

OPERATE WATER WELL, TRANSFER AND NETWORK SYSTEM

COURSE OUTLINE 2024

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TRAINING TITLE

OPERATE WATER WELL, TRANSFER AND NETWORK SYSTEM

<u>VENUE</u>

DUBAI, UAE

DURATION

5 Days

<u>DATES</u>

09 - 13 December 2024

PRICE

\$5,250 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch.

TRAINING INTRODUCTION

This comprehensive training program covers water well operation, treatment, and maintenance.

This water network systems operations and maintenance training course provides practical skills and knowledge and safe practices and procedures in operating and maintaining water distribution systems and networks.

This course is designed to cover related topics such as water distribution system operators, procedures operations and maintenance for clear wells, storage tanks, functional elements, components and features of distribution system facilities, operating and maintaining distribution systems and networks, maintaining water quality in the network, disinfecting new and repaired facilities, and methods and techniques for hazard control and safe procedures and programs.

Determine how your well is maintained. While you will have to fix your water well if it experiences issues, you won't ever have to feel like you have no control over your water source. A municipal water source is easy and convenient for town and city dwellers. However, if something goes wrong, everyone who depends on that source faces issues. With preventative maintenance, wells can last for decades without any major issues. While initial installation, periodic repair, and regular maintenance carry their costs, the water well more than pays for itself in its perpetual supply of water. You aren't stuck with hefty monthly water bills or fees to the city for rights to their water. You simply pump the water right from your well into your home—free of charge. We hope that this guide will help you understand the basics of owning a water well and what is needed to maintain it properly. It will help you with common terminology, tips, water-quality equipment, and schedules for preventative maintenance.

TRAINING OBJECTIVES

- Understand the fundamentals of a water network system.
- Water well chemical treatment
- List Characteristics of the water network system and distribution system operation and Maintenance.
- Operate water network system.
- Maintain a water network system.
- Test and control water in a water network system.
- Design and read a water network map.
- List water quality considerations in distribution systems and water networks.
- List Disinfection and safety procedures and best practices.
- Use applications and tools to analyze, operate, and design a water network.
- Determine the role of the water distribution system operator.

TRAINING AUDIENCE

This course has been researched and developed for Experienced Managers, Superintendents, Supervisors, Engineers, Planners, Team Leaders and Coordinators of:

- Water well control and operations staff
- Water Handling Controller
- Water Handling Field Operator II

TRAINING OUTLINE

Day (1):

Introduction to Water Systems Networking

- Anatomy of a water system
- Water system classifications
- Water systems networks
- Classification of water systems
- Water supply system concepts
- Fundamental considerations
- Water distribution systems
- Continuous availability of water supply
- Water supply considerations
- Water treatment plants
- Water quality monitoring
- Water distribution system design concepts
- Water supply source classifications
- Water system components
- Calculate capacities and volumes, head and pressure, and flow rates
- Water purification processes
- Calculate chemical dosage
- Describe the disinfection process and the chemicals used in a water network system
- Type of water network system and modern water network system
- A brief history of the water network
- Network hydraulics, fluid properties and theory
- Source and chemical characteristics of water
- Pre-treatment and water standards
- Potable water quality management
- Water sampling procedures and analysis
- Pressure drop calculations in different water networks and fittings
- List the type and applications of typical water storage facilities

Day (2): Importance of Operation and Maintenance

- What is Operation and Maintenance (O&M)?
- Cost-effective, efficient, and sustainable water systems
- O&M built into operational programs
- Constrains of Operation and Maintenance
- Scope of work of the O&M Network
- Available O&M Tools
- Case Study
- Promoting Operation and Maintenance
- Design of system management
- Training
- Spare parts
- Finance
- Examples of Inappropriate O&M
- Water Leakage Prevention Measure
- Corrective Measures
- Preventive Measures
- Technology Development
- Leakage Survey
- Leakage Repair
- Pipe Laying and Construction Supervision
- Piping Design Procedure/Process
- Supervision System
- O&M requirements

Day (3):

Protection for Water Network Systems

- Line protection function
- Valves, pumps, pipe protection
- Transformer protection function
- Compensator protection function

- Busbar protection function
- Circuit-breaker, backup protection function
- Monitoring and evaluation function
- Key Issues for Improvement of O&M
- Operation and maintenance requirements
- Monitoring for effectiveness
- Planning tools

Day (4): Operation and Management (O&M) of a Water Network System

- The Supply and Operation
- Water network major components
- Mechanical and electrical system components
- Water-gate, valves, stop cocks, motors, and instruments
- Hydraulic of water system networking
- Water network system design
- Pipeline materials, Type and design
- Distribution and transmission system valves (operation, installation, check and control)
- Water pump type, selection, installation, operation, and intakes.
- System design for water pumping
- Variable-speed pumping
- Operation and management of a water network (daily operation)
- Monitoring process information
- Operation records and reports
- Electrical control systems

Day (5):

Maintenance of Water Network Systems

- Test the water network system
- Failure mode for the water network system
- Flow problem and control

- Pressure problem and control
- Test and control valves, pipes, pumps and switches
- Problem and reduce vibration and noise
- o Investigation of system contamination
- Take off-line
- Shutting down system
- Power outages
- Power Consumption
- Water distribution system flushing
- Leakage prevention and control;
- Maintenance and adequate disinfectant residual
- Friction losses
- Maintenance information system
- Retrofitting the existing water pumping system
- Daily operation problems and repairs
- Security, Safety, and Administrative Procedures
 - Water Network System Security
 - Health and Safety Regulation
 - Hazardous Materials and Safety
 - Normal/abnormal conditions
 - Normal characteristics of water Chemical
 - Monitor, evaluate, and adjust chlorine disinfection
 - Ability to calculate dosage rates
 - Inspect, maintain, and repair flow measurements
 - Inspect, maintain, and repair well operation
 - Diagnose/troubleshoot process units
 - Leak detection
 - Processes in normal operating condition
 - Disinfectants concepts and properties
 - Disinfectant processes and design parameters
 - Disinfection calculations
 - Proper handling and storage of disinfectants
 - Lifting procedures
 - Regulations

- Microbiological
- Safety plans and apply safety procedures
- Safety hazards verbally and in writing
- Safe work habits
- Chemical hazard communication
- Electrical grounding
- Potential impact of disasters on the facility
- Slips, trips, and falls

TRAINING CERTIFICATE

MAESTRO CONSULTANTS Certificate of Completion for delegates who attend and complete the training course.

METHODOLOGY

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of "real life" issues in their organizations. The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.