

OXYLOCK®

MISSION 10 — WATER-SIDE OXYGEN CONTROL FOR HYDROGEN



EUROPE'S HYDROGEN FUTURE NEEDS WATER-SMART OXYGEN CONTROL

THE EUROPEAN COMMISSION NOW PRIORITISES DESALINATED SEAWATER, TREATED WASTEWATER
AND BRACKISH WATER FOR HYDROGEN PRODUCTION.

NEW EU JRC ASSESSMENT — 8 OCTOBER 2026



18–22 LITRES OF WATER
PER kg OF HYDROGEN



0.24% OF EUROPE'S 2017
FRESHWATER CONSUMPTION BY 2030



UP TO 1.65% BY 2050



SPAIN • ITALY • PORTUGAL —
HIGHEST WATER-STRESS RISK

THE NEW OPPORTUNITY IS AFTER PURIFICATION.

Purified water can absorb oxygen again during storage, tank ventilation, pumping and transfer, OXYLOCK® is designed to control dissolved oxygen at the final water-side protection point—before the purified make-up water reaches the electrolyser.

WHY OXYLOCK® BELONGS IN THE DISCUSSION



- Compact water-side oxygen-polishing concept
- No conventional liquid oxygen-scavenger dosing
- Positioned after the expensive purification stage
- Potential protection during storage, standby, start-up and intermittent operation
- Designed for integration by water-treatment OEMs and hydrogen EPC partners
- Hydrogen-specific operational benefit remains subject to independent validation



ALTERNATIVE WATER SOURCE

Desalinated seawater
Treated wastewater
Brackish water



ADVANCED PURIFICATION



RO / DESALINATION / EDI



STORAGE & TRANSFER



OXYLOCK® FINAL DISSOLVED-OXYGEN POLISHING



ELECTROLYSER



DISSOLVED O₂ ≠ O₂ IMPURITY IN HYDROGEN GAS



DISSOLVED O₂ IN WATER

- Molecular oxygen carried in liquid make-up water
- Can re-enter after purification through tanks, air contact and pumping
- Potential OXYLOCK® treatment target
- Must be measured before and after the media



O₂ IN HYDROGEN GAS

- Usually linked to membrane crossover, gas separation, operating load or air ingress
- Requires electrolyser controls and, where necessary, downstream DeOxo
- OXYLOCK® must not be presented as a replacement for gas purification

THE PROOF PROGRAM

- 1 Measure dissolved O₂ before and after OXYLOCK®
- 2 Test municipal reuse water, brackish water and desalinated seawater after final purification
- 3 Verify conductivity, resistivity, TOC, particles and Fe/Ni/Cu/Zn leaching
- 4 Compare against membrane degassing and vacuum deaeration
- 5 Measure hydrogen-side O₂ separately during start-up, standby and variable load
- 6 Quantify media life, pressure drop and lifecycle cost
- 7 Qualify through electrolyser OEMs, water-treatment companies and EPC partners

**THE MARKET IS NOT RAW SEAWATER.
THE MARKET IS THE FINAL PROTECTION
OF PURIFIED HYDROGEN-PRODUCTION WATER.**

**OXYLOCK® — FINAL DISSOLVED-OXYGEN POLISHING FOR PURIFIED
ALTERNATIVE-WATER STREAMS USED IN HYDROGEN PRODUCTION.**

Subject to source-specific and electrolyser-specific validation. Water-side dissolved oxygen control does not replace membrane crossover control or downstream gas purification.

WATCH WATER GmbH • MADE IN GERMANY • WATER TREATMENT INNOVATION SINCE 1984

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