

# Motoring

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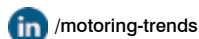
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*Motoring Trends* from PIN 365 will focus on the entire spectrum of the automotive industry in India and around the world. True to its tagline: 'Powering The Mobility Ecosystem,' the bi-monthly magazine will give you in-depth information about the current and the emerging trends of the automotive industry in different sections of Cars, Commercial Vehicles, 2 & 3-wheelers, Components, New Mobility, Technology, Research & Development, Off-road and News Around the World along with a regular feature – 'Sublime Substances.' The Cover Story will be a detailed and well-documented analysis of megatrends that will impact the industry or companies that set new benchmarks. *Motoring Trends* will be a reliable knowledge partner for the automotive professionals, decision-makers, academics and research students.

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Kindly visit our website [www.motoring-trends.com](http://www.motoring-trends.com) for instant updates on the happenings in the automotive world.







# The Good Times

The commercial vehicle industry has performed well in the last financial year and is doing well in the current financial year. The healthy performance of the respective vertical of the automotive sector comes after a prolonged slowdown and much regulatory pressure. The regulatory pressure hasn't seemed to have eased, whereas the expectations of commercial vehicle buyers and users have changed significantly. The pandemic may have contributed its bit, but the focus in the commercial space is increasingly on TCO rather than the initial acquisition cost. With sectors like e-commerce and express delivery helping make some drastic shifts in the Indian auto industry in terms of electrification and more tonnes-per-km and giving vehicles like the Tata Ace Electric and premium Volvo 4x2 tractor a reckoning, it is the construction and infrastructure as well as the e-commerce sector that are expected to drive the demand for commercial vehicles.

On the bus side, the launch of a new bus by Volvo in India indicates that the premium bus segment is alive and kicking. Volvo is the only one there. The Mercedes-Benz premium rear-engine luxury bus was withdrawn at the time of transition to BS VI and should take some time to return to the scene of action. With the new regulation of 13.5 m length for two-axle front-engine bus segment getting OEMs and bus body builders to go back to their drawing boards and return with some very interesting designs, it is the movement in the tourist, staff and school space that is proving to be a positive driver for buses, which were the worst affected during the pandemic. Happenings like the electric double-decker bus are far and wide but indicative of how excitement in the bus space can be dialled with innovative products. The best part of this all is a rising concentration on alternative fuel technologies.

**Bhushan Mhapralkar**  
Editor

## Motoring Trends

Vol No: 3 | Issue No: 5 | September-October 2022

**Subscription:**  
6 issues: INR 2,400/- USD 150  
12 issues: INR 4,800/- USD 300  
Single copy: INR 400/- USD 25

Printed by Maya Powath at Five Star Offset Printers, Building no. 1/151, A, B & C, Nettoor, Maradu Municipality, Ernakulam District, Kerala State-682 040 and published by her at 20 Vaikunth, Mount Mary Road, Bandra (West), Mumbai - 400 050  
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## Dr Holger Klein Appointed Chairman And CEO Of ZF Friedrichshafen AG



Dr Holger Klein

**D**r Holger Klein, Member of the Board of Management at ZF Friedrichshafen AG (ZF) and responsible for the Asia-Pacific region, Car Chassis Technology Division, Aftermarket and Production, will succeed Wolf-Henning Scheider as the Chairman and CEO at the turn of 2022/2023. Joining ZF in 2014 as a seasoned

international industry expert from McKinsey management consultancy, Dr Klein led the integration of US company TRW Automotive post-acquisition. He completed the assignment earlier than planned. Taking over the reins of the Car Chassis Technology Division in 2017, he realigned its product range with ZF's 'Next Generation Mobility' strategy. Serving as a member of the ZF Board of Management since 2018 and heading the Asia-Pacific and India regions from Shanghai, Dr Klein has under him the business of the Passenger Car Chassis Technology and Aftermarket divisions. **MT**

## Ganesh Mani Is President And Chief Of Operations At ALL



Ganesh Mani

**A**ppointed as Ashok Leyland's President and Chief of Operations, Ganesh Mani will head manufacturing, sourcing and supply chain in particular. He will head the entire company operations and leverage over three decades of his rich experience in the field of manufacturing, strategy and formulation. Carrying ahead Ashok Leyland's ambition to be among the

top 10 global CV players, Mani is expected to emphasise on profitability, technology and further strengthening of the product portfolio through an efficient time-to-market strategy. He is also expected to drive digitalisation at Ashok Leyland right down to its various manufacturing facilities in a bid to respond to regulatory and market shifts quickly. Moving over to Ashok Leyland from Hyundai, where he was the director of manufacturing operations and a member of the board, Mani has to his credit seven patents for special manufacturing processes. Currently the Vice Chairman, CII Chennai Zone, Mani has had a stint at Maruti Suzuki too. **MT**

## Michael Lohscheller To Become Nikola CEO



Michael Lohscheller

**N**ikola Corporation has announced the appointment of Michael Lohscheller as the CEO and President. He succeeds Mark Russell, who will retire in January 2023. Joining the Nikola Board of Directors effective immediately to become the CEO while Russell remains a member of the Board, Lohscheller has several notable

achievements to his credit, including the one that has had a major impact in moving the Tre battery-electric vehicle (BEV) into series production. Achieving development milestones for the Tre fuel cell electric vehicle (FCEV), which will advance Nikola's journey as a pioneer in zero-emission transportation and infrastructure solutions, is also one of Lohscheller's accomplishments. With over 20 years of experience in various leadership roles, Lohscheller will help Nikola to capitalise on the growth opportunities ahead of it. **MT**

## Nitin Kant And Monika Saxena Appointed By Revfin



Nitin Kant

Monika Saxena

**A** digital lender through its own Non-Banking Financial Company (NBFC), Revfin Services has announced the appointments of Nitin Kant and Monika Saxena as National Head of Distribution and Chief Strategy Officer, respectively.

With an industry experience spanning two decades in a plethora of business areas such as two-wheelers, consumable durables, personal loans, business loans and healthcare, Kant will be responsible for expanding Revfin's footprints across the EV financing space in the country. With stints at organisations like NIIT, American Express and Samsung, and an experience spanning over 20 years, Saxena will work with the team at Revfin with an aim to retain the undisputed leadership position of the company in the digital lending space. **MT**

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## Mukesh Bansal Appointed TelioEV CTO



Mukesh Bansal

**C**harging network provider TelioEV has appointed Mukesh Bansal as its CTO. Bansal brings with him an experience in the IoT and robotics space spanning over two decades. Having held leadership positions in organisations in the respective space with customer engagement as the criteria, he will oversee all product

business development and identify technology solutions. Driving the team at TelioEV to develop a partner ecosystem for the products of the company, Bansal will also drive firmware capability enhancement and build an end-to-end offering in IoT and EV domain. Having held leadership positions at Signify Innovation India and India Hi-Tech Robotics Systemz, he will work towards the company realising its potential as a market leader in the EV charging network provider segment. **MT**

## Mansoor Ahmed Appointed Isuzu President



Mansoor Ahmed

**I**suzu Motors International FZE has announced the appointment of Mansoor Ahmed as its new President. He succeeds Yasuyuki Nijima, who will remain in the organisation as the Chairman of Isuzu Motors International FZE. Bringing with him a rich experience spanning over 35 years in the automotive sector

across Asia, Ahmed is expected to transform the UAE operations in line with the global shifts taking place in the automotive sector globally. To be involved in the growth of Isuzu in the UAE market by offering a range of efficient commercial vehicles, including the N-Series, F-Series and C&E-Series, he is expected to forward the vision of the Japanese company in the competitive market that the UAE is. Other than serving as the Senior Vice President for Strategy and Product Management at UD Trucks, Ahmed also served at Volvo Group Trucks and at the Tata Group. **MT**

## Hannes Ruoff Appointed CEO Of Porsche Asia Pacific Pte Ltd



Hannes Ruoff

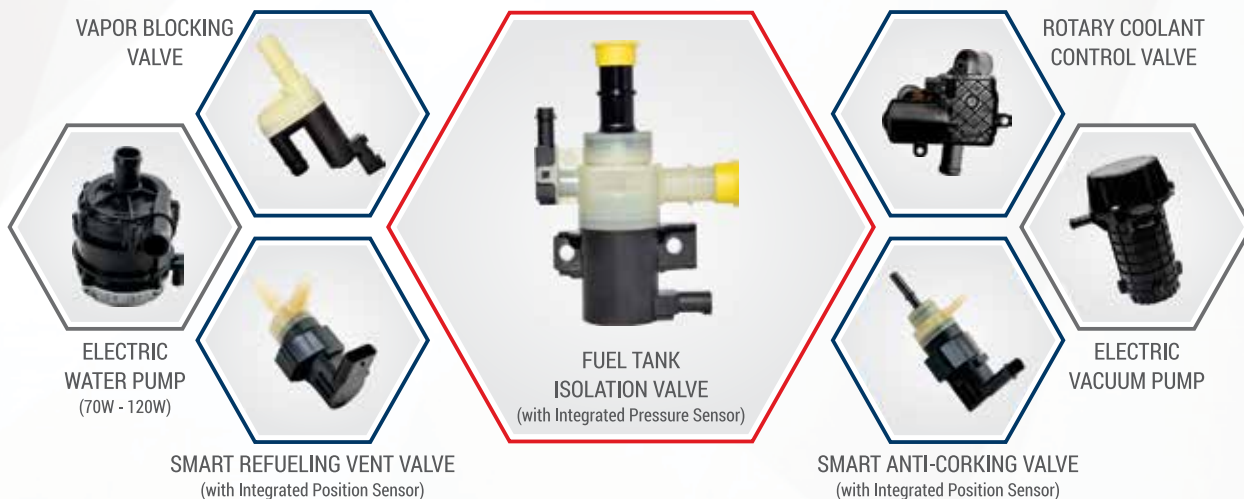
**G**erman sports car maker Porsche has announced the appointment of Hannes Ruoff as its Chief Executive Officer (CEO) for Singapore-based Porsche Asia Pacific Pte Ltd, effective 1 October 2022. Ruoff will press ahead with successful projects that are already underway in the region. He will also expand Porsche's

brand presence in the Asia-Pacific region through new initiatives. Coming to the role from Porsche AG, most recently as the Area Manager for Asia-Pacific and Australia in the Overseas and Emerging Markets sales region, Ruoff will take the challenge of making the local assembly operations in Malaysia grow and address strategic interests of the German automaker. As a subsidiary of Porsche AG, Porsche Asia Pacific serves importers in 13 markets, including Malaysia, New Zealand, Singapore, Thailand and Vietnam. **MT**

## Sunil Puri Is Managing Director Of CASE Construction Equipment India

**A**ppointed as the new Managing Director of CASE Construction Equipment India Ltd, a brand of CNH Industrial, Sunil Puri will bring with him a rich experience of having worked in various positions in the construction equipment and industrial equipment space. With stints at Ingersoll Rand (I) Ltd, Elgi Equipment, Revathi Equipment and Sandvik, Puri has joined Case Construction Equipment India from Bridgestone India. In his new assignment, he will spearhead the operations and expand the brand presence of the company in the region. Bringing in a wealth of knowledge and market understanding with a career spanning over three decades, Puri will drive Case Construction Equipment India to offer innovative quality products and strong aftersales support. **MT**

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As part of a strategy to have half of its vehicle sales to be electric by 2025, the Volvo XC40 Recharge is a compact e-SUV measuring about 4,425 mm in length and 1,863 mm in width. An all-electric version of the petrol-powered XC40, it is the Swedish automaker's smallest SUV! It is also quite sleek and pleasant in its appearance – devoid of much flash and a hurry to brag about its status. So, what makes it stand out is its ability to shoulder quite a bit of technology and a few other surprises. With the facelift getting the SUV a set of angular headlamps with a new iteration of the 'Thor's Hammer' DRL and a slightly more aggressive looking bumper at the front and rear, the XC40 Recharge is distinguished at once by its minimalist closed-off grille. In place of the grille is the charging port. With a ground clearance that is slightly less than that of its petrol-powered version at 175 mm (the battery pack situated in the floor is partly to blame), the electric SUV rides on 19-inch diameter wheels and 235/50 R19 tyres. The petrol XC40 rides on 18-inch diameter wheels, on the other hand.

The increase in wheel diameter has had an ironic effect on the availability of storage space at the rear. The rear boot space is down from 460 litres to 419 litres! The solace, nevertheless, is the 31-litre boot space under the bonnet. With the IC engine taken off, the e-SUV now has more space to present indeed. With the battery pack amounting a big chunk of the vehicle's 2,200 kg kerb weight, the XC40 Recharge carries the minimalist design theme of the exterior to the interior. The interior is therefore minimalist in its approach yet of very high build quality. In fact, the high build quality applies to the entire vehicle. The all-black trim is likely to make some occupants feel a bit claustrophobic, particularly at the rear (the seating position is lower and upright), but the fact is, the electric SUV is fairly comfortable. This is despite the seat cushioning being a bit on the firm side.

In terms of creature comfort, the new infotainment system has been borrowed from the XC60. It packs the telematics and is powered by Google. Glitchy at times, the unit is Android-based, to say the least. It has a number of apps that could be obtained from the Play Store with the help of an e-SIM. Access to Google Maps and Assistant is there. The

# Refreshing Volvo XC40 Recharge

The Volvo XC40 Recharge is set to begin a trend of luxury e-SUVs that are both exciting and capable.

**Bhushan Mhapralkar**

infotainment system interface is also used to access safety assistance features such as lane keeping aid and road sign information. The phone is linked via Bluetooth and the e-SIM, subject to network connectivity. An interesting and informative all-digital instrument console is part of a strong features list of the XC40 Recharge. The others include a panoramic sunroof (with touch controls), wireless mobile phone charging, an ADAS suite with Level 2 autonomous driving, connected car technology (using telematics), powered front seats with driver-side memory and a premium sounding Harman Kardon audio system. Compact yet packing a lot between its fenders, the e-SUV has two motors (one on each axle). They together produce 408 bhp of power and 660 Nm of peak torque.

With an ability to accelerate from 0 to 100 kmph in a spritely 4.9 seconds, the XC40 Recharge performs admirably. Claimed to have a range of 418 km as per the WLTP cycle (The Worldwide Harmonized Light Vehicles Test Procedure that consists of a chassis dynamometer test cycle for the determination of emissions and fuel consumption from light-duty vehicles), the vehicle does not call for a key or pushing the start button to start it. With a rectangular fob in the pocket, all it takes to get the vehicle going is the need to shift the auto transmission lever to 'Drive'. It feels






unusual at first but is easy to learn. A safety catch: the feature works only after it has recognised that a person is in the driver's seat. If the driver's seat is vacated, the drive system shuts down. The entire car shuts down. With the actual range of the 78 kWh-unit battery being in the region of 300 km, the XC40 Recharge feels nimble and agile with an ability to provide acceleration bursts on an open stretch.

Taking a little over 30 minutes to charge up to 80 percent using a 150 kW DC fast charger and around 2.5 hour to charge to 100 percent with a 50 kW charger, the XC40 Recharge responds well to a gentle gas pedal usage in the absence of drive modes. There is one called the Off-Road mode, which, as far as its name goes, is of not much use on the road! Equipped

with regenerative braking when the foot is taken off the accelerator (and during braking), the e-SUV is surprisingly fast in its moments. As much as the 'one-pedal driving' mode, when activated (by accessing the infotainment screen), can get the vehicle to stop immediately if the foot is taken off the right pedal (it takes getting used to and can be effectively used in slow speed city driving), the machine overtakes without a bother. Such is the ferocity with which it accelerates when the pedal is pushed that the overtaking manoeuvres are easily accomplished. It is often that the animal has to be calmed down post the job! It is that instance when the

over 2-tonne weight of the vehicle does not seem to matter at all. It will not be an exaggeration to say that the performance of the XC40 Recharge is of the sports car level.

The ride borders on stiff. The same is evident when traversing a rough patch. On the highway, however, the vehicle stays highly planted. Undulations are well taken care of. The steering provides a good feel even though it is a bit light. The lightness helps manoeuvre in the city. To add more weight to the steering for a highway ride is possible. It is done by accessing the menu through the infotainment screen. Handling is commendable, with the all-wheel drive system ensuring application of power rather precisely.

With the commercial launch set for July 2022, the XC40 Recharge is expected to be priced in the region of INR 7.5 million. If it is priced well below the expected mark, it will have a large swathe of the luxury e-SUV market to itself at least for some time to come. At least until the likes of Jaguar E-Pace are introduced in this market. A trendsetter of the sorts, therefore, the XC40 Recharge will appeal to those who are not keen on something like the Mini Cooper SE to announce their arrival at the office or at a meeting. 



# Bharat Forge Eyeing Growth In Aluminium And Lightweighting Tech

Bharat Forge has established a subsidiary for aluminium products and lightweighting technology solutions.

## Bhushan Mhapralkar

Post the acquisition of JS Autocast Foundry India Private Limited (JS Autocast) in June 2022, Bharat Forge has announced the establishment of a wholly owned subsidiary called 'Kalyani Lightweighting Technology Solutions'. It is born out of the need to drive the aluminium business and offer lightweighting solutions. Focusing on the manufacture of aluminium components for automotive and industrial applications, and on R&D of lightweight solutions, the new enterprise, based in Pune, should provide Bharat Forge an ability to pursue its interests in new and emerging fields such as electrification. Drawing attention to the rising need for aluminium components, among others, in order to reduce weight and, in turn, the carbon footprint, the new wholly owned subsidiary is also claimed to have been established to cater to the shifting requirements of the auto and industrial sectors, especially in a post-pandemic environment where the emphasis on digitisation has been rising to include technologies like AI and IoT.

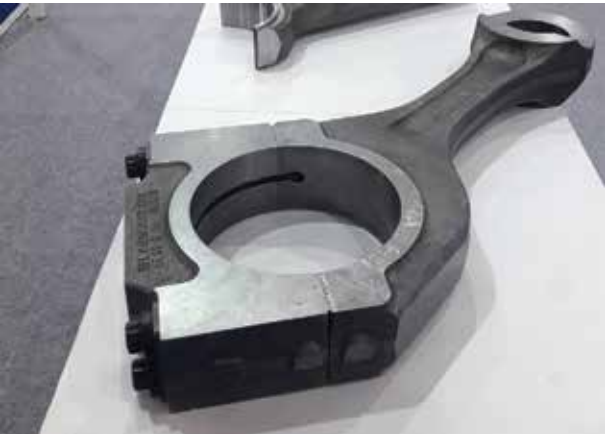
As new technologies take hold in the area of alternative fuels and autonomous driving, Bharat Forge is eyeing new opportunities even as it continues to cater to sectors like power, oil and gas, construction and mining, rail, marine, defence and aerospace, apart from auto. Participating in the defence space in line with the opening of opportunities for private players, and in the aerospace sector through a modern facility at Baramati, the company has picked up a 60.66 percent stake in an electric two-wheeler manufacturing company, Tork Motors, through its subsidiary Kalyani Powertrain. Concentrating on new and innovative products and technologies, therefore, without losing sight of the supply of parts such as crankshafts, axles, connecting rods, dosing components in emission aftertreatment systems, common rails, steering knuckles, control arms, reinforcement brackets, shafts, gears etc., Bharat Forge is staying agile and healthy with the means of organic and inorganic growth.

Acquiring JS Autocast for a consideration of INR 4.89 billion through its subsidiary, BF Industrial Solutions Limited (BFISL), the company is tapping niche opportunities in the auto and industrial segments. Through strategic acquisitions, it is looking at bagging new clients and new opportunities in sectors other than those that it is catering to. While the JS Autocast



Baba Kalyani






foundry with a 28,800 TPA capacity at Coimbatore is expected to help Bharat Forge to gain a tactical advantage, the fact that the SIPCOT foundry of JS Autocast has been granted an environmental clearance to expand its existing foundry operations from 21,768 TPA to 72,000 TPA is not of less significance either. Also, JS Autocast is not the first company that Bharat Forge has acquired in its journey. A year ago, the company acquired Sanghvi Forging & Engineering Limited (SFEL) along with its wholly owned subsidiary, Sanghvi Europe B.V., for a consideration of INR 900 million through BFISL. It has accommodated it as a stepdown subsidiary of BFISL.

Expected to benefit from the expertise of SFEL to manufacture open and closed die forging products for oil and gas, defence, ship building, power, construction and mining, aerospace, railways, marine and general engineering sectors, and from its European arm that is engaged in exports for the last two decades, Bharat Forge has been witnessing a healthy order flow. It has reported a 9.3 percent increase in its consolidated net profit at INR 2.31 billion in the fourth quarter that ended on 31st March 2022. Baba Kalyani, Chairman and Managing Director, Bharat Forge, mentioned, "The Indian operations of the company secured new orders worth around INR 10 billion in FY2021-22 across automotive and industrial applications. This includes a healthy mix of existing and new customers in the area of traditional and new products." In the case of international operations, Bharat Forge is known to have secured orders of around USD 150 million for steel and aluminium forgings in North America. Particular growth seems to come to the company from the supply of lightweight aluminium cast parts for EVs as well. From an OEM in India,

the company secured an order to supply DC-to-DC convertors.

Confident of a strong growth in FY2022-23 with strong cash flows, revenue contribution from new strategic acquisitions and verticals, ramp up of aluminium operations in US and the development of new products for sectors other than those that it has been participating in for a long time, Bharat Forge is keeping an eye on challenges like rising inflation and higher freight costs. Taking interest in the performance of the automotive and industrial supply chains across geographies and amid the changing geopolitical environment, Bharat Forge is charting a strong growth path amid encouraging recovery in many of its existing client areas like commercial vehicles, among others. Drawing attention to a report released in March 2022, Raghunandhan NL, Vice President, Senior Equity Research Analyst – Automobiles Sector, Emkay Global Financial Services, mentioned that the order book of the company is healthy even though some supply constraints are expected in the 2022 calendar year. Of the opinion that a strong recovery in the CV space in India and abroad should help, Raghunandhan averred that Bharat Forge is expected to clock a revenue CAGR of 16 percent in FY2022-23 and FY2023-24 on the basis of continuation of cyclical recovery in the underlying auto and industrial segments in both domestic and overseas markets. Nascent segments such as defence, renewables, aerospace, railways, e-mobility and lightweighting solutions have the potential to cross USD 100 million each in revenues in the mid-term, he added. 





