Case Study 1

Type of analysis: Vibration Analysis
Machinery: Turbocharger
Details: T/C of a 1970 Hp, 1200 RPM Engine in a Gas Plant

Inspection Findings / Recommendations / Actions:

1) Initial Inspection: Normal baseline vibration → Recommendations: None

2) 2nd Inspection (4 months later): Vibration level doubled → Recommendations: Inspection of the turbocharger, including thrust and radial bearing clearances checks. → Action Taken: None

3) 3rd Inspection (30 days later): Overall Vibration level tripled → Recommendations: Inspection of the turbocharger, repair or replace. → Action Taken: None

4) 6 weeks later: Failure → T/C destroyed --> Unnecessary engine repair and production lost cost. No action taken due

Repair Damage Cost: $300,000
Condition Based Maintenance (CBM)

Case Study 2

Type of analysis: Vibration Analysis
Machinery: Gearbox
Details: Gearbox of an industrial mill

Inspection Findings / Recommendations / Actions:

1) Initial **Inspection**: Increase in vibration on inlet bearing. Indeed, this bearing had extensive damage. → **Recommendations**: Inspection and repair as necessary → **Action Taken**: Gearbox repaired. Gearbox inlet bearing found to have extensive damage.

2) Extensive damage of gearbox leading to costly repairs was prevented.

3) No production losses due to scheduled shutdown.

Estimated Cost Saving: $278,500
Condition Based Maintenance (CBM)

Case Study 3

Type of analysis: Vibration Analysis
Machinery: Pump Bearing
Details: Bearing of Pump used O/B a vessel

Inspection Findings / Recommendations / Actions:

1) Initial Inspection: Indications of probable bearing ball pass inner race damage. →
Recommendations: Close monitoring. → Action Taken: None

2) 2nd Inspection (6 days later): Inner race damage confirmed → Recommendations: Replace corresponding bearing on the earliest available shut down. → Action Taken: Bearing replaced. Old bearing found to have a split in the inner race.

3) Extensive damage of pump was avoided.

Estimated Cost Saving: £44,500
Condition Based Maintenance (CBM)

Case Study 4

Type of analysis: Vibration Analysis

Machinery: Pump Bearing

Details: Propulsion Cooling SW Pump Bearing used O/B a vessel

Inspection Findings / Recommendations / Actions:

1) Initial Inspection: Abnormal bearing vibrations. → Recommendations: Close monitoring. → Action Taken: None (pump was recently overhauled based on ship’s PMS).

2) 2nd Inspection (2 weeks later): Temperature raise, increased vibration, noise through impeller → Recommendations: Replace corresponding bearing on earliest available shut down. → Action Taken: Roller Bearing and Mechanical Seal replaced. Pump impeller inspected and found in perfect condition.

3) Extensive damage of pump was avoided.

Maintenance Cost: €1,000

Estimated Cost Saving: €30,000