STI Vibration Monitoring Inc.

Vibration Monitoring and Machine Protection Systems

1010 East Main Street, League City, TX 77573 Phone:281.334.0766 Fax: 281.334.4255
www.stiweb.com / www.stiwebstore.com

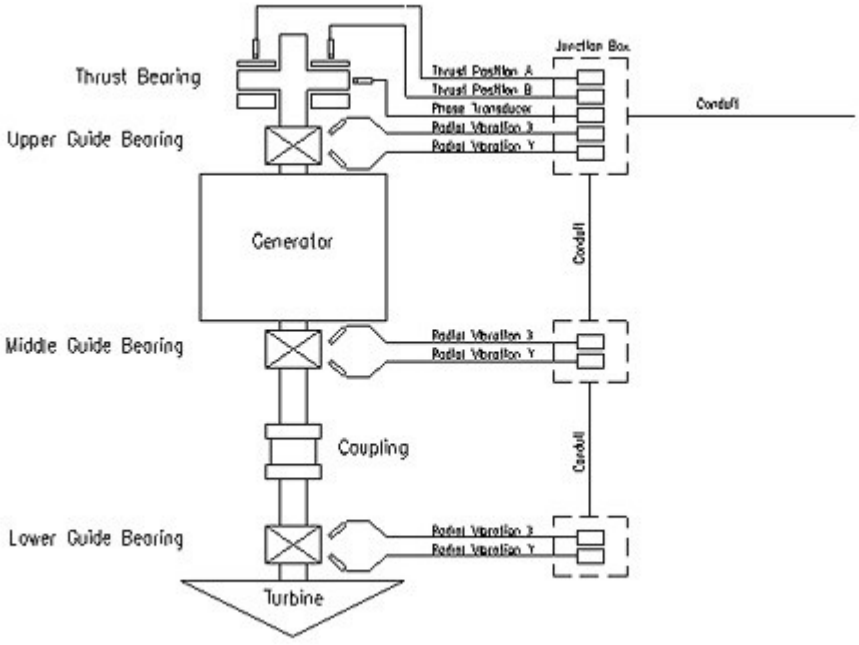
Condition Monitoring Custom Products

Case History: Hydro Turbine Generator

The Problem:

A Western US Power Utility desired to monitor the radial vibration of their 13 each 3 bearing Vertical Hydro Turbine Generators. The Utility had an upgraded DCS System which they wanted to use for display and trending of the radial vibration values. As the bearings were smooth bore or journal type X&Y Proximity Probes or Eddy Probes mounted 90 degrees apart were to be used as the primary sensors at each Radial Bearing with an output in mils (0.001") displacement. The responsible engineers wanted a standalone system for each of the 13 Hydro Turbine Generator Units with local display and output provided to the DCS. In addition the engineers wanted intermediate terminal blocks to simplify wiring and a Phase/Speed output for portable balancing instruments.

Typical 3 bearing Vertical Hydro Turbine Generator:



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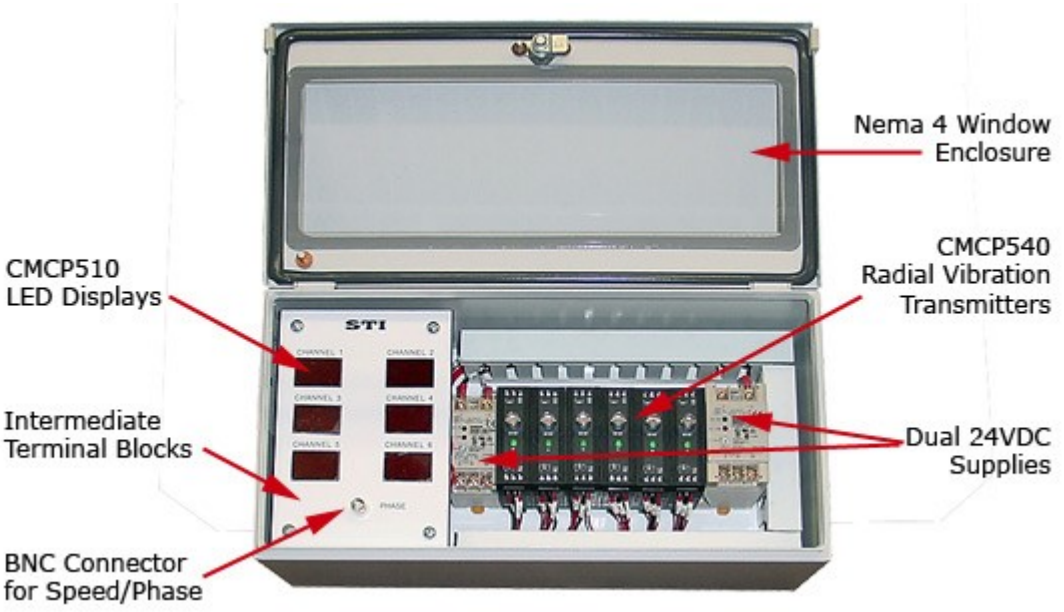
The Solution:

