

THE GOOD

India Third in AI

A report from the Australian Strategic Policy Institute says that when it comes to various segments of AI, India ranks third, just behind the US and China. It noted that India is lagging behind when it comes to standout research performers.

AI Clears Clot

An AI device called the 'Penumbra Flash 12 F Catheter' was used to clear out a blood clot in a patient at Medanta Hospital in Haryana's Gurugram, which according to doctors makes the hospital the first in the country to use the technology.

THE BAD

AI in the Dock

Top AI companies have been hit by copyright claims alleging aggressive scraping of data from the internet. The problem of scraping data has been exacerbated by startups hitting a wall on free information that can be sourced from web.

AI Rigs Reviews

Fake AI-generated reviews that give apps five stars have begun flooding mobile as well as smart TV app stores, according to a report from DoubleVerify. The report says reviews allow low quality apps to rank higher in searches.

THE UGLY

AI Shocker for Cos

High pay expectations are causing a slowdown in hiring of AI talent in India, particularly for 132 Indian firms in sectors like tech, manufacturing and finance, according to a survey by Deel. Survey also reported a rise in requests for payments in US dollars for contract workers.

Traditionally viewed as an engineering-focused industry, the oil and gas sector is increasingly adopting AI and generative AI (GenAI) to optimise operations and drive efficiency through real-time data and insights. From upstream exploration and production to midstream storage and downstream refining and distribution, AI tools are being integrated across the value chain, signalling a notable shift in an industry long dominated by a traditional engineering mindset.

Companies are leveraging AI for a variety of applications, including pinpointing exploration sites, subsurface engineering via seismic data interpretation, reservoir modeling, fluid flow prediction, and optimising drilling extraction rates. AI is also enhancing operational efficiency in crude trading, and the technology is playing a crucial role in smart logistics control for supply chain management, predictive maintenance of key assets like turbines, pumps, and pipelines, and refining process optimisation to boost efficiency and safety.

Cairn, the oil and gas arm of Vedanta, for instance, is making use of AI-powered process digital twins of gas and offshore facilities, leading to about 30% reduction in flaring and 18% fuel gas optimisation, the company told E.T.

It has deployed AI and machine learning (ML) to reduce the down-time of machinery such as hydraulic rod pumps and to keep up oil production volumes. Data from Internet of Things (IoT) and sensors are analysed with AI/ML to determine the likelihood of such machines failing, while real-time insights and smart alarms help in alerting.

"These machines are in oilfields in, for instance, remote parts of Rajasthan. If they fail, it takes significant time for a person to travel and make it right, and there would be a significant decline in volume," explained Sandeep Gupta, chief digital and information officer, Cairn Oil and Gas.

The company has built an AI model using historical procurement and consumption data to forecast the optimal future quantity of spare parts procurement needs, minimising existing spare parts, reducing non-moving inventory and overall working capital. At one field site, savings of about \$1.5 million could directly be attributable to this solution, Gupta said.

"The biggest problem the oil and gas industry faces is emissions. It is under tremendous pressure to change its portfolio, but even if they cannot change it completely, doing it as efficiently as possible to minimise emissions will be quite significant," Anish De, global head - energy, natural resources & chemicals, at KPMG, told E.T.

AI, with its data analytics insights and actionability, will play a major role in enabling hyper-efficiency. And if companies do it right, this will also have a positive bottom line impact, De said.

