

## **Nuclear Fusion and Advanced Materials: Emerging Opportunities**

Market Research Report | 2023-10-17 | 144 pages | BCC Research

#### **AVAILABLE LICENSES:**

- Single User License \$5500.00
- 2-5 Users License \$6600.00
- Site License \$7920.00
- Enterprise License \$9504.00

## **Report description:**

Description

Report Scope:

The report provides an overview of the nuclear fusion market and analyzes market trends. The nuclear fusion market is through in the stages of R&D, and from the fusion company's information it is expected to be commercialized between 2032 to 2038. Hence, 2035 is considered as the base year, and the report provides market data for the forecast period 2036 through 2040 by estimating values derived from manufacturers. Revenue forecasts for this period are segmented based on technology, application, and geography.

The report also includes a section on the major players in the market. Further, it explains the major drivers, competitive landscape, and current trends of the nuclear fusion market. The report concludes with a focus on the nuclear fusion vendor landscape and includes profiles of the major players operating in the global market.

Report Includes:

- 14 data tables and 53 additional tables

- An overview of global market outlook for nuclear fusion and advanced materials

- Analyses of global market trends, with data from 2035-2040, and projections of compound annual growth rates (CAGRs) through 2040

- An identification of market trends, issues and forecasts impacting the global market and a breakdown of the market based on type, technology, and region

- An outline of the recent technological advances in certain advanced materials and their use in the commercialization of nuclear fusion power over the next few decades

- Coverage of nuclear fusion regulations across several countries, government funded projects, start-ups in nuclear fusion, and alternative energy investments opportunities in the oil & gas industry

A discussion of the key advanced materials, the technologies related to fusion power, and their current and future potential
Company profiles of major players within the industry, including Commonwealth Fusion Systems, First Light Fusion Ltd, General Fusion Inc., HB11 Energy Holdings Pty Ltd, and Marvel Fusion GmbH

**Executive Summary** 

Summary:

Since the 1950s, the possibility of fusion has been understood. Large-scale tests are not necessary to predict performance as simulation codes can now describe fusion processes in greater detail because of rapidly growing computer power. Also, quick digital controls help to better regulate the suppression of plasma oscillations, which are responsible for the energy leak from the core fusion event. These and other technological developments have made it possible for fusion to evolve more quickly.

Although government investment continues to play a significant role in the fusion landscape, private investment has increased recently as the progress has been sufficiently encouraging and there is an urgent demand for zero-carbon energy. This increased funding comes from a variety of sources, including conventional technology venture capital, strategic investments by established energy firms, like Eni and Equinor's in Commonwealth Fusion Systems, and seed investments from extremely wealthy people, like Sam Altman's 2021 investment in Helion Energy. Private companies are building larger fusion machine components and designing full-scale prototypes due to access to funding; many start-ups aim to run commercial fusion machines between 2031-2035.

Moreover, there are a growing number of start-ups that are entering into the nuclear fusion industry. The companies are working on different technologies such as magnetic confinement, inertial confinement, hybrid, and others in order to develop fusion power. For instance, in the past five years there were 18 new nuclear fusion start-ups founded. On average from 2019 to 2022 there were around four start-ups founded every year. The start-ups are also backed by big publicly listed companies as nuclear fusion is achieving breakthroughs and inching closer to the development of fusion power. Google and Chevron became part of a \$REDACTED million funding raised by TAE Technologies in June 2022. Also, Sumitomo Corporation of Americas, a Japanese investment firm, also took part in the round and announced that it will assist TAE in introducing its fusion technology to the Asia-Pacific (APAC) region.

## **Table of Contents:**

Table of Contents Chapter 1 Introduction Overview Study Goals and Objectives Reasons for Doing This Study Scope of Report What's New in this Update? Methodology Information Sources Geographic Breakdown Chapter 2 Summary and Highlights Market Outlook Chapter 3 Market and Technology Overview Nuclear Fusion History Nuclear Fusion Regulations by Country

U.S. U.K. France Germany Russia China South Korea Analysis of the Abovementioned Regulations Value Chain Analysis of the Nuclear Fusion Industry **Research & Development Component and Fuel Suppliers** System Integrators/Nuclear Fusion Companies **Potential Industry Applications** Patent Analysis Chapter 4 Market Dynamics Market Drivers Increased Funding by Top Venture Capitalist and Other Private Investors **Increase in Government Funded Projects** Growing Number of Start-ups in Nuclear Fusion Growing Need for Additional Amount of Energy and Zero Carbon Energy Market Opportunities Alternative Energy Investments Opportunities in the Oil & Gas Industry Growth Potential for Space Industry Integration of Artificial intelligence (AI) and Machine Learning (ML) Technologies for Nuclear Fusion Market Challenges High Capital Costs for Constructing and Commissioning of Nuclear Fusion Facilities Issues Faced by Plasma Heating, Confinement, and Stability Low Availability of Tritium Regulation and Licensing of Commercial Fusion Energy Facilities Chapter 5 Market Breakdown by Technology Overview **Magnetic Confinement Fusion** Inertial Confinement Fusion Magneto Inertial Fusion Chapter 6 Market Breakdown by Application Overview **Electricity Generation** Space Propulsion Others (Marine Propulsion, Medical, Off-Grid Energy, Hydrogen and/or Clean Fuels, Industrial Heating) Chapter 7 Market Breakdown by Region Overview North America U.S. Canada Mexico Europe Germany

U.K. France Italy Spain Rest of Europe APAC China Japan India Thailand Rest of APAC Rest of the World **Chapter 8 Competitive Landscape** Strategic Analysis **Recent Key Developments Competitive Analysis** Analysis on Alternative Power Generation Technologies Time by Proof-of-Concept to Early Commercialization for Energy Technologies Is Small Modular Reactor (SMR) a Threat for Nuclear Fusion? **Chapter 9 Company Profiles** AVALANCHE ENERGY DESIGNS LLC COMMONWEALTH FUSION SYSTEMS (CFS) CTFUSION **EX-FUSION INC.** FOCUSED ENERGY FIRST LIGHT FUSION LTD **GENERAL FUSION INC.** HB11 ENERGY HOLDINGS PTY LTD HELION ENERGYINC. MARVEL FUSION GMBH MAGNETO-INERTIAL FUSION TECHNOLOGIES INC. (MIFTI) PRINCETON FUSION SYSTEMS INC. TAE TECHNOLOGIES INC. TOKAMAK ENERGY LTD. ZAP ENERGY INC. Chapter 10 Appendix: Acronyms



# **Nuclear Fusion and Advanced Materials: Emerging Opportunities**

Market Research Report | 2023-10-17 | 144 pages | BCC Research

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

#### **ORDER FORM:**

Select license	License	Price
	Single User License	\$5500.00
	2-5 Users License	\$6600.00
	Site License	\$7920.00
	Enterprise License	\$9504.00
	VAT	
	Total	

\*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346. [\*\* VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	Phone*	
First Name*	Last Name*	
Job title*		
Company Name*	EU Vat / Tax ID / NIP number*	
Address*	City*	
Zip Code*	Country*	
	Date	2025-05-10

Signature