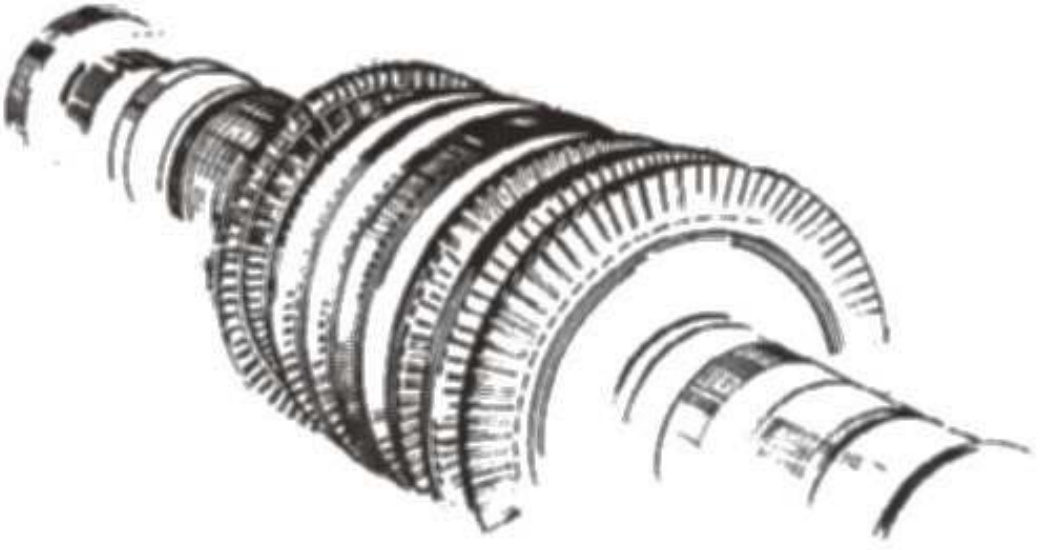
# PROTOR

## On-Line Vibration Monitoring System



A complete solution for vibration monitoring of turbines and other rotating machinery with an intuitive user interface, full unitisation and independent measurement channels

## PROTOR

**PROTOR** provides a complete solution for vibration monitoring of rotating machines. Individual, multi-channel,distributed acquisition and processing subsystems (RMDAS units) are connected using standard networks to one or more database processors (Windows NT or Linux) providing access to both real-time and historic data. Data is available on Windows PCs over LANs, WANs and modems for display in a variety of graphical and numerical forms.

## PROTOR Benefits

Improved overall efficiency by increasing machine uptime.

Improved safety by decreasing the risk of machine failure.

Continuous machine health information allows predictive maintenance, avoiding and limiting machine damage.

Reduced capital costs by extending machine service life.

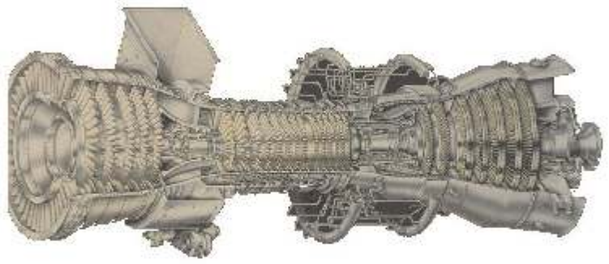
Decreased machine servicing costs by only repairing or replacing those parts which are damaged or worn out.

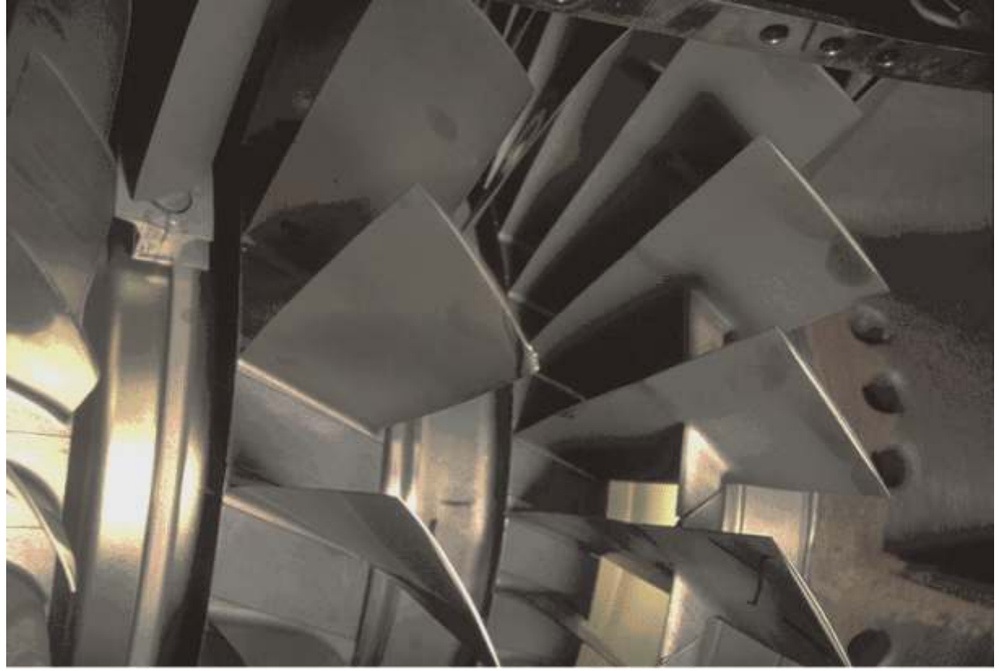
Decreased machine repair costs by recognising problems before they cause serious damage.

