

Solar Water Desalination Plant Market to Reach USD 5.1 Bn by 2035, Growing at 7.3% CAGR | Transparency Market Research

Rising adoption of solar-powered desalination and bundled EPC-O&M solutions drives market expansion toward sustainable freshwater generation.

WILMINGTON, DE, UNITED STATES, October 1, 2025 /EINPresswire.com/ --

The global [solar water desalination plant market](#) is witnessing remarkable growth as renewable energy integration reshapes the global water treatment landscape. According to the latest market outlook, the global solar water desalination plant industry, valued at US\$ 2.4 billion in 2024, is projected to grow at a CAGR of 7.3% from 2025 to 2035, reaching US\$ 5.1 billion by the end of 2035.



This growth underscores a global shift toward climate-resilient water infrastructure, as governments, industries, and communities increasingly turn to solar-driven desalination to combat water scarcity while reducing carbon emissions.

“

Solar desalination is emerging as a climate-resilient solution that bridges renewable energy and sustainable water supply.”

Transparency Market Research

Don't miss out on the latest market intelligence. Get your sample report copy today @:
https://www.transparencymarketresearch.com/sample/sample.php?flag=S&rep_id=74398

Market Overview: Solar water desalination plants utilize solar energy to convert saline or brackish water into

potable or usable water. They represent a crucial technological solution at the intersection of renewable energy and sustainable water management.

The market has evolved beyond small experimental projects into commercially viable systems, including containerized mobile units for rural communities, PV-driven reverse osmosis systems, and large-scale solar-thermal facilities integrated with industrial complexes or municipal grids. With declining [photovoltaic](#) (PV) costs, improved energy storage, and enhancements in low-energy membrane technologies, solar desalination is no longer just a sustainable choice — it is increasingly becoming an economic necessity for water-scarce nations and industries.

Key Drivers of Market Growth

1. Solar-Synchronized Desalination Reduces Dependence on Energy Storage

One of the major breakthroughs in the sector is the development of solar-native desalination architectures that synchronize plant operations with solar availability. These systems eliminate the need for large, expensive battery storage and instead use dynamic reverse osmosis (RO) control, variable feed rates, and thermal buffering to optimize output throughout the day.

For instance, researchers at MIT developed a solar-aware desalination prototype that adjusts to fluctuating solar irradiance, offering a scalable, reliable, and cost-effective method of producing freshwater. Such innovations have drastically reduced CAPEX and lifecycle emissions, making small- to medium-scale solar desalination plants feasible even in off-grid regions.

2. Strategic Partnerships Between Solar Developers and Desalination Firms

Another key growth factor is the rise of partnerships between solar developers, water technology specialists, and EPC (Engineering, Procurement, and Construction) companies. These collaborations allow for the creation of turnkey solar desalination projects that combine expertise in renewable energy, water engineering, and infrastructure financing.

A notable example is VA Tech Wabag's large EPC and O&M contract for a 100 MLD desalination project integrated within a solar PV manufacturing complex in India. Such projects demonstrate how industrial customers are investing in water security by coupling their process water needs with renewable energy projects.

Key Players and Industry Leaders

The global solar water desalination plant market features a blend of renewable energy pioneers, water treatment specialists, and engineering conglomerates. Leading companies include:

- Caterpillar Inc.
- Elemental Water Makers B.V.
- F Cubed Limited
- Photon Energy Systems Limited
- Sinovoltaics Group
- Solar Water Solutions Ltd.
- Sterlitech Corporation

- Tesla, Inc.
- Trunz Water Systems AG
- Waaree Energies Ltd
- Acciona S.A.
- Veolia Environnement SA
- ACWA Power
- Boreal Light GmbH
- IDE Technologies

These players are competing and collaborating on the development of energy-efficient membranes, hybrid PV-thermal systems, and modular desalination units designed for both industrial and municipal applications. Many are also investing in long-term O&M contracts, EPC bundling, and AI-based monitoring solutions to ensure performance optimization.

Recent Developments

The global solar desalination landscape has been marked by significant technological and commercial milestones:

- June 2025: Lantania launched a 4.5 MWp solar photovoltaic system for the Alicante Desalination Facility in Spain, commissioned by the Ministry for Ecological Transition and Demographic Challenge. The €4.7 million project exemplifies the EU's growing commitment to renewable-powered water infrastructure.
- December 2024: Jakson Green and Desolenator announced a strategic collaboration during the IDRA World Congress (UAE) to co-develop next-generation solar desalination solutions. The partnership aims to expand sustainable water access in arid regions and promote climate-resilient water systems.

These developments reflect a global push toward renewable-integrated desalination, aligning with net-zero goals and sustainability-driven investments.

□ Full Market Report available for delivery. For purchase or customization, please request here – https://www.transparencymarketresearch.com/sample/sample.php?flag=S&rep_id=74398

New Opportunities and Challenges

Opportunities

- Decentralized, modular desalination systems for coastal and island communities are becoming increasingly popular.
- Industrial demand for sustainable process water — especially in manufacturing, mining, and energy sectors — offers new revenue streams.
- Government incentives and climate adaptation funding are boosting investment in solar desalination infrastructure.
- Hybrid technologies combining PV power, thermal energy, and advanced RO membranes are

enhancing plant efficiency.

