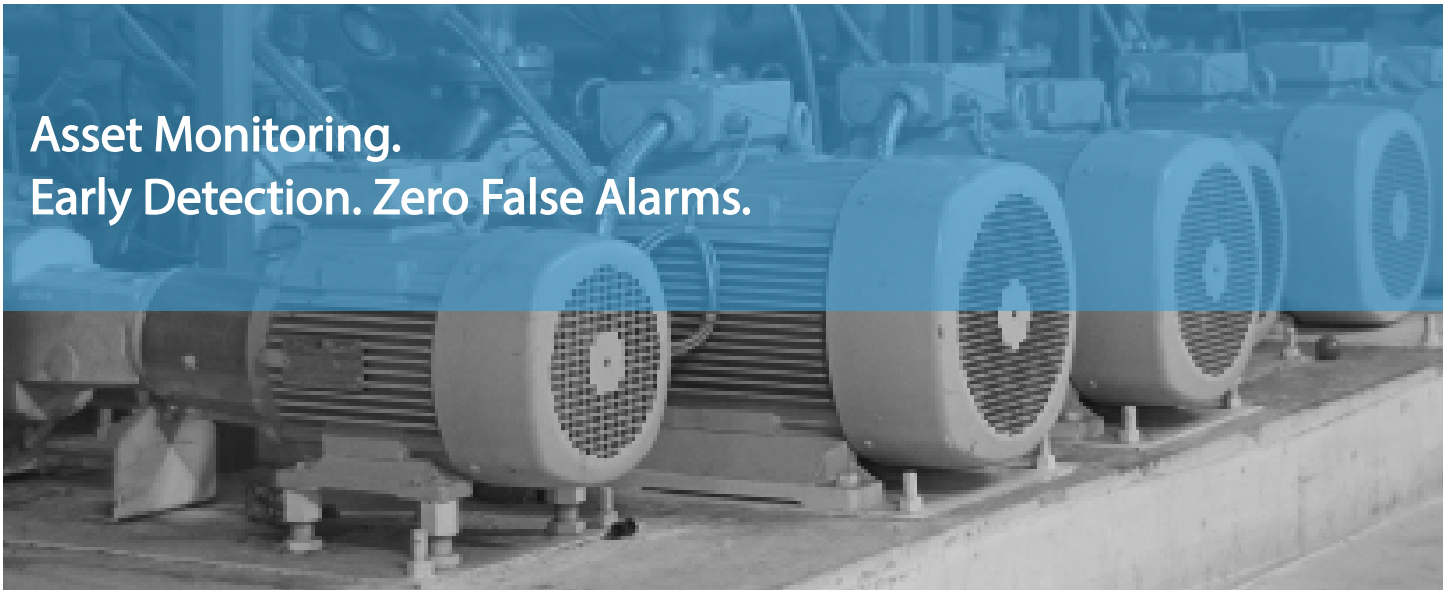
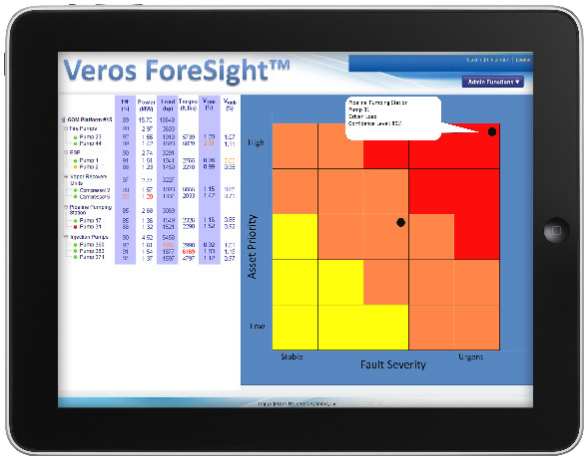


Veros ForeSight™

See the future in plenty of time to change it

Veros ForeSight is the only industrial asset monitoring system that provides a dashboard with real-time operating metrics and clear, early warnings about impending equipment failures, with zero false alarms. ForeSight utilizes the induction motor as its only active sensor, connecting at the motor relay or drive panel to monitor electrical waveforms. No sensors are placed on the monitored assets.

Engineering and maintenance managers rely on Veros ForeSight to quickly and easily know how their assets are operating, identify poorly performing equipment and be alerted to problems months in advance, so they can plan and take action.



