+357 96 030922
info@marketpublishers.com

Computational Fluid Dynamics Market By Component (Software, Services), By Deployment Mode (On-premise, Cloud), By End User (Automotive, Aerospace, Manufacturing, Energy, Material and Chemical Processing, Others): Global Opportunity Analysis and Industry Forecast, 2024-2033

https://marketpublishers.com/r/C93AB2863F19EN.html
Date: March 2025
Pages: 395
Price: US$ 2,601.00 (Single User License)
ID: C93AB2863F19EN

Abstracts

The global computational fluid dynamics market was valued at $2.6 billion in 2023, and is projected to reach $5.3 billion by 2033, growing at a CAGR of 7.2% from 2024 to 2033.

Computational Fluid Dynamics (CFD) is the science of using numerical methods and algorithms to analyze and solve problems involving fluid flows—basically simulating how gases or liquids behave under different conditions using a computer. It enables engineers and researchers to model complex fluid dynamics scenarios, optimize designs, and improve product performance across industries such as aerospace, automotive, energy, healthcare, and manufacturing. CFD solutions reduce the need for physical testing by leveraging numerical methods and computational algorithms, saving time and costs in the product development process.

The Computational Fluid Dynamics (CFD) market is experiencing steady growth, driven by several key factors. One of the primary drivers is the increasing demand for simulation-based design and engineering across industries such as automotive, aerospace, energy, and healthcare. As companies aim to reduce product development cycles, costs, and reliance on physical prototyping, CFD provides a powerful tool for virtual testing and optimization. Rise in proliferation of high-performance computing (HPC) and surge in adoption of cloud-based simulation platforms are further enabling

+357 96 030922
info@marketpublishers.com

more complex and large-scale simulations, boosting the market's accessibility and scalability. In addition, the increasing focus on sustainability and energy efficiency has led to the use of CFD in optimizing HVAC systems, wind energy designs, and reducing emissions in industrial processes.

However, the market faces several restraints that could impact its growth. One major challenge is the high cost of commercial CFD software licenses and the required computing infrastructure, which can be a barrier for small and medium-sized enterprises. Moreover, the complexity of CFD simulations often necessitates specialized expertise, creating a skills gap and limiting broader adoption. In some industries, regulatory challenges and the need for extensive validation of simulation results can also slow down the implementation of CFD solutions.

Despite these restraints, there are significant opportunities that promise to shape the future of the CFD market. The growing integration of artificial intelligence and machine learning with CFD is opening new possibilities for accelerating simulations and improving predictive accuracy. The expansion of CFD applications into emerging fields like biomedical engineering (e.g., simulating blood flow or respiratory systems) and electronics cooling is also expanding the addressable market. Furthermore, increased investment in digital twins and smart manufacturing is expected to drive further demand for real-time simulation capabilities, positioning CFD as a core technology in the next generation of industrial innovation. For instance, in 2021, Altair acquired Flow Simulator from GE Aviation, further solidifying their partnership and expanding into new industries such as healthcare, locomotives, and renewable energy.

Segment Review

The CFD market is segmented on the basis of component, deployment mode, end user, and region. By component, it is divided into software and services. On the basis of deployment mode, the market is bifurcated into cloud based and on-premise. By end user, it is categorized into automotive, aerospace, manufacturing, energy, material & chemical processing, and others. On the basis of region, it is analyzed across North America, Europe, Asia-Pacific, and LAMEA.

Key Findings

By component, the solution segment accounted for the largestcomputational fluid dynamicsmarket share in 2023.

+357 96 030922
info@marketpublishers.com

By deployment mode, the on-premise segment accounted for the largest computational fluid dynamics marketin 2023.

By end user, the automotive segment accounted for the largest computational fluid dynamics market sizein 2023.

Region wise, North America generated the highest revenue in 2023.

Competition Analysis

The key players profiled in the computational fluid dynamics market analysis are Altair Engineering Inc., ANSYS, Inc., Autodesk, Inc., COMSOL AB, Dassault Systemes, Flow Science, Inc., Hexagon AB, Siemens A.G., SimScale GmbH, The MathWorks, Inc., The AnyLogic Company., National Instruments, PTC Inc., Cadence Design Systems, Inc., M-Star Simulations, LLC, Maya HTT, Simulent Consulting, Inc., Tridiagonal Solutions, Quest Consultants Inc., EnginSoft SpA.

