

# **OPERATIONAL EXCELLENCE ELEMENT**

## **ELEMENT No. 3**

### **PURIFICATION PLANT OPERATION PROCESSES**

Generated: 8/28/2025

WSM Operational Excellence Framework

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## **1. ELEMENT OVERVIEW**

Element Number: 3

Element Title: Purification Plant Operation Processes

Status: Active

Total Associated Processes: 13

### **Description:**

Comprehensive plant management system covering all aspects of plant operations from data input and design through construction, operations, financial management, and decommissioning. Includes strategic planning, clustering analysis, mobile units, and operational excellence programs.

### **Timeline Information:**

Created: 8/27/2025

Last Updated: 8/27/2025

## **2. ASSOCIATED PROCESSES**

This element contains 13 associated processes that define the operational procedures and standards. Each process includes detailed steps, responsibilities, and performance measures to ensure consistent execution and continuous improvement.

### **2.1 OE-3.1: PLANT DATA INPUT**

#### **Process Information:**

Process Number: OE-3.1

Process Name: Plant Data Input

Status: active

Revision: 1

Process Owner: Data Management Coordinator

Issue Date: 8/27/2025

#### **Process Description:**

Comprehensive plant data entry system covering all categories with map uploads, P&IDs documentation, and database submission capabilities for complete plant information management.

#### **Expectations:**

This process ensures comprehensive plant data collection and documentation across all operational categories with proper digital asset management and database integration.

### Detailed Process Steps (3 steps):

#### Step 1: Enter plant data across all categories

Details: Comprehensive data entry covering all plant operational categories including technical specifications, capacity, location, and operational parameters

#### Step 2: Upload maps, plans, and P&IDs

Details: Digital documentation upload including site maps, engineering plans, process and instrumentation diagrams, and technical drawings

#### Step 3: Submit data to database

Details: Final data validation and submission to central plant database with quality control checks

### Performance Measures (2 measures):

#### 1. Data Entry Accuracy Rate

Formula:  $(\text{Accurate data entries} / \text{Total data entries}) \times 100$

Target: "e 99.5 %

Frequency: Daily

Source: Plant Data Management System

#### 2. Data Entry Timeliness

Formula: Average time from data collection to system entry

Target: "d 2 hours

Frequency: Weekly

Source: Process Tracking System

## 2.2 OE-3.10: OPERATIONAL EXCELLENCE PROGRAM

### Process Information:

Process Number: OE-3.10

Process Name: Operational Excellence Program

Status: active

Revision: 1

Process Owner: Operational Excellence Manager

Issue Date: 8/27/2025

### Process Description:

Performance optimization system for portfolio assessment, efficiency benchmarking, plant excellence rating, and best practices library implementation.

### Expectations:

This process ensures continuous operational excellence with comprehensive performance assessment and best practices implementation for optimal plant operations.

### Detailed Process Steps (4 steps):

#### Step 1: Assess portfolio performance metrics

Details: Comprehensive assessment of plant portfolio performance using key operational metrics

#### Step 2: Benchmark efficiency & uptime

Details: Performance benchmarking analysis comparing efficiency and uptime metrics across plants

#### Step 3: Rate plant excellence level

Details: Excellence rating system for evaluating and scoring plant operational excellence levels

#### Step 4: Apply best practices library

Details: Implementation of best practices from operational excellence library for continuous improvement

### Performance Measures (2 measures):

#### 1. Employee Engagement Score

Formula: Percentage of employees actively participating in OE activities

T a r g e t : "e 7 5 %

Frequency: Semi-annually

Source: HR Management System

#### 2. OE Initiative Success Rate

Formula: (Completed OE initiatives / Total planned initiatives) × 100

T a r g e t : "e 8 0 %

Frequency: Quarterly

Source: Program Management System

## 2.3 OE-3.11: WATER PURCHASE AGREEMENT MANAGEMENT

### Process Information:

Process Number: OE-3.11

Process Name: Water Purchase Agreement Management

Status: active

Revision: 1

Process Owner: Contract Manager

Issue Date: 8/27/2025

### Process Description:

Contract management system for WPA administration including contract registration, pricing management, status tracking, and supporting documentation oversight.

