

Zero Liquid Discharge (ZLD) Systems Market Report by Process (Pretreatment, Filtration, Evaporation and Crystallization), Systems (Conventional ZLD Systems, Hybrid ZLD Systems), Technology (Thermal-based, Membrane-based), End Use Industry (Power, Oil and Gas, Metallurgy and Mining, Chemicals and Petrochemicals, Pharmaceutical, and Others), and Region ?2025-2033?

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Report description:

The global zero liquid discharge systems market size reached USD 8.2 Billion in 2024. Looking forward, IMARC Group expects the market to reach USD 14.9 Billion by 2033, exhibiting a growth rate (CAGR) of 6.8% during 2025-2033. The market is witnessing substantial growth, driven by strict environmental policies and the escalating demand for sustainable water treatment techniques. Moreover, sectors including oil and gas, power generation, and chemicals are rapidly deploying ZLD systems to lower their wastewater production and improve resource efficiency, thereby propelling the market growth.

Zero liquid discharge (ZLD) systems refer to the strategic wastewater treatment solutions used for processing industrial plant discharges to prevent the release of liquid effluents in the water bodies. They include equipment and tools for ultrafiltration, reverse osmosis, crystallization and fractional electrodeionization (EDI). ZLD systems utilize crystallizers and membrane-based and multiple effect evaporation systems for the recovery and recycling of water. These systems also facilitate recycling and reuse of wastewater, thereby preventing the intake of freshwater. As a result, they are commonly used in process plants, bulk drug manufacturing units, textile factories and chemical plants, along with desalination and power plants.

Zero Liquid Discharge (ZLD) Systems Market Trends:

The increasing demand for effective wastewater treatment solutions across industries is one of the key factors driving the growth of the market. Various industrial and manufacturing units utilize ZLD systems for the processing and disposal of brine

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concentrates. They are also used in coal-fired and thermal power plants located near water bodies for removing liquid and solid waste from the system and producing clean water that is suitable for reuse. The clean water obtained is further utilized as a coolant and for various industrial processes, such as cooling tower and boiler blowdown. In line with this, both private and public organizations are launching numerous water decontamination programs, which is also contributing to the growth of the market. Additionally, various product innovations, such as the development of hydrophobic hollow fiber membranes, are acting as other growth-inducing factors. These membranes are utilized for effective brine treatment and recovering useful resources from the water. Other factors, including the implementation of favorable government policies prohibiting the discharge of concentrated effluents in water streams, along with the increasing requirement for clean and potable water, are anticipated to drive the market toward growth.

Zero Liquid Discharge Systems Market Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market, along with forecasts at the global, regional, and country levels for 2025-2033. Our report has categorized the market based on process, systems, technology, and end use industry.

Breakup by Process:

- Pretreatment
- Filtration
- Evaporation and Crystallization

Breakup by Systems:

- Conventional ZLD Systems
- Hybrid ZLD Systems

Breakup by Technology:

- Thermal-based
- Membrane-based

Breakup by End Use Industry:

- Power
- Oil and Gas
- Metallurgy and Mining
- Chemicals and Petrochemicals
- Pharmaceutical
- Others

Breakup by Region:

- North America
 - United States
 - Canada
- Asia-Pacific
 - China
 - Japan
 - India

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South Korea
Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

Competitive Landscape:

The competitive landscape of the industry has also been examined along with the profiles of the key players being Alfa Laval AB, Aquatech International LLC, Condorchem Envitech, ENCON Evaporators, Evoqua Water Technologies, GEA Group Aktiengesellschaft, H2O GmbH, Hydro Air Research Italia Srl, Oasys Water Inc., Petro Sep Corporation, Praj Industries Limited, Safbon Water Technology Inc. and Veolia Environnement S.A.

Key Questions Answered in This Report

1. What was the size of the global zero liquid discharge (ZLD) systems market in 2024?
2. What is the expected growth rate of the global zero liquid discharge (ZLD) systems market during 2025-2033?
3. What are the key factors driving the global zero liquid discharge (ZLD) systems market?
4. What has been the impact of COVID-19 on the global zero liquid discharge (ZLD) systems market?
5. What is the breakup of the global zero liquid discharge (ZLD) systems market based on the process?
6. What is the breakup of the global zero liquid discharge (ZLD) systems market based on the systems?
7. What is the breakup of the global zero liquid discharge (ZLD) systems market based on the technology?
8. What is the breakup of the global zero liquid discharge (ZLD) systems market based on the end use industry?
9. What are the key regions in the global zero liquid discharge (ZLD) systems market?
10. Who are the key players/companies in the global zero liquid discharge (ZLD) systems market?

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