Advanced Industrial Water Management & Treatment Technologies

Course general description:

This comprehensive training program focuses on industrial water management, treatment technologies, and best practices. Participants will gain in-depth knowledge of water chemistry, treatment processes, and practical applications in industrial settings. The course combines theoretical concepts with real-world case studies, hands-on exercises, and interactive sessions to ensure effective learning.

Audience:

This course is designed for:

1. Industrial process engineers and operators
2. Water treatment plant operators and supervisors
3. Environmental compliance officers
4. Manufacturing facility managers
5. Quality control personnel
6. Project engineers involved in water treatment systems
7. Industrial wastewater treatment specialists
8. Plant maintenance engineers and technicians.

Course objectives:

Upon completion, participants will be able to:

1. Understand fundamental principles of industrial water chemistry and quality parameters
2. Evaluate and select appropriate water treatment technologies for specific applications
3. Design and optimize water treatment processes
4. Implement effective water management strategies
5. Troubleshoot common water treatment problems
6. Ensure compliance with environmental regulations
7. Apply best practices for water conservation and reuse

Course duration:

5 days

Course location:

Dubai

Course contents:

Day-1

- Pretest
- Overview of industrial water systems and fundamental water chemistry.
- Understanding impurities, water quality parameters, and testing methods.
- Techniques for water sampling and laboratory analysis, including corrosion and scale control.
- Exploring microbiological aspects, biofilm control, and chemical treatments.
- Overview of water quality standards and regulations.

Day-2

- Introduction to mechanical and media filtration, and membrane technologies like reverse osmosis.
- Ion exchange processes for softening and de-alkalization.
- Techniques for clarification, sedimentation, and chemical precipitation.
- Coagulation, flocculation, and dissolved air flotation processes.
- Design considerations for primary treatment systems.

Day-3

- Exploring advanced oxidation, UV treatment, ozonation, and electrodeionization.
- Treatment methods for boiler, cooling, and process water systems.
- Zero liquid discharge systems and wastewater recovery techniques.
- Membrane bioreactors, emerging technologies, and industrial case studies.

Day-4

- Process control, automation, and online monitoring for water systems.
- Data analysis, performance optimization, and troubleshooting techniques.
- Preventive maintenance and emergency response strategies.
- Chemical handling, environmental compliance, and documentation.
- Strategies for cost optimization in water system operations.
- **Day-5**
- Water conservation methods and environmental sustainability initiatives.
- Economic evaluation of treatment technologies.
- Review of key concepts covered during the course.
- Final assessment and course conclusion.

Methodology:

- 50% lectures & concepts
- 10% Videos
- 15% Case studies
- 15% Exercises
- 10% Discussions

Course code: (TPRS052)