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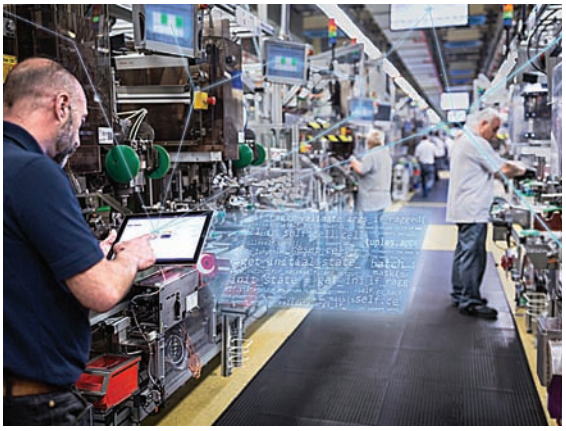
India needs to speedily upskill workforce to Industry 4.0



For India Auto Inc to be future-ready, it is imperative the workforce across the supply chain, from OEMs to suppliers as well as dealers gets familiar with the latest tech in robotics, IoT, AI, mechatronics, 3D printing, machine learning, analytics, design and virtual collaboration.

AS THE AUTOMOTIVE industry deals with the massive disruption caused by the pandemic, vehicle manufacturers and component suppliers in India will also have to urgently work towards bridging the workforce skills gap in many segments.

On July 14, World Youth Skills Day, Nikunj Sanghi, Chairman of the Automotive Skills Development Council (ASDC), spoke about the skilling challenges faced by the automotive industry and the way forward.

"In today's world of smart manufacturing, AI-connected technologies and even custom operations, the entire automotive supply chain – from OEMs to suppliers to dealers – will need to upgrade its skills to align it with new disruptive forces. The auto industry is now witnessing the emergence of new business models, smart technologies, and a future of collaborative work and education. There is also a polarisation of jobs with a decline in mid-level, repetitive, and regulated jobs and an increase in demand for creative, design-oriented, high-level skills."

Growing demand-supply gap at India Auto Inc

According to Sanghi, "The disruption of digital and automation is leading to a scenario in which employers in the auto industry will face the challenge of finding employable youth within the next five years or so. The most important imbalances in the labour market, such as unemployment and underemployment, are increasingly linked to the growing mismatch between demand and supply of workers with specific abilities. Therefore, there is an immediate necessity to skill as well as upskill the labour force."

An ASDC-EY industry report estimates that by 2026, 45.08 million people will be employed at India Auto Inc. Of these, around 15 million jobs are expected to be generated by natural growth factors while 20 million will emerge year-on-year employment replacement. To meet future demand, while also being future-ready, today's automotive workforce must be re-skilled or upgraded. As legacy roles fade, new skills need to be in the areas of IoT, AI, mechatronics, robotics, 3D printing, machine learning, analytics, automotive design, virtual collaboration and computational thinking, to name a few, said Sanghi.

ASDC chairman Nikunj Sanghi: "Digital and automation disruption is leading to a scenario in which employers in the Indian auto industry will face the challenge of finding employable youth within the next five years or so."

"Since automotive and digital sales have emerged as global undercurrents, India must bring into line its skilling levels to global standards so as not to miss the bus of the fourth industrial revolution. For this, it must start nurturing talent at a young age, beginning with schools and colleges. Moreover, industry skilling courses should be given the same weightage as academic ones. Skilling courses can be customised keeping Industry 4.0 in mind in the areas of manufacturing and maintenance as well as for the stable evolution towards EVs.

"If the above initiatives are assumed on a war footing to bridge the digital skills gaps, sooner or later, India will arise as an auto manufacturing hub supported by adequate skilled talent across all segments," said Sanghi.

Rajasthan latest Indian state to announce EV buyer incentives

By Ajit Dalvi

Rajasthan is the latest state in India to announce incentives for EV buyers, albeit with different incentives. As per the July 16 notification, a provision is made to reimburse the SGST (State Goods and Service Tax) amount and give one-time grant to EV buyers. Recharge of the SGST amount is payable on all EVs.

A lump-sum grant amount will be payable on all electric two- and three-wheelers, as per their battery capacity (see table below). This grant amount is payable on vehicles purchased from April 1, 2021 to March 31, 2022 and registered till March 2022. Importantly, the vehicle must be purchased from Rajasthan. Financial transfer is to be done at the level of the concerned District Transport Officer. The amount of SGST, to be recharged by the EV seller will be equal to the amount shown in the bill, says the notification.

Indian states race to fast-track EV adoption

With growing consumer awareness about EVs, the recently enhanced FAME subsidy for two-wheelers and also sky-high petrol prices, the EV industry is seeing considerable traction. This can be seen in terms of new investment towards setting up new plants, EV infrastructure as well as vehicle buying.

What's more, over the past year, many states across India have rolled out their own EV policies, all designed to incentivise buying as well as to make EV manufacturing a smooth experience.

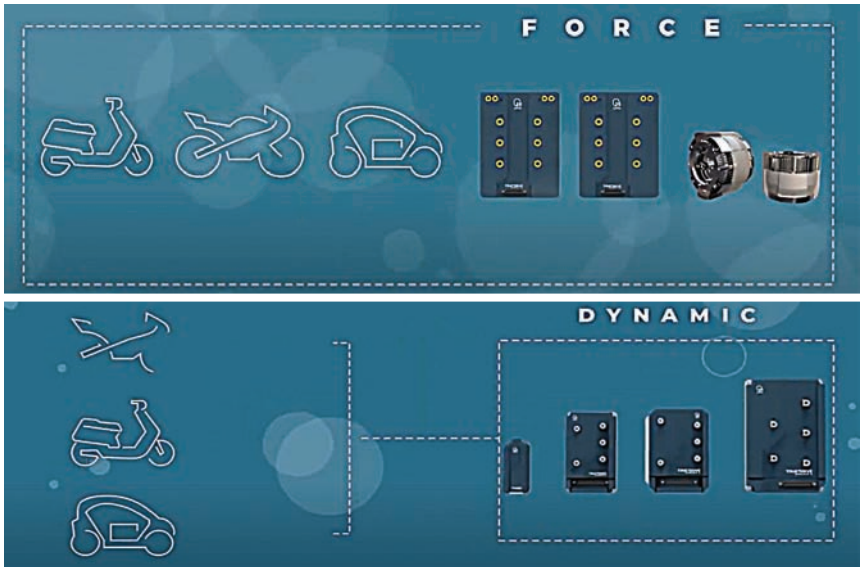
On July 13, Maharashtra unveiled a comprehensive all-encompassing policy. In August 2020, Delhi notified its EV Policy, which aims to register 500,000 EVs in the city by 2024. In June 2021, Gujarat unveiled its own policy, which targets a total of 200,000 EVs which comprise 110,000 e-two-wheelers; 70,000 e-three-wheelers and 20,000 e-four-wheelers. In September 2019, traditional automotive hub Tamil Nadu had drafted a policy to be India's 'EV hub', aiming to attract Rs 50,000 crore investment

- **Maharashtra's bold EV Policy, p12**
- **Exclusive interview with Maharashtra Industries' Minister Subhash Desai, p16**

RAJASTHAN EV BUYING INCENTIVES

	Battery capacity capacity (kWh)	Grant Money or buyer incentive via SGST
Electric 2-Wheelers	Up to 2 kWH	Rs 5,000
	Up to 4 kWh	Rs 7,000
	Up to 5 kWh	Rs 9,000
	More than 5 kWh	Rs 10,000
Electric 3-Wheelers	Up to 3 kWH	Rs 10,000
	Up to 4 kWh	Rs 15,000
	Up to 5 kWh	Rs 17,000
	More than 5 kWh	Rs 20,000

Sona Comstar partners IRP for 2- and 3W e-powertrain



Sona Comstar and IRP will collaborate to conceive, design, develop prototype, and manufacture high-efficiency, low-cost, magnet-less powertrain (motor + controller) for e-two- and three-wheelers.

SONA COMSTAR and Israel's IRP Nexus Group, a leading provider of cutting-edge electric powertrain solutions for e-mobility, have joined forces for a powertrain project.

The two companies have joined iCreate (International Centre for Entrepreneurship and Technology) that will invent a new powertrain, manufacture it and market it globally.

iCreate has initiated the 'iEV Powertrain Project' with the aim of Indian companies creating and owning futuristic technology, going beyond merely licensing and manufacturing. The project entails Sona Comstar and IRP collaborating to conceive, design, prototype, and manufacture high efficiency, low-cost, magnet-less powertrain (motor + controller) for electric two- and three-wheelers.

Under the agreement, IRP will license its technology to Sona Comstar for manufacturing of the system exclusively in India, expecting to start mass production in 2023.

This project involves creating an innovative motor-plus-controller combination that does not use rare earth elements like neodymium, besides offering high efficiency and low cost to manufacturers of electric two- and three-wheelers. While there are several motor manufacturers in India, they still need to import the magnets. Also, the fast-growing global EV market is looking to diversify supply chains and mitigate risk stemming from dependency on limited and unreliable sources.

"This is another step in IRP's mission to lead the automotive ecosystem with innovative and sustainable technology," said Moran Price, IRP Systems Co-founder, and CEO. "Our technology ensures not only cleaner air but also a more environment-friendly production process and responsible use of natural resources. We are excited to partner with a global, leading player such as Sona Comstar to bring the product to the mass market."

"We are excited with this partnership as it will help India reduce its dependence on imports of critical raw materials. The system developed through this partnership will be environmentally compatible and cost-effective, ensuring the security of natural resources by avoiding the use of rare earth elements," said Kiran Deshmukh, CTO, Sona Comstar.

A new charge

OVER THE YEARS, the automotive industry has triggered healthy competition among Indian states to attract investments from OEMs and component manufacturers. The growing electrification megatrend is giving it some extra charge. The competition is now also to attract EV-related investments, with some states, which are already automotive hubs, wanting to be leading EV industry hubs too.

When the fresh wave of automotive industry players entering India began in the late 1990s, Tamil Nadu, or specifically Chennai, was the preferred port of call for many. Especially biggies like Hyundai and Ford. Over the years, others like Karnataka, Andhra Pradesh and more recently Telangana have also emerged as investment destinations. Once referred to as the 'Detroit of India', Chennai and its adjoining areas want to earn a similar status in the new-age EV industry too. Pooja Kulkarni IAS, MD and CEO, Guidance TN — Tamil Nadu's nodal agency for investment and export promotion — tells why the state is confident of earning it, in an interview on page 50 of this annual South India Industry Special issue.

Ola Electric's Rs 2,400 crore mega investment gives a shot in the arm in Tamil Nadu's pitch as a major EV industry hub in the making. However, it won't be the only one, as some more investments could also be in the pipeline. After the investment announcement for the mega-size manufacturing plant, Ola Electric has again created some buzz with its soon-to-be-launched maiden product receiving 100,000 reservations within 24 hours of the start of bookings. Is that an indicator of the electric scooter being a game-changer, or did the nominal, refundable booking amount of Rs 499 made many book casually on the Ola app? Will the sales numbers be as dramatic as the booking numbers? That only time will tell, but read our detailed story on page 46 on what the Ola Electric scooter could mean for Ola, and the industry.

Despite pandemic conditions, India saw the highest ever FDI inflow, of $81.72 billion (around Rs 6 lakh crore) in FY2021. Gujarat, also an emerging auto hub, topped the list, followed by Maharashtra. A historically strong auto hub, Maharashtra wants to now be the same for the EV industry too. Which is why it has revised its EV Policy of 2018 to make it much more comprehensive and incentivising for industry and EV adoption by end users. What are some of the key plans, and did Maharashtra benchmark any other EV policy while designing its own? Industries minister Subhash Desai shares the details on page 16.

Whether it is the Western state of Maharashtra, or the Southern state of Tamil Nadu, or the state of Delhi in the North, state governments are increasingly taking the charge of paving the road for mass scale electric mobility in India.

This, incidentally, is *Autocar Professional*'s landmark 400th issue. Thank you for being a strong supporter of India's No. 1 automotive B2B title.

Sumantra B Barooah, Executive Editor
sumantra@haymarketsac.com

Audi India targets 15 percent of sales from EVs by 2025

Balbir Singh Dhillon, Head of Audi India (seen with the e-tron 55 and Audi e-tron Sportback 55): "We are here in India for a marathon. We are not running a sprint."

By Sumantra B Barooah

Audi is the latest OEM to enter the gradually growing electric car space in India, with a set of three models under its e-tron brand. The entry-level model in the range, the e-tron 50 sports an ex-showroom price-tag of Rs 99.99 lakh, while the e-tron 55 costs Rs 1.16 crore, and the e-tron Sportback 55 Rs 1.17 crore.

Audi India plans to add another model to its EV range later this year. Audi India's move comes after around two years of market research. The favourable feedback led to its entry in the EV space, and also set a target of gaining at least 15 percent of its annual sales from EVs by 2025.

By 2025, Audi AG plans to have a portfolio of 20 EV models. Some of them could be part of Audi India's portfolio too. Audi is the third brand to enter the Indian luxury EV market, after Mercedes Benz and Jaguar, but the first one to launch three EV options at one go.

Audi India head Balbir Singh Dhillon says the company is looking at a long-term play in the EV game. "We are here for a marathon. We are not running a sprint," he said at a select media briefing. The first set of e-trons have arrived in India through the fully imported route, but local assembly of future e-trons could be part of the long term game-plan. "Anything that makes business sense, we will invest," said Dhillon.

Readying a charging network in 75 cities

To facilitate the adoption of its e-trons, and other EVs too, Audi India will set up a network of 100 chargers in 75 cities. In few markets, the option of dialling in a mobile charging station (on a truck) will also be available for Audi customers.

To woo customers and also offer them peace of mind, Audi India is offering a claimed industry best buyback scheme under which the customer can expect at least half of the car's value by the end of three years. Audi India would hope that the 'best-in-class' charging options – 11kW AC and up to 150kW DC – would also help earn the customer's confidence to opt for an EV.

While the big metros in all likelihood lead the sales for Audi's EVs, there's also a "good number of enquiries and leads" from markets like Indore and Jaipur too, according to Audi India. Dhillon says the "young" brand of Audi is preferred by "a lot of enthusiasts". He and his team would bet on the high torque and driving dynamics offered by an EV for the e-tron brand to gain good ground in India.

CAFE II norms to drive demand for sintered parts

The Indian auto industry uses 4kg of sintered components per car as compared to 12-16kg in the US and Europe.

By Shahkar Abidi

The second phase of CAFE II norms, which kicks in from April 1, 2022 and is designed to cut carbon emissions from new cars to 113 grams per kilometre, is likely to give a boost to demand for sintered components. OEMs, in their quest to lightweight vehicles and enhance fuel economy, are expected to benefit from powder metallurgy or sintering technology.

According to Jignesh Raval, MD, Sintercom, upcoming regulatory norms including CAFE II, will drive demand towards sintered technology, as forgings do not perform as well in terms of reducing NVH levels. "We will be investing around Rs 50-52 crore over the next three years, "said Raval.

The key advantage of sintering is that it allows making of complex products that have high strength, precision and are relatively cost efficient compared with other processes.

OEMs have to introduce VVT / VCT (variable valve / cam timing) tech as engine efficiency has much to do with the timing of the exhaust and intake valves. If these valves can be managed and timed properly from the VVT/ VCT, the engine does not require as much fuel, leading to improvement in mileage and reduction in carbon emissions.

