

Training Agenda of Vibration Online

PROJECT: SATUN Control System Retrofit

One and a half day

Online Vibration System

- 1) The difference and various types of online and offline vibration monitoring/protection system
- 2) The difference of relative vibration (proximity probes) and absolute vibration (accelerometer or velocity probes)
- 3) The uses of ICP accelerometers and seismic velocity sensors
- 4) The selection of sensors, vibration cable and connector
- 5) The selection of sensor installation
- 6) How to set a proper frequency filter for bearing, gear drive fan, belt drive fan, compressor, pump, turbo expander, etc.
- 7) How to set a proper maximum Frequency for bearing, gear drive fan, belt drive fan, compressor, pump, turbo expander, etc.
- 8) How to set a proper band frequency for bearing, gear drive fan, belt drive fan, compressor, pump, turbo expander, etc.
- 9) How to select a proper location to install online sensors
- 10) How to set a proper unit for detecting bearing, gear, absolute vibration or relative vibration
- 11) How to set alarm for bearing, gear drive fan, belt drive fan, compressor, pump, turbo expander, etc.

Basic Vibration Technology

- 1) Maintenance Philosophy
- 2) Time and Spectrum Domain
- 3) Basic of FFT analysis in order
- 4) ISO Standard for different application, e.g. ISO2372, 10816 and 7919 for Turbine/Generator
- 5) Vibration Analysis for
 - Unbalance
 - Mechanical Looseness
 - Resonance
 - Misalignment, Soft Foot/ Distortion
 - Pump/Fan (Hydraulic Problem)
 - Blade/Vane Pass Frequency
 - Pulley/Belt Problem
 - Oil Whirl/ Oil Whip
 - Bearing Failure Analysis
 - Gear Defected Analysis
 - Motor Analysis

One and a half day

System Troubleshooting for both Hardware & Software

- 1) Hardware & Software architecture
- 2) Software's error troubleshooting;
 - Equipment IP
 - LAN
 - Server
 - Devicenet to LAN
 - Devicenet to TCP IP MODBUS
 - RSview
 - RSmacc
 - Odyssey
- 3) Hardware's error troubleshooting;
 - XM 121
 - XM 440
 - Sensors
 - Cable
 - Connector

How to PM the System

- 1) The procedure and frequency of XM 121 and sensors calibration
- 2) When does it need to be recalibrated or test certified?
- 3) Checking fault signal if come from real hardware fault or just looseness of wiring
- 4) When to check the looseness between connector and sensor
- 5) The definition of display status and alarm status at the hardware
- 6) The definition of display status and alarm status at the software