SENSONICS
Keeping Industry Turning

Newsletter No.2 - October 2007 **www.sensonics.co.uk**

Welcome to our latest quarterly newsletter, which aims to keep customers and partners up to date with new developments and provide case studies and measurement techniques for protecting your critical rotating plant.

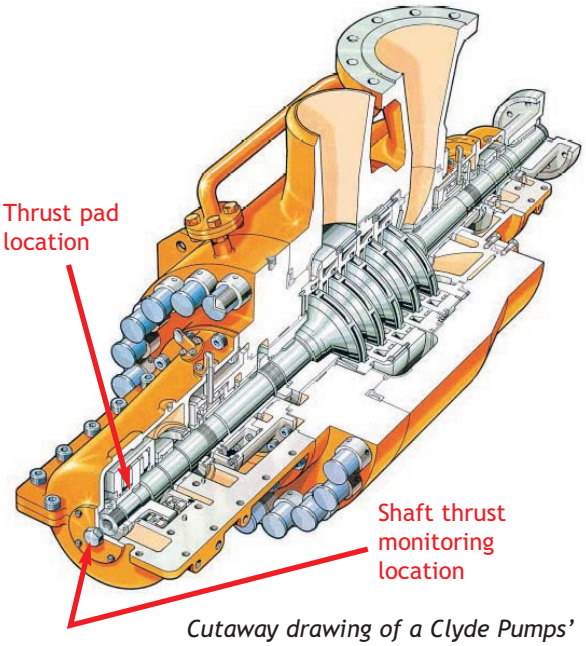
Thrust monitoring on feed pump equipment

For critical pump applications effective and reliable monitoring of thrust bearing wear is essential. Such plant often runs continuously, with maintenance carried out during outage periods planned to fit with process and revenue demands. To determine whether the thrust pads are to be replaced during these outages, it is essential to be able to predict the wear on them. With rotational speeds from 3000-7000 rpm, protection against potential pump damage is vital: excessive thrust wear may damage the bearing assembly and also the impeller, resulting in the plant potentially being out of action for six months or more.

Sensonics has been working alongside plant instrumentation engineers for many years to provide effective thrust measurement using its range of equipment and services.

A high pressure boiler feed pump (BFP) set operates with pressurised fluid within the thrust bearing. The permissible total wear on the thrust pad (from new) is typically 0.75 - 1.25 mm before inspection or replacement is required. Older feed pump designs use a hydrodynamic (water) lubrication system driven from the impeller action. Tilting pad thrust bearings, common for the newer BFP designs, utilise a high-pressure hydraulic oil supply to minimise friction. This is particularly effective at start-up or slow rotating speeds, where the hydrodynamic effect which establishes itself at rated speed is not present. Excessive wear can be due to inadequate oil pressure or flow around the assembly, and a worn balance device can produce uneven forces on the bearing producing the same result.

As well as a measurement of Thrust pad wear, other important data can be obtained. Thrust pad wear provides valuable feedback on the efficacy of the lubrication technique. Also, by combining wear rates with vibration measurements a good guide to BEP (best efficiency point) performance of the pump can be obtained.



Cutaway drawing of a Clyde Pumps' Multistage Barrel Case Boiler Feed Pump
(© Clyde Pumps Incorporating Weir Pumps Glasgow)

Thrust monitoring is also a key protection measure to ensure automatic shutdown when the safe operating limits are being exceeded.

While it is fairly straightforward to monitor the end of the drive shaft for changes in pad thickness the measurement is complicated by the following factors:

- Shaft and Casing Expansion
- Float in overall assembly
- Measurement target shape and size

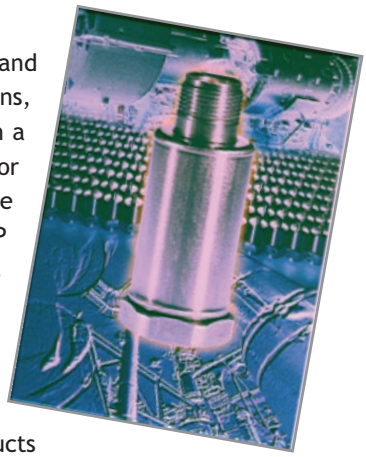
Thus the measurement range for the shaft position must cover the mechanical expansion and float and still provide accurate thrust wear indication is required.

