Power Plant Steam-Water Cycle Chemistry and Monitoring Course

16 – 20 May 2027
Johannesburg

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Ref: 954_172799 **Date:** 16 – 20 May 2027 **Location:** Johannesburg **Fees:** 6000 Euro

Overview

Power Plant Steam-Water Cycle Chemistry and Monitoring Course is a 1-week course for plant chemists, water treatment specialists, laboratory professionals, operations engineers, maintenance teams, and reliability staff who leave with a Steam-Water Chemistry Monitoring and Response Portfolio. Participants connect treatment regimes, representative sampling, online analyzers, laboratory assurance, corrosion products, deposits, steam purity, and chemistry excursions to operating decisions. Agile Leaders Training Center delivers this course on power plant cycle chemistry.

Who Should Attend

- Teams responsible for feedwater, boiler-water, condensate, and steam chemistry control.
- Functions responsible for demineralization, condensate polishing, and treatment-system performance.
- Groups responsible for sampling systems, online analyzers, and laboratory data quality.
- Operations teams responsible for chemistry alarms, excursions, and coordinated response.
- Reliability functions responsible for corrosion, deposits, tube condition, and outage evidence.

The course assumes participants can interpret plant chemistry measurements and process flow diagrams at work, and leaves out introductory analytical chemistry and detailed equipment design.

Departments and Industries

The course supports steam-water chemistry decisions across power generation and steam-using industries.

- Power plant chemistry, water treatment, and laboratories
- Operations, maintenance, commissioning, and reliability
- Thermal generation and combined-cycle facilities
- Industrial utilities, process plants, and cogeneration
- Engineering support and technical assurance functions

Learning Objectives

By the end of this course, participants will be able to:

- Analyze steam-water circuit risks, metallurgy, and treatment needs.
- Compare volatile, oxygenated, phosphate, and caustic treatments.
- Evaluate sampling, analyzer, and laboratory evidence quality.
- Diagnose corrosion, deposition, contamination, and air in-leakage.
- Build chemistry excursion limits, response paths, and records.
- Prioritize monitoring, corrective action, and verification tasks.

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Course Agenda

Day 1: Cycle Chemistry Foundations

- Steam-Water Circuit and Metallurgy Exposure Map
- IAPWS Cycle Chemistry Guidance Applicability Review
- Feedwater, Boiler-Water, Condensate, and Steam Quality Matrix
- Corrosion, Deposition, and Carryover Mechanism Map
- Plant Chemistry Risk and Control Objective Register

Day 2: Treatment and Water Systems

- Volatile and Oxygenated Treatment Selection Matrix
- Phosphate and Caustic Drum-Boiler Treatment Review
- Demineralization Train Performance Diagnostic
- Condensate Polishing and Contaminant Removal Map
- Chemical Dosing, Storage, and Control Verification Sheet

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Day 3: Sampling and Measurement Assurance

- Representative Sample Point and Conditioning Plan
- Online Conductivity, pH, Oxygen, and Silica Analyzer Review
- Analyzer Calibration and Data Validation Record
- Laboratory Method, Blank, Standard, and Control Chart
- Chemistry Dashboard and Data Reconciliation Method

Day 4: Damage and Excursion Response

- Iron and Copper Corrosion Product Trending Method
- Deposit Sampling and Chemical Cleaning Decision Evidence
- Steam Purity and Boiler-Water Carryover Assessment
- Air In-Leakage and Condenser Contamination Diagnostic
- Chemistry Excursion Severity and Response Decision Tree

Day 5: Cycle Chemistry Practice

- Suggested Exercise: Treatment Regime Selection
- Suggested Exercise: Sampling and Analyzer Data Validation
- Suggested Exercise: Corrosion and Deposit Trend Diagnosis
- Suggested Exercise: Chemistry Excursion Response Planning
- Capstone Exercise: Steam-Water Chemistry Monitoring and Response Portfolio

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Practical Exercises

The course uses suggested activities to integrate treatment selection, evidence quality, damage diagnosis, and response.

- Suggested activity: compare treatment regimes against circuit design, metallurgy, operating mode, and measured conditions.
- Suggested activity: identify sampling and analyzer errors by reconciling online and laboratory evidence.
- Suggested activity: interpret corrosion-product, deposit, carryover, and steam-purity trends.
- Suggested activity: build an excursion decision tree with actions, responsibilities, and verification points.

FAQs

Who suits power plant cycle chemistry training, and what does it assume?

Plant chemistry, water treatment, laboratory, operations, maintenance, and reliability teams suit the course. It assumes participants can interpret chemistry measurements and process diagrams, while introductory analytical chemistry and detailed water-treatment equipment design remain outside scope.

How does steam-water cycle chemistry differ from general water treatment training?

Steam-water cycle chemistry connects treatment, sampling, analyzers, corrosion, deposits, steam purity, and excursions to the operating power cycle, while general water treatment training may focus more broadly on raw-water processes and treatment-plant equipment.

Why are representative sampling and online analyzers important in cycle chemistry?

Representative sampling and reliable analyzers provide timely evidence of the actual steam-water circuit, allowing teams to detect contamination, verify treatment conditions, reconcile laboratory results, and act before abnormal chemistry persists.

How are power plant chemistry excursions investigated?

Chemistry excursions are investigated by confirming the measurement, checking sample conditioning and analyzer status, tracing process changes, comparing related parameters, reviewing treatment inputs, assessing damage risk, and documenting corrective action and verification.

What does corrosion-product monitoring show in a steam-water cycle?

Corrosion-product monitoring shows how iron- and copper-bearing material moves through the cycle, supports trend comparison across operating conditions, and provides evidence for treatment review, deposit assessment, maintenance planning, and corrective action.

Conclusion

Participants take back a Steam-Water Chemistry Monitoring and Response Portfolio linking treatment regimes, samples, analyzers, laboratory controls, corrosion products, deposits, purity, excursions, and actions. The portfolio improves coordination among chemistry, operations, maintenance, and reliability teams. It turns measurement evidence into traceable chemistry decisions and verification records.