

Global SOEC Supply, Demand and Key Producers, 2026-2032

<https://marketpublishers.com/r/G5847CCB0122EN.html>

Date: February 2026

Pages: 105

Price: US\$ 4,480.00 (Single User License)

ID: G5847CCB0122EN

Abstracts

The global SOEC market size is expected to reach \$ 707 million by 2032, rising at a market growth of 36.7% CAGR during the forecast period (2026-2032).

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.

This report studies the global SOEC demand, key companies, and key regions. This report is a detailed and comprehensive analysis of the world market for SOEC, and provides market size (US\$ million) and Year-over-Year (YoY) growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of SOEC that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global SOEC total market, 2021-2032, (USD Million)

Global SOEC total market by region & country, CAGR, 2021-2032, (USD Million)

U.S. VS China: SOEC total market, key domestic companies, and share, (USD Million)

Global SOEC revenue by player, revenue and market share 2021-2026, (USD Million)

Global SOEC total market by Type, CAGR, 2021-2032, (USD Million)

Global SOEC total market by Application, CAGR, 2021-2032, (USD Million)

This report profiles major players in the global SOEC market based on the following parameters - company overview, revenue, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Topsoe, Sunfire GmbH, Bloom Energy, OxEon Energy, Ceres, FuelCell Energy, Egen Energy, Swift New Energy, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the world SOEC market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), by player, by regions, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global SOEC Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global SOEC Market, Segmentation by Type:

Oxygen Ion Conducting

Proton Conducting

Global SOEC Market, Segmentation by Cell Geometry:

Planar

Tubular

Others

Global SOEC Market, Segmentation by Operating Temperature:

High-temperature SOEC (800-900°C)

Medium-temperature SOEC (650-800°C)

Low-temperature SOEC (

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