

Global SOEC Market Growth (Status and Outlook) 2026-2032

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Abstracts

The global SOEC market size is predicted to grow from US\$ 79.04 million in 2025 to US\$ 743 million in 2032; it is expected to grow at a CAGR of 39.0% from 2026 to 2032.

A solid oxide electrolyzer cell (SOEC) is a solid oxide fuel cell that runs in regenerative mode to achieve the electrolysis of water (and/or carbon dioxide) by using a solid oxide, or ceramic, electrolyte to produce hydrogen gas (and/or carbon monoxide) and oxygen. The production of pure hydrogen is compelling because it is a clean fuel that can be stored, making it a potential alternative to batteries, methane, and other energy sources. Electrolysis is currently the most promising method of hydrogen production from water due to high efficiency of conversion and relatively low required energy input when compared to thermochemical and photocatalytic methods. The upstream industry chain of Solid Oxide Electrolysis Cells (SOECs) mainly consists of functional ceramic materials, electrode materials, metal and alloy materials, sealing and joining materials, as well as key manufacturing and processing equipment, all of which play a critical role in determining stack performance, durability, cost structure and scalability. From an application perspective, Chemicals and Refineries currently represent the dominant demand segment, reflecting the near-term priority of replacing grey hydrogen in existing industrial processes and enabling low-carbon production of ammonia, methanol, and synthetic fuels. Steel plants, particularly those pursuing hydrogen-based direct reduced iron (H₂-DRI) routes, remain at an earlier adoption stage but are widely viewed as one of the fastest-growing medium-term opportunities for SOEC deployment. Power and Grid applications, including power-to-power, long-duration energy storage, and grid balancing, play a more exploratory role, with adoption largely dependent on policy incentives and system-level decarbonization strategies. Other applications are primarily limited to pilot projects and niche industrial uses, contributing marginally to overall market volume.

Globally, the Solid Oxide Electrolyzer Cell (SOEC) market is transitioning from technology demonstration toward early-stage commercialization, driven by accelerating decarbonization requirements across energy-intensive industries. Leveraging high-temperature electrolysis, superior system efficiency, and strong compatibility with industrial waste heat, SOEC is increasingly recognized as a strategically important pathway for green hydrogen production and Power-to-X applications.

LPI (LP Information)' newest research report, the "SOEC Industry Forecast" looks at past sales and reviews total world SOEC sales in 2025, providing a comprehensive analysis by region and market sector of projected SOEC sales for 2026 through 2032. With SOEC sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US\$ millions of the world SOEC industry.

This Insight Report provides a comprehensive analysis of the global SOEC landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyses the strategies of leading global companies with a focus on SOEC portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms' unique position in an accelerating global SOEC market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for SOEC and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global SOEC.

This report presents a comprehensive overview, market shares, and growth opportunities of SOEC market by product type, application, key players and key regions and countries.

Segmentation by Type:

Oxygen Ion Conducting

Proton Conducting

Segmentation by Cell Geometry:

Planar

Tubular

Others

Segmentation by Operating Temperature:

High-temperature SOEC (800?900?C)

Medium-temperature SOEC (650?800?C)

Low-temperature SOEC (

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