**B**osch, a leading supplier of technology and services, has been bringing together comprehensive expertise in vehicle technology with hardware, software and services to offer complete mobility solutions. The Bosch mobility solutions web portal presents highlights from the areas of connected mobility, automated mobility and powertrain systems and electrified mobility. In fact, Bosch is present in all of the mobility segments in India – from passenger vehicles to heavy commercial vehicles and light commercial vehicles to three-wheelers and two-wheelers.

Adding another feather to its cap will be one of the latest steps of the company – expanding its artificial intelligence of things (AIoT) activities in India by transforming its headquarters in Adegudi, Bengaluru, into a new smart campus called Spark.NXT. The inauguration of the same took place in Bengaluru,

India, in July this year, also with the company celebrating 100 years of Bosch in India.

Throwing light on Bosch completing 100 years on Indian soil, Soumitra Bhattacharya, Managing Director at Bosch Limited and President of the Bosch Group, India, averred, “In terms of automotives, we have moved from an automotive components manufacturer to a systems manufacturer to a solutions manufacturer.”

Over the last five years, Bosch has invested INR 8 billion in developing the campus, which has the capacity to potentially house 10,000 associates. The 76-acre site is Bosch’s first smart campus in India and features multiple smart solutions based on sustainability, security and user experience for associates, visitors and facility management. It is designed to adapt to the needs of the users, and the smart solutions are innovated on the foundation of Bosch’s technological know-how.

In truth, in the construction phase, a strong emphasis was placed on recyclable materials and the transplanting of trees, ensuring an increase in green cover.

As an AIoT company, Bosch India leveraged its world-class artificial intelligence (AI), internet of things (IoT), automation and digitalisation capabilities to develop its smart campus in pursuit of its vision for a sustainable, self-reliant and future-ready India. To further enhance its R&D capabilities for the new way of working, the company has also trained over 10,000 associates through a comprehensive reskilling initiative over the past two years.

### Spark.NXT - what is it?

Bhattacharya explained that Spark.NXT is a curiosity to transition and transform, and to meet the business expectations of not only grabbing the opportunities but co-creating the opportunities of the future.

# Becoming Smarter And Sustainable

Bosch has always been known for its cutting-edge technology, including in the mobility sector. The company completed 100 years in India this year and has also come up with a new smart campus called Spark.NXT, which was launched in July this year in Bengaluru, India. Spark.NXT has several parts to it, along with sustainability and mobility being a prominent focus.

## Juli Eklahare

Filiz Albrecht, Member of the Board of Management and Director of Industrial Relations at Robert Bosch GmbH, who officially took responsibility for Bosch India from 1 July 2022, talked about Spark.NXT and asserted, "Spark.NXT demonstrates our commitment to both sustainability and the well-

being of our associates. It features a variety of smart IoT and machine learning (ML) solutions, which are expected to cut energy consumption on the campus by nearly 30 percent. The new campus will be an inspiring environment for our associates that will help them unleash their creativity and spark future innovations."

In his inaugural speech, the Indian Prime Minister, Narendra Modi, said that the Bosch Spark.NXT campus will certainly take the lead in developing futuristic products and solutions for India and the world. "I am happy that Bosch India has worked not only on innovation but also in giving it scale," he said and added, "A key pillar in this will be sustainability. I was told that Bosch has achieved carbon neutrality both in India and outside of the country, which is very inspiring. Bosch came to India 100 years ago as a German company, and now it is as much Indian as German. This is a great example of German engineering and Indian energy."

Spark.NXT has been broken into six parts – Spark.Mobility, Spark.Living, Spark.Industry, Spark.Software, Spark.Sustainability and Spark.Culture.

## Spark.Mobility

"In mobility, we are talking of green mobility under four core factors – personalised, automated, connected and electrified," Bhattacharya enlightened and continued, "For the





last 12 years, we have worked on safety and reducing road accidents very closely with the Government of India.”

### Spark.NXT and collaboration

Bhattacharya further put across that they are trying to do obsessive collaboration, not just with their customers or start-ups but for their group companies. “Many of these legal entities are currently, and will be further, housed inside the campus. We work together with software and hardware engineers, look at what the customers need and co-create the solutions,” he elucidated and continued, “Today, it’s all about where people get together and co-create through collaboration and also create opportunities.”

Giving a concrete example, Bhattacharya said, “Let’s take the example of driver drowsiness in some vehicles. So the emergency brakes, the cockpits, the connectivity and the various aspects that we will further announce in the areas of hydrogen electrification are all simple but clear examples of what we are trying to do.”

“So this campus, with this environment, allows us to get not just internal collaboration but external collaboration as well,” he stated.

### Bosch’s sustainable practices

Albrecht further stated that the Bosch Group is a leading global supplier of technology and services. “We have 128 locations across the globe and the company generated a sale of EUR 78.7 billion in 2021,” she shared and went on, “Bosch is a value-driven company and our commitment to sustainability is an integral part of the corporate culture. The key for us is technology, and as an innovation leader, we develop products and solutions of outstanding quality that help conserve natural resources and improve the quality of life.”

Albrecht went on to mention that as a company, Bosch has a long history of sustainable practices. She asserted, “Sustainability is no longer just a ‘nice to have’. Today, sustainability is our core mission,

and we are working hard to live up to our responsibility here. By acting in an economically, environmentally and socially responsible manner, we want to improve the quality of life of the present and future generations as well. The Bosch Group has been carbon neutral since 2020.”

### Focusing on carbon neutrality

“While making our own operations carbon neutral was in itself a big step, we are now focusing our efforts on reducing emissions outside of our direct sphere of influence,” Albrecht asserted and continued, “We are aiming to reduce our annual upstream and downstream emissions by 15 percent by 2030. To achieve this, we are, firstly, pursuing a circular economy strategy that involves keeping materials and products into usability for as long as possible. Secondly, we are striving to optimise energy efficiency in our existing products. And thirdly, we are shifting our product portfolio towards carbon neutrality.”

Coming to Bosch India, Albrecht cited that it is playing a key role in carbon neutrality, water management and energy efficiency, and that the people at Bosch India are doing some inspiring work in sustainability. While sustainability is central to a company’s corporate strategy, its success depends on the people. Bosch India wants to create an environment that enables its associates to develop their full potential and contribute to the company’s long-term success. It is preparing its associates for the transformation and helping them to develop personally and acquire new skills.

### Investment in electromobility, digitalisation and more

“One more area of focus is reskilling associates and preparing them for the technologies of the future,” Albrecht informed and continued, “Over the past five years, Bosch has invested EUR one billion in this and plans to invest another billion in artificial intelligence, electromobility, software, digitalisation and Industry 4.0, to name just a few, over the next five years. Here as well, India is playing a key role for both our

company and the global arena. The country has an advantage of demography and the availability of talent that can power global solutions.”

### The importance of diversity

She went on to aver that when it comes to their workforce, they are convinced that their tremendous diversity is one of their most important factors of success. As a global player, Bosch has associates from some 150 different countries, and diversity is one of the core values of the company. The company is working hard at all levels of the Bosch Group to increase its diversity further by also bringing in women in leadership roles.

Coming to India, Albrecht said, “India is a highly diverse country, with a variety of cultures and languages. We believe that India’s diversity is key to its engine of innovation, and we’ll continue to invest in our local workforce in the years to come.”

### Bosch’s presence in Karnataka

Bhattacharya spoke of the company’s presence in Karnataka and mentioned that Bosch has the largest R&D centre in the world (outside of Germany) in Karnataka and that Bosch Global Software Solutions is headquartered in Koramangala. “Our collaboration with the Government of Karnataka has been there for a very long period,” he mentioned.

He further highlighted, “We transitioned the country from BSIV to BSVI in a record time of three years, where Europe and other countries took eight years. We have also worked very closely with the Government of India for Make in India and Aatmanirbhar Bharat.”

The Chief Minister of Karnataka, Basavaraj Bommai, who was the Chief Guest at the ceremony, applauded the work done by Bosch India, especially in Karnataka. He asserted, “It is a pleasure to be part of the inauguration of the Spark.NXT Campus of Bosch India. The company has had its presence in the state for several decades now, and it is heartening to host India’s largest smart campus here.



Karnataka, primarily Bengaluru, has been a technology hub and houses the largest number of R&D centres across the globe. This campus is another feather to its cap.”

The chief minister further added, “This campus showcases R&D capabilities for both automotive and non-automotive products and services, and I hope that this will elevate the city’s leadership in the field of technology to a greater level.”

### Campus walkthrough

The media was even given a walkthrough of the new smart campus, taking them through three of the solutions – Bosch Air Quality Management, Smart Working Solution and Visitor Management System.

**Bosch Air Quality Management** – Bosch India has already taken a lot of measures inside the new campus to reduce the impact of air pollution. Some of the measures include increased green cover (by 30 percent) and increased green energy – the company has made its entire campus a non-motorised zone. Plus, it has some new initiatives, like paperless work culture, planned.

However, in order to understand the effect of the emissions surrounding the campus (traffic, construction etc.) on the campus, the company has deployed its air quality monitors inside the campus and regularly monitors the data. This data is provided to the associates and is available as real-time information. The data is also made available to visitors on a big screen in the lobby etc.

**Smart Working Solution** – With the hybrid working model becoming the new norm, this opens up opportunities to reduce some real estate costs by decreasing the number of desks available. Naturally, it becomes important for the associates to know if there are desks available before they go to the office. Therefore, in order to facilitate this kind of flexible working model, Bosch India has come up with a smart solution, ‘Flexi Booking App’. Through this application, associates can check the availability of the desks and book the same from the comfort of their homes.


Another smart solution that Bosch India has come up with is ‘Automated Comfort Assistant’ application. Through this application, associates can provide feedback on how they feel about the office temperature (too hot, too cold

etc.), and the system automatically adjusts the temperature based on this feedback so that everyone feels comfortable.

The combination of these two solutions gives real-time usage for facility management to optimise the workplace. This eventually helps in a considerable reduction in the cost of the real estate.

**Visitor Management System** – The Smart Visitor Management Solution scans a visitor’s face and gives automatic access. Plus, this solution also has a smart locker that works on a QR-based system – when an employee sends an invite to a visitor, the visitor gets a QR code on their mobile. The visitor just has to show the QR code as smart locker and a locker is assigned to them. There is no manual intervention involved; it’s all automated.

The benefit of this solution is that it gives the visitor a seamless experience – there is zero dependency and enhanced security.

In order to make the solution much smarter, the company also wants to implement geo fencing (so that visitors do not go into any areas of the campus where they are not supposed to go), go cardless and include a robot to assist visitors around the campus. 

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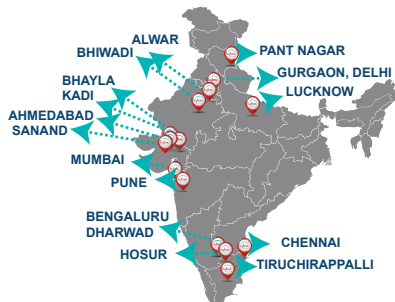
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# BharatBenz Exchange: Enhancing India's Logistics Through Efficient Trucking

Since 2020, the BharatBenz Exchange programme has been enriching logistics by pushing modern and efficient trucks onto the roads.

**Bhushan Mhapralkar**







M C Narendra, Proprietor, Prime Sands and Construction LLP.

**O**n a pleasant August morning, M C Narendra, Proprietor, Prime Sands and Construction LLP called Trident Trucking – the BharatBenz dealer in Bengaluru – to sell one of his trucks and buy a new, albeit smaller vehicle of the same make. A second-generation entrepreneur and owner of a company that makes ready-mix concrete and related products for the construction and infrastructure sectors at Hosakote, Narendra has a fleet of nine concrete mixers, two 12-wheel tippers and a bulker. They are all of BharatBenz make and reflect the fact he has been a loyal BharatBenz customer for over a decade now. His entire fleet is made up of BharatBenz vehicles in fact. A plaque at the entrance of his office endorses this relationship with not just the dealer but with Daimler India Commercial Vehicles as well. Announcing that he trusts BharatBenz vehicles to ensure the smooth running of his RMC

business – the trucks run in a radius of 20 to 25 kms from the batching plant on the outskirts of the city – he established in 2019, Narendra is not the kind who will mince words. “I called Trident Trucking to sell my truck since I trust them and the brand they represent. It was the transparency factor that made me go to them,” he mentioned.

Starting as a pilot in 2018 and establishing a formal base in 2020, the BharatBenz Exchange programme has gained strength across the country. Today the program is available across 50 BharatBenz outlets and has done approx. 5,000 M&HCV truck transactions since its inception. Consider the recent inclusion of buses to the programme and it is cleverly engineered to work as a national-level network. A visit to the BharatBenz Exchange website and one can see all the trucks from across the country listed here. Offering good resale value (prices

of CVs have risen significantly over the last few years), the programme has a dedicated team at each dealership. It provides attention to the needs of the sellers and buyers in terms of end-to-end documentation, finance, insurance, etc, thereby assuring transaction transparency, ease of sale, quick payment terms and certified vehicles. Unlike what a private used commercial vehicle agent would provide, the programme offers extended warranty and annual maintenance contract too.

### Pleasant selling experience

With the evaluation of every vehicle put up for sale consisting of 100 check points, and including refurbishment on the need basis, the BharatBenz Exchange programme has come to provide higher confidence with hassle-free documentation and transparent transaction capability. Offering finance and insurance support under one roof, the programme is providing a privileged experience at every outlet, ensuring a new truck buying experience to the buyer of a used truck and a pleasant experience to the seller. Emphasising that it was perhaps the first time in his life that he had such a (pleasant) selling experience, Narendra mentioned, “Once I gave them the documents, they transferred the amount within a few hours to my account. This is something that I have never seen in my life.”

Revealing that he sold his 10-wheel truck with a Palfinger crane mounted on it, Narendra averred, “What satisfied me was the way they reciprocated and handled everything. I am satisfied with the value I have got.” Made to feel comfortable by the BharatBenz Exchange team at Trident Trucking, Narendra informed, “Quite often the transfer the ownership is not done quickly. In this case, the involvement of Trident Trucking provided me the security I was looking for. Compared to others, I would not be tense if anything does go wrong.” Mentioning that it was proving difficult to manoeuvre the 10-wheel truck on narrow village roads in the area, Narendra revealed that he is going for a smaller BharatBenz truck.



Transaction transparency, ease of sale, quick payment terms and certified vehicles are the bedrocks of BharatBenz Exchange programme.



## COVER STORY

### The BharatBenz Exchange programme

Revealing that they are looking at over 100 cases this year against a dozen cases last year (2021), H. S. Sudarshan, CEO, Trident Trucking, informed, “The BharatBenz Exchange programme is benefitting the transporters (our customers) in a big way as we are able to give them an assurance of caring for their vehicles, about getting them a good resale value and addressing the requirements of the seller as well as the buyer.” “The seller expects transparency, good value and a fast transaction whereas the buyer expects a vehicle that is maintained and assured other than being ‘value for money’ deal,” he added. Stating that a refurbished truck is delivered if it has to, with genuine spares and serviced by trained technicians, Sudarshan said, “An AMC package and extended warranty availed along with the vehicle results in added benefit.” He also touched on the different side of the programme. “Captioned as ‘Dealer to Owner(D2O)’, the programme also gives a lot of importance to a driver and helps him to fulfil his aspiration to own a BharatBenz truck at a good price, with lower EMIs and lower down payment,” he expressed.

Raghavendra Prabhu, General Manager, Trident Trucking, remarked, “An interesting part of BharatBenz



Exchange programme is the sale of more new vehicles through it, which reflects at uncompromised service levels with more vehicles in motion.” Of the opinion that the programme provides benefits like service at an authorised centre, warranties and AMCs, he said, “Helping drivers to own a truck by assisting them to get finance.” Stating that transport contracts could differ quite a bit depending on whether they are working for an e-commerce company with 15000 to 20000 km running per month or intra-city where a used truck would be preferable in terms of business viability, Prabhu mentioned, “The BharatBenz programme is helpful for those who sell a chunk of their fleet after the loan period is over and go for new ones. It saves them

the trouble to go out and find 40 or 50 customers in the market.” “The expectation of the seller being quick deal closure so he can re-invest his capital in a new vehicle and that of the buyer being to get a good condition vehicle at a fair price, it is the trust factor that we bring in,” he added.

### A clear focus on commercials

With a clear focus on commercials where the seller is looking at a quick deal closure so that he can invest in a new vehicle or vehicles, the buyer is looking for a good condition truck at a fair price. The higher ratio of interstate transactions – a tipper from Rajasthan or Haryana would fetch a better price in Kerala or Karnataka because of higher demand there – bring the BharatBenz Exchange programme into focus with the seller can realising better price and the buyer realising a deal he can trust. “Being a close-knit group in the form of a network gives us the advantage to facilitate such deals,” said Prabhu. Stating that the seller has zero worries with the BharatBenz Exchange team taking care of the paperwork, Prabhu explained that it is the same with the buyer as the dealer and vehicle brand facilitate finance among other essentials for him as well. He also provided an insight into the nature of transactions where a buyer and seller decide on a price and the transaction takes place or the dealer invests in a vehicle until an appropriate buyer is found and the seller is immediately given the capital to buy a new BharatBenz vehicle.

The hustle and bustle typical of a transport Nagar in any city are





(L to R) Kausheesh Girish and K V Girish of Shri Venkateshwara Transport.

evident at Yeshwantpur, Bengaluru, as the father and son duo, K V Girish and Kausheesh Girish of Shri Venkateshwara Transport (SVT) narrate their experience of purchasing a used BharatBenz truck under BharatBenz Exchange. "We availed the programme because we were sure that we will get a vehicle at good price, in good condition

follow up on the paperwork. They facilitate for finance and everything is done with transparency." Informing that the BharatBenz Exchange programme team keep acknowledging the buyer at every stage, Kausheesh said, "Since its BharatBenz' own exchange policy, there's surety of things being done on time." "Every time we have bought

the vehicle. From the VIN number, the history of whatever work has been done from the beginning can be seen," he added. Of the opinion that they will tell this, this work has been done rather than to show the entire service history of the vehicle as per the VIN number, Kausheesh explained that the BharatBenz Exchange programme presents 100 percent assurance in terms of refurbishment. Revealing that an instance where loan repayment has started and some documents are yet under process leads to much inconvenience, he informed, "Not just documents or refurbishment, the BharatBenz Exchange programme offers any support that may be needed, including AMC, extended warranty, etc." "For the last 10 years we have been getting good support from Daimler and their dealer," Girish added.

On the subject of AMC for used trucks, Kausheesh elaborated that



As per the need, vehicles under the BharatBenz programme are refurbished.

and the documentation will be done immediately," Girish quipped. Kausheesh expressed, "What we liked is the transparency. There are no hidden things and charges." Stressing on the fact that the truck would have undergone evaluation and refurbishment at a BharatBenz dealership, Kausheesh averred, "Walk into the showroom and they treat you with courtesy. They finish the maintenance requirements and

a used truck, we have been given a 5-star treatment," he quipped.

### Assured support

Revealing that the truck they bought was refurbished, Girish mentioned, "The best part is, the documents are 'running', the vehicle has been transferred in our name and the funding has been done." "To understand the refurbishment, we were shared the service history of



Sanjay Yadav, BharatBenz truck driver.

it is beneficial since it includes offers and discounts on spares and service. "We had an issue with the used BharatBenz truck and the road assistance team from the showroom that was about 150 km away attended the call in three to four hours. In six hours, the issue was solved and the truck was back on the road," he signed off. Hailing from Jharkhand, Sanjay Yadav, the driver of a used BharatBenz truck in Bengaluru expressed that he finds it 'problem-free' with powerful braking and an efficient engine. Of the opinion that it does not give any trouble, Yadav said, "Even after a 12-hour shift, I do not feel tired." <sup>41</sup>



**M**ahindra & Mahindra (M&M) introduced the Bolero MaXX Pik-Up, its new brand of futuristic pickups loaded with many category-first features and catering to city transport and logistics needs.

The new brand comes with many category-first features such as iMaXX technology, turn-safe lights and height-adjustable seats, targeting emerging demands for convenience, comfort and safety. Coupled with these, the powerful and efficient engine and class-leading payload capacity meet standard requirements such as performance, mileage and resale.

“We have had deep understanding and engagements with our customers. Figuring out what they want and delivering products and services in line with their expectations has helped us to be in the number one position in this segment in the last two decades,” said Harish Lalchandani, VP & Head, Marketing – Automotive Division, M&M.

M&M claims it owns over 60 percent market share in the 2-tonne to 3.5-tonne pickup category. The company also said it has over 1.8 million customers for its pickup vehicles.

The company unveiled the brand with the launch of the Bolero MaXX Pik-Up City 3000 with a starting price of INR 768,000 (ex-showroom). Coming in three variants, City 3000, City 3000 LX and City 3000 VXI, the Bolero MaXX Pik-Up is manufactured at M&M’s Chakan plant in Pune.

The Bolero MaXX Pik-Up has been designed for the new-age customers, who increasingly demand more technology, safety, convenience and comfort. The design of the new pickup is based on five pillars – maximum technology, style, comfort, safety and savings.

Veejay Nakra, President, Automotive Division, M&M, said, “At Mahindra, we constantly strive to influence customers’ life positively and enable them to earn more and prosper. The all-new Bolero MaXX Pik-Up is a futuristic brand loaded with many category-first features such as the advanced iMaXX technology, turn-safe lights, height-adjustable seats, in addition to the powerful and efficient engine and class-leading payload capacity. With this new benchmark brand in the pickup segment, Mahindra once again demonstrates its intention and

capability to offer immense value to its customers.”

R Velusamy, President, Automotive Technology and Product Development, M&M, said, “Our latest offering, the all-new Bolero MaXX Pik-Up is engineered to tackle the high-demand and always-evolving requirements of the pickup market. We have equipped it with iMaXX connectivity offerings hosted on Amazon Web Services, which has unrivalled tech features that help customers monitor and sweat their assets better. The Bolero MaXX Pik-Up City 3000 is equipped with a drivetrain that is powerful and has a higher payload capacity of 1,300 kg yet offers exceptional fuel efficiency of 17.2 km/l.”

