Best Technology Soultions **(BTS)**

Training Program

Pumps, Compressors & Turbines: Selection, Operation & Maintenance

Training Program

Introduction:

A complete understanding of construction details and functioning of pumps, compressors and turbines is a prerequisite for successful operation of plant and piping system. This is especially important nowadays when various models of this equipment still create in everyday operation various problems: mechanical, hydraulic, etc.

This course will feature the importance of proper operation and maintenance of rotating machinery such as pumps, compressors and turbines of various designs and applications, which are encountered throughout chemical and process industries, including oil refineries, gas production facilities, power generation and other fields of engineering. The course is intended to familiarize engineers, technicians and operators with the guidelines and best practices employed in utilizing this equipment, including installation, operation, maintenance and repair. The emphasis in this course will be on physical understanding of the problems in operation and the best way of troubleshooting them. The course will feature:

- Explanation of complex flow situations in pumps, compressors and turbines
- Principles of selection of right pump, compressor and turbine for the given application
- Practical issues related to trouble-free functioning of pumps, compressors and turbines
- Guidelines for installation, operation, maintenance and troubleshooting
- Maintenance and repair economic issues: cost and benefit analysis

Who Should Attend?

Mechanical Engineers, General Supervisors, Consulting Engineers, Design Engineers, Foremen, Supervisors, Technicians, Maintenance Personnel, Engineers of all disciplines, Supervisors, Team Leaders and Professionals in Maintenance, Engineering and Production Managers, Maintenance Personnel, Heads of Maintenance and Operation, Chemical Engineers, Equipment Specialists, Technical Engineers, Operation Engineers, Planning Engineers, Process Engineers, Reliability Specialists, Boiler Plant Construction Managers, Consulting Engineers, Design Engineers, Insurance Company Inspectors, Operation, Maintenance, Inspection and Repair Managers, Supervisors and Engineers, Plant Engineers, Senior Boiler Plant Operators, Repairers and Installers, Product Engineers and Technologists, Operation, technical service and maintenance professionals, Engineers, Consultants and Sales professionals, Technical professionals responsible for interdisciplinary energy projects

Course Objectives:

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

- Use methods of estimating the degree of deterioration and inefficiency of equipment
- Apply best practices and techniques of pinpointing the root cause of problems
- Understand technical features of pumps, compressors and turbines
- Select optimal type and size of equipment for a given industrial application
- Choose the most efficient remedies and troubleshooting techniques in operation

Course Outline:

Centrifugal Pumps

- Overview of various types of pumps based on design and application
- World standards and codes related to pump design
- Main elements of centrifugal pump construction
- Design of pump-suction piping

- Selection and sizing of centrifugal pump
- Solving problems in operation

Positive Displacement Pumps

- Positive displacement pumps: reciprocating and rotary
- Pump requirements for chemical, process and oil industry, power generation
- Pumps for special applications
- Guidelines for pump installation and operation
- Pump inspection, control and performance testing
- Maintenance and troubleshooting of pumps

Centrifugal Compressors

- Overview of the main features of various types of compressors
- Classification of compressors based on design and application
- World standards and codes related to compressor design
- Main elements of centrifugal compressor construction
- Analysis of centrifugal compressor efficiency
- Guidelines for trouble-free centrifugal compressor operation

Positive Displacement Compressors

- Positive displacement compressors: Reciprocating and Rotary
- Basic criteria for selecting the optimum cost-effective compressor
- Compressor loadings and speeds; noise control and protection
- Compressors for special applications
- Guidelines for compressor installation and operation
- Compressor inspection, maintenance, control, performance testing and troubleshooting

Industrial Gas Turbines

- Main elements and technical characteristics of gas turbine design
- Radial and Axial-flow gas turbines
- Combustor performance, types of fuels, combustion and pollution control
- Gas turbine deterioration, corrosion and erosion prevention
- Mechanical vibrations, monitoring, measurements, diagnostics and analysis
- Installation, operation, maintenance and troubleshooting of gas turbines