

Impact Of Renewable Energy Expansion On The Market: Key Driver Transforming the Organic Rankine Cycle Market in 2025

Organic Rankine Cycle Global Market Report 2025 – Market Size, Trends, And Global Forecast 2025-2034

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Is The Organic Rankine Cycle Market Set To Witness Substantial Growth?



The organic rankine cycle market size is expected to see strong growth in the next few years. It will grow to \$0.98 billion in 2029 at a compound annual growth rate (CAGR) of 6.9%."

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The organic Rankine cycle market continues to witness significant growth propelled by rising demand for renewable energy sources, marked growth in industrialization, escalating global energy demand, and widespread adoption of ORC systems. From a market value standing at \$0.7 billion in 2024, the industry is expected to grow to \$0.75 billion in 2025, indicating growth at a compound annual growth rate CAGR of 7.3%.

The market size of the organic Rankine cycle market is expected to achieve strong growth in the coming years, estimated to reach \$0.98 billion in 2029 at a compound

annual growth rate CAGR of 6.9%. This growth reflects increased cross-sector collaboration, a heightened focus on energy efficiency, the rise in electric vehicle EV applications, sustained efforts towards reducing greenhouse gas emissions, and growing environmental consciousness. Other noteworthy trends over this forecast period include advancements in technology, the integration of renewable energy, integration of energy storage, attention towards low-temperature sources, and government incentives.

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What Drives The Organic Rankine Cycle Market Growth?

The prevalence of renewable energy sources is set to fuel the organic Rankine cycle market's growth trajectory. Renewable energy, generated from naturally replenishing and sustainable sources such as sunlight, wind, rain, tides, and geothermal heat, is growing in demand, urgently needed to diminish greenhouse gas emissions, combat climate change, and ensure a sustainable energy supply for the future. The organic Rankine cycle ORC technology converts low-temperature heat from geothermal, biomass, and solar thermal sources into electricity, thereby enhancing the efficiency and viability of these renewable energy systems.

The growth of renewable energy sources is further underscored by projections from the Energy Information Administration EIA, a US-based government administration. In January 2024, the EIA predicted a 75% increase in solar power generation in the U.S., from 163 billion kWh in 2023 to 286 billion kWh by 2025. Concurrently, wind power generation is projected to grow by 11%, from 430 billion kWh in 2023 to 476 billion kWh in 2025. This collective growth in renewable energy sources lends momentum to the organic Rankine cycle market.

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Who Are The Key Players In The Organic Rankine Cycle Market?

The organic Rankine cycle market boasts the presence of major players such as General Electric Company, Siemens Energy AG, Mitsubishi Heavy Industries Ltd., Asea Brown Boveri Ltd., Baker Hughes Company, Atlas Copco AB, Kawasaki Heavy Industries Ltd., IHI Corporation, Alfa Laval AB, Dürr AG, Ormat Technologies Inc., Exergy International Srl, Turboden S.p.A., Calnetix Technologies LLC, TAS Energy Inc., ORCAN ENERGY AG, Kaishan USA, Triogen Limited, Elvosolar a.s., Enertime S.A., INTEC GMK GmbH, Climeon AB, and Enogia S.A. These industry stalwarts are recognized for innovative advancements aimed at enhancing energy efficiency and reducing emissions, particularly in capitalizing on waste heat from industrial processes for sustainable power generation.

How Is The Organic Rankine Cycle Market Segmented?

- 1 By Model: Dynamic; Steady-State
- 2 By Fluid Type: Hydrocarbon-Based ORC Systems; Siloxane-Based ORC Systems; Other Fluid Types
- 3 By Power Output: ≤ 1 MWe; > 1 5 MWe; > 5 10 MWe; > 10 MWe
- 4 By Capacity: Small-Scale ORC Systems; Medium-Scale ORC Systems; Large-Scale ORC Systems

5 By Application: Waste Heat Recovery; Geothermal; Biomass; Oil And Gas; Waste To Energy; Solar Thermal

Contributing to these segments are factors such as real-time performance simulation, transient state analysis, dynamic load tracking systems, control system modeling, thermodynamic cycle modeling, energy efficiency analysis, and systems stability and thermal balance analysis.

What Is The Regional Analysis Of Organic Rankine Cycle Market?

North America achieved the highest market share in the organic Rankine cycle market in 2024, with Asia-Pacific identified as the fasted growing region in the forecast period. The report diversely covers regions such as Asia-Pacific, Western Europe, Eastern Europe, North America, South America, and the Middle East and Africa.

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