### Features

This latest pickup brand offers the advanced connected technology – iMaXX telematics solution, which increases customers’ profitability and peace of mind. The iMaXX telematics solution helps track vehicles and deliveries, optimise routes and provides geo-fencing, driver management, location sharing and fuel logs. “Pickups are used for multi-

# Bolero MaXX Pik-Up Launched With Many Category-First Features

*To maintain its leadership position in the 2-tonne to 3.5-tonne category, M&M introduced Bolero MaXX Pik-Up, a new brand of futuristic pickups catering to modern India's transport and logistics needs. The company unveiled the brand with the launch of the Bolero MaXX Pik-Up City 3000 recently. M&M has given many category-first features such as iMAXX technology, turn-safe lights and height-adjustable seats, targeting emerging demands for convenience, comfort and safety.*

## Sharad Matade

point deliveries, so route optimisation reduces fuel consumption and increases profitability. With the geo-fencing feature, the owner can draw a virtual fence, and if the vehicle goes beyond the drawn fence, the owner gets an alert. This feature reduces the owner's anxiety about the misuse of the vehicle. With location sharing feature, the fleet companies can track the vehicle live, and onboard vehicle diagnostics improve business productivity and reduce operating costs. Along with these features, the app has more than 30 other features," explained Manoj Gaubba, Associate Chief Engg, CPH Platform, Mahindra & Mahindra.

The new vehicle offers the highest internal service in the category of 20,000 km and a warranty of three years/100,000 km. Also, it has a higher payload capacity of 1,300 kg the widest cargo space in the

category (1,700 mm) and best-in-category R15 tyres for improved loading.

The Bolero MaXX Pik-Up is made to be rugged and versatile, suiting every type of terrain. Its interior and exterior are again designed based on customers' inputs. The dashboard has been crafted to have multiple multi-utility packets. Height-adjustable seats, first in the category, have also been given. As the driver of such vehicles spends more than 12 hours of the day in the vehicle, M&M has given a bigger cabin with sliding windows. The certified D+2 seating with headrest and higher legroom provides maximum comfort, and its moulded roof gives an impression of the modern age.


The new vehicle is made of a single-piece body side panel, along with category-first turn-safe lights, LED tail

lamps and a front bonnet to enhance safety. The wider track and the longer wheelbase are engineered to deliver the dynamics and the safety of the vehicle considering the improving infrastructure in the country.

## Ahead in the game

"We want to continue our leading position in the segment by giving what customers want. We have introduced many firsts in the category, starting from flatbed, CNG variant and so on, and now the IMaxx technology with enhanced safety and comfort. We are constantly in touch with our customers. If you give what the customers want and provide great value, you maintain the market leadership," added Lalchandani.

The company kept a very thin difference in the prices of all three variants. The City 3000 variant is priced at INR 768,000, whereas the City 3000 LX is priced at INR 772,000 and the City 3000 VXI at INR 787,000.

"One of the philosophies of Mahindra is to enable our customers to rise. When they rise, we rise. We try to get as many customers as possible to experience the best and greatest of techniques, safety and comfort that this segment has to offer. With this price range, we want customers to be cognisant of the great value that has been provided and then to shift to the top-end variant and give them the experience that they had not got," explained Lalchandani. 





# The Stellar Performance Of Indian CV Industry

The strong performance of the Indian CV industry has contributed to the South Asian CV market's position as the most promising globally.

**Bhushan Mhapralkar**

**S**elling 500,000 units in FY2021-22 and registering an increase of 26 percent as compared to unit sales in FY2019-20, the Indian CV industry has turned out to be an interesting island of growth globally. With the geopolitical and economic developments in regions like Europe and US posing growth constraints for CVs, the Indian CV market, on the contrary, has witnessed healthy sales growth in the last two quarters. In doing so, it has turned out to be a key contributor to the strong performance of the South Asian market for CVs – in the M&HCV segments in particular. In a recent webinar by IHS Markit, Jayesh Shelar, Head – Product Management Group, Mahindra Truck and Bus Division, Mahindra & Mahindra Ltd, expressed that the South Asian M&HCV market will grow by 7.7 percent in 2022 and clock healthy double-digit figures in 2023 and 2024. In the face of challenges – one of the significant challenges being the railways since 2010 – the Indian CV industry, it is clear, has managed to hold its own.

Taking into account the industry growth in FY2021-22 and the two quarters of the current fiscal, the CV industry has exhibited a rare ability to reinvent itself, and time and again. Post the peak of FY2011-12, the industry witnessed a prolonged slowdown. It weathered the pandemic and is showing signs of good growth once again. This is despite the many storms – the ABS norm in 2015, the transition from BS III to BS IV in 2017, new axle norms in 2018, blower norm in 2018 and the transition from BS IV to BS VI in 2020 – that came its way. Most



were of regulatory nature and that pressure hasn't eased yet. Also, the expectations of CV buyers and users have changed significantly. Of the opinion that the entry and exit barriers have come down and will ease further, Shelar informed, "From being acquisition and resale value sensitive in 2010, customers are now looking at total cost of ownership (TCO) and are ready to experiment with new technologies and brands." "The last decade was one of discoveries and presented key challenges like the three emission cycles," he quipped.

Adding that this decade will be one of disruptions, Shelar said, "A shift from transport to logistics model is taking place."

## **Innovative product offensive**

With record-high fuel prices, rising inflation, higher import bills, supply chain constraints and weaker export demand being the headwinds, the Indian CV industry is on a product offensive. Offering

new and innovative products that are addressing concerns such as record-high fuel prices, a shift towards eco-friendly logistics and an increase in technology (features like advanced telematics are becoming commonplace), it is keeping a close watch on the expectations and requirements of customers big and small. A look at the pre-owned CV schemes floated by most CV makers will underline this trend and how these schemes are helping to create momentum for new CV sales. With positive territory retention for the Indian CV industry expected to come from the investment in infrastructure and construction activities, and from the e-commerce sector that is expected to grow to the second largest position in the world by 2034, according to Paritosh Gupta, Analyst – M&HCV Forecasting, S&P Global Mobility, initiatives like the scrappage policy should help.

Estimated to clock a robust volume growth of 12 to 15 percent in the current financial year, according to an ICRA report, the

Indian CV industry is positioned well to benefit from a number of government schemes other than the scrappage policy. Registering a healthy growth of 112 percent on a Year-on-Year basis in wholesale dispatches in the first quarter of the current fiscal against a low base during the same period last fiscal, the CV industry is set to witness a pronounced growth in the goods carrier sub-segment, according to Kinjal Shah, VP and Co-Group Head, ICRA Ratings. With average speeds going up on the basis of infrastructure development and deployment of modern technologies that ease the work

demand for intra-city transportation needs of the e-commerce sector in particular. Seeing a shift to alternative fuels – CNG and electric – in the wake of record-high diesel fuel prices and the subsequent effect on the TCO, it is the I&LCVs that are finding relevance in new application areas like mobile fuel dispensing. If better availability of CNG is aiding I&LCV segments, it is the commitment of most e-commerce players to reduce their carbon footprint that is helping SCVs in their shift to electric. The introduction of Tata Ace Electric SCV was accompanied by an arrangement to supply it no less than 39 e-commerce players, including Amazon and Flipkart.

have also begun gaining ground with an increase in staff, school and tourist activity. They are also the ones that are showing the most inclination towards electrification. Of the opinion that a big tranche of about 50,000 e-buses will come in over the next five years, Gupta commented, “The M&HCV bus category is expected to pick up in 2022 and reach 54,000 units by 2026.” In FY2020-21, the bus segment did 22,000 units, indicating that the effect of pandemic on it was not yet over.

Of the opinion that the market share of e-buses is expected to reach 30 percent in the long run, Gupta expressed that he expects Tata Motors and Ashok Leyland to lead the respective space for the next decade. “Expect the industry volumes to peak in 2025,” he informed. Confident that Tata Motors will almost touch 200,000 units in 2026, Gupta averred, “Tata Motors will continue to lead the e-bus market in the long run, followed by BYD and others.” Manat Bali, Research Analyst, S&P Global Mobility, said that FAME, state schemes, COP26 target, PLI schemes and taxation are the electrification tail winds. Pointing at the recent announcement by Switch Mobility, a Hinduja Group company and sister concern of Ashok Leyland, about the supply of 200 double decker buses to Mumbai’s BEST undertaking in the next six months and taking care of their upkeep as well as factors like charging etc. through a captive entity, an industry source emphasised that the need is to ensure a green source of electricity and a thorough estimation of the ‘cost to the environment’ of such vehicles before it gets too late.

Other than a deeper consideration of the ‘cost to the environment’ factor, there is also a need to ramp up the supporting infrastructure right up to the grid level and keep the electricity costs in check, he added. “The hinderances in electrification include regulatory drawbacks, infrastructure issues, cost concerns and end user dilemmas,” Bali averred regarding electrification of buses, cautiously informing in the same breath that India will dominate the e-bus market in South Asia by contributing to over 90 percent of the share. **MT**



of the driver, the CV industry in India is set to see secular growth, benefitting segments all across.

Making up 61 percent of overall sales with annual sales of 422,000 units in FY2021-22, it is the SCVs that are gaining ground quickly in parallel to a rise in the contribution of M&HCVs and I&LCVs to the overall sales in the current fiscal. In FY2021-22, I&LCVs did 93,000 units, ably highlighting that they are poised to grow in line with the

### Buses are gaining ground too

For transportation over longer distances, the e-commerce sector is seen to take interest in heavy-duty trucks. Consider the acquisition of premium heavy-duty Volvo trucks by Delhivery. Reporting a healthy volume growth of 258 percent on a Year-on-Year basis to 19,297 units in the first quarter of FY2022-23, buses





**L**aunching the Ecomet Star 1815, AVTR 4220 and AVTR 4420 (4x2 tractor) with 43.5-tonne GCW in the M&HCV segments, Ashok Leyland is on a product offensive. The launch of the three trucks follows the unveiling of an electric bus, EIV12, by Switch Mobility – its sister concern – in June 2022. Yet another interesting e-bus from Switch Mobility, a double-decker that is no different from the one seen in UK, is expected to soon find its way to Mumbai's BEST undertaking. Pointing at a smart product offensive that will see Ashok Leyland introduce CVs in the IC engine sphere and Switch Mobility in the EV sphere (especially buses, where the rate of electrification is higher), the Ecomet Star 1815 by Ashok Leyland – with a GVW of 17.5 tonnes – is engineered to offer best-in-class payload capacity and superior mileage. The two AVTR 4220 tractors, on the other hand, are claimed to be the first of their kind in 4x2 tractor configuration with a GCW of 41.5 tonnes and 43.5 tonnes, respectively.

The two 4x2 tractors are aimed at addressing the changing market requirements in the face of new entrants, which are influencing a change from being a mere transporter to a logistics player. Reporting a 111 percent jump in domestic sales of M&HCVs to 7,329 units in July 2022 as against the sale of 3,473 units in July 2021, Ashok Leyland has been pursuing its goal of becoming the fifth largest bus manufacturer in the world and tenth largest in trucks. Reporting a 16 percent growth in the LCV segment with the sale of 5,386 units in July 2022 as against the sale of 4,656 units in the same month last year, the company has been exerting itself in the domestic market, which is witnessing record high fuel prices and making investment in technology more intensive as well as complex, and in the international markets where it sees a potential for growth. Pursuing efficiency gains at various levels, the CV maker has been upgrading its existing lineup to be in line with the BS VI emission

# Ashok Leyland's Product Offensive

In line with the market requirements and the ensuing technological shifts, Ashok Leyland is introducing new CVs that are smart and versatile.

**Bhushan Mhapralkar**







norms as well as the changing customer expectations. It is also developing new products.

### Going modular

Subjected to extensive modernisation (as part of the Ecomet lineup) in the face of regulatory requirements and customer expectations, the Star 1815, powered by a BS VI 150 hp H Series engine, features 295/90 R20 radial tyres and is available in five loading spans (20 ft, 22 ft, 24 ft with day cabin and 20 ft and 22 ft with sleeper cabin). Employing high-strength steel frame, it is available with a high side body option as well. Featuring a digital dashboard with Advanced Digital Driver Assist (ADDA), advanced telematics (i-Alert) and remote diagnostics with 24x7 customer assistance through Uptime Solution Centre, the Star 1815 interestingly gets very

close to the MCV segment in its abilities. Reflecting Ashok Leyland's 'modular' platform strategy, on the other hand, the two AVTR 4x2 tractors, aimed at carrying dense loads, are powered by a BS VI emission standard compliant 200 hp 6-cylinder 5.6-litre engine mated to a 6-speed transmission. Promising higher fluid efficiency and lower DEF consumption, the two tractors come with a choice of cowl, M-cabin, U-cabin and N-cabin (both are sleeper cabins).

Following close after the introduction of the 8-wheel AVTR 2620 truck with a lift axle and having a GVW ranging from 25.5 tonnes to 47.5 tonnes, the two tractors should make good candidates for those looking at ferrying infrastructure building material and express deliveries in the wake of rising average speeds and an ability to cover more kilometres

per day. As for the AVTR 2620, Ashok Leyland has, depending on the cargo to be ferried and the need to deploy the lift axle, has smartly configured a flex-truck. It has engineered it such that the GVW changes as per the loading span. The loading span options are 24 ft, 26 ft, 28 ft, 30 ft and 32 ft. The AVTR series truck also comes in different wheelbases – 4,930 mm, 5,130 mm, 5,430 mm, 5,880 mm and 6,180 mm, respectively.

### Focus on total cost of ownership (TCO)

While the Ecomet range at the ICV segment level (almost bordering the MCV segment) has been subjected to much change, it is the AVTR range of heavy-duty trucks that is all-new and highlights the modularity of the chassis in relation to the cabin. Unlike Scania's modularity concept,



the one that Ashok Leyland has employed in the case of AVTR Series of M&HCVs is about modularity of chassis and cabin. The engines are only getting there. For example, the CV major announced the launch of a 250 hp 4V H Series engine with the premium N-cabin. Stressing that the combination will offer better TCO, the company has stopped short of explaining what this engineering initiative is about in some detail. Except stating that this engine and cabin combination will be offered in tippers, haulage trucks and tractors, the company, in its press release, has not even bothered to highlight the strength of the engine and the features of the premium cabin in terms of benefitting the customer.

Expressing that the modularity of AVTR platform significantly reduces product lead time, Sanjeev Kumar, Head – MHCV, Ashok Leyland, averred, “This combination of H6 4V engine in AVTR trucks with premium N Cabin will deliver better TCO advantage for our customers.” With the attention shift from initial acquisition price to TCO, the willingness to invest in technologies like telematics is going up. While sacrificing price sensitivity, the transporter today is showing an affinity for tools that will help him increase the efficiency of his business. Consider this: The high GCW of the two AVTR 4220 tractors permits customers to carry denser loads and achieve superior fuel efficiency as well as better TCO.

Reorienting themselves as logistics players rather than being mere transporters, truck operators are looking at their business and the tools involved as a service rather than a liability. A truck for them amounts to a service. A purchase like the Ecomet Star 1815 amounts to an additional new point in their fleet.

The concept of service is logically not limited to new players in the field. It is cutting across tonnage points, across technological shift and across geographies, claimed an industry source. He mentioned that the utility of trucks as a service is growing especially fast in the case of fleets that operate in the infrastructure and e-commerce domain. It is exactly at these points that new technologies like electrification are taking hold, he added. Look beyond the fitment of advanced telematics suite called the

i-Alert in the Ecomet Star 1815 of the two AVTR 4x2 tractors, therefore, and the importance of the Uptime Solution Centre will be clear at once. This centre is a key aspect of the digitalisation efforts of Ashok Leyland to provide ‘connected’ vehicles. With an eye on the money a transporter spends in the post-sales lifecycle of the vehicle, the company, through the centre, is providing AI-driven prognostics. While doing so, it is also banking on exponential smartphone growth and the rollout of advanced



## The LNG strategy

Pursuing an LNG fuel strategy for some time, Ashok Leyland has unveiled its first LNG fuel offering called the AVTR UF3522. It is a rigid 35-tonne truck certified under the Central Motor Vehicle Rules (CMVR) through Automotive Research Association of India (ARAI). Completely validated and optimised for Indian operating conditions, the AVTR modular platform-based truck could be further expanded for multiple purposes and applications ranging between 19 tonnes and 42 tonnes. It is, according to Dr N Saravanan, Chief Technology Officer, Ashok Leyland, completely developed in and for India to provide better range and operability across all functions and industries. Sharing 80 percent of its parts with its diesel-powered siblings, the truck with a 220 hp H6 engine provides driveability that is no inferior to a similar diesel offering. The patented double tank option gives it a range of over 1,500 km on a single fill. The oil change interval is also higher at 20,000 km. **MT**

network levels such as 5G. These developments would enable it to seek data and leverage it to better address the market and regulatory requirements.

## Focus on maximum uptime

Detecting potential issues in advance and offering real-time analysis of vehicle parameters to ensure timely reactive support, the Uptime Solution Centre of Ashok Leyland is ensuring that its vehicle users are on the road for most hours of the day and month-after-month. It is in keeping with the shifting pressure points of transporters, like freight rates, record fuel prices etc. With freight rates increasingly under pressure due to competition, especially from railways, the Indian trucking market is fast changing. The rate of its change has made it a key driver of the optimistic outlook the South Asian region has posted as far as the CV market is concerned, with a stellar performance in the last two quarters. Performing well in 2021, the Indian CV industry is expected to continue to clock healthy growth in the short and midterm at least. Despite headwinds like inflation, higher import bills and weakening exports, the industry is expected to perform well on the basis of investment in infrastructure and e-commerce sector growth.

With the shift towards electrification expected to be slower in trucks as compared to buses, the intermediate route for trucks is turning out to be gas propulsion. Ashok Leyland is well poised to take advantage of it by introducing CNG variants of existing products and developing new ones. Among the existing lineup, the CNG offerings of the company includes Ecomet Star 1115 CNG truck with an 11.44-tonne GVW and Dost CNG. At Excon 2022, the CV major showcased an H-Series CNG engine. Its salient features include an ECU gas leak detection control, superior cold start capability, power and torque availability at lower rpm, higher fuel efficiency and durable engine parts such as valves and valve seats. Displaying good agility by tackling technological, regulatory and customer requirements, Ashok Leyland is on a product offensive that would ensure better earning ability for its customers. **MT**

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# Mumbai's Switch Electric Double-Decker

The electric double-decker bus from Switch Mobility for Mumbai looks attractive and promises a new era of public transport.

**Bhushan Mhapralkar**

**M**umbai, the megacity and financial capital of India, has got its first electric double-decker bus from Switch Mobility. It is the first of the 200 such buses to be supplied to the BEST undertaking by the end of this year. By replacing its ageing Ashok Leyland diesel-powered double-decker buses with electric double-deckers, BEST will become the first transport organisation in the country to do so. Modelled on the Switch (formerly Optare) electric double-decker buses that are found on the roads in the UK, the vehicle – termed as the Switch EiV 22 – is quite attractive in its appearance. It makes ample use of tinted glass to dial a modern appearance and look spacious on the inside. Offering an airy feel and good visibility with that amount of glass panelling, the bus is a result of clever packaging and lightweighting. Switch Mobility worked with companies like Hindalco to deploy

aluminium structural panels that ensure the desired structural integrity and strength while keeping the weight down. They also contribute to a high passenger-to-weight ratio and competitive cost per kilometre.

Of the opinion that the electric double-decker is safe and comfortable, Mahesh Babu, CEO, Switch Mobility India and COO, Switch Mobility Ltd, expressed, “As India’s first and unique electric double-decker, the EiV 22 involved multiple challenges to fulfil new-age customer requirements without sacrificing the iconic double-decker lineage. Drawing attention to the Metro Decker launch in London – where 90 percent of the people use public transport – in 2014, Mahesh Babu mentioned that the effort behind electric double-decker is to bring people who are travelling in cars to it. Stating that only one percent of the population in Mumbai

uses public transport, he remarked, “There are more double-deckers in London than single-deckers because of the higher carrying capacity and lower road space consumption.” Informing that they want to help their customers achieve a zero carbon footprint by democratising net zero carbon mobility, Mahesh Babu said, “The Switch EiV 22 electric double-decker will not only bring back fond memories for Mumbaikars, it will also transform the public transport space in terms of sustainability and footprint, which is the need of the hour in India.”

## Engineered for regional needs and longer life

Set to provide an air-conditioned ride to commuters on CSMT-to-Nariman Point, Colaba-to-Worli and Kurla-to-Santacruz routes as 200 units are delivered by the end of this year, the electric double-decker



– with a 650-volt architecture – is capable of ferrying nearly twice the number of seated passengers as a comparable single-decker bus at just an 18 percent increase in kerb weight. Engineered to address regional needs and eccentricities such as flooding in monsoon with a higher floor height of 900 mm, the bus has two doors and two staircases. The challenge of accommodating two staircases, according to Mahesh Babu, was achieved to ensure ease of movement inside the vehicle and is in line with the observation that buses can get very crowded in most Indian cities during the peak hour. With its battery pack located under the floor, the Switch EIV 22 shares its electric (and electronic) architecture with that of the E1 bus in Europe.



“We do our own software, and in the last one year, our engineers achieved a 10 percent efficiency improvement through software optimisation and use of AI technology,” explained Mahesh Babu.

Engineered for higher cycles of 3,000 to 4,000 and a lifespan of over eight years, which would be equivalent to 500,000 to 600,000 km of vehicle running, the electric double-decker bus uses NMC battery technology, which ensures that the battery pack is 30 percent lighter than the competition. A unique thermal management system at the cell

level, module level and pack level aids the battery pack to run at its most efficient. There’s a safety suppression system in place as well. The 231-kWh capacity liquid-cooled high-density battery pack with dual-gun charging system ensures a range of up to 250 km for the electric double-decker under intra-city conditions. The chassis of the bus supplied to the body builder (Antony of Navi Mumbai is said to have built this particular bus body) is made at the Ashok Leyland facility that Switch Mobility shares with it. As it looks at scaling up the operations in India as a Hinduja Group company and as a sister concern of Ashok Leyland, Switch Mobility, according to Mahesh Babu, is looking at setting up a dedicated facility as part

of its plan to invest INR 10 billion in a span of three to five years.

