

Industrial Zero-Liquid-Discharge (ZLD) Systems

ANMD-MRS10-100 · Water & Environmental Technologies

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US\$

WHY THIS REPORT

Zero-liquid-discharge (ZLD) systems eliminate liquid waste from industrial operations — recovering nearly all water and concentrating contaminants to solids for disposal or reuse, spanning evaporator-crystallizer trains, membrane-based and hybrid thermal-membrane systems, minimal-liquid-discharge variants and brine concentration. This decision-grade study sizes the global market three ways — value, treatment capacity (m³/day) and systems — across ZLD technology, process stage and application, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought — balancing recovery against energy. ZLD eliminates discharge and recovers water and salts, but is energy-intensive, making efficiency and renewable coupling central to the case.

Mapped Sustainable Development Goals:

SDG 6 Clean Water & Sanitation	SDG 9 Industry, Innovation & Infrastructure	SDG 11 Sustainable Cities & Communities	SDG 12 Responsible Consumption	SDG 13 Climate Action
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Measurable sustainability outcomes assessed:

- Regulatory compliance and effluent-discharge elimination
- Water and salt recovery in water-stressed regions
- Resource recovery turning residuals into products
- Energy/carbon intensity and solids disposal as material risks

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	9 Report Parts	7 Regions Covered	40+ Country Markets
2025–32 Forecast Horizon	4 Forward Scenarios	25+ Companies Profiled	5 SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. Asia Pacific dominates demand; the Middle East scales on scarcity; the Americas grow on regulation; other regions assessed on their own merits.

MARKET OVERVIEW

From compliance mandate to circularity strategy — where hybrid trains cut the energy penalty of full ZLD.

Industrial ZLD is moving from compliance mandate to a water-recovery and circularity strategy. Demand is driven by discharge regulation, water scarcity and corporate stewardship across Asia Pacific, the Middle East and the Americas. The market is read three ways — value, treatment capacity and systems — and forecast under four scenarios, each region reported separately.

- **Asia Pacific dominates demand** — China and India, where strict discharge mandates and water scarcity force industrial ZLD adoption
- **Middle East scales on scarcity** — Saudi Arabia and the UAE, where water stress and industrial growth drive recovery systems
- **Americas grow on regulation** — United States, on power, oil-and-gas and mining ZLD projects responding to discharge limits
- **Hybrid thermal-membrane is the differentiator** — membrane brine concentration ahead of evaporation cuts the energy and cost penalty of full ZLD

REGIONAL OUTLOOK

Across seven reporting regions, the report separates leading markets from high-growth and emerging ones — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Markets & Drivers
Asia Pacific	Demand leader	China, India — discharge mandates, water scarcity, industry
Middle East	Scarcity-led	Saudi Arabia, UAE — water stress, industrial growth
North America	Regulation-led	United States — power, oil & gas, mining ZLD
Europe	Stewardship demand	Germany, Italy — industrial stewardship, discharge limits
Latin America	Emerging	Chile, Brazil — mining brine, industrial reuse
Africa	Frontier	South Africa — mining & industrial discharge control

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Strict discharge & ZLD regulation • Industrial water scarcity & recovery • Corporate water-stewardship & ESG • Membrane brine-concentration gains • Resource & salt recovery value	• High energy & operating cost • Very high CAPEX of full ZLD • Solids handling & disposal burden • Scaling, corrosion & reliability issues • Complex operation & skilled-staff needs

SEGMENTATION SNAPSHOT

By ZLD Technology	Evaporator-crystallizer · membrane-based · hybrid thermal-membrane · minimal-liquid-discharge (MLD) · brine-concentration
By Process Stage	Pre-concentration · brine concentration · evaporation · crystallisation
By Application	Municipal · industrial · commercial & residential
By End User	Utilities · municipalities · industry · buildings
By Business Model	Equipment sales · EPC · Water-as-a-Service
By Scale	Decentralised · commercial · municipal / utility-scale

TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

Part I — Report Foundation, Discovery and Strategic Intelligence

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- › Chapter 2. Industry Discovery Summary — Industrial Zero-Liquid-Discharge (ZLD) Systems
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

Part II — Market Intelligence, Sizing, Forecasting and Segmentation

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- › Chapter 6. Market Dynamics
- › Chapter 7. Global Market Size and Forecast, 2020–2032
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- › Chapter 45. Bottom-Line Verdict and Strategic Recommendations
- › Chapter 46. Implementation Roadmap and Stakeholder Playbooks

Part IX — Annexes, Directories and Reference Material

- › Chapter 47. Methodology Annex
- › Chapter 48. Corporate Directory and Company Intelligence Annex
- › Chapter 49. Patent Directory and Patent Intelligence Annex
- › Chapter 50. Project Intelligence Annex
- › Chapter 51. Forecast Annex
- › Chapter 52. Sustainability KPI Annex
- › Chapter 53. Reference Annexes

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans thermal-ZLD majors, membrane brine-concentration specialists, and resource-recovery innovators. Deal activity — hybrid-ZLD projects, brine-concentration ventures and discharge-compliance contracts — signals a market consolidating around lower-energy recovery.

Representative players profiled in the full report:

Veolia Environnement S.A. (HPD) · SUEZ SA · Aquatech International LLC · Gradiant Corporation · GEA Group Aktiengesellschaft · and 20+ further profiled players across thermal-ZLD majors and recovery innovators.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a conditional investment view.

KEY QUESTIONS THIS REPORT ANSWERS

- How large is the global industrial ZLD market, and how fast will it grow to 2032?
- Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- How does hybrid thermal-membrane design change ZLD economics versus full evaporative ZLD?
- Who leads, and where is the competitive and patent white space?
- Is the investment case bankable — and under what conditions?
- How does the category align with the SDGs, industrial circularity and disclosure regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, water and natural-capital intelligence and a decision-ready bankability view in a single architecture.

- **Triangulated sizing** — every market read three ways so value, volume and the physical-unit views reconcile rather than conflict.
- **Region-honest forecasting** — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- **Integrated evidence base** — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- **No-fabrication discipline** — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- **Anti-greenwashing rigour** — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- **Decision-first structure** — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear, conditional investment view.

WHO SHOULD BUY THIS REPORT

Investors, manufacturers, developers, utilities, lenders and policymakers, and strategic corporate planners and decision-makers.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at www.anewmarketdynamics.com · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at www.anewmarketdynamics.com. The full detailed table of contents will be sent directly to your registered company email address.