
Smart Water Systems Training Course: Sensors, Leakage Analytics and Digital Tools

10 – 14 May 2027
Vienna





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Programme Summary

Smart water systems are the subject of this one-week training course for water utility managers and infrastructure leaders, ending in a smart water roadmap for one utility network or treatment system. Utilities hold more meter, pressure, flow and plant data than ever, yet losses, failures and complaints are often still found late. The programme links sensing, leakage analytics, network and treatment optimisation, asset condition and data governance into one investment case, applying each tool to a system the participant manages. Mars Training Centre UK delivers this programme on smart water systems to mixed-organisation cohorts.

The Business Case

Water that is produced but not billed, pipes that fail without warning and treatment plants run by habit all raise cost and weaken service. Where smart water systems are bought as separate devices, utilities collect data nobody acts on and platforms that staff do not trust. Leaders who match each technology to a specific loss, failure or energy problem, and agree data ownership and security first, can fund the right projects and show results.

- Non-Revenue Water Share: Falls as leakage, metering and billing losses are located and ranked.
- Unplanned Network Failures: Fall as asset condition and pressure patterns are read early.
- Energy and Chemical Use: Improve as treatment and pumping decisions follow measured demand.

Principles and Evidence Base

- ISO 24512: The guidelines for management of drinking water utilities frame the service and performance questions in Sessions 1 and 5.
- ISO 55001: The asset management system requirements shape the condition and renewal work in Session 4.
- NIST AI Risk Management Framework: Its govern, map, measure and manage functions guide the oversight of analytical models in Session 4.

Intended Participants

- Utility managers who own network performance, losses and customer service.
- Operations leaders who run treatment plants, pumping and control rooms.
- Asset and planning leaders who decide renewal and capital priorities.
- Digital and data leaders who select and support water technologies.
- Finance and regulatory liaison leaders who test investment cases.

Typical sectors include municipal water supply, wastewater, industrial water and district cooling.



Learning Outcomes

1. Participants will be able to evaluate where sensing and metering close the largest data gaps in a water system.
2. Participants will be able to diagnose leakage and non-revenue water components from flow and pressure data.
3. Participants will be able to prioritise network and treatment optimisation options by benefit and effort.
4. Participants will be able to assess asset condition evidence and digital twin outputs for renewal decisions.
5. Participants will be able to construct data ownership and cyber security rules for water technologies.
6. Participants will be able to justify a phased investment roadmap to executives.

Programme Structure

Day 1: Smart Water Systems and Performance Baselines

Which losses, failures and costs should technology address first?

- Water Balance Baseline Sheet
- Service Performance Indicator Set
- Data Source Inventory
- Problem and Technology Matching Table
- Utility Pain Point Map

Day 2: Sensing, Metering and Data Quality

Where should sensors and meters go, and can their data be trusted?

- District Metering Layout
- Pressure and Flow Sensor Plan
- Smart Meter Reading Review
- Data Quality Rule Set
- Communication Network Options Table

Day 3: Leakage and Non-Revenue Water Analytics

How are losses located, sized and ranked for action?

- Minimum Night Flow Analysis
- Burst and Leak Alert Logic
- Apparent Loss Screening Checklist
- Intervention Ranking Matrix
- Loss Reduction Tracking Chart



Day 4: Optimisation, Asset Condition and Digital Twins

How do models support pumping, treatment and renewal choices?

- Pump Scheduling Scenario
- Treatment Dosing Trend Review
- Pipe Failure Risk Scoring
- Digital Twin Use Case Brief
- Model Governance Register

Day 5: Applying the Tools to One Water System

Do the baseline, data, loss and asset tools support one roadmap?

- Applying the Session 1 Water Balance Baseline Sheet
- Using the Session 2 District Metering Layout
- Testing the Session 3 Intervention Ranking Matrix
- Checking the Session 4 Model Governance Register
- Completing the Smart Water Roadmap

Methodology

The programme uses a data workshop method built on anonymised flow, pressure, meter and plant records from supply and treatment systems. Participants work in peer groups on a shared network, challenge each other's readings of the data and receive written facilitator feedback on each exercise set before turning to a system of their own.

- Suggested activity: Reading a night flow profile to separate leakage from legitimate use.
- Suggested activity: Ranking ten sensor locations by value of information.
- Suggested activity: Drafting access rules for a shared utility data platform.

Capstone Output

Each participant completes a smart water roadmap for one utility network or treatment system. It holds a water balance baseline, a sensing and metering plan, a loss reduction ranking, an asset risk summary, data and security rules, and a phased investment case. The roadmap is used at work to brief executives, direct the first funded projects and set the measures for tracking results.

Frequently Asked Questions

Is smart water systems training suitable for managers who are not data specialists?

Yes. Smart water systems training assumes responsibility for a water network, plant or programme and explains data methods in operational terms, without coding or advanced statistics.



Which standards do smart water systems rest on in this programme?

Smart water systems rest on ISO 24512 for utility service management, ISO 55001 for asset management and the NIST AI Risk Management Framework for model oversight.

How is the roadmap from smart water systems used at work?

You use the smart water roadmap to brief executives, direct the first funded projects and set the measures for tracking results.

How does smart water systems training differ from reverse osmosis plant training?

Smart water systems training centres on data, analytics and investment across networks and treatment, while reverse osmosis plant training centres on membrane performance and cleaning in a single process.