With the greenfield plant in Spain on track and in line with its plans for the European continent, Switch Mobility has laid emphasis on high local content for the electric double-decker. Only the cell of the battery pack and microchips are imported, according to Mahesh Babu. The motor and controller of the bus

are made in India by Dana. Drawing attention to the use of an advanced connected technology called Switch Ion, which enables monitoring of the vehicle, including its geofencing and its condition down to the factor of battery operation, Mahesh Babu averred, “Every cell could be remotely monitored using Switch Ion across the country and across the globe. About two terabytes of data from the vehicles is collected daily and analysed.” Stressing on functions such as diagnostics, prognostics and driver training to up the efficiency of operation of the buses, he said that the company’s sister concern, Om, will maintain and run the buses under GCC model. “We will install charging stations at two depots of BEST with 0 to 80 percent charging in less than an hour,” he added.

Revealing that they are discussing with multiple cities in India to deploy the electric double-decker bus, Mahesh Babu informed, “Switch Mobility is planning to make up to 200 units next year depending on the demand.” “The EIV 22 costs between INR 18 million to INR 23 million,” he quipped. Speaking at the launch, Ashok Hinduja, Chairman, Hinduja Group of Companies (India), said, “The Group has a clear vision to support economies in delivering their net zero objectives through renewable energy, finance and zero emission transportation. We are confident that our new zero emission double-decker bus will deliver a cleaner and more sustainable future, reinforcing our commitment for India and the globe.”

Asserting the need to transform the country’s transport system from a long-term perspective, Nitin Gadkari, Minister of Road Transport and Highways of India, Government of India, averred, “With a focus on reforming urban transport, we are trying to build a low-footprint and high-passenger-density integrated EV mobility ecosystem. The government’s vision and policies are supportive of EV adoption with growing consumer demand for greener solutions. I would like to congratulate Switch Mobility, a subsidiary of Ashok Leyland, for being the one to revive the double-decker and remaining committed to introducing new technologies for the benefit of passengers and society at large.” **MT**



# The Truck Electrification Trend

The electrification trend is catching up with trucks too, and the pace is only expected to rise further.

**Milan Olsansky**

One of the trends in the automotive industry is undoubtedly electrification. And it's not just about personal cars, but also the truck segment, which includes heavy varieties. The market offers for electric trucks, despite the current difficult situation, is reviving around the world. It consists of traditional truck manufacturers, who now have a complete portfolio with locally made zero-emission truck models as well as newcomers, start-ups and so-called integrators or joint-venture companies.

A recent study by Calstart, California, US, has highlighted that the number of locally made zero-emission truck and bus models is

expected to grow by 26 percent between 2020 and the end of 2022 worldwide. While 433 models were available on the market in 2020, the count is expected to reach 544 models by the end of the current calendar year. This data was revealed through an online presentation by Calstart as part of its Global Commercial Vehicle Drive to Zero programme and campaign.

## Swedish steel

Volvo Trucks has the largest market share in the full-electric (BEV) market for heavy trucks (42 percent) – from (BEV) electric truck FH Electric for intercity transport and FM Electric for

regional deliveries to FE Electric and FL Electric trucks for urban environments. The electric Class 8 Volvo VNR series truck model is becoming increasingly popular in North America ever since the Swedish CV major launched the second generation of its BEV. At a recent presentation on Volvo FE Electric fully electric delivery vehicle, one thing was clear that its price is still disproportionately high. While the standard ICE (with diesel engine) Volvo FE costs around EUR 100,000, the Volvo FE Electric is available in Europe for EUR 350,000. At this price, it would appeal to those who have a certain business model in place. For example, one Volvo FE Electric has





been used in the Czech Republic by transport company CS Cargo.

Working to strengthen its production and testing facilities in Södertälje, Scania is relatively strong in distribution (the 25 P electric truck won the Sustainable Truck of the Year 2022 award). It has secured an important order from Denmark. As efforts to develop very heavy BEV trucks with a total weight of 60 tonnes or a total combination weight of 75 tonnes mount with the use of oversized powertrain components, a change in the trend of truck electrification is due. Developing such BEV trucks should not be difficult as the technology for the same is available. In fact,

a BEV solution is said to be in place already in the form of a battery-powered road tractor for international traffic. It is claimed to be capable of a range of 400 km to 500 km and a short charging time of 45 minutes. Those 45 minutes could provide the driver of the vehicle a well-earned break before he covers another 400 km to 500 km.

### Stuttgart Road

Making clear its strategy at the end of 2021 during an event, Daimler highlighted BEV trucks and hydrogen trucks (FCEV) as the two alternative fuel CVs. Of these, the Mercedes-Benz eActros electric heavy truck for delivery service was

launched soon after. It began series production – series production means the building of a few dozen units – in the autumn of 2021. As of current, it is the second generation eActros with a new rear electric axle that is in series production. In February 2022, two German logistics players, DB Schenker and Dachser, were supplied with eActros electric trucks. With a special methodology to introduce significant innovations into operation, electric propulsion vehicles in particular, Daimler is expected to press into production another electric truck model, eEconic, designed primarily for municipal waste collection, starting 2023. How it will be priced then will be interesting to watch. The final price of electric trucks continues to be extremely high (three and four times more than that of a similar IC-engine truck). An interesting occurrence concerning BEV trucks is that the CV makers reduce the price when they offer it to their customers as the information (data) gathered from the usage is helpful in further developing the product and technology. If the German CV major also entered into such an arrangement, it is claimed to already have a database that is essential for normal operation. It is therefore said to be ahead of the competition.



### **It doesn't stay in the corner**

MAN recently announced that it will launch its first heavy electric truck in 2024, a year ahead of schedule. Stefan Klatt, Head of Corporate Structure, MAN, said, "The future of electric trucks as pure BEVs lies in the fact that the role of diesel trucks to address today's needs is not neglected." The eTGM BEV trucks are for some time being offered by MAN for the distribution segment.

Developing an FCEV project for a heavy truck, the German CV major is also exploring the prospect of an internal combustion engine running on hydrogen. With manufacturing roots that go down to being the first large steelworks until the eighteenth century, MAN has been making trucks since 1915. The company has always been able to deal with the changes with honour. It is therefore safe to expect that when e-mobility takes hold in goods road transport, there will be a corner

outside of the mainstream with the name MAN written clearly.

### **A flourishing joint venture**

Not far from Germany, Iveco has been pursuing electrification of its CVs relentlessly. Its plans are supported by a celebrated and well-considered joint venture with American start-up Nikola since 2019. In September 2021, Nikola and Iveco commissioned a production plant in the German city of Ulm.








Several electric heavy trucks were delivered by Nikola to the United States of America out of this plant. In January 2022, Nikola announced that it has entered into an arrangement with Proterra for supply of batteries. As things progress in the area of BEVs in association with Nikola, which has had its own set of challenges to take care of, Iveco is driving an even more ambitious goal of developing a hydrogen truck with its American associate. If the Nikola Tre BEV truck uses an Iveco platform, the two – Iveco and Proterra – are said to be working on leveraging the respective platform strengths to develop a Hydrogen (FCEV) truck and press it into production at Ulm by 2023.

To legally understand what is actually happening in the Iveco Group as far as e-mobility is concerned, it is necessary to recall a number of unquestionable facts in terms of the production and sale of Iveco heavy trucks. With a market share of around six percent to seven percent, the vehicles, with a total weight of over 16 tonnes, are competing with Renault Trucks. Looking for a strategic partner (CNH Industrial, to which Iveco belonged to until the end of 2021, has been its biggest investor after it was hived off to be a separate company) for a long time, Iveco turned to Chinese CV maker FAW not without a reason.



It found out perhaps that FAW was the best suitor. Not liking this connection, the US administration recommended the whole matter to the Italian government.

Iveco's association with Nikola Motor Company led to changes in the top positions of CNH Industrial's management. This was in connection with Nikola's Founder and CEO Trevor Milton being accused of fraud. Iveco is known to thoroughly evaluate the situation

and take the arrangement further. It has perhaps to do with the fact that the electrification journey of both the companies – one being an old European CV major and the other being new and lesser known – is so intertwined and subject to tough competition. Also, Iveco has been operating independently as the Iveco Group since 1 January 2022. 

*The author of this article is the editor of a European magazine on commercial vehicles called Trucker. He is also a jury member of the International Truck of the Year consortium.*



# Vikas Gupta, Founder & CEO, E-Ashwa Automotive Private Limited



## **How big is the electric three-wheeler market in India?**

I would draw your attention to the data published by EV Reporter, a market research firm, in 2022 to answer your question. As per the data, the electric three-wheeler market in India was worth INR 22.46 billion in FY2021-22.

## **How fast has the market grown?**

Major growth in the electric three-wheeler segment has been in the last seven years. Reaching the INR 22.46-billion-mark last fiscal, the electric three-wheeler market continues to grow strongly.

## **What is the market share of E-Ashwa in this market?**

E-Ashwa has a 0.49 percent market share in electric three-wheelers. We consider it as an achievement when we see that there are multiple players in the market – to the tune of over 340. Of the over 340 players, at least a little over 100 are in the industry from before E-Ashwa was established.

## **What is the market positioning of your electric three-wheelers?**

E-Ashwa has tried to create a value proposition in the segment by offering a complete range of vehicles. It thus has three basic models in its portfolio, namely a rickshaw, a loader cargo and an auto. Other than these three, the company is offering a garbage collection van, a school van, an ice-cream van, a fruit and vegetable cart and a food cart. All the offerings are backed by a good range and high quality of build.

## **What markets are you present in? Are your electric three-wheelers sold all over India or in regional markets?**

E-Ashwa is present in 28 states and union territories. The company has not confined itself to a particular state, region or market.

## **What kind of growth are you experiencing as far as the sale of electric three-wheelers is concerned?**

The growth of electric three-wheelers is largely seen in Tier 1 and Tier 2 cities. It is only now that its presence in Tier 3, Tier 4 and even smaller cities and towns is beginning to show. The penetration of electric

three-wheelers in villages has also started picking up. The penetration of such vehicles is more in North as compared to South. We expect the electric three-wheeler market to grow at over 20 percent CAGR in the next five to seven years.


## **What is the localisation level? What is the manufacturing setup for electric three-wheelers like?**

Nearly every component of an electric three-wheeler is made in India. In the last one year, the import of electric three-wheeler components has gone down to zero at E-Ashwa.

## **Out of your overall sales, how much do the electric three-wheelers contribute?**

In FY2021-22, electric three-wheelers contributed 20 percent of the total sales at E-Ashwa.

## **Are the passenger electric three-wheelers sold more? Or are the cargo ones sold more?**

In FY2021-22, it was the passenger electric three-wheelers that sold more. In FY2022-23, the trend is changing. 

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**The recent sales figures have been positive for the CV industry. How do you look at the development after a long spell of downturn?**

After two consecutive years of severe downturn and disruptions that saw the CV industry shrink by almost half (FY21 versus FY19), a 27 percent growth has been clocked in FY22 over FY21. The CV Industry has maintained a growth momentum and registered a growth of 114 percent in the first quarter of FY23 against a lower base of the first quarter of FY22. The growth has been broad-based and across regions as well as segments. While the M&HCV (Medium & Heavy Commercial Vehicles) and I&LCV (Intermediate & Light Commercial Vehicles) segments grew by 131 percent and 158 percent, respectively, in Q1 FY23 as against the Q1 FY22 performance on the back of increased activity in road construction, mining and agriculture and e-commerce growth, the SCV demand has remained robust. It is backed by continued consumer spending. The opening of schools and revival of staff and tourist movement has put the CV passenger segment growth at 280 percent in Q1 FY23 as against 57 percent in Q1 FY22. For us, the fuel price inflation and interest rates remain the key monitorables.

**Freight rates have continued to lag behind the scale at which the fuel prices have grown. As a CV maker, how do you look at the situation?**

While the CRISFrex index (CRISIL pan India freight index) remained higher in Q1 FY23 compared to the second half of FY22, on a month-on-month basis, a marginal dip in freight index was seen in May 2022 and June 2022 on account of the full effect of the excise duty cut on fuel being passed on. More than the freight rates, it is the transporters' profitability that is the key imperative for the CV industry. This has been largely stable in the current calendar year. The overall situation is better than in Q3 FY22. The rising of repo rates by 90 bps in Q1 FY23 and another 50 bps points recently by the Reserve Bank of India will have an impact on the lending rates and lead to higher interest outflows for transporters. In the upcoming festive seasons, the freight rates and utilisations are expected to improve. Fuel prices and interest rates, however, will remain key monitorables governing transporters' profitability.

# Girish Wagh

## Executive Director, Tata Motors

By Bhushan Mhapralkar

**How would that influence the CVs of the future or the fuel technologies associated with them? Whether CNG, hybrid or electric CV sales will overtake diesel or petrol CV sales?**

Fuel prices have the biggest impact on the operating economics of transporters. It is therefore essential to look for cost-effective alternative fuel options. Since FY22, the CV industry has seen an increasing affinity towards CNG-powered vehicles due to its price advantage over diesel and the ensuing better operating economics. In addition, CNG vehicles enjoy benefits like exemptions on green tax/cess in a number of states and cities across the country. In the case of acquisition cost, the retail price difference between similar diesel-powered and CNG-powered vehicles has reduced post the BS VI emission norms transition. Seeing a sharp rise in FY22 due to the increasing differential between CNG and diesel prices, increasing availability and operating economics, CNG-powered commercial vehicles in I&LCV segment grew by 40 percent in FY22 as compared to 20 percent in the earlier fiscal. SCVs and pickups grew by 18 percent in FY22 as compared to the earlier fiscal when they grew by 5 percent. The increase in CNG price over the last two quarters has led to the tapering of demand in first quarter of FY23 in the I&LCV segment by 27 percent and in the SCV and PU segment by 17 percent. Going forward, the fuel preference in CVs is expected to shift towards natural gas. Similarly, in small and light commercial vehicles, there is a growing interest in EVs for intra-city and last-mile applications in particular. The industry, as a result, will provide

a variety of fuel choices to meet application needs, switching to EVs eventually.

**Tata Motors has been at the forefront of understanding and responding to market changes. What does the technology roadmap for the future look like?**

Continuing to identify and develop leading technologies across our portfolio of products and services that would be beneficial to the customers and be of convenience too, an accelerated interest in connected and electric vehicles is being witnessed. Taking a cue from international and India-specific nuances, a comprehensive technology roadmap has been made to address key emerging trends and is being integrated into the upcoming vehicle programmes. We have already made substantial progress in mass mobility electric vehicles with more than 715 e-buses running on Indian roads. The cumulative running of these buses has been over 40 million kilometres. We have also recently forayed into the e-cargo-mobility with the launch of Ace EV in the last-mile delivery segment. In the case of connected vehicle technologies, there's the Tata Motors next-gen digital solution for optimal fleet management called Fleet Edge. It is found on more than 230,000 vehicles and enables customers to maximise their fleet utilisation and earning potential. With a priority to delivering best-in-class operating economics, superior comfort and convenience and enhanced connectivity to our customers, we are working on digitalisation within our operations with the use of Industry 4.0 and other technology domains.



**What is the trend that you see vis-a-vis new CV sales?**

Tata Motors' pre-owned CV brand 'Tata OK' works arduously to make profitability feasible on every certified vehicle. We now have India's largest network for pre-owned CVs. The volumes of 'Tata OK' have grown more than 10 times in the last four years. Through its franchises, 'Tata OK' buys reliable and long-lasting Tata CVs, refurbishes them and resells them at market-driven prices in their subsequent ownership of the vehicles. Tata Motors supports seamless transaction of buyback of pre-owned vehicles and sale of new vehicles or 'Tata OK' certified vehicles.

**What growth do you anticipate for the CV industry against the regulatory and economic shifts?**

A strong drive on infrastructure spending by the government is

expected to improve demand across segments and applications in FY23. Critical sectors including e-commerce, FMCG, FMCD, construction, mining, steel and cement will continue to drive demand in the M&HCV and I&LCV segments. Similarly, the SCV segment is expected to grow on the back of resilient demand from agriculture, dairy and e-commerce sectors. We expect a recovery for passenger CVs imminently with the reopening of offices and schools – also from increased activity in the tourism sector and from replacement demand for the old fleet, which is expected to increase volumes in this and the next fiscal. Government initiatives like the scrappage policy are expected to be critical for the entire commercial vehicle business, as are the 'Gati Shakti' project announced during Union Budget 2022 as well as the heightened focus on infrastructure projects. The fiscal support for capital

expenditure to state governments will boost the demand for M&HCVs. The Performance-Linked Incentives (PLI) scheme by the government is another crucial element that will prove vital for the overall CV sector and its growth prospects.

**Is it a matter of time for electric light, medium and heavy-duty CVs to arrive that the Ace EV has been introduced?**

With increasing focus from the government on import substitution and energy security, transition to alternative fuels is imperative across all vehicle segments including CV. The government is keen to drive faster adoption of zero-emission electric vehicles in a number of segments in order to accelerate the transition towards sustainable transportation. With strong policy support and orchestration activities across multiple stakeholders, India has already made significant progress in deploying electric buses in many cities. Two-wheeler and three-wheeler segments are also witnessing a significant rise in penetration of EVs due to favourable customer benefits. In last-mile delivery segment, Niti Aayog has already launched the 'Shoonya' campaign to accelerate the adoption of electric vehicles in the urban deliveries segment and create consumer awareness about the benefits of zero-pollution delivery. Tata Motors is keen to accelerate this transition towards zero-emission EVs. In the mass transportation segment, we have already introduced e-buses and are working closely with the government to accelerate the deployment across multiple cities in India. We have also developed the Ace EV to address the last-mile segment and are engaging deeply with e-commerce companies and their logistics partners to facilitate their shift to zero-emission fleets. Going forward, we believe that EVs will have potential across segments in specific use cases that are amenable for electrification. In addition to product and technology development, this will also require continued policy support and ecosystem development to deliver hassle-free EV experience to the customers. At Tata Motors, we continuously evaluate opportunities for electrification in varied segments, including battery as well as hydrogen fuel cell technology, in order to offer the most suitable and profitable option for our customers. **MT**

**What about the focus on safety?**

Safety is one of the key product attributes and includes the driver, passenger, vehicle and cargo. We see safety in two aspects – active safety and passive safety. While active safety is driven through driver-assisted features, passive safety is driven by new technology in materials and safety systems onboard. Our products come with the choice of world-class driver safety features such as Electronic Stability Control (ESC), rear parking assist, rear-view camera, Hill Start Aid (HSA), electronic anti-fuel theft system, improved brakes, engine brake assist, air-conditioning with ambient air temperature sensor and more. Features like these have been developed to increase the driver's capabilities. They have been developed keeping in mind the longer driving distances.

**Going by the participation of Tata Motors in the used CV business,**



## INTERVIEW

A leader in SAE Level 4 self-driving vehicle software for heavy-duty vehicles, Torc Robotics, an independent subsidiary of Daimler Truck, is opening a technology and software development centre in Stuttgart, Germany. In regards to the development, Gianenrico Griffini spoke to Michael Fleming, CEO, Torc Robotics, and Peter Schmidt, Head of Autonomous Technology Group, Daimler Trucks.



Michael Fleming

# Autonomous Driving:

*In an interview dating back to October 2019, you said you were in the phase of testing Class 8 autonomous driving on the public road. What stage are you currently working in? What results did you achieve so far?*

Michael Fleming: Since we last met at the North American Commercial Vehicle Show in Atlanta in 2019, we have been safely testing a fleet of autonomous trucks daily on public roads in the US. We are developing autonomous truck technology to navigate for long-haul, hub-to-hub transport – our target use case. Typical driving scenarios, such as lane changes and complex merges, have been tested intensively and have proven that Torc's autonomous driving software can safely navigate on highways. Recently, we have expanded our features and are now running and demonstrating L4 autonomous trucks with enhanced capabilities in more complex scenarios on surface streets, ramps and turns at controlled intersections. Our routes have expanded to multiple states: Virginia, New Mexico and Texas. Each area provides us

with unique traffic and environmental conditions for testing. We have also expanded our simulation testing – allowing us to safely simulate thousands of traffic scenarios and reinforce capabilities on public roads.

*Can you describe your technical solutions for Class 8 autonomous driving? Is a high degree of redundancy a key pillar of your Level 4 autonomous driving strategy?*

Michael Fleming: The virtual driver is the Automated Driving System (ADS), which enables the vehicle to perform driving tasks. This includes software and hardware. Torc's software stack is also known as the virtual driver. The automotive grade hardware includes computers, sensors and other hardware necessary for the virtual driver to perceive the world around it, localise and make behavioural decisions to perform driving tasks.

Peter Schmidt: Yes, in our opinion, redundancy is a must for autonomous trucks. It is the only way to ensure maximum safety.

Here we do not compromise. Our engineers at Daimler Truck North America have done a phenomenal job in the past few years, successfully developing the first scalable autonomous truck platform with critical safety systems. Based on Freightliner's industry-leading flagship truck, the autonomous-ready Cascadia with redundant functions represents the foundation for autonomous trucking. This truck has a second set of critical systems, such as steering and braking, and continuously monitors and assesses the health of these systems. In case of interruption or errors, the newly developed redundant systems will be able to safely control the truck.

*What does the launch of the cross-functional TAAC (Torc Autonomous Advisory Council) mean? Does it mean you have already achieved a robust road-proof autonomous technology level that must be translated into transport operators' reality?*

Michael Fleming: We believe in developing technology to create sustained innovation in freight transport. This means



Peter Schmidt

Michael Fleming: At Torc, we want to be part of the solution, but we need to strike a balance of pushing innovation while keeping safety at the forefront. We're happy to be thought leaders in sharing our own very stringent guidelines for testing and safety plans and helping to educate state and federal officials on the importance of autonomous trucking to society.

**Recently, Daimler Truck subsidiary Torc Robotics announced the opening of a technology and software development centre in Stuttgart. How can you use the know-how acquired in the US for European autonomous driving operations?**

Michael Fleming: For now, we remain laser-focused on

# Heavy-Duty Vehicles

working closely with leaders in shipping and logistics to define the best way to integrate with the freight network. With members of the TAAC, we are exploring solutions for hub-to-hub operations, fleet logistics and fleet maintenance services. These are the capabilities beyond the technology for driving that are necessary for commercialisation. The TAAC supports Torc's goal to be the first scalable, profitable, commercialised L4 truck solution. We are collaborating with key freight industry players who will provide strategic insights to Torc as we integrate with the freight network and tackle challenges beyond highway driving.

Peter Schmidt: With Torc now involving leading logistic companies, we are entering the next phase, focusing on specifically defining the real-world use case of the autonomous system of the future. We are on the right path and, together with our collaborators, we share the pioneering spirit and the willingness to succeed in autonomous trucking.

