



## EtaPRO™ Predictor™

Fault detection, diagnosis & prognosis for rotating machines

- Manage Business Risk.
- Improve Availability & Efficiency.
- Reduce Costs.

### EtaPRO Predictor

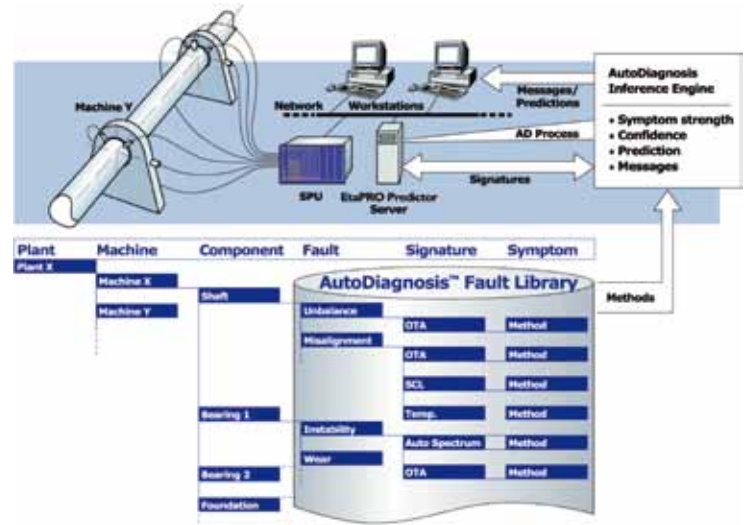
Plant owners and operators want to know when their plants are at risk due to incipient failure, how to avoid the failure, and how long they have to take action before it becomes critical. EtaPRO Predictor, with AutoDiagnosis™ technology (US Patent 7,089,154 B2), provides unprecedented early detection and diagnosis of faults in gas and steam turbines, generators, pumps, fans, compressors, and other critical rotating machinery. Unlike OEM protection systems, EtaPRO Predictor predicts time-to-criticality and provides recommendations for action to avoid unplanned downtime.

### AutoDiagnosis™ Early Warning

Traditional vibration monitoring systems provide diagnostic information only after a high vibration incident occurs. This means that very few faults are actually monitored, warnings to the operator come too late to avoid failure, and post-mortem analysis is required to understand what happened. In contrast, EtaPRO Predictor continuously and automatically evaluates multiple fault symptoms in their early stages and provides advance warning of impending failure so corrective action can be taken.

### How It Works

Vibration signals carry vast amounts of diagnostic information about machine component problems in their early development. This diagnostic information is revealed by GP Strategies™ proprietary Signature Processing Units (SPU's), executing advanced time and spectral analyses. EtaPRO Predictor turns this information, together with process and geometrical component data, into AutoDiagnosis messages. An *instantaneous* AutoDiagnosis reveals events such as rubbing, surge and cavitation, while a *predictive* AutoDiagnosis reveals specific machinery faults in their early development and provides a "time-to-criticality" prognosis for recommended action.



### EtaPRO Predictor monitors these faults:

- Cavitation
- Eccentricity
- Instability
- Gear wheel faults
- Pole position faults
- Resonances
- Rubbing
- Winding shorts
- Deformation
- Expansion faults
- Journal bearing faults
- Misalignment
- Pressure pulsations
- Rolling element bearing faults
- Unbalance

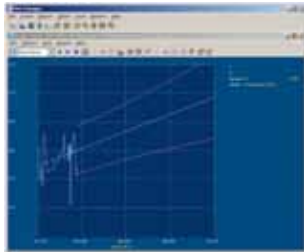
## EtaPRO Predictor Advantages

EtaPRO Predictor is the only technology in the market that combines advanced diagnostic tools in an automated approach to detect, diagnose, and prognose potential faults on any type of critical rotating machine encountered in the power and oil & gas industry.

Features	Benefits
Early detection of mechanical faults in rotating machinery.	Reduced forced outage/downtime.
Patented AutoDiagnosis fault identification and forecasting.	Reduced analysis time/comprehensive cause determination.
Predicted lead time to inspection/action required.	Improved outage planning/reduced risk.
Comprehensive detection methods.	OEM-independent/plant-wide deployment.
Library of proprietary fault signatures/models.	More faults covered and earlier detection.
Most advanced analytical tools for vibration and fault analysis in the industry.	Comprehensive data assessment and fault verification.

## Demonstrated Results

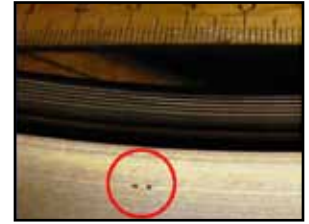
At a 500MW supercritical combined heating and power plant, AutoDiagnosis alerted operators to early signs of a fault with the gas recirculation fan motor bearing with a time-to-critical prognosis of 196 days. To avoid a potential failure during the peak heating season, plant management decided to take a planned outage to disassemble and inspect the bearing.



The inspection confirmed the incipient defects in the roller elements detected by EtaPRO Predictor, as well as pitting in the outer race. Plant personnel replaced the roller elements and race and returned the fan to service where it operated without trouble throughout the peak operating season.



Wear marks on bearing



Pittings on outer race way



Fan rotor

## The EtaPRO System

Achieve operational excellence of capital-intensive, high-risk facilities with GP Strategies' EtaPRO System, the most comprehensive platform for performance and condition monitoring.



Contact us to schedule an EtaPRO Predictor demonstration:  
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Learn More  
about EtaPRO  
Predictor



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