Reverse Osmosis Design & Installation

Aquasolve College of Science & Technology (ACST)

Programme Overview

Duration: 7 days (56 hours)
Level: Specialist
Focus: Practical RO system design, installation, and troubleshooting

RO Theory & Membrane Science

• Osmosis vs reverse osmosis
• Semi-permeable membrane technology
• Salt rejection and water flux
• Concentration polarisation
• Recovery rate and brine management

Feed Water Analysis & Pre-Treatment

• SDI (Silt Density Index) testing
• Pre-treatment requirements: multimedia filtration, carbon, softening
• Antiscalant selection and dosing
• Feed water quality limits for membranes
• Case study: Ghana borehole water pre-treatment

RO System Design

• Sizing pumps and pressure vessels
• Array configurations: 1-stage, 2-stage, single-pass, double-pass
• Energy recovery devices
• Design software: WAVE, ROSA, IMSDesign
• Piping and instrumentation diagrams (P&IDs;)

Installation & Commissioning

• Membrane installation procedures
• System flushing and sterilisation
• Start-up sequence and parameter setting
• Performance testing and acceptance criteria
• Documentation and handover

Operation & Maintenance

• Daily monitoring: pressure, flow, conductivity, pH

• Membrane cleaning schedules
• CIP chemical selection (Membraclean A & B)
• Membrane replacement criteria
• Common faults: low flux, high salt passage, pressure drop

Troubleshooting & Optimisation

• Diagnosing scaling, fouling, and degradation
• Normalising performance data
• Water quality troubleshooting
• Cost optimisation: energy, chemicals, membrane life
• Real-world case studies from Ghana

Practical Components

This programme includes hands-on training at Aquasolve's training facility with a fully operational 500 L/hr RO system. Participants will perform membrane installation, CIP procedures, and system commissioning under supervision.

Fee: GHS 5,500 per participant | **Registration:** victoria@aquasolvewater.com