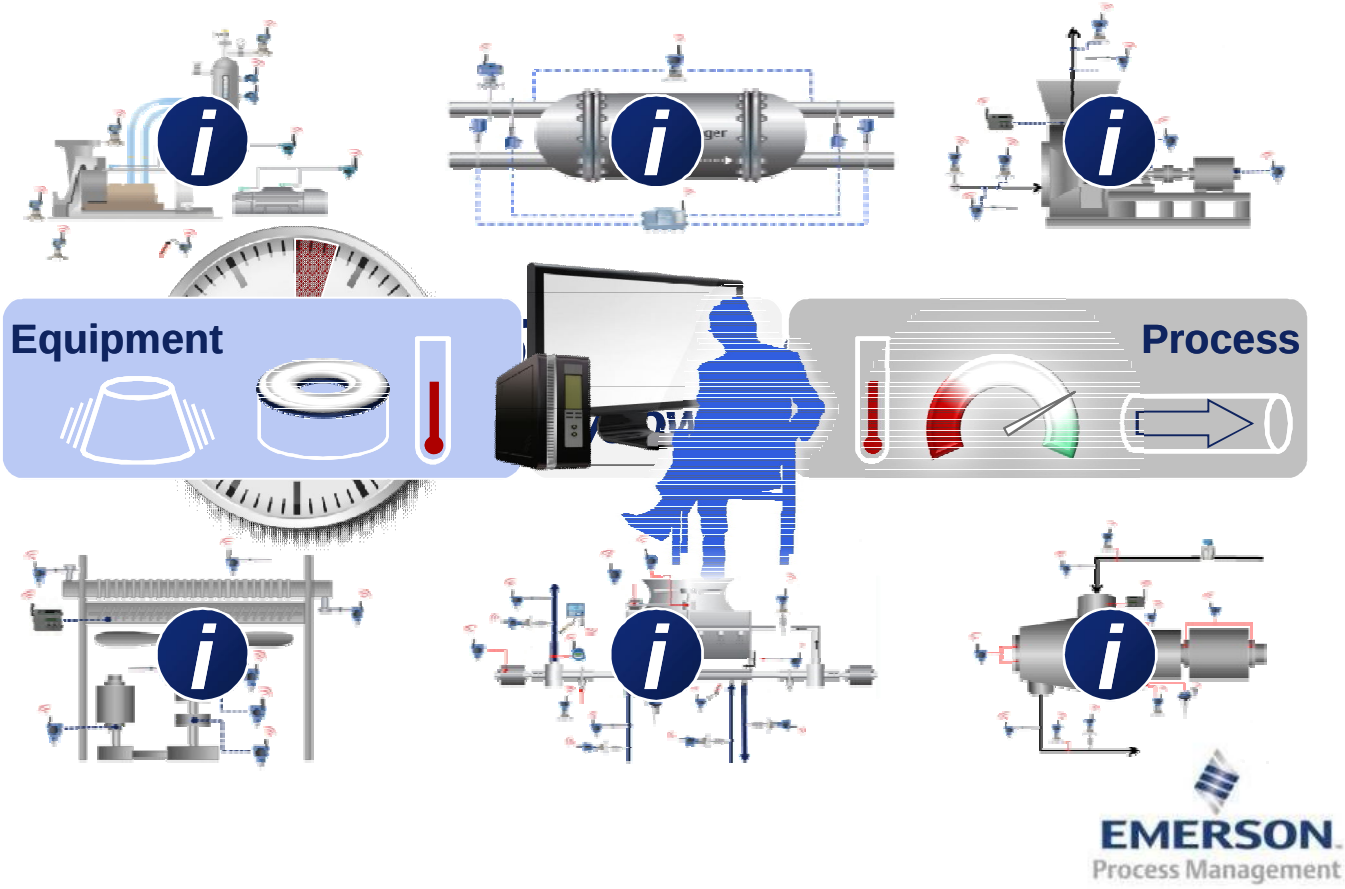
Essential Asset Monitoring

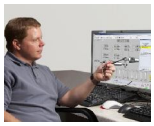


EMERSON.
Process Management

Access to Information – Operations Alert Status

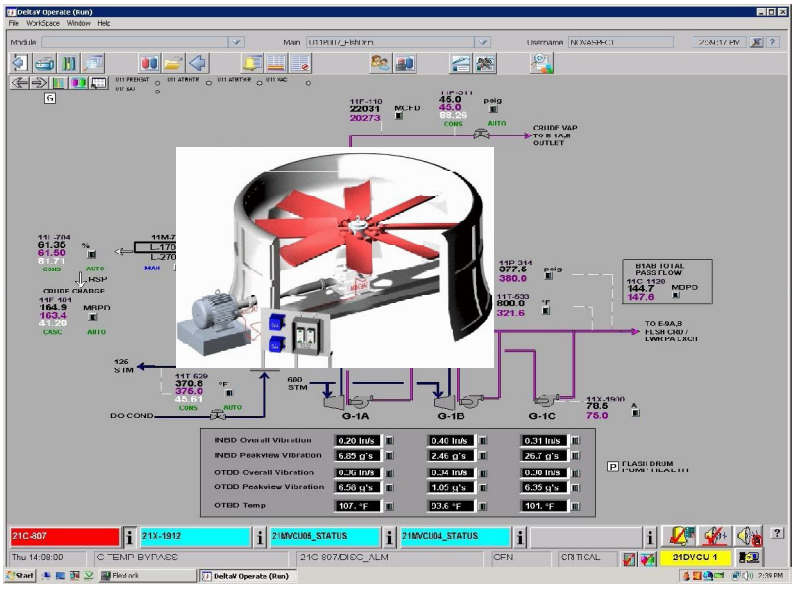
Rotating Equipment

Control Room



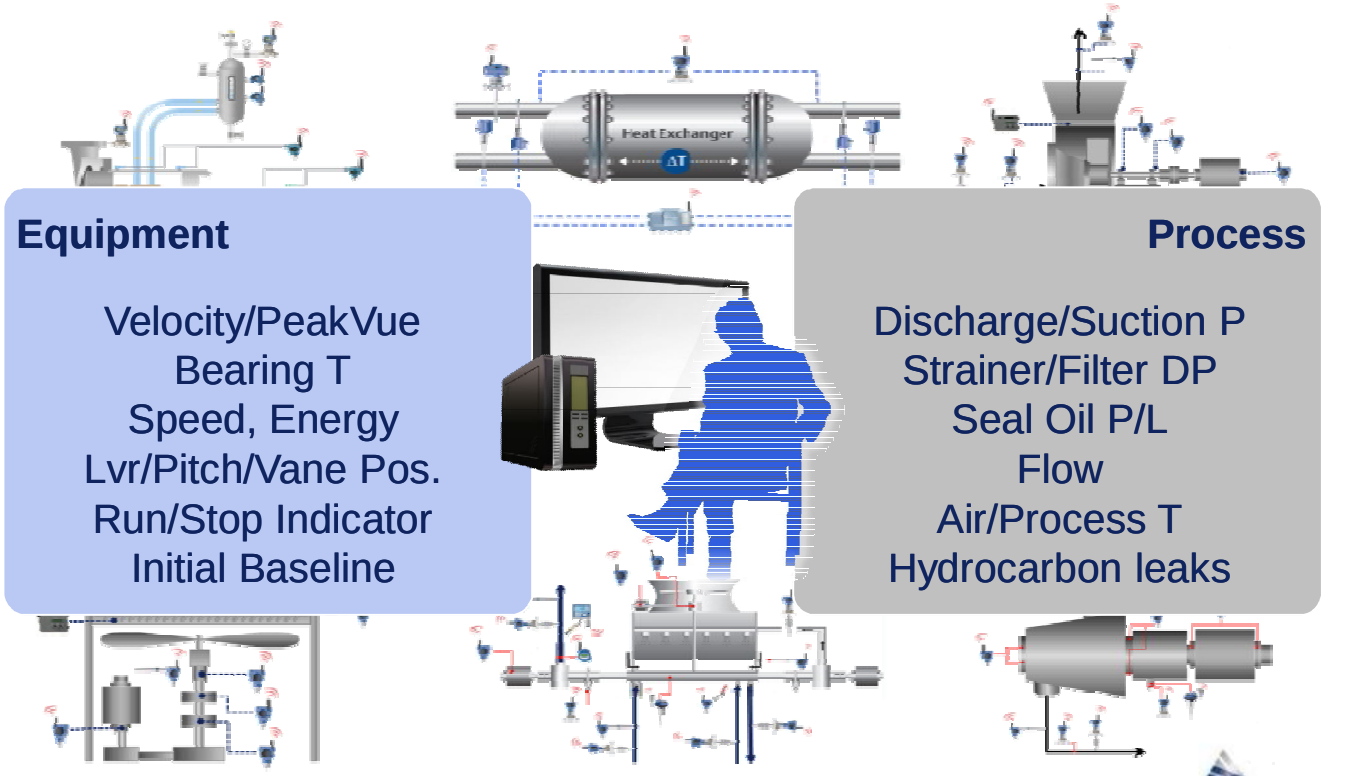
Maintenance

I&C Engineer



EMERSON
Process Management

Essential Asset Monitoring



Equipment

Velocity/PeakVue
Bearing T
Speed, Energy
Lvr/Pitch/Vane Pos.
Run/Stop Indicator
Initial Baseline

Process

Discharge/Suction P
Strainer/Filter DP
Seal Oil P/L
Flow
Air/Process T
Hydrocarbon leaks

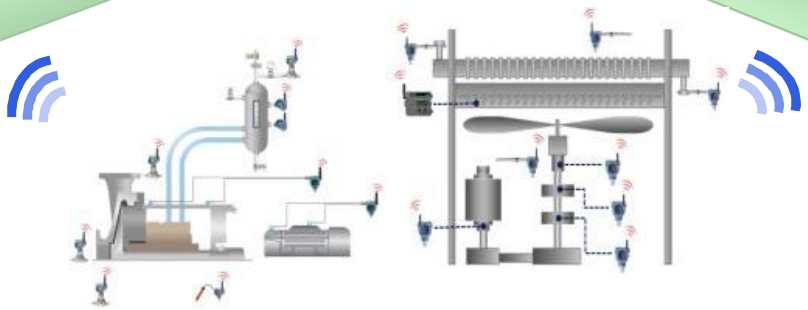
EMERSON.
Process Management