At present, the Indian auto industry uses 4kg of sintered components per car as compared to 12-16kg per car in the US and Europe, indicating much potential for such parts .

In 2011, Sintercom inked a strategic JV and technology transfer with Miba Sinter, which invested in Sintercom to become a co-promoter with a 30 percent stake.

Sundram Fasteners wins GM's Supplier award for the eighth time

By Ajit Dalvi

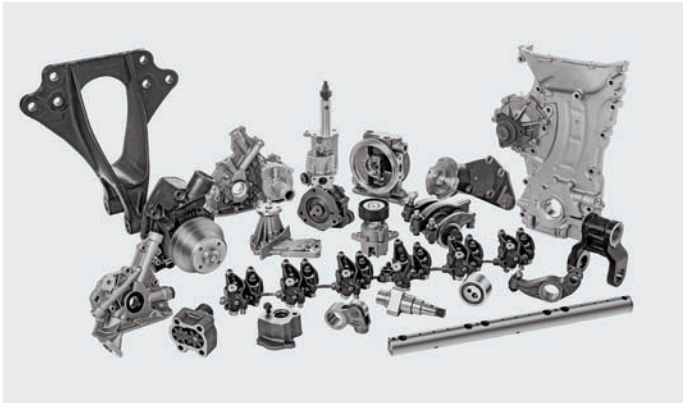
India's Sundram Fasteners, which is part of the TVS Group of Companies and one of India's largest automotive component suppliers, has once again won the prestigious General Motors' Supplier of the Year award for 2020. What's noteworthy is that this is the eighth time that the Tier 1 supplier has won the award, which validates the high level of product consistency and quality.

On June 22, General Motors recognised its top global partners at its 29th annual Supplier of the Year awards. Recipients of the Supplier of the Year award include 122 suppliers representing 16 countries, with more than a dozen first-time winners. Additionally, 26 companies representing eight countries earned GM's Overdrive Award.

The Supplier of the Year recognition is for performance in CY2020. The awards highlight global suppliers that distinguish themselves by exceeding GM's requirements, in turn providing GM customers with innovative tech and among the highest quality in the automotive industry.

Sundram Fasteners supplies key products to GM, including transmission shafts, radiator caps and more, which are seen across GM brands like Cadillac, GMC and Chevrolet.

The company has been a GM vendor for over 25 years and has won the Supplier of the Year award five times in a row from 1996 to 2000, and in 2009, 2019 and now, in 2020.



Sundram Fasteners, a GM vendor for over 25 years, supplies key products including transmission shafts, radiator caps and more which are seen across GM brands like Cadillac, GMC and Chevrolet. Since 1968, GM has spent more than $100 billion with Tier 1 suppliers.

Heightened focus on quality pays dividends

Set up in 1966, the Chennai-based Sundram Fasteners has transformed into a global leader with world-class facilities in three countries. It has a well diversified product portfolio encompassing high-tensile fasteners, powder metal components, cold extruded parts, hot forged components, radiator caps, automotive pumps, gear shifters, gears and couplings, hubs and shafts, tappets and iron powder.

Over the years, the company has acquired cutting-edge technological competencies in forging, metal forming, close-tolerance machining, heat treatment, surface finishing and assembly.

An unwavering focus on quality manufacturing and products benchmarked to top global quality norms has seen Sundram Fasteners develop a strong OEM clientele in India and in key growing overseas markets like Germany, USA, the UK, Italy, France and Brazil.

Arathi Krishna: "Despite the pandemic-related challenges in 2020, we managed to deliver excellence by adroit stock and inventory management, prudent manufacturing planning and intelligent logistics coordination, without compromising the health and safety of our people."

All 17 plants in India are Deming Prize winners

It is to be noted that in October 2018, the company's sharpened focus on quality won the Tier 1 supplier the prestigious Deming Prize for all its 17 plants located in India.

Commenting on the GM Supplier Award, **Arathi Krishna, Managing Director, Sundram Fasteners**, said, "We are pleased to receive this prestigious award from a highly esteemed customer like General Motors. This recognition is a validation of our commitment to quality, innovation, sustainability and excellence. The fact that we have received this award for the eighth time demonstrates our ability to exceed customer expectations consistently."

"Despite the pandemic-related challenges in 2020, we managed to deliver excellence by adroit stock and inventory management, prudent manufacturing planning and intelligent logistics coordination, without compromising the health and safety of our people," she added.

Winners of Supplier of the Year awards were chosen by a global team of GM purchasing, engineering, quality, manufacturing and logistics executives. Parameters for evaluation were Product Purchasing, Global Purchasing and Manufacturing Services, Customer Care and Aftersales and Logistics.

GM targets long-term sustainability

"As GM works to achieve a future with zero crashes, zero emissions and zero congestion, we are proud to have innovative and dedicated suppliers around the world as partners in this mission," said Shilpan Amin, GM — Vice-President, Global Purchasing and Supply Chain.

"Throughout a challenging year, our suppliers have showed resilience and dedication in working toward our shared goal of long-term sustainability for our planet and the communities we serve while meeting our present needs," said Amin. "We are pleased with what we've accomplished together in the past year."

GM was the first automotive OEM to establish a supplier diversity program in 1968. Since then, GM has spent more than $100 billion with Tier 1 diverse suppliers.

● **South India as a driving force for India Auto Inc, p19**

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FOLLOW US

MAKING A MARK 400 TIMES . . . AND COUNTING

By Hormazd Sorabjee

IN A WORLD gone topsy-turvy, our 400th issue is a big reason to celebrate and also look back with immense pride on what has been an incredible journey. Our inaugural issue on December 15, 2004, which featured a rare interview with Osamu Suzuki as our cover story, set the tone for what is India's most read and respected automotive B2B magazine. Since then, we've been at the cutting edge of news, bringing you the latest developments from the auto industry as they unfold not just in the magazine but on our rapidly growing digital platforms as well.

It's fair to say that *Autocar Professional* has spoken to more automotive CEOs than any other publication, a clear reflection of the immense credibility and respect the magazine has earned over the years.

We have reached this landmark issue in the most extraordinary circumstances which have rocked our way of life. The dark clouds of Covid-19 still linger and continue to cast a shadow of uncertainty which makes the future very hard to predict. However, the Indian auto industry has shown remarkable resilience, bouncing back not once but twice after each of the two lockdowns. The silver lining is that demand for personal mobility has rapidly shot up and to own a vehicle has become a topmost priority, especially for the Uber generation who are still fearful of travelling in shared space.

It's this underlying demand, the promise of a massive, growing market, once destined to become the third largest in the world, which enticed automakers and who, over the years, installed huge capacity to cash in on a booming middle-class aspiring to buy their first vehicle. But the dream market of India has remained just that for many OEMs — a dream.

'OVER 16 YEARS, AUTOCAR PROFESSIONAL HAS SPOKEN TO MORE AUTOMOTIVE CEOs THAN ANY OTHER PUBLICATION, A CLEAR REFLECTION OF THE IMMENSE CREDIBILITY AND RESPECT THE MAGAZINE HAS EARNED OVER THE YEARS.'

Four hundred editions on, some things haven't changed. The market leaders in 2004 continue to be firmly at the top today. In fact, some of them, like Maruti Suzuki and Hero MotoCorp, continue to have a strong grip on their number one position. In fact, if anything, the strong will only become stronger as they leverage scale, brand, a low-cost base and immense distribution clout and, in effect, make weaker players even weaker. Some multinationals which have been trying to crack the Indian market for decades will face a difficult future and, in this age of limited resources and uncertainty, will have to decide whether to keep trying to turn around their loss-making operations in India or focus on other profitable markets.

It's hard to predict the content of our 500th issue, especially at a time the auto industry is facing disruption and upheaval like never before. Some MNCs will have gone, tech companies will jump into the auto race and it remains to be seen how rapid the inevitable shift to electrified vehicles will be. One thing is for sure — *Autocar Professional* will be around, covering the seismic shifts as they happen, from the front and in real time. Enjoy this issue! ■

From the inaugural issue (left) to the latest edition, *Autocar Professional* has enhanced its status as India's most respected automotive B2B magazine.

Motherson to democratise high-end vehicle lighting tech

Tier 1 major to focus on developing and localising breakthrough exterior lighting solutions like Matrix LED technology which is said to enhance vehicle and pedestrian safety, says **Mayank Dhingra**.

Tier 1 giant Motherson Group's automotive lighting division – a joint venture with Italy's Marelli Automotive Lighting – is working towards deep localisation of exterior vehicle lighting solutions in India. The company says that the partnership with Marelli allows it to access the latest in technology as well as manufacturing processes in exterior automotive lighting, which have enabled it to take bold steps, such as introducing LED rear lamps in the Mahindra Verito Vibe – a segment-first feature back in 2014.

The company's four manufacturing plants – one in Bawal (Haryana), two in Pune (Maharashtra) and lastly in Sanand (Gujarat) – have a total annual production capacity of 850,000 sets of headlamps and 800,000 rear lamps. All the mechanical design, styling, simulations and electronics development is also being conducted at the company's application-and-engineering centre in Pune.

"Right from the modules to the projectors and PCB assembly, most of our products offer a large localisation content in the automotive lighting space," said Vishal Kabadi, President, Lighting and Electronics, Motherson Group.

"We are further increasing localisation. Other than the PCBs, which are being assembled, it is the ECUs, which are next in line to undergo localisation, and work has already commenced," he added, in an exclusive interview with *Autocar Professional*.

In India, Motherson Lighting equips models such as the Tata Safari, Maruti Suzuki Baleno, Tata Nexon, Jeep Compass and the Tata Harrier, among others.

Democratising matrix solutions

The company is also working towards democratising high-end matrix headlight systems, which offer adaptive driving beam (ADB) functionality to automatically dip and adjust the headlights' throw to prevent the illumination from blaring into onlookers' eyes, especially on two-way carriageways, while allowing superior light intensity compared to conventional halogen or projector headlamps.

"A lot of innovation is set

LOOKING TO LIGHT UP INDIA'S PASSENGER VEHICLE MARKET

- Motherson's four manufacturing plants – one in Bawal (Haryana), two in Pune (Maharashtra) and lastly in Sanand (Gujarat) – have a total annual production capacity of 850,000 car sets of headlamps and 800,000 tail-lamps.
- Sharp focus on increasing localisation. Other than the PCBs, ECUs are next in line to undergo localisation at the company.
- Looking to introduce adaptive driving beam, matrix LED lighting and full-rear LED combination lamps in the Indian passenger vehicle market.

Vishal Kabadi, President, Lighting and Electronics, Motherson Group: "We have begun initial discussions with a couple of OEMs to bring matrix headlight tech adaptive driving beam to India."

to come to India. Europe is far ahead of us in terms of ADB, matrix solutions and full rear-combination lamps that cover the entire rear profile of the vehicle," said Kabadi.

"We are in a very good space in terms of launching new products and technologies. We have just started initial discussions with a couple of OEMs about the way forward to bring the matrix technology to India," he added.

While initially the ADB kit itself might need to be imported due to volume limitations, once the volumes grow, it would be the next area to see efforts to enhance localisation for cost optimisation.

"I would be optimistic to see these making their way into the sub-Rs 20 lakh price segment of vehicles, but it needs to be seen which vehicle type or body form will adopt them first – hatchbacks, sedans or SUVs," he stated.

Automotive lighting trends

Giving an overview of the latest trends in exterior automotive lighting in the passenger vehicle segment in the country, Kabadi explained that India has evolved from predominantly being a bulb-dominated market a decade ago to now LEDs, which started coming into rear lamps around 2014.

"Headlamps have only caught up over the last five to six years," he said.

More than 80-85 percent of Motherson's present lighting portfolio to OEMs including Maruti Suzuki India (Baleno, Vitara Brezza), Honda Cars India (City, Amaze), Tata Motors (Nexon, Safari, Harrier), Stellantis (Jeep Compass) and Renault (Duster) comprises LED-based lighting solutions, which are "more on the front-end of the car than at the rear".

"This trend is going to continue and most B-segment-and-above cars are already using LEDs," said Kabadi.

While modern-day trends in rear lamps focus on styling and define a brand's signature concept with more use of LEDs emerging as a unique selling proposition, the front is related to both styling as well as safety, according to the Motherson top executive.

"Lighting features that use sensors and aid pedestrian protection as well as signalling for oncoming traffic have been developed over the last four years, and are also available across the globe," remarked Kabadi.

"These features will come as the next revolution in automotive lighting in India over the next four-five years," he signed off. ■

FedEx invests Rs 740 crore in Delhivery to optimise logistics biz

FedEx bets big on Gurgaon-based logistics and supply chain services provider and will also transfer certain domestic business assets in India to Delhivery.

FEDEX EXPRESS, A subsidiary of FedEx Corp and the world's largest express transportation company, and India's Delhivery, a leading logistics and supply chain services company, have entered into a partnership aimed to optimising gains in the logistics market.

"India is a strategic priority for FedEx. This strategic alliance will support our long-term vision to grow our India business and serve customers seeking to expand in or enter the Indian market, as well as provide opportunities to develop product and technology solutions together with Delhivery for the benefit of our customers," said Raj Subramaniam, President and COO of FedEx Corp.

Sahil Barua, co-founder and CEO Delhivery, said, "We are excited to partner with FedEx and look forward to the synergies created between Delhivery's capabilities in India and FedEx's global network. Our aim is to bring new products and opportunities to Indian and global businesses and consumers through unique access to our networks, and our technology and engineering capabilities."

As part of the collaboration, FedEx will make a US$ 100 million (Rs 740 crore) equity investment in Delhivery, and the companies will enter into a long-term commercial agreement. FedEx Express will focus on international export and import services to and from India, and Delhivery will, in addition to FedEx, sell FedEx Express international products and services in the India market and provide pick-up and delivery services across India. FedEx will transfer certain assets pertaining to its domestic business in India to Delhivery.

This transaction combines the FedEx global network with Delhivery's extensive pan-India network and technology solutions to bring the best of both worlds together.

Delhivery, which has an all-India network covering over 18,700 pincodes, provides a full suite of logistics services such as express parcel transportation, LTL and FTL freight, reverse logistics, cross-border, B2B and B2C warehousing, end-to-end supply chain services, and technology services. The New Delhi-based company has supplied over a billion shipments since inception and has a clientele of over 15,000, including large and small e-commerce participants, SMEs and other enterprises and brands. ■

Maharashtra races to fast-track e-mobility

Eyeing a 10 percent share of EVs in total vehicle sales by 2025, Maharashtra's incentive-laden EV policy aims to accelerate adoption of the eco-friendly vehicles across segments. **Ajit Dalvi** takes a close look.

The EV industry is seeing considerable traction in terms of new investment for setting up manufacturing plants, infrastructure as well as buying given the hike in fuel prices.

Maharashtra, which accounts for around 15 percent of total vehicle sales in India, has joined the list of states in India looking to fast-track electric mobility. On July 13, following a State Cabinet meeting on July 4, the state government unveiled a comprehensive EV Policy 2021, which is designed to accelerate both adoption of electric vehicles (EVs) in the state as well as set up EV manufacturing and charging infrastructure.

The overarching aim of the policy, valid from 2021-2025, is for EVs to contribute to 10 percent of new vehicle registrations — or 300,000 EVs — a year by 2022. This will comprise 10 percent two-wheelers, 20 percent three-wheelers and five percent four-wheelers or passenger vehicles. All EVs are exempted from road tax.

