

# Digitalization is Changing Offshore Operations

John Donnelly, JPT Editor | 06 May 2019

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The Offshore Technology Conference (OTC) launched its golden anniversary 6 May with a wide-ranging panel discussion on the current viability of the offshore sector and how digitalization will change it in the future.

Operators, digital and traditional service providers, and academics offered their vision of what lies ahead in the session titled, “OTC’s Golden Anniversary Opening Session: The Next 50 Years of Offshore Developments.” The annual conference, the largest event focused on all aspects of offshore exploration and production, runs through 9 May in Houston.

Total is the latest operator to publish a prediction of what the future global energy mix might look like. Its *Energy Outlook 2040* proposes two distinct scenarios of the energy future: a momentum scenario, in which oil demand is dominated by transportation and petrochemicals, and a rupture scenario, which sees a massive shift in public policy and the growth of renewables. Either way, “our industry has a major role to play in climate change issues,” said Arnaud Breuillac, president of exploration and production for Total.

The global energy mix is changing, he said, but the question is how rapidly, especially regarding use of electric vehicles and the growth of electrification in developing countries. Given the pending population growth and the fact that 1.5 billion people do not have access to energy now, increased use of natural gas and renewables is the “right approach to stabilize the energy system,” Breuillac said. The 21st Century will likely be the “century of electricity,” he added.

“It is clear that the pace of change does not lie entirely in our hands,” he said about the use of hydrocarbons in the future, but will be influenced by the public and policymakers as well. For now, Total is pursuing projects on the low end of the cost curve while trying to reduce its carbon footprint from production to customer delivery.

Whether the industry should pursue a future of reduced hydrocarbon production and use appears to be a dilemma, said panel moderator Scott Tinker, director of the Bureau of Economic Geology at the University of Texas at Austin. If climate change is the worst problem, then reduced hydrocarbon use could be part of the solution; but if poverty is the globe’s biggest issue, then hydrocarbons are undoubtedly part of the solution.

Although the industry “does produce a lot of CO<sub>2</sub>,” Tinker said, access to readily available and affordable energy also alleviates hunger and provides clothing, shelter, and clean water, and allows access to education, health care, and medical services, among other things. Offering more perspective, Tinker noted that although there is a lot of talk about the growth in wind and power for energy, their use is but a fraction of demand for oil, natural gas, and coal. Over the past several decades, carbon emissions in the US and Europe have been flat to slightly down, while emissions in Asia have grown sharply, he said.

The offshore is still viable despite the recent emphasis on renewables and the astounding growth of

the shale sector, said Roger Jenkins, president and CEO of Murphy Oil. This is a great time to participate and invest offshore because the current cost structure is low and efficiency gains in the sector are “still at the infancy stage,” and new technologies and execution models are shortly ahead. “Every day we are evolving,” he said.

Jenkins said adoption of digital technologies will continue to improve offshore operations, including improved well efficiency, real-time directional drilling, lower maintenance costs, and safer operations. Other improvements will include subsea multiphase pumping, use of electric BOP and control systems, better seismic gathering and interpretation, and use of digital twin of assets, which will lead to efficiencies in maintenance.

Malcolm Frank, author of the book *What to Do When Machines Do Everything*, believes the oil and gas industry is “late to the party” when it comes to adopting digital technology, but could benefit from learning from the mistakes of other industries that were early adopters. “If you manage it correctly, this will open new horizons of growth and new opportunities.”

Artificial intelligence is one of the great enablers in history, he said, on a par with the invention of the loom and other groundbreaking shifts in how people work and produce goods and services.

“The robots aren’t coming, they are already here,” he said, citing common technologies such as Spotify, Alexa, and Facebook.

Many industries and even professional sports teams now realize that the use of virtual and augmented reality increases retention rate and can be a superior way to learn. Other industries have adopted “smart infrastructure,” he said, connecting all operations to the Internet to increase efficiency and reduce maintenance time.

One hindrance to buying into large-scale use of digital technology is fear from employees that they will be replaced by machines. But 75% of the time in industry, Frank said, machines and the use of bots enhance one’s job, not eliminate it. But management will need to determine how best to merge humans and machines in their companies.

The industry is “wide open” to improve operations through virtual and augmented reality, smart infrastructure, robotic processes, and the use of bots, he added.

Even in a digital age, TechnipFMC CEO Doug Pferdehirt believes the oil and gas industry can be an attractive industry in which to work for the same reason it has been in the past because it offers:

- A clear sense of purpose, as it helps meet the world’s energy needs and raises standards of living
- Opportunities of discovery to those who are pioneering, courageous, and determined.
- The pursuit of innovation that has been and will continue to be transformational.

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