

SWRO-005 / REV A

Desalination and concentrate-treatment module

STATUS: CONCEPT / UNQUALIFIED. Cost unknown. Patent review not performed. EU conformity not determined.

Source and requirements

Original extraction paragraph references: 836, 3666, 3673

Source site permeate 1840 m³/s and recovery 45%; huge scale and network consistency unverified.

Candidate manufacturing route

Fab 1: membrane material qualification where relevant

Fab 3: pressure equipment and manifolds

Fab 4: fabrication and treatment hardware

Fab 5: water-quality and system acceptance

Governing models

E01, E07, E08, E09, E15, E16, E36, S19, S20 — see the English formula register; use only within each stated domain.

Critical missing evidence

Intake chemistry, fouling, pretreatment and membrane guarantees

Concentrate mass/energy balance and environmentally acceptable disposal

Pressure-vessel, electrical and process-control design

Cost model and missing quotations

$C_{unit} = (\text{materials} + \text{machine/setup} + \text{energy} + \text{labour} + \text{QA} + \text{overhead}) / \text{accepted units}$. Record currency, price date, batch quantity, yield, rework, contingencies and uncertainty. Avoid double-counting costs included in machine rates. No supplier quotes have been obtained.

Membrane area and replacement

Electricity and pressure recovery

Pretreatment, civil works, concentrate treatment and monitoring

Patent-review record

Search seed (not executed): reverse osmosis pressure exchanger brine treatment mineral recovery struvite
Required records: jurisdictions, search dates, CPC/IPC classifications, patent families, publication PDFs, independent claims chart, legal status and expiry/lapse review. Product geometry and intended use must be frozen sufficiently for a meaningful review.

Patent publication PDFs are not attached because no product-specific patent search or claims assessment has been performed. This dossier is not a patent, clearance opinion or claim of novelty.

EU and other regulatory applicability

Pressure equipment, machinery, electrical safety and water-contact requirements as applicable

Site water abstraction/discharge and environmental approvals

Starting sources: EUR-Lex Regulation (EU) 2023/1230 and Directive 2014/68/EU where relevant; EPO Espacenet and official registers for patent research. Full applicable standards, legal classification and jurisdiction-specific approvals must be verified.

Acceptance and reproducibility

Define the product measurands, test environment, tolerances, calibrated instrumentation, lot traceability and a statistically justified sampling plan. Numerical convergence, manufacturing yield and service reliability are separate criteria. No 99% feasibility or 98% product-equivalence claim is established.

Release gate

Do not treat a proposed route as a toolpath. Complete geometry, material allowables, process qualification, simulation verification, prototype tests, inspection, conformity review and responsible engineering approval before release.