Our solution uses tested algorithms on a combination of process and equipment data to deliver asset health

Asset Health Indicator
Vibration Health/Alarm Health

Pre-Engineered Software Algorithm
Analyze for statistically significant changes & max/min limits

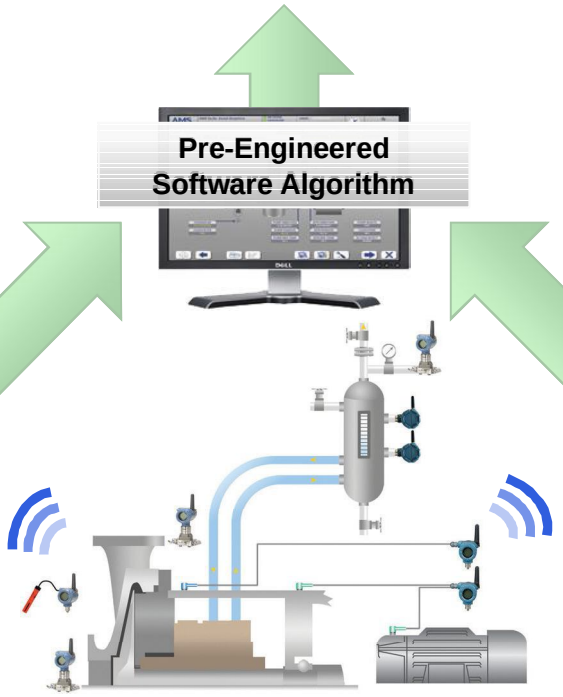
Process Data
Discharge/Suction P
Strainer/Filter DP
Seal Oil P/L
Flow
Air/Process T
Hydrocarbon leaks



Equipment Data
Velocity/PeakVue™
Bearing T
Speed, Energy
Lvr/Pitch/Vane Pos
Run/Stop Indicator
Initial Baseline

Our solution uses tested algorithms on a combination of process and equipment data

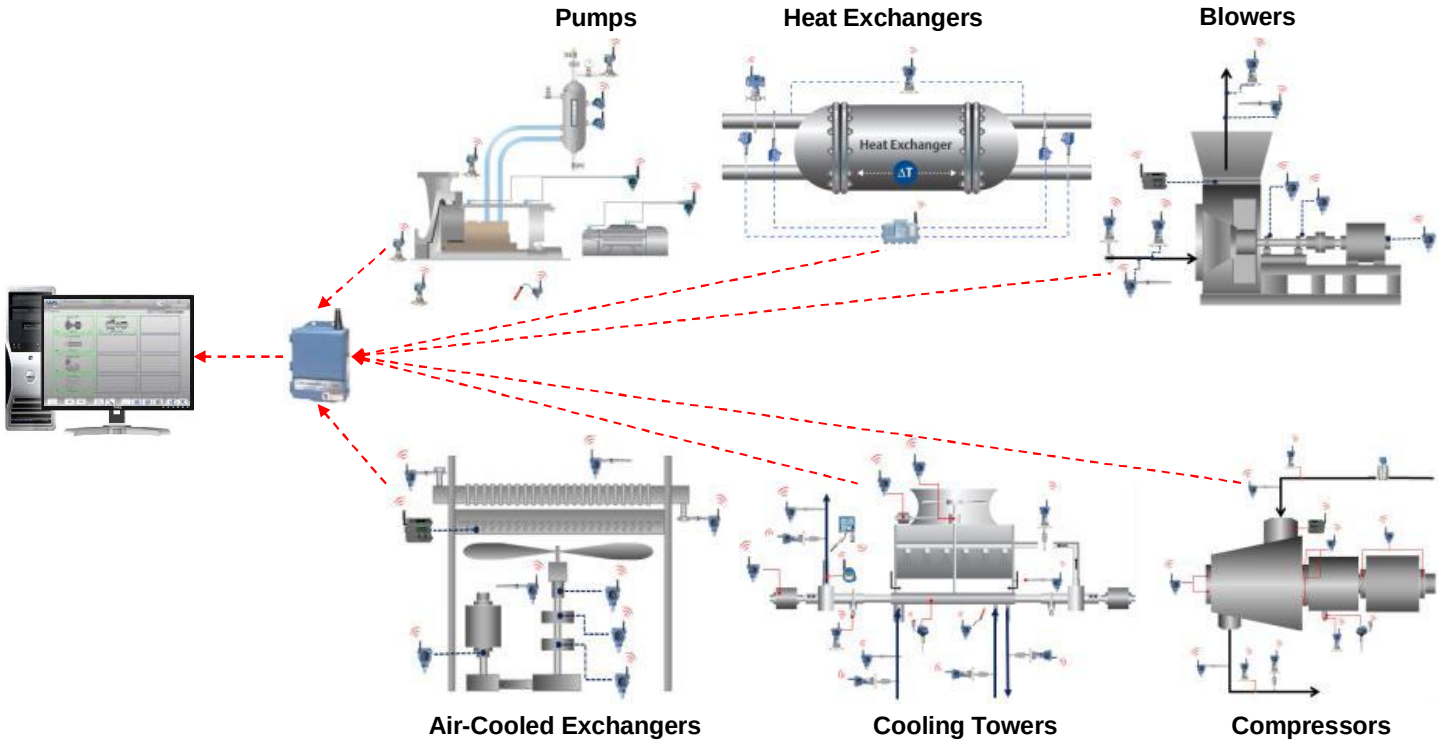
Pump Health Indicator
Bearing and Gear Wear
Pump Cavitation
Low Pump Head/Plugged Suction
Seal Leaks