### Expectations:

This process ensures effective water purchase agreement management with comprehensive contract oversight and pricing optimization for cost-effective water sourcing.

### Detailed Process Steps (4 steps):

#### Step 1: Register WPA contracts

Details: Contract registration system for water purchase agreements with comprehensive contract data

#### Step 2: Record pricing (fixed, CCR, variable)

Details: Pricing structure management including fixed, cost component ratio, and variable pricing models

#### Step 3: Track status (complete, partial, missing)

Details: Contract status tracking system monitoring completion, partial fulfillment, and missing elements

#### Step 4: Manage supporting documents

Details: Document management system for contract supporting documents and compliance records

### Performance Measures (2 measures):

#### 1. Agreement Compliance Rate

Formula: Percentage of water purchase agreements meeting all terms

T a r g e t : " e 9 8 %

Frequency: Monthly

Source: Contract Management System

#### 2. Water Cost Optimization

Formula: Cost savings achieved through agreement negotiations

T a r g e t : " e 3 % c o s t r e d u c t i o n

Frequency: Quarterly

Source: Procurement Management System

## 2.4 OE-3.12: MOBILE UNITS MANAGEMENT

### Process Information:

Process Number: OE-3.12

Process Name: Mobile Units Management

Status: active

Revision: 1

Process Owner: Mobile Operations Manager

Issue Date: 8/27/2025

### Process Description:

Mobile asset management system for tracking unit repository, monitoring deployment status, managing capacity and technology specifications, and overseeing maintenance operations.

### Expectations:

This process ensures effective mobile unit management with comprehensive asset tracking and deployment optimization for flexible operational capacity.

### Detailed Process Steps (4 steps):

#### Step 1: Track repository of mobile units

Details: Comprehensive tracking and inventory management of mobile unit repository

#### Step 2: Monitor deployed & under-maintenance units

Details: Real-time monitoring of mobile units deployment status and maintenance schedules

#### Step 3: Record unit capacity, technology & location

Details: Technical specifications management including capacity, technology type, and location tracking

#### Step 4: Manage deployment status

Details: Deployment management system for tracking unit assignments and operational status

### Performance Measures (2 measures):

#### 1. Mobile Unit Availability

Formula: Percentage of time units are available for operation

T a r g e t : "e 9 5 %

Frequency: Weekly

Source: Maintenance Management System

#### 2. Mobile Unit Utilization Rate

Formula: (Operational hours / Available hours) × 100

T a r g e t : "e 8 5 %

Frequency: Monthly

Source: Asset Management System

## 2.5 OE-3.13: PLANT PROFIT & LOSS STATEMENTS

### Process Information:

Process Number: OE-3.13

Process Name: Plant Profit & Loss Statements

Status: active

Revision: 1

Process Owner: Financial Analyst

Issue Date: 8/27/2025

### Process Description:

Financial analysis system for comprehensive P&L management including revenue calculation, cost analysis, profit computation, and budget variance reporting.

### Expectations:

This process ensures comprehensive financial analysis with detailed P&L tracking and variance analysis for optimal financial performance management.

### Detailed Process Steps (5 steps):

#### Step 1: Select plant for P/L analysis

Details: Plant selection interface for profit and loss analysis with filtering and selection capabilities

#### Step 2: Calculate revenue (fixed + variable)

Details: Revenue calculation system including fixed revenue components and variable income streams

#### Step 3: Calculate costs (energy, chemicals, labour, maintenance)

Details: Comprehensive cost calculation covering energy, chemicals, labor, and maintenance expenses

#### Step 4: Compute net profit & margin

Details: Net profit and margin calculation with profitability analysis and performance metrics

#### Step 5: Compare budget vs actual variances

Details: Variance analysis comparing budgeted versus actual financial performance with trend analysis

### Performance Measures (2 measures):

#### 1. P&L Accuracy

Formula: Percentage of P&L line items within  $\pm 2\%$  of actual

Target: "e 9 5 %"

