MARTECH CONFERENCE 2017 PAPER PRESENTATION:

Subject of presentation: INTEGRATED CONDITION MONITORING TECHNOLOGIES FOR ENERGY SAVING APPLICATIONS on Board ships

Abstract-

Condition monitoring of machines provides knowledge about the condition of machines.

Any deterioration in machine condition can be detected and preventive measures taken at an appropriate time to avoid catastrophic failures.

This is achieved by monitoring such parameters as

- Vibration,
- Thermography,
- Ultra sound/ acoustic emission etc.(High Frequency above 20 k Hz Ultra sound)

The changes in these parameters help in the detection of the development of faults, diagnosis of causes of problem and anticipation of failure.

The application of condition monitoring in plants results in savings in maintenance costs, and improved availability and safety. The techniques covered in this presentation are performance, vibration, motor stator current, shock pulse, acoustic emission, and thermography and wear debris monitoring.

The instrumentation required, Vibration recording Analysis in Software, Air and contact borne ultra sound Ultra probe, Infrared thermal image camera, Noise recording instrument method of analysis and applications with some examples are explained.

FFT and Time wave forms in velocity and acceleration spectrum signal processing techniques to gain more benefits of vibration monitoring are covered.

Wear debris monitoring methods include magnetic plugs, ferro-graphy, particle counter and spectrographic oil analysis is not discussed in this presentation.

The benefits added with the-

- improved Reliability giving extended Mean Time Between Failures and
- Avoid catastrophic failures
- Additional Plant Availability.
- Operators confidence
- Economical maintenance by planned shutdown, procure spares and service without ship stopped.

There have been recorded instances where the gains in improved plant uptime has led to deferment of expensive plant expansion.