STI offered and delivered a custom enclosure solution making use of the well proven CMCP540 Radial Vibration Transmitters, CMCP515 Power Supplies and CMCP510 Bright Red LED Displays. The CMCP540 provides Peak to Peak detection of the Proximity Probe signal along with constantly monitoring the OK Status of the sensor. A linear 4-20 mA output (0-15 mils) was provided for each channel to the customers DCS IO. Thrust Position although normally highly recommended was not monitored as the customer has had no history of thrust failures. As X&Y Proximity Probe Sensors were provided "Orbits" can be easily observed on portable analyzers or a simple Oscilloscope by connecting to the BNC buffered outputs provided.



The STI System for each Unit was provided in a Nema 4 painted steel enclosure with window, bright Red CMCP510 LED Displays for each channel along with a BNC connector for Phase/Speed. As each CMCP540 Transmitter is provided with a BNC Buffered Output connections for balancing equipment are very straight forward. A complete wiring drawing was provided as part of the package in AutoCAD.

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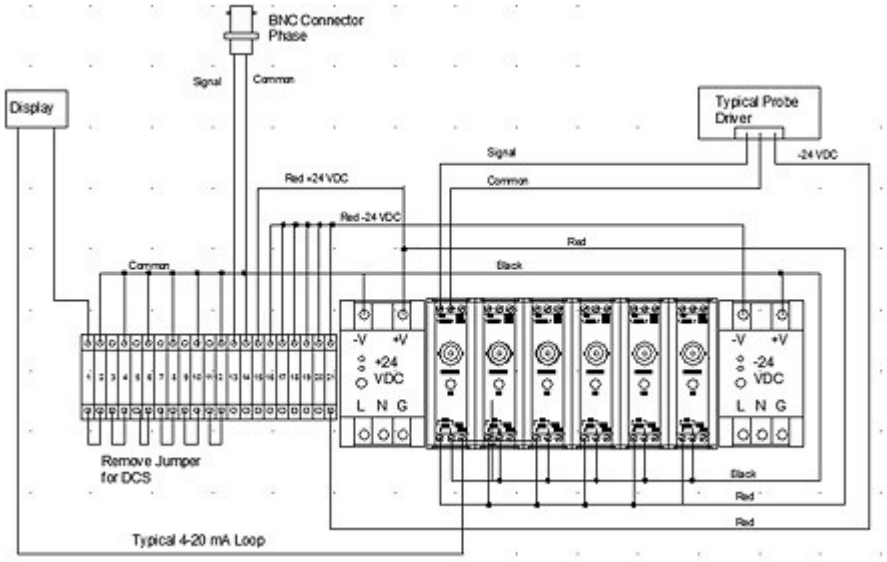

Two CMCP515 24VDC Power Supplies were provided for each system to provide the +24VDC Transmitter power and -24VDC Proximity System Power. The CMCP510 Red LED Displays are loop powered and are on the same loop provided to the DCS. Sensor failure will cause the Green OK LED on the CMCP540 Transmitter to extinguish and drive the 4-20 mA Output to <2 mA signaling the DCS that there is a fault. The system was fully wired, integrated and tested at STI's League City Texas facility prior to shipment. Troubleshooting and maintenance is straightforward as each channel is independent and easily tested and replaced by customer's technicians.

Please contact us for information concerning your Hydro Turbine Application. We will be more than happy to work with you to provide a solution that meets your needs.