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A look at BMW's electric future, its impact on supply chain and sustainability

Stefan Juraschek, vice president development electric-powertrain, outlines the company's strategy for EV and battery supply chain.

As part of a mixed drivetrain future, BMW will base its model range on a flexible platform. The company will be able to make agile choices of all-electric, hybrid drive or combustion engines, according to market demand. This will make the transition to an all electric future easier to achieve.

Battery choice

BMW has settled on prismatic cell technology, unlike rival's choice of round or pouch cells. Hard case technology increases the level of automation during battery assembly. Integrating safety systems such as cell shut down in the event of a short circuit is also easier. Prismatic also achieves a higher packing density, making for better space efficiency in the car.

Supply and demand

BMW is confident its battery supply chain will be meet growing demand for battery cells, through long term contracts. It has built up in-house battery expertise via joint projects with global partners across the value chain. The company is lowering the proportion of critical raw materials, such as cobalt in its battery cells. The fifth generation BMW electric powertrain is now completely free of rare earths.

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Catching up with China
European OEMs are often thought to be behind Chinese in battery cell development. But, BMW believes its battery technology is on a par with or superior to the competition’s.

Development work since 2008 is an advantage and BMW will continue to expand in-house expertise to advance cell technology. BMW is clear that building cell prototypes and producing small batches enables it to analyse the production processes and deliver build-to-print capabilities.

It can provide system suppliers with exact instructions based on BMW Group specifications, from material selection through to cell production. BMW makes electrical components, if it sees an advantage to be gained from it, as is the case with the electric powertrain.

When the development plans for the BMW i3 emerged, it was clear there wasn’t a single electric motor on the market that would have met the criteria. BMW is as unwilling now to make any compromises when it comes to key performance characteristics, such as space requirements, output and weight.

Drive systems have always been an area that has set the BMW Group apart from the competition.

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And exactly the same applies to electric drive systems.

But, in BMW's view, producing cells would not give it the same competitive advantage, either now or in years to come.

Sustainability

The BMW Group is working with Northvolt and Umicore to to establish a closed lifecycle loop for sustainable battery cells in Europe.

This starts with a recyclable cell design and continues with a production process that uses renewable energies. The battery cells should first fulfil their primary purpose in cars for as long as possible.

Once their lifecycle there comes to an end, they could be used in stationary energy storage devices. Finally, the battery cell is recycled and the raw materials reused, completing the loop.

BMW is focusing on cell development, Northvolt is building a cell production facility in Sweden and Umicore is the materials cycle and recycling expert.

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