

sub.net ECO

eMS

First Choice for Renewables

Installation and Commissioning Compliance

Grid Code Compliance

**Fault Ride Through
Reactive capability**

Continuous Monitoring of Power Quality

**Harmonic Content, Voltage unbalance
Flicker, Voltage fluctuations**

Advanced Fault Reporting

Multiple circuits

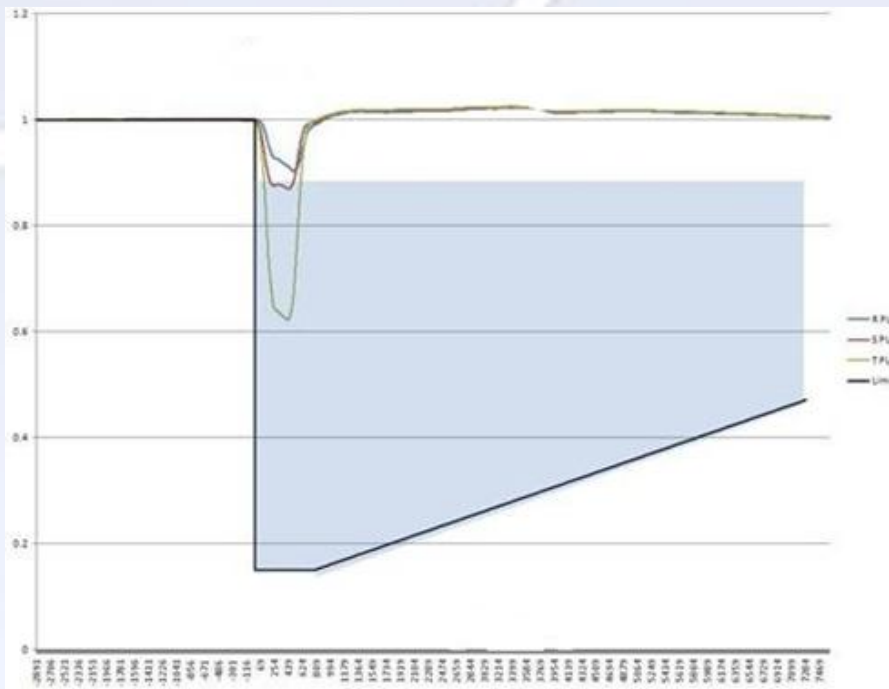
Embedded Monitoring Systems
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Grid Code Compliance

The Grid Code ensures that the energy network can be operated correctly with or without significant quantities of embedded generation. A new generation station must prove that it meets the local Grid Code before it can be connected to the energy network.

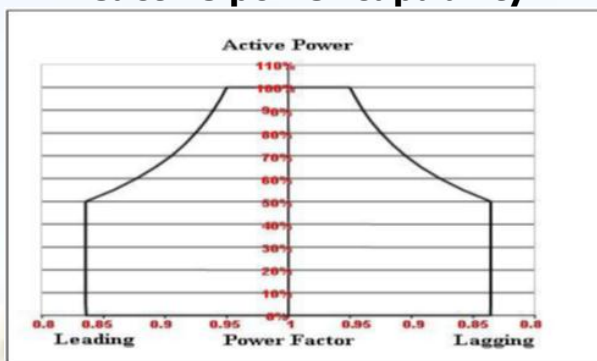
Most countries or states have their own Grid codes which are similar but not identical. This Code covers all the operating procedures and principles between the generating and grid companies. The sections of the Grid Code which require monitoring equipment are the Connection Conditions and the Operating Code.

Fault Ride Through

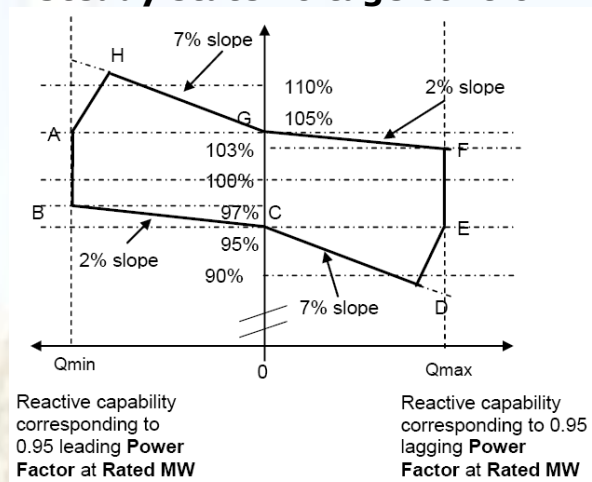


Within the Connection Conditions is the Fault Ride Through requirement. This defines the response of a generating site to varying levels of fault current. As sub.net records and reports on grid faults it is continuously checking on the fault ride through capability.