Frequency: Monthly

Source: Financial Reporting System

#### 2. Reporting Timeliness

Formula: Number of days after month-end to complete P&L

Target: "d 5 business days"

Frequency: Monthly

Source: Financial Management System

## 2.6 OE-3.2: PLANTS UNDER DESIGN

### Process Information:

Process Number: OE-3.2

Process Name: Plants Under Design

Status: active

Revision: 1

Process Owner: Design Engineering Manager

Issue Date: 8/27/2025

### Process Description:

Registration and management system for plants in design phase including design documentation, progress tracking, and detailed analysis capabilities for pre-construction planning.

### Expectations:

This process ensures systematic management of plants during design phase with proper documentation and progress tracking for successful project delivery.

### Detailed Process Steps (4 steps):

#### Step 1: Register plant under design

Details: Initial registration of new plant in design phase with basic project information and design parameters

#### Step 2: Add design notes & documentation

Details: Comprehensive design documentation including technical notes, specifications, and engineering requirements

#### Step 3: View plant details

Details: Review and access complete plant design information and project status

#### Step 4: Review distance & cluster analysis

Details: Analyze plant location relative to existing facilities and evaluate clustering opportunities

### Performance Measures (2 measures):

#### 1. Design Quality Index

Formula: Number of design issues identified in review

Target: "d 5 i s s u e s p e r p r o j e c t"

Frequency: Per Project

Source: Quality Review Reports

#### 2. Design Schedule Performance

Formula:  $(\text{Actual design completion} / \text{Planned design completion}) \times 100$

Target: "e 9 5 %"

Frequency: Monthly

Source: Project Management System

## 2.7 OE-3.3: PLANTS UNDER CONSTRUCTION

### Process Information:

Process Number: OE-3.3

Process Name: Plants Under Construction

Status: active

Revision: 1

Process Owner: Construction Manager

Issue Date: 8/27/2025

### Process Description:

Construction phase management system including plant registration, progress tracking, documentation management, and detailed assessment capabilities for active construction projects.

### Expectations:

This process ensures effective construction phase management with real-time progress tracking and comprehensive documentation for successful project completion.



### Detailed Process Steps (4 steps):

#### Step 1: Register construction plant

Details: Register plant entering construction phase with project timeline and construction parameters

#### Step 2: Track construction progress

Details: Monitor and update construction milestones, progress reporting, and project timeline management

#### Step 3: Upload construction documentation

Details: Document management for construction records, permits, inspections, and compliance documentation

#### Step 4: View plant details & assessment

Details: Access comprehensive plant information and construction assessment reports

### Performance Measures (2 measures):

#### 1. Construction Progress

Formula:  $(\text{Actual construction completion} / \text{Planned completion}) \times 100$

Target: "e 90 %

Frequency: Weekly

Source: Construction Management System

#### 2. Safety Incident Rate

Formula: Number of safety incidents per 200,000 work hours

Target: "d 0.5 incidents

Frequency: Monthly

Source: Safety Management System

## 2.8 OE-3.4: OPERATING MODEL SELECTION

### Process Information:

Process Number: OE-3.4

Process Name: Operating Model Selection

Status: active

Revision: 1

Process Owner: Operations Strategy Manager

Issue Date: 8/27/2025

### Process Description:

Decision support system for selecting optimal operating models through data review, decision tree analysis, and comprehensive assessment of critical assets, decommissioning, and efficiency metrics.

### Expectations:

This process ensures optimal operating model selection through systematic analysis and decision-making frameworks based on comprehensive plant assessments.