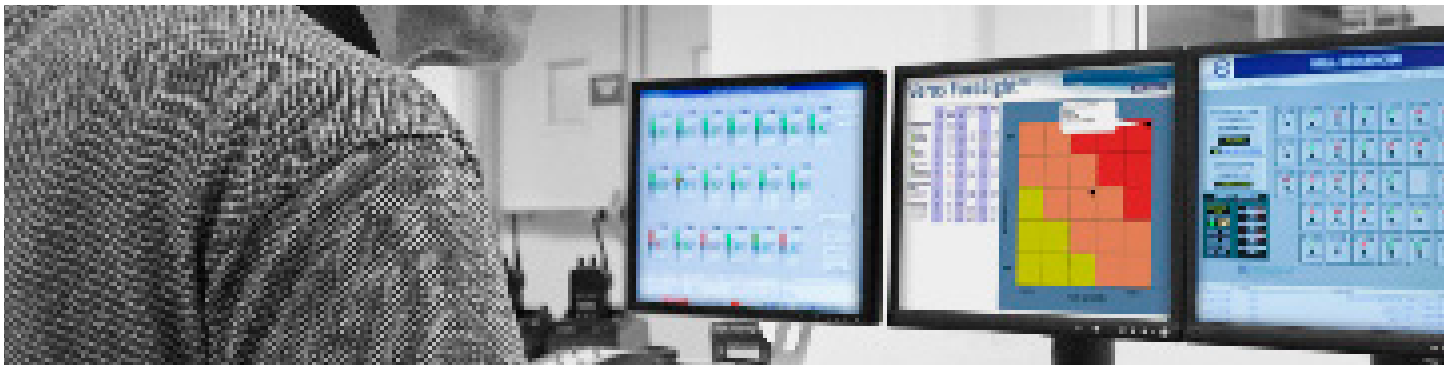
The results

- Less unplanned downtime
- Reduced exposure to safety and environmental incidents
- Improved efficiency
- Minimized spare parts and maintenance costs

Have you considered online monitoring but it was too expensive and complicated?

Do you want to see real-time efficiency, torque, power consumption and loading for your motors?

Would you like to know about faulty motors, compressors, pumps and fans early enough to take action? With no false alarms?



Veros ForeSight is a non-invasive, self-learning asset monitoring solution that monitors the performance and condition of electrically driven equipment.

Veros ForeSight Features

- Electrical measurements only
- Automated condition interpretation
- Detection of mechanical and electrical faults
- Display of real-time operating conditions
- Mobile, email and SMS alarm notification
- OPC compliant, fully networkable

Veros ForeSight Benefits

- Displays a dashboard with real-time operating information, such as efficiency, torque, load and power consumption
- Continuously monitors 300+ asset risk and performance metrics
- Detects slight variations, accurately detects faults and predicts failures
- Provides early warnings so you can plan and take action
- Produces zero false alarms
- Delivers peace of mind

Easy, Non-Invasive Installation

- Requires 90 minutes at motor switches or VFD enclosure
- Clamp the current transformers on motor lines or relays and connect to bus secondary voltages or motor side VFD conductors
- Enter motor nameplate information
- Turn on (no configuration required)

How it works

The software uses high frequency electrical measurements and statistical signal processing algorithms based on nonlinear regression and correlation methods, and on machine learning algorithms to arrive at key metrics used to detect and track mechanical problems developing in the entire power train.

The source of information for mechanical fault detection is in the air gap flux variations. Depending on the nature of developing mechanical problems, the radial, axial and azimuthal (or torsional) variations in the motor air gap magnetic field produce corresponding distortions in the motor current.

Electrical problems are detected by empirically developing and tracking system impedance models. Classification and isolation of faults is accomplished by a combination of machine learning methods based on classifiers and specific spectral fingerprints of faults.