Process Data
Discharge P
Suction P
Strainer DP
Seal Oil P
Seal Oil Level
Hydrocarbon Detect

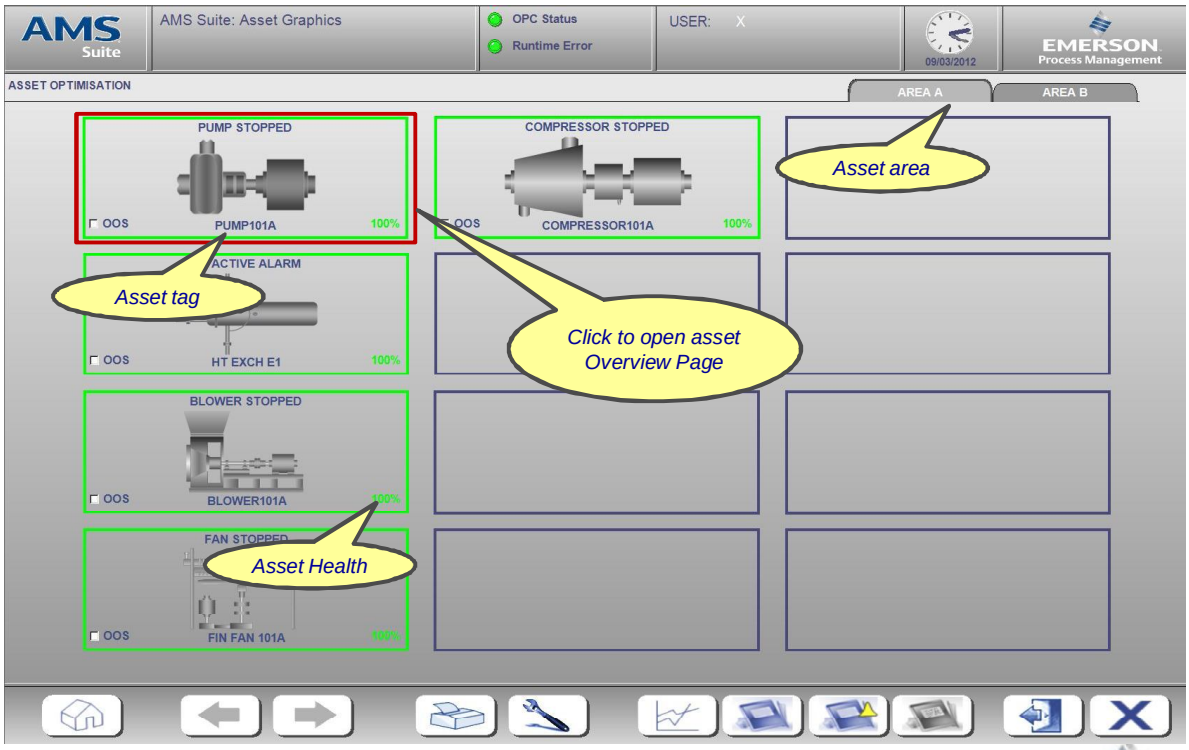
Equipment Data
Velocity
PeakVue
Pump Bearing T
Pump Speed
Run/Stop Indicator
Initial Baseline

Essential Asset Monitoring Suite



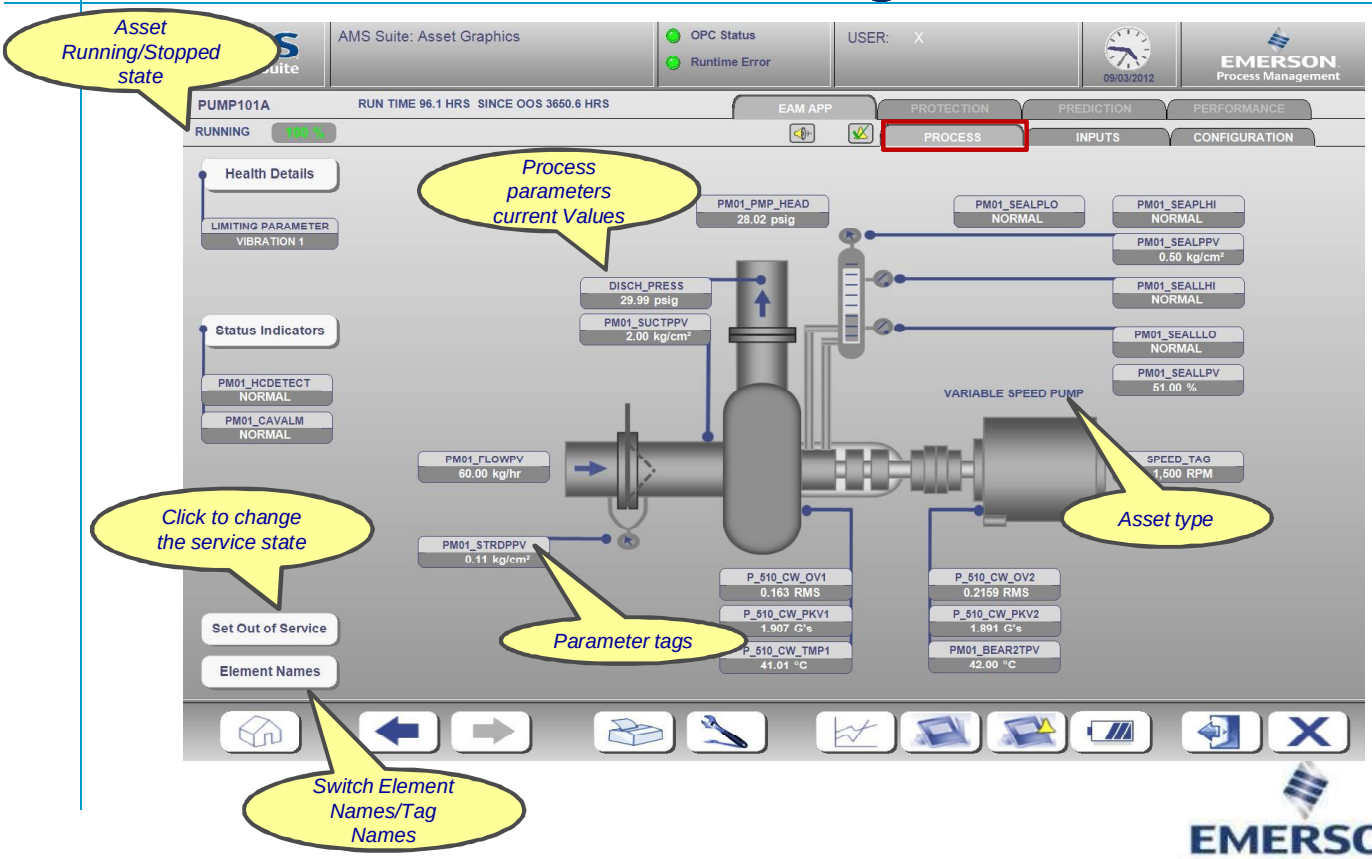
Preconfigured applications built on AMS Asset Graphics software which combines process and asset data obtained from the field to report Overall Asset Health