### Detailed Process Steps (4 steps):

#### Step 1: Review Data Input

Details: Comprehensive review of all plant data inputs and technical specifications for decision-making

#### Step 2: Review Decision Tree

Details: Analyze decision tree framework for optimal operating model selection based on plant characteristics

#### Step 3: Define Critical Asset, Decommissioning, Risk Assessment. Efficiency Assessment

Details: Comprehensive assessment of critical assets, decommissioning requirements, risk factors, and efficiency metrics

#### Step 4: Select Operating Model according to decision Tree

Details: Final selection of optimal operating model based on decision tree analysis and assessment results

### Performance Measures (2 measures):

#### 1. Decision Timeline

Formula: Average time from analysis to operating model selection

T a r g e t : " d 3 0 d a y s

Frequency: Monthly

Source: Decision Tracking System

#### 2. Model Selection Accuracy

Formula: Percentage of operating model selections meeting performance targets

T a r g e t : " e 8 5 %

Frequency: Quarterly

Source: Performance Review System

## 2.9 OE-3.5: PLANT DATABASE

### Process Information:

Process Number: OE-3.5

Process Name: Plant Database

Status: active

Revision: 1

Process Owner: Database Administrator

Issue Date: 8/27/2025

### Process Description:

Centralized plant information management system providing comprehensive plant listing, data management, reporting capabilities, and geographical visualization tools.

### Expectations:

This process ensures centralized plant information management with comprehensive data access, reporting, and visualization capabilities for effective decision-making.

### Detailed Process Steps (4 steps):

#### Step 1: List all submitted plants

Details: Comprehensive listing and catalog of all plants in the database with filtering and search capabilities

#### Step 2: View, edit, or delete plant data

Details: Plant data management functionality including viewing, editing, and deletion with proper access controls

#### Step 3: Access plant reports

Details: Generate and access comprehensive plant reports including operational, financial, and performance reports

#### Step 4: View plants on map

Details: Geographic visualization of plant locations with interactive mapping and spatial analysis capabilities

### Performance Measures (2 measures):

#### 1. Data Update Frequency

Formula: Percentage of data updated within specified timeframes

T a r g e t : "e 9 0 %

Frequency: Weekly

Source: System Audit Reports

#### 2. Database Completeness

Formula: (Populated data fields / Total required fields) × 100

T a r g e t : "e 9 5 %

Frequency: Monthly

Source: Database Management System

## 2.10 OE-3.6: PLANT UPGRADES MANAGEMENT

### Process Information:

Process Number: OE-3.6

Process Name: Plant Upgrades Management

Status: active

Revision: 1

Process Owner: Plant Upgrade Manager

Issue Date: 8/27/2025

### Process Description:

Strategic upgrade management system for identifying improvement needs, prioritizing CAPEX investments, evaluating risk and efficiency opportunities, and managing upgrade implementations.

### Expectations:

This process ensures strategic plant upgrade management with proper investment prioritization and risk assessment for optimal plant performance enhancement.

### Detailed Process Steps (4 steps):

#### Step 1: List plants with upgrade needs

Details: Identify and catalog plants requiring upgrades based on performance, age, and operational criteria

#### Step 2: Score & prioritize CAPEX investment

Details: Investment scoring and prioritization framework for capital expenditure optimization

#### Step 3: Evaluate risk & efficiency opportunities

Details: Risk assessment and efficiency opportunity analysis for upgrade investments

#### Step 4: View plant upgrade details

Details: Detailed upgrade project information including costs, timeline, and expected benefits

### Performance Measures (2 measures):

#### 1. Upgrade Cost Performance

Formula:  $(\text{Actual costs} / \text{Budgeted costs}) \times 100$

T a r g e t : "d 1 0 5 %

Frequency: Per Project

Source: Financial Management System

#### 2. Upgrade Project Success Rate

Formula:  $(\text{Successful upgrades} / \text{Total upgrade projects}) \times 100$

T a r g e t : "e 9 0 %

Frequency: Quarterly

Source: Project Management System

## 2.11 OE-3.7: BUDGET & ACTUAL PRODUCTION DATA

### Process Information:

Process Number: OE-3.7

Process Name: Budget & Actual Production Data

Status: active

Revision: 1

Process Owner: Financial Controller

Issue Date: 8/27/2025

### Process Description:

Financial performance tracking system for recording budgeted versus actual production data, cost analysis, variance management, and comprehensive budget oversight.

