



CERTIFICATION • MEASUREMENT • INSPECTION

M.O.E.'S MISSION STATEMENT

The **energy revolution** is indispensable in times of scarce resources and incalculable risks of other technologies and entails great responsibility for present and future generations.

Decentralized power generation systems are a challenge for energy supply networks and need to participate in securing grid stability. We are contributing by reviewing the electrical and mechanical properties of power generating units and systems as well as other relevant components aiming at the highest possible security and quality.

Our main business segments are the accredited fields of **certification, measurement and inspection**. We have been accompanying the implementation of the verification guidelines for power generation systems as to grid integration since their induction.

M.O.E. has established itself by its broad range of services as a highly qualified **competence centre in Germany and abroad** and acquired the necessary accreditations, permits and recommendations in all fields.

FACTS

Foundation 2009

Registered office Itzehoe, Germany

Further locations Hamburg and Kiel, Germany





Managing director Jochen Möller

Company size over 70 qualified employees

Accredited according to DIN EN ISO/IEC 17020 (inspection body) DIN EN ISO/IEC 17025 (test laboratory) DIN EN ISO/IEC 17065 (certification body)

Notified measurement body according to § 29b German Federal Immission Control Act

CERTIFICATION

M.O.E. is a certification body accredited according to DIN EN ISO/IEC 17065:2018 in the field of grid integration and system services and offers highest competencies and quality in power generator unit, plant and component certification. These competencies have been proven with more than 1,500 grid connections of wind energy farms, PV farms, combustion engines (emergency power, biogas, combined heat and power plant), storage facilities and other types of power generation.

System certification

The system certificate is a prerequisite for obtaining the grid connection. This confirms to the system operator and the grid operator that grid-compliant operation of the system is possible. At the end of the certification process, M.O.E. prepares the Power Park Module (PPM) Declaration of Conformity, which certifies the correct implementation of the planning documents. In accordance with the national and international grid code requirements of the NC RfG or VDE, M.O.E. offers the entire documentation including the commissioning declaration and the extended commissioning declaration for prototypes.

Unit certification

The unit certificate, which forms the basis for system certification, includes the testing of power generating units such as wind turbines, solar inverters, CHPs, hydropower and storage facilities. It takes place on behalf of all power generating units of the series. In accordance with the European Network Code (NC RfG), the corresponding operating resource certificates can be issued for all European countries in compliance with the national specifications.

Component certification

For all essential components (e.g. parc controllers, protective relays, compensation systems) which are located in a power generating unit or plant, a component certificate or an equipment certificate can be issued in accordance with NC RfG. With the component certificate, the manufacturer or operator receives proof in accordance with national grid codes that the properties and functionality of a component comply with the guidelines. This proof of quality provides the manufacturer or operator with the necessary proof and significantly facilitates unit and system certification.

Individual certification assessment procedure for power-generation facility

The verification methods mentioned are not suitable for every power generating system. With the so-called individual certification assessment procedure for power-generating facility (system certificate C), a system certificate can be issued without submission of a unit certificate. The proofs in the procedure also guarantee a safe and permanent grid connection of the power generating system. M.O.E. offers all associated services including certification, model validation, measurement and monitoring from a single source.

Information Security Management Systems

Critical infrastructures depend on secure IT systems and a functioning Information Security Management System (ISMS). This concerns among others, the operation of electricity and gas grids, decentralised power generating system and plants or systems for controlling electrical output. In order to protect and independently test these systems, M.O.E. has competence in the area of ISO/IEC 27001 and ISO/IEC 27019. This also applies to the corresponding IT security catalogues of the Federal Network Agency.

MEASUREMENT

Acoustic measurements and forecasts

In order to protect the environment, the Federal Immission Control Act stipulates limit values for noise emissions and immissions, which must be met by wind turbines, CHP plants and industrial facilities, for example. M.O.E. is accredited as a testing laboratory for the determination of noise at technical installations and is also notified as a measuring point in accordance with § 29b BlmSchG (Federal Immission Control Act).

Measurement of electrical properties

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

INSPECTION

Electrical components

The plant operator shall ensure that electrical systems and equipment are checked for their proper condition at regular intervals. The inspection body of M.O.E. GmbH is accredited according to DIN EN ISO/IEC 17020:2012 and thus guarantees its customers the highest level of expertise and maximum quality in the field of inspection. Accreditation as an inspection body covers the inspection of power generating systems with regard to the conformity assessment for the system certificate and the metrological proof of protective equipment at all voltage levels. In addition, testing according to electrical safety e.g. DGUV V3 and monitoring of the system-relevant parameters during the operating phase e.g. according to chapter 11.5.5 of VDE-AR-N 4110/4120 are offered from a single source.

Mechanical components

All wind turbines are to be inspected at regular intervals on the support structure, the machines and the rotor blades by an independent expert. If these deadlines are missed, there is a risk of losing the building permit, type approval or the insurance cover. The M.O.E. experts are recognised by the Bundesverband WindEnergie e.V. (German Wind Energy Association) and inspect at any stage of your project.

MOELLER OPERATING ENGINEERING

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REFERENCES

- more than 30,000 inspections regarding grid conformity of wind turbines, solar inverters, combustion engines and further decentralized power generating units
- more than 1,000 inspections with respect to grid conformity of transfer stations and substations
- more than 1,500 system certifications for wind turbines, solar parks as well as combustion engines
- more than 150 unit and component certifications for wind turbines, PV inverters, combustion engines, storages and components such as generators and controllers, etc.
- more than 4,000 grid protection tests on power generating units
- more than 200 grid protection tests on grid connection points
- more than 300 inspections of wind turbines and checks according to electrical safety
- more than 150 acoustic measurements of wind turbines and other noise sources
- over 50 measurements of electrical properties
- more than 20 individual certification assessment procedures for power-generating facilities
- over 50 audits of IT security management systems
- technical quality assurance for grid operators carried out on several thousands of power generating units and plants

FIELDS OF COMPETENCE

- Unit certification, component certification, system certification and individual certification assessment procedure for all power generating units and systems (NC RfG, VDE-AR-N 4105, 4110, 4120 and 4130 as well as FGW TR 3, 4 and 8)
- Coverage of the areas of wind energy, photovoltaics, combustion engines, storage systems and hydropower
- Measurement of electrical properties and acoustics (IEC RE, FGW, BImSchG)
- Inspections at any stage, e.g. recurring tests, warranty inspections and preparation of declarations of conformity (DGUV V3, DIN EN 50110)
- Grid protection tests of power generating units and substations
- **Research projects** in the field of grid integration of power generating systems
- Competence in guidelines on international and national level e.g. FGW, VDE, FNN, DKE, IEC, IEC RE and CENELEC
- Transport and construction monitoring for wind turbines
- Auditing of IT Security Management Systems
- gestaltung: hemmerich.de