



# GOLD\* Service

## *Generator Health Monitoring*

Building on decades of monitoring and diagnostics experience, GE offers a range of services for generator owners. Our GOLD Service package provides a Generator On-Line Diagnostic solution to improve reliability, extend availability and lower the cost of maintenance—thanks to our permanently installed sensors and twice-yearly generator analysis by GE specialists.



### Expert assessments to provide reliability—and peace of mind

In today's competitive markets, reliability is a top priority. But aging generators are subject to deterioration of their electrical and mechanical components. Left unchecked, this damage can become cumulative—leading to expensive forced outages and unplanned downtime.

GE's Generator Health Monitoring – GOLD Service can address these issues through periodic monitoring and assessment of the generator's condition. Our service provides installation of permanent sensors, followed by twice-yearly measurements and an expert report.

Thanks to our continuous training and extensive experience, GE's generator experts can support the plant owner with a specialist perspective. This support includes reliable identification of impending faults, recommendations on mitigation and—if requested—assistance with effective planning of maintenance, repairs or replacement.

Since the launch of our GOLD Service almost two decades ago, customers around the world have benefited from this high level expertise, along with the assurance of increased availability and reliability.

## GOLD Service in action

GE's GOLD Service allows you to make informed decisions on the maintenance that is needed—and when. This enables easier strategic planning and management of your operations, outages, spare parts requirements and finance. By increasing the reliability and availability of your generator, you can significantly reduce the cost of maintenance.

Our generator online diagnostics package comprises modules for the stator and the rotor respectively. After installing permanent sensors, our generator experts visit twice a year to take measurements under different load conditions, using GE equipment. The results are presented in a comprehensive report that covers:

- Your generator's overall condition and reliability
- Any impending defects and weaknesses in the equipment
- Long-term trend analyses
- The nature and extent of any repair, overhaul or service recommended



## Measurement

Specific condition assessments are carried out to allow early detection of faults before the condition becomes critical.

### Partial Discharge

To identify stator insulation system deterioration

**Method:** We use coupling devices that capture pulse-like discharge currents.

**Analysis:** Phase-resolved Phi-Q-N patterns are plotted to identify the discharge sources within the generator.

### Rotor Flux

To identify rotor-winding interturn isolation faults

**Method:** A magnetic flux probe is used to take measurements within the air gap and provide information on flux leakage originating from the individual rotor slots.

**Analysis:** The measured data is analyzed in relation to symmetry criteria between the poles and the flux density zero-crossing point. The severity of the winding-short can be quantified and the affected coil localized

### Shaft Voltage

To assess shaft grounding and the danger of electro-erosion in bearings, to detect active rotor-winding interturn isolation faults, and to detect problems with bearing isolations and shaft rubbing

**Method:** Grounding shaft-riders or special contact probes are used in conjunction with high-speed measurement of the voltage between shaft and ground.

**Analysis:** The recorded waveforms are analyzed in the time and frequency domain.

## Application

Any large 2- or 4-pole turbo generator

- Any OEM brand of generators

## Scope

- Installation of permanent sensors
- A GE expert visits the site every six months to take measurements

## Related Offerings

- GOLD Service is an online offer that is performed with the generator in normal operation. It complements our offline diagnostic services, which are carried out only when the generator is at a standstill. To enhance knowledge about the machine in-between outages, GOLD Service enables you to benefit from regular assessments using permanently installed sensors.
- GOLD Service customers who want the benefit of remote support in addition to permanently installed assessment equipment can opt for the next levels of Generator Health Monitoring.