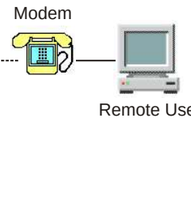
Reduced machine downtime by allowing machines to be maintained while in service.

Reduced risk of unplanned shutdowns by allowing scheduled maintenance to coincide with production requirements.

Excellent data accessibility bringing data to your desktop either locally or remotely.








*Example single machine configuration*

*Example multiple machine configuration*

**PROTOR supports:**

- Bearing performance analysis
- Examination of critical runup / rundown modes
- Data comparison at known speeds
- Accurate and reliable trends
- Ability to set up accurate limits
- Examination of blade frequencies
- Full FFT processing of runup / rundown data
- Historical data storage
- Better control of machine rotor startup
- Remote access via modem or WAN

**PROTOR can help detect:**

- Shaft unbalance
- Shaft rubs
- Shaft bowing
- Bearing faults
- Misalignment
- Shaft cracking
- Looseness of rotating elements
- Whirl problems
- Balance piston rubs
- Damaged sealing strips
- Generator shorts
- End winding vibrations
- Blade response
- Hub cracking

**PROTOR** provides comprehensive alarm checking, mimics, trends, vector plots, orbits, FFTs, waterfalls and so on, for real time and historic data.

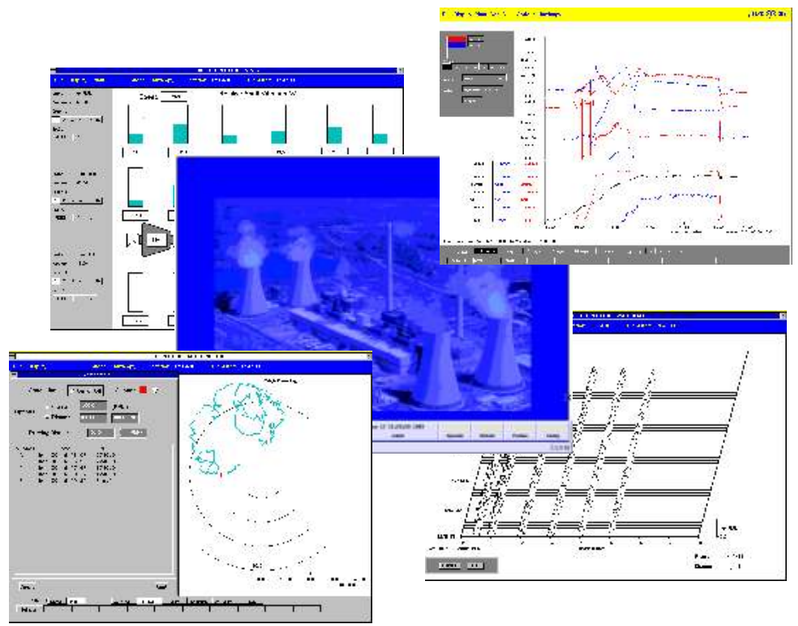
**Real Time Graphics include:**

- Runups
- Rundowns
- Mimic diagrams
- Orbits
- Vector plots
- FFTs
- Numerical displays
- Trend plots
- Order plots
- Waterfalls
- Demand time and spectra
- Reference overlays during runup and rundown
- Combined vibration and plant process parameter plots
- Cascade and overlay X-Y plots

**Historic Data Graphics include:**

- Runups
- Rundowns
- Vector plots
- Order plots
- Trend plots
- Orbits
- Bode
- Amplitude and phase plots
- Waterfalls
- Spectral maps
- General X-Y plots of dynamic and plant process signals
- Stacked and overlay plots

**PROTOR** is the most cost effective and efficient way of capturing, analysing and reporting data from rotating plant. The **PROTOR** system protects your plant and provides a future proof solution to health monitoring.



# PROTOR

**Alarm processing** of dynamic results based on the following

- Amplitude exceedance for overall and selected orders
- Exceeding elliptical boundaries in amplitude and phase
- Exceeding difference in RMS and sum of first four orders
- Exceeding subsynchronous amplitude
- Step alerts
- Banded spectra alerts
- Automatic signal select on alerts
- Vibration alerts dependent upon plant process parameters
- Full remain and occur handling for acknowledgement
- Filtering of wild alerts

**Data Collection Units** may be any mix of the following

- Devoted to a single rotating machine (unitised)
- Shared between several rotating machines (multiplexed)
- Distributed over entire facility
- Multiple segments

**Data Acquisition**

- Synchronous or time based
- All channels sampled simultaneously
- Up to 128 dynamics per rotating machine
- Up to 256 plant process parameters per machine
- Plant process parameters either direct or from network
- Vibration data sent to other processors over network
- Differential buffered inputs, low pass filtering, AC/DC coupling
- Support for wide variety of transducers including direct voltage, eddy probes, ICP

**Standards**

- Internationally compliant network TCP/IP protocols
- Standard Microsoft Windows NT
- Standard Ethernet and/or Token Ring

**Multiple Users**

- Local and wide area networks (Ethernet and Token Ring) and over modem

**For more information call:**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