

SUPPLY CHAIN INSIGHTS

BIG ENERGY MEETS BIG DATA

The energy sector is finding new ways to tap into its data reserves.

The energy industry is a data-rich environment. Across the sector, companies collect a wide variety of data in huge volumes, often at high velocity. Geologists gather seismic data to pinpoint potential new sources of gas and oil. Renewable companies continually watch the sun and the wind to both identify changing patterns and optimally locate energy generation sites. National Oil Companies (NOCs) are using drones in remote locations to gather visual information on, for example, pipeline leaks. And refineries and processing plants increasingly depend on big data to predict production failure and activate remedial maintenance, thereby reducing downtime.

The industry as we know it today simply wouldn't exist without its data. But despite its importance, most energy companies do something strange with the vast majority of the data they generate: They throw it away. There are practical reasons for that. In aggregate, the equipment installed on an offshore oil

platform generates between one and two terabytes of data every day. Right now, those facilities just don't have the data bandwidth to export most of that data for analysis. As a result, they monitor the data stream for things they know are important, like indications that there is a safety or production issue. If there's nothing there to raise concern, the remaining data may be stored locally for a while, but it is ultimately deleted.

Drilling for insights

Today, however, there's a data revolution underway. Across industries, the emergence of new artificial intelligence (AI) technologies are allowing organizations to use their data in much more powerful ways. Unlike the software systems of the past, the latest analytical approaches don't get bogged down by huge data sets, they thrive on them. Today's AI-based systems can take in big data, evaluate and categorize it, and then draw inferences from this to provide an insight, decision or conclusion.

For data owners, this kind of analysis has huge potential. Instead of just combing their data for things they already know about, they can now mine it for entirely new insights, revealing opportunities for improvement they had no idea existed. Moreover, the more data these AI systems consume, the smarter they get. AI-based systems can learn continually from the real world, adjusting their models in response to the latest information and forming new insights.

Energy companies have been quick to spot the potential of this new approach. For example, oil major Total recently signed an agreement with Google Cloud to jointly develop artificial intelligence solutions applied to subsurface data analysis for oil and gas exploration and production. Offshore, companies are exploring the use of hybrid approaches, in which the torrent of operational data is scanned by local AI systems and a smaller subset of that data is exported for central storage and analysis.



AI en route

The growth of AI also has profound implications for logistics in the energy industry, says Steve Harley, President Energy, DHL. “Logistics networks are now shifting to a proactive and predictive paradigm. Computer vision and language-focused AI systems are helping logistics personnel to see, understand and interact with the world in new and more efficient ways. AI technologies are also enabling a new class of intelligent logistics assets to augment human capabilities – for example, automation can be added to essential Health, Safety, Security and Environment (HSSE) compliance checks, ensuring any irregularity or misalignment is instantly identified and escalated for urgent attention. One of our customers is considering applying AI to the logistics operations of an offshore rig in the North Sea,” he adds, in order to improve the efficiency of supply vessel, helicopter and personnel movements, while also raising safety standards.

— **Jonathan Ward**