

Taking the initiative to change

The world is moving fast and that creates tremendous opportunity to think outside the box and fuel change through innovation, says sponsor ExxonMobil Chemical

ANDY BRICE LONDON

To be a successful innovator in today's ever-changing chemical landscape, it is vitally important to allocate sufficient resources, not only in terms of funding, but in time and people. To succeed, you need the right attitude, appetite, drive and commitment.

Dave McConville, vice president, global chemicals technology at ExxonMobil, says the business has three distinct paths for delivering innovation. First, there is significant investment within the organisation itself, with a spend of around \$1bn/year directed not only at looking to new ideas but taking existing concepts and improving them, he says.

Collaboration is another important area, working with industry partners on joint developments where there are common interests and goals.

The third aspect is the corporation's commitment to supporting research with academic and non-governmental institutions. "We think this is particularly important because there are a lot of really excellent ideas within the academic community but what's often missing is the ability to scale up the technology," says McConville.

"That's where I think major corporations like us can play a big role, helping with the translation of that technology at the conceptual level to increase the impact it can have on society.

"In our business, we're continually trying to improve," he says. "Many of the processes we run are quite mature and the improvements we make tend to be incremental – but they're still extremely important. These help us to stay competitive, as well as helping to reduce our emissions, cut energy consumption, and improve our products and processes."

"Although it's about continuously improv-

ing the materials that we already sell into the market, we're also looking for opportunities for gamechangers – the really big ideas. You constantly have to ask whether you are working on the right things," he notes. "Are you looking at something that is really going to move the needle for your business and society?"

Sustainability and the drive towards greater efficiency is certainly stimulating R&D, he adds, and it is encouraging chemical players to break into new fields and explore new and exciting opportunities.

"I think there's a lot of out of the box thinking going on in our industry and sustainability is becoming a bigger driver for innovation. If you compare the type of work we're doing today to even 30 years ago, it's very different. There are just so many opportunities that are afforded by the drive for sustainability that it opens doors to things that simply would not have been pursued in the past."

McConville points to ExxonMobil's development of biofuels via algae and its partnership with California-based Synthetic Genomics. After some significant breakthroughs with the technology in June 2017, they announced in March this year that they were targeting a 10,000 bbl/day algae biofuel facility by 2025.

"That itself tells you that when you focus the research and investment you can achieve some pretty remarkable things. That development could be really important for the planet in the future."

DAVE MCCONVILLE
Vice president, global chemicals technology, ExxonMobil

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Green algae offer a potentially attractive route to alternative fuels

ExxonMobil

Other examples, he says, are its halobutyl rubber products, which improve air retention in tyres and improve fuel economy while reducing the CO₂ footprint, or the work taking place with Connecticut-based firm FuelCell Energy on carbonate fuel cells – a promising technology that makes it possible to capture CO₂ streams from power plants, run them through fuel cells and generate electricity.

A few years ago, ExxonMobil also launched *Exceed XP*, he adds, a new line of polyethylene (PE) that provided yet another "step change in performance". This new material enabled the next generation of down-gauging of films for the flexible film packaging industry, he says.

In addition to reducing the amount of material needed to package the same application, this material significantly reduces leakage that sometimes occurs in so-called "bag in box" applications. "This is another example of continuous development in an area where we thought performance was beginning to flatline," he says.

Moving forward, recycling and life cycle assessment remains a key priority, he explains. While the benefits that plastics have brought to society are clear – from the lightweighting of cars to increasing the shelf life of food – the industry recognises that plastic waste is a major issue that needs to be addressed.

"Plastic is building up in the countryside and in our oceans because it's not properly recycled, but there's a lot of carbon and energy contained in that plastic, and a lot of opportunity," he says.

"The question is, do you continue to landfill or look for ways to turn it back into feed for a process you run? This is certainly something that we're all looking at and an area that I think is going to evolve quickly over the coming years.

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