ULTRASONIC INSPECTION
BEARINGS, PUMPS, MOTORS
GEAR BOXES, MECHANICAL WEAR

DESCRIPTION
Inspection of mechanical equipment with ultrasonic instruments has many advantages. Ultrasound inspection provides:

- Early warning of Bearing failure
- Early warning of Poor lubrication
- Prevent over lubrication during maintenance
- Effective on High & Low speed bearings
- Detect carbon brush “Hop” before damage to armature
- Early warning of mechanical failure (bearings, gears, bushings
- **Reduce diagnostic time significantly**

In addition, since ultrasound is a high frequency, short wave signal, it is possible to filter out stray, confusing background noises and focuses on the specific item to be inspected. Basic inspection methods are extremely simple and require very little training. In addition ultrasonic testing works extremely well with vibration technology. In fact the two technologies complement each other and enhance any PDM, (Predictive Maintenance) program.

How Ultrasound Bearing and Mechanical Inspection Works
Mechanical movements produce a wide spectrum of sound. By focusing on a narrow band of high frequencies, the Ultrasonic unit detects subtle changes in amplitude and sound quality. It then heterodynes these normally undetectable sounds down into the audible range where they are observed on a meter (for trending and comparison purposes) and heard through headphones.
Based on research by NASA, it was established that ultrasonic monitoring provides early warning of bearing failure. Various stages of bearing failure have been established. An 8 dB gain over baseline indicates pre-failure or lack of lubrication. A 12 dB increase establishes the very beginning of the failure mode. A 16 dB gain indicates advanced failure condition while a 35-50 dB gain warns of catastrophic failure.

Ultrasonic Bearing Inspection Method
There are two basic methods for ultrasonic bearing monitoring: comparative and historical. In order to trouble shoot bearings or to establish a baseline, it is necessary to compare similar bearings for potential differences in amplitude and sound quality. To do this, make a reference point on a bearing housing or use the grease fitting, tune to 30 kHz and reduce the sensitivity until the bearing reads 20 on the meter. Then compare this base reading to other similar bearings. A failing bearing will show an 8 dB gain. Once a series of bearings have been tested, and a base line set, data is recorded and then compared to future readings for historical trending and analysis.

TO FIX IT…..FIRST YOU HAVE TO FIND IT!