## CTC AppNotes

A series of technical documents written by members of the CTC community

## **Proximity Probe Mounting -Thrust Measurements**

**Executive Summary** 

One of the issues for reliability professionals in the current era is how to effectively and reliably monitor thrust bearing wear in critical applications. This edition of CTC's PRO

AppNotes will explore the concept of axial monitoring of plain or journal bearings on assets such as turbines for increased reliability and safety.



The axial or thrust measurements

position is one of Proximity probes are often used to monitor the most critical turbine shafts in power plants.

in rotating machinery. If a thrust bearing should fail, axial movement of the shaft is no longer constrained and must instead be translated to some other part of the machine. When this is allowed to occur, the uncontrolled axial movement will quickly allow rotating and non-rotating probes elements to come in contact, resulting in disastrous conseauences. Such regrettable occurrences are financially toring the shaft they devastating for the asset and can also be a serious safety can risk to plant personnel.

While some degree of reliability can be achieved using a



Probes are important monitoring tools for all types of turbines

the proximity probe units fails.

single proximity probe to monitor the thrust position, virtually all the guidelines and stanfor (including API Standard 670) agree that dual probes should be used to achieve the greatest

## Preparing for installation

tem. These techniques should remain in consistent use and drivers. throughout the plant. The most common thrust position full scale range selected is usually +40 to -40 mils (which falls within the PRO proximity probe systems normal range of

90 mils). Positioning is important as well.

The most common recommendation is that proximity probes used to monitor thrust position be placed within two (2) shaft diameters of the thrust bearing (for example 4on a 4 inch diameter shaft the probes should be mounted no further than 8 inches from the thrust collar). This assures that the proximity probe system is not ad-

versely affected by shaft thermal growth. In some cases this is not possible, and the analysts needs to be aware of the thermal growth expected and plan accordingly.

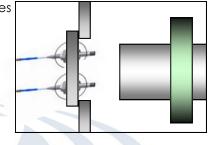


## Installation

Special brackets or hous- Monitoring a thrust bearing collar ings may be required to with a dual probe installation. achieve correct probe

positioning and adjustment. However, frequently probes can be mounted through the bearing casing using PRO's

DM901 and DM903 series probe mounting adapters. Where cannot mounted directly monisometimes mounted to observe the thrust collar or



some other integral axial Dual axial probes mounted with shaft surface. Once the DM901-1A bushings

probes are installed correctly they must then be properly gapped. Extreme care must be taken when this step is performed. Improper gapping results in the permissible reliability range of the thrust bearing falling outside of the probe's linear measurement range. In order to properly gap the probe the shaft is mechanically barred against the active thrust shoe or other known position. The proximity probe can then be gapped and the DC voltage documented. reliability. Dual probe In order to insure the proper placement of the probe a systems provide redun- worksheet incorporating the allowable shaft wear, float dancy to ensure contin-zone and probe parameters should be developed. This ued measurement integ- will help determine the optimum gap and that all alarms rity in the event one of fall with in the probes measurement range.

Parts included i n this discussion DM901, DM902, & DM903 Proximity probe mounting options Several important measurement techniques must be de- DP1001 Series proximity probes, cables and drivers cided upon prior to installation and calibration of the sys- DX3301 Series Bently compatible proximity probes, cables

> If you have any questions or for further information please contact CTC directly Email at dgripe@ctconline.com sales@ctconline.com or feel free to call 1-800-999-5290 in the US and Canada or +1-585-924-5900 internationally.

If any PRO product should ever fail, we will repair or replace it at no charge, as long as the product was not subjected to misuse, natural disasters, improper installation or modification which caused the defect.