# Fundamentals of Pump Health Assessments

## Reliability & Lubrication 101

This introductory course provides a practical foundation for holistically evaluating pump health in its field operating environment. Participants will learn how vibration analysis, pump performance evaluation, visual inspections, thermography, and oil sampling come together to give a good overall picture of equipment health. The course emphasizes real-world installations and their implications. Ideal for maintenance professionals, reliability engineers, and any technical staff looking to build core competencies in pump assessments and corresponding reliability improvements.

## Syllabus Overview:

### 1. Introduction to Rotating Equipment Health

- Importance of condition monitoring
- Overview of failure modes and early warning indicators
- Integrating performance, vibration, and lubrication data

### 2. Pump Health Evaluation

- **Performance**
  - System Walkdown
  - Understanding the Pump Curve
  - Understanding the Process and System Curves
  - Factory vs. Field Testing
  - Tools & Techniques
  - Compensating for Real-World Conditions
  - Balance Line Flow Testing
  - Interstage Take Off Lines
  - Troubleshooting & Limit Testing
- **Vibration**
  - Protection vs. diagnostics
  - Fundamentals of vibration theory
  - Fault identification
  - Troubleshooting tools & techniques
  - Using vibration data to alongside performance data

- **Oil Sampling**
  - Introduction to Oil Sampling & Analysis
  - Interpreting Oil Analysis Results
  - Oil Analysis and Troubleshooting Pump Issues
  - Contamination & Equipment Health
- **Thermography & Visual Inspections**
  - Piping best practices
  - Installation & foundations
  - Seal leaks
  - Mechanical seal plan systems
  - Pumps and motors

## 3. Integrated Equipment Health Assessment

- Case-studies combining vibration, performance, and lubrication data
- Prioritizing maintenance actions and decision-making
- Creating a pump health scorecard
- Discussion: Building a predictive maintenance program