**Can you outline a timetable for deploying hub-to-hub self-driving trucks on daily interstate operations in the US?**

Peter Schmidt: We are aiming to commercialise autonomous trucks on the road within this decade. In the US, we expect autonomous trucking to be a reality on a bigger scale by 2030. Already, from the middle of the decade onwards, we could see the first trucks running freight with customers, and we could then see the market ramp-up subsequently. While the go-to-market timing is determined by our partners, we will make sure our autonomous-ready Freightliner is available in time.

Michael Fleming: Building on what Peter said, our timeline to deploy hub-to-hub self-driving trucks on daily interstate operations is not determined by a specific target date but by safety first. We will bring autonomous trucks into customer operations only when it is safe to do so.

**What do you need from the legislator to speed up the introduction of self-driving trucks? What is it still missing?**

developing autonomous trucking for deployment on US highways. The team in our Stuttgart office will support these efforts, tapping into the amazing talent pool of software and product development specialists in one of Germany's prime automotive regions. This is the primary reason we decided to open an office in this location.

Peter Schmidt: Later on, we can then leverage our position as a global player and transfer the know-how and experience acquired in the US to bring autonomous trucking into other markets, for example, to Europe. However, due to different legislations and infrastructure, we expect other markets outside of Europe to become viable sooner. For the near-term, we are focused on commercialisation in the US and believe this focus will help us reach our goal here by 2030.

**Gianenrico Griffini is the editor of Vie&Trasporti (Italy) and a technical journalist specialising in commercial vehicles. He is also the Chairman of International Truck of the Year consortium. **



Anil M Kamat

# A Home Run For Buses

Building buses and electric vehicles, among others, MG Group has been catering to the needs of private bus operators, automotive OEMs and various others. Anil M Kamat, Managing Director, MG Group, spoke about his company's plans on the sidelines of Prawaas 3.0 exhibition in Hyderabad.

## Juili Eklahare

### **What did you launch at Prawaas 3.0?**

We launched our own product as an OEM, which is called the Columbus. The Columbus is a world-class, ultra-low fully flat floor, AHM 2021 compliant, one-of-its-kind premium tarmac coach.

### **MG Group is known to provide high-quality buses to the Indian market. Does that indicate the gap between European buses and Indian buses is shrinking?**

The gap between European and Indian buses, at least in the inter-city premium coach segment, is shrinking, but overall, the Indian bus and coach industry still has to mature quite a bit for us to get to European standards, per se. Substantial investments in product design, superior materials/components and qualitative aspects and corresponding appropriate price realisation are required across all bus segments to get at par with European standards. That's going to take a little bit of time; however, we see it happening – there is a transformation taking place that is going to force all the manufacturers to upgrade their products.

In fact, all the companies in the Indian bus and coach sector have realised the change in customer expectations for comfort, safety, serviceability of the product etc. Thus, all companies are moving up, and I believe this is something that should be possible to achieve in the next few years.

### **How do you plan to stay ahead in the Indian bus body building market?**

In India, we have got our clientele spread across the entire range of applications in the bus and coach industry. So I think we'll be able to achieve our vision in due course of time when the demand picks up.

### **How has the Covid pandemic affected MG Group?**

The pandemic affected business big time. With schools being run online and corporates working from home, there were no requirements for school buses and staff buses. Also, there was obviously no travel. Therefore, inter-city coach business was down, which is still going to take some time to come back up. Even the state governments did not have budgets for purchases. Hence, overall, there was no business across the segments at all.

### **What is your post-pandemic vision for the MG Group?**

We have restructured and restructured internally in order to focus on certain segments of national importance, apart from the bus and coach industry. Some of the focus areas at our end are the aviation, defence, healthcare and EV (in the two- and three-wheeler space) sectors.

### **Can you tell us about MG Group's plans for EVs?**

The first and foremost priority would be to electrify the Columbus, possibly by the end of 2023. We also recently opened the MG EV Park at our Zaheerabad facility, which was inaugurated by the Minister of Municipal Administration and Urban Development of Telangana, K T Rama Rao. It is focused on being an incubation hub for electric two- and three-wheeler start-up companies.

### **What is your biggest takeaway from Prawaas 3.0?**

Seeing the kind of footfall at the exhibition just goes to show that after the challenging two years of the pandemic, things are looking brighter again and the demand is coming back. **MT**



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# Vitesco's Plant Of The Future Opened In Pune

*The second manufacturing plant of Vitesco in Pune has been built with the objective of achieving a twin technological transformation: from fossil fuels to renewable energy and from analogue to digital technology. With an investment of around EUR 30 million, it is strongly equipped with automation, digitisation and Industry 4.0. Initially, the new plant will cater to two-wheelers, followed by various powertrain solutions products, such as engine management systems, sensors and actuators, as well as exhaust management components for passenger cars and commercial vehicles.*

## Sharad Matade

**W**ith the opening of the second manufacturing plant in Pune, Vitesco Technologies, a leading international manufacturer of modern drive technologies and electrification solutions, will narrow its focus on the growing demand for highly efficient, low-emission technologies for internal combustion engines as well as electrified and all-electric drive systems in India. The plant was inaugurated by Klaus Hau, Member of the Executive Board at Vitesco Technologies, and Anurag Garg, Managing Director & Country Head of Vitesco Technologies India Private Limited.

The plant, located in Talegaon, Pune, has been operational since 2020; the official opening got delayed due to the Covid lockdowns. The company invested around EUR 30 million in infrastructure, buildings and plant.

“We put this new plant in place in Pune because of our success in the past years. Our existing plant capacity has been filled, and we needed additional production space. We already had successful operations in Pune. We felt it was the perfect place to set up a bigger operation and combine the mechanical plant activities in a separate hall with our electronics capabilities. Because over time, we see those mechanical and electronics increasingly merging into mechatronic capabilities,” said Hau.



Klaus Hau



Anurag Garg

Adding to Hau, Garg said, “There are certain products related to the electronic control units and the different types of sensors we deliver from this plant. On one side, there is capacity; on the other, we are going through the challenges of chip shortages. But we have balanced it out in the last month of the year. As the chip shortage will continue for some time, we at least have been able to ensure that all our customers are running their operations without stopping production lines.”

Spread over 20 acres, initially, the plant will cater to two-wheelers, followed by various powertrain solutions products, such as engine management systems, sensors and actuators, as well as exhaust management components for passenger cars and commercial

vehicles. Hau said all three segments – two-wheelers, passenger cars and commercial vehicles – are essential for Vitesco. The German component maker started in India with electronic fuel injection solutions with its catalyst solutions for the two-wheeler market, which Hau terms as a significant market for the company’s products.

“We believe that the two-wheeler market in India is a leading market, and with our global team, we are currently developing specific solutions for the two-wheeler market, targeting India. We are also trying to reuse some of the building blocks that we have from our global market. Still, because of the two-wheeler market size and the early adoption of electrification in India, we are going into specific developments,” said Hau.



The local team will have a more prominent role in developing solutions for the two-wheeler segment, taking support from the expertise in other markets. “This is a powerful endorsement of the local team and the local experts. We have developed very strong relationships with our two-wheeler OEM manufacturers in India based on our products on the combustion side. We are already engaging with those manufacturers to see where we offer additional value to their solutions,” added Hau.

Vitesco supports its customers with system solutions, focusing on efficient gasoline and diesel applications on the passenger car side. “We look forward to supporting our customers in India with our electrification solutions already in place in other markets. In the commercial vehicle segment, the BSVI implementation gave us a big momentum to bring our advanced sensing technologies and actuators, primarily sensor technologies, into the Indian market. This is what you will see in the plant as well. We still see growing demand for many years because the combustion engine in the commercial vehicle sector will still play a major role for many years,” explained Hau. Garg added, “BSVI just launched in two years, and it is still growing. Two-wheeler electrification has just started shaping up well, where we see the sudden quantum coming by 2024. We are getting ready for the future of the two-wheeler, which will also make us further future-ready for the passenger car business when it comes.”

Vitesco Technologies’ new Pune plant is a cutting-edge plant that

meets its grid demand entirely through renewable energy sources. Furthermore, the site generates sustainable electricity.

All-new photovoltaic systems have been installed, generating 03 GWh of solar energy. The present installed capacity is 2.6 MW, with the company aiming to raise it to 3.6 MW by the end of the year. With over 25 cobots and robots installed on the production lines and shop floor, the facility is also strongly pursuing automation, digitisation and Industry 4.0.


Garg mentioned, “Our mission is to develop highly efficient, low-emission technologies for internal combustion engines and electrification technologies for all vehicles in India. For this, we built a futuristic plant – one that is intelligent, sustainable and predictive. With these key characteristics, we were able to construct this plant of the future in Pune. Several creative projects have been completed at this facility. These projects on digitisation, automation and sustainability across our manufacturing network have helped us to shape the Plant of the Future.”

“This plant is to serve our Indian customers. By being part of our global network, you will find the products that you see here in this plant are the same products you’ll find in quite a few of our other plants across the globe. We are working together to see where we can help each other when there is a peak of demand or even a shutdown, which unfortunately, we recently experienced in some other markets. But in principle, we strongly believe in our philosophy of

‘in the market for the market’. And that means the Pune plant is for our Indian customers,” confirmed Hau.

Recently, Vitesco Technologies joined hands with Renault Group, a major player in the automotive industry, for the joint development and production of power electronics in a so-called ‘One Box’ for electric and hybrid powertrains.

Under this agreement, both partners will join their forces, contributing their know-how and experience to jointly develop a power electronics concept that is unique on the market. Renault Group will bring its electric and hybrid expertise, while Vitesco Technologies will provide its ‘best in class’ technologies and processes.

Talking about the need for such more partnerships, Hau said, “We believe we will see more and more partnerships in coming years. Over these last three years, we noticed that you have to collaborate well to ensure that you are well aligned with market demand, catering to the demands. On the electrification side, a significant challenge is that the demands in some of the core markets have exceeded our expectations. So to keep up with those demands, it’s good to be in early partnerships across the whole supply chain, from the vehicle manufacturers to tier I suppliers. And by bringing together the expertise of Renault on the vehicle architecture side and Vitesco on the components and systems side, by jointly defining solutions, we can reduce costs, packaging as well as size of the product.” 



# Autonomous Vehicles - How Soon?

It may be too soon to say goodbye to ICE vehicle and to welcome autonomous vehicles.

**Louis Rumao**

There is still more than a decade available for automakers to earn a significant chunk of their annual sales from internal combustion engine (ICE) vehicles. Some are planning to cut off their investment in ICE vehicles and focus all their resources on developing electric vehicles (EVs). Surely, given the environmental concerns, regulatory push and spurred by recent fuel cost increases, the move to electrification is no doubt guaranteed.

But what about autonomous vehicles (AVs)? Taking the technological world by storm, autonomous driving technology will prove to be immensely beneficial to the society. AVs run without a human operator, using a combination of sophisticated AI software, LiDAR and RADAR sensing technology. Although a relatively new innovation, the growth of AVs is projected to reduce air pollution by up to 60 percent, cut travel time by as much as 40 percent and reduce traffic accidents as well as casualties by as much as 90 percent. In addition to being safer and environmentally friendly, AVs used in transportation and delivery services are projected to help businesses by reducing costs. But there some potential issues need to be overcome.

## Safety concerns

At present in the US, there are about nine AV crashes per million miles driven versus four crashes for non-AVs. The higher AV accident rate can be attributed to AVs being forced to operate on existing highways and city streets that have not yet been modified for AVs. Several companies are busy testing their AVs on public roads, but necessary updates to transportation infrastructure and

AV-focused legislation have not yet occurred. These updates are as needed as the technology itself, and their absence could prove to be constraints on the speedy rollout of AVs.

## EV battery flammability

EV battery, which contains multiple cell packs with electrolyte, is prone to burn either due to manufacturing defect or due to damage caused by

an accident. Lithium-ion batteries are known to be highly combustible. According to the U.S. National Transportation Safety Board, if a collision damages a battery, there is a risk of 'uncontrolled' increases in temperature and pressure, known as thermal runaway. This can cause an explosion of toxic gases and fire, presenting an additional danger to emergency responders. As lithium burns, it creates a metal fire with





temperatures that reach 2,000 degrees Celsius. Attempting to douse the fire with water could lead to a hydrogen gas explosion. Recently, an accident-damaged EV parked in a junkyard caught fire after three weeks. The firefighters had to dig a pit, fill it with water and dunk the burning car into water to douse the inferno. General Motors (GM) had to recall every Bolt EV made since December 2016 for battery-related fires.

### Prone to cyber attacks

The threat from hackers during vehicle operation is a real one! In 2015, hackers remotely took over a Jeep, travelling at over 100 kmph, and forced it to stop on a highway. The hackers were able to access the car's braking and steering through the onboard entertainment system.



### Inadequate infrastructure - roads, charging, hi-speed Wi-Fi

The US has a leading position globally in technology but falls way behind, like many other countries, in infrastructure and policy considerations. For AV growth, infrastructure needs upgrade on many fronts. While Tesla has done a lot by installing numerous charging stations as part of its vehicle charging network, there is a need for a lot more



charging stations compatible with different electric cars. Some countries have taken the lead in standardising charging systems. Singapore seems to be the current AV development leader as it has already published national standards for AI and AVs. It also has some of the highest quality of roads, and financial resources, making it an excellent candidate for massive AV roll-out.

Also needed is a widely available and improved 5G coverage for expansive vehicle-to-vehicle communications that allow vehicles to exchange real-time traffic, route and road information. Improvements to the roads, markings, signs and sensors are also required for AVs to recognise and react to road conditions and traffic laws.

### Liability laws need overhaul

Current laws based on strict product liability hold a vehicle manufacturer responsible for any damage resulting due to a product defect. But AVs operate mostly based on the inputs from their surroundings. If one of those inputs is defective and the vehicle

causes an accident, who is liable? In case of a conventional vehicle, it's the driver who is usually at fault for causing an accident. But for AVs, there is no driver to blame! Therefore, creative regulations are needed for apportioning the liability. As AVs detect and record data associated with their surroundings, privacy laws may require updates to protect this data. Both state and federal laws may need to stipulate who can own, access and use this data.

### Could we expect a speedy AV deployment?

While many vehicle OEMs and technology companies are pushing the AV technology, its widespread deployment could be a long way off. Some experts feel that over the next five years, we'll start to see commercial fleets of autonomous vehicles piloting people and goods. After that, we could start to see broad adoption. Clearly, AVs are still an imperfect technology for our complex, real-life driving conditions and every mishap attributed to a driverless vehicle may postpone its full deployment. **MT**



# Hygge Energy Attempts To Bridge The EV Charging Gap In India

Hygge Energy has developed a marketplace for local players to trade renewable energy.

Gaurav Nandi

The last decade has witnessed a gradual transformation of the Indian mobility space. The influx of electric vehicles (EV) has added to this change. It has also aptly highlighted the adaptation of modern technology by the auto industry, among others, to close the gap between EVs and IC-engine vehicles.

With stress being laid on the creation of an efficient infrastructure, albeit in the form of enough charging solutions, efforts are being made to ensure early adoption of EVs as well as a sustainable user experience. Designing a software to unlock the monetary potential of renewable energy with an eye on EVs and terming it as 'Zero Emission Electric Mobility', Hygge Energy has developed a marketplace that paves the way for local players to trade renewable energy. It is an initiative that will be set up at CNG stations. In this direction, the company has signed a memorandum of understanding with Think Gas.

Prateek Saxena, Founder and CEO of Hygge Energy, mentioned, "The Indian EV charging business faces three major problems: the electrical grid is not resilient enough to allow charging; the grid energy mix is not renewables-centric, and hence the charging source is not renewable-based in any manner; and buying grid energy is not profitable for charging operators. When chargers are set up, the grid requires very costly upgrades. The resulting increased transformer size causes higher sanctioned load and electricity bills as well. The load factor on the grid is too high; as the demand



peaks for EV charging, the grid often does not have the capacity to support it. There is also a lack of aggregation of carbon credits. The individual EV charging station operators are not in a position to consolidate carbon credits for monetisation. Our solution addresses all of these problems."

Zero Emission Electric Mobility was designed with three essential objectives in mind: charging EVs using renewable energy; promoting zero-emissions mobility; and no upgrades for grid infrastructure, hence avoiding delays and expenses. This will decrease grid load dependency for charging stations by over 80 percent and improve grid resiliency.

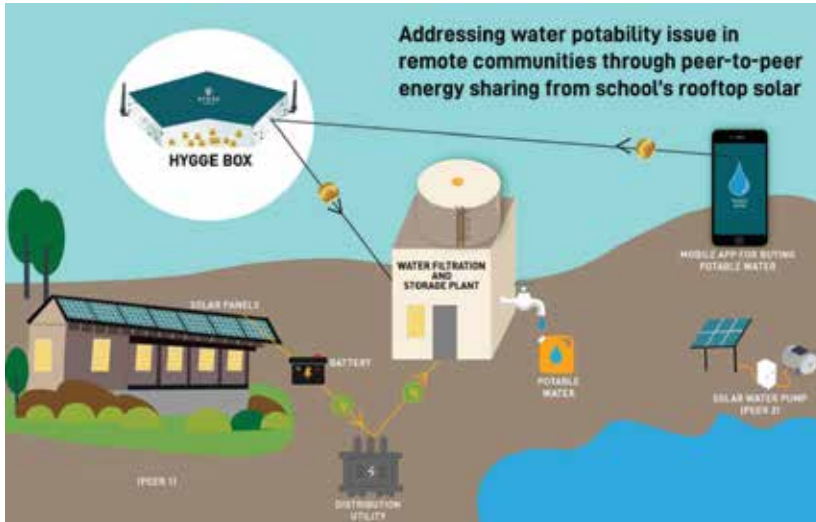
Hygge's solution is supported by an end-to-end immersive EV charging mobile app that facilitates the entire charging experience for both the driver as well as the charging station owner.

## The platform

The platform addresses the lack of aggregation of carbon credits as well. As the platform will source renewable energy for EV charging, it will be used for maximising carbon credits for companies like Think Gas in the clean fuel business, informed the executive.

Hygge Energy enables entrepreneurs and large corporates interested in investing in the EV charging business to make money. The platform is plug-and-play. It instantaneously connects EV charging stations to next-gen technology, including IoT devices embedded with artificial intelligence and blockchain that reduce cost of operation, and an immersive EV charging app that drives traffic.

Hygge's technology allows EV operators to become profitable at a very low cost. "We partner for long term with operators, and this association lasts throughout the lifecycle so that we can support their operations related



to pricing, policy, regulation and technology,” said Saxena.

### Bridging the gap

Hygge’s EV charging system is supported by a next-gen charging app that enables owners to book, reserve and pay for charging time slots in advance, avoiding waiting time and disappointments because of not getting a charging spot and chaos at charging sites. End-to-end planning and scheduling of EV charging will also allow EV owners to overcome the hurdle of range anxiety.

The gamified and community-centric app will enable like-minded individuals to come together and exchange ideas for creating a greener future. Zero Emission Electric Mobility is a highly adaptable system that provides 100 percent clean energy e-mobility by ensuring that EV charging is done with renewable energy, thereby allowing environmentally conscious

EV owners to be in charge of their energy usage and carbon footprint.

Hygge’s charging app also enables tracking of payments as well as carbon credits earned by users each time they utilise Hygge’s network. This will open up access to an INR 750 billion carbon trading market for renewables-based EV charging.

“Now our end users also include drivers of CNG vehicles. Think Gas requested us to improve the customer experience at their CNG filling stations by using our EV charging app for providing a similar experience for CNG drivers. Our app for CNG users includes advance booking, cashless payment and loyalties, like our EV solution,” informed the CEO.

### Zero emission transportation

Electric vehicle charging using coal-heavy grid power emits 50 times

more carbon than doing it using solar photovoltaic solutions. Zero Emission Electric Mobility ensures that all EV charging is done using renewable energy as opposed to using other available energy sources, thereby drastically reducing the greenhouse emissions.

The system is facilitated by Hygge’s proprietary customer premises IoT device called the Hygge Box, which operates on embedded machine learning-based artificial intelligence and blockchain technology. It enables tracking, measurement, optimisation, allocation and accounting of renewable energy, hence ensuring that electric vehicles are primarily charged with clean renewable energy.

Zero Emission Electric Mobility is a highly adaptable system that provides completely clean e-mobility. The platform can not only be integrated to any EV charging or battery swapping system but also provides truly zero-emission transportation by ensuring the use of low-cost renewable energy for charging EVs and batteries.

### The partnership

Zero Emission Electric Mobility (complete with the Hygge Box and Hygge Energy’s EV charging app), as well as Hygge Energy’s app for CNG filling, will initially be installed at a Think Gas CNG station in Uttar Pradesh, followed by other locations under discussion. This will be a big step by Hygge towards unlocking a USD 15 billion carbon trading market for service providers offering CNG and EV charging services in India, which will make these businesses profitable.

Hygge’s platform is integrated with on-site or off-site renewable energy and the distribution grid infrastructure. It enables tracking, measurement, optimisation, allocation and accounting of energy. This ensures that all renewable energy is directed towards EV charging. In the absence of EV charging, this energy can be redirected to other applications for maximum utilisation and savings on electricity bills. It also avoids the additional load that EV charging infrastructure puts on distribution transformers. As a result, renewable energy e-mobility can be accommodated without the need for additional investments in grid infrastructure. **MT**





# OEMs Or Software Companies: Who Will Control The Data?

Software is finding a growing presence in cars today, which will eventually get upgraded over time. In fact, over the years, car manufacturers have invested millions in the R&D of automotive software. And automotive OEMs are competing with tech giants to produce operating systems for the car. Ivo Ivanov, CEO, DE-CIX International, discusses why OEMs need to be in control of the data journey of their cars, why the type of usage of the car or the special mobility packages will become more essential down the line and if there really will be a software war in the near future.

## Juili Eklahare

**T**he cars of the future will be highly interconnected, and we'll see real-time data exchange. A couple of years ago, automotive OEMs were focused on the engine, shape, the mechanical part of the car etc. However, they have now understood that the digital part of this business will drive them more successfully into the next century. There is a huge appetite for

control of data by the OEMs, not just of the software but the infrastructure as well.