Challenges

- High initial capital costs and site-specific engineering complexities remain hurdles in emerging economies.
- Brine disposal and environmental regulations pose ongoing sustainability concerns.
- Intermittent solar generation, although mitigated by new architectures, still requires system-level optimization and policy support.

Latest Market Trends

The industry is witnessing several transformative trends:

- Hybrid Systems: Integration of PV panels with solar-thermal collectors and membrane distillation technologies is gaining traction to enhance output consistency.
- Digitalization: IoT and AI-driven remote monitoring systems are being deployed for predictive maintenance and real-time optimization.
- Decentralized Solutions: Growth in plug-and-play containerized units designed for villages, islands, and remote industries.
- Circular Economy Focus: Innovations in brine management and reuse, turning waste streams into valuable byproducts.
- Green Financing: Solar desalination is increasingly qualifying for climate bonds, green infrastructure funds, and sustainability-linked loans.

Future Outlook

The solar water desalination plant market is poised for robust, sustained growth through 2035. As governments and corporations prioritize climate adaptation, water security, and carbon neutrality, solar desalination will emerge as a central solution to global freshwater challenges.

Analysts predict that the convergence of solar PV technology, membrane innovation, and AI-based control systems will continue to lower production costs and improve operational efficiency. Moreover, policy frameworks emphasizing renewable integration and public-private partnerships will catalyze further expansion in developing economies.

By 2035, solar desalination is expected to evolve from a niche alternative to a mainstream water production technology, supporting urban utilities, industries, and agriculture alike.

Market Segmentation

By Technology

- Thermal Desalination: Simple stills, Multi-Effect Humidification (MEH), Multi-Effect Distillation (MED), Multi-Effect Solar (MES), and Multi-Stage Flash (MSF).
- Membrane Desalination: Reverse Osmosis (RO), Electrodialysis Reversal (EDR), and Membrane Distillation (MD).

By Plant Size

- Less than 100 m³/day
- 100–1,000 m³/day
- 1,000–10,000 m³/day
- 10,000–20,000 m³/day
- 20,000–30,000 m³/day
- More than 30,000 m³/day

By End Use

- Industrial
- Agriculture
- Commercial
- Municipal
- Military & Government Agencies

Regional Insights

The Middle East and Africa (MEA) region dominates the global solar water desalination market. Countries such as Saudi Arabia, UAE, Egypt, and Morocco are spearheading large-scale renewable desalination initiatives due to abundant solar resources and chronic freshwater scarcity.

MEA governments are also mandating low-carbon desalination, integrating renewable energy sources into national water strategies. Projects under Vision 2030 (Saudi Arabia) and UAE Water Security Strategy 2036 are prime examples of policy-driven market acceleration.

Asia Pacific is emerging as another key market, led by India, China, and Australia, where industrial and agricultural water demand continues to soar. Meanwhile, Europe is advancing solar desalination pilot projects in the Mediterranean basin, focusing on energy efficiency and decarbonization.

Latin America and North America show growing potential in coastal desalination and disaster-resilient water infrastructure, with countries such as Chile, Mexico, and the United States investing in renewable-powered desalination R&D.

□ To buy this comprehensive market research report, click here @ -

https://www.transparencymarketresearch.com/checkout.php?rep_id=74398<ype=S

Why Buy This Report?

- Gain an in-depth understanding of global solar desalination dynamics and future market opportunities.
- Access comprehensive segmentation analysis covering technology, plant size, and end-use sectors.
- Evaluate regional trends, including policy landscapes, project pipelines, and growth prospects.
- Identify key market players, their strategic partnerships, and competitive positioning.
- Leverage quantitative and qualitative insights to support investment, policy, and business decisions.
- Stay informed about emerging innovations, sustainability shifts, and evolving cost structures.

More Related Reports –

Tennis Ball Machines Market: <https://www.transparencymarketresearch.com/tennis-ball-machines-market.html>

Global Bleisure Travel Market: <https://www.transparencymarketresearch.com/bleisure-travel-market>

Spiritual Services Market: <https://www.transparencymarketresearch.com/spiritual-services-market.html>

Second-hand Products Market: <https://www.transparencymarketresearch.com/second-hand-products-market.html>

About Us Transparency Market Research

Transparency Market Research, a global market research company registered at Wilmington, Delaware, United States, provides custom research and consulting services. The firm scrutinizes factors shaping the dynamics of demand in various markets. The insights and perspectives on the markets evaluate opportunities in various segments. The opportunities in the segments based on source, application, demographics, sales channel, and end-use are analysed, which will determine growth in the markets over the next decade.

Our exclusive blend of quantitative forecasting and trends analysis provides forward-looking insights for thousands of decision-makers, made possible by experienced teams of Analysts, Researchers, and Consultants. The proprietary data sources and various tools & techniques we use always reflect the latest trends and information. With a broad research and analysis capability, Transparency Market Research employs rigorous primary and secondary research techniques in all of its business reports.

Contact Us

Transparency Market Research Inc.
CORPORATE HEADQUARTER DOWNTOWN,
1000 N. West Street,
Suite 1200, Wilmington, Delaware 19801 USA
Tel: +1-518-618-1030
USA - Canada Toll Free: 866-552-3453

Atil Chaudhari
Transparency Market Research Inc.
+1 518-618-1030

[email us here](#)

Visit us on social media:

[LinkedIn](#)

[Instagram](#)

[YouTube](#)

[X](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/854256056>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2025 Newsmatics Inc. All Right Reserved.