RO Feed Pump Tech. & Maintenance

Introduction:

Tending to System Maintenance is Necessary for Successful Operation

Understanding and reacting to the performance of a reverse osmosis (RO) system is necessary for continued successful operation. It is this interaction that allows us to quickly and correctly identify and correct issues that may arise. The following discussion is intended to explain the importance of RO maintenance

Understanding and performing routine RO maintenance can prevent most problems before they occur. RO maintenance is more than repairing and replacing parts. It means taking steps to reduce or prevent problems from occurring and being aware that a problem may be coming before it happens. Ensuring the RO is properly applied to the project and that feed water pretreatment (and the feed water itself) is checked on a regular basis also are instrumental. You also must check that normal scheduled maintenance occurs. If the system is large enough, daily log sheets are to be filled out. Maintenance is a combination of all these.

An RO unit is only as good as the application allows. The first step in preventative care is to ensure the feed water is of satisfactory condition. Customers just don't want to pay for that all-important feed water analysis, yet it cannot be

stressed strongly enough. The larger the system, the greater the importance. Be aware of your feed water source. Surface water can produce needs that groundwater does not and vice versa. If your community mixes the two, it can be a "double whammy." The point is to understand your feed water and install the proper pretreatment

Who Should Attend?

This course is directed towards Supervisors, Team Leaders and Managers in RO Maintenance, RO Engineering and Production. The course will also benefit anyone who wishes to update themselves on RO Feed pump Predictive Maintenance Technologies, vibration analysis and Failure Analysis techniques, as well as those who have to judge the suitability of these technologies for their needs, and learn how to implement them for the benefit of their pumping system

Course Methodology

'Tell me and I'll forget; show me and I may remember; involve me and I'll understand'

There are a number of methods and techniques which may be used to deliver training. our training course will involve a variety of these methods, with the aim of helping to retain

the attention and interest of trainees. As a general principle we use of methods that actively

engage the trainees is encouraged. Although a training course is likely to involve some degree of traditional presentation and explanation by an instructor, significant benefits in understanding, learning and information retention are gained when trainees are challenged to become involved in discussions, attempt table-top exercises and carry out practical deployments.

Classroom presentations typically involve an instructor imparting his or her knowledge and

experience to a group of trainees, often with the support of visual aids.

Trainees may have a particular interest in hearing about incidents that have occurred in their country or region, also the course aids will include:

- Group discussions and exercises
- Facilitated discussions
- Table-top exercises
- Manuals, workbooks and references
- Assessing competencies
- Certification and accreditation
- References and further reading

Course Objectives:

By the end of this course delegates will be able to:

- The maintenance required for the RO feed pump
- Preventative Care and Routine Maintenance
- Predictive maintenance and Data Log
- The internal and external parts for RO Feed water pump
- Understand both the amount of water and how the water will be used.
- Know the correct operating flows of the unit
- Changes in feedwater temperature and total dissolved solids

Course Outline:

1. **RO system**

- Prefiltration
- Booster Pump
- Pressure Pump

- Reverse Osmosis Membrane
- Instrumentation & Protective Features
- Frame
- Connections
- Chemical Injection System

2. Feed water source .

- Chemicals compassion
- Water treatment
- Pressure and temperature
- Flow rate
- Chemicals treatment
- Filters

3. Pump

- 3.1 Technical data
    - ❖ 3.1.2 Application range
    - ❖ 3.1.3 Electric motor data
    - ❖ 3.1.4 Noise and vibration .
    - ❖ 3.5 General arrangement .
    - ❖ 3.1.6 Space requirement
    - ❖ 3.1.7 Filtration
    - ❖ 3.1.8 Properties of water
    - ❖ 3.1.9 Air bubbles .
    - ❖ 3.1.10 Chemicals
- 3.2 Pumps
    - ❖ 3.2.1 Type of pumps
    - ❖ 3.2.2 Internal parts

- 3.2.3 External parts

4. Arrival inspection, transportation, handling, lifting and storage

5. Pre-maintenance (Installation and commissioning)

- 5.1 Important dimensions .
- 5.2 Cleanliness
- 5.3 Fluid temperature
- 5.4 Electrical data
- 5.5 Pre mounting checklist, based on preferred system design .
- 5.6 Lifting and positioning
- 5.7 Instrumentation .
- 5.8 Connections .
- 5.9 Ensure free flow .
- 5.10 Verify setting of safety/relief valves
- 5.11 Flush the pump .
- 5.12 Bleed and remove air from the pump
- 5.13 Verify direction of rotation .
- 5.14 Check the filter condition
- 5.15 Instruct operator and maintenance personnel

6. Operation of motor pump unit

- 6.1 General safety information
- 6.2 What to listen and look for

7. Maintenance and service of the pump unit .

- 7.1 General safety information
- 7.2 Service and inspection interval for the pump .
- 7.3 Shut down of the system
- 7.4 Disassembling and assembling the pump unit
- 7.5 Assembling the pump unit .