



WE015: Advanced Wastewater Treatment Technology





Training Description:

Process industries remain under pressure to reduce effluent volumes and pollutants. Effluent treatment technologies have accordingly increased their sophistication and industrial users are now expected to deploy dedicated units of high efficiency which reliably achieve targets, are robust in operation and generate minimal collateral waste.

The course provides a thorough introduction to wastewater treatment technology, covering the full range of physical, chemical and biological processes available. Process selection is approached from first principles, based on the fundamental character of the effluent, but is grounded in practical and economic reality. The treatment and disposal of resulting wastes, especially solids, can be critical in process selection, and this issue is also addressed. The course includes an introduction to the principles of regeneration, reuse and recycle, and describes latest trends and developments. As such it equips both the individual engineer and the organization to act as the 'intelligent buyer' in specifying plant and assessing the claims of vendors.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Learn the purpose, principles of operation and limitations of different treatment technologies
- ✓ Understand how the nature of the wastewater stream(s) informs plant and process selection
- ✓ Understand the downstream and collateral impact of treatment technologies, especially ultimate disposal options
- ✓ Understand concepts of regeneration and recycle systems
- ✓ Prepare for practical problems and real-life projects
- ✓ Learn the design principles and functional design and design basic for each advanced treatment technologies

Organisational Impact:

- ✓ Empower personnel with skills required to handle effluent treatment design, analysis and selection
- ✓ Enable competence in new and revamped wastewater process projects
- ✓ Ensure that the right effluent treatment technology is selected
- ✓ Improve awareness when communicating with vendors and consultants
- ✓ Better poise for future challenges in the field

Personal Impact:

- ✓ Improve skills and impact on the development of effluent treatment projects
- ✓ Promote creativity in the selection and specification of new wastewater treatment plant
- ✓ Enhance ability to troubleshoot and improve existing wastewater installations
- ✓ Familiarize with the latest developments in effluent treatment technology

Training Designed for:

This course is intended for all Engineers with training needs in effluent treatment and a need for a better understanding of the available technologies as well as those practitioners who wish to improve their knowledge and skills in wastewater treatment projects and communicate efficiently with vendors as an 'intelligent buyer'.



Training Program:

DAY ONE:

- ❖ Pre-Test
- ❖ Introduction and Basics of Wastewater Treatment
 - Primary sources of process waste and effluent streams
 - Measures of contamination; individual and collective
 - Effluent treatment objectives and strategy
 - Wastewater treatment as a separation process

DAY TWO:

- ❖ Mechanical, Physical and Chemical Primary Processes
 - Solid-liquid and liquid-liquid separations
 - Precipitation and flocculation
 - Chemical oxidation and reduction processes
 - Column processes - stripping and extraction

DAY THREE:

- ❖ Biological Primary Processes
 - Classifying and targeting biological processes
 - Aerobic processes - principles, selection and sizing
 - Anaerobic processes
 - Biological nitrogen and phosphorus removal
 - Troubleshooting bioprocesses

DAY FOUR:

- ❖ Polishing Processes and Solid Waste Handling
 - Membrane processes - reverse osmosis, electro dialysis and desalination
 - Ion exchange and adsorption processes
 - Solid waste treatment and disposal - the tail that wags the dog?
 - Treating and conditioning solid wastes for disposal
- ❖ Process Selection and Integration
 - Process selection 'rules of thumb'
 - Introduction to effluent system optimization
 - Regeneration, reuse and recycle
 - Emerging technologies, new concepts and future trends in effluent treatment Difficult Clients

DAY FIVE:

- Design principles and functional design and design basic for each advanced treatment technologies
- Solar Technology for wastewater treatment plant application
- EBNR – Enhanced Biological Nutrient Removal system configuration
- Bio gas harvesting from sludge digester technology
- Sludge to energy technology, etc.
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION





Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request”.

Please note that the above topics can be amended as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

For training registrations or in-house enquiries, please contact:

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Training & Career Development Department