What's more, with a view to reducing pollution levels in urban parts of the state, the EV policy is targeting 25 percent electrification of public transport and last-mile delivery vehicles over the next five years in six key cities — Mumbai, Pune, Nagpur, Aurangabad, Amravati and Nashik.

Recognising the speedy growth of the e-commerce segment and the growing need for vehicle logistics to cater to inter-city and intra-city transport, the Maharashtra government is targeting at least 25 percent of urban fleet vehicles transition into EVs by 2025. This clearly also translates into a massive opportunity for EV manufacturers, both in the state and beyond.

The proposed incentives are in addition to the Centre's FAME II incentives and will be awarded to vehicle manufacturers based on the number of vehicles registered in Maharashtra.

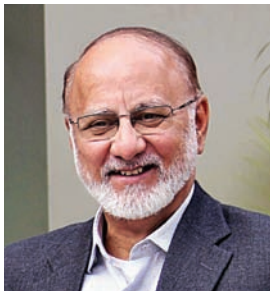
The state's EV policy essentially comprises three direct incentives for demand, supply and charging infrastructure. There are also non-fiscal incentives for developing skilled manpower to support the transition to e-mobility across the state. The maximum budgetary provision for 'demand side' and 'charging infrastructure' incentives is Rs 930 crore for four years (2021-2025). The EV policy implementation is to be funded through a green tax levied on re-registration of old vehicles and fuel cess.

There is also a plan to convert 15 percent of the Maharashtra State Road Transport Corporation's fleet, which is currently

By 2025, the Maharashtra government aims to have 10 percent of all new vehicle registrations across two-, three- and four-wheelers as electric across the state.

MAHARASHTRA'S ELECTRIC DRIVE

- The state government's EV Policy, which has a Rs 930 crore outlay, aims to get nearly 300,000 new EVs on the roads every year by 2025.
- Maharashtra aims to be one of India's leading manufacturers of battery EVs.
- Targets 25% of public transport and all delivery fleets to be electric.
- From April 2022, all Maharashtra government vehicles will be EVs.
- To set up 2,375 charging stations across key cities and four highways.



SMEV's Sohinder Gill: "These much-awaited measures and an inclusive and pragmatic approach to e-mobility and charging infrastructure are imperative to boost innovation and increase uptake among consumers."

Tata Motors' Shailesh Chandra: "This visionary policy will enable a faster transition to EVs. Also, the support extended in increasing charging infrastructure will offer electric vehicles owners a hassle-free commute."

Ather Energy's Tarun Mehta: "The Maharashtra government's new EV Policy has taken into account the entire EV ecosystem. Such progressive policies have the potential to drive faster adoption of EVs in India."

Piaggio Vehicles' Diego Graffi: "The government has clearly focused on enhancing EV adoption, particularly in last-mile transportation and two-wheelers. The emphasis on development of charging infrastructure is crucial."

Ampere Electric's Nagesh Basavanhalli: "The EV policy will be a great enabler of green mobility. It will not only boost the growth of EVs but will also provide employment and give impetus to the setting up of charging infrastructure."

16,500-strong, to electric by 2025. As is known, the loss-making MSRTC is already actively engaged in shifting a fair portion of its fleet to CNG to cut high monthly diesel costs. What's more, from April 2022, all new government vehicles, whether owned or leased, and plying in the major cities of the state, will necessarily have to be EVs.

Big incentives for 2-, 3, 4-wheeler buyers

Take a look at the data sheet below and there are ample incentives for electric two-, three- and four-wheelers. The policy, which interestingly, has an 'early bird' incentive, also factors in a scrappage incentive. Early adoption of EVs till December 31, 2021 will draw maximum benefits of Rs 44,000 on e-two-wheelers, Rs 92,000 on e-three-wheelers and Rs 175,000 on electric passenger vehicles.

Maharashtra, like some other states, is also seeing gradually increasing demand for EVs particularly in urban regions. The sky-high, wallet-busting price of petrol (Rs 107.83 a litre) and diesel (Rs 97.45 a litre as on July 24), is also driving vehicle owners to think electric.

As per a report in *The Hindustan Times* on July 13, the state currently has a total of 38,293 EVs and counting. There is a marked increase in the rate of EV adoption – from a total of 959 EVs bought in the state in CY2017, the first six months of 2021 (January-June and 13 days of July) have seen 7,711 EVs being registered in Maharashtra.

Focus on EV charging infra, mega projects

Speedy adoption of EVs can only be possible if there is adequate EV charging infrastructure, which is vital to keep consumers' range anxiety at bay. To ensure this is achievable, the EV policy has outlined plans to aggressively develop EV charging infrastructure. This is estimated at around 2,500 charging stations, in seven major urban agglomerates (Mumbai, Pune, Nagpur, Aurangabad, Nashik, Amravati and Solapur), and four major state highways (Mumbai-Pune, Mumbai-Nashik, Mumbai-Nagpur and Pune-Nashik).

While slow chargers (15,000 units) will get incentives up to Rs 10,000 per charger, fast chargers (500 units) will be incentivised up to Rs 500,000 per charger. The government document states that "urban local bodies will be encouraged to provide property tax rebates to residential owners for installing private charging infrastructure within their premises." ULBs/PWD/ MSRDC will identify locations for charging infrastructure installation.

Furthermore, real

MAHARASHTRA ELECTRIC VEHICLE POLICY INCENTIVES FOR TWO-, THREE & FOUR-WHEELERS

	Battery capacity capacity (kWh)	Basic incentives	Early bird incentives	Assured buyback & battery warranty incentives	Scrappage incentives	Total incentives
Electric 2-wheelers (before December 31, 2021)	3	Rs 10,000	Rs 15,000	Rs 12,000	Rs 7,000	Rs 44,000
Electric 2-wheelers (after December 31, 2021)	3	Rs 10,000	NA	Rs 12,000	Rs 7,000	Rs 29,000
Electric 3-wheelers (before December 31, 2021)	7	Rs 30,000	Rs 35,000	Rs 12,000	Rs 15,000	Rs 92,000
Electric 3-wheelers (after December 31, 2021)	7	Rs 30,000	NA	Rs 12,000	Rs 15,000	Rs 57,000
Electric 4-wheelers (before December 31, 2021)	30	Rs 150,000	Rs 100,000	NA	Rs 25,000	Rs 275,000
Electric 4-wheelers (after December 31, 2021)	30	Rs 100,000	NA	NA	Rs 25,000	Rs 175,000

Maharashtra's EV policy offers an 'early bird' incentive for new vehicle purchases up to December 31, 2021, ranging from Rs 44,000 for electric two-wheelers to Rs 92,000 for three-wheelers and to Rs 275,000 for electric passenger vehicles. It is also one of the few states in the country to offer scappage incentives.

MAGENTA SETS UP INDIA'S LARGEST EV STATION IN NAVI MUMBAI

ON THE SAME day as the Maharashtra government announced its bold new EV Policy designed to fast-track e-mobility in the state, EV charging solutions provider Magenta opened India's India's largest public EV charging station in Navi Mumbai. The facility was inaugurated by Subhash Desai, Minister of Industries and Mining, Maharashtra.

The Minister said: "Maharashtra has been in the forefront of EV development. Under our draft EV Policy 2021, we aim to bring at least 146,000 new battery-operated electric vehicles (BEVs) on state roads by 2025, estimated to comprise about 10 percent of all new vehicle registrations by that time. We support our very own local start-ups like Magenta to drive the adoption of EVs in the state and in the country and soon globally."

The charging station, which is operational around the clock, has 21 chargers – four DC chargers (15 to 50 KW capacity) and 17 AC chargers (3.5 to 7.5 KW). The AC chargers have been developed and manufactured in-house in India.

Depending on the usage, a vehicle can be charged in as less as 45 minutes. For vehicles which require AC slow charging, a parking bay allows for overnight charging. These chargers can be operated through Magenta's ChargeGrid App with online remote monitoring which includes an automated payment gateway.

The setting up of this public EV charging station in Mumbai is in line with the Centre's plan to set up 400,000 charging stations to meet the requirement for two million EVs which could potentially ply on its roads by 2026. According to SMEV statistics, there are 1,800 charging stations in India (March 2021) catering to 16,200 electric cars, including the fleet segment.

The charging stationhas 21 chargers – four DC chargers (15 to 50 KW capacity) and 17 AC chargers (3.5 to 7.5 KW). This facility will be operational round the clock.

Magenta opened India's India's largest public EV charging station in Navi Mumbai and was inaugurated by Subhash Desai, Minister of Industries and Mining, Maharashtra.

Charger manufacturing plant coming up

Meanwhile, Magenta has announced plans to set up an AC charger development and manufacturing unit for India and for exports. The company has recently closed Series-A funding of Rs 120 crore from American philanthropist, Dr Kiran Patel, and will invest Rs 30 crore of its own. A second R&D centre in the same location is also to be set up in Navi Mumbai.

Maxson Lewis, MD and co-founder of Magenta Group said, "The year 2021 has presented a great responsibility and opportunity to fast track the development of electrification and EVs. The impact of the pandemic has led to an emergence of a new consumer who is eager to be healthy, breathe clean air and build a better, more resilient world for the next generation. We at Magenta aim to strengthen this vision."

On June 24, Magenta signed an agreement with Telangana State Renewable Energy Development Corporation to coordinate the transition of government officer transport from ICE vehicles to EVs.

Two weeks later, on July 8, it partnered Mahindra Electric to deploy 100 Mahindra Treo Zor electric three-wheelers, which will be inducted into its delivery fleet of the new e-mobility Electric Vehicle Enabled Transport (EVET) platform.

estate developers will be mandated to have EV parking facilities. As per the government directive, there will be 20 percent mandatory EV-ready parking in residential locations, 25 percent in institutional and commercial complexes, and 100 percent in government offices.

EV manufacturers and associated e-mobility industry stakeholders are also part of the EV policy. The EV Policy document says that "all the benefits under 'D+' category of mega projects will be provided to these industries irrespective of location of manufacturing unit in the state. This incentive will be applicable from the date of notification of policy and will be disbursed through the Industries, Energy and Labour Deparment."

The state government is instituting a Mechanism Steering Committee under the chairmanship of the Chief Secretary and other concerned department principal secretaries to assess the policy's effectiveness, considering the EV ecosystem and environment. A Climate Change Department will drive the 'EV Monitoring Cell'.

Industry gives thumbs up

The Maharashtra government's progressive EV policy has begun drawing a response from captains of industry. **Sohinder Gill, Director-General, Society of Manufacturers of EVs (SMEV)**, said: "The Maharashtra government's announcement is not only encouraging for the EV industry but also solidifies India's vision of becoming a global EV hub. These much-awaited measures offer to bridge the chasm between awareness and consumer sentiment towards e-mobility. We hold steadfast optimism towards states announcing a revised policy with a special focus on demand creation. An inclusive and pragmatic approach to e-mobility and charging infrastructure is imperative to boost innovation and increase uptake among consumers."

Shailesh Chandra, President, Passenger Vehicle Business Unit, Tata Motors, commented: "We are delighted to see a very enabling policy by the Maharashtra government. It is a very welcome move and indeed a very strong resolve shown by the government towards EV adoption. Also, the support extended

A fleet of Tata Motors electric buses, used by the BEST in Mumbai, get the 240kWH charging treatment at a Tata Power station in Backbay Depot.

in increasing charging infrastructure will offer EV owners a hassle-free commute. This visionary policy will enable a faster transition to EVs."

Tarun Mehta, CEO and Co-founder, Ather Energy, said: "The Maharashtra government's new EV Policy is extremely comprehensive and has taken into account the entire EV ecosystem. The incentives offered for both the demand and supply side will accelerate the adoption and the manufacturing of EVs in the country. In addition to demand incentives, the policy also incentivises buyback and vehicle scrappage. Early bird incentive is a great mechanism to jump-start things, as well as to drive festive sales. Such progressive policies introduced by the state governments have the potential to drive faster adoption of EVs in India."

Diego Graffi, CEO and MD, Piaggio Vehicles, said: "The government has clearly focused on enhancing EV adoption, particularly in the last-mile transportation segment and two-wheelers. The new Maharashtra EV policy is well designed, covering various elements of the EV ecosystem. The emphasis on the development of charging infrastructure is crucial as it will minimise the concern about the range anxiety and promote EV penetration in the State. The new policy will lower the acquisition cost for the customers, which will aid in a shift towards EVs."

Nagesh Basavanhalli, MD and Group CEO, Greaves Cotton & Director, Ampere Vehicles, said: "The EV policy announced by the Maharashtra government will be a great enabler of clean and green mobility. This will not only boost the growth of EVs but will also provide employment at various levels and give impetus to the setting up of charging infrastructure. "

Uday Narang, Chairman, Omega Seiki Mobility said: "This radical step taken by the Maharashtra government to subsidise EVs will provide the much-required stimulus. The Rs 930 crore policy aims to get nearly 300,000 new EVs on the road every year by 2025. It will also help create an estimated 100,000 new jobs. Besides, the support for setting up a charging infrastructure, not just in urban areas but also on highways, will lead to faster adoption of EVs. I hope more and more states follow Maharashtra's lead and bring out similar incentives and pave the way to make India the No. 1 EV maker."

A fleet of Tata Motors e-buses, used by the BEST in Mumbai, gets 240kWH charging at a Tata Power station. From PVs to public transport, speedy adoption of EVs is possible only if there is adequate EV charging infrastructure. The EV Policy aims to set up 2,500 charging stations in Mumbai, Pune, Nagpur, Aurangabad, Nashik, Amravati and Solapur and four state highways.

Indian states race to fast-track EV adoption

With growing consumer awareness about EVs, the recently enhanced FAME subsidy for two-wheelers, termed the 'low-hanging fruit' of the EV industry and also sky-high petrol prices, the EV industry is seeing considerable traction. This can be seen in terms of new investment towards setting up manufacturing plants, infrastructure as well as vehicle buying.

What's more, over the past year, a number of states have come up with their own EV policies all designed to incentivise buying as well as to make manufacturing these a smooth experience. In August 2020, Delhi notified its EV Policy, which aims to register 500,000 EVs in the city by 2024. In June 2021, Gujarat rolled out its policy targetting 200,000 EVs which includes 110,000 electric two-wheelers, 70,000 e-three-wheelers and 20,000 electric four-wheelers. In September 2019, Tamil Nadu had drafted a policy to be India's 'EV hub', aiming to attract Rs 50,000 crore investment. And recently Rajasthan announced SGST-driven incentives for two- and three-wheeler buyers going electric. ■

Adequate charging infrastructure is key to enable faster adoption. The Maharashtra Policy outlines a comprehensive plan for it.

● Interview with Maharashtra Industries Minister, Subhash Desai, p16

Gigafactory, skilling, part of Maharashtra's plans to be a major EV hub

The state government has initiated discussions with both local and foreign prospective investors interested in EV battery manufacturing and allied areas. **Sumantra Bibhuti Barooah** reports that building a pool of local personnel skilled for EV industry is also a focus area of the state's new EV Policy.

Battery cost and its technology evolution influences the rate of electric vehicle (EV) adoption. Likewise, the presence of a fully localised battery manufacturing factory will help a state grow its EV industry. Recognising the criticality of it, the Maharashtra state government which announced its EV Policy in mid-July, has initiated talks with potential investors.

