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Jenny Schoeppe, Senior VP, ZF Group, Global Commodity and Purchasing.

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Scaling Up Automation And Connectivity

Radha Krishnan, President and Founder, Detroit Engineered Products (DEP) in an upfront interview with **Deepti Thore** speaks on revolutionising existing technologies with automation and connectivity.

@DeeptiT9
Deepti Thore

Q. Can you give us an insight into the automated process for parametric modelling patent?

A. We are continuously working towards reducing the time taken for a customer to get to market by systematically and optimally automating as many Computer-Aided Engineering (CAE) processes. This automated parametric modelling process which is patented broadly includes building a parameterised CAE model from Computer-Aided Design (CAD).

"Converting gasoline to EV vehicles and fast-tracking the design and development of EV vehicles is where the market is geared at."

The automated processor includes a set of rules and templates for identifying geometric features. This feature generates parameters automatically, allowing for the efficient modifications to various elements in the parametric model. Engineers can use the parametric approach to create different configurations of their designs quickly and easily.

Q. What are new developments for the automotive segment?
A. Most countries have accelerated heavily towards going green in the last few years, and the greatest developments being made are in the electric vehicle space. For instance, Europe's announcement to go fully electric by 2035 has fast-tracked a lot of developments and collaborations globally between the automotive industry, service providers, battery cell manufacturers, and a lot of startups have emerged in this space too. Converting gasoline to EV vehicles and fast-tracking the design and development is where the market is geared at.

Q. How are you ensuring cost-effective product development and time savings?
A. Cost-effective product development is only one aspect, the criteria is always to provide maximum value to the client. By providing the highest quality in the shortest time possible, in the most economical way. At DEP, a number of factors are optimally primed to achieve this. We have our own in-house proprietary CAE platform, DEP MeshWorks which we can develop and tweak as needed enabling a high degree of customisation to the client. Additionally, we have a workforce including over 95 per cent engineers, most of whom have advanced degrees (Masters and PhDs), which results in a high quality of solutions. Tying up with strategic partners globally, and working strategically with low-cost centres ensures a cost-effective solution for our clients.

Q. How are you facilitating digital transformation for the segment?
A. We aim to provide customers and consumers with a future driving experience that is lighter, smarter, faster and safer. With the current fast-paced growth of the automotive industry, there is a great need for companies globally to adapt digitally. We help companies harness the power of CAE and enable design-driven cost reduction at the design stage itself. This can really help manufacturers identify critical features of their cars that consumers value and cut out costly waste. Ultimately, these cost-cutting measures will result in lower unit costs for consumers and a quicker time to market. Frugal engineering can effectively reduce costs and is perfect for growth platforms in emerging markets, while infusing

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> "The emphasis on electronics in the car is rapidly increasing as the consumer is no longer looking at the car as just a mode of transport. Demand for electronics is only going to increase as even the small and mid-segment carmakers and two-wheeler companies are starting to provide advanced features."

collaboration and flexibility into the implementation process.

Q. How are electronic advancements influencing the future of the automotive industry?

A. Electronics is a key element of the value creation in the automotive industry. With the advent of increasing personalisation and digitalisation we are seeing all around, the emphasis on electronics in the car is rapidly increasing as the consumer is no longer looking at the car as just a mode of transport. Demand for electronics is only going to increase as even the small and mid-segment carmakers and two-wheeler companies are starting to provide advanced features. Major applications like safety and ADAS, infotainment, body electronics and e-powertrain are no longer just luxury features but are being seen across variants, and will only increase.

Q. Tell us about the Morphing technology concept.

A. Morphing as the name suggests is an adaptation of a given shape to a new form. Usually in a design cycle, Finite Element (FE) modelling and simulations are performed once the concept CAD is generated. With the need to reduce design iterations, it is useful if the concept changes are made in the FE model itself, taking the time required for CAD generation off the cycle. This can be achieved by CAE Morphing. DEP MeshWorks' powerful CAE function encompasses a feature-based morphing tool that can rapidly morph existing FE and Computational Fluid Dynamics (CFD) models to match new geometry and/or to new proportions. Component and full system level FE/CFD models (such as automotive vehicle crash, NVH and durability models) can be morphed precisely to fit target design features such as styling lines, sections, and proportions among others. Overall, it minimises time in design modification by directly working at the mesh level thus improving the overall lead time.

> "DEP solutions are aimed to both revolutionise existing technologies and create new and exciting concepts."

Q. How are you helping the industry's transition to electrification?

A. With the rapid overhaul in the mobility industry, technology evolution is favouring key trends including automation, electrification, connectivity, shared mobility, and 360-degree engineering enhancements. Innovations in the mobility segment are geared towards both better experiences for the consumer and societal good. DEP solutions are aimed to both revolutionise existing technologies and create new and exciting concepts. In turn, it optimises automation and automotive connectivity. DEP with our specialised connected and autonomous vehicles solutions, cater for the needs of the different categories of connected car technology including infotainment, telematics and infrastructure. We have focused service packages on infotainment with heads-up displays, audio, in-car entertainment, telematics to connect the car allowing it to gather and share data, and infrastructure to help bridge the car and the environment.

> "We have focused services packages on infotainment with heads-up displays, audio, in-car entertainment, telematics to connect the car allowing it to gather and share data, and infrastructure to help bridge the car and the environment."

Q. Any collaborations that could fuel growth plans?

A. We are constantly expanding our reach globally by tying up with strategic partners that can benefit both mutually. We have offices in the USA, China, Korea, Japan, and India, and through our 23 partners globally, we have a strong footprint in Europe, South-East Asia and Canada as well.

Q. What is the outlook for the foreseeable future?

A. There are so many things on the horizon for the automotive sector. Several leading OEMs plan to shift to in-house chip production through strategic alliances with leading semiconductor

"Many automotive OEMs and technology companies are testing the feasibility of 'Digital Twin' and 'Metaverse' technologies, especially in autonomous driving."

manufacturers. Technology companies are deepening their presence in the automotive industry by serving as future mobility enablers. Vehicles from mass-market OEMs will see increased adoption of connected services technologies. Many automotive OEMs and technology companies are testing the feasibility of 'Digital Twin' and 'Metaverse' technologies, especially in autonomous driving. Digital solutions are extending across the entire customer journey, including the aftermarket. The growing EV population will spur demand for niche services and EV parts replacement in the aftermarket. As for the shared mobility market, new mobility patterns will emerge as consumer attitude change and demand services emerge based on lifestyle choices. **ACI**