Following machines are identified to be covered under pilot project.

Sr.No. Tag No. No. of seal leaks In Last two years

1 P-32 A 19

2 P-32 B 17

3 P-518 C 15

4 P-765 14

5 P-705 B 10

6 P-424 B 10

7 P-30 A 9

8 P-310 B 9

9 P-7120 9

10 P-208 A 8

11 P-423 D 8

12 P-512 A 8

**Proposed Solution**

We propose a pilot project for **six months** covering following modules /

technologies.

1. Initial assessment

2. Vibration Based Condition Monitoring Program

3. Contamination control program

4. Performance Monitoring

5. Operation Reliability

6. GREAT (**G**reasing **R**equirement **E**valuation **A**ssessment **T**esting)

7. Human Reliability

2. **Vibration Based Condition Monitoring** involves measurement of

vibration parameters, namely, Amplitude, Frequency and Phase.

Vibration monitoring helps diagnosing problems, such as Unbalance,

Misalignment, Looseness, Bearing problems, Gear problems, Cavitation

and flow induced problems, Resonance etc. Typical vibration patterns

are shown below.

Development of Vibration Based Condition Monitoring program has following

steps / elements.

· Development of vibration monitoring strategy

· Establishing baseline vibration data

· Development of vibration monitoring database

· Vibration analysis and reporting (1 Day per month)

· Vibration control using in-situ dynamic balancing (Optional)

· Program management

· Procedures and guidelines

· Metrics and KPI’s

“Vibration Based Condition Monitoring” services will be implemented for above

mentioned twelve (12) pumps for a period of six (6) months.

Periodical reports on “Vibration Measurement, Diagnosis, Statistics” will be submitted

in electronic format.

**Lubrication Contamination Control Program**- Initially, we will

implement Contamination Control Program using STAR value added

solutions, namely, **Bearing Life Enhancer (BLE) as shown.**

Initially Contamination Control program will be implemented on above mentioned

pumps using Bearing Life Enhancer (BLE).

“Lubrication Based Condition Monitoring” services includes following

Ø Supply & Installation of one number of Bearing Life Enhancer (BLE) on each

pump.

Ø Monitoring Oil Contamination Control program

Analyzing each rotating equipment for its operating performance vs

design performance is key to success of condition monitoring programs.

Such analysis complement the condition monitoring programs.

Performance monitoring in association with vibration analysis gives much

more insight into Root Cause Analysis (RCA) for any particular

equipment. This forms the basis for long term asset reliability, availability

and maintainability.

Performance monitoring program will be implemented on above mentioned pumps.

For successful implementation of performance monitoring program, process

parameter information such as suction pressure, discharge pressure, motor current,

flow should be available.

**Operation Reliability**

Equipment Reliability takes care of how assets are monitored and maintained.

On the other hand Operation Reliability covers how assets are operated and

how their basic care can be effectively taken by field operators. Most companies

claim that they have “Operator Check-list”. In reality such manual check list data

add very little value in reliability program.

Using today’s mobile technologies – iPADs, PDA’s etc, these manual “Operator

Check-list” can be redefined into more comprehensive, interactive and decision

making templates, thereby empowering field operators in plant wide reliability

program. In future, such programs can also be interfaced with CMMS

(Computerized Maintenance Management Systems).

“Operation Reliability” services will be implemented for above mentioned pumps.

All “Operator Check-lists” will be reviewed, redefined and converted into electronic

form which can then be utilized using mobile applications. This service does not

include any supply of mobile devices, such as iPADs, PDA’s as well as any kind of

firmware & software.

“Operation Reliability” services includes following

Ø Converting Operator Check-lists into SMART Operator Templates.

**GREAT (Greasing Requirement Evaluation Assessment**

**Testing)**

GREAT (Greasing Requirement Evaluation Assessment Testing)” services will be

implemented for above mentioned pumps. Electric motors are likely grease lubricated

and will be covered under “GREAT” program.

**Human Reliability**

The most important asset of any industry is its skilled and knowledgeable

manpower. Knowledge is Power. This is achieved via Skill Development,

Knowledge transfer & various training programs in a planned & phased manner.

During the pilot project, we will conduct following training courses for a batch of

five (5) team members. Each course will be of one day each.