EAM Home Page



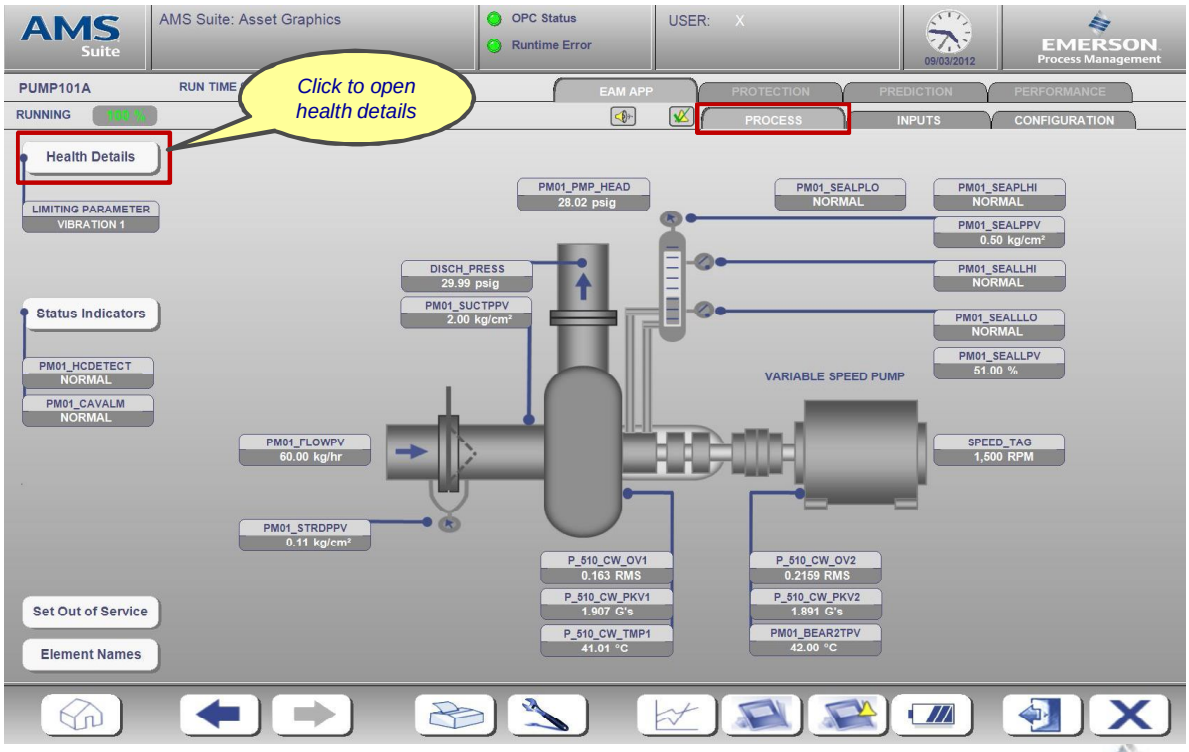
EMERSON. Process Management

EAM Asset Overview Page



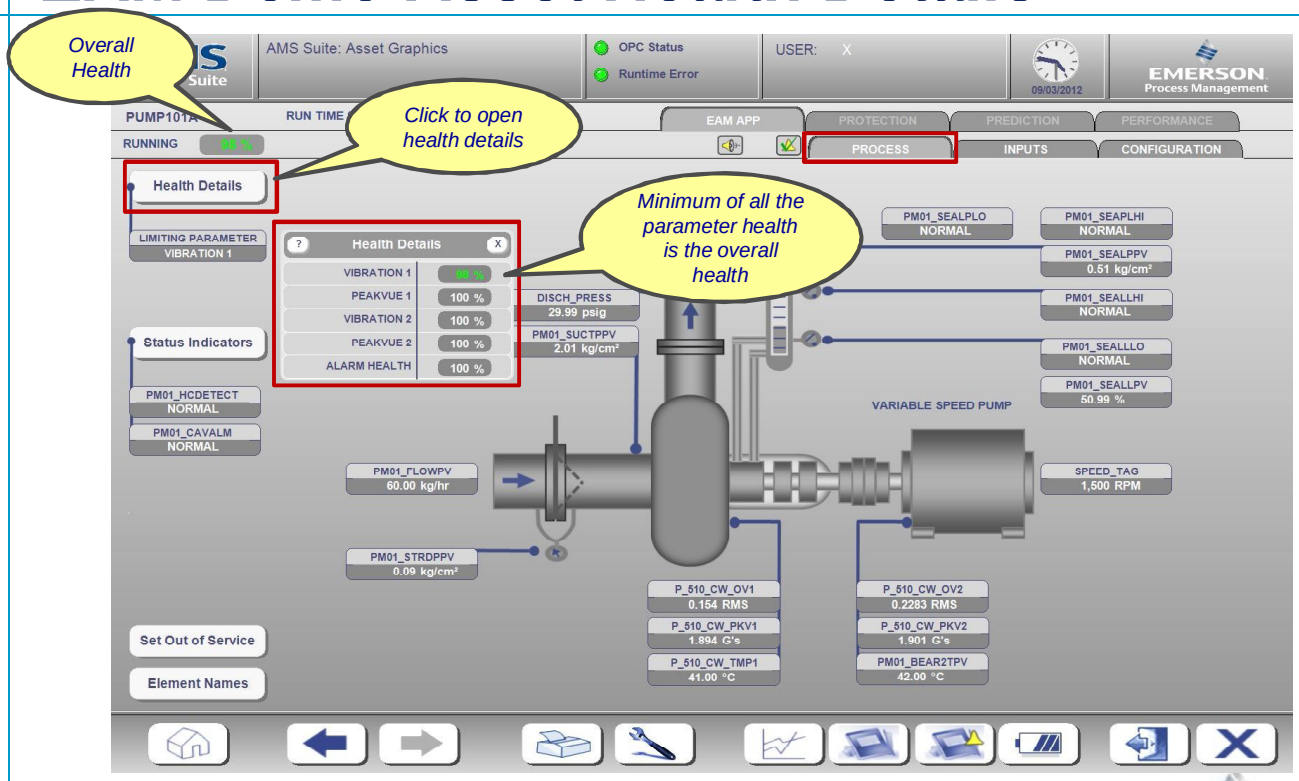
EMERSON
Process Management

EAM Demo Asset Health Details



EMERSON
Process Management

EAM Demo Asset Health Details



EMERSON Process Management

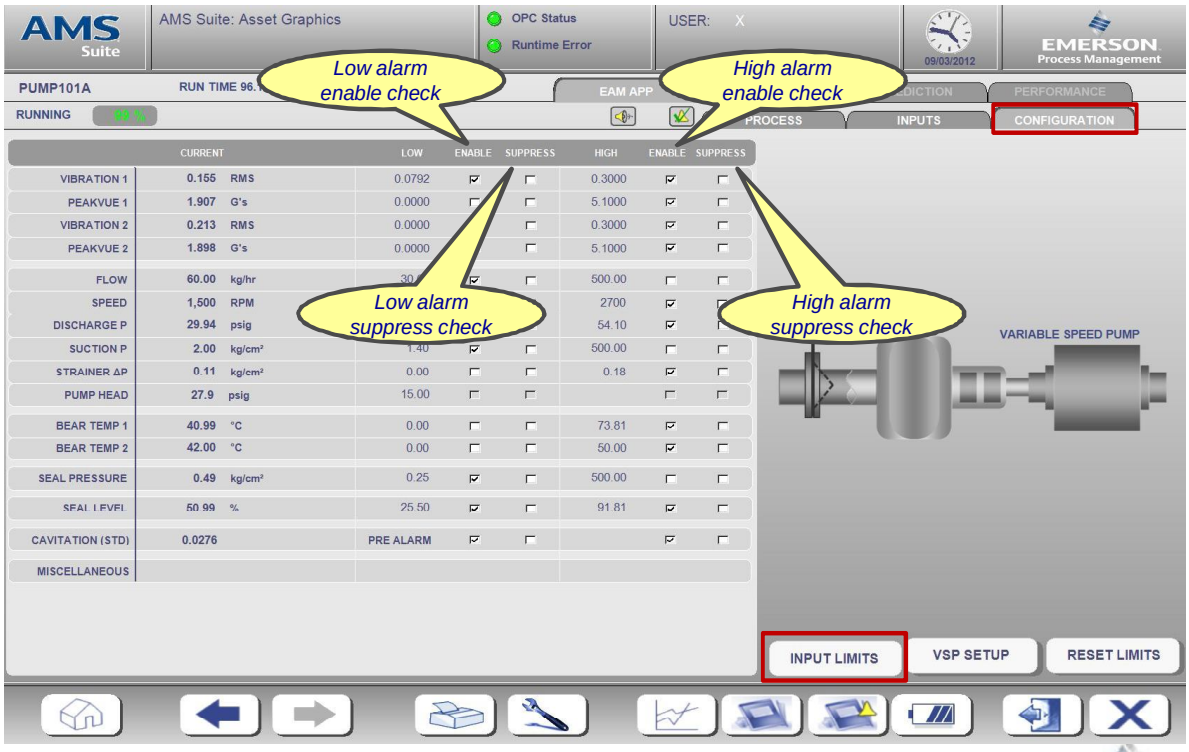
EAM Inputs Page

EMERSON Process Management

