What next for refining and petrochemicals?

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John Abbott

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John Abbott was appointed Downstream Director and a member of the Executive Committee of Royal Dutch Shell plc on October 1, 2013. He joined Shell in 1981 after graduating from Birmingham University, UK, with a first-class honours degree in Chemical Engineering.

John has since worked in the UK, Singapore, Thailand, the Netherlands, Canada, and the USA, predominantly in the areas of Global Manufacturing and Supply, Trading and Distribution. In 1994, he was seconded to the British Government on a brief assignment to work in the Central Policy and Planning Unit of what was then the Department of the Environment.

In 2006, John became Vice President Manufacturing Excellence and Support, based in Houston, USA. Two years later, he became Executive Vice President of Shell's Upstream Americas Heavy Oil business, based in Calgary, Canada.

In 2012, John was appointed Executive Vice President of Global Manufacturing and led a team of 30,000 employees and contractors based at around 30 refineries and chemical sites worldwide.

John is a Fellow of the Institution of Chemical Engineers, as well as a chartered engineer and chartered scientist.

A British national, John is married with two adult children and enjoys cycling, astronomy and photography.

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With the arrival of battery electric cars what does the future hold for the refining industry? And how does the petrochemical industry sit within the global energy transition which is underway? In this speech, John Abbott says that both refining and petrochemicals need to become more integrated, reduce their carbon intensity and take advantage of the opportunities digitalisation brings. But, if they can do that, they can look forward to a bright future.

Ladies and gentlemen,

I wanted to tell you about something I heard recently.

A few months ago, a Croatian businessman decided to take a road trip from Istanbul to the far north of Norway, and back again, 10,000 kilometres, just to prove he could.

What made it a challenge is that his car is a battery electric Tesla. He describes himself as a masochist for attempting the journey, and it was not always easy, but he did it.

Given the range concerns around electric cars, this could be considered a big achievement.

Breakthrough

He reminds me of Bertha Benz. Her husband was Karl Benz, the founder of Daimler. She took her husband's prototype car on a 180-kilometer trip without asking him.

There were no gasoline pumps back then. She had to fill up at pharmacies, because they were the only places you could buy gasoline.

It was the first long-distance journey in a motor car… history has proved that this was definitely a big achievement.

The world has changed a lot since Mrs Benz took her road trip. And there is a lot more change happening in the world right now. There is a global energy transition underway. And battery-electric cars are just one part of that.

The world has to undergo this transition because it has to meet the energy needs of a growing global population at the same time as rapidly reducing its carbon emissions. As this growing population improves its living standards, that energy demand will rise.

But what does this mean for refining and petrochemicals?

While nobody can forecast with certainty the future pace of change and its impact on demand, I believe there is a bright future for both areas. Let me explain why.

Rising demand

With petrochemicals, that is easy.

Demand is growing, up by an average of 3.7% each year in the last 15 years. People want petrochemical products. They need petrochemical products. And, in fact, some of these products, such as insulation, are going to be important in the world's efforts to cut its carbon emissions.

These strong fundamentals are why Shell considers its chemicals business to be a strategic growth priority.

And this means Shell is investing.

Right now, the company is building its fourth linear alpha olefins unit in Geismar, Louisiana, in the USA. The 425,000-tonne-per-year capacity increase will make the site the world's largest alpha olefins producer.

With our partner CNOOC, Shell is also expanding a facility at Nanhai, China. The new ethylene cracker and ethylene derivatives units will increase ethylene capacity by more than 1 million tonnes per year, about double the current capacity.

Shell will also build a major new petrochemical complex near Pittsburgh, Pennsylvania, in the US.

But what of refining and the transport fuel it produces? Has that Croatian businessman

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shown that the battery electric car has now finally arrived? Can there really be a bright future for refining? Yes. Yes there can.

Bright future

For a start, to misquote Mark Twain, reports of the death of the internal combustion engine have been greatly exaggerated.

That trip that Bertha Benz took happened in 1888. It took decades before the motor car became truly global. Would that Tesla trip be possible across Asia? South America? Africa? Not yet, probably.

Today there are about a billion cars on the road and around two million of them are electric. By 2040 the IEA believes there will be 2 billion cars on the road and 150 million of them will be electric.

That is a jump in electric cars from under 0.2% of the world's car fleet to 7.5%. It still leaves 92.5% on other fuels.

But then there are trucks, ships, jet planes. None of these can run on electrons yet.

It is not just petrochemicals the world needs, it needs gasoline, diesel and jet fuel. It needs refineries. On top of that, petrochemical facilities themselves need refineries.

Strategies

None of this is a reason to be complacent. We can especially never afford to be complacent over safety. And Shell knows its products have to be cost competitive and socially acceptable in a world that needs to cut its carbon emissions.

To address this, Shell has three main focuses, and this is true of both refining and petrochemicals.

Firstly, the full integration of our operations to ensure that refining, chemicals and our trading arm are all working closely. This maximises the returns we can extract.

Secondly, we need to reduce our own operational carbon intensity. This is a big job but, from this year, managing carbon intensity has become a part of the scorecard that determines Shell employee bonuses, including mine.

Thirdly, by using the opportunities of digitalisation to strip out costs and streamline manufacturing processes.

And just one final point.

Karl Benz died in 1929, more than 40 years after his wife's famous drive. When he died, cars with combustion engines were still facing competition from steam-powered vehicles.

Yes, the world is changing but global change takes time.

In that time, there is much the industry can do to get in shape. If it can do that, there is a long future in store, both for petrochemicals and for refining.

Thank you.

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