In fact, automotive companies have already started turning into software companies. Ivo Ivanov, CEO, DE-CIX International, mentions that automotive OEMs plan to create an independency from operating systems like iOS or android, so as to have their own software-driven

platform – and this is valid for all major automotive companies, from Honda to Toyota, which is a market reality. At the same time, we also see automotive OEMs partner with companies like Google or Amazon, because of their cloud capabilities. While this sure is the case, it doesn't tell us that the automotive OEMs will stop creating their software independency.

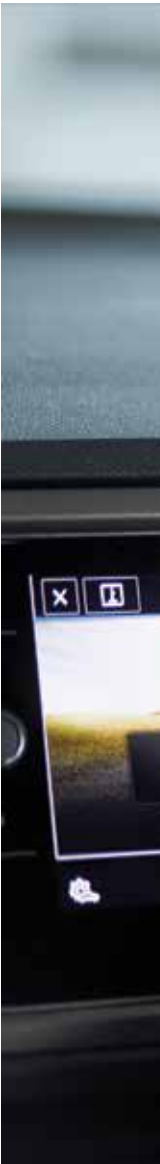
“If you ask me about software, I truly believe that we will see the so called ‘software war’ in the near future,” Ivanov expresses and continues, “They will collaborate if it comes to cloud resources and cloud computing resources for their manufacturing platforms. However, if it comes to creating and increasing the control of the data gateway related to the digital car, then we will definitely see a future competition between the propitiatory software developments of companies like Volkswagen, BMW etc. (you name them) and the established operating system providers like Apple or Google.”

### OEMs in control of the data journey - why is it needed?

While the automotive OEMs can easily go to the software companies, it comes down to who controls this.



Ivo Ivanov







“If the software related to the car remains in the hands of the existing players, then the OEMs will have to share a bigger portion on the assets with those companies,” Ivanov enlightens and adds, “They can share if needed, but the question remains of who has the majority in that stake. They want to increase their margin on the digital assets related to the car and become the major stakeholder in that domain.”

Ivanov further informs that, moreover, those who want to be extremely successful in the future must make themselves capable of doing this. “Because if they do not create this controllability of the data journey, they will not be able to create digital assets,” he puts across and adds, “An OEM can grow its value as a company on the stock exchange if it is able to

provide the market with a story that is futuristic and can create a value in the future. And the OEMs will not be able to differentiate in the future with the quality of the car seats, engines, shape of the car etc. alone – they will be able to differentiate with smart digital concepts for mobility solutions in our digital lives.”

Citing a relevant example in this context, he asserts, “Let’s think about the metaverse, or the truly and entirely digitalised environment; we see companies like McLaren and Porsche that have already started creating their digital twins for the metaverse. It eventually comes down to access to the customers. The OEMs have the cars and the customers are the users of the cars.”

## OEMs developing their own software - is it safe?

However, even companies like Tesla have their share of failures in vehicle software, with there being investigations into Tesla’s driver enhancement software following a spell of documented malfunctions. So, what can one say when it comes to smaller OEMs?

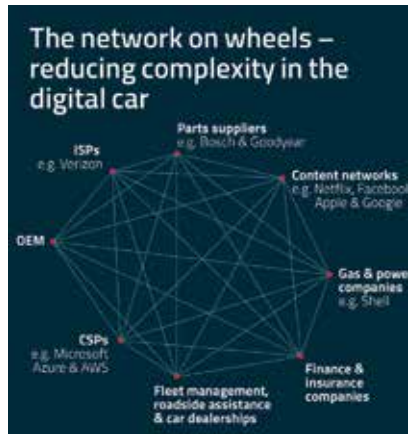
“It’s a normal process of improving your code, its security and the software. It’s what Microsoft, Apple, Google etc. have been dealing with for decades now. In fact, the OEMs will catch up much faster because they have the money to make sure that they hire efficient people and acquire other companies. And also, again, they have access to the end-users,” explains Ivanov.



## Control of the data journey and infrastructure

The OEMs have the cars, the customers and the users of the car. These OEMs want to control the framework and will integrate existing solutions and other elements but want to be in control of the data journey, which is the asset. "The assets are the tonnes of data produced by the car," Ivanov shares and goes on, "Hundreds of thousands of organisations around the world are trying to get involved in this huge and tremendous business surrounding data – the data getting into the car and the data being produced in the car. This is what the OEMs aim for."

Ivanov further clarifies that the OEMs will probably not write the code for everything from zero, but they sure will want to control the framework. "But



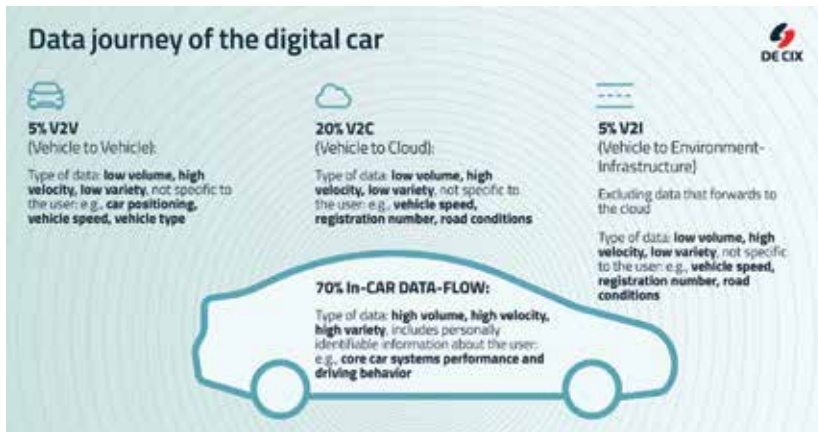
the knowledge of where exactly the data comes from in the car and where the data goes from out of the car, then they will be able to turn themselves into the gatekeepers of the data journey and create their virtual and digital assets around this



driver behaviour. And I believe that it's not the ownership of the car in terms of legal rights of owning the car, but the type of usage or the special mobility packages that will become more essential."

## Not just software, but chips too

According to market research firm Gartner, by 2025, fifty percent of the top 10 automotive OEMs will design their own chips. Ivanov envisions that what we have seen the battery production for electric cars, will happen in the case of chips too. "All of the dominant OEMs, from Tesla to BMW to Mercedes to Volkswagen, have already started heavily investing in their own battery manufacturing assets. In some cases, they collaborate with existing battery manufacturers, or in other cases, they create their own battery factories," Ivanov asserts and adds, "So we see a similar development in the chip industry. That's because the chips in the connected car and the whole mobility concept around the future of OEMs are nothing but the new engine."



they can get control on the software in a sense where they can control it through licences, agreements etc.," he avers.

Focusing on another element – infrastructure control – Ivanov elucidates, "If the OEMs can achieve

data. Today's cars are already kind of a fifth screen, and they will become more so in the future. As you can imagine, the windows of a car can be used as displays to explain and deliver more information about the environment in order to help the driver for a higher level of security in the

## A leading position

Software is certainly transforming the automotive world. And yes, major automotive OEMs are now seriously investing in new software platforms. The software and infrastructure together, undoubtedly, will empower automotive OEMs to be the gatekeepers in this data journey and provide them with the level of controllability of the data journey that they need to create virtual and digital assets for their shareholders. Software is definitely one of the main differentiators, creating a leading position in automotive OEMs.



# RUBBER MATERIAL CONFERENCE 2023

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# Making vehicles (SaaS)y

There are increasing software components to vehicles, with new intelligence being added and them getting more sophisticated. SaaS is a way to deliver the software, and we are seeing more software in the automotive industry. Venkat Nathan, Founder and CEO, Nesh LIVE, talks to us about the start-up's transition to a vehicle connectivity solutions company, their USP and more.

## Juili Eklahare

**W**hile we see large players like Tesla choosing to build their vehicle connectivity solutions inhouse, SaaS could be the way to go for medium to small players in the automotive OEM space to enable these solutions. However, they may need to approach companies that offer full-stack SaaS solutions for vehicle connectivity to compete with the large players.

One such company is Nesh LIVE, which provides SaaS solutions for vehicle connectivity and was selected by Stanford University as one of the promising start-ups in India under the Seed Transformation Programme in 2017, and has close to about 100,000 vehicles in its system. Moreover, the start-up has been working with vehicle manufacturers for close to five years now.

“Our solutions are deployed at leading truck, bus and off-road vehicle manufacturers. Besides this, we are also working with electric vehicle (EV) manufacturers right now,” says Venkat Nathan, Founder and CEO, Nesh LIVE. “We are working towards helping these manufacturers extract, transfer and analyse battery and vehicle data in the cloud. This in turn is the bedrock for any mobility – that bedrock is quality data, and quality data comes with connectivity right at the production line and the latest sensors supporting the extractions. So when a vehicle is born, the sensors are put in right at the time of its birth as an OEM fitment rather than leaving it to the customer to buy it as an aftermarket fitment.”

### The three-dimensional way

Nesh LIVE's specialisation is that it works with manufacturers early on and tries to integrate its products into the manufacturing line. That way, the whole ecosystem benefits from quality data. In order to build intelligent insights on data, connectivity has to have all the dimensions, from vehicle data to user-behaviour to the environment. The start-up attacks the automotive OEMs' problems in this three-dimensional way. Doing this provides insights not just for the manufacturers but for the entire network – everyone in the chain is allowed to see and access information that they are allowed to see and access.

### The rating system

“Today, we collect close to 100 million data points a day. Nesh LIVE also provides rating systems for the vehicle

as a feature, based on the data they get,” says Nathan and goes on, “This rating is useful for the fleet owner.”

The rating system is provided for the vehicle and drivers, and now Nesh LIVE will be extending very similar algorithms for battery rating of electric vehicles. There are a number of applications for battery rating; for one, it helps the user understand the health of the battery. And secondly, as these batteries come up for reuse in other sectors, the grading system will help decide their afterlife in the long run. In fact, the vehicle rating system helps people anonymously compare their own vehicles within their own fleet and other fleets as well.

“In summary, we identify what data is needed and work with the automotive manufacturers. We then extract that data and send it to the cloud. Once that data is sent to the cloud, we run a lot of analytics in the cloud and then provide insights to different stakeholders,” Nathan makes clear.

### Nesh LIVE's SaaS solution - from ICEs to EVs

Some aspects of the SaaS feature are common, while some are industry-specific. “For instance, bus manufacturers want to know when the bus shows the pick-up location in advance. While all applications need to be highly accurate, the accuracy requirements in the bus segment are much higher within SaaS,” Nathan tells us and goes on, “However, in case of construction equipment like earth movers, for instance, there is greater importance to monitoring its working hours rather than accuracy of its location since it is mostly restricted



Venkat Nathan



to select zones. Hence, there are small variations from segment to segment. Even EVs have some variations that we are addressing right now.”

Elaborating further on this, Nathan says, “The EV industry is very interested in having a lot of analytics on battery, especially the charging and discharging cycles and health of the battery. This in turn impacts the range of the vehicle, and the range of a vehicle is dynamic. The dynamic range prediction needs to take into account, along with the driver behaviour, such as braking and speed, the usage of the vehicle, the environment, the road surface etc.”

“The SaaS offerings include the mobile app for the driver. For example, the driver gets push notifications based on what we see in terms of his/her handling the vehicle, the way he/she drives, the battery being due for service etc. Besides, we also educate and engage the user for best practices of the EV vehicle,” he adds.

### From mobile applications to vehicle connectivity solutions

In fact, Nesh LIVE was initially into building mobile applications for the fleet industry when the product was launched in 2015, before venturing into vehicle connectivity solutions. However, the transition wasn't too difficult as the two fields are very related, Nathan claims. He asserts, “When we started back in 2015,

we started with applications on the phone, predominantly focused on the driver dimension. We provided the driver with an app, like Ola or Uber do today, and basically tracked the phone. The industry had just begun to explore other forms of connectivity of tracking a vehicle back then. So what started in 2015 as GPS tracking and reporting has slowly morphed into a huge vehicle intelligence and analytics platform.”

GPS tracking was, in truth, seen as a low-end commodity product back in 2015. “So when we approached large automotive suppliers with our solution, they approached it cautiously,” Nathan tells us and continues, “However, we had to really convince them that while today it is only GPS, tomorrow it will be the black box of the vehicle – like the Wi-Fi of a house – enabling connectivity and becoming the point of access to the internet.”

Therefore, while the transition for the company from a technical perspective wasn't much, convincing customers to adopt the technology and telling them that it would morph into providing intelligence for the vehicle and improving its efficiency and safety was difficult back then. “However, we saw the perspective change after 2019. Today, the end-user wants intelligent insights,” Nathan explains.

He further adds that Nesh LIVE has also created virtual sensors that direct the load of the vehicle. “We can tell if a vehicle is travelling with or without load by algorithms. This has further increased the utilisation of the vehicle,” he informs.

### Reinventing and staying ahead

While the start-up has come a long way since its inception, it has to face competition like any other organisation and industry. Nathan cites that Nesh LIVE has competition at two levels – the IoT level and the transporter level.


“The IoT-level competition is quite generic and not focused on automotive; data is collected from any industrial equipment, is processed and analytics on it is provided. It is very broad-based,” he explains and goes on, “On the other hand, Nesh LIVE is very automotive-niche; we have people with experience in automotives and we have worked with automotive companies for nearly seven years. Therefore, we have built up a lot of domain knowledge that comes in handy to provide advanced analytics.”

“At the transporter level, one will find companies providing good GPS tracking solutions to transporters. These competitors are at the transporter level, meeting their respective needs,” Nathan further explains.

Coming to where Nesh LIVE stands out, Nathan highlights, “Our start-up does not provide just for the transporters. Our USP is that we provide a lot of features for the auto manufacturer, including the dealers and service network of the manufacturer. And all of this is automated as a production line fitment at the manufacturing line. So we try to stay ahead by being domain-focused and being a very holistic end-to-end player for the ecosystem – not just for the transporter.”

But staying ahead of the competition is not enough. Nesh LIVE has also been constantly working on enhancing its SaaS platform. The start-up invests 20-30 percent into new R&D initiatives of SaaS and is continuously improving. In fact, it has customers in Canada and has ongoing trials in Dubai and the US. Moreover, it has already run some trials in Nigeria.

### Cater to the automotive ecosystem

Today, it's all about providing intelligent insights, which has been a pull from the end-users themselves. The end-users want to increase their vehicle utilisation and get more revenue out of it. What's more important is that the software architecture has to show agility for the vehicle from the very first day. Therefore, SaaS technology will not only improve the safety but also the efficiency and operation of every vehicle, and last but not least, help cater to the automotive ecosystem. 



# Get That Car Fixed

With more and more cars getting into the market, car service is here to stay and has enormous potential. Multi-car servicing businesses will necessitate more advanced technology and updated skills in order to handle the car service needs of today. Vivek Sharma, Founder & CEO, Fixcraft, discusses how technology is the company's backbone, how it has won its customers' trust and sources spare parts and more. Read on...

## Juili Eklahare & Sharad Matade

**T**he multi-car servicing business in India is picking up today and could be the future of the country. Car ownership is still evolving in our country, while we are already the third-largest auto market. The per capita car penetration is still very low, so we will still look at buying more cars, and there is huge potential for growth here.

As there will be millions of cars coming on the roads every year, they will require maintenance and care during their lifecycle. Also, a well-serviced car does not pollute the environment as much as one that has not been serviced. Besides, to add to the driving experience, which is evolving, a car serviced well on time only makes the experience more pleasant.

One company that is investing a lot in tech-enabled infra in multi-brand repair and service is Fixcraft. Fixcraft was founded by IIMB alumni Vivek Sharma, Inderjeet Rao and Abhishek Goyal in 2018. A tech-enabled one-stop service for all car repair and servicing needs, all of Fixcraft's garages are company-owned. With 20,000 happy customers, the company plans to go pan-India in a year and even intends to get into a franchise model, but at the right time – it is in no rush. It already has workshops in Gurugram, Noida and Bengaluru and will open shops in Pune and Hyderabad over the next two to three months.

An end-to-end service delivered through an easy-to-use app today, the first two and a half years of Fixcraft's operations were only into body repair. It started with



mechanical repairs in June-July of 2021. Today, all its facilities operate across all services.

### Fixcraft's inception

Vivek Sharma, Founder & CEO, Fixcraft, has been in multiple roles that have given him an exposure to the automotive industry. What he observed in around 2016-2018 was that there were a lot of changes in the way cars were being purchased and sold in the market. However, the repair sector was functioning in the same way that it has been for decades. Therefore, there was some need for a disruption to happen in this space, which brought the idea of Fixcraft into being.

Sharing his own experience, Sharma tells us, "When I was driving a Maruti Ciaz back in 2017, it met with a small accident. It got a dent on a door, and after I sent it for repair to Maruti, I was charged a high amount for it. While I tried to get it done at a cheaper price, I wasn't sure about the quality of the work on the car. So I ended up driving

a dented car for a few months. If one observes, practically every car on the road has a scratch or some other blemish on it, and of course, no one likes that. That's when it hit me that there's probably no solution about the quality of the work done on a car while not burning a hole in one's pocket. That's when we realised that something needs to be done about this sector, clubbed with the market potential and my personal experience. This led me to do a lot of research about it."

Sharma further shares, "When we decided that something needed to be done about this sector, the point was, 'what should we do?' Do we do everything related to car repair? Or do we only do accidental or body repair? Another question that arose was that which business model should we do – do we just aggregate the demand existing in the market and divert it to the existing workshops? Or do we do something about it ourselves?"

Sharma goes on to tell us that it was decided that an aggregation or

marketplace kind of a model would not be a great place to go to. "That's because the quality of the service was very important; the delivery of quality is in the hands of a third-party garage in an aggregation model. Thus, we decided that we'll have 100 percent control on the garages in our phase one, where the work will be done – we'll own the garage and the people working out of it," he says and continues, "We decided to focus on better customer delivery and then explore multiple cities. But our phase one was to understand the consumer pain points, which we wanted to solve at our own scale."

Sharma adds that Fixcraft decided to enter the market with body repair and chose to do car service in its phase two.

## Consistent quality

With its presence in multiple cities, we ask Sharma how the company makes sure that the quality of their



Vivek Sharma

services is consistent everywhere. Sharma cites, "Quality control is a multi-part process, where the work is happening and then you are standardising things. That way, there's no problem at a later stage. You then have checks and balances, so that even when you are following the process, you make sure that nothing outside of it is happening."

"The actual work is happening on the car in phase one, which we have further broken down into two parts – the first is the people and the process that the people follow, and the second is the material that is being used on the car. So we standardise the consumption of the material; we

test it out at our Gurugram facility. We have standardised the materials that we will use all across our garages, with a central and country-level tie-up with multiple companies," he adds.

Throwing more light on the process, Sharma asserts, "Let's say a door needs to be painted – that involves a 13-step process. So everybody follows that 13-step process, which brings out a certain level of standardisation across the centres – if this 13-step process is followed, with the same kind of material being used, then it results into roughly 90-92 percent standardisation right there."

"The second level is the gate check, where the quality inspection takes place before the car is delivered, which is same across all our garages, irrespective of the location," Sharma adds.

In a nutshell, Fixcraft is standardising its entire operating procedures that need to be followed, which is a work in progress for the company. "We'll do a franchise expansion model when we are completely sure that it's a foolproof playbook that can be followed by anybody who gets on board. While we have achieved a certain degree of standardisation, a certain degree is still a work in progress," Sharma tells us.

## Individual garages running on their own

With two more garages in line and keeping its quality consistent with its presence in multiple cities, Fixcraft mainly strives as a company by focusing on having the individual garages it operates run on their own in the first three to four months and get into an operating break-even point. "The workshop starts running on its own between one quarter or four months (even if it takes a little more time)," Sharma highlights and goes on, "Typically, one workshop should be able to give us about INR 8 million a month of top-line. But we operationally break-even at about INR 2.5 million."

## Technology - the mainstay

Technology also happens to be the backbone for Fixcraft, like it is for so many other companies in the industry, where it is being used to build more trust and transparency with customers. Also, digital is the

key today for any organisation, and shedding more light on this, Sharma explicates that a car service experience with Fixcraft will be very similar to how one orders food on a food delivery app. "You can order what you want for your car on a Fixcraft app," Sharma explains and continues, "You add it to your cart and order it. Then a person comes to pick up your car, and you can see who that person is, along with their details, like photo, ID card, valid driving licence etc."

"Moreover, when the car is in the garage, no upsell happens, which we have made sure of as a policy. Therefore, the customer is not in constant fear that the advisor in the garage is going to upsell them three or four more things that the car may not need, thus increasing the expected bill. Also, when the car is in the garage, the customer will see a step-by-step update, along with a photo of the car, as to what's happening; like the car is being washed, is ready for delivery etc.," clarifies Sharma.

Fixcraft also has a workshop module that has different cars assigned to the service specialists in the workshop. They update the status, which is visible to the customer. Plus, technology also helps the company get more output. "We have a system which analyses different times that are taken across different categories of works in the car," Sharma states and goes on, "By analysing this, the system throws out a schedule mentioning which car needs to be sent to which part of the workshop, as every car has a different scope of work."

## Winning the customers' trust

While technology plays a prominent role in making sure that the customers have transparency about the company's processes, it's a given fact that most authorised service stations make replacements for car parts instead of repairing them, which leads to making more money. However, it's the other way round with Fixcraft. Sharma elaborates, "We make more money when we repair rather than replace. So everybody in the value chain knows that we need to stay away from replacement as much as we can in order to keep the company profitable."



## AFTERMARKET

Another factor that Fixcraft has focused on is to incentivise the advisors to get a five-star review from the customer. “There is an established norm where the advisors in our garage will not really tell the customer what to get done for their cars,” Sharma enlightens and adds, “But they have to give the right advice, so that the customer is happy and gives a five-star review for the work that is delivered. This is something that we have seen working for us right now.”

### Fixcraft's hiring strategy

But how does a company make sure that its employees and technicians are skilled enough to develop that transparency with customers? Of course, that all starts with the hiring itself.

“People who are part of ITIs and vocational institutes are trained in the basic theory and skills,” Sharma asserts and continues, “We hire them and bring in our experts. For example, our paint company expert will come and help them understand the various steps. A training is done every quarter. Then we have on the job training – a supervisor, a technical assistant, or an expert will train them on the go. The technical supervisor is typically part of the oil company. For instance, if we take oil from Castrol, Castrol will appoint one technician here, who will provide training in car servicing, car maintenance, AC repair etc. to do in the standard process.”

