

Global Ai In Oil and Gas Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The AI in oil and gas Market is expected to register a CAGR of 10.81% during the forecast period (2023 - 2028). Large oil and gas firms have facilities spread out over the globe. Therefore it's crucial to manage them all effectively. They can access all of their locations' data in one spot thanks to AI. This enables them to manage and monitor all of their plants remotely. Data records may occasionally be incomplete. Thus it's crucial to digitize and evaluate them before using them.

Key Highlights

AI improves operations in the upstream, midstream, and downstream processes. AI promotes high security and safety standards in the oil and gas sector. Due to their flammability and the release of toxic gases, oil and gas are highly hazardous. Artificial intelligence systems can track toxicity levels and leaks and warn users of issues that must be fixed. The fluctuation in temperature is another threat to safety in the oil and gas sector. As the seasons change throughout the year, AI can automatically modify cooling and heating systems to keep the goods safe. Artificial intelligence will also warn the maintenance team when equipment used to process and transport crude oil needs maintenance.

The offshore oil and gas industries employ AI and data science to simplify access to the complex data required for oil and gas exploration and production. This enables businesses to find new exploration opportunities and improve the use of current infrastructures. For example, According to BP plc, global oil production amounted to 89.9 million barrels per day in 2021. Production can be increased by using AI tools.

The sharp reduction in oil prices worldwide has been the most unexpected element driving up demand for artificial intelligence in the oil and gas industry. Margin constraints, as a result, forced oil and gas operators to change their priorities from raising overall output to successfully optimizing it. The factors propelling the growth of the global artificial intelligence market in the oil and gas industry include eliminating the costly risk of drilling, utilizing big data to improve operational performance, and transforming the traditional production system into new predictive technologies.

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Several companies are deploying digital twins to attain the overall health of the oil wells present in a cluster based on geographical position. The digital twins' AI performs the calibration requirements of certain wells and the subsequent analysis of the causes, improving overall functional quality. For instance, Chevron is rolling out digital twin technology for its oil fields and refineries. The company further expects to save millions worth of quality and other maintenance costs. The Saudi economy is under exceptional strain due to the low oil prices and the COVID-19 pandemic. COVID-19 has further depreciated oil and wreaked havoc on Saudi Arabia's non-energy industries, which it is attempting to grow as part of its diversification strategy. The Kingdom's objective to migrate its economy from oil-based to AI-based will require considerable investment. In a speech given to a state television of Saudi Arabia, The Crown Prince of Saudi Arabia, Mohammed Bin Salman informed that the total investment injected into the national economy is expected to reach USD 3.2 trillion by 2030.

Artificial Intelligence in Oil & Gas Market Trends

Upstream Operations to Witness Significant Growth

Organizations worldwide are trying to make the exploration and production processes more efficient and optimized. The operations in this field are the major factors driving the usage of AI in oil and gas companies. The AI tools can help oil and gas companies in digitizing records and automate the analysis of the gathered geological data and charts, which can lead to the potential identification of issues, such as pipeline corrosion or increased equipment usage.

Oil and gas companies can potentially gain crucial insights to improve their business outcomes in their upstream processes with the integration of AI software. This process may involve the feeding of curated data records and information from data sources to the software, including structured documents, PDFs, handwritten notes, audio, or video files.

Companies like BP and Royal Dutch Shell, which have pledged to achieve net-zero carbon emissions by 2050, are under increasing pressure to minimize their carbon footprint in compliance with the Paris Agreement. Shell is employing AI technology to do predictive maintenance of individual pieces of equipment or entire systems to reduce its carbon footprint. This factor allows the corporations to foresee and handle probable equipment faults before they occur. Further, According to BP plc, Global oil production amounted to 89.9 million barrels per day in 2021. Such production will drive the market.

In November 2021, Baker Hughes, an energy technology business, and AIQ, the Abu Dhabi National Oil Company's (ADNOC) artificial intelligence (AI) joint venture with Group 42 (G42), announced a strategic collaboration agreement to create advanced analytics solutions for the global oil and gas industry.

AI has multiple applications in the oil and gas industry, such as production optimization with computer vision to analyze seismic and subsurface data faster, downtime minimizing for predictive maintenance for oil and gas equipment, reservoir understanding, and modeling for predicting oil corrosion risks to reduce maintenance costs. Moreover, the market has been witnessing many investments by big players in technology.

North America is Expected to observe a Significant Growth

Owing to the increasing adoption of AI technologies across the oilfield operators and service providers and the robust presence of prominent AI software and system suppliers, especially in the United States and Canada, the North American segment is anticipated to account for the largest share of the AI in oil and gas market over the forecast period.

Factors such as the strong economy, the high adoption rate of AI technologies across the oilfield operators and service providers, a robust presence of prominent AI software and system suppliers, and combined investment by government and private organizations for the development and growth of R&D activities are projected to drive the demand for AI in the oil and gas sector in the region.

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ExxonMobil, one of the leading oil producers in the country, announced its plans to increase the production activity in the Permian Basin of West Texas by producing more than 1 million barrels per day (BPD) of oil equivalent by as early as 2024. This capacity is equivalent to an increase of nearly 80% compared to the present production capacity.

In addition, owners and operators in the United States recognize how IT-based automation can productively address the unique challenges of the upstream oil and gas sector. For instance, Baker Hughes uses the InForce surface control system, which combines the hydraulic power to activate downhole tools and the control logic to govern an intelligent well system. PLC controls system functions for more complex completion configurations. It is primarily used where remote operations must be done through existing SCADA.

Among all the enabling technologies, AI is projected to play a significant role in the oil and gas industry in the region. It has also been used to increase the safety of gas stations for preventive maintenance due to the growing number of fire incidences at gas stations in North America.

Artificial Intelligence in Oil & Gas Market Competitor Analysis

The AI in oil and gas market is moderately competitive and consists of a few major players holding the market share. The companies continuously capitalize on acquisitions to broaden, complement, and enhance their product and service offerings, add new customers and certified personnel, and help expand sales channels.

May 2022 - The world's first graduate-level research institution devoted to artificial intelligence (AI), Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), has planned a strategic partnership with IBM. Senior executives from the two organizations signed a Memorandum of Understanding to improve fundamental AI research and speed up the kinds of scientific discoveries that could enable AI to be used to assist address some of humanity's most pressing problems.

May 2022 - Google has increased its focus on developing machine learning (ML) and artificial intelligence (AI), despite holding its developer conference I/O 2022 late. It concentrates on both product development and research. PaLM is a fresh approach to AI and natural language processing. According to Google, it is their largest model to date and is trained on 540 billion parameters.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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