Reactive power capability



Steady state voltage control



The Operating Code has a range of parameters to be monitored.

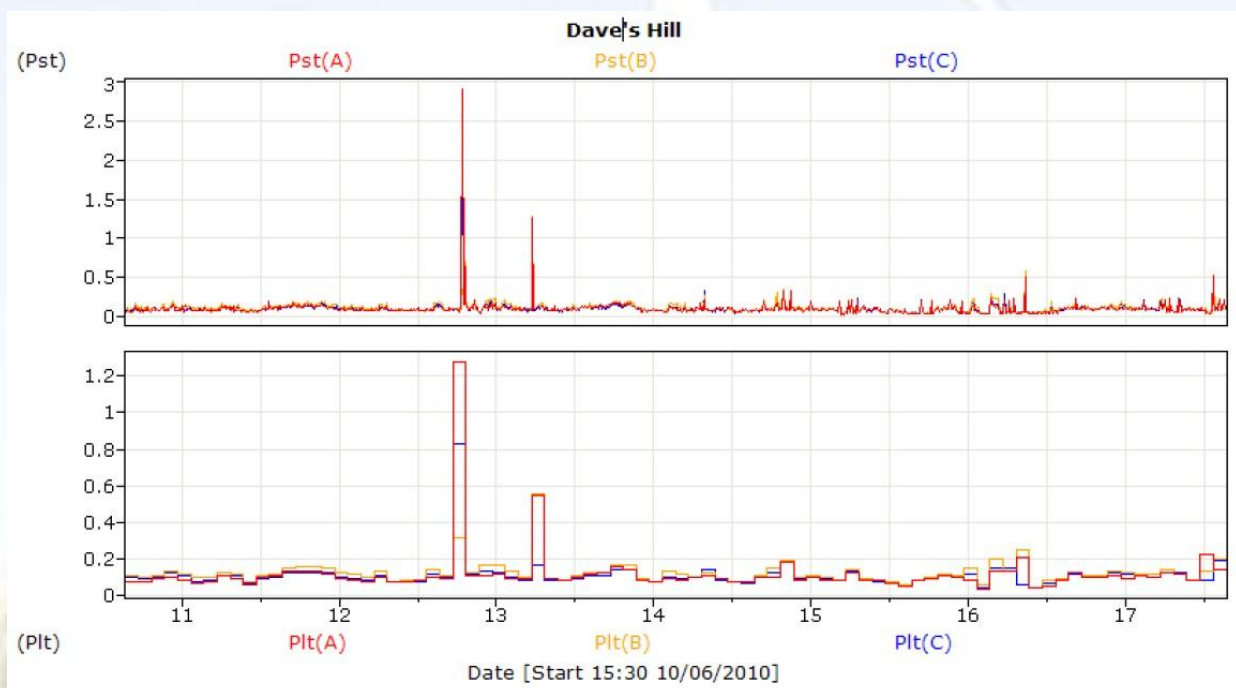
These include: –

- Harmonic content
- Voltage unbalance
- Flicker
- Voltage fluctuations
- Fault ride through
- Reactive capability

Flicker Report (EN61000-4-15)

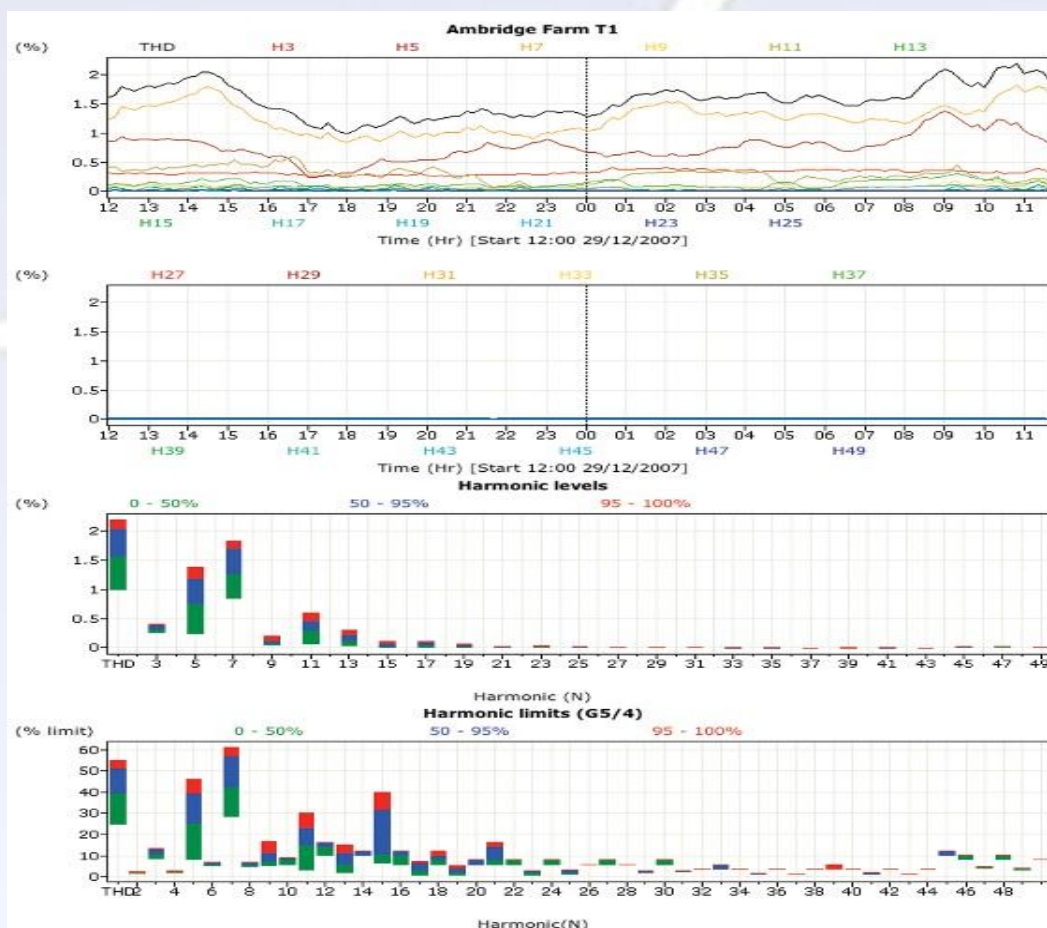
As part of its power quality monitoring functionality sub.net records the individual voltage flicker values on a 3 phase circuit. The measurements comply with IEC61000-4-15 with scaling values from 0.1 to 20. A report including both Pst (10 min) and Plt (2 Hr) values may be created over a user defined time interval.

The flicker trend report includes both graphs and a table with the maximum, minimum and average flicker values over the trend interval. All sub.net trend reports may be viewed on-line and emailed to the current user.



Harmonics Graphs (EN61000-4-7)

Sub.net records these parameters continuously and can report the trend over time. Harmonic reports can include comparisons with standards such as G5/4. Fault event reports can include the real and reactive power response to the event. During Grid Code compliance testing the voltages, currents, powers and frequency are all recorded by the trend (10 minute) and RMS log (10Hz) recording modes. These provide a permanent record of the test results.



As well as the phase voltages and currents sub.net may be configured to monitor additional signals from isolated transducers to extend the information in the test reports and meet specific Grid Code monitoring requirements. These signals may include:-

- Actual real Power
- Available active power
- Simulated test frequency
- Active power control set point
- Tap changer position

An output module is available for sub.net to provide the analogue output quantities defined in the new National Grid Generator Compliance document (section CC.6.6.2). The output signals are -10V to + 10V and the signals are :-

Registered Capacity - Reactive Power – Frequency - Nominal voltage