"We are very actively interacting with industrial houses to promote the manufacturing of EV batteries, and soon we will find that many investors take interest in setting up this battery manufacturing units here in the state," Subhash Desai, Industries Minister, government of Maharashtra, tells *Autocar Professional*.

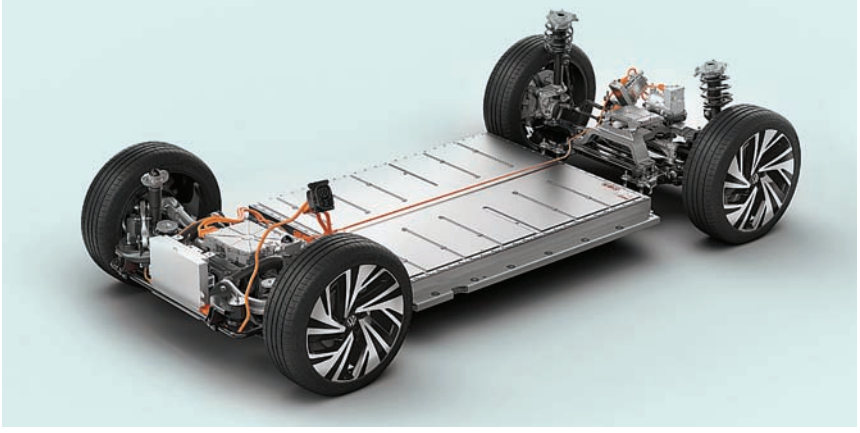
The names of the potential investors were not divulged, but Desai says they are "local as well as global". One of them is set to be Reliance Industries, which has recently announced a Rs 60,000 crore investment plan to build a variety of components for the new energy ecosystem including advanced batteries.

Encouraging local entrepreneurship in the EV space is also a focus for the state government, according to Desai. While the state government conducts discussions with prospective investors of a gigafactory or two, Desai says the focus is also on training and skilling local students and building a talent pool which is fit for the EV ecosystem.

Developing industry-ready personnel

Availability of 'industry-ready' personnel has been an issue in varying degrees in the domestic ICE vehicle industry for long. Cognisant of the challenge, the Maharashtra government has taken measures to ensure availability of more industry-ready manpower, which is essential for the state to retain its position as a major auto hub. "The skill development corporation of Maharashtra is very busy since the past four years in converting the conventional courses into industry specific courses," says Desai.

Incentives aimed at fuelling demand for EVs and setting up charging infrastructure are key for mass-scale EV adoption in the state, and India, but factors like availability of local supply chain (battery being the most crucial) and local talent pool would also be crucial in the growing competition among states vying to be major EV hubs.



Maharashtra's EV Policy has been jointly developed by three departments — Industries, Environment and Transport — and looks to maximise EV adoption.

That explains the focus on these areas by the Maharashtra government, a major auto hub in the traditional ICE vehicle industry. Will it be able to achieve the same status in the EV industry? The jury is out on that, but the Maharashtra government is putting efforts for "time-bound results" and to be a major EV industry hub in the country. For starters, the first set of time-bound goals is 10 percent of all new vehicles in the state.

Maharashtra's EV Policy, unveiled on July 13, isn't the first one by the state. It had launched one three years ago, with a vision to be 'a globally competitive state for electric vehicle and component manufacturing, and maximise EV adoption'. The developments didn't quite live up to the vision of that policy, drawn up by the state government's Department of Industries. This time around, with a more favourable industry environment and a more comprehensive policy, jointly developed by three departments — Industries, Environment and Transport — the story can be quite different.

INTERVIEW SUBHASH DESAI, INDUSTRIES MINISTER, MAHARASHTRA GOVERNMENT

Did you benchmark any other EV policy introduced elsewhere in the world where it has really worked and given the intended results, or maybe any other EV policy within India, while designing the comprehensive Maharashtra EV Policy?
It's my experience that the government of Maharashtra is always leading, and leading from the front. In any sector that we introduce a policy, we work hard, we do research and with great efforts the policies are released. When new policies are released, it is my experience other states follow.

I had an opportunity to meet the CM of a leading state which was making great efforts in industrial development, so I casually asked him, "How do you attract industries into your state? What are those ideas, and what are those measures that you take to make your state attractive for investors run to your state?" He looked at me for a few moments and then said, "Mr. Desai, shall I tell you the truth?" I said yes, I would like to understand the truth. He said, "Whenever there are new policies announced by the government of Maharashtra, I send my officials to Mumbai to study those policies. They come back and they re-introduce those policies here and try to make our state more attractive."

These are the words of a leading state's chief minister. So we are happy. If we are followed, we are happy because together we have to make this country stronger. And I always appreciate healthy competition between the states. But rest assured, this EV Policy will set a benchmark. We'll be happy to be copied by other states, as the country would be cleaner, greener and stronger.

'Maharashtra's EV Policy will set a benchmark. We'll be happy to be copied by other states, as the country would be cleaner, greener and stronger.'

Announcing a comprehensive, attractive policy is one thing and ensuring that every aspect of it gets executed at the ground level is another. What steps or process have you planned to ensure that everything that you have listed in the EV Policy gets executed?
Keeping this in mind, we have already taken three departments – transport, environment and industry – in this platform. With these three departments across the length and breadth of the state, we are sure we would be able to implement this policy seamlessly.

We have no doubt about implementing the policy and getting stronger results. We have taken care of every aspect of this sector, and therefore we are not worried.

Has there been any expression of interest for investment in the state since the announcement of the new EV Policy? Any development in talks with Tesla?
All states are very actively engaged in bringing or inviting global giants into their respective states. Maharashtra is equally busy and eager to invite investors, including Tesla. We have been continuously in touch with them and we are trying to understand their concerns and their requirements.

Likewise, there are other brands and other corporations which may take interest in investing in Maharashtra. So, we are very active on these fronts.

On another note, how have things progressed under 'Magnetic Maharashtra 2.0'? Are they as per plans or have you had to make any tweaks based on experience, feedback?
Let me assure you, nobody can stop Maharashtra – Maharastra is unstoppable. Even during the pandemic-challenging times, we have signed MoUs with investors. Right from April 2020 till now, as many as 60 investors have signed MoUs with the government of Maharashtra. A few of them are from the US, UK, Singapore, Japan, Korea and Germany. Many domestic companies have also made agreements with us. In fact, all these MoUs are converting into real industries. They will not remain on paper alone. And for this purpose we have allotted them land, and 80 percent of these investors have acquired land from us. When an investor takes land, he is serious about his investment and therefore I am categorically mentioning that every MoU is being converted into real-time industry. With this, investments of over Rs 2 lakh crore have been assured in the state. More than 300,000 job opportunities will be created through these efforts. ■

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SCAN ME

The south stands tall but challenges remain

Since the time India opened its gates to investments from international automakers, states like Tamil Nadu have been hugely successful in wooing big brands. Today, along with Karnataka, Andhra Pradesh and Telangana, the stage is set for a new chapter in mobility, says Murali Gopalan.

This edition of *Autocar Professional* focusing on South India coincides with the 30th anniversary of economic reforms. It was the time when Prime Minister PV Narasimha Rao and Finance Minister Manmohan Singh drafted a new growth blueprint for the country.

It is in this backdrop that the southern region becomes a relevant point of discussion. Before 1991, the prominent automotive residents here included the TVS Group and Ashok Leyland along with the likes of Standard Motors and Royal Enfield, which was then a Lilliputian version of its present self. Traditionally, the south has had a vibrant component industry and has always been ahead of the curve when it comes to critical infrastructure like roads, highways and ports.

Yet, during the pre-reforms period, it was Maharashtra that had top brands like Tata Motors (or Telco as it was then called), Bajaj Auto, Mahindra & Mahindra, Premier Automobiles, Bajaj Tempo (the modern Force Motors) and the Kinetic Group. Up north, Maruti gave an added halo to Haryana while the east was home to Hindustan Motors which was still going strong with its Ambassador brand.

As economic liberalisation gradually set in with gates thrown open to car multinationals, the south got into the act quickly. Hyundai and Ford were big coups for Tamil Nadu when it was generally thought that Maharashtra would be the frontrunner for these two brands. Volvo Trucks decided to set up its plant in Bengaluru as also Toyota, which was ready for a fresh start after its not-so-memorable outing earlier with the DCM Group for light commercial vehicles.

Maharashtra, the traditional favourite, had clearly taken its eyes off the road and suddenly found itself out in the cold. Sure, the likes of Fiat were planning to set up a big plant in Ranjangaon near Pune for Project 178, the world car, which had been a runaway hit in Brazil. Likewise, Peugeot had bought out a stake in partner Premier Auto's facility in Kalyan for its 309.

Yet, it was more than apparent now that other states had got into the race to bag new projects with the south clearly leading the way. Even while the Honda duo of cars and motorcycles opted for the NCR region, Tamil Nadu was racing ahead in the second phase of big ticket investments wooing Renault-Nissan,

While Hosur has been home to TVS for over four decades now, Royal Enfield has grown beyond Thiruvottiyur to its new plant in the Oragadam industrial belt.

In Karnataka, Toyota Kirloskar Motor has two plants in Bidadi with annual 310,000 units capacity. Kia's massive plant in Anantapur is a jewel in Andhra Pradesh's crown.

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Daimler (for commercial vehicles), Royal Enfield for its expansion plans, Yamaha and BMW. Alongside, M&M decided to set up Mahindra Research Valley, its R&D hub, near Chennai while a slew of big names in the component space followed suit.

It was more than apparent that Tamil Nadu was serious about positioning itself as the Detroit of Asia even while a rejuvenated Maharashtra had put its house in order and got Volkswagen to set up its base at Chakan near Pune. M&M, likewise, opted to expand in the same region by setting up a sprawling plant.

Tamil Nadu is the traditional auto component hub of India and a vibrant one at that. From starter motors to the latest high-tech electronics-laden parts, suppliers in the state make them all.

Gujarat jumps in, Andhra lowers the anchor for auto

By this time, Gujarat under Chief Minister Narendra Modi decided the time had come to throw its hat into the automobile ring. The big break came in the form of the Tata Nano where headwinds in West Bengal, the original location for the project, prompted the company to look elsewhere. Modi virtually laid down the red carpet and Gujarat had a prestigious brand in its kitty.

More were to follow in the form of Maruti Suzuki, Ford and Honda Motorcycle & Scooter India which suddenly reminded the other automotive hubs that Gujarat was more than a serious competitor. This is what perhaps led to an awkward situation where the Tamil Nadu government made it known rather prematurely that Peugeot had pretty much decided to set up its car plant in the State.

There was no truth in this news and the denials that followed only showed that states were now under greater competitive pressure. The irony is that Peugeot finally opted for Gujarat, much to Tamil Nadu's consternation, but later shelved its plans following the global slowdown of 2008-09. By the time it returned to redraft its India plan, it had entered into an agreement with the CK Birla Group to acquire its plant near Chennai, which was largely underused.

Eventually, Tamil Nadu had Groupe PSA (as Peugeot was later rechristened and had now gone in for another avatar as Stellantis following its merger with Fiat Chrysler Automobiles) in its portfolio which meant a big deal from the viewpoint of housing big automotive brands.

During these years, Chandrababu Naidu as Chief Minister of the united Andhra Pradesh (before the Telangana bifurcation took place) was as keen on being part of the auto parade. He pulled out all the stops to woo Proton of Malaysia but nothing materialised. Then came the turn of VW except that this was stalled too for a host of reasons.

Finally, AP bagged the Kia project by which time Telangana had also been formed as a new State. The Korean carmaker, part of the Hyundai Group, has been growing from strength to strength in record time with two successful products in the Seltos and Sonet. The plant in Anantapur is virtually a jewel in AP's crown even while Telangana has upped the ante with two R&D projects from ZF and Fiat Chrysler now under the Stellantis umbrella.

The south has come a long way since the onset of reforms and states like Tamil Nadu, in particular, have pulled out all the stops to woo investors. Yet, there are a host of challenges to grapple with going forward. The days of offering generous fiscal sops to investors may become increasingly difficult with states by themselves financially fragile.

If things go according to plan, the Chennai-Bengaluru belt could be the new electric hub in the coming years especially with other established players like TVS and Ather.

While the pandemic has been a deathly blow to their balance sheets, they are also unhappy with the fact that GST compensations from the Centre have been delayed and this in turn is creating its own set of problems. From the manufacturers' end, there are other issues to reckon with, especially excess capacity at some plants.

While Hyundai has been a smash success story that has firmly put Sriperumbudur on the company's global map, Ford has little to show even after two decades of operations near Chennai. The alliance pact with M&M has been shelved and the American automaker is now on its own in India.

The Maraimalainagar facility has more than enough capacity to share while the story is pretty much the same for the other plant in Sanand, Gujarat. There have been reports doing the rounds that Ford is open to the idea of contract manufacturing with interested OEMs but how quickly that will progress is the question.

Chennai-based Daimler India CV is also a major exporter of trucks and buses.

Toyota similarly has had surplus capacity issues but the silver lining in the cloud is its pact with Suzuki which will have tremendous implications for India. The Bidadi plant near Bengaluru will now be put to good use to produce cars for Maruti Suzuki; beyond this, the sky's the limit for new forays like electrification.

Even while Covid-19 has been scorching the Indian terrain, new investments have come in south from the likes of Greaves Cotton which has resurrected its Ranipet plant in Tamil Nadu to produce Ampere-badged electric scooters. If things go according to plan, the Chennai-Bengaluru belt could be the new electric hub in the coming years especially with other established players like TVS and Ather.

These are exciting yet challenging times for the auto industry with further headwinds coming in from the pandemic and its onslaught on the economy. What the southern region has in its favour is a skilled and cerebral workforce coupled with reliable infrastructure to take the automotive growth story to the next level. ■

Showstopper Hyundai

The Korean carmaker's remarkable success story in India is praiseworthy at a time when other top brands have exited the market or continue to languish. This decade will see the Korean aggression continue with group company, Kia India, also firing on all cylinders, says Murali Gopalan.

When Hyundai first made it known in the mid-1990s that it was setting up shop in India, not too many people took notice. After all, this was an unknown Korean brand in a country which was far more familiar with American and Japanese car models.

This was also the time another Korean automaker, Daewoo, had announced its India foray along with Automobiles Peugeot of France. More brands from across the world soon joined the parade as the country had opened its gates to investments from MNC carmakers. The landscape which was being dominated by Maruti Udyog, Premier Automobiles and Hindustan Motors was now preparing for a virtual blitzkrieg of new cars.

Fast forward to 2021 and there is no question that Hyundai is the biggest success story among these companies which have tried their luck in perhaps the world's most competitive car market. Sure, Maruti Suzuki (the erstwhile Maruti Udyog) continues to be the lord of the masses but Hyundai has proven to be a tough rival, which has constantly pushed the envelope in new products and technology.

The Korean carmaker's triumphant run should be seen against the report cards of others — some have shut shop while others are chugging along at a slower pace. Peugeot was the first to bid adieu in 1997 when headquarters in Paris decided that nothing was going right in India. Daewoo followed suit four years later though this time it was the bankruptcy of its parent company in Korea that led to the closure of all global operations including India.

More recently, General Motors decided that enough was enough since it has precious little to show during its run of over two decades. Like Hyundai, it was an early entrant to India but that is where the commonalities end. Where GM was crawling like a snail, Hyundai was moving at breakneck speed and the results are there for all to show.