Sharma further informs that Fixcraft is also going to start a certification programme for all the technicians who have gone through this training. “We intend to make a full-fledged programme around the training and certifications of technicians and mechanics who are operating in our garages. In truth, they will also be employable outside of Fixcraft to work in other multi-brand workshops,” he elucidates.

### Difference in cost

While winning the customers' trust makes a humongous difference in having them coming back again, in terms of cost and quality both, Fixcraft sees to it that the customer experience they provide is impeccable. But they focus on their prices too. When asked about the cost differences between getting a service at a Fixcraft workshop



and an authorised service centre, Sharma tells us that it varies depending on the brand and segment of the car. Giving us an example, he says, “For instance, an entry level Maruti Swift can get one door painted for INR 3,000-3,200 at Maruti, while the same can be done for INR 2,000 at a Fixcraft workshop. As the segment goes up, a Volkswagen Vento door paint will cost about INR 7,000 at a Volkswagen workshop, while it will cost INR 3,000-3,200 at a Fixcraft workshop.”

### Getting the spare parts

Whether a company chooses to replace or repair a part, sourcing spare parts can be a big challenge for any multi-brand service business, from fast moving to slow moving to maintaining inventories. In fact, a lot of companies are investing their money just to manage inventories in different ways.

Explaining Fixcraft's way around getting their spare parts on time, Sharma puts across that when their workshop business was scaling, until then, their spare parts needs were being met by their local sourcing. “However, we began to realise that while we were able to source the spare parts, our pricing was not really up to the mark – because we would not buy it in bulk,” he mentions and continues, “We decided in December last year that we may want to build a spare part vertical of our own, where we will source directly, and not only consume them ourselves but supply to the market as well. That would mean becoming a large distributor of spare parts pan-India, which is the plan.”


Sharma further conveys that they are working with large distributors across the country right now – West, South and North (East is not so prominent yet). “We also have

a solid database where we have started sourcing inventory of parts that are fast moving,” he informs and goes on, “On the body shop part side, the advantage is that the customer expects that the car will take two to three days to come back. So we follow a ‘Just in Time’ philosophy on body repairs.”

### Effect of the Covid pandemic

While the Covid pandemic affected Fixcraft's overall business, it also did good for it where personal space became very important. People were not comfortable with taking an Uber or Ola during the pandemic, because of which they started using their personal cars more. “This in turn resulted in them caring for their personal cars more, and that acted as a booster for our business,” Sharma cites and continues, “When the markets opened up, we saw a sudden surge in our business – service as well as repair. And that has continued; whenever there has been a lockdown, we have seen a dip. But that's typically momentary – the moment the lockdowns open up, the upsurge in the demand covers up for the dip in the previous months.”

### Being top-notch

Fixcraft intends to capitalise on economies of scale. From providing excellent services to complete customer satisfaction, the entire ecosystem of multi-car services and repairs is evolving, and will do so with the years to come, with technology becoming more advanced and customer requirements changing rapidly. When it comes to car services, while making profits is important, what's pivotal is to ensure that the customer experience is paramount and that the car is delivered as quickly as possible with efficient work done on it. 



## ELECTRIC HORNS



## ELECTRONIC HORN



## BACKUP ALARM



## DC-DC CONVERTER



## SMART USB CHARGER



## BRAKE PAD



## BRAKE SHOES



## AUTOMOTIVE BATTERIES



## INVERTER & SOLAR BATTERIES



## AUTOMOTIVE LAMPS



## ENGINE OIL





# Automotive Innovation Summit 2022, Chennai

The coming together of experts and auto industry stakeholders from various diverse backgrounds made the Automotive Innovation Summit 2022 interesting.

**Bhushan Mhapralkar**



Supported by experts from diverse backgrounds and auto industry leaders, the Automotive Innovation Summit 2022, organised by the Southern Chapter of the Confederation of Indian Industry in Chennai, saw N Saravanan, President & CTO, Ashok Leyland Limited and the Summit Chairman, draw attention to innovations in the auto industry, including those in the area of active and passive safety, in his inaugural speech. He set the tone for the day-long event with the theme 'Innovation for Future Vehicles'.

Stressing that the auto industry is beginning to sell automobiles as a service with telematics, insurance, finance as part, giving rise to the concept of 'products-to-solutions', Saravanan mentioned, "Service orientation in CVs and EVs is more intensive, with organisations telling OEMs or those supplying vehicles to manage their fleet. In EVs especially, the supplier of vehicles is told to take care of the vehicles, manage the charging duties and carry out various other tasks." Stating that OEMs are under tremendous pressure to do a lot

more with fewer resources, he averred, "The auto industry could learn from the software industry and reduce turnaround time. With traits such as a shift from mechanical to electronic visible other than a change in validation techniques, a change in material science in line with lightweighting technologies (nano materials, for example) and fragmentation in terms of exploring alternative fuel technologies increasing, digital tools are finding greater use along with the need for mechanical and software knowledge." Explaining

that it is becoming complex to deal with technologies, Saravanan said that there is a need to create a level playing field by gaining speed in new energy technologies like electricity, hydrogen etc.

Faiz Ahmed, Chief Operating Officer, Hinduja Tech Ltd, said, "Much innovation is happening in manufacturing as vehicle lifecycles shrink and put pressure on investments." Highlighting battery development and energy density gains, he averred, "The result is better thermal management and weight reduction." Drawing attention to EV axle innovation, Ahmed said, "I recently came across a motor with phenomenal torque output that weighs a mere

assume importance as 40 to 50 percent of the vehicle's content in the future will be software-based. It (software) will be the unique part, whereas hardware will be more or less common." Stating that vehicle configuration will be important, he quipped, "No company will survive with a single product."

### Innovation is the key

Highlighting the rising use of 3D printing, Rajiv Bajaj, Managing Director – India & SAE, Stratasys, said, "Players of diverse backgrounds have come together to address environmental challenges with the use of 3D printing. With support from materials like high yield PA11 to

Bajaj explained that 3D printing is helping to digitalise traditional manufacturing processes and do dual manufacturing. He provided an example of a 3D printing machine at Volkswagen's Pune plant used to make PPE kits during the lockdown.

Speaking about technological challenges concerning EVs and the need for skilled technicians, Dr S N Sridhara, Vice Chancellor, HITS, said, "EVs will catch up by up to 43 percent and infrastructure by up to 41 percent." Stating that India is poised to become a leader in EV shared mobility by 2030, he added, "The need for grid power for EVs is from greener sources in terms of reducing greenhouse



18 kg." Of the opinion that power electronics is a key aspect of EVs, he explained, "Materials like silicon carbide and gallium nitride are enabling volume reduction (by almost 60 percent) in parts like DC-DC convertors. While EME challenges are being dealt with, compliance in EVs with their use of electronics is complex." Drawing attention to the upcoming regulation, SOTIF, Ahmed averred, "Regulations such as this will make EVs safe and efficient. 5G will take vehicles online and make them connected. Cyber security will

reduce cycle time and enhance design capabilities of automakers, 3D printing is being combined with traditional manufacturing technologies and got a fillip during the pandemic." Stressing that 3D printing is being used for part prototyping, Bajaj said, "Connected with the shopfloor, 3D printing machines have become versatile enough to expand the use of materials of the high HDT variety and of high tensile strength." Of the opinion that material capability is providing design freedom in terms of appearance, weight etc.,

gas emissions." Of the opinion that lithium-polymer batteries and super capacitors will make a powerful solution in the future and the use of alternative battery materials like zinc and sulphur will aid future development of EVs in terms of energy density, Dr Sridhara explained, "Regulations concerning EVs and their materials, like batteries, are fast emerging. Battery swapping technology is emerging but has a lot of challenges associated with it in terms of disposal of used batteries in particular. There's also



a need for skills through academia-industry collaboration.”

### Software is key to future automobiles

Meenakshi Sundaram, CTO – Advanced Engineering (Simpson Engines), Simpson & Company, said that unique development methods are emerging, with the software industry ensuring new possibilities for the auto industry. Stating that India is the most price-sensitive market, Uday Narang, Founder, Omega Seiki Mobility, in his inaugural speech for the first session of the event

Confident of new technologies getting a fillip with Industry 4.0 in terms of robotics, humanoid interface, machine learning, high-speed computing, digitalisation and cloud computing, Narang averred, “Major developments in mobility are happening, and there is no lack of opportunities. The EV ecosystem is at a nascent stage but moving fast with government encouragement.” “There is a big opportunity to electrify logistics vehicles. They do not have to idle at borders if they are electric,” he added. Narang also revealed that his company is developing a 3.5-tonne and a 6-tonne

Data Security Council of India, said, “From an emerging technologies point of view in automotive, the need is to analyse and process huge data acquired from existing autos on the road.” He also drew attention to 25 emerging technologies in the automotive field, including blockchain. Stressing that poor production maintenance is adding to the industry challenges, Urmi Benjamin, Solution Consulting Head – South India, Service Now, expressed, “A seamless and smooth operation of devices in the form of a common platform to facilitate data interoperability is



titled ‘Automotive Mega Trends’, mentioned that 51 percent of three-wheelers in India are electric. Highlighting a shift towards electric and hydrogen, he averred, “Big challenge is infrastructure, and the need is to find products that are a lot cheaper.” “Only then will it be convincing to move to EVs,” he added. Stressing on the need to build an ecosystem, Narang explained, “A large number of products are being built with parts sourced from China. There is therefore a need to build SEGs and to impart education that is of practical use. Retrofitting buses with EV tech will empower rural transport and enable boys and girls to avail education. If electrical energy is not green enough, let us move to hydrogen.”

e-truck. Prakash Ranjan Sahay, Group Director – R&D, Virtual Prototyping Solutions, Synopsys, said, “The auto industry is facing a challenge from the software and electronics point of view. It is about chip shortage, electric architecture (single function ECUs to multi-function ECUs), software development, security and time-to-market.”

Of the opinion that vehicles are increasingly being defined by software, like the computer operating systems, Sahay averred, “The challenge is to decouple software and hardware to expedite testing of SDVs with virtual vehicles and to produce more virtual prototypes.” Vinayak Godse, Senior Vice President,

necessary. Also, there’s a need to invest in cyber security to ensure safety and avoid revenue loss.”

### Automotive design

At the beginning of the next session with the theme ‘Future Trends in Automotive Design, Styling & Engineering’, Selvaraji Muthu, Senior General Manager – Design & Development, Mahle Engine Components India Pvt Ltd, mentioned, “Different solutions for different vehicle segments are necessary.” Revealing that Mahle is working on hydrogen-ICE technology for heavy duty applications, he said, “The green hydrogen policy of India is an interesting step towards developing a hydrogen automotive

ecosystem.” “India can become an export hub for hydrogen,” he added. P Atokiavelu, Joint Editor, Motor Vikatan Group, said that customers are demanding and want a host of features at competitive prices. Sathiyaseelan G, Vice President & Head – Design & Styling, Ashok Leyland, averred, “Design progress over the decades has made the future unpredictable. A phone today is the most professionally accomplished camera. A spectrometer invented by an Iyengar scientist is now used to ascertain the quality of meat in the US.”

Stressing on unmet needs, Sathiyaseelan expressed, “It is necessary to accommodate cultural diversity.” Questioning the need for straight roads to drive on irrespective of innovations like EVs, hydrogen vehicles and autonomous vehicles, he quipped, “The future automobile is dependent on political correctness.” Dr K Subramanian, Senior Vice President – Product Development, Ashok Leyland and the Summit Co-Chairman, stated that India is behind China in EVs and could do with a different approach than the latter. It could do away with the use of rare earth metals to make motors. It could do away with the idea of going behind IC giants and instead look at different ways to manage the passage of current across voltage points. At the beginning of the 3rd session with the theme ‘Next Generation Technologies in Automotive Electronics’, Durgadutt Nedungadi, Vice President – India & International Business, Netradyne Technologies India, said, “With a focus on driver safety, my company provides driver assistance (fleet) solutions using AI and the same technology that ADAS systems use.”

### A glimpse into automotive future

Pointing at the need for an architecture to accept new apps like in an android phone, Basavaraj Patil, Technical Head, Vector Informatik India, explained that a central architecture and cloud will lead to a robust vehicle operating system as the demand for features increase along with the right hardware and software.

“The challenge would be to combine legacy sensors with new, less traditional ones,” he added. Shivkumar Kalyanaraman, CTO – Energy & Mobility, Microsoft India, averred, “Mobility and transportation requirements are changing. Cloud transformation is impacting the entire automation value chain. Cloud also enables to partner with the customer throughout its product journey.” Explaining that cloud supports AI, IoT and Industry 4.0, he said, “Cloud is enabling connectivity in autos, is defining the software and is facilitating a shift from IoT to models to mixed reality.”

Describing the vehicle as a device and emphasising the importance of securing its path

future fuel technologies will take beyond diesel, but their practicality in terms of costs, even though viable theoretically, is an area of much deliberation. The significant up-front cost of EVs poses a question as to how a shift could be encouraged.”

Highlighting the fact that the cost of batteries and electronics is a key factor in EVs as either have to be replaced upon failure, Dr Subramanian said, “There’s also a challenge in terms of customising a battery pack to be lighter and smaller for use in a city car.” Ahmed remarked, “The TCO of an EV is an important factor apart from the availability of real estate for EV charging in a city vis-à-vis IC engine vehicles.” Paul Sundar Singh,



across hardware and software, Priyamvada Vembar, Head – Cybersecurity Practice, Bosch Global Software Technologies, said that cyber security cuts through layers. Stating that cars also need to get security patches like a PC or a phone does, she explained, “The market drivers for cyber security include new technologies like ADAS, wireless battery management, manufacturing etc.” “Regulations will cover all vehicles by 2025 in India for cyber security. An OEM has to prove a cyber security management system on the vehicle for it to be type-approved,” she added. The panel discussion on the future of electric vehicles in India saw Dr Subramanian express, “All the

Managing Director, Accenture Solutions, averred, “OEMs need to make their own batteries as there’s less space to manoeuvre because of the involvement of minerals.” Tanuj Mittal, Director – Customer Process Experience, Dassault Systemes, explained, “Optimisation in production will ensure scale and control over costs. There is a need to look at materials to keep the cost of batteries low.” Puneet Mehta, Senior Principal Engineer – Electrical & Electronics, Mahindra & Mahindra, said, “We will get better materials and mining technologies. Industry models are changing with a focus on cost and innovation. Every OEM having a gigafactory may make it expensive if the utilisation were to be less.” **MT**



# Vehicle Dynamics Conference 2022

The Vehicle Dynamics Conference organised by PIN 365 recently received good industry participation.

## Bhushan Mhapralkar



**T**he Vehicle Dynamics Conference held on 8 June 2022 in Chennai under the theme 'Changing Dynamics in Vehicles and Technovation From the Tyre Industry' was a success. Organised by PIN 365, the publisher of *Motoring Trends* and *Tyre Trends* media properties, the one-day event attracted tyre and auto industry stakeholders in good numbers. With industry veteran Tom Thomas down with Covid, it was Antony Powath, President, PIN 365, who set the tone for the conference with his inaugural address. He said, "The auto industry is passing through a tectonic shift of EV revolution, of sustainability and to go 'green'." "Enormous challenges are posing forth for the R&D, design, raw material and manufacturing teams," he added. Stating that there is tremendous pressure from stakeholders and governments, he said, "The Vehicle Dynamics Conference is an effort to bring all the (auto and tyre industry) stakeholders together to speak about the challenges they face and the way forward."

Ramanathan Srinivasan, Managing Director, Automotive Test Systems, set the bar high with his address. He mentioned, "The challenges of safer mobility and EVs and customer expectations are making it more complicated in terms of systems and the ability to give better performance to the customer." "The increase in torque is asking for high tyre performance," he added. Stressing on autonomous driving also posing a challenge, Srinivasan mentioned that they sold some slip angle sensors in the 90s by accident in India that cost about 80 percent more than the longitudinal speed sensors. "From then (when the demand was for a printout over data acquisition and transfer) to now, where artificial intelligence is combined with simulation and objective measurement to co-relate between subjective, objective and bench testing results, the progress achieved with 'vehicle in the loop' is about technology going much further," he added. Stressing on advanced processing capabilities, Srinivasan averred, "Consider the

work happening on ESP, chassis components and tyres, and the technology is governed by computers, making it imperative to get good data and to understand it". Stating testing and validation as a global phenomenon, he said, "The nature of the problem faced by OEMs in the last few years is regarding annotations."

Citing an example of mounting an INS system in front of the vehicle and near the CG point, Srinivasan mentioned, "Measuring in respect to lateral motion, the parameters at either point differed from each other. With both data being right, it would be important to understand how to benchmark it in a way that it is differentiated from one vehicle to another based on the two different parameters obtained at two different points." V K Misra, Technical Director, JK Tyre and Industries, explained the motive behind the event in his address. He averred, "The auto industry today is challenged by a plethora of conflicting needs. This is driven by emerging technologies and environmental considerations."

Drawing attention to electronics and how it is changing vehicle components, Misra said, "There is a requirement for product technologies to adapt in a manner that includes broader and complete range of operating conditions." "The need to balance performance with shrinking time to market is growing," he added. Stressing on cost challenge and the challenges faced by vehicle systems engineers as well as designers, Misra informed, "Systematic evaluation of automobiles is continuing as new technologies are changing customer expectations. Path defining disruptions like EVs and autonomous vehicles are forcing the automotive fraternity to use transformational and innovative product development ways of testing and validation."

With Automotive Test Systems as the corporate sponsor and JK Tyre and Industries as well as Ralson Tyres as the co-sponsors, the conference got off to a heady start with the lighting of the lamp. The first session on passenger vehicles – the theme being 'Safe and Efficient Passenger Vehicles' – saw Piyush Ghongade, Team Lead, Vehicle Dynamics 2W and 4W, Research and Development, CEAT Limited, delve into 'Global Testing Trends in Vehicle Dynamics'. Providing an overview of the CEAT R&D centre, including the facility at Frankfurt, Germany, Ghongade mentioned that they have created a database with the use of advanced instruments under 'Testing 4.0' to help tackle customer-end problems. Revealing that the company's dynamics team includes four engineers from Germany, he informed, "The customer touchpoints often include

cavity noise, tyre-to-road contact noise and pass-by noise, among others, in terms of NVH." "Our strategy involves high-speed testing with advanced instruments such as an accelerometer at the vehicle level, a steering gyro and a steering robot," he added. "These instruments aid development of correlation between indoor and outdoor, to develop shaker base for statistics and to get driver level inputs," Ghongade explained. Highlighting belt angle and castor steer angle as two parameters of understeer gradient analysis, Ghongade averred, "The internal equations in terms of performance developed by taking such parameters into consideration are helping us address customer issues such as the on-centre performance of the sample being inferior to the reference sample." "We used objective technologies and secured objective data to answer the query," he added.

C Lakshmi Kanthan, Consultant, Automotive Test Systems, gave a presentation on 'Understanding the Requirement for Correlation Between Various Aspects of Vehicle Testing on a Test Track'. Of the opinion that electronics in vehicles has increased to 30-40 percent from 5 percent some 30 to 40 years ago, Lakshmi Kanthan gave an example of electronics ensuring locking of all the vehicle doors at the press of a button today. Explaining that technology has progressed rapidly with the help of machines, he averred, "The challenge is to match digital and physical test data results in line with the fact that vehicle understanding today is in digital format." Stressing that

the auto industry uses mechanical systems and digital systems involving electronics and software, Lakshmi Kanthan said, "Often, mechanical systems take less time to configure than the software-based ones." "The right data availability to do analysis is crucial to software-based testing," he quipped.

Highlighting the need for more data than is available, Lakshmi Kanthan expressed, "EV testing, for example, would involve putting parameters other than that of a motor and vehicle body to arrive at a complete digital model. The scenario would include a big gap of data unavailability in some areas, tackled by machine learning and use of AI-based systems." Drawing attention to the challenge of converting physical parameters like driver behaviour into software for simulation, he underlined the use of mathematical models to transfer the required data. Delving into the need for data security, Lakshmi Kanthan touched on KLC and steering system testing as examples to highlight the correlation between test data and virtual model.

Dr Jaiganesh Subbayan, Principal Scientist, Pre-Development, Global R&D – Asia, Apollo Tyres Ltd, provided a rare insight into the working of tyre manufacturers and automotive OEMs through his presentation, 'Trends & Challenges From Vehicle Manufacturers to the Tyre Industry'. He drew attention to three factors – vehicle suspension system, vehicle structure and tyres – in the case of vehicle dynamics as he explained that it is the reaction between the tyre contact patch and the surface below that ensures





the functioning of steering, brakes and powertrain. Revealing that vehicles today are lighter, efficient and more responsive, Dr Subbyan mentioned, "The need to reduce tyre weight and rolling resistance is growing in response to the rise in travelling average speed and EVs." Informing that two billion tyres were produced in 2021 globally, he explained, "Conflicting performance target requirements are challenging. For example, an aggressive tread design capable of better tackling hydroplaning and traction enhancement would generate more noise. Likewise, stiffer sidewalls will improve handling response but reduce ride quality."

Referring to Maurice Olley as the father of vehicle dynamics in US, Dr Subbyan said, "Over the years, vehicle dynamics has gained from initiatives like testing (facilitated by the permission from US Army to

apart from the different tyre pressures in the front and rear tyres, and the conflicting requirements get more complex." Revealing that silica and newer materials are finding use in tyres, he said that a vehicle today could have up to 20 different tyre sizes. These sizes could range from 18 inches to 21 inches. Their nature could also differ as per the summer or winter use. Dr Subbyan concluded by referring to regulations not limited to the tyre industry but also those that affect the auto industry as a whole.