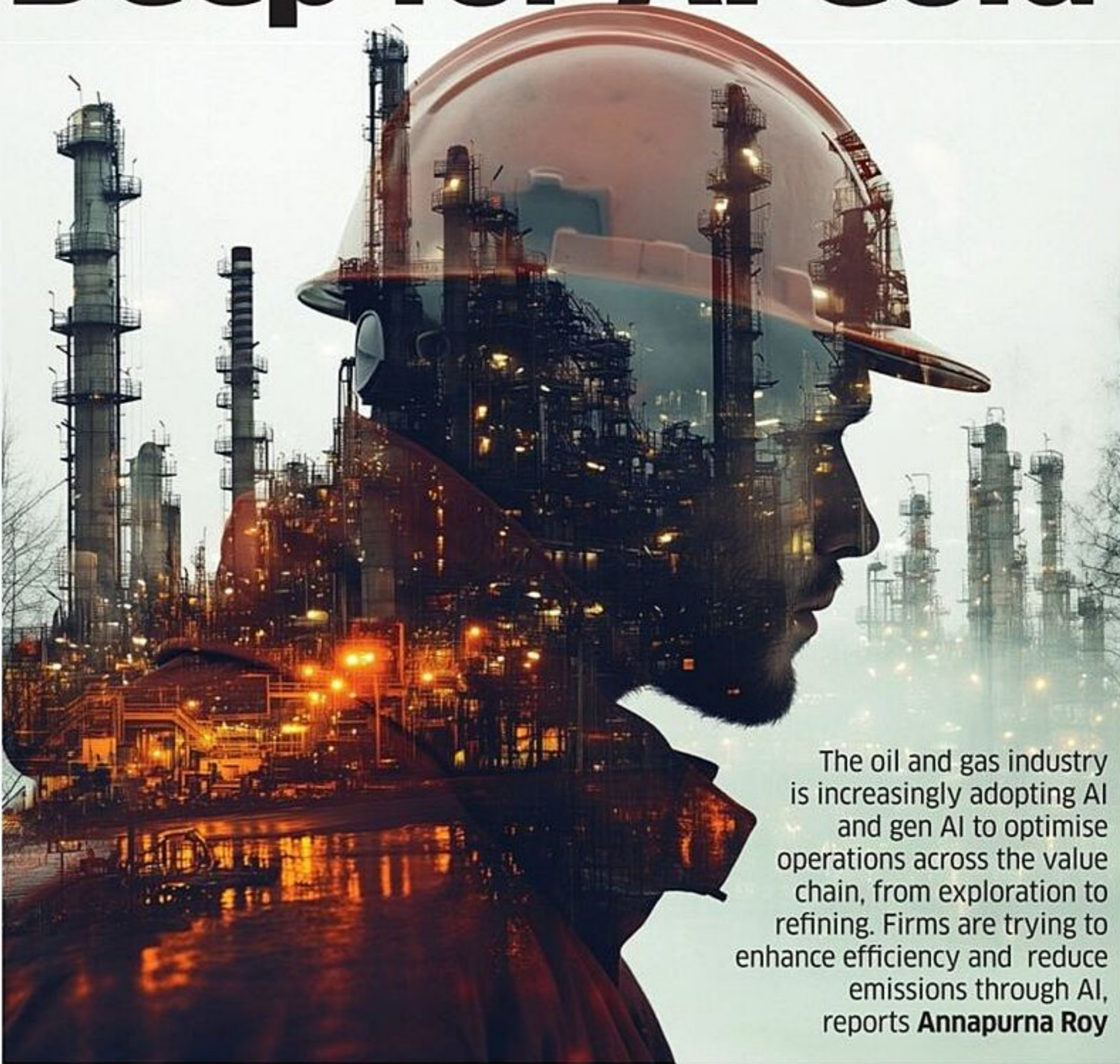
"You're seeing massive efficiencies, particularly in the upstream segment, much of it because of new technologies like AI, and in areas where there's a net saving," De explained. For instance, if heat loss in a petrochemical plant can be brought down by even 2%, that has a significant positive impact on the bottom line. In another instance, Indian Oil Corporation (IOC), is using GenAI for project delay compendium analysis, using historical learnings from large projects over the last two decades. It also has GenAI solutions to query legal compendiums, a chatbot for human resource functions, and customer sentiment analysis and visualisation.

For the international trade department, which carries out negotiations to import oil, GenAI helps with email summarisation and price discovery.

Manish Grover, executive director (strategic IS & IS), refineries HQ, at Indian Oil Corporation, said, "We have AI initiatives towards yield optimisation and maximisation. AI can tell us what is required to be produced—if there is X rate in the market, then which is the yield which will give me the maximum profit at that point of time."