Likewise, Ford is gasping for survival in this country and speculation is already rife that it may go the GM way if there is no hope of a turnaround. A lot was expected from its alliance with Mahindra & Mahindra but once that fell through, the American carmaker would find it tough going solo. Even though there is no official confirmation on its intent to wind up operations, the fact that it has recently called it a day in Brazil does not augur well for another emerging market like India.

Peugeot has, of course, returned in its new avatar as Citroen and under the corporate brand umbrella of Stellantis, the merged entity of Groupe PSA and Fiat Chrysler Automobiles. Other automakers are also

Hyundai, which retails 11 car models across segments in India, currently has 522 dealers and more than 1,310 service points across the country.

Fully integrated state-of-the-art manufacturing plant at Sriperumbudur, near Chennai, has a manufacturing capacity of 750,000 units per annum.

HYUNDAI: A HOUSEHOLD NAME IN INDIA

- Hyundai has emerged Maruti Suzuki's fiercest rival over the last 25 years.
- Its success story began with the Santro and has now continued with new offerings across segments.
- The brand association with Shah Rukh Khan was a trailblazer for the industry.
- Both have stayed together for over two decades now.
- This decade will see Hyundai step on the gas with new technologies.

INTERVIEW SS KIM, MANAGING DIRECTOR & CEO OF HYUNDAI MOTOR INDIA

SS KIM, Managing Director of Hyundai Motor India, shares his thoughts on the road ahead in this email interview with Murali Gopalan.

As Hyundai gets ready to meet a host of new challenges this decade in India, what are your plans to remain the key differentiator?
The year 2021 has been extremely fulfilling for us as we completed 25 years of our operations in India and rolled out the fastest 10 millionth car recently.

We have charted a strong roadmap for the future along with all our stakeholders wherein our focus will remain on introducing new products, technologies, experiences and building social values by engaging communities while strongly focusing on the human side of enterprise.

We will continue to drive excellence across the spectrum of our India operations and induce excitement for customers. Further we will stand by our business plans, showcasing a strong commitment to 'Make in India'.

You have constantly remained upbeat on electric. Are you working on a strategy to make electric cars affordable to the masses?
Electrification is one of the top priorities for the Centre and we have already showcased our prowess in this segment by introducing India's first fully electric SUV Kona Electric in 2019. Hyundai has been a technology pioneer over the last many years and holds adequate synergies to develop electric vehicles for India. We continue to evaluate market opportunities from time to time and will introduce products depending on the favourable factors prevalent during these times.

What other fuel alternatives will Hyundai look at in India as part of its drive to stay ahead of the curve?
As the country's leading smart mobility solutions provider, Hyundai continues to develop innovative solutions for our customers and remain much ahead of the industry by introducing new fuel technologies and powertrain options.

Hyundai was the first OEM to introduce compact BS6 diesel – Hyundai 1.2 Ecotorq diesel and offers the widest range of BS6-compliant diesel engines: 1.2 l, 1.5 l and 2.0 l. Further, we have already introduced a BEV to Kona Electric and globally have recently showcased the new era of electric mobility with the Ioniq 5.

Guided by our global vision of 'Progress for Humanity', Hyundai has invested in the development of advanced technologies to ensure we can elevate customer experiences while also making a positive impact on the environment.

We have already initiated the feasibility study for fuel cell electric vehicles in India and promise to bring the ultimate solution with zero emission mobility.

With realities like shortage of semiconductors and supply chain disruptions,is Hyundai working on a de-risk strategy for the future ?
We are aware of the automotive industry's rising concerns over semiconductor supply for vehicle manufacturing. We are closely monitoring the situation to take prompt and necessary measures and optimise production in line with the supply conditions.

'We are focused on development of advanced technologies for India.'

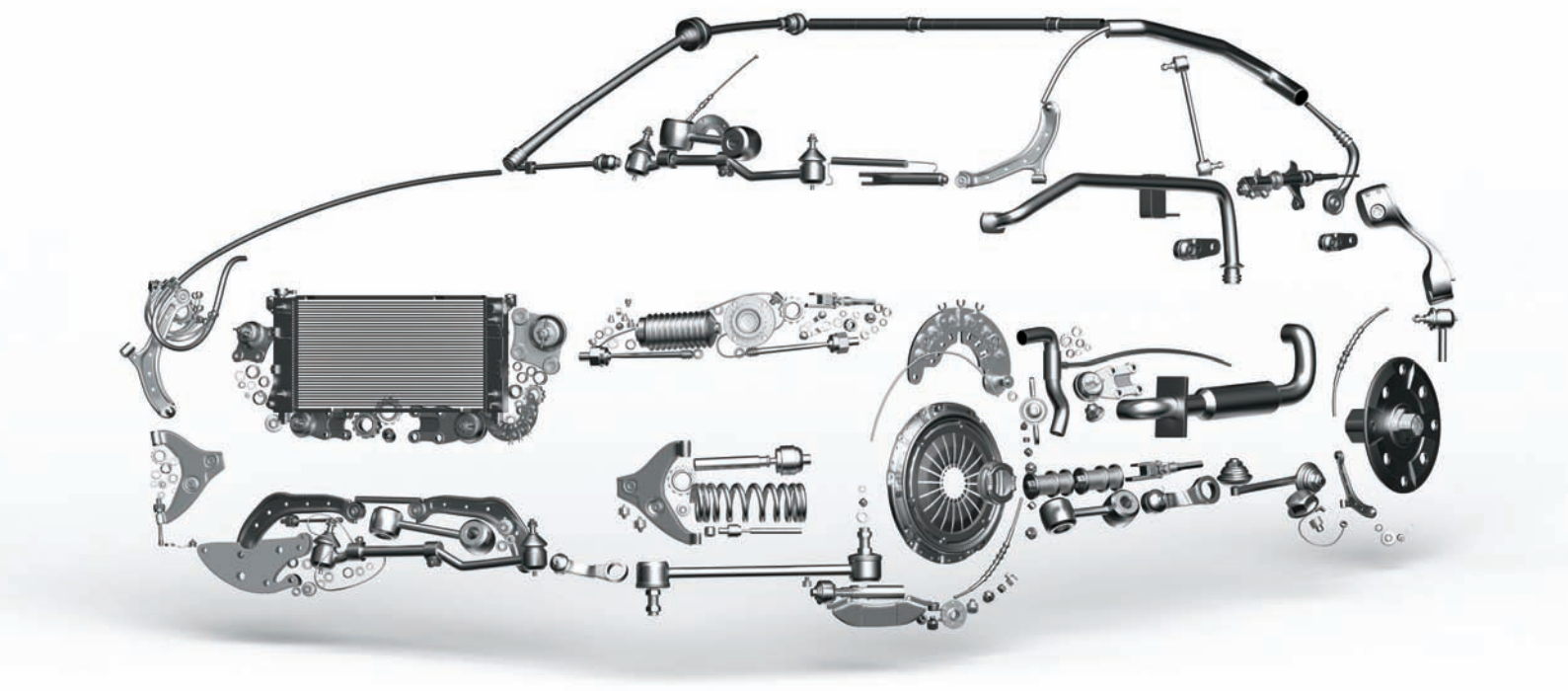
Is Kia also an integral part of the India plan especially when you need to take on alliances like Toyota-Suzuki, Skoda-VW and Stellantis?
Globally Hyundai and Kia are competitors – similarly we will compete with each other in India as well. To meet customer values and cost of ownership while looking at Government policies and structural changes, we might share supply chain operations like vendors, powertrain sharing and technology sharing. However, all other operations are separate as per our brand ethos.

What, in your view, have been the implications of Covid on personal mobility?
During these challenging times, we have stood by societies and communities by reaching out with various initiatives that helped them tide over the adversities. We have witnessed new-age buyers in India preferring brands that showcase the human side of enterprise. With markets opening up and customer sentiments improving, Hyundai will also continue to stand by its customers and introduce world-class products and services that exceed customer aspirations. In June 2021, we created another milestone with the production of the fastest 10 million cars in India.

Furthermore, we have also received over 11,000 bookings for the Alcazar, showcasing a strong performance for Hyundai's latest offering in the 6- and 7-seater SUV segment. In June 2021, we also recorded growth in both the domestic and exports markets over the same period last year, presenting a positive consumer outlook post the lockdown period.

Over the last few months, we have been conducting operations with cautious optimism. Currently, the domestic market is witnessing a significant level of demand as customers continue opting for personal mobility. We are also focused on development of advanced technologies and products that will usher in a brighter and greener future.

What should India do to accelerate growth of its automobile industry?
Despite the ongoing challenge of Covid-19, the Indian automotive industry seems to be overcoming most of its challenges, and many are now in the rear-view. The Centre is investing huge amounts on infrastructure development so we believe that in 2-3 years we could reach the pre-Covid levels. The Centre's incentives to increase exports and technology disruption will help create opportunities at all levels of the automotive value chain.



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following the partnership route as in the case of Renault-Nissan, Skoda-Volkswagen and Toyota-Suzuki.

Hyundai's Make-in-India story gets a partner in Kia

The Hyundai Group also has Kia which recently set up base in India and is already off to a blazing start with two smash successes in the Seltos and Sonet. Yet, the two Korean brands will remain fierce challengers in this market even while there will be synergies at the back end (*see interview with Hyundai Motor India MD, SS Kim on page 23*).

This model reflects the inherent aggression within each of these companies in standing on their own two legs and being able to showcase their prowess to the market. It is this never-say-die attitude that puts in perspective why Hyundai has been so successful in India while many others have perished along the way. It also explains why Kia is destined to be another success story even while retaining its individual identity instead of being subsumed by Hyundai.

What is remarkable is that when Hyundai first announced its India plans, it had not reached the kind of global scale as it has today with plants across the world. The alien Korean association of yesteryear has given way to one if deep respect for its styling, design, technology and performance. Hyundai prides itself as a company which is future-ready and will stop at nothing when it comes to creating new benchmarks in excellence.

This is precisely the reason why customers in India are pleased as punch with Hyundai. For the latter, the India journey is testimony to astute planning, aggressive product development, localisation and retail, spotting gaps in the market and being quick to seize opportunities, being the first mover in many spheres and so on.

Each of its business leaders over the last 25 years have taken the growth story forward and today the company is poised to take on a host of new challenges emanating from tighter legislation on emission norms, mobility options and technology breakthroughs.

Fire-in-the-belly approach

All this has required tremendous hard work along with the fire-in-the-belly approach to excel and put the market leader under constant pressure. Even if Maruti Suzuki sells more, Hyundai remains in a league of its own as a worthy challenger. Who knows what could happen during the course of this challenging decade which will see the men being separated from the boys.

Rewind to the 1998 Delhi Auto Expo when the Santro was first unveiled at a time when the Tata Indica was dominating the headlines and even labelled as the 'Kohinoor of India' by a top minister during its unveiling. Yet, the Santro stood out as a unique Tall Boy image which was so radically different from what Indian customers were used to. It was bold, smart and unconventional

One of Hyundai's big successes in India is the Creta SUV. Since its launch in 2015, the Creta has sold over 600,000 units and is currently the best-selling SUV. The second-gen Creta in sold with 1.5-litre petrol, 1.5-litre diesel and 1.4-litre turbocharged petrol engine options.

HMIL'S PRODUCTION MILESTONES

1 million	2006	7 years 6 months
2 million	2008	2 years 7 months
3 million	2010	1 years 9 months
4 million	2012	1 year 7 months
5 million	2013	1 year 6 months
6 million	2015	1 year 7 months
7 million	2016	1 year 5 months
8 million	2018	1 year 7 months
9 million	2019	1 year 6 months
10 million	2021	1 year 9 months
10,000,000	**22.75 years**	**273 months**

Hyundai deserves kudos for its vision and drive to rope in Bollywood superstar Shah Rukh Khan for an association that has lasted over two decades, perhaps the longest ever for a car brand worldwide.

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in design while assuring a peppy performance.

The Santro took the market by storm and it was also the first time when Maruti was truly up against stiff competition. The Japanese carmaker was then in the midst of a tussle with its partner, the Government of India, and had little to show at the 1998 Expo. And even while this was showcased as the Indica event, the Santro more than held its own.

Hyundai was clearly not going to let go of the momentum and came out all guns blazing. It signed up Shah Rukh Khan as brand ambassador for the Santro and was quick to recognise that he was the future superstar of Bollywood. SRK was on a roll with a bagful of hits in his kitty and had successfully transitioned from dark portrayals in *Baazigar* and *Darr* to a romantic lead star.

Like the Santro, he was the latest craze and the bonding with the car was just perfect. There is absolutely no question that the leadership team at Hyundai deserves kudos for its vision and drive to rope in SRK for an association that has lasted over two decades...perhaps making it the longest ever for a car brand worldwide. "Normally, film actors will be remembered for the films they have done. I think a part of my 'legacy' would most certainly include my relationship with Hyundai," SRK had told this writer in a 2018 interview.

Both had started off as relative newcomers in their own fields of specialisation: one was this relatively unknown Korean brand while the other had moved from Delhi to Mumbai. "We were just fledglings trying to find a ground and make it in a new market/city/country to tell people that we were there to serve them," SRK said.

According to him, there was hard work and goodness coming from Hyundai in terms of technology and understanding the market. The Santro was a car which was about a family using it together. "I think to come from a different country and understand the culture here with the Santro was memorable," he said.

What gave him the ultimate high was when people turned around to tell him 'We are driving your car'. "For an actor when somebody says I am like *Chak De* or I am like *Baazigar*, it is special. It is as big a high as that when someone tells me that they are driving my car," he said.

In his view, when two people are working together, the most important thing is to trust each other on the job that they do. "I can never ever even imagine doing the job that Hyundai is (doing) and think they can also perhaps not delve into the depths of the job that I do," explained King Khan during the interview.

HMIL plays a key role as HMC's global export hub. It exports to nearly 90 countries across Africa, Middle East, Latin America, Australia and APAC.

Right: On July 27, Hyundai opened its new corporate HQ in Gurugram. Other than R&D operations, all key functions including sales, marketing, aftersales, finance and HR have been shifted to this new location.

What was also interesting was the "honest truth" that success formulates its own relationship whether it is a filmmaker and an actor, an actress and an actor or a brand and an ambassador. "Success is a great deepener of relationships and so is failure actually. I think both of them work together," said SRK.

Yet, there was a certain sense of pride "knowing that a company started with you and I think it is similar for them that an actor started with them and we call that pride". He also made it clear that the ambassador is just a wrap up as the product eventually has to be good. "It would be stupid of me to think that Hyundai does well just because of me. I do my job as best as I can and try to keep up with Hyundai in my own line of work," said SRK.

He reiterated that it is the product that matters by the end of the day. "I am a big believer that the product works because of the product, and not because you are the ambassador or face that represents it. If the product is good, it doesn't make a difference how you market it or who you market it to. People will come for it because the quality is good," he added.

The challenge, however, was to keep reinventing oneself. "Success is nothing if it is not prolific and if it is not going to happen with the change you make. It is dependent on the market, audience and the buyer," said SRK.

There is absolutely no question that Hyundai's own outlook is in sync with its famous brand ambassador. Even while Santro paved the way for its India story, it has constantly come up with a slew of exciting products that fit in with what the market needs. Sure, there have been setbacks like the Getz and new Santro but by and large, the reading of the customer's mind and eventual response has been pretty spot-on.

