

ENERGY
ENVIRONMENT
ECONOMY

TROUBLESHOOTING MEASUREMENT SERVICES

Issues such as engine vibration, noise, poor performance, and unwanted shut-downs often require specialist attention rather than routine maintenance. Wärtsilä troubleshooting measurement services not only help to identify the root causes of faults, they can also help to improve the operational economy of the power unit and ensure compliance with existing standards and regulations. These services can provide the data needed to reduce noise and vibration on a cruise ship, for example, or reduce downtime and fuel consumption in a power plant.



FINDING THE ROOT CAUSES

In most cases, finding the root causes requires in-depth data before any proposals for improvement can be made. To provide this data, Wärtsilä offers a variety of troubleshooting measurement services. Wärtsilä's global network of experts use the latest measurement tools and adapt them to your conditions and requirements. Wärtsilä's system experts analyse the results and give suggestion on how to solve the problem or how to avoid the recurrence of this failure in the future.

These and other performance parameters can be measured:

- Cylinder pressures
- Noise and vibration of installation
- Torsional vibrations
- Load of flexible couplings
- Pressure pulsations
- Pressures and temperatures of installation
- Thermal scanning for SOLAS compliance and electrical systems
- Engine performance

KEY BENEFITS

- Help in finding root causes of problems
- Use measurement data to reduce downtime and fuel consumption, optimise maintenance, improve safety, etc.
- Ensure compliance with existing standards and regulations
- Reliable results from Wärtsilä specialists using advanced measurement methods

AVAILABILITY

All troubleshooting measurement is available for all 4-stroke engines in the Wärtsilä portfolio, both in Marine and Power Plant applications. Most of the measurements are also applicable for other 4-stroke and 2-stroke engines. Torque, stress, temperature, pressure, vibration and noise measurements can be done for several kinds of installations, even non-engine based cases.

For successful measurement, the engines should be run according to a specified measurement programme. This may require different loading and speed conditions as well as shut-downs and start-ups. The required downtimes depend on the installation time for the measurement equipment and must be estimated case by case.

PARAMETERS AND METHODS

The time required for installing the measuring equipment depends on the parameter and measurement method. For example, basic vibration measurement needs no installation time, while full instrumentation of telemetry torque measurement takes about 8 hours per shaft. Upon completion of the measurement, a written Measurement Report will be presented including condition statements and recommended actions.



Wärtsilä's system experts analyse the measurement results and give recommendations for improving the performance of your installation.

VIBRATION MEASUREMENT

- To notice potential cracks
- To verify the efficiency of the resilient mounting
- To verify operative alignment/balancing
- To avoid failure on key parts i.e. turbocharger

TORSIONAL VIBRATION MEASUREMENT

- Operative verification of the torsional vibration avoiding the derivative silicon comparison
- Long term monitoring to detect existing dangerous running conditions, which are related to the particular installation (especially for Dredger)
- To check after crankshaft resizing
- To validate the actual damper status for fulfilling the classification requirements and avoiding the viscous damper refurbishment

NOISE

- Microphones for free field and induct sound pressure
- Handheld real-time 1/3-octave noise analysers

- Handheld FFT-analysers
- Sound recorders
- Boompoles

THERMAL SCANNING

- Periodic verification of the status of the insulation in order to avoid failures in engine room, e.g. in case of fire
- Cylinder pressure and Combustion
- Combustion balancing (IMES)
- Combustion verification after main overhaul of injection system

PRESSURE PULSATION

- Fuel pressure pulsation in fuel line indicates the need for corrective action in pipes anchoring or fuel damping in order to reduce the potential failure in pipes
- After a cavitation failure, the verification of pressure pulsation may give indication on how to reduce or avoid this phenomenon, which contributes to a longer lifecycle of the system