



Grid Compatibility

Measurement of Electrical Characteristics

UL carries out measurements and evaluations to determine the electrical characteristics of wind turbines, solar inverters and of other generation units/systems according to the currently applicable standards (e.g. IEC 61400-21 and FGW TR 3) and is accredited according to ISO/IEC 17025:2005 and approved by MEASNET and FGW.

In the field of grid integration UL carries out measurements and evaluations to determine the electrical characteristics and grid compatibility of:

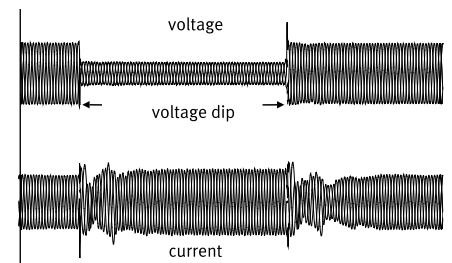
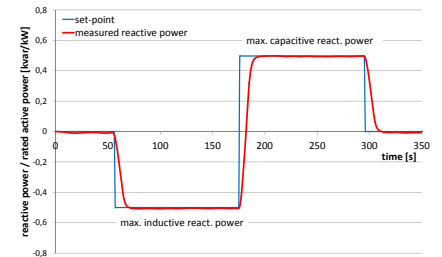
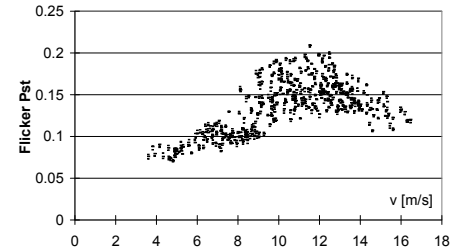
- wind turbines
- solar inverters
- combustion engines (cogeneration, Biogas machines)
- wind and solar farms
- controller for wind and solar farms

The Services Include:

- Power Quality
 - Flicker and voltage fluctuations in normal operation and during switchings
 - Harmonics up to 9 kHz
- Active power control
 - Power peaks
 - Active power set-point control
 - Ramp rate limitation
 - Power reduction due to overfrequency
- Reactive power control
 - Reactive power capability
 - Set-point control
- Disconnection from the grid
 - Grid protection (under-/overfrequency, under-/overvoltage)
 - Cut-in conditions
- Response to temporary voltage drops
 - Ride-through
 - Reactive current injection
 - Behavior during the fault and after fault clearance

Our Qualifications:

- More than 330 measurements of electrical characteristics worldwide
- Measurements are carried out according to the following guidelines:
 - IEC 61400-21: Measurement and assessment of power quality characteristics of grid connected wind turbines
 - MEASNET: Power quality measurement procedure
 - DIN VDE V 0124-100: 2012-07: Grid integration of generator plants – Low-voltage



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