FMRIMS	Pump Reliability Improvements	Reliability, Integrity & Maintenance Training
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Course Description

The workshop is a hands on improvement program for pumps comprising of:

- Assessment of current performance in reliability, availability and maintenance costs for pumps.
- Comparison to pacesetters and identification of gaps. Benchmarking
- Defining what Best Practices need to be implemented to close the gap.
- **Application of Best Practices, Equipment Degradation Templates to close gaps.**
- Key Performance Indicator, Goal Setting & Performance Monitoring

Who Should Take the Course

The course is ideal for persons with assigned responsibilities improvements in the pump reliability and maintainability area, as well as managers who want to increase awareness of the payoffs of pump reliability improvements managements.

Engineers who need to know the reliability management as they apply to developing pump reliability improvement programs. Design engineers, technical specialists, maintenance specialists, operations technical specialists, reliability specialists, and product/program managers will benefit from the course.

What Will You Learn

The participants will gain knowledge of programs and methods to achieve pump reliability improvements to reach target performance. They will learn the proven Best Practices contained in EDT that are appropriate to apply for different development situations as well as the basics of implementing the practices to reach reliability, availability and maintenance cost reduction targets.

The workshop will be applied to existing plant pump bad actors.

Included Materials

Attendees will receive a soft copy of:

- Pump Reliability Handbook
- RAM Guide
- API 682
- Course Text Book
- Course Slides

Course Outline

- **Establishing pumping system reliability and availability targets**
- **Reliability System Elements**
  Assessment of current reliability considering reliability system elements
- **Plant/systems reliability analysis**
  Asset Reliability KPI's
  Bench marking
- **Mechanical Seal Wear**
- **Bearing Wear Out**
- **Lubrication System Failure**
- **Cooling System Failure**

- **Pump / Driver Misalignment**
- **Disk Pack Fracture**
- **Fouling**
- **Wear / Erosion of Impeller or Casing**
- **Applying Reliability principles to:**
  Identifying types of failures and their consequences
  Identifying loss for various failures
  Prescribing the overall reliability approach and Methodologies "Mix"
- **Equipment selection process**
  Operational history
  Robustness in design
  Maintainability
  Life cycle cost determination
  After sales service

- **Operating Outside Operating Envelope**
- **Plugged Section**

- **Excessive Starts / Swaps**
- **Blocked Discharge**
- **Interdisciplinary Reliability Focus Team**
  Organizing for Reliability
  Understanding human factors in Reliability
  Operator Driven Reliability (EBC, TPM etc.)

Course Instructor: Namik Kosaric is a Canadian Professional Engineer with experience with PETRONAS, Bahrain Petroleum Company and ESSO Petroleum Canada in reliability improvements and maintenance cost reduction, mechanical design, project engineering and technical support of Oil Refineries and Oil Production Facilities.

For the last 8 years in PETRONAS Namik Kosaric was responsible for providing technical and knowledge leadership in development, coordination and implementation of plant reliability and integrity improvements and program to PETRONAS OPU's to improve and support the overall Petroliam Nasional Berhad objectives.

In BAPCO, Namik Kosaric, pioneered and implemented a root cause failure analysis of lost profit opportunities and chronic failures using a multi-disciplinary teams to improve plant reliability, availability, safety and to ultimately reduce operating costs. Significant cost savings were achieved as a result of over 200 completed investigations.

For 23 years in ESSO Petroleum Canada, Namik Kosaric has made significant contribution worldwide in reliability improvements, design, projects and maintenance cost reduction in upstream and downstream facilities.