



Performance Monitoring of Industrial Pumps

Feb 14-16, 2018

(3 - Day Technical Program)



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Workshop Overview

Performance Monitoring of Industrial Pumps:

Pumps are the workhorse of the process industry and one of the most abundantly used machines in most industrial sectors and applications, whether it be chemical / petrochemical / fertilizer plants, refinery, water treatment or power generation, etc.

Monitoring a pump's performance and efficiency is a direct measure of an operating plant's KPI and also a priority for energy conservation. A poorly selected pump or one that does not run at its optimum design duty point is a classic example of wasted energy. Furthermore, a pump operating away from its duty point badly affects life of the seals, bearings, wear rings and shaft since radial forces in the pump are lowest at duty point and increase with its shift on either side. Therefore, to maintain the asset's integrity, and also to have a record of its efficiency, pump monitoring becomes a regular requirement.

We at FFC with our three operating plants are involved with a large variety of types and capacities of industrial pumps. Considering our experience of more than 30 years in operating plants with record efficiencies, we have designed this training workshop to share our knowledge with our colleagues from the local industry. This 3 day workshop is designed for low to mid-level experienced process and production engineers.

Major Topics Covered:

The training workshop covers the characteristics of various industrial pumps and their performance monitoring methods. The workshop focuses mainly on centrifugal pumps which are most commonly used in industry but also covers other types.

Our Approach is Interactive & Personal:

Prepared directly by process industry engineers, this training incorporates a hands-

on approach, with interactive lectures / group discussions more of a forum of technical executives; an environment quite different from typical training institutes.

Workshop Structure:

A day wise breakup of the program is included for a total duration of 3 days.

Our Inherent Expertise:

FFC has now been involved with imparting training to the local industry since more than a decade at our plant. Our workshop faculty are our brightest engineers selected from our running plants to deliver relevant and practical knowledge to our colleagues from other industries.

This training workshop is now being conducted at our Head Office in Rawalpindi by FFC's Engineering division with highly experienced professionals who have well established performance monitoring programs which has enabled our plants to demonstrate up to 140% of design capacities with service factor reaching as high as 99%.

Benefits:

This program will prove invaluable for process and operations engineers. The workshop will equip the participants with skills in performance monitoring of pumps. It will also help in optimizing pump operations at industrial units, reducing energy consumption and uprating existing pumping facilities.

The know-how will in turn help in timely planning of maintenance, identify extreme service conditions and avoid premature failures; thus improving reliability of the pumps and the whole industrial unit.

Target Audience:

This workshop is intended for :

- Process Engineers
- Operation Engineers

Day-wise Program



Day One:

* Theory of Pumping

- Requirement of pumping
- Pumps' flow, head
- Affinity laws

* Type of Pumps

- Constant head & capacity
- General Selection criteria

* Centrifugal Pump

- Pumps' flow
- Velocity triangle
- Internal flow & Energy losses
- Theoretical & Practical Head
- Characteristics Curves

Day Two:

* Performance of Centrifugal Pump

- Calculations of Head, Power, Efficiency
- Operating vs. Design conditions
- Calculation of NPSH
- Use of Software

* Effects of Piping System on Pumps

- System curve and throttling control.
- Friction losses in pipes
- Pumps operating point
- Effect of specific gravity

* Miscellaneous

- Capacity uprates of pumps
- Minimum flow requirement
- Pump drivers (motors, turbines)
- Parallel pumps operation
- Capacity Control Methods

- Mechanical aspects affecting performance

Day Three:

* Reciprocating Pumps & Performance

- Calculations of Head, Power, Efficiency
- Volumetric efficiency & Flow estimation

* Case Studies of Pumps

- High pressure trip on fluid density change
- Loss of lubrication
- Uprate of lube oil pumps
- Pump impeller pre-mature failure
- Cavitation of BFW pump

Instructors

Tehseen Ullah Khan, Deputy Manager - Engineering.

Mr. Tehseen Ullah Khan holds vast practical experience of 15 years as a Process Engineer in the industry. He has worked as Process Engineer at head office and all operational sites of FFC. Tehseen has contributed mainly toward upgrading old ammonia/urea complex, which included plant de-bottlenecking, upgradation of plant safety & control system and advanced safety/control systems for turbo-machinery. In addition, he possess considerable expertise in troubleshooting plant problems and performance gauging. He has special interest in process modelling for both dynamic and steady state using latest plant simulation software. He presents technical papers in international conferences like IFA and is also a Lifetime Member of the Pakistan Engineering Council (PEC).

Shawala Azhar, Deputy Executive - Process Engineering

Ms. Shawala Azhar is working as a Process Engineer in FFC since 2012. She has served both at Plant site and FFC Head Office, Rawalpindi. She has 6 years' experience in engineering studies regarding numerous plant modifications, process evaluations; plant monitoring, trouble shooting, optimization and catalysts replacement. She is also actively involved in feasibility evaluations, design and engineering of various sustainability and efficiency projects. Burner Management System upgrade, Synthesis machine uprate and Reforming section improvement studies are some of the major projects handled by Shawala. During her professional career, she has contributed as a speaker/trainer in seminars and professional trainings. She is also facilitating in strengthening academia and Industry linkages.

Workshop Dates :

The three-day training workshop will be held from 14-16 February 2018.

Venue:

The training will be conducted at FFC Head Office, SONA Tower situated opposite Pearl Continental Hotel (PC) on Mall Road in Rawalpindi Cantonment.

Training Fee:

The fee for our three-day training program is **Rs. 30,000/-** (excluding tax) per participant.

Discounts:

Early bird discount of 10% available for all nominations received before 15th Jan 2018.

Quality discount of additional 10% for 3 or more nominations from a organization.

Lunch & Refreshments:

Refreshment breaks during workshop along with lunch at our cafeteria during the 3 workshop days are included in cost.

Registration:

Please fill in our application form for registration and email at **trainings_ts@ffc.com.pk**. Confirmation will be sent within one week of registration.

Payment Mode:

Payment is due upon receipt of the acceptance letter along with the invoice. Please ensure that the payment reaches the office before the start of the program.

Our preferred mode of payment is by cheque / banker's draft payable to Fauji Fertilizer Company Limited.

Please send the cheque / draft to:

Technical Services (HO),

Fauji Fertilizer Company Ltd, Sona Tower,
156 - The Mall, Rawalpindi,
Tel: +92-51-8454840

Cancellation/Substitutes & Refund:

In case a registered participant is unable to attend, please inform at least 2 days before the workshop for any substitute participation. Cancellation is free up to 7 days before workshop start date (except for an application processing fee of Rs. 5,000). A refund will not be possible after that or in case of no show.



Participants Feedback:

"A very good initiative by FFC in achieving the milestone of promotion of Technical Platform for Pakistan"

"Welcoming questions about any topic & at even on 1st slide, Highly appreciate the vast knowledge of trainers"

"A good experience and a good technical forum for interaction between employees of different organizations"

For Queries Contact:

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