

# TG GUARD T-G U-Y-U

## Monitoring Turbine Generator

TG Guard is a semi-autonomous data acquisition system specially designed to monitor your turbine generator, such as gas turbines and steam turbines.

TG Guard is designed to work with our Advanced VibroFibre™ -- a special sensor capable of measuring and trending both vibration and local temperature rise of the Stator end windings.

With a TG Guard system, one can monitor both Stator End Winding (SEW) vibration and Partial Discharge (PD). PD increases local current, will give rise to a small temperature augmentation in the event area. By trending the local temperature rise together with the gradual increases in vibration amplitudes, will give the customer a definite alarm that the crisis is imminent and required shut down for immediate attention.

## Technical Specifications

<b>Vibrofibre™ Sensor:</b>	<b>Vibration Measurement</b>	<b>Temperature Measurement</b>
Operating Temperature:	-40°C to 200°C	-40°C to 200°C
Measuring Range:	0 to 500 microns	-40°C to 200°C
Resolution:	1 micron	0.1°C
Frequency Range:	20 to 500Hz 20Hz +/- 20%	2Hz
Resonance Frequency:	>600Hz	N/A
Transverse Sensitivity:	<5%	N/A
Operating Pressure:	2000psi	2000psi
Max Shock Acceleration:	>70g	>70g
Weight:	2gms (without cable)	2gms (without cable)
Size:	38mm L x 18mm W x 7mm T	38mm L x 18mm W x 7mm T
Fiber Cable Length:	9meters 30meters (Optional)	9meters 30meters (Optional)
Fiber Cable Min. Bending Radius:	30mm	30mm
Fiber Connector:	FC/UPC	FC/UPC
Non-Destructive Temperature:	Sensor: -40°C to 200°C Fiber: -40°C to 200°C (with silicone tube)	Sensor: -40°C to 200°C Fiber: -40°C to 200°C (with silicone tube)
<b>TG Guard™ System</b>		
Number of Inputs:	Fiber optics: 16 Extra analog inputs: 16	
Sensitivity:	10mV/μm	
Frequency Range:	20 to 2000Hz	
Residual Noise:	0.8mVRMS/30...4,000Hz	
Operating Temperature	0°C to 45°C	
Relative Humidity:	Up to 95%	
Fiber Connector:	FC/UPC	
SCADA Interface:	RS 485; MODBUS	
Computer Interface:	USB	
Supply Voltage:	100/110V; 220/240VAC	
Software:	TG EYE Software	
Cooling System:	Assume Generator Hydrogen cooling	
Size:	440mm (W) X 132.5mm(H) X 340mm (D)	

**TG EYE**  
**TG GUARD**

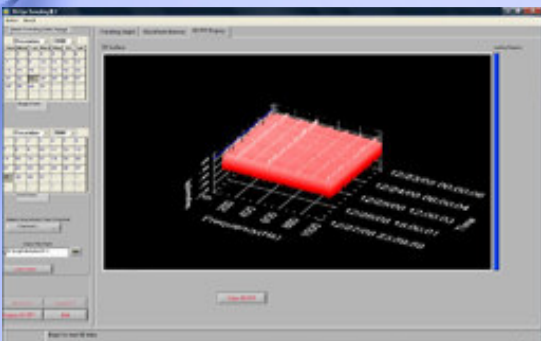
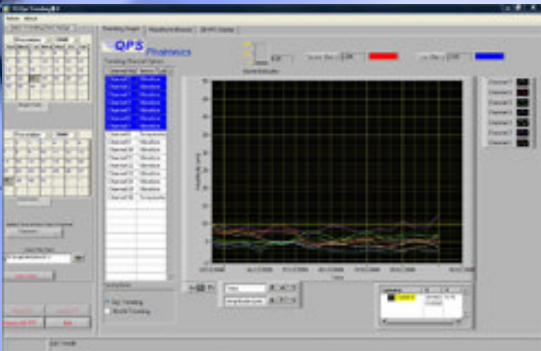
**QPS** Photronics

# TG GUARD TG EYE

**TG EYE, the analysis and trending software available with TG Guard**

Built into TG Guard is an embedded real-time operating system, the system is capable of conducting self-calibration on all the installed advanced VibroFibre™ SEW sensors. This calibration routine also facilitates local temperature measurement. Since TG Guard works off optical interference fringes that will be affected by any temperature change at each of the sensor head, the system tracks these temperature changes and records them along with the vibration signals. Through a complex algorithm, the system can track temperature rise of up to 250°C. TG Eye is a software tool designed to analyze and to do trending on the acquired data from TG Guard.

TG eye also contains a system setup interface to allow user to remember the exact sensor installation points. This graphic system configuration would also set up your vibration and temperature trending data storage. Our network version of the TG Guard will be released at the end of 2010. Customer can upgrade their software when they install our solution to additional turbine units. These turbine units do not have to be located at the same physical plant. The software will support a network of power plants each containing several turbine generators.



# TG GUARD TG EYE **VibroFibre™ SEW Sensor**

## *Features*

- 8 extra analog inputs allowing customers to correlate vibration and local temperature rise with conditions of the Generator or third party sensor inputs
- Customized sensor cable and composite cable length
- User friendly TG EYE operating software for trending and analysis of both vibration and local temperature rise
- 12/16 VibroFibre™ sensor channels: all can measure vibration and temperature simultaneously 24/7
- Networking of multiple TG Guard monitoring all your Generators at the plant
- Works on a desk top or Lap top with limitless memory and disk storage
- Links to your SCADA system via RS485 under MODBUS Protocol
- 16 sensor Status LED on the front panel to indicate sensor operation

## *Other Advantages*

- Easy and rapid installation (one day only for 16 sensors!)
- 5 years warranty
- One year money back Guarantee
- 5 years of free TG EYE software upgrade
- Monitoring service and trending of vibration and temperature during this warranty period via WEB portal on PC server
- Customer alert advice for 5 years
- Alarm reporting during warranty period

## *Ultimate benefits for you*

- **Long life protection: expected life of TG GUARD and advanced VibroFibre™ sensors and system of 25 years, hence 5 years warranty**
- **Acting as Guardian Angel to your turbine generators around the clock 24/7**
- **Long term technical support and partnership**

**The most cost effective solution! We have your welfare in Mind!**