Key Benefits for Stakeholders

This report provides a quantitative analysis of the market segments, current trends, estimations, and dynamics of the computational fluid dynamics market analysis from 2023 to 2033 to identify the prevailing computational fluid dynamics market opportunities.

The market research is offered along with information related to key drivers, restraints, and opportunities.

Porter's five forces analysis highlights the potency of buyers and suppliers to enable stakeholders make profit-oriented business decisions and strengthen their supplier-buyer network.

In-depth analysis of the computational fluid dynamics market segmentation assists to determine the prevailing market opportunities.

Major countries in each region are mapped according to their revenue contribution to the global market.

Market player positioning facilitates benchmarking and provides a clear understanding of the present position of the market players.

+357 96 030922
info@marketpublishers.com

The report includes the analysis of the regional as well as global computational fluid dynamics market trends, key players, market segments, application areas, and market growth strategies.

Additional benefits you will get with this purchase are:

Quarterly Update and* (only available with a corporate license, on listed price)

5 additional Company Profile of client Choice pre- or Post-purchase, as a free update.

Free Upcoming Version on the Purchase of Five and Enterprise User License.

16 analyst hours of support* (post-purchase, if you find additional data requirements upon review of the report, you may receive support amounting to 16 analyst hours to solve questions, and post-sale queries)

15% Free Customization* (in case the scope or segment of the report does not match your requirements, 15% is equivalent to 3 working days of free work, applicable once)

Free data Pack on the Five and Enterprise User License. (Excel version of the report)

Free Updated report if the report is 6-12 months old or older.

24-hour priority response*

Free Industry updates and white papers.

Possible Customization with this report (with additional cost and timeline, please talk to the sales executive to know more)

Market share analysis of players by products/segments

Additional company profiles with specific to client's interest

+357 96 030922
info@marketpublishers.com

Additional country or region analysis- market size and forecast

Criss-cross segment analysis- market size and forecast

Expanded list for Company Profiles

Historic market data

Market share analysis of players at global/region/country level

SWOT Analysis

Key Market Segments

By Component

Software

Services

By Deployment Mode

On-premise

Cloud

By End User

Automotive

Aerospace

Manufacturing

Energy

+357 96 030922
info@marketpublishers.com

- Material and Chemical Processing
- Others

By Region

- North America
  - U.S.
  - Canada
- Europe
  - UK
  - Germany
  - France
  - Italy
  - Spain
  - Rest of Europe
- Asia-Pacific
  - China
  - Japan
  - India
  - Australia
  - South Korea

+357 96 030922
info@marketpublishers.com

- Rest of Asia-Pacific
- LAMEA
  - Latin America
  - Middle East
  - Africa
- Key Market Players
  - Altair Engineering Inc.
  - ANSYS, Inc.
  - Dassault Systemes
  - Hexagon AB
  - The MathWorks, Inc.
  - PTC Inc.
  - Flow Science, Inc.
  - COMSOL AB
  - M-Star Simulations, LLC
  - Tridiagonal Solutions
  - EnginSoft SpA
  - Simulent Consulting, Inc.
  - SimScale GmbH
  - Autodesk, Inc.

+357 96 030922
info@marketpublishers.com

Siemens A.G.

The AnyLogic Company.

Cadence Design Systems, Inc.

Quest Consultants Inc.

National Instruments

Maya HTT

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

CHAPTER 4: COMPUTATIONAL FLUID DYNAMICS MARKET, BY COMPONENT

CHAPTER 5: COMPUTATIONAL FLUID DYNAMICS MARKET, BY DEPLOYMENT MODE

CHAPTER 6: COMPUTATIONAL FLUID DYNAMICS MARKET, BY END USER

+357 96 030922
info@marketpublishers.com

CHAPTER 7: COMPUTATIONAL FLUID DYNAMICS MARKET, BY REGION

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

CHAPTER 8: COMPETITIVE LANDSCAPE

+357 96 030922
info@marketpublishers.com

CHAPTER 9: COMPANY PROFILES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

List Of Tables

LIST OF TABLES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

List Of Figures

LIST OF FIGURES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Computational Fluid Dynamics Market By Component (Software, Services), By Deployment Mode (On-premise, Cloud), By End User (Automotive, Aerospace, Manufacturing, Energy, Material and Chemical Processing, Others): Global Opportunity Analysis and Industry Forecast, 2024-2033

Product link: https://marketpublishers.com/r/C93AB2863F19EN.html

Price: US$ 2,601.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/C93AB2863F19EN.html