Will this decade see leadership questions change between Hyundai and Suzuki? For now, it seems a farfetched thought given the difference in volumes but life does throw up unexpected surprises. With Kia in tow, there is no telling which way the seesaw will tilt with the Koreans determined to pull out all the stops in a Japanese-dominated market.

Hyundai Motor India currently has an 18.35 percent PV market share and 23 percent UV market share. Kia India has 5.8 percent in PVs and 13 percent in UVs. Club the two and what you get is a powerhourse. ■

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Toyota and ACMA to impart best practices to component makers

ACMA member companies to benefit from the 'Toyota Way' including people development, lean manufacturing, EV tech, industrial safety, environmental, quality and supply chain management. **Mayank Dhingra** reports on the focus areas of the training initiatives and its potential impact.

In line with its unwavering commitment to contribute to human development, Toyota Kirloskar Motor (TKM) has signed a memorandum of understanding (MoU) with the Automotive Component Manufacturers Association of India (ACMA). The company will, through its training arm, Toyota Learning and Development India (TLDI), impart best practices like people management and lean management principles with the 800-plus members of ACMA.

TKM says that the initiative aligns with its continuous efforts to provide life-long learning to all stakeholders to help them achieve their full potential. As per the MoU, the company will impart up to 131 training programs, focusing on automobile and electrified vehicle technologies, industrial safety and management systems. Moreover, trades such as automobile welding, car painting, mechatronics and robotics, along with quality and supply chain management will be some of the programs to be undertaken..

ACMA's Vinnie Mehta: "This initiative will not only benefit ACMA member companies, but will also help India become a world-class automotive manufacturing hub through development of efficient, agile and best-in-class practices."

The training programs will be conducted either at the TKM plant in Bidadi, Karnataka or at the premises of the participating ACMA member companies. TKM will deploy trainers who are certified by the Toyota Motor Corporation, Japan as well as Toyota's Asia-Pacific Global Production Centre (AP-GPC), Thailand.

The 'Toyota Way' focuses on becoming better by sharpening the skills of every person and continues the quest for improvement by encouraging both incremental and breakthrough innovative thinking.

According to G Shankara, Vice-President, Human Resources and Services, TKM, " The 'Toyota Way' focuses on the quest for improvement by encouraging both incremental and breakthrough innovative thinking. Today, every organisation is looking for a silver lining as they adapt to the new normal and make work more productive and flexible."

"The Toyota Production System, which is a globally-renowned approach for the automotive industry helps in building lean and agile systems. We are happy to share Toyota's

PARTNERS IN PROGRESS: LEARNING THE TOYOTA WAY

- Skill training to include lean manufacturing, industrial safety, supply chain management, mechatronics, robotics and EV technologies.
- Training programs to be conducted at Toyota's plant in Karnataka or at the premises of participating component manufacturers.
- Certified trainers from Toyota Japan and the Asia-Pacific Global Production Centre in Thailand will train ACMA members.
- Total 131 training modules with Toyota Production System and the Toyota Way will focus on building lean, flexible and agile systems.

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INTERVIEW: G SHANKARA, VICE-PRESIDENT, HR AND SERVICES, TOYOTA KIRLOSKAR MOTOR

What are the broad objectives of this new skilling association with ACMA?
The automobile industry is undergoing a major transformation where OEMs are shifting lanes from being traditional manufacturers of vehicles to becoming mobility solutions providers. This new outlook has led to more Connected, Autonomous, Shared and Electric (CASE) – enabled vehicles foraying into the market.

To cater to the evolving needs of customers and the industry, India needs a more robust workforce that matches the pace for changing skills and occupational requirements. Though India has the advantage of a younger workforce, there is a gap in terms of employability and skills required by industries.

In line with its mission of 'Producing Happiness for All', Toyota believes in sharing its know-how and developing youth into world-class technicians. Through this, Toyota aims to contribute to society by making the Indian industry competitive. Since its inception in 1999 in India, TKM has been at the forefront in imparting the best training practices to enhance the skill levels of its key stakeholders. People are the most important asset at Toyota and thus developing them forms the fulcrum of our company's philosophy.

Over the years, the company has intensely focused on human resource development through skilling and attitude change, which has resulted in continuous improvement contributing to business excellence. Numerous skilling programs through its training arm Toyota Learning and Development India (TLDI) have created a world-class talent pool.

Similarly, the recent collaboration will enable the company to share its best practices like people development, problem-solving and lean manufacturing principles with members of ACMA, thereby contributing to the Skill India mission and meeting the ever-evolving skilling landscape.

When will the initial training sessions commence and have the suppliers been already identified?
Training sessions have already commenced from July 2021 – the first program was a webinar on 'Automation with a Human Touch', also known as Jidoka. Additionally, ACMA and TKM are also planning to take up Gemba-based projects based on the requirement of its members.

'Training sessions have begun last month with the first program being a webinar on 'Automation with a Human Touch', also known as Jidoka.'

Furthermore, classroom-based programs, shopfloor experience-based programs, and hybrid programs too will be undertaken, keeping in mind the Covid guidelines and expectations of the participants.

Will the focus lie on imparting training only to the ACMA members who are TKM vendors as well or is it open to all members?
Since its inception, TKM has been constantly engaging in skilling and training initiatives for key stakeholders and value-chain partners including its suppliers. With this collaboration, TKM has further extended its skill development program to the industry members of ACMA.

In addition, the company is offering its training programs to other members including domestic and overseas participants. Besides, TKM is also conducting faculty development programs for principals and faculty of ITIs, governments of Karnataka, Kerala, and Odisha and leadership development programs for Toyota distributors in 10 countries of the Middle East and Central Asia.

Which are the key areas that would be accorded prime importance in this skilling program?
TKM's collaboration with ACMA will facilitate skill upgradation for component manufacturers and will go a long way in creating a sustainable, robust, and future-ready automotive supply chain in the country. Broadly, key domains of skilling are classified into manufacturing excellence and leadership development.

To ensure manufacturing excellence at organisations, training programs will be imparted on lean principles, safety, built-in quality, environment management system, new technologies like electrification, stamping, welding, painting, assembly and mechatronics among others. Further, leadership development programs at different levels are being organised, like building an organisational culture, plan-do-check-act (PDCA), building consensus through A-3, problem-solving techniques, and building a customer-first philosophy.

know-how. We are hopeful that our association with ACMA in facilitating skill upgradation for the component manufacturers will go a long way in creating a sustainable, robust and future-ready automotive supply chain in the country," he added.

According to Vinnie Mehta, director general, ACMA, "The MoU between ACMA and TKM for people's development is a step in the right direction to prepare our human resources for the future. It will not only benefit ACMA member companies, but will also help India become a world-class automotive manufacturing hub through development of efficient, agile and best in class practices."

Mehta further added, "The pandemic has led to the realignment of shopfloors to ensure sustainable manufacturing with safety. Auto components manufacturers who will undergo skilling under this joint TKM-ACMA initiative, will be endowed with skills and knowledge for creating a manufacturing ecosystem that can overcome challenges of disruptions and ensure business continuity." ■

30 SECONDS ON... THE TOYOTA WAY

The Toyota Way has 14 principles that rest on two pillars, which is about engaging employees by promoting active participation in improving their every day job.

1. Base management decisions on long-term philosophy, even at the expense of short-term financial goals.
2. Create continuous process flow to bring problems to the surface. (Just In Time).
3. Use pull systems to avoid 'overproduction'.
4. Level out the workload.
5. Build a culture of 'stopping to fix problems' to get quality right.
6. Standardised tasks are the foundation for continuous improvement and employee empowerment.
7. Use visual controls so no problems are hidden (opportunities are exposed to all).
8. Use reliable and thoroughly tested tech that serves your people and processes.
9. Grow leaders who thoroughly understand the work, live the philosophy and teach it to others.
10. Develop exceptional people and teams who follow company's philosophy.
11. Respect extended network of partners and suppliers by helping them improve.
12. Go and see for yourself and thoroughly understand the situation.
13. Make decisions slowly by consensus.
14. Become a learning organisation through relentless reflection and continuous improvement.

Daimler upbeat as truck sales rebound quickly

The Chennai-based manufacturer of the BharatBenz brand of commercial vehicles is confident that medium and heavy trucks have weathered the impact of the second Covid wave. **Managing Director and CEO Satyakam Arya** tells **Murali Gopalan** that the aggressive vaccination strategy will be a huge help to take on the third wave.

Satyakam Arya recollects the time when the second Covid-19 wave still had not quite made its devastating impact in India. During an interview in Mumbai earlier this year, the MD and CEO of Daimler India Commercial Vehicles (DICV) had told this writer that things were actually looking up for the commercial vehicle industry. "When we met in February, nobody was talking of the second wave . . . during that quarter we were seeing a strong and sharp recovery of the economy and CV market," he says.

Since then, of course, things have been disastrous with the country feeling the Covid heat as never before. Through April and May, hospitals were packed with patients desperate for oxygen while the sight of burning corpses in crematoria is still fresh in everyone's minds.

Yet, Arya reiterates that the CV space, and more specifically medium and heavy trucks (10-55 tonnes), is back on track as it was some months after the first wave. "We expect the same is happening already as the country is recovering from the second wave," he says.

DICV produces and sells 10- to 55-tonne trucks as well as BharatBenz buses across India and expects sales to cross 250,000 units in 2022.

One would be quite right in being sceptical with his outlook but the numbers support Arya's assessment. Despite massive headwinds like skyrocketing diesel prices, loss of savings and the

BHARATBENZ BULLISH ON M&HCV SALES THIS YEAR & BEYOND

- This calendar year could see sales of medium and heavy trucks average at 160,000 units.
- This could even increase to 190,000 units if the third Covid wave is not severe.
- Going forward, 2022 could see M&HCV sales cross the 250,000-unit mark.
- Daimler India CV has a strong order book both in India and for export markets.
- The company is going flat out in its vaccination strategy.
- It is also getting ready with a new blueprint for mobility options in India.

DICV's MD and CEO Satyakam Arya says demand for medium and heavy trucks (10-55 tonnes), is back on track. Left: One of 2020's major deliveries for the company was this order for 120 BharatBenz trucks from CJ Darcl Logistics.

rural economy battered, it is quite apparent that the revival is "already happening as we speak".

In 2020, medium and heavy truck volumes were 106,000 units with volumes in the first half (January-June) at barely 42,000 units. This was the time of the first wave when a nationwide lockdown was imposed in end-March and production across all auto plants came to a grinding halt.

Green shoots of recovery in M&HCVs seen

"This time in 2021, the first six months' volumes are already 95,000 units," says Arya which translates into a jump of nearly 130 percent. This quarter also saw April and May hit by the second wave like last year when the country went into a complete closure except that industry was allowed greater autonomy.

"We are seeing a big jump in sales and our projection is that this trend will continue. As a result, the market this year could finish at 160,000 to 180,000 trucks as against 106,000 units last year," he adds. Doubtless, there are challenges/uncertainties ahead and he readily concedes that one must factor in the effect of the third wave.

"If it is severe like the second one, we will finish with 160,000 units and if it is not and the vaccination drive helps us insulate ourselves, it could be anywhere between 180,000 and 190,000 units," says Arya. The bottom line is that even the worst-case scenario will be "substantially better" than last year.

And if this momentum continues, there is no reason to believe that medium and heavy truck sales should not exceed 250,000 units in 2022. "We have done extremely well too at DICV and are in line with the market buoyancy," he adds. There is also a strong order book for exports where numbers are expected to be more than double compared to last year.

As Arya explains, the peak of the first wave of the pandemic occurred in mid-September wave last year. The recovery kicked off in December after a lag of two-and-a-half months. "Right now, we are seeing a much quicker return to normalcy as far as the market is concerned," he says.

Mining activity "continues to be strong" while demand from the booming e-commerce industry has also grown rapidly along with the need for last-mile delivery across India.

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BHARATBENZ GETS FUTURE-READY WITH MOBILITY OPTIONS

SATYAKAM ARYA AND his team are preparing the base to take BharatBenz to the next level when it comes to mobility solutions. This is happening at a time when Daimler AG has already announced that it is splitting its truck and car businesses for greater focus and flexibility.

"We are definitely getting future-ready. This will happen irrespective of Covid which has, perhaps, accelerated some of these efforts. For example, digitalisation has got a fillip with a lot of initiatives," says Arya. From his point of view, Daimler is the largest truck and bus maker in the world and "we strongly believe we need to shape the future of mobility" for people and goods.

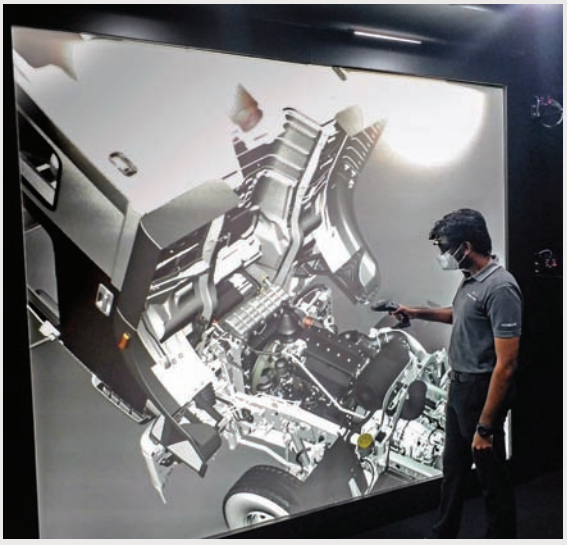
For instance, the virtual reality centre in Chennai is closely linked to digitalisation and the transformation underway. It has been installed "not just for us" but the Daimler business in Asia which means other group companies can use this facility.

The entire customer interface is also being digitalised gradually and the next step of transformation will take this story to the next level. According to Arya, the global capability centre established last year in the middle of Covid is "expanding rapidly" and this momentum will continue as more work happens out of India. "We do it for India and the world from India which helps us achieve scale," he adds.

In his view, future mobility will be about mobility solutions and "complete peace-of-mind" to the customer. The global capability centre will also be expanded in a big way and talks are on with different parts of Daimler on what competencies and work can be done in countries like India.

Whether it is the tie-up with Volvo for fuel cells or Traton/Volvo in electric chargers, it has implications for India since there is access to that technology which is being developed. For the CV space, continues Arya, only electric is not the option and when it comes to long haul, "we will need hydrogen also".

The technology is being developed overseas and the Indian arm will have full access to it – "We are watching the hydrogen economy in India". Clearly, the employees at the global capability centre can be part of that development and this is only natural given that work like the e-Canter chassis was developed at DICV. "There are many such projects. It is a global organisation by the end of the day," points out Arya.



Daimler India set a new benchmark in customer service operations and R&D in the CV industry with its Virtual Reality Centre at its Chennai plant. The VR Centre was inaugurated in June 2021.

The structural change happening globally in splitting trucks and cars will have a lot of benefits in terms of agility, flexibility and greater focus. In CVs, the general talk is hydrogen and electric and this will "definitely see" its impact play out in India "and help us design future mobility".

Arya is also keen to see the country contribute more to the success of Daimler globally, especially with the kind of potential it has. "Just look at the population of any country versus the number of CVs sold and India is clearly an outlier . . . sooner or later as the economy gets even stronger, things will change," he says.

Right now, the building blocks are being put in place in terms of investments in infrastructure which will help the industry. The middle class is also growing in affluence and when per capita income grows, the scope for seeing more trucks will only increase.

