

AI and the world of oil and gas

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The way we power our world a decade from now may look quite different from today; as the shift towards renewables gathers pace, emerging markets continue to industrialise, and as electric vehicles grab increasing market share.



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In addition, artificial intelligence (AI) and cognitive learning tools, will also provide companies with new market opportunities and unlock further productivity gains.

How can AI help oil and gas companies plan for the future?

Predicting market trends and shifts: By analysing vast swathes of data – from macroeconomic trends, to weather patterns, to consumer spending patterns – energy companies can predict future demand and dynamically resource their operations to capture the most profitable opportunities.

Exploration and mining: By analysing seismic vibrations, reservoir pressure differentials, strata permeability and other geospatial data, AI can effectively guide decisions about where to drill.

Dynamic operations: Embedded sensors enable better visibility across the value-chain – alerting managers when equipment is liable to fail, rerouting truck schedules to another depot based on traffic conditions, and the like.

Storage and transportation: The composition of oil or gas resources can be accurately monitored (in terms of temperature, moisture levels, transport time duration). With the right cognitive tools, you're able to better understand the effect of certain external conditions on the composition and profitability of the resources.

Development of platforms: Oil and gas players have a golden opportunity to create their own digital platforms or ecosystems, enabling others to create apps and connect to their operations via APIs. With AI underpinning the development of these platforms, firms are able to reach new markets and deepen their expertise, by pulling in the specialised services of partners, vendors, and others within the value chain.

Attracting talent: Due to their geographically-dispersed, engineering-intensive nature, the oil and gas industry has a heavy requirement for skilled management and technical staff. As the younger (millennial) workforce takes a fresh view on how they can add value to their company, they need the infrastructure and tools to turn their ambitions to reality. If the average millennial employee is used to AI-powered social media algorithms and digital navigation systems, then the corporate tools must have a similar level of sophistication.

Supply chain efficiency: It's important to note that oil and gas companies operate within complex supply chains – so rule-based anomaly detection can be used to detect things like fraud, duplicate payments, untapped volume discounts and other

areas of direct cost benefit in the supply chain areas

Smarter trading decisions: In many areas, trading decisions are made by analysing a large number of factors. AI can be harnessed to extract relevant information from literally hundreds of sources – presenting data to analysts, to ensure optimal pricing.

Pipeline monitoring: The likes of encroachments, rusting, and leakage, can be monitored with drone and satellite pictures, robotics, AI and machine vision technology. In this way, it's even possible to conduct maintenance and inspection without shutting down facilities.

Back-office function compliance: Using robotics-based automation, business processes at the back-end can help to ensure that compliance can be automated – reducing the overall costs and cycle time.

Generating value from your data: By training AI systems to go through digital information on oil wells and understand its context, the metadata can be extracted. This can be used by decision-makers so that intelligent, "context specific" queries can be answered from these unstructured data sources. Over time, the models can become more comprehensive – deriving increasingly valuable insights.

In the future, the ability to blend the power of artificial intelligence, with human intuition and creativity, will be essential in navigating an uncertain future, characterised by fewer sources of growth, slimmer margins, and increasing complexity.

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