

AI-Driven Perfusion Bioreactors Market 2025: Key Trends, Growth Drivers & Forecast Insights

The Business Research Company's AI-Driven Perfusion Bioreactors Market 2025: Key Trends, Growth Drivers & Forecast Insights

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Perfusion Bioreactor With Artificial Intelligence (AI) Control Market Growth Forecast: What To Expect By 2025?

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Expected to grow to \$3.95 billion in 2029 at a compound annual growth rate (CAGR) of 7.1%”

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In recent times, there has been a remarkable expansion in the market size of the perfusion bioreactor with artificial intelligence (AI) control. The market is predicted to swell from \$1.55 billion in 2024 to \$1.88 billion in 2025, demonstrating a compound annual growth rate (CAGR) of 21.3%. The surge experienced during the historic period can be credited to factors such as the growing acceptance of single-use bioreactors, increased investments in biopharmaceutical research and development, the rising

need for efficient cell culture systems, a broadening emphasis on continuous bioprocessing methods, and the escalation of automation in manufacturing procedures.

The market for perfusion bioreactor with AI control is projected to undergo notable growth in the coming years, reaching an estimated \$4.02 billion by 2029, with a CAGR of 20.9%. This progression during the forecast period is largely due to the rising use of digital health technologies, an increasing fondness for hybrid bioreactor solutions, a growing need for advanced monitoring systems, a wider application in personalised medicine, and higher governmental backing for bioprocessing innovation. Some of the significant trends for the forecast period include improvements in AI-driven control platforms, leaps in continuous

bioprocessing methods, advancements in automatic monitoring and control systems, R&D growth in precision medicine applications, and amalgamation with digital manufacturing ecosystems.

Download a free sample of the perfusion bioreactor with artificial intelligence (ai) control market report:

<https://www.thebusinessresearchcompany.com/sample.aspx?id=29146&type=smp>

What Are Key Factors Driving The Demand In The Global Perfusion Bioreactor With Artificial Intelligence (AI) Control Market?

The surge in personalized medicine is set to significantly boost the expansion of the perfusion bioreactor market, which leverages artificial intelligence (AI) control. Distinct genetic, molecular and clinical elements of an individual patient form the basis for personalized medicine, allowing for more precise and targeted treatment options. Significant strides in genomics have led to an increase in personalized medicine, allowing treatments to be customized according to a patient's specific genetic makeup. This ensures increased effectiveness and safety for a variety of conditions. Perfusion bioreactors powered by AI play a crucial role in enabling personalized medicine. They offer continuous, accurate production of patient-specific cells such as stem cells or engineered tissues under highly monitored conditions. For example, the Personalized Medicine Coalition, a non-profit organization based in the US, reported in February 2024 that the FDA had granted approval for 16 new personalized treatments for rare disease sufferers in 2023, a significant increase from only six in the previous year. The approved personal treatments in 2023 also comprised seven cancer drugs and three for other diseases and conditions. Thus, the rising prominence of personalized medicine is fueling the growth of the perfusion bioreactor with artificial intelligence (AI) control market.

Who Are The Leading Players In The Perfusion Bioreactor With Artificial Intelligence (AI) Control Market?

Major players in the Perfusion Bioreactor With Artificial Intelligence (AI) Control Global Market Report 2025 include:

- Thermo Fisher Scientific Inc.
- Merck KGaA
- Lonza Group AG.
- Danaher Corporation
- Sartorius Aktiengesellschaft
- Getinge AB.
- WuXi Biologics Inc.
- Eppendorf Aktiengesellschaft
- ABEC Inc.
- Catalyx.ai

What Are The Main Trends, Positively Impacting The Growth Of Perfusion Bioreactor With Artificial Intelligence (AI) Control Market?

Leading businesses in the perfusion bioreactor with AI control market are prioritizing the development of cutting-edge methods, which leverage AI-enhanced continuous monitoring of bioreactions to refine cell culture performance, boost product output, and lower operational expenses in biopharmaceutical manufacturing. This specifically involves the deployment of artificial intelligence algorithms to consistently evaluate bioreactor data, allowing for instant insights, anticipatory modifications, and enhancement of cell proliferation and product quality during biomanufacturing. For instance, in February 2025, The Cultivated B GmbH, a biotech firm based in Germany, unveiled AI-powered multi-channel biosensors intended to amplify the continuous monitoring of bioreactors in cell culture and fermentation processes. These biosensors continuously generate high-definition data analytics, which permit bioprocess engineers to monitor growth and metabolism with remarkable precision, identifying molecules at sub-picomolar levels such as glucose, amino acids, and lactic acid. By integrating AI, it provides immediate insights and suggestions to refine media formulation, increase measurement accuracy, diminish risk of contamination by avoiding manual sampling, and expedite product development for use in areas like pharmaceuticals, biologics, food biotechnology, waste recycling, and alternative protein creation.

Analysis Of Major Segments Driving The Perfusion Bioreactor With Artificial Intelligence (AI) Control Market Growth

The perfusion bioreactor with artificial intelligence (ai) control market covered in this report is segmented –

- 1) By Product Type: Single Use Perfusion Bioreactors, Multi-Use Perfusion Bioreactors
- 2) By Artificial Intelligence (AI) Control Type: Predictive Analytics, Process Optimization, Real-Time Monitoring, Automated Feedback Control, Other Artificial Intelligence (AI) Control Types
- 3) By Application: Cell Therapy, Monoclonal Antibody Production, Vaccine Manufacturing, Stem Cell Research, Other Applications
- 4) By End-User: Biopharmaceutical Companies, Academic And Research Institutes, Contract Manufacturing Organizations, Other End-Users

Subsegments:

- 1) By Single-Use Perfusion Bioreactors: Disposable Bag Bioreactors, Modular Single-Chamber Bioreactors, Pre-Sterilized Single-Vessel Bioreactors
- 2) By Multi-Use Perfusion Bioreactors: Stainless Steel Bioreactors, Glass Bioreactors, Multi-Vessel Continuous Culture Systems

View the full perfusion bioreactor with artificial intelligence (ai) control market report:

<https://www.thebusinessresearchcompany.com/report/perfusion-bioreactor-with-artificial-intelligence-ai-control-global-market-report>

Which Region Is Expected To Lead The Perfusion Bioreactor With Artificial Intelligence (AI) Control Market By 2025?

In 2024, North America led the global market for perfusion bioreactors with AI control, while

Asia-Pacific is anticipated to witness the highest growth during the prediction period. The comprehensive report includes details about different regions such as Asia-Pacific, Western Europe, Eastern Europe, North America, South America, the Middle East, and Africa.

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