Arya is also of the view that the multimodal logistics parks which are coming will also play a big role in CVs . . . about 35 have been announced and one has been set up. "Once the momentum is in place, you will see how the industry changes structurally," he says. Express freight corridors will have high speeds happening and the average driving speed of heavy trucks will increase.

Trucks will finish their journey outside the city in these parks and this hub-and-spoke concept will bring huge benefits. The logistics costs will come down by four percent and manufacturing will become more competitive across sectors.

One of the key reasons is that things were handled differently this time around. The auto industry was allowed to function, business could go on, freight movement was happening and "we did not go down to zero levels in order to restart".

People-first mantra

Another difference from last time, continues Arya, is that "we are already talking of the third wave" where there was no talk of the second wave then. "The reality has sunk in that there could be potentially some trouble ahead with the third wave now inevitable. It depends on all of us and how quickly we learnt our lessons from the first and second wave," he says.

From DICV's point of view, it is gearing up to take on the onslaught even while there is still no clarity how severe the third wave will be and when it will actually spread its tentacles across the landscape. "We are very well prepared in terms of taking lessons from the first two waves and know that the most important thing is to vaccinate," says Arya.

At DICV, this ended up being top priority in the middle of the second wave and the maker of the BharatBenz brand of trucks and buses stuck to this goal with a vengeance. Today, 100 percent of its employees are vaccinated and the vaccination centre within the plant has catered to employees and their families as well as employees of the companies around the industrial zone.

Though supply chains for DICV are coming on track faster than after the first wave of Covid-19, Daimler India is bracing itself for other potential challenges ahead.

"We also will vaccinate the local community of Oragadam (near Chennai) where our plant is located as well as truck drivers who come there. We have vaccinated close to 1,000 employees of other companies and some of them are suppliers to DICV," adds Arya.

While vaccinations were clearly top priority, the company was as determined to focus on its supply chain since it was no longer going to be an issue of demand but of supply. "The supply chains have been disrupted . . . they were hit by the first wave and again by the second wave," he explains.

While they are coming back on track "much faster than last time", there are still some challenges that have to be met and "beyond this we need to prepare" for the third wave. As Arya puts it, "Knowing we are in a period of uncertainty in demand versus supply, we all

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DICV has begun a free vaccination drive for truck drivers of all brands at its on-site vaccination centre in the Oragadam Plant, Chennai. It has already inoculated over 3,000 supplier staff and third party contractors on-site, in addition to over 3,000 employees and dependents.

need to be more agile and flexible in our businesses."

This is a key aspect at DICV where its business is now being steered only by retail and not wholesale which means there is no indiscriminate pushing of vehicles to dealers. Additionally, the company is doing a lot of work on digitalisation across the value chain to cope with the crisis.

"We are keeping a minimal level of inventory at our dealers and will simply replenish when the retail is done . . . this will be the way going forward and we will not be tempted to push stocks," reiterates Arya.

Getting back to the recovery, it is still intriguing how things have bounced back so quickly especially when the impact of the second wave has been far more devastating. Clearly, one of the triggers has been the "tremendous investment" happening in infrastructure where the Centre has taken the lead.

Mining activity "continues to be strong" while e-commerce has also grown rapidly along with the need for last-mile delivery. Intra-city travel has increased and medium and light duty trucks are in strong demand . . . in a way these segments have "remained resilient" to the pandemic.

Rural markets felt the heat for sure compared to last year but demand for trucks continues clearly indicating that the overall recovery has been quick across the country. "Rural will remain resilient to Covid and demand will continue which makes me believe that the road ahead is good in terms of growth," reaffirms Arya.

Oil's not well though

Yet, he is quick to point out that it is not a bed of roses either since there are other realities to be reckoned with. One of these is the commodity price spiral, especially steel, which is worrying and could act as a dampener.

Diesel prices do not help either at this point since they are linked to inflation and this can create havoc if unchecked. Likewise, small and medium fleet operators continue to face challenges though the good news is that "this recovery is real and happening".

This is also borne out by the fact that the number of e-way bills generated is a "very strong indicator of freight". The average number from September 2020 to March 2021 (after the first wave and before the second) was about 60-64 million per month. In the same period pre-Covid (September 2019-March 2020) it was 52 million and the spurt happened following the Budget. For the CV industry, this is sufficient reason to believe that an encore will happen this time too going forward.

In this optimistic backdrop, diesel prices are worrying since they can cause "structural changes in industry" where small and medium operators cannot survive. Fleet utilisation will consequently be badly hit as was evident after the first wave when it was just 35 percent. In an arena where 97 percent of trucks are financed, paying EMIs during such a downturn can eventually lead to business closure.

The good news this time around is that fleet utilisation levels are up to nearly 65 percent and this trend is expected to continue. "We believe that the next 12 to 18 months will be a period of strong growth in consumption thanks to more personal savings parked in banks," says Arya.

This is already happening in advanced markets like the US where people begin spending in a big way when they start to feel safe. Back home in India, this is more than evident in the crowding of hill stations even though it has created concerns among the medical fraternity about Covid cases going through the roof all over again.

As Arya says, this kind of surge in optimism is typical across the world especially when people have had less chance to spend when they have been locked indoors for months. Frustration levels begin building up and everyone just wants a break from the monotony. "When they start to feel safe, they will spend more and more," he adds. ■

● **Interview with Rajaram Krishnamurthy, Vice-President (Marketing & Sales & Customer Services), DICV, p38**

Despite global market disruptions, Daimler Buses India is successfully producing Fuso buses for export markets.

Rajaram Krishnamurthy: 'Daimler India CV's new VR centre aims to provide the best-in-class truck-o-nomics.'

New Virtual Reality Centre at **Daimler India Commercial Vehicles'** plant at Oragadam, Tamil Nadu, will help transform both R&D and vehicle servicing procedures, enable remote collaboration with Daimler Truck teams and significantly reduce time and costs required for CV testing and development. **Rajaram Krishnamurthy, VP (Marketing & Sales & Customer Services)** speaks to **Sricharan R**.

Daimler India Commercial Vehicles (DICV) recently inaugurated a Virtual Reality Centre (VRC) at its sprawling manufacturing plant in Oragadam in Chennai. This high-on-digitisation facility allows engineers to virtually perform serviceability and accessibility checks. This also holds the potential to make commercial vehicle servicing and R&D considerably faster, more comprehensive, and more cost-effective. What's more, it helps in reducing the need for custom-built tools, prototype vehicles, and service bays, significantly reducing time and costs required for CV testing and development.

Collaborating remotely without the need for a physical model and workspace is another major advantage. DICV is able to share the digital models with Daimler Truck colleagues around the world and, what's more, has access to over a century of technological expertise.

The Virtual Reality Centre essentially aims to reduce time to market as well as product development costs. What kind of developmental inputs / gains are you expecting from this facility?

Before a product goes to market, each new model must be evaluated based on how easy it is to service and maintain. The standard process is to develop a prototype version of the vehicle and then test how service technicians can access its parts and perform repairs. This process is repeated multiple times until the vehicle is fit to be mass produced. The VRC will allow us to replace many of those prototype-building iterations with virtual modelling and testing. It will speed up the development process and free up resources for further enhancing our portfolio.

Another benefit of using VR is the opportunities it offers for remote collaboration. Without the need for a physical model and workspace, DICV is able to share the digital models with Daimler Truck colleagues around the world. The teams can access the same model simultaneously to exchange opinions and advice in real time, even if they are oceans away from each other. In today's world of travel restrictions and social distancing guidelines, the benefits this offers are incalculable.

With the use of 3D goggles and navigational joysticks, the new VR Centre helps to virtually undertake serviceability and accessibility checks.

You have said that the facility enables operators to check serviceability and accessibility by using digital models. Can you explain how?

The VRC allows operators to virtually perform serviceability and accessibility checks using a digital model accessed via 3D goggles and navigational joysticks. Apart from serviceability check, this platform can also be horizontally applied for special tool prototype development, repair method study, labour hour evaluation and animated content development for repair methods.

What are the specific highlights of the 3D Barco projector, power wall, advanced real-time tracking cameras, 3D head movement tracker goggles, and VR software which can seamlessly interact with the vehicle design via navigational joysticks?

The 3D Barco projector

is a one-of-a-kind, rear-mounted Ultra Short Throw (UST) projection system custom-made for Daimler India Commercial Vehicles that allows the engineers to move freely in front of the power wall. ART (Advanced Real-time Tracking) cameras and 3D head movement trackers allow the vehicle model on the screen to fit the scale between the users and screen accordingly. VR software integrates the 3D model data, ART camera signals and user input from joysticks and delivers seamless engineering analysis.

Is this a step towards making a vehicle without creating a prototype? And, is it possible to bring out a vehicle without having a prototype?
The launch of the VR Centre sets a benchmark for the Indian CV industry as it revolutionises the customer service operations and R&D. It is an important step forward towards the digitisation of the entire vehicle design planning process, and a milestone in our long-term goal of complete business digitisation. At this stage, the technology is developed enough to reduce the number of iterations in the prototype development process and reduce overall cost of vehicle development.

How much cost and time savings are possible with this VR facility?
There is definitely a potential cost and time saving while performing service engineering with digital models in comparison to the physical vehicle. We are currently evaluating this with case studies.

What kind of training and skill development have the VRC operators been given?
VRC team members have undergone training to maintain and run the hardware (projector, ART cameras, workstation, 3D goggles and joystick). In-depth and customised hands-on software training has also been provided to operate VRC to the fullest potential. As a part of our digital transformation, we concentrate on upskilling and creating a workforce that is more digital-minded.

We focus on developing a digital culture by rolling out digital training across the functions within DICV. This is done to ensure employees are not completely dependent on IT, but are armoured with basic skills and understanding of the digital technologies being introduced, and ready to embark on and reap the most benefits out of our digital transformation journey.

'As part of our digital transformation, we concentrate on upskilling and creating a workforce that is more digital-minded.'

There is a plan to use VR to enhance remote collaboration and share digital models with Daimler Truck teams worldwide. How do you plan to leverage this to achieve gains in India?
The VR Centre is an example of DICV benefitting from the global resources held by its parent company, Daimler Truck AG. As mentioned earlier, we can share the digital models that we develop for the India market with Daimler Truck colleagues around the world. The teams can access the same model simultaneously to exchange opinions and advice in real time.

We have access to over a hundred years of technological expertise in commercial vehicle manufacturing and collaborate with experts working in more than 35 locations around the world.

This global heritage, combined with our proud Indian roots, gives us an unbeatable advantage to provide the best-in-class truck-o-nomics for the India market.

What is the next stage of this VR centre. What will it evolve into?
This facility has the potential to make commercial vehicle servicing and R&D considerably faster, more comprehensive, and more cost-effective. We are excited to pass these benefits on to our customers in the form of affordable, high-tech, high quality products and services. This helps Daimler India Commercial Vehicles become a Centre of Excellence in providing state-of-the-art service engineering and product development services. ■

The new virtual reality centre helps DICV share the digital models that it develops for India and collaborate with Daimler Truck colleagues around the globe in real time to assess the same models.

Vipin Sondhi: 'QoQ will be better, but we have to maintain safety as we go through what could be a third wave.'

As the country and the economy gradually recover from the body blow dealt by Covid-19, commercial vehicle players are draw up plans for sustainable growth. **Vipin Sondhi, MD and CEO, Ashok Leyland**, talks to **Sumantra Bibhuti Barooah** on the outlook for the CV market, plans for the reorganised EV business, hydrogen tech and progress towards entering the global 'Top 10' club of CV makers.

Bada Dost.

AVTR range of modular trucks.

Is Ashok Leyland's financial performance in Q4 a reflection of sequential improvement in the industry? How was Q1?

Well, the quarter one of this year has had states in lockdown. If you were to reflect back on Q4, there was a significant recovery. We think that quarter on quarter will be better, we will get stronger. But we have to ensure that we maintain safety as we go through, what could be a third wave.

Apart from the threat of the third wave, how is the industry looking? Could you throw some more light, in terms of possible performance in the subsequent quarters?

We've got to watch that very carefully, but when I look at each segment of the vehicle industry, each has its own demand and growth drivers. So the light commercial vehicles are driven by a lot of e-commerce, rural demand. We think e-commerce will continue. Rural demand maybe a little muted. Light commercial vehicles should continue on their return to recovery.

With new platforms for the LCV and M&HCV segments, Ashok Leyland is advancing towards realising its vision to be among the 10 largest commercial vehicle makers globally.

Then let me move to tippers. Government spending is very important for infrastructure. Looking at the roads and highways, it seems that they are rising to higher numbers and, therefore, we think that tipper demand will continue to come back as well.

Then, we come to the heavy commercial vehicles. If you remember, the heavy commercial vehicles were the worst affected because of the axle load norms which changed two-and-a-half years ago. To that extent, capacity utilisation has to

be completed but I think with the forecast about the economy growing at about 9.5 percent, these are core economy aspects and goes with GDP, these heavy trucks. We think that maybe, they will be slower in the beginning but they will start coming back as well and the confidence comes because in Q4, we had started seeing the demand for long haul to come back as well. We see no reason why that shouldn't come back. But the phases in which they will come back will depend on which segment each one of these supports.

With the signs of improvement in the market and also the projected economic growth, though it was revised downward from 10.5, 9.5 is still good. Is the investment cycle back?

We will ensure that we keep focused on the future whether it's technology or people, but you have to remember that we launched two new platforms last year that, the modular business platform which we call the AVTR and the Phoenix platform from which the 'Bada Dost' came from. Now we will be launching more and more variants out of this platform plus there will be maintenance capex. We have got plants and we have to ensure that they are constantly upgraded, constantly debottlenecked. It's a lot of that but the major capex cycle came off a year and a half ago. Now we have got to ensure that we sustain the momentum and use the capex mix judiciously. We will not postpone anything.

'Switch would be focused to design its own plans which will be a global interplay, in which India will play a huge part on sourcing, operations, engineering capability, but the focus will be electric vehicles.'

Between the two key interventions in terms of platforms made last year, the AVTR for M&HCVs and Phoenix for LCVs, will the LCV space see a lot more action because that's where Ashok Leyland has relatively less presence? How will the LCV play shape up in the next couple of years?

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It's been shaping up well very well over the last 8-9 years. With the launch of the 'Bada Dost' from the Phoenix platform, which won the CV of the Year award in 6 months after launch, we grew market share by 2 percentage points. The Bada Dost had only participated in 5 or 6 months out of that. We see further strengthening of our LCV play within the country and outside as well.

But that's not taking anything away from the AVTR. The AVTR with the modular business platform is technologically several steps ahead of what was prevailing in India before April 1, 2020. Therefore, from the point of view, it is a customisable product and we think the total cost of ownership is the best in the industry. So as the customer starts using it, they will see more value and we're getting a very positive feedback.

With the strategy of clubbing all your EV tech assets under Switch Mobility, what is the plan going ahead and how much of advancement have you already made since the reorganisation of your electric vertical?
The whole idea is to channelise all our strengths in terms of people, capability, and sourcing into one singular vehicle, which is a singular company whose whole bread and butter is electric vehicles because it's new. So the division of Ashok Leyland EVs was there for some time and we have EV buses plying in Ahmedabad and now in Patna. We also had Optare in the UK, which was diesel and electric. We have carved it now and made it electric, and both of these have now come into Switch Mobility. So as we have buses, those will continue till Switch designs and develops its own plans. Switch would be focused on designing its own plans which will be a global interplay, in which India will play a huge part on sourcing, operations, engineering capability, but the focus will be EVs — electric buses and LCVs. Till such time we will continue to supply, bid and participate in the Indian market as we were anyway. And improvements will keep coming.