### Expectations:

This process ensures accurate financial tracking and budget management with comprehensive variance analysis for optimal financial performance.

### Detailed Process Steps (4 steps):

#### Step 1: Record budgeted production & costs

Details: Input budgeted production targets and associated cost projections for planning and control

#### Step 2: Record actual production & costs

Details: Input actual production data and costs for performance tracking and analysis

#### Step 3: Compare variances

Details: Variance analysis comparing budgeted versus actual performance with root cause analysis

#### Step 4: View/edit plant budget data

Details: Budget data management including viewing, editing, and updating budget parameters

### Performance Measures (2 measures):

#### 1. Budget Accuracy

Formula: Percentage of budget categories within  $\pm 10\%$  of actual

T a r g e t : "e 8 5 %

Frequency: Quarterly

Source: Financial Reporting System

#### 2. Production Variance

Formula:  $(\text{Actual production} - \text{Budgeted production}) / \text{Budgeted production} \times 100$

T a r g e t : "e - 5 % t o + 1 0 %

Frequency: Monthly

Source: Production Management System

## 2.12 OE-3.8: CLUSTERING MANAGEMENT

### Process Information:

Process Number: OE-3.8

Process Name: Clustering Management

Status: active

Revision: 1

Process Owner: Strategic Planning Manager

Issue Date: 8/27/2025

### Process Description:

Strategic clustering analysis system for identifying synergy opportunities, optimizing plant groupings, calculating cost savings, and recommending optimal cluster configurations.

### Expectations:

This process ensures effective clustering strategies with comprehensive synergy analysis and cost optimization for enhanced operational efficiency.

### Detailed Process Steps (4 steps):

#### Step 1: Identify clustering opportunities

Details: Analysis and identification of potential plant clustering opportunities for operational synergies

#### Step 2: Group plants for synergy

Details: Strategic grouping of plants based on geographic, operational, and economic synergies

#### Step 3: Calculate potential cost savings

Details: Financial analysis and calculation of potential cost savings from clustering strategies

#### Step 4: Recommend optimized clusters

Details: Final recommendations for optimal plant clustering configurations with implementation roadmap

### Performance Measures (2 measures):

#### 1. Cluster Optimization Rate

Formula: Number of optimization opportunities identified and implemented

Target: "e3 optimizations

Frequency: Monthly

Source: Operations Management System

#### 2. Clustering Efficiency

Formula: Total cost savings achieved through clustering

Target: "e\$500K per quarter

Frequency: Quarterly

Source: Cost Analysis System

## 2.13 OE-3.9: DECOMMISSIONING ANALYSIS

### Process Information:

Process Number: OE-3.9

Process Name: Decommissioning Analysis

Status: active

Revision: 1

Process Owner: Decommissioning Manager

Issue Date: 8/27/2025

### Process Description:

Comprehensive decommissioning management system covering plant closure identification, cost estimation, asset recovery planning, and phased decommissioning execution.

### Expectations:

This process ensures systematic decommissioning management with comprehensive cost analysis and asset recovery optimization for effective plant closure.

### Detailed Process Steps (4 steps):

#### Step 1: Identify plants for closure

Details: Strategic analysis to identify plants suitable for closure based on performance and strategic criteria

#### Step 2: Estimate closure costs & asset recovery

Details: Financial analysis of decommissioning costs and asset recovery potential

#### Step 3: Assign decommissioning status

Details: Status assignment and tracking for plants in various stages of decommissioning process

#### Step 4: Define decommissioning phases

Details: Detailed phasing plan for systematic decommissioning execution and timeline management

### Performance Measures (2 measures):

#### 1. Decommissioning Cost Accuracy

Formula:  $(\text{Actual decommissioning costs} / \text{Estimated costs}) \times 100$

Target: 90%-110%

Frequency: Per Project

Source: Financial Analysis System

#### 2. Environmental Compliance Rate

Formula: Percentage of decommissioning projects meeting all environmental requirements

Target: 100%

Frequency: Per Project

Source: Environmental Management System