EAM Inputs Limits Configuration Page

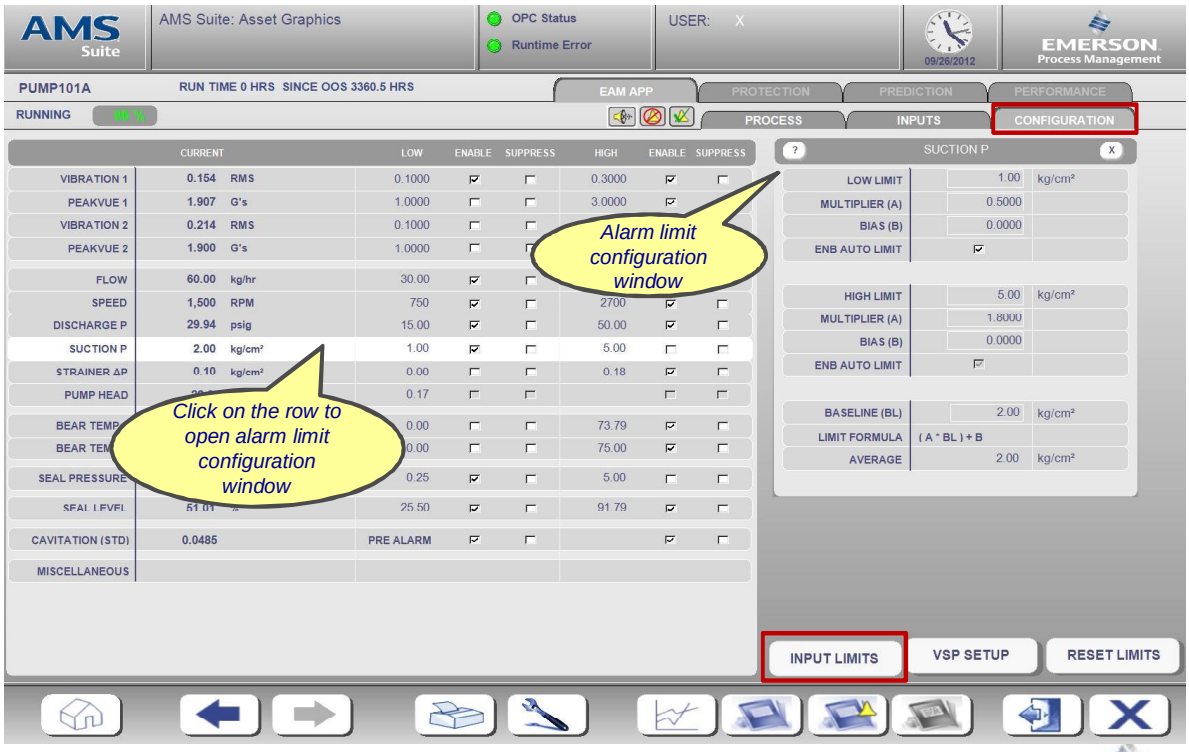
EMERSON Process Management

EAM Inputs Limits Configuration Page



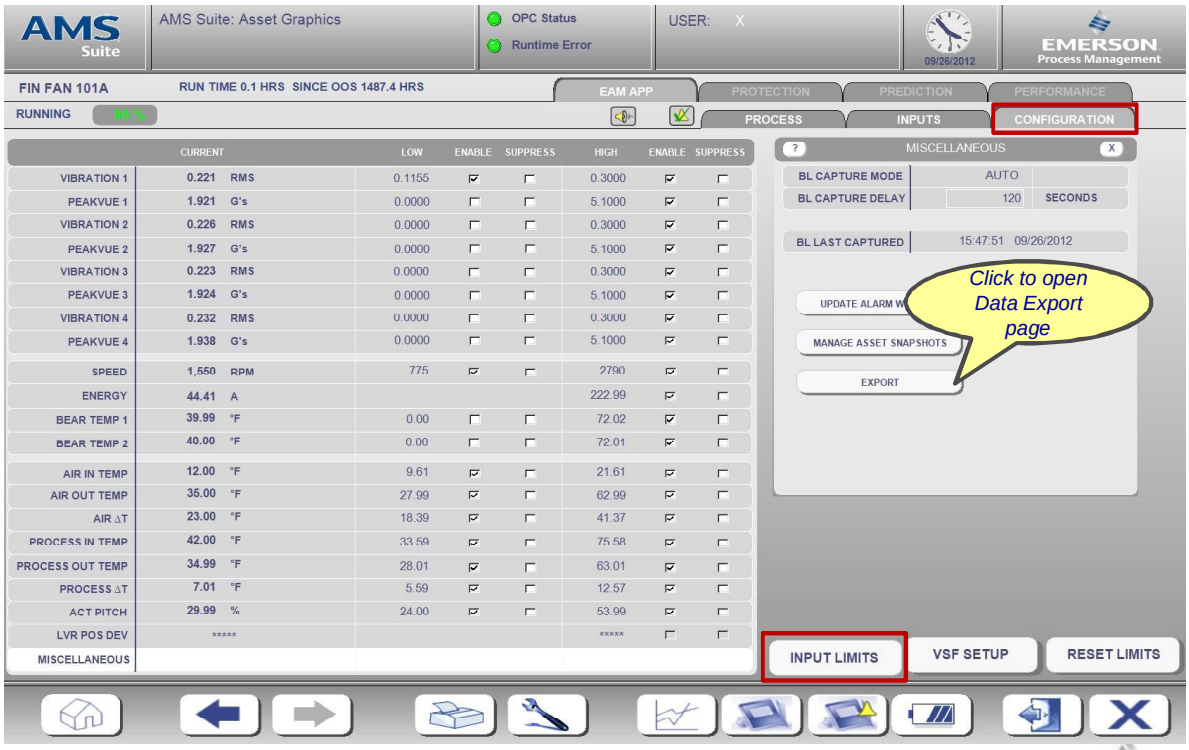
EMERSON Process Management

EAM Inputs Limits Configuration Page



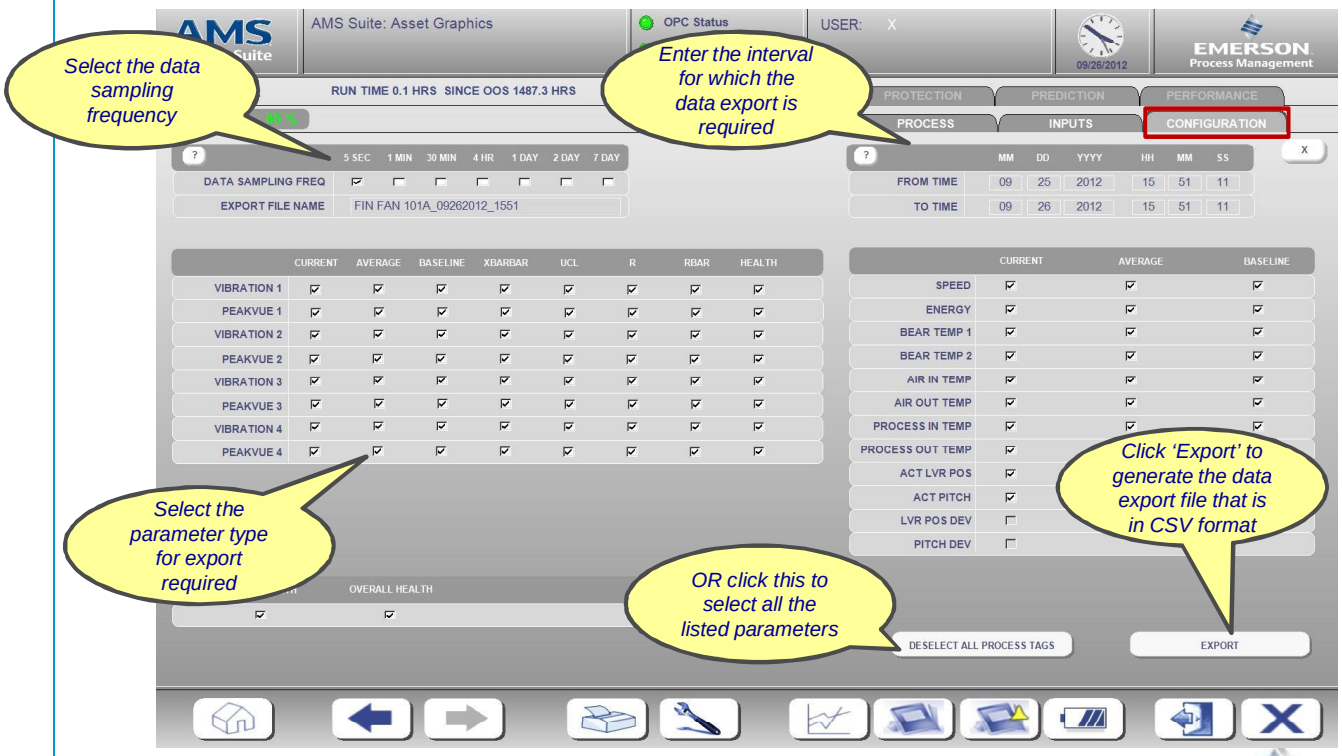
EMERSON Process Management

EAM Demo 'Export' feature



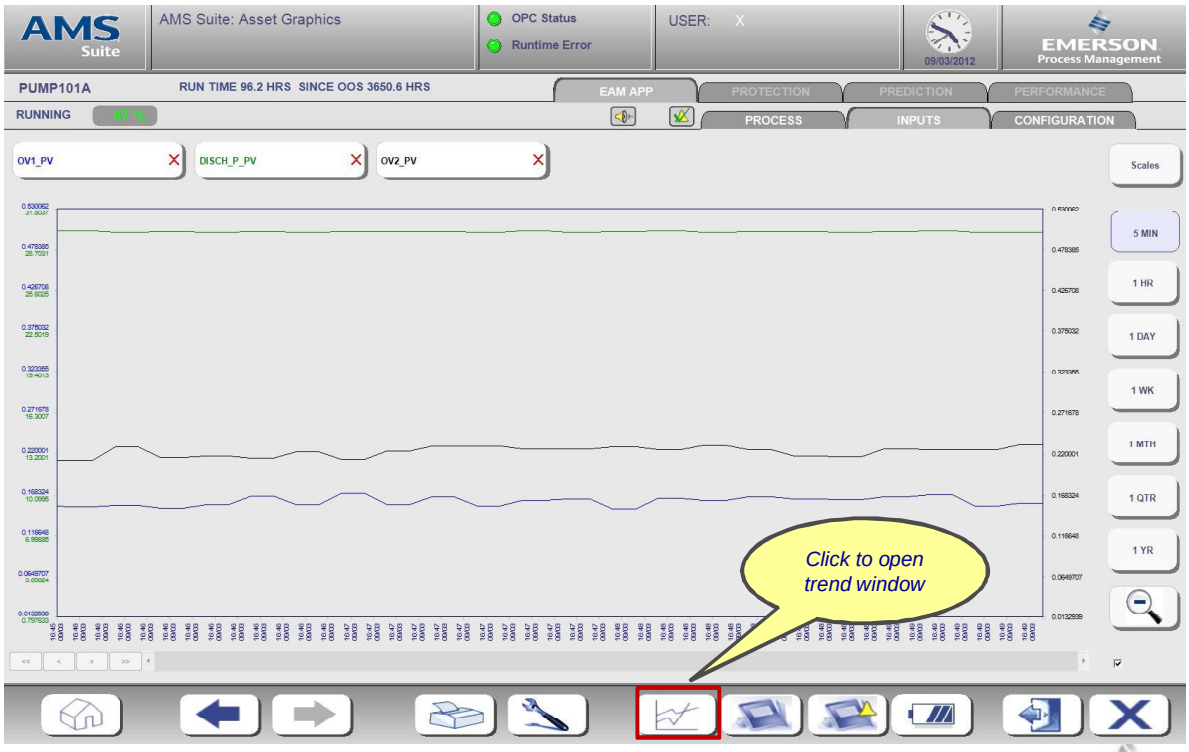
EMERSON Process Management