Under the theme of 'Safe and Exciting Two-Wheelers', the two-wheeler session saw Praveen Kumar S, the R&D head for two-wheelers (Vehicle Dynamics Business Unit) at Continental Automotive India, speak about 'Safety Beyond ABS for Two-Wheelers'. He drew attention to the ABS function by stating that it is mandatory since 2019 on vehicles above 125 cc engine capacity and

transmission, Kumar said, "It aids the rider to avoid wheel slip and subsequent loss of control." Pointing at optimised curve braking feature, he averred, "It helps the rider to steer the vehicle in a curve under braking by considering the lean angle and according exerting pressure at the calliper level." "The hill hold assist function at the other end helps smooth starting on an incline or a decline with the automatic application and release of brakes," he added. Underlining the need for a system architecture for such systems to co-function, Kumar spoke about rider-assisted systems such as blind spot detection (to alert others on the road), lane change assist, headlight assist, rear-end collision warning (indication in rear view mirrors), traffic sign assist, side obstacle detection and adaptive cruise control. Delving into riding manoeuvres and differing traffic conditions as per the region,



use GPS) and the use of electronic instruments." "The use of electronics has helped devise tyre models and multi-body dynamics vehicle models," he added. Stating that there are 10 to 15 tyre models to understand vehicle response virtually, Dr Subbyan said, "Factors like air pressure, load, speed and temperature play an important role. In the case of noise inside the cabin, a 10-decibel difference is possible when measured over different surfaces." Underlining OE focus on noise, ride, handling, grip and rolling resistance, he touched upon high frequency noise, low frequency noise, air cavity noise and the resultant vibrations. Drawing attention to measurement of such parameters using advanced instruments, Dr Subbyan informed, "Ride and handling continue to be a subjective development even today. Add impact as yet another element,

aids in modulating the braking force at the calliper level, thus avoiding wheel lock and the resultant loss of steering and control. Mentioning that complexity is dialled by the need to realise the function of ABS for all applications, Kumar averred, "A dual-channel ABS developed with a modelling technique will eliminate rear wheel lift that could lead to a rollover." Of the opinion that ABS and RLP are typically tuned for bikes, he explained, "There are more advanced safety technologies like traction control, which detects and eliminates wheel slip under acceleration on a slippery surface that could cause instability. To prevent wheel slip, the wheel sensor will signal the engine management system to lower the torque, calculating at the same time the optimal torque to move on."

Highlighting drag control as an extension of traction control in high-powered vehicles with auto

Kumar stressed, "Advanced assist functions could come up by 2025. An EV shift will support this along with the government initiatives." "The challenge is to offer such functions at an affordable cost and faster pace," he signed off.

Sukumar Chella, Senior Manager and Head of FEA, TVS Tyres, spoke about 'Unique Aspects of Two-Wheeler Dynamics and Role of Tyre Properties'. He delved into the action of static and dynamic deformation forces on tyres. Of the opinion that the finite analysis data correlates well with experimental data in static (for factors like footprint, static deformation and footprint contact distribution) and is tough to quantify when it comes to tyre deformation in dynamic, Chella mentioned, "The FEA data once validated with experimental values is used to drive FEA procedures for dynamic



evaluation. This gives the confidence to rely on the dynamic output of FEA results.” Informing that the FEA dynamic output is correlated with forces-in-moment data taken from test rigs, Chella drew attention to an equilibrium scenario under dynamic conditions and a testing procedure that uses discretised tyre. Underlining the use of mathematical expressions for a tyre, he expressed, “Typically, the data from drum surface is used a lot in characterising a tyre. This practice was probably adapted from four-wheeler tyre testing and may not apply as effectively to two-wheeler tyre testing.” “This is also because of the lack of literature and standardisation,” he added.

Stressing the need to consider factors like dynamic camber that can range from 30 degrees for a scooter tyre to 55 degrees for a racing bike tyre, Chella defined dynamics as



the connection of the tyre contact patch with the surface below. “We were surprised when we started evaluating two-wheeler dynamics five to seven years ago and compared flat road data and rigid drum data. The lateral forces were found to be fairly similar and the ‘up-righting’ moment data was also fairly the same,” he added. Stressing on some difference in aligning moment to the footprint length, Chella said, “There was found an inability to accurately characterise the tyre using simulation or experimental procedures about how a rider experiences a new tyre design.” Stating that they defined FEA procedure with discretised tyre in a ‘rigid’ state bike with no suspension in MBD domain, Chella averred, “It is correlated with actual rider feedback and involves two tyres – good and bad.” Emphasising on a unique testing procedure for two-wheeler tyres, he concluded that

good data can be obtained from a properly designed test.

The presentation given by Mahendran Gurusamy, Sales Manager, HBK India, with the subject line ‘Test & Measurement Solutions for Vehicle Dynamics Testing’ provided a rare insight into vehicle dynamics tests and measurements. He averred, “The data acquired for digital simulation through physical mobile vehicle testing should be accurate.” He touched on test and measurement for sound and vibration applications, on sensors in mobile testing and on mobile vehicle testing data recording. Revealing that the V-shaped model is the first to be called for involving concept design through to simulation, Gurusamy said, “With the use of APM software, the development of proto is carried out, followed by physical testing. In all this, it is necessary to collect accurate data with virtual testing and simulation, with



mobile vehicle testing, with structural lab testing, with noise and acoustic lab testing, dynamic lab testing etc.” Drawing attention to the use of strain gages on vehicle parts, he expressed, “To collect data for structural durability test, for example, it is necessary to have proper installation of gages with the use of cold or hot curing adhesives.”

Of the opinion that the data acquired could be pushed to the clouds from the field to the analysis centre in the case of structural durability by using products of his company, Gurusamy said, “The load acquisition (RLDA), data analytics, simulation and bench testing journey is supported by SomatXR data acquisition system under harsh environment. It is used with GNSS and the data transmitted using CAN FD.” Stressing on the powerful DAQ software, Gurusamy said, “The SomatXR data collected 10 gigabytes of measurement data

during the Cape to Cape 2.0 project involving a Volkswagen Touareg that travelled across Africa and Europe.” Presenting a case of abnormal suspension noise troubleshooting, he informed, “SPC was used to identify contributions.” Drawing attention to sound quality testing in an anechoic chamber of a tyre, for example, Gurusamy said, “HBK facilitates the connection between physical measurements and digital simulation, thus solving the data challenge.”

The final session of the event for commercial vehicles – supported by Continental Automotive India as the lunch sponsor and Sova Motion as the networking partner – saw Professor R Krishna Kumar, Institute Professor (and Perry Blackshear Chair from 2016 to 2021), Indian Institute of Technology, Madras, give a fine, albeit long, presentation on artificial intelligence and vehicle



dynamics along with his co-presenter M V Krishna Teja of JK Tyre and Industries Ltd. Stating that machine learning depends upon good old statistics and optimisation, Professor Kumar said, “The difference between the two is such that statistics is to ‘infer’, whereas optimisation is to ‘predict’.” “Machine learning, classified into three categories – supervised learning, unsupervised learning and reinforced learning – is about classification and regression, about clustering and association, and about learning from experience,” he added. Stating that machine learning is replacing old control techniques and algorithms, Professor Kumar averred, “Input, function and output are the backbone of machine learning. Many machine learning techniques rely on function generator. Reinforced learning is human-like and can be used in real life.”




Termining human being as a state, his brain as an agent and its action as a policy derived from learning to carry out activities in an environment, Professor Kumar said, "Nothing works without rewards, which is the output." "A reward is a result of the interaction of an agent with the environment," he quipped. Describing target as an episode that involves upgrading of state action and rewards, he expressed, "Consider an ABS against a traditional unit. When a combination of new and worn-out tyres is used, it makes for an interesting consideration from the point of view of machine learning." "To close the gap between an ABS working with new tyres and the one working with a combination of different brand of tyres or with tyres that are worn out and good under straight braking as well as under cornering-braking situation, machine

case of a future state of mind. This is about how the braking distance will be or the tyre behaviour will be." Touching on the key question of developing a policy that maximises the sum of rewards called returns, Teja said, "There are two neural networks – one that just acts by activating the solenoid valves and the other is about inferring about being good or bad, or whether it will be good or bad in the future." Highlighting value-based, policy-based and combined (value and policy-based) models available, he said, "A neural network with several layers is an ideal function approximator." "It is about what a brain can squeeze out from the data that is there," he quipped. Of the opinion that it depends on the available data, its complexity and the ability to solve, Teja informed, "There are millions of parameters inside a neuron, and it all boils down

powertrain, durability, safety, NVH and ride, handling and drivetrain, Datar mentioned, "The beauty of Adams is its ability to be used in the machinery space, including aerospace." "It is used to build a virtual model of a vehicle and helps provide a predefined architecture for various subsystems such as anti-roll bar, double wishbone suspension, MacPherson strut suspension etc.," he added. Revealing that Adams provides different suspension models, engine models, motor models, steering models and tyre models, Datar said, "Different templates could be picked and bound together to create a vehicle by updating the various properties and parameters."

Of the opinion that a full vehicle model could be manoeuvred through typical sets such as suspension analysis, straight line events, open loop steering events and cornering events, Datar stated, "In the case of on-road and lab simulations, Adams facilitates kinematics and compliance simulations like sine sweep." Revealing that Adams also provides the ability to simulate a vehicle on a digital proving ground like Horiba MIRA and IDIADA, he said, "All leading OEMs are using Adams for their vehicle simulations." With most automotive OEMs expressing interest in the conference – Triton EV scheduled a presentation and withdrew at the last moment due to some unseen circumstances – it was an interesting and informative day for all those who gathered at the Hyatt Regency in the heart of Chennai. Delegates from OEMs like Mahindra & Mahindra, among others, including some surprise visitors from EV companies, added to the excitement of networking by tyre and automotive industry stakeholders at the conference.

Providing food for thought to the automotive industry and the tyre industry as the two continue to collaborate and work closely for the production of safe, comfortable and reliable automobiles, the Vehicle Dynamics Conference attracted over 200 people. It turned out to be a full-house event throughout the day, reflecting the rapid changes enveloping the automotive scheme of things. 



learning has a role to play," said Teja. He drew attention to how the 'yaw' angle is maintained. Stressing on the setup – a loop consisting of agent, environment, action, reward and state – in regard to an ABS controller, Teja said, "Inside the controller, there are a few neurons trained on a car model, a brake model and a tyre model. These are models that can be trained to a high degree of freedom even as the agent – the controller – is always learning depending on what it experiences in terms of a tyre that is either worn or new."

Stating that the controller keeps on learning in the loop and activates the valves accordingly to ensure braking and other functions, Teja averred, "The agent thinks of rewards in a way of activating the solenoid valves in

to the policy – a policy regarding what actions need to be taken now or two times of a step ahead. The value function is about a tutor sitting behind and providing an evaluation about the steps taken – whether it is good or bad."

Makarand Datar, System Manager, Hexagon, gave an interesting presentation on 'Designing a Safer and Efficient Vehicle Using Adams Software'. He described Adams (Automated Dynamics Analysis of Mechanical Systems) software as a multi-body simulation tool that can simulate any mechanical system to the point of multi-body dynamics, incorporating flexibility at the same time for the required components. Explaining the applications of Adams in vehicle domains such as



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## Wet Grip Testing Facility available at IRMRA



### Wet Grip Testing Facility available at IRMRA – Global Automotive Research Centre, Chennai

Indian Rubber Manufacturers Research Association (IRMRA) has created the facility of wet grip testings, as per Stage-II of AIS 142:2019, in the premises of Global Automotive Research Centre, Chennai. IRMRA has procured Skid Trailer and its towing vehicle from Dufournier Industries, France, which would be utilized to measure adhesion performance of tyres.

For any related information, Please contact on **+918291404906** or email : **rr@irmra.org;**  
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# Geotab Offers A Look Into The Future Of Telematics

As a leading player in IoT and connected transportation, Geotab is responding to future challenges in fleet management solutions by leveraging telematics and data.

## Stefan Pertz

Since being established in 2000, Geotab has grown from a small, family business to a global leader in solutions for fleet management and vehicle monitoring. In its 20+ years of operation, Geotab has achieved significant milestones; in 2020, Geotab surpassed two million connected vehicles built on a single, open platform.

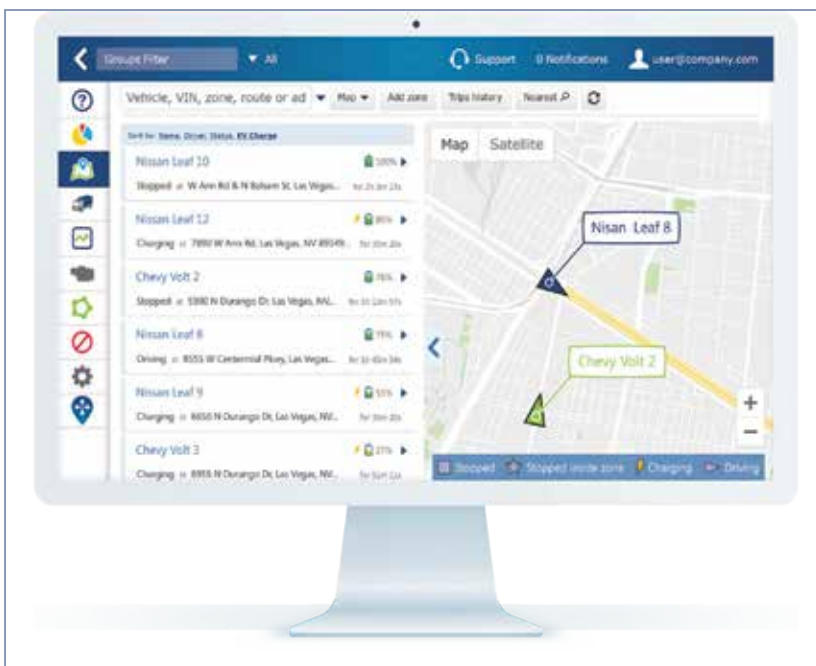
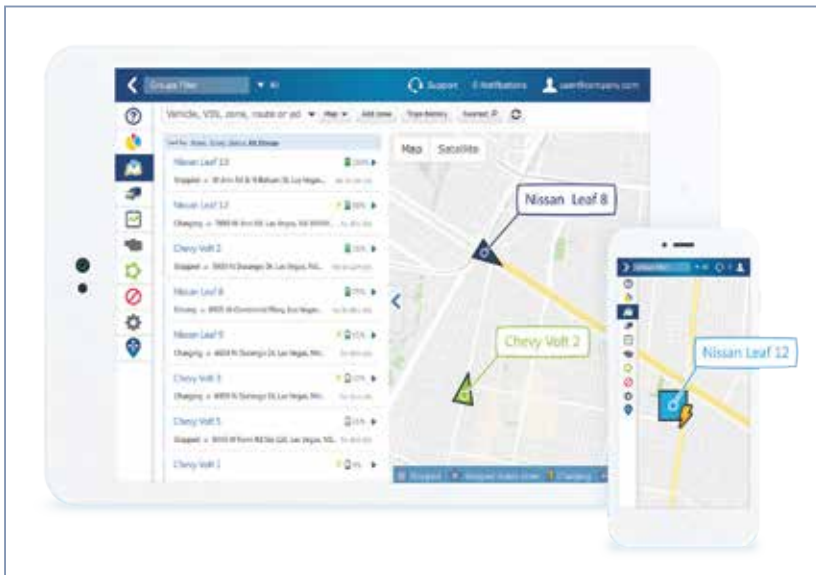
Focused on advancing security, connecting commercial vehicles to the cloud and providing cloud-based analytics, Geotab helps customers better manage their fleets. Geotab's open platform and Marketplace allow both small and large businesses to automate operations by integrating vehicle data with other data assets.

As an IoT hub, the in-vehicle device provides additional functionality through IOX Add-Ons. Processing billions of data points a day, Geotab leverages data analytics and machine learning to help customers improve productivity, focus on sustainability, optimise fleets through the reduction of fuel consumption, enhance driver safety and achieve regulatory compliance.

Talking to Asian Trucker was Geotab's Deepak Kadambi, General Manager, APAC, who explained more about the business and its offerings. Currently having over 2.6 million connected vehicles in over



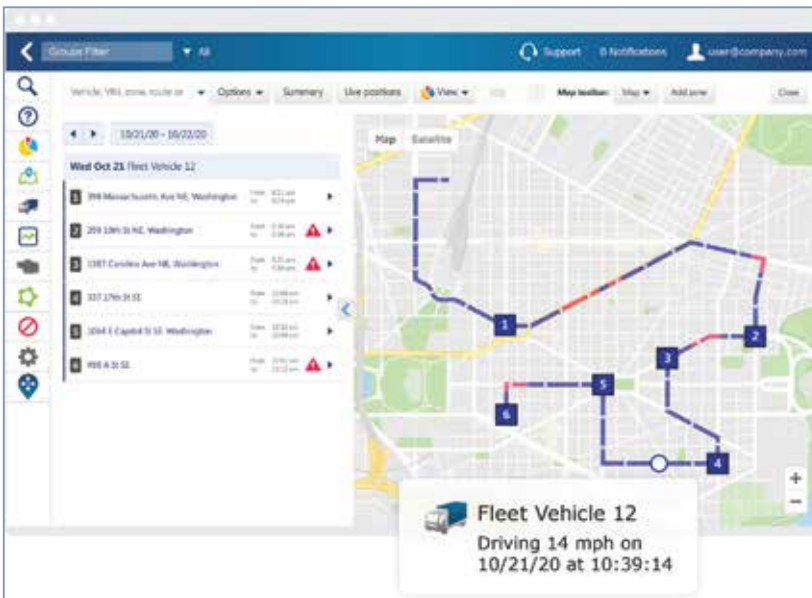
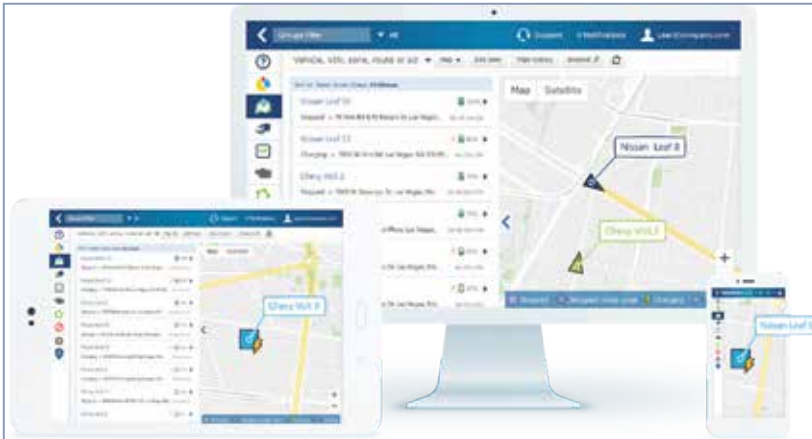
130 countries in all seven continents (yes, including Antarctica!) on their platform, Geotab prides itself in being one of the largest telematics providers globally. Founded at the turn of the century, the business took off when GPS gained popularity as a business tool. "Initially, Geotab was a product-based company. However, today the company understands itself as a company that leverages its prowess of data to provide its customers with a plethora of solutions that addresses their needs and pain points," he said. The aspiration, as mentioned by Geotab's CEO Neil Cawse, is to become the operating system for connected vehicles.



Today, sales are seen as a by-product of the ethos of being an innovation and development-focused company. “Most of our sales happen through our third-party channels,” Kadambi explained. Typically, Geotab does not sell directly to end customers. As a technology-driven company, Geotab’s indirect sales model allows for the company to focus on innovation and has enabled global expansion. A channel partner – for instance, a Malaysian distributor – understands the local market better than Geotab and can educate the team on local transportation requirements; thus, market entry is not only possible with an indirect sales model but is more likely to be successful. “The company’s ability to be flexible and customise its solution to better fit the use cases of either a region or of a specific industry is one of the many reasons Geotab has managed to amass its high number of connected vehicles on its platform,” said Kadambi.

This approach has allowed Geotab to be more responsive to market needs and become more global in its orientation. The company had seen a significant growth in the last few years. Through the expansion of its distribution network and adaptation of strategic innovations that paved the way into new areas, Geotab’s products are now poised for new paradigms in transportation. “For instance, electrification of the transport industry is on everyone’s agenda. Geotab has, however, developed products to support electrification for more than 10 years now,” said Kadambi. While most players would treat this as a new trend, Geotab has already future-proofed itself by developing products for what the world could become.

Speaking about this topic, Kadambi points out that electrification of the transport industry isn’t necessarily going to make things easier or more difficult for the telematics provider. There are certain challenges that need to be addressed; for instance, the fact that currently there isn’t a unifying standard for electric vehicles (EV). Retrieving data from electric vehicles is more complicated than from Internal Combustion Engine (ICE) vehicles, but Geotab helps mitigate this problem. Today, Geotab is compatible with and can retrieve data from over 200



electric vehicle makes and models. For those fleets that are not quite ready to make the transition from ICE to EV, Geotab offers myriads of data to help them focus on sustainability. The data enables fleets to analyse their environmental footprint; for example, vehicle data can help analyse how efficiently a

fleet is using its fuel. If a business is thinking about transitioning to EVs, Geotab can offer an electric vehicle suitability assessment to determine which vehicles in a fleet are most suitable for an electric replacement. “The transition to electric vehicles for most fleets will be slow and likely only start with a few vehicles.

Conveniently, the Geotab platform enables mixed fleet management for ICE and electric vehicles on one platform,” said Kadambi.

Typically an aftermarket product, this kind of telematics solution addresses a very apparent need of transporters to be able to manage multi-brand fleets by enabling mixed fleet management on one unified platform. “Transporters will naturally hedge their purchasing risks by purchasing vehicles from different brands. This is where Geotab’s software becomes very important, as it offers a unifying platform that allows fleets to manage vehicles from different OEMs,” explained Kadambi. This capability stems from the ambition to become the operating system for connected vehicles, an ambition that has driven Geotab right from the start. While currently the revenue of Geotab is coming from the aftermarket, there is a conscious effort to work with the OEMs.

The Asian market, surprisingly, is one that is not as easy to penetrate. The unique situation of countries like Malaysia, where trucks are being imported from all corners of the world and in a wide range of applications, makes some fleets incompatible with the Geotab platform. In North America or Europe, as Kadambi points out, the average vehicle age is much lower and the technology is homogenous across brands and fleets. In order to produce the information from telematics in the Asian market, one would need to reverse engineer how data is extracted from the vehicle. “In developed markets like North America and Europe, it is pretty much plug and play and you get all sorts of information. However, in Asia, the vehicle complexity is much bigger as a result of the imports of used vehicles from other markets,” said Kadambi.

Kadambi stressed that the approach of the company is not only rooted in current needs but in the anticipation of how the market may evolve. “What Geotab works towards is addressing the technology gap between today and where the world is heading. I believe it is this approach that will ensure our lasting success,” he said in closing.

*The author of this article is the editor of Malaysian magazine on commercial vehicles called Asian Trucker.*



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