## DG3 - Centrifugal Pumps: Operation, Maintenance and reliability, Vertical Pump Problems and Solutions

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## Suggested Topics:

- Seal plan which was not expected wrong for the application
- Preventive/predictive technologies

## Off design operation

- Mean time between failure how do we measure, and how do we use the metrics
- How to create pump reliability in an unreliable plant
- Seal-less versus sealed pump reliability, canned motor pumps versus mag drive pump reliability
- Mechanical Integrity Inspections of VS 6 pumps in hydrocarbon service
- Seals in light hydrocarbon service operations, risk, leak response, maintenance
- Pump predictive/preventive maintenance program elements 3.
- Measures of effectiveness of preventive and predictive programs for pumps
- Roles of operations and maintenance/reliability in improvements and data collection
- Reliability experience with liquid versus non contacting gas seals applications
- Maintenance philosophy for pumps
- Spare parts OEM versus non-OEM

## Repairs - OEM versus non-OEM service facilities

- Pump foundation, alignment and pipe strain influence of reliability
- Impact of corporate purchasing alliances on pump reliability
  - o Repair facilities alliances
  - o New equipment purchasing alliances
- Repair techniques and material improvements
- Portable and on-line monitoring impact on reliability
- Wireless monitoring impact on reliability and risk of failure
- Optimization of thrust bearings configuration
- Lubrication system impact on reliability oil mist versus flood, oil selection
- Mechanical Seals