EAM Demo 'Export' feature



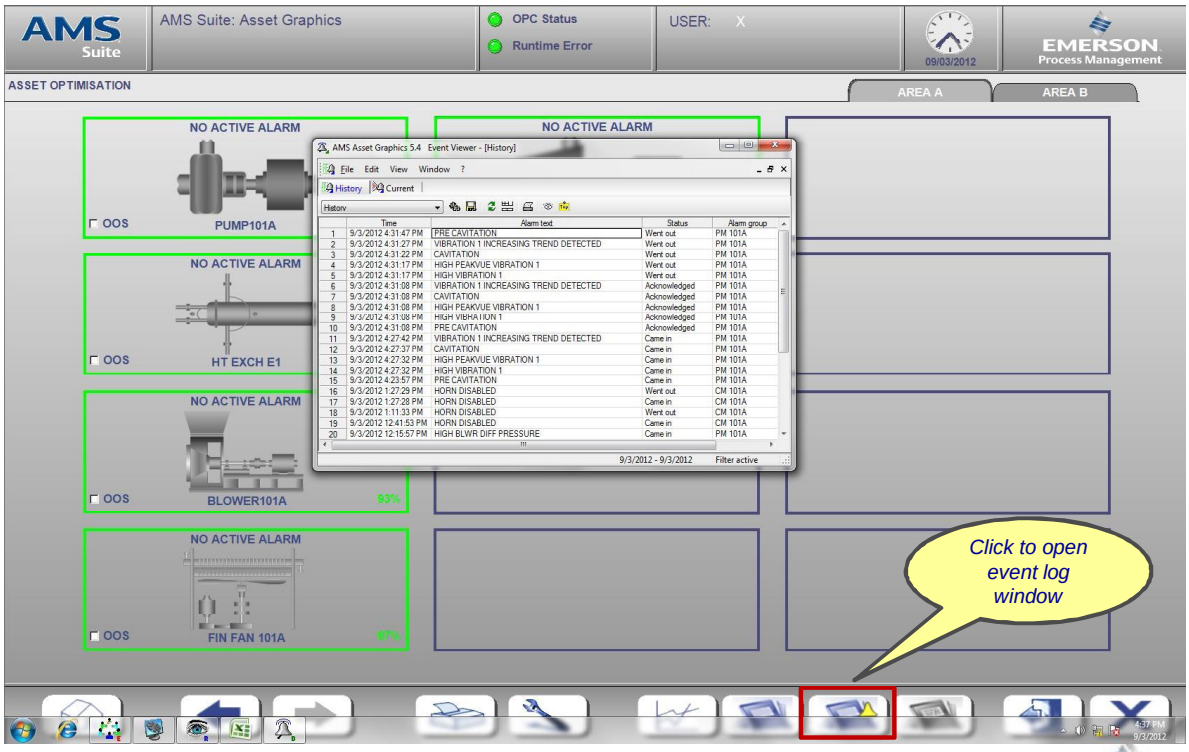
EMERSON Process Management

EAM Demo Asset Trends

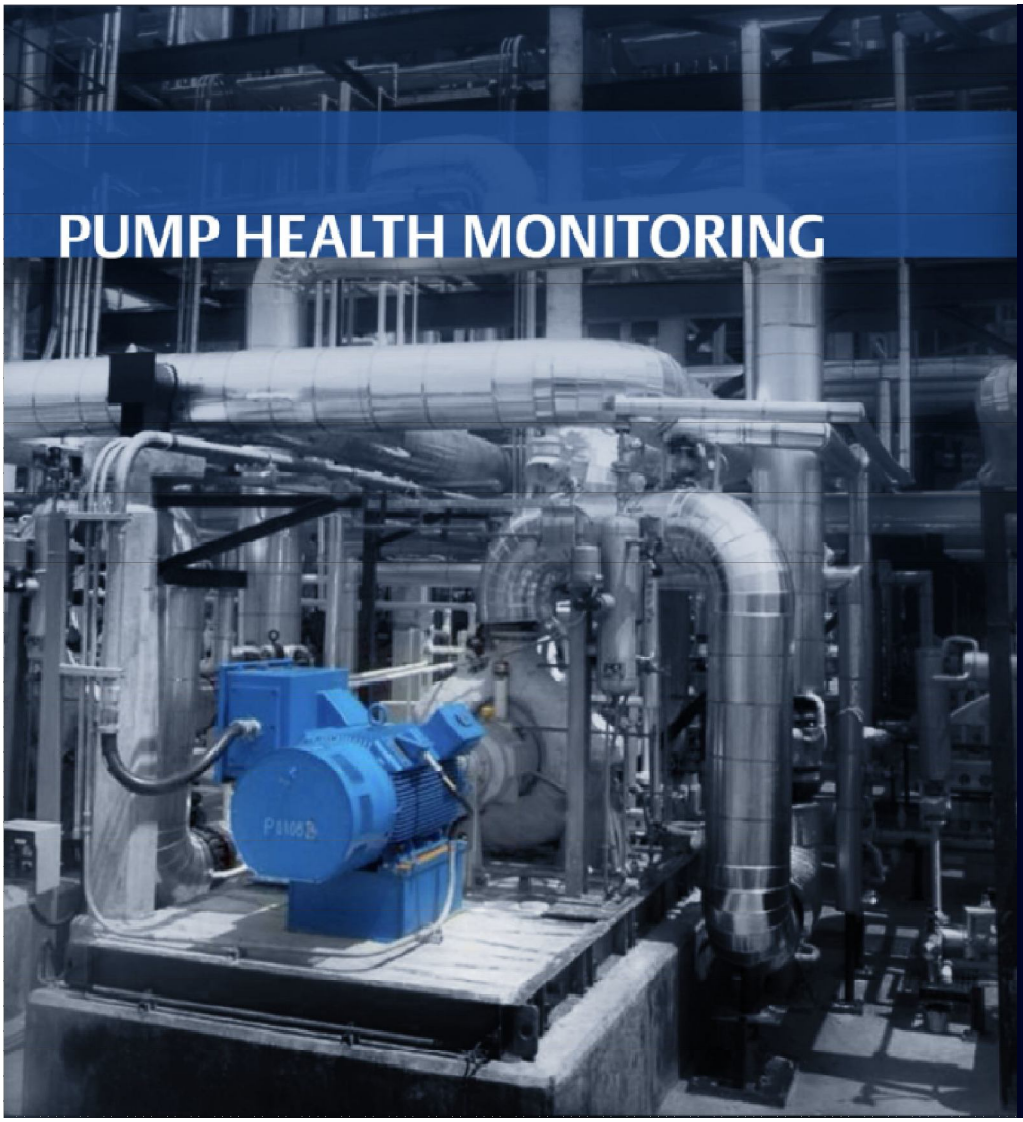


EMERSON
Process Management

EAM Demo Event Viewer Display



EMERSON Process Management



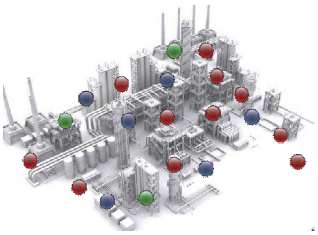
Refinery Solutions

Pump Health Monitoring for Improved Safety, Reliability, and Operations

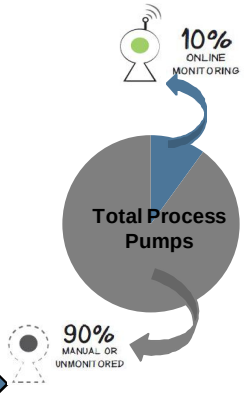
EMERSON
Process Management

Importance of Pump Health Monitoring

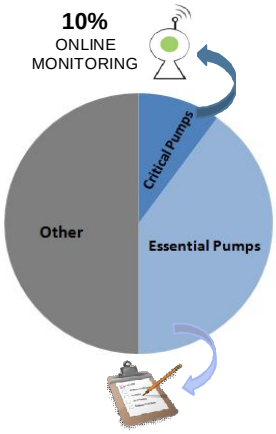
There are approximately **200 process pumps** in the average refinery, chemical or petrochemical plant.



Typically, only **10%** of the most critical pumps have on-line health monitoring. As many as **90%** of process pumps are manually or not monitored at all.

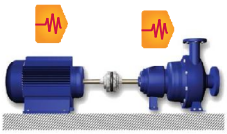


40% of total process pumps are considered "essential" pumps that are manually monitored



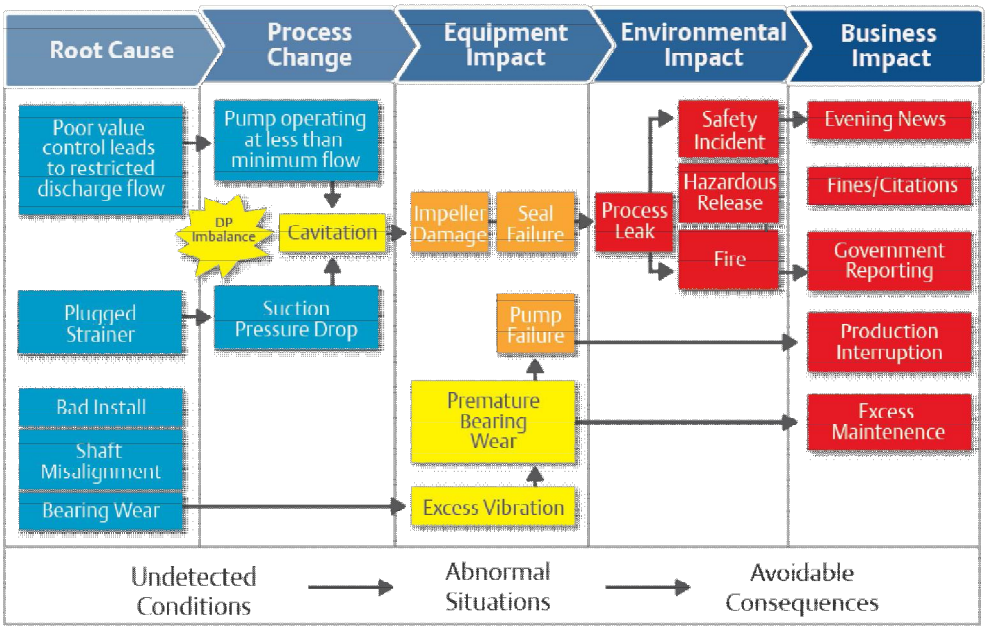
Manual monitoring is not always enough to identify degrading performance and take action.

Pump failures can cause process upsets and downtime, **taking hours or days to recover normal operations**.



Looking at a typical Pump Root Cause & Effect Diagram

Pump failure can impact several process areas



EMERSON
Process Management

Only with Emerson…
Address every critical root cause…

Fault Condition	Vibration	Peak Impacting	Pressure (Discharge, Differential and Seal Fluid)			Seal Fluid Level	Temperature	Leak Detection
High Vibration	☑							
Cavitation		☑	☑					
Bearing fault		☑						
Pre-cavitation			☑					
Low head			☑	☑				
Low Discharge			☑					
Seal Pressure				☑				
Low Suction				☑				
Low Flow				☑				
Strainer Fault				☑				
Seal Failure					☑			
Seal Fluid Level						☑		
Bearing temp							☑	
Liquid HC Leak								☑

EMERSON
Process Management

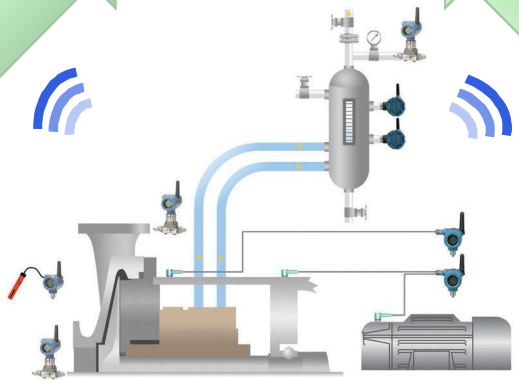
…using pre-engineered algorithms on a combination of process and equipment data to report asset health

Pump Health Indicator
Pump Vibration
Pump Cavitation
Bearing Temperature
Strainer Plugging
Seal Fluid/Hydrocarbon Leaks

Early warning system that can be easily understood; don't need machinery expert to interpret

Pre-Engineered Software Algorithm

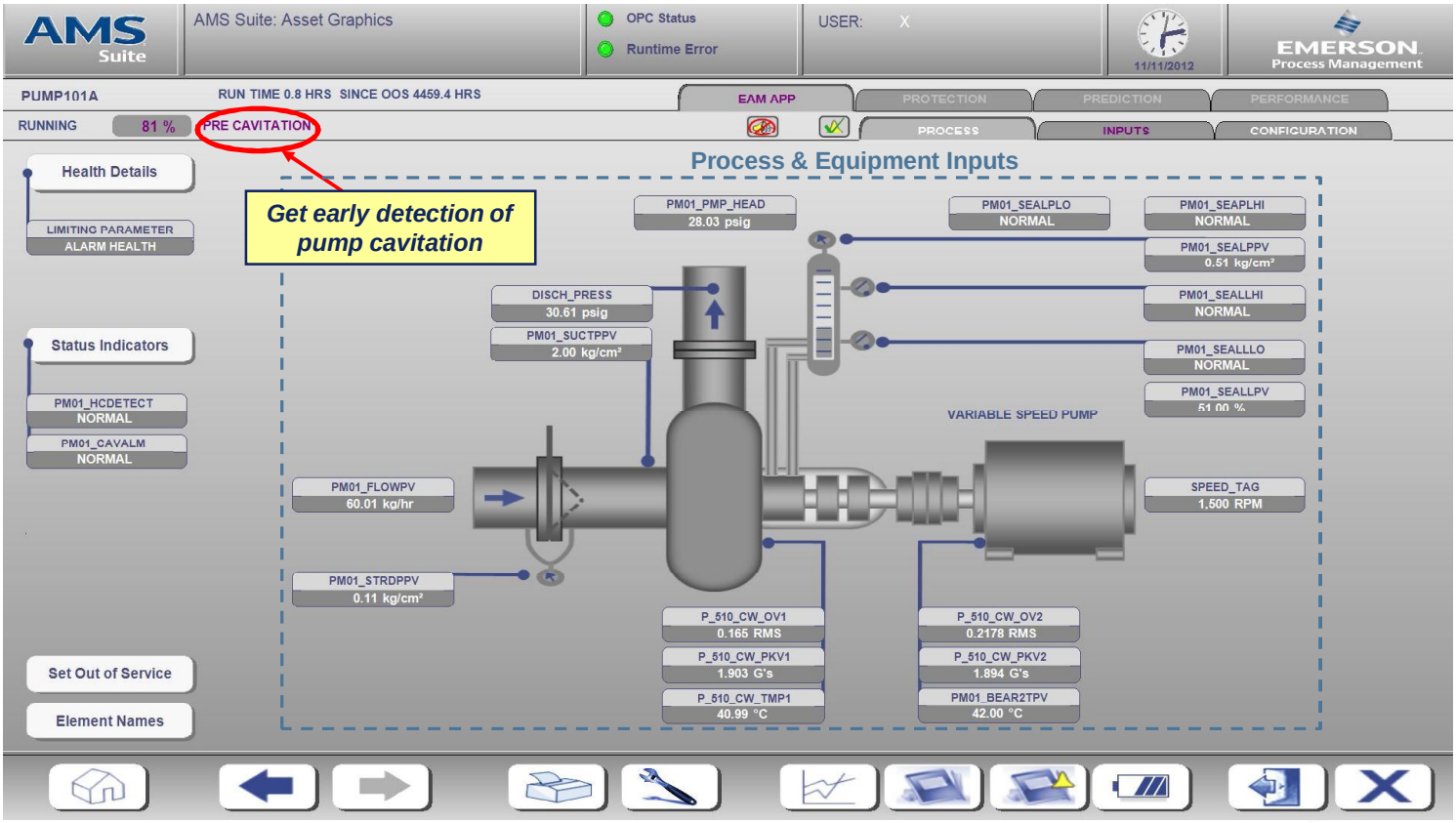
Provide early warning of impending failure and abnormal operation without spurious alarms



Process Data
Discharge P
Suction P
Strainer DP
Seal Oil P
Seal Oil Level
Hydrocarbon Detect

Equipment Data
Overall Velocity
PeakVue
Pump Bearing T
Pump Speed
Run/Stop Indicator
Initial Baseline

Pump cavitation detection



Early Cavitation Warning with Process Data