

Overhung Centrifugal Pumps

OCP

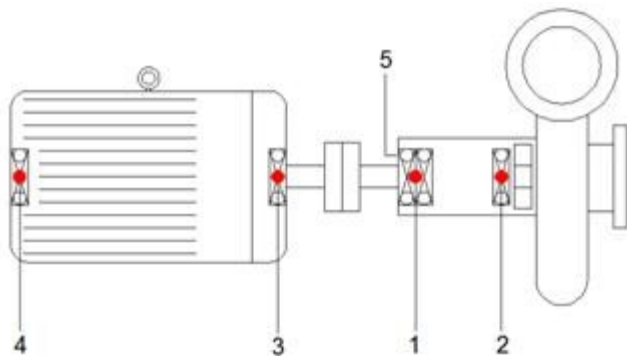


Overhung Centrifugal Pumps are unique in that the Impeller is cantilevered outboard of the pumps bearings. This design allows for an open suction at the outboard end and reduces the number of shaft seals to the inboard side only. Many plants have hundreds if not thousands of Overhung Pumps in operation including spares. A careful appraisal of the Pumps criticality

to the process will help determine the monitoring technique to be used. Plant Safety must also be appraised as pump catastrophic failure may be dangerous to personnel or even be a fire or explosion hazard.

Bearings in most cases will be of the Rolling Element Type (REB) with a double angular contact bearing (back to back) to handle thrust on the pump (#1 above). REB bearings tend to fail or wear over time and vibration levels are an excellent measurement of bearing health. Vibration sensors (usually accelerometers) should be mounted horizontally and directly as possible in line to the bearing and shaft centerline for good transmittal of vibration energy (see drawing below).

Portable Instrument Data Collection Program:



Plants with walk around data collection Predictive Maintenance Programs (PMP) performed weekly,

bi-weekly or monthly will take measurements at all marked data collection points (1-5) shown in the drawing above. Permanent mounting of Accelerometers with a local BNC Switch Box like STI's CMCP300 or CMCP310 Series will improve safety and provide more repeatable and smoother trending. See STI's web site for a complete listing of Accelerometer Mounting Accessories.

Protection System:

If the Pump is in considered to be Critical to the process or safety a Vibration Protection System should be considered. Once again factors such as criticality to the process and safety are used to determine the extent and complexity of the Protection System.

Usually Electric Motors are ignored as they can be replaced fairly quickly and inexpensively. Customers may optionally elect to monitor the Motor Outboard End only to provide vibration data across the coupling.

Criticality	Points to Monitor
Balance of Plant	1 and 2
Essential	1, 2 and 3
Critical	1, 2, 3 and 4
PMP (Data Collection)	1, 2, 3, 4 and 5

Existing Local PLC/DCS System:



With an existing PLC or DCS System STI recommends using the CMCP420VT Sensor at the points recommended in the above table. Fully self contained and loop powered installation is straight forward to the local Field IO. Temperature can be added by selecting the CMCP420VT-T Dual Parameter Sensor keeping in mind that a Field IO channel must be available for each parameter. Local display option with BNC connector for PMP may be added. The CMCP420VT

Series is approved for Class 1 Division 2 Areas by both CSA and UL. Class 1 Division 1 areas can be completed using an Explosion Proof Conduit Head such as the CMCP420XPHD.

Existing Local PLC/DCS System couple with Data Collection Program (PMP):



If the Protection System is to be coupled with the Data Collection Program and there is existing Field IO then it is recommended that the CMCP500 Series Din Rail Mounted Transmitters be used. Mounted in a local enclosure they provide 4-20 mA output to the Field IO and a raw acceleration signal available on a front mounted BNC connector. When used for PMP higher frequency response is required for analysis especially high frequency analysis such acceleration enveloping or gE. This frequency response is available by standard accelerometers of smaller mass than the CMCP420VT.

Stand Alone Protection System w/Alarms and Relays:



For a Complete Stand Alone protection System STI recommends the CMCP500A Series. The "A" denotation provided the 500 series Alarm Module that includes OK, Alert and Danger Alarms and Relays. The CMCP500A Series was designed to meet API-670 requirements. They are also approved for Class 1 Division 2 Areas by CSA and UL. Designed as single channel monitors they have all the features of large rack based systems but at a much reduced price. Features include selectable alarm time delay, trip multiply, remote reset and normally energized or de-energized relays. Alarm status is also visually signaled by front mounted LED's. Optional displays may also be specified. Complete packaged Monitoring Systems such as the CMCP5304 are available and In Stock.

Custom Enclosures, Integration and Mounting Accessories:



STI would be pleased to provide a quotation covering complete enclosure integration to meet your requirements. Please contact us by phone or email and we will respond promptly. Enclosures are available in Painted Steel, Fiberglass, Stainless Steel and Explosion Proof (XP). STI also carries a complete line of Power Supplies, Field IO and Industrial Radio Modems.