Ashok Leyland's EV plans get renewed with the formation of Switch Mobility, which is currently working on global plans.

When there's a market intervention by Switch Mobility in India in the commercial vehicle space, will it be under the Optare/ Switch brand or will it be under the Ashok Leyland brand? And when can we expect an additional EV product from Ashok Leyland, for the first time under Switch Mobility?
The brand will be Switch, and we will get back to you with plans as and when it's done, but the brand will be Switch. It's a very nice sounding electric kind of name. At least we thought so.

Talking about electric mobility, Reliance Industries has unveiled some 'new energy' mega plans involving giga factories and fuel cell technology. Does that come as good news for the EV industry?
I think more interesting, even for the hydrogen industry. So when you look at the Union Budget announced in February, it talked of a national hydrogen mission. So the government of India is very serious. And then when you have one of the largest corporate sectors saying that they will invest big time into hydrogen and green energy, there are opportunities.

So where do commercial vehicles come into this space? It is expected that the heavy commercial vehicles which ply across our vast country could well be in the future powered by hydrogen fuel cells. And therefore it is important that we are sensitive to that, and we are sensitive to that.

'Now we have got to ensure that we sustain the momentum and use the capex mix judiciously. We will not postpone anything.'

So, does that mean there are projects going on in Ashok Leyland for developing commercial vehicles which can run on hydrogen?
It's early stages as yet. As I said, are we sensitive to it (hydrogen as a fuel)? The answer is yes. And I will leave it there for the moment.

Ashok Leyland has a vision to be among the top 10 CV OEMs globally. What's the status of the progress towards realising that vision? Has the pandemic led to any shifting of the goalpost?
When you have a vision, you have a vision and you stay true to that vision. And along the journey will come several ups and several downs. Now when you look at it globally, then you have got to see how some of the other countries fared. China, for example, came back earlier than the rest of the world. So there was an advantage, let's say, that the Chinese companies had. But going forward, this is a journey over several years, and who knows what the future will be vis-a-vis how things pan out.

For the first time in our lives, my life, health was the reason for a slowdown and then a lockdown. Otherwise it was always a financial crisis or maybe a policy crisis. So when we look forward, is the journey impacted? And if you look at one year, the answer would be yes, but I don't think one should look at a one-year time span when we are looking at a vision. The question is, what are the building blocks that are being put together for the vision itself? For example, we announced a formation of a separate committee at the board, for environment social governance. That's sustainability. That will go through every aspect of the business. It's not about planting trees and doing CSR. It is sustainable products and sustainable processes. ■

SONDHI ON ASHOK LEYLAND'S STRIDES IN FUTURE

- Given the government spending on infrastructure and the rising number of highways, expect tipper demand to continue growing.
- Heavy trucks in the country could, in the future, be powered by hydrogen fuel cell technology.
- Switch Mobility will be a global interplay with electric vehicles.
- Will invest to launch more variants based on the AVTR and Phoenix platforms, along with maintenance capex.
- LCVs are driven by e-commerce, rural demand; e-commerce will continue but rural demand may be muted for now.

Tarun Mehta: 'By 2025, around 40 percent of India's scooter market can be electric.'

Co-founder of Ather Energy is bullish on conventional scooter buyers speedily shifting to electric mobility over the next five years in the Indian market. An interview by **Mayank Dhingra**.

Ather Energy has been expanding aggressively since the beginning of 2021. How does it feel like as a start-up?
It's an amazing feeling as this is what we started out for in the first place. The last six months have been terrific. We were present in two cities (Bangalore and Chennai) back in November 2020, and now we are there in 14 cities. Moreover, there are around 20 more cities in the pipeline for this year. What felt like a prototype journey up until last year, now feels very real as people across the country are using the product and talking about it.

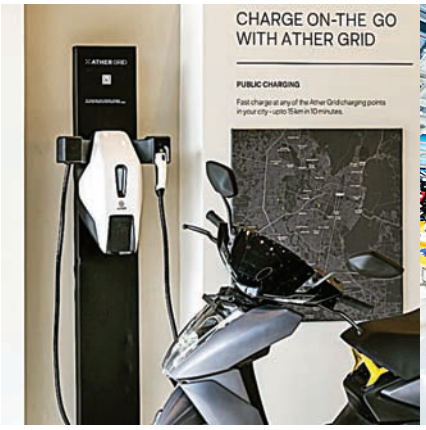
What are the near-term growth challenges that you foresee in the electric vehicle market in India?
The biggest challenge right now is adding more capacity. While there is a ton of demand from all over the country that is pushing us to add more touchpoints and experience centres, the only bottleneck is scaling up production. And within that, it's not just about our own capacity, but scaling up the entire supply chain – the vendors and their partners too.

SRICHARAN R

The smart e-scooter maker is expanding rapidly outside its home market of Bangalore. After Mysore, Mumbai, Pune and Delhi, it rode into Kozhikode on July 24 with its Ather 450X (above) and the 450.

That is going to be our top focus to try and enhance the capacity by up to 40 times over the next couple of years. While the only primary constraints would be capacity limitations and pure EV options available to the consumer, I believe from a demand perspective or from a perspective of the willingness to switch to electric mobility, as much as 40 percent of the Indian scooter market can go fully electric over the next five years, and the government incentives are definitely playing their part.

Do you plan to continue with the strategy to set up Ather Grid chargers before launching products in a new city?
The model will remain the same and the reason we have done that always is that before a customer decides to buy an Ather, as a company, we want to instil a sense of comfort and confidence that Ather is invested into the ecosystem and we are present here for good. So, we put our infrastructure even before the first vehicle gets delivered in a city and going forward, we would stick with the plan even when we go to 100 cities.



A charging network of 'Ather Grid' points, a high-on-automation assembly line at new Hosur plant and flagship experience centres the binding links of Ather's story so far.

What role do you see the government undertaking to facilitate EV charging infrastructure to accelerate electric vehicle adoption?
The government should really focus on driving access to charging points in private parking lots. The big gap today is that most urban customers have a parking lot but their lots don't have a charging point, which basically implies access to a 5Amp or 15Amp socket. This is extremely hard for a private player to solve.

Therefore, the government should create an incentive or a policy that mandates a 15Amp or an industrial socket in parking lots. I believe this one amendment can have a significant impact in the offtake of electric two-wheelers like no other regulation.

What are some of the key highlights in terms of advanced manufacturing solutions deployed at Ather's new Hosur plant in Tamil Nadu?
There's been a fair bit of work that has happened on the battery assembly front, including a lot of automation to bring down assembly costs and time and to improve overall quality. The overall takt times have come down significantly thanks to really high-level of automation. Moreover, data from each station is already being tapped and analysed, which is helping us maintain a strong traceability.

Having said that, we are still in an early phase and the vehicle assembly will itself see dramatic changes as we go forward.

Over the coming years, we are going to see increased levels of automation in the vehicle assembly process, which is going to see an Ather rolling off every 30 seconds. Today, we are rolling off a scooter every four minutes, but the eight-fold improvement is going to be based on a lot of automation.

Does the company plan to create more jobs at the new facility in Tamil Nadu and what is your opinion of the workforce skills specific to EV manufacturing?
EV manufacturing has a lot of high-skill jobs and since there is a heightened level of electronics, it is a very complex domain. Over the next few years, there will be a few thousand jobs that would be coming up at the Ather plant itself.

So, there are more jobs being created, which are relevant for the future and are also more sophisticated than traditional jobs which are mechanical in nature. And, this is not just at Ather. Even at our vendor partners, given the high involvement of electronics, the overall work content is increasingly getting sophisticated.

'An Ather will roll off every 30 seconds in future, compared to 4 minutes today. The 8X improvement is expected to come on the basis of heavy automation in assembly process.'

Given the subsidies on EVs, do you anticipate electric two-wheelers being sold at prices lower than ICE vehicles?
I certainly think so. Although a lot of EVs come with more advanced functionalities, like for instance, in terms of software, navigation and connectivity, but if we do an apples-to-apples comparison, I believe electric two-wheelers will soon enough be priced similarly or even cheaper than the petrol-powered ones. In fact, it is already happening. An Ather 450X is today priced cheaper than an Aprilia 150 or a Vespa in Gujarat, after subsidy.

Also, with a greater number of players coming in, the supply chain starts expanding and the overall prices come down faster. So, just the fact that there are more OEMs, it improves the supply chain significantly. Furthermore, as a general direction, EV cost structures are coming down whereas petrol cost structures are going up.

Do you see the price parity being achieved even without current government incentives or lucrative subsidies on EVs?
I think it will take a while before the EV industry can work independently of subsidies. Given the quantum of subsidy currently in the market, while I do believe some of it could be absorbed going forward, they would have to be phased out in a gradual manner but not altogether at once.

How do you plan to combat the competition in the EV space?
I don't think there is any combating that needs to happen. I believe the market needs more credible players and more options. So, every competition only helps open up and build the market even further. If we have more OEMs launching products, it drives more customer awareness, supplier viability as well as a strengthened infrastructure. All of it is great to have. ■

There is a growing band of Ather consumers in India. In March 2021, Dr Pawan Munjal, Hero MotoCorp's CEO, took delivery of the first Ather 450X in New Delhi.

Ola draws first blood but must walk the talk

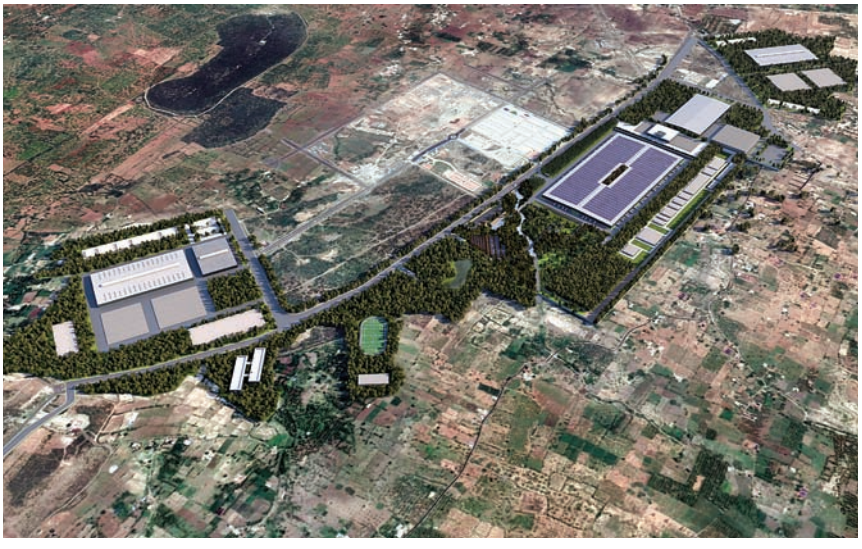
With bookings for its electric scooter exceeding 100,000, Ola is perceived to be the new disruptor in this space. The challenge though is to keep the momentum going with a top-class product and service, says **Murali Gopalan**.

Ola has created the buzz but the real slog starts now. The Ola e-scooter will be available in 10 colour options – both bright and dark – which makes it the one with the widest range available from any OEM.

Electric mobility got a shot in the arm recently thanks to Ola, which has been making the headlines thanks to its record bookings tally of over 100,000 on the first day of online bookings opening. There is still no indication when its electric scooter will be launched but the company has managed to create a buzz around the product already. The key, of course, is to sustain interest among potential customers and ensure that it is not all hype by the end of the day.

After all, there have been cases galore in the auto industry where there has been overwhelming response for a product initially before the entire story has fallen apart like a pack of cards. For instance, go back to 1996-97 when the Fiat Uno got nearly 300,000 bookings but the supply glitches were enough to deter buyers as cancellations began mounting.

In fact, it was the debacle of the Uno that prompted Fiat to switch its business plan from a greenfield facility at Ranjangaon near Pune to taking charge of its partner, Premier Auto's, facility at Kurla near Mumbai. Nothing worked right thereafter and the Uno also died a quiet death.



Ola's 'Future Factory', located on a humungous 500-acre site in Tamil Nadu, equals 378 football fields or 25 Delhi T3 airport terminals. It is billed to be the most advanced two-wheeler plant in the world.

The promise of plenty

Fiat, similarly, promised the moon with the Palio and customers were more than willing to give the company a second chance. The initial response to the hatchback was stupendous but typically the problems began in aftersales and service. The Palio followed the Uno in the list of failures when it deserved better.

Then you have had the case of the Tata Nano which caught the fancy of the world thanks largely to its jaw-dropping price tag of Rs 100,000. Going by this sentiment, the people's car should have been roaring in the market but nothing of the sort happened. Its USP on price turned out to be the millstone around its neck as customers were put off by the cheap car association.

The real slog for Ola Electric starts now

All these examples cited above are not intended to act as a wet blanket for Ola's electric scooter except to drive home the point that the acid test finally lies in real sales numbers that can be sustained over a period of time. Doubtless, the response to the bookings is cause for celebration but the same customers can turn horribly fickle if they find something lacking in the product.

And quite unlike the days of the Uno and Palio, social media today can be a double-edged sword where bad news can spread like wildfire and undo all the hard work. Ola will, of course, be aware of this and the leadership team will be keen to ensure that the scooter lives up to expectations and much more.

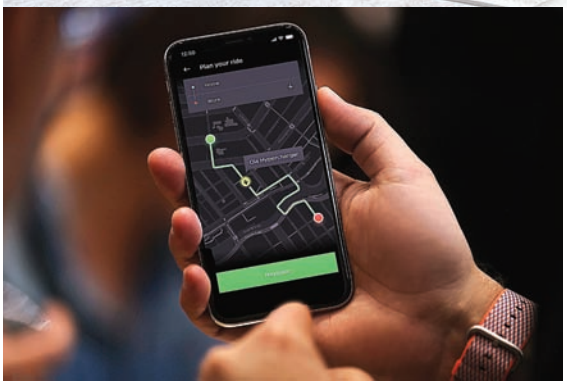
In the process, can it take on traditional players like Bajaj Auto and TVS Motor, which have also launched their own electric scooters and are now keen on pursuing this space aggressively? Their offerings are largely confined to Bengaluru and Pune even while Bajaj is now extending the Chetak's presence to Nagpur with other cities due to follow suit.

TVS, likewise, has earmarked substantial investments for electric which clearly shows that it is confident about its potential going forward at least in two/three-wheelers. This also goes in line with top global mobility experts who believe that these two segments are the best way to kick-start electric mobility in a country like India.

For instance, the pandemic has given a huge fillip to e-commerce where electric pickups are now gaining traction for deliveries from the warehouses to supermarkets. Of course, the internal combustion engine (ICE) option continues to be as relevant since its numbers are much more but operators are now beginning to realise that the operating costs of electric are definitely more competitive than petrol or diesel.

And this is where Ola will potentially have a large buyer base which will want its electric scooter for businesses like Zomato, Swiggy and the like for home deliveries. Employers will be more than pleased to buy scooters en masse for their staff since this will mean a huge saving in costs. After all, petrol is retailing at over Rs 100 a litre in most Indian cities and electric offers the added benefit of cleaner emissions.

According to industry experts, the market size for these applications is "staggering" in cities like Pune, Hyderabad, Mumbai and Bengaluru. The optimistic projections put numbