

ASSET HEALTH - CONDITION MONITORING SYSTEMS

PURPOSE AND SCOPE

This document provides National Grid's high-level condition monitoring (CM) policy.

The policy covers the application of condition monitoring to new plant items, existing assets (including nursing applications) and trials of new CM equipment.

PART 1 – POLICY

1.1 CM systems shall only be purchased where there is a proven safety need, business case or identified knowledge collection requirement. Any cost benefit analysis should include the whole life cycle costs of the CM system, including maintenance, post-delivery support agreement (if required), future upgrades, and differences in life between the CM system and the plant being monitored.

1.2 All CM systems installed for non-trial applications shall be:

- a) Compliant with NGTS 3.24.2 and 3.24.15.
- b) Compliant with IEC 61850.
- c) Able to send alarms signals to a central remote location. Alarms should as a minimum distinguish between a CM system fault/failure and a fault/failure of the plant item.
- d) Able to send pre-alarm warnings, eg of a developing fault, to the CM system operator.

1.3 Plant

New equipment procured without a CM system shall:

- a) Be specified to include either embedded sensors or designed to permit the simple retrofitting of sensors which may, at a later date, be connected to external hardware thereby creating a fully functional CM system.
- b) Avoid the need for outages at such time that a full CM system is installed by ensuring that the connections from these sensors are:
 - i) Electrical sites - brought down to ground level and terminated in an appropriate enclosure;
 - ii) Gas sites – brought to an intrinsically safe area and terminated in an appropriate enclosure.

To develop more robust, future-proof CM systems, consideration shall be given to transmitting raw sensor data via the Substation Control System (SCS) or substation LAN to the substation Information Management Unit (IMU) for processing remote from the plant item.

CM systems that require hardware within the substation compound, eg data loggers, shall be able to be interrogated remotely. These shall have an SCS or WAN connection installed within, or close to, the enclosure where the terminations are located.

1.4 Software

All new CM systems that rely on a local PC to gather data and perform processing of that data shall use an operating platform compatible with the current National Grid platform.

The software shall use a web-based Graphical User Interface (GUI).

Consideration shall be given to remote diagnostics and repair of the CM system without the need to visit the National Grid site where the equipment is located.

Consideration shall be given to remote software patching and upgrades.

1.5 Trials

Prior to the commencement of a trial a risk register will be developed detailing risks and mitigating control measures associated with the technology/system undergoing trial.

Trials shall generally last 12 months unless circumstances dictate otherwise.

The supplier shall be made aware of the need for remote diagnostics and/or fixing of the system prior to any trial commencing. The CM system supplier shall be informed that, following commissioning of the system, return to site will be limited to only two visits (to repair the system) during the remainder of the trial.

Following the completion of the trial a review will be made of the performance of the system under trial.

PART 2 – DEFINITIONS AND DOCUMENT HISTORY

2 DEFINITIONS

Condition monitoring can be distinguished from condition assessment by the following definitions:

- a) Condition monitoring is the acquisition, recording and automatic analysis of parameters which indicate the state of equipment (generally online and in real-time), and commonly look for changes of state or trends in these parameters.
- b) Condition assessment is the activity of reviewing the available condition information offline by an engineer to evaluate the health of an item of equipment, with a view to recommending a particular course of action.

3 AMENDMENTS RECORD

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
1	April 2004	First issue	Simon Sutton Condition and Capability	Mike Dean Asset Strategy Manager
2	June 2006	Changes to the rules for trials	Simon Sutton Condition and Capability	Edgar Goddard Asset Health and Network Design Manager