An AI-powered integrated planning tool for supply chain management has helped to improve crude oil evaluation, short- and long-term planning, and busi-

Oil & Gas Cos Dig Deep for AI Gold



The oil and gas industry is increasingly adopting AI and gen AI to optimise operations across the value chain, from exploration to refining. Firms are trying to enhance efficiency and reduce emissions through AI, reports **Annapurna Roy**

Top roles expected to create demand in 2024 in the oil and gas industry	Experience Range (years)	Open Demand by FY 2025
Data Scientist & Engineering	5 - 12	55%
AI Solution Architects	8+	47%
Geoscientists & Reservoir Engineers with AI Skills	5 - 10	22%
AI Ethicists and Policy Analysts	7+	15%
AI Project Managers	9+	15%
AI Consultants and Advisors	10 - 12+	27%

SOURCE: TEAMLEASE DIGITAL

ness decision-making, Grover said, adding that 85-90% of the crude is imported—the largest capital expenditure for the company—and evaluation in an efficient manner is vital. AI is also being used to monitor and optimise IOC's shipping processes and avoid possible damages.

"Whenever data is being created, we are using the power of AI to give us more insights and decision-making tools," Grover said. "Over the last five years, OT (operational technology) and IT have been integrated to enable this."

For energy efficiency improvements, IOC has rolled out captive power plant dashboard and optimisation at their refineries, along with energy management systems installed for end-to-end utilities and supply-side optimisation through consumption monitoring and data of supply side utility costs.

"Ultimately, when I'm investing crores in projects and they don't come in time, I'm losing money, I'm losing productivity out there," Grover said. "All these solutions together let me monitor my projects better, maybe take those preventive steps so that the projects are coming on time."

The global AI in oil and gas market is expected to grow by 16.17% by 2028, of which the Asia-Pacific region will con-

tribute 38%, according to data from Teamlease Digital. India will contribute more than 50% to the Apac share.

"The sector being a continuous process sector, live monitoring and control take priority, leading to emerging technologies taking centre stage to reduce process time and error rates," said Munira Loliwala, vice president - strategy and growth, at Teamlease Digital.

With AI, organisations are able to see a 20% improvement in operational costs and an approximately 40% increase in data accuracy, according to Loliwala. The sector is also seeing upwards of 50% improvement in creating a paperless environment.

AI also assists refinery companies in meeting crucial quality standards. By predicting potential deviations in product quality before they occur, production specialists can proactively make adjustments to reduce waste and ensure consistent production reliability and environmental sustainability, said Loliwala.

Improvements in efficiency for the green line also make strategic business sense, said experts. Tech giant Accenture estimates that AI and GenAI can help drive 1-2.5% improvement in topline, 2-3% reduction in cost and 3-6% reduction in capital spend across the value

chain. "Emerging product substitutes, increasing regulatory and environmental requirements, new entrants from the diversified ecosystem and changing consumer preferences are necessitating the need for a radical change," said Hari Shankaranarayanan, managing director and lead - energy, Accenture in India.

Experts said GenAI bots have significant application in corporate functions—which are very large in oil and gas companies—across management of personnel, basic claims related matters, or legal matters. GenAI can act as "non-human eyes" for contract monitoring and reporting, said Deepak Mahurkar, partner, PWC. He said reducing manual interventions in processes and bringing in agility is a priority for companies across sub-surface, above surface, transportation, retail, gas, liquefaction, and others.

"Business expansion and increasing revenue through lateral expansion, forward and backward integrations—this is an aspiration of oil and gas companies," Mahurkar said.

For instance, oil tankers today are highly sensorised and AI helps detect and flag any anomalies in transportation. The technology can process data for as many as 50,000 trucks every second.

AI helps tailor customer experiences, as proximity sensors at retail outlets can alert fuel stations of nearby customers and registered customers can be flashed advertisements or fuel rates, Mahurkar said.

While use cases are still emerging, companies are seriously weighing options and are ready to spend money to develop them, Mahurkar said.

Most organisations are investing nearly 20% of their budget in AI development, according to Teamlease Digital's Loliwala, which enables them to digitally transform their business.