QUESTIONNAIRE

'Condition-Based Maintenance for GT plants' project proposal

– Gas Turbine users and Oil&Gas industry–

Below is a list of questions, related to a project idea to ETN by NTUA and Cranfield University under the title: *Condition-Based Maintenance (CBM) for GT plants*.
This questionnaire is addressed to you following the presentation of the project idea at the Annual ETN Workshop on 9-10 October 2013 in London, UK, (a summary of which can be found here, section 9.5). The main goal of the questionnaire is to map current practices and available tools in gas turbine plants condition monitoring. An additional aim is to identify related issues of interest.
Your contribution, by filling this questionnaire, is highly appreciated.

ETN partner name: _____

1. Which of the following best describes the gas turbine maintenance approach you currently follow?

☐ *Breakdown Maintenance*; maintenance actions are taken only after breakdown / when fault occurs.

☐ *Preventive Maintenance*; maintenance actions are taken after specific time intervals of operation, regardless of the condition of the engines, unless a machinery issue occur in the meantime.

☐ *Predictive Maintenance*; maintenance actions are planned and taken according to the actual condition of the operating engines, which is assessed through appropriate condition monitoring procedures.

2. What kind of condition monitoring software is currently installed in your power plant(s)?

☐ In-house developed software

☐ Commercial software; developer: _____

☐ None

3. Which of the following features does the condition monitoring software, currently installed in your power plant(s), have?

- ☐ Real-time data acquisition and storage
- ☐ Automated data verification
- ☐ Sensor Validation; automated sensor fault diagnosis
- ☐ Trend analysis from vibration measurements
- ☐ Trend analysis from other measurements (e.g. Thermodynamic measurements)
- ☐ Vibration analysis (e.g. FFT analysis)
- ☐ Exhaust Gas Temperature (EGT) analysis (e.g. EGT spread, EGT profile)
- ☐ Engine Model
- ☐ Fault diagnosis during steady state operation; identification of the root cause / physical underlying fault
- ☐ Fault diagnosis during start-up and/or transient operation; identification of the root cause / physical underlying fault
- ☐ Creep Life analysis
- ☐ Engine Remaining Useful Life estimation; assessment of the remaining safe operating time before engine components failure
- ☐ N/A
- ☐ Other:

4. Does the condition monitoring software, currently installed in your power plant(s), allow data export?

- ☐ Yes, in real-time.
- ☐ Yes, but not in real-time.
- ☐ No.
- ☐ We don't know.

5. Which of the following features would you like to see integrated into your existing condition monitoring software?

- ☐ Data verification
- ☐ Sensor Validation; development of a tool allowing automated sensor fault diagnosis
- ☐ Engine Model including adaptation capability to allow simulation of specific gas turbines
- ☐ Fault diagnosis during steady state operation; identification of the root cause / physical underlying fault
- ☐ Fault diagnosis during start-up and/or transient operation; identification of the root cause / physical underlying fault
- ☐ Creep Life analysis
- ☐ Engine Remaining Useful Life estimation; assessment of the remaining safe operating time before engine components failure
- ☐ Other:

6. Are there any issues or concerns regarding your participation in a CBM related project?
(e.g. confidentiality issues, doubt about CBM usefulness)

7. Additional comments: