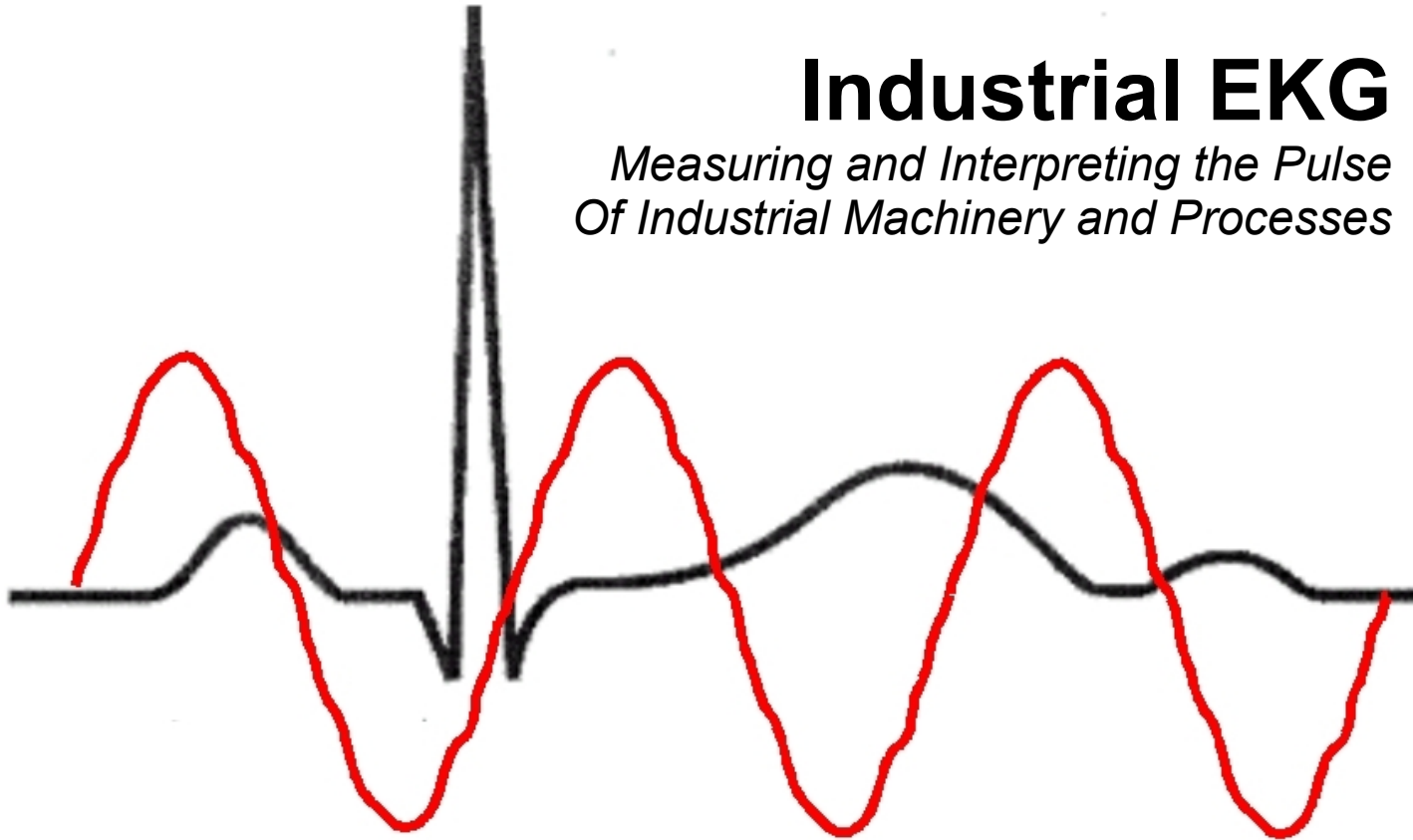


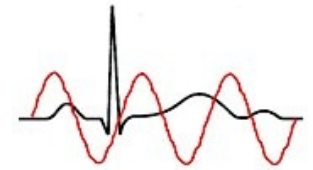
A Virtual On-Site Demo

Industrial EKG

*Measuring and Interpreting the Pulse
Of Industrial Machinery and Processes*



What We Do



We help you reduce energy and operating costs by using EKGs to monitor the health of industrial equipment instead of people, like industrial cardiologists.

Our uniqueness:

- we don't need sensors on the monitored machines, no cables to install;
- an experience database of tens of thousands of motors to compare your equipment against;
- multiple monitors in one product – energy efficiency & consumption, power line condition, electrical and mechanical motor condition; and mechanical condition of driven equipment;
- we directly measure how even mechanical faults like unbalance, misalignment, and loose connections waste energy dollars, making ROI calculation fast, easy, clear and unambiguous.

The Test Site

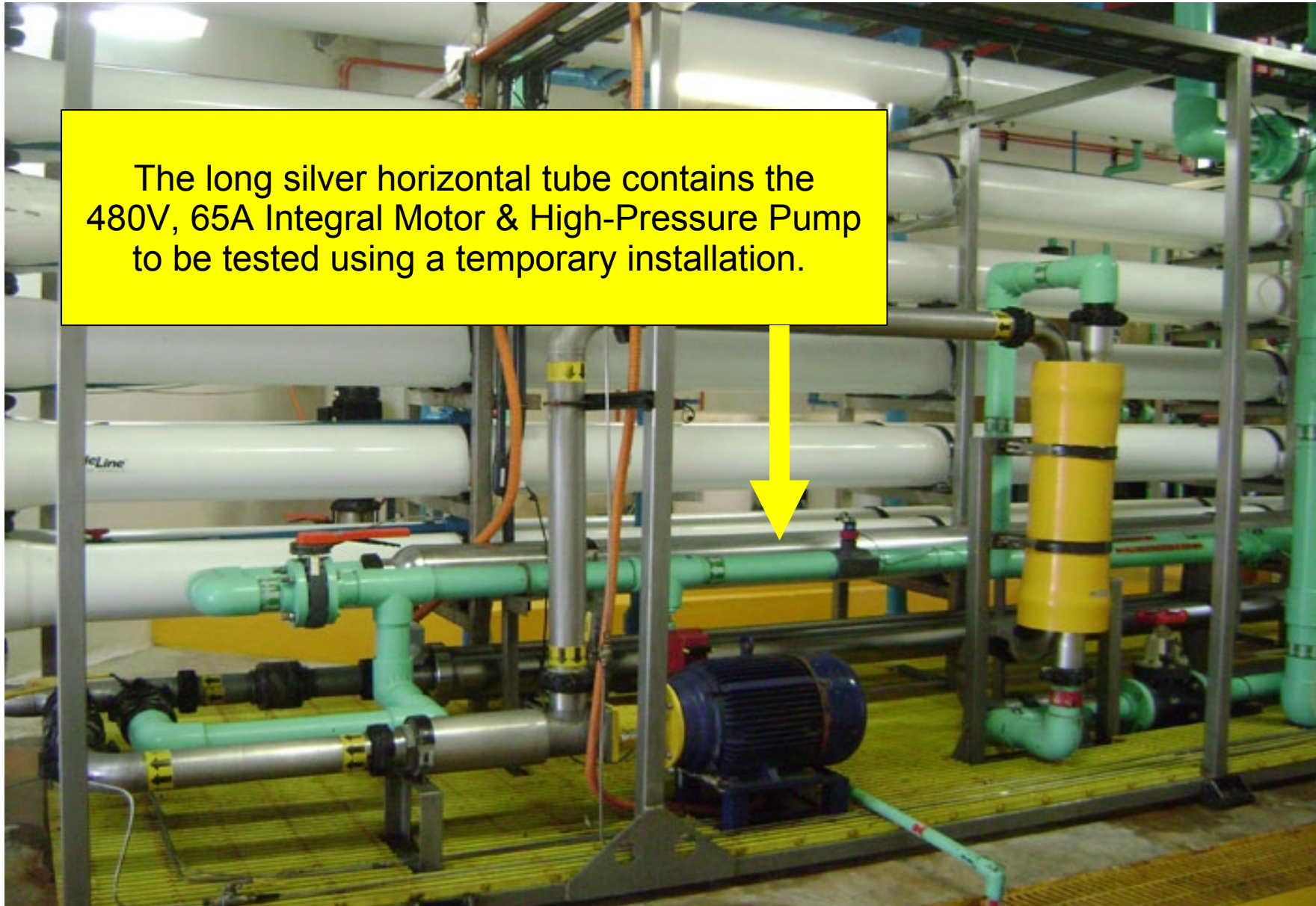


Reverse Osmosis Water Purification System
700-room Resort Hotel

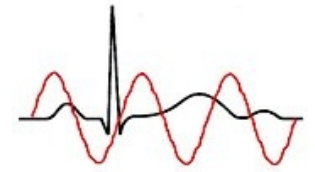
The System Being Tested



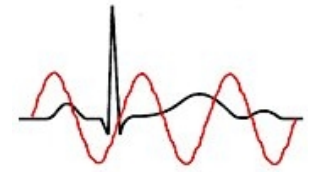
The long silver horizontal tube contains the 480V, 65A Integral Motor & High-Pressure Pump to be tested using a temporary installation.



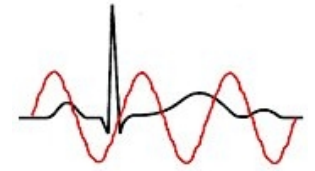
The Equipment Room



The IEKG Portable Kit



A Current Transformer



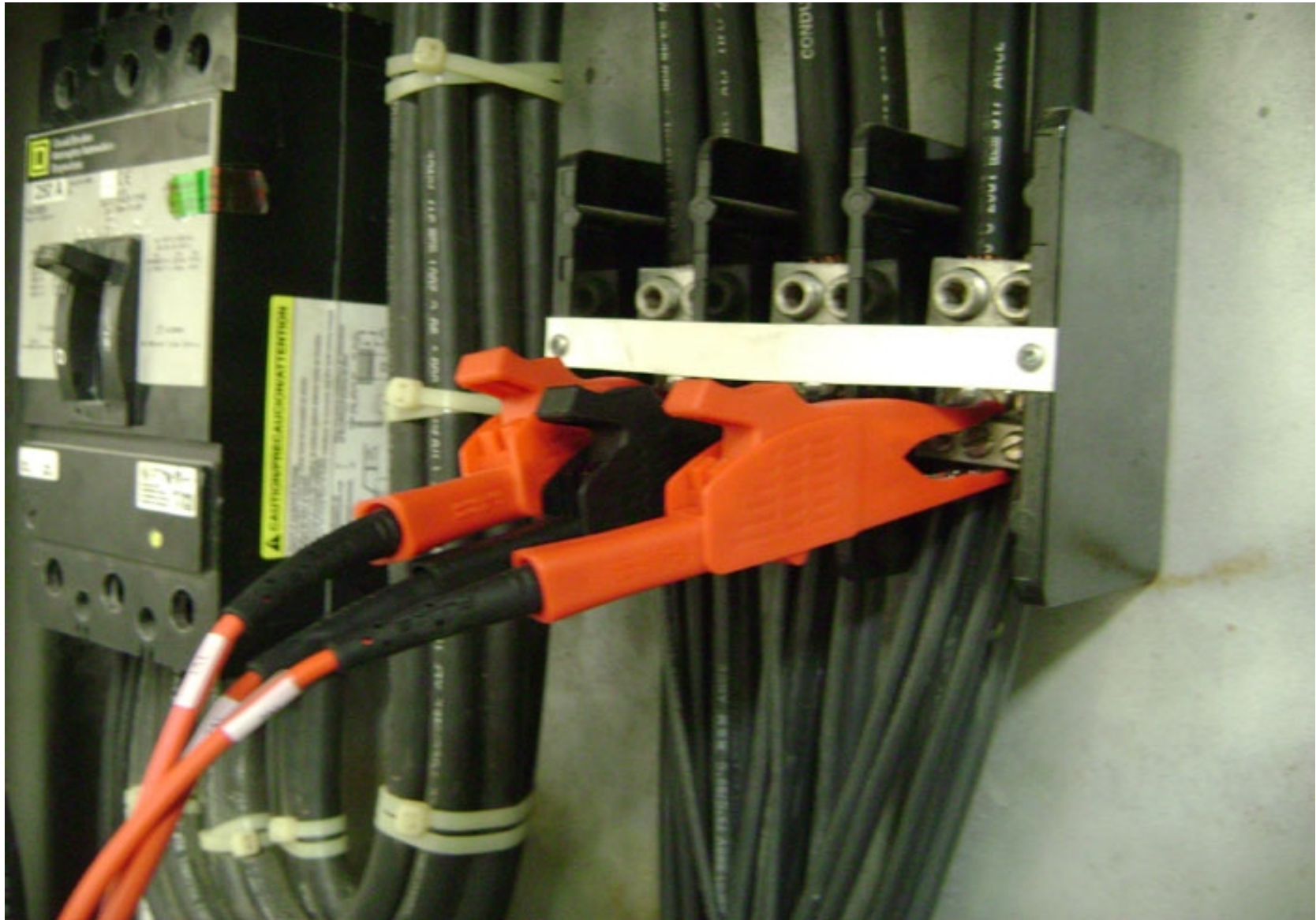
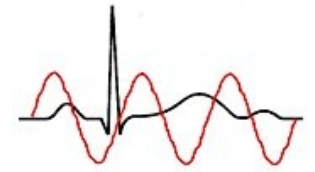
Split-core to facilitate quick and easy temporary installation.



3 CTs Installed on Motor Leads



3 Voltage Connections



Notice:



*No Sensors
On the
Motor or Pump !*

5 Minutes of Setup...



...Confirm Nameplate Data...



MCM Configuration Tool 2.0

Address: **1** (circled in red) | Select Command: **Get Status** | Send

Connection: **Response** | TCP/IP: 192.168.1.100 | 100 msec

MCM Mode:

- ☐ Idle
- ☐ Check
- ☐ Learn
- ☐ Improve
- ☒ Monitor
- ☐ Update

Motor Status:

- ☒ No Data
- ☐ OK
- ☐ Watch Line
- ☐ Watch Load
- ☐ Examine 1
- ☐ Examine 2

Settings

Input threshold	6.0000
Frequency threshold	15.0000
Magnitude threshold	15.0000
Nominal voltage	251.0000
Nominal current	67.0000
Powerfactor tolerance	0.0200
Gain tolerance	0.0200
Connection type	1
Voltage balance threshold	10.0000
Current balance threshold	20.0000
Voltage level	10.0000
Current level	50.0000
Voltage min. level	15.0000
Current min. level	15.0000
Default variance	0.0001
Status threshold	4.0000
Default cluster size	200
Window length	14
Harmonic channel	2
Display harmonics	1
Int thres. PSD	7.0000
PSD level size	4.0000
Residual threshold	0.5000

Update | **255.0000** | Read | OK

Wait for Initial Learn Period...



MCMScada with Diagnostics

File View Operations Settings Log License Help

High Pressure Pump #1

Name	Mode	Status	Irms(Amp)	Vp-p(Volt)	Power Fac...	Active Po...	Reactive P...	THD(%)	I Imbalan...
High Pressure Pump #1	OFF								

Artesia
MCMScada
Motor Condition Monitor
Remote Monitoring & Control

JOEBARNES-PC User 1

... Initial Diagnosis: OK.



- Power Line Supply – OK
- Electrical – OK
- Motor Mechanical – OK
- Pump Mechanical - OK

EQUIPMENT STATUS		ELECTRICAL STATUS	
OK	Loose Foundation / Components	OK	Power Line Supply
OK	Unbalance/Misalignment/Coupling/Bearing	OK	Active Power
OK	Vane / Trans. Element / Driven Equipment	OK	Reactive Power
OK	Bearing	OK	Vrms [V]
OK	Rotor	OK	Irms [A]
OK	Loose Windings / Stator / Short Circuit	OK	V Imbalance
OK	Internal Electrical Fault	OK	I Imbalance
OK	External Electrical Fault	OK	Frequency
OK	Other	OK	THD [%]
OK	Line Status	OK	3th Harmonic
OK	Load Status	OK	5th Harmonic
OK	The equipment is working as expected.	OK	7th Harmonic
		OK	9th Harmonic
		OK	11th Harmonic
		OK	13th Harmonic
		OK	Electrical vibration
WORK REQUESTS			
OK: The equipment is working as expected.			

Review some details...



Diagnostic

EQUIPMENT STATUS	
OK	Loose Foundation / Components
OK	Unbalance/Misalignment/Coupling/Bearing
OK	Vane / Trans. Element / Driven Equipment
OK	Bearing
OK	Rotor
OK	Loose Windings / Stator / Short Circuit
OK	Internal Electrical Fault
OK	External Electrical Fault
OK	Other
OK	Line Status
OK	Load Status

OK The equipment is working as expected.

ELECTRICAL VALUES		
OK	Power Factor	0.87
OK	Active Power [kW]	36
OK	Reactive Power [kVar]	20
OK	Vrms [V]	255
OK	Irms [A]	54
OK	V Imbalance[%]	0.57
OK	I Imbalance[%]	
OK	Frequency [Hz]	
OK	THD [%]	
OK	3th Har	
OK	5th Har	
OK	7th Har	
OK	9th Har	
OK	11th Har	
OK	13th Har	

OK Electrical va

WORK REQUESTS

OK: The equipment is working as expected.

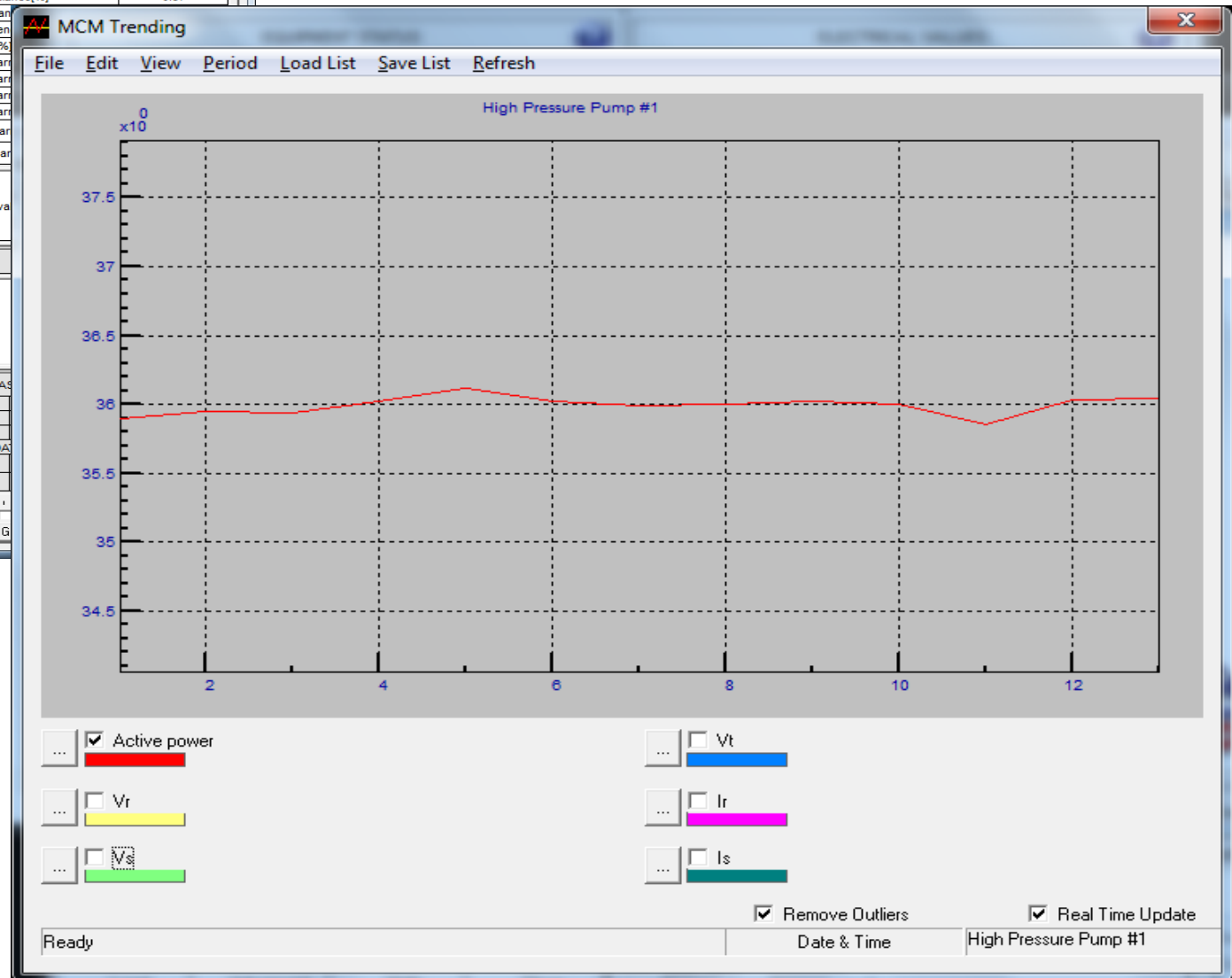
EQUIPMENT INFORMATION	
Equipment Name	High Pressure Pump #1
Equipment Type	Pump
Nominal Voltage [V]	240
Nominal Current [A]	67
Rotation Spd. [rpm]	3000
MCM Address	1

DATABASE	
Start Date	
End Date	
Number of Data Points	
Database Range	
Number of Data Points	

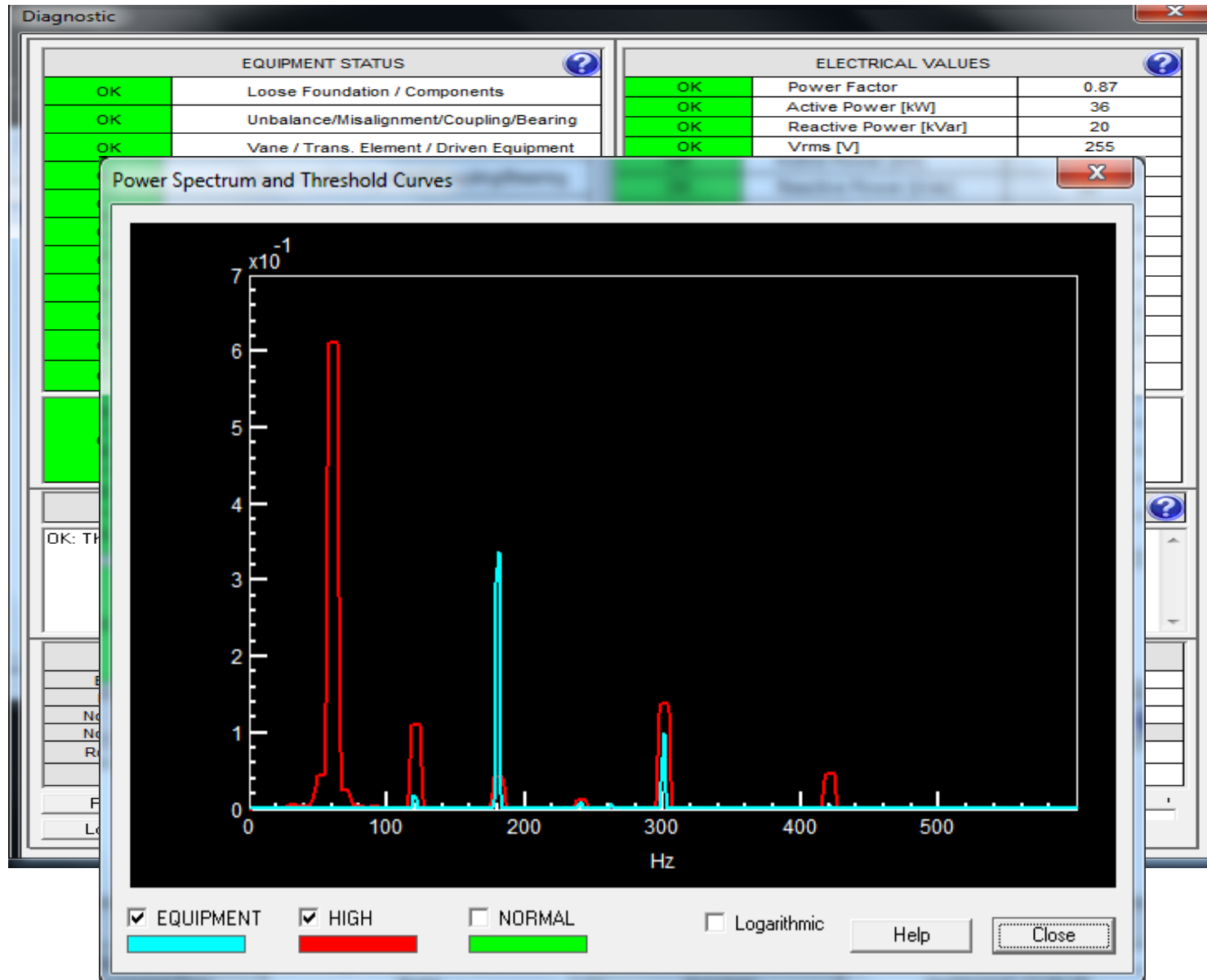
Plot Report Clear Selection PSD

Load Advanced Help Close

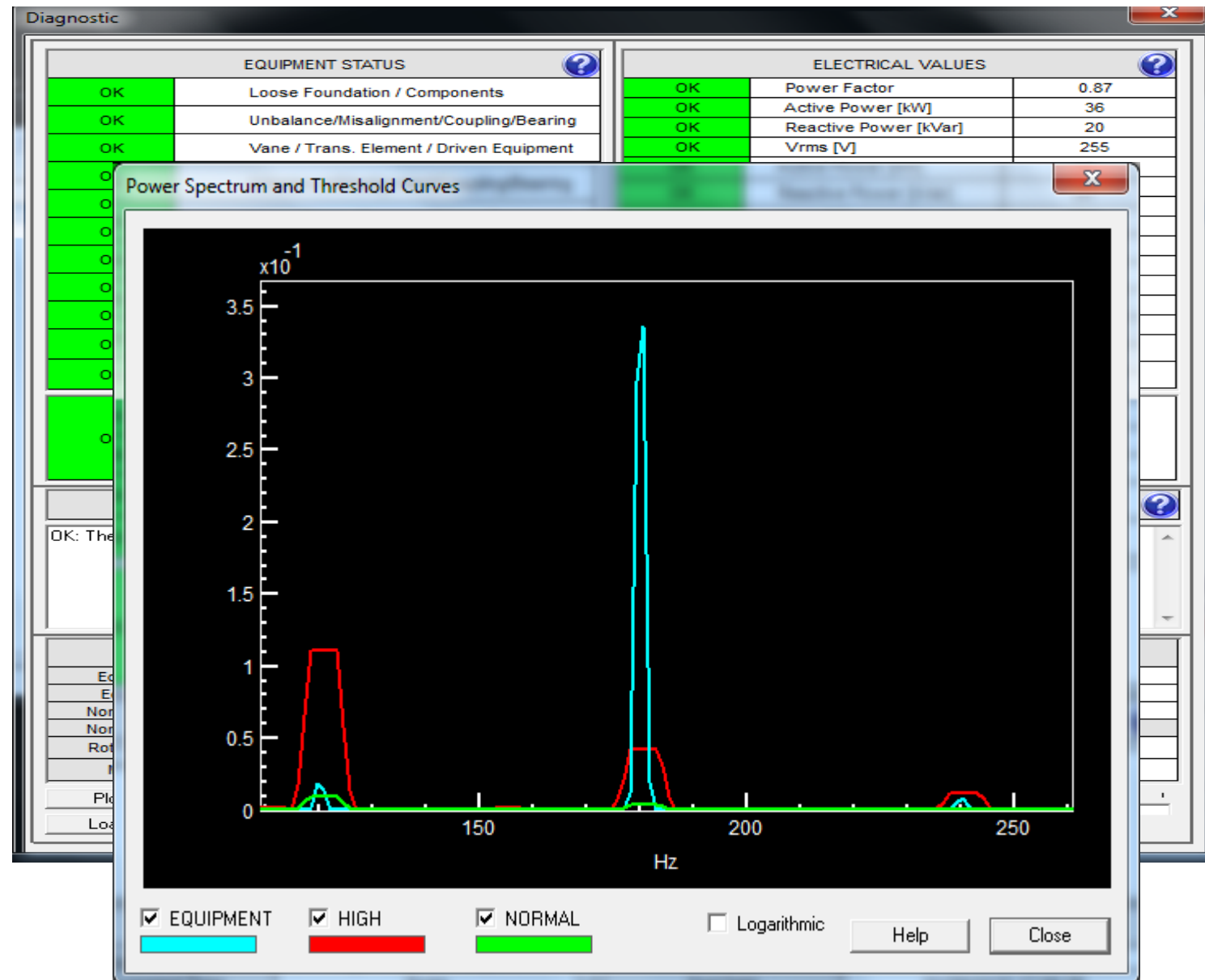
Step 1 Goto 14



...More Details...



Line freq 2nd order a little high...



...but not a problem.



This motor has been doing nearly continuous duty for many years and is just beginning to show very slight winding degradation.

The levels are fine and there's no reason to take any further action.

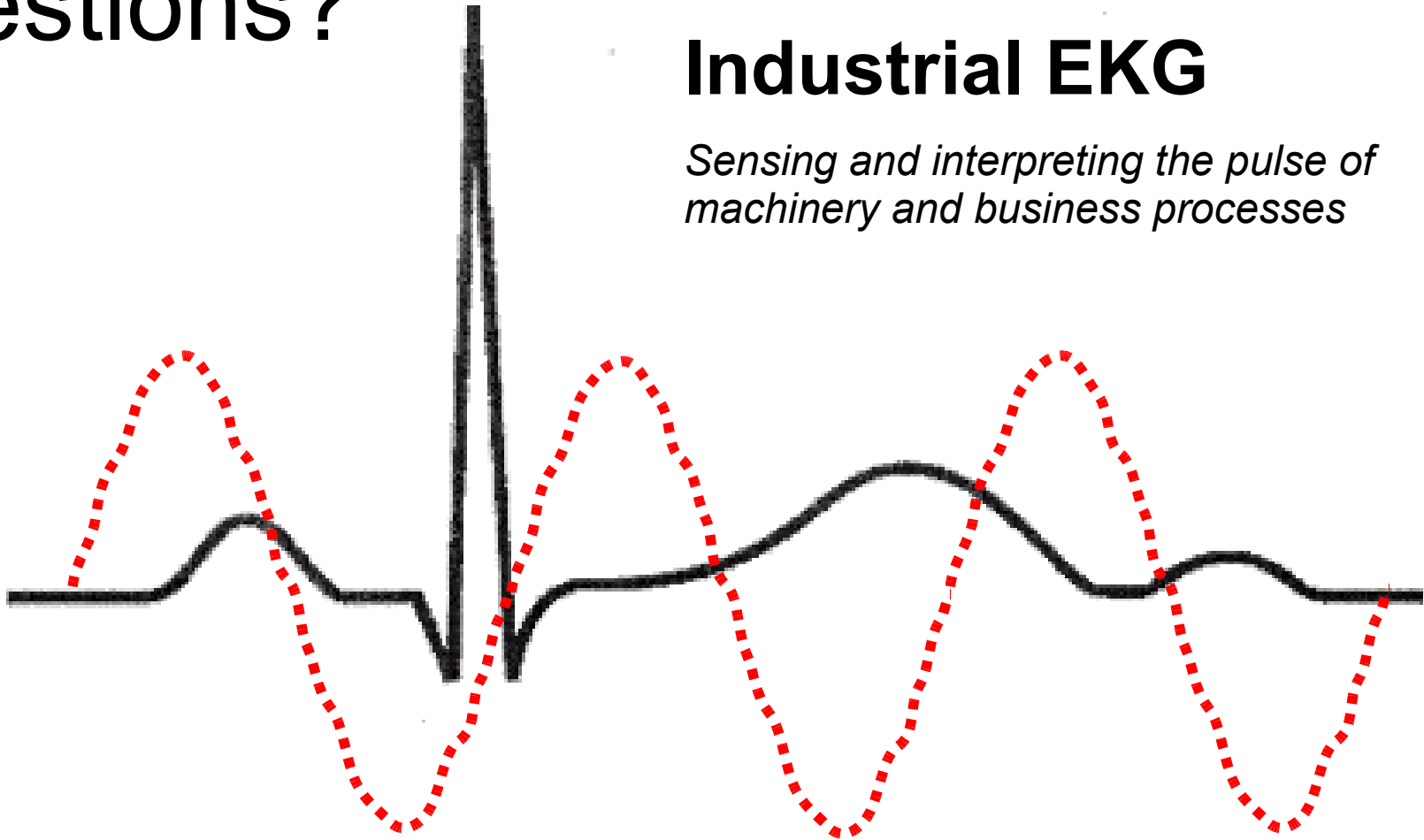
After monitoring this motor for a few days, a more detailed assessment would be available. But this quick check indicates all is OK.

Questions?



Industrial EKG

*Sensing and interpreting the pulse of
machinery and business processes*



info@industrialekg.com