Proximity probe systems are the preferred solution for this type of measurement. Mounted axially to the shaft, the ideal location for the probe is facing the shaft end - drilling and tapping the cover plate is a common way of achieving this. If this is not permitted or the target area insufficient (it must be 2x probe diameter), a shaft collar can be utilised or added between the thrust and shaft end bearing. This has the advantage of being located closer to the thrust bearing and therefore reducing the amount of measurement error due to expansion and other shaft effects.

Senturion range of proximity probe systems for non-contact expansion measurements

High specification - including the delivery

As a result of lean manufacturing initiatives at Sensonics, core product lead times have been reduced and we now have a range of industrial accelerometers available from stock.



Rated for operation up to 150ºC and proven in the toughest applications, the PZA6 model is available with a 2-pin MIL connector as standard or with integral high temperature cable. Offering a standard ICP type interface, the PZA6 is suitable for connection to both fixed and portable vibration monitors and combines Sensonics' reputation for high specification, high quality products with a very competitive price.

Sensonics distributors fly in

During June we held our first distributor training event at Stansted Airport. Attended by our key partners from Italy, Portugal, Sweden and Norway, the event provided detailed training on Sensonics' full product range and and an opportunity to discuss application experiences from the different regions. Such was the success of the event that another is planned for November for those distributors who were unable to attend.

Recent contract award highlights

- SpyderNet vibration trending systems for naval application. *Location:* India
- Supply of turbine and boiler feed pump supervisory systems for retrofit. *Location:* UK
- Cold Water Lift Pump vibration monitoring and protection systems. *Location:* Iraq
- Customised proximity probes for oil film thickness measurement on hydraulic bearings. *Location:* Sweden

Increased power demand in Asia

Following the success of exhibiting at the European POWER-GEN shows in recent years, during September we joined our Thailand agents, Advanced Siam Tech, for our first venture into POWER-GEN Asia, held this year in Bangkok.

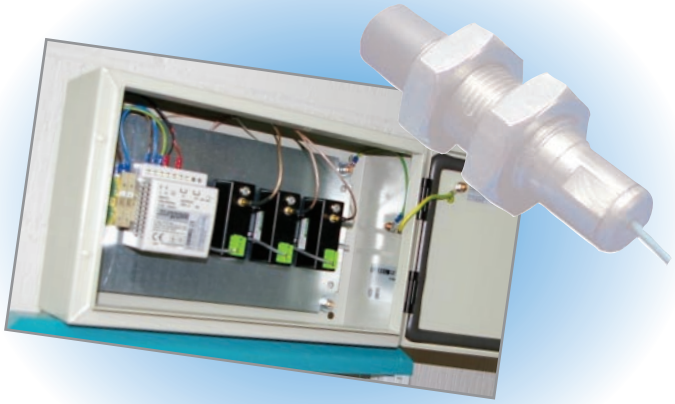
Our objectives for the exhibition focused on meeting existing Thai end users and discussing current applications, as well as realising new opportunities in this high growth market in Malaysia, Indonesia and the Philippines.

Sensonics with the AST team at POWER-GEN Asia 2007

New product release

Recognising the need to connect proximity probe and LVDT systems directly into DCS & PLC systems we have introduced a new range of probe drivers offering a direct 4-20mA interface.

Although LVDT products are readily available with current outputs, such products are generally not suitable for heavy industrial applications, where measurement linearity and stability needs to be maintained at temperatures up to 200ºC. The new DIN rail mount product has the same mechanical profile as our existing probe drivers, and can be located close to the measurement point, eliminating further instrumentation cost to achieve plant-wide system connection.



Sensonics are a leading supplier of turbine supervisory and high integrity protection equipment to industry. With 30 years experience in providing vibration, displacement and speed instrumentation solutions in demanding environments, not only do they supply a full range of sensors and API 670 compliant measuring and protection equipment, but also offer design through to installation and commissioning services.

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