offer testing according to DGUV V3 and during the operational phase according to Chapter 11.5.5 of VDE-AR-N 4110/4120 from a single source.

Mechanical components

Wind turbines must be inspected regularly by an independent expert on their supporting structure, machinery and rotor blades. Failure to meet these deadlines could result in the loss of building permits or insurance coverage. Our experts are recognized by the German Wind Energy Association.

Moeller Operating Engineering GmbH (M.O.E.)

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REFERENCES

- **More than 30,000 inspections** regarding grid compliance of wind turbines, solar inverters, combustion engines and other decentralized generation units
- **Over 1,000 inspections regarding** grid compliance of transfer stations and substations
- **More than 2,300 system certifications** of wind and solar parks as well as incineration power machines
- **Over 290 units and components certifications** for wind turbines, photovoltaic inverters, combustion engines, storage and components such as generators as well as controllers etc.
- **More than 6,000 protection tests** on generation units
- **Over 330 protection tests** at network connection points
- **More than 950 periodic inspections** of wind turbines and tests according to electrotechnical safety standards
- **More than 300 acoustic measurements** on wind turbines
- **Over 50 measurements** of electrical properties
- **More than 20 individual verification procedures**
- **Over 50 audits** of IT security management systems
- **Over 1,000 technical quality assurance for grid operators at several thousand** generation units and -systems carried out

AREAS OF EXPERTISE

- **Unit certification, component certification, system certification and individual verification** procedures for all generation units and systems (NC RfG, VDE-AR-N 4105, 4110, 4120, 4130 as well as FGW TR 3, 4, 8 and other international guidelines)

Coverage of **wind energy, photovoltaics, internal combustion engines, storage systems, hydropower and e-mobility**

Measurement of electrical properties and acoustics (IEC RE, FGW, BImSchG)

- **Inspections, periodic tests, warranty acceptance and preparation of declarations of conformity** (DGV V3, DIN EN 50110)

- **Grid protection tests** of power generation units, sub stations and substations

- **Research projects in the field of grid systems** integration of generation systems

- **Guideline and standard competence** at international level and national level, e.g. FGW, VDE, FNN, DKE, IEC, IEC RE and CENELEC

- **Transport and construction monitoring** for wind turbines

- **Grid operator services**