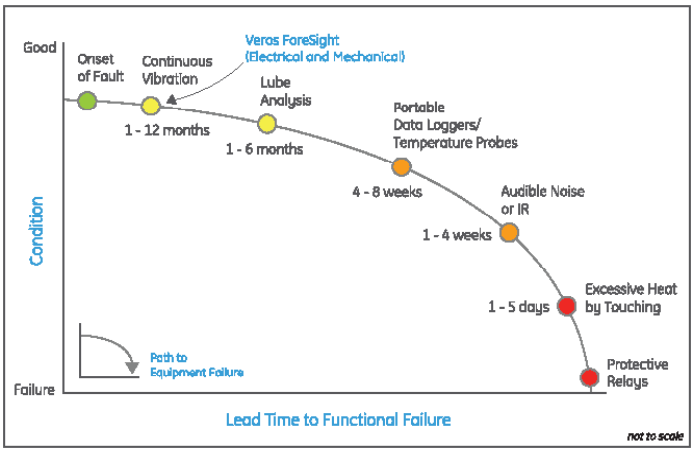
Performance Monitoring

ForeSight provides real-time display of several critical metrics shown below to allow managers to better operate and manage their equipment:

- Power quality
- Mechanical Loading
- Motor Efficiency
- Torque
- Power Consumption

Equipment Condition Monitoring

ForeSight continuously monitors equipment for defects and alarms months in advance of potential failures. With ForeSight, users can optimize their responses to impending issues, saving downtime and avoiding catastrophic incidents.



Representative Faults Detected by ForeSight

Pumps

- Cavitation
- Partial/low flow
- Dry running
- Impeller damage
- Bearing damage
- Seal failures

Motors

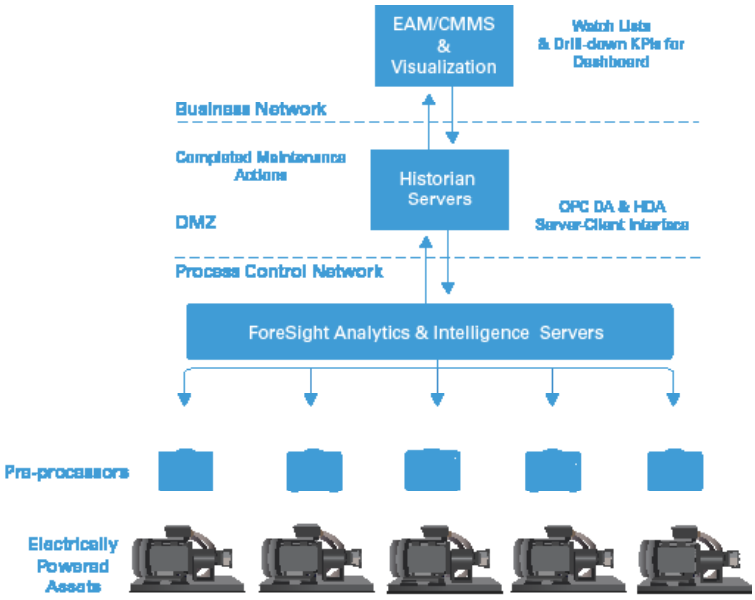
- Stator shorts
- Over/under loading
- Bearing degradation
- Rotor bar/end ring cracks
- External misalignment
- Stator eccentricity

Fans

- Impeller damage
- Bearing damage
- Unbalance/misalignment

Compressors

- Impeller damage
- Bearing damage
- Unbalance/misalignment



ForeSight System Architecture

The Veros ForeSight system architecture is simple but powerful. An OPC based interface allows the system to communicate asset intelligence to historians and other business software. A web based user interface allows end-users to receive alerts and other drill-down intelligence about monitored assets. Alarms can be delivered to end-users via e-mails, text messages and/or phone calls on an event driven basis. Veros ForeSight has a distributed architecture meaning an unlimited number of assets can be monitored.

MONITOR SPECIFICATIONS

Motor Type	3-phase AC induction of any power or voltage rating
Electrical Source	Fixed speed (line driven) Variable speed (inverter or VFD driven) Soft-starters
Operation Type	Continuous
Voltage Inputs	Direct connection for low voltage motors (up to 480 VAC) Step down transformers required above 480 VAC 3 or 4 wire connections
Current Inputs	0-333mVAC; one per phase from shunted split-core CTs attached to primary lines or to metering/relaying CTs
Input Power/Power-up Inrush Current	115-125 or 210-230 VAC, 50/60Hz @ 0.2A max (separate 1 phase power needed only for VFD motors); 3A max for 20ms
Communication	Ethernet, TCP/IP, 10/100Mbps, AES 256 encryption
Dimensions (L x W x H)	6.5 x 6.5 x 4.5 inches 16.5 x 16.5 x 11.5 cm
Environmental Factors	32 – 122F (0-50C)
Weight	5.8 lbs / 2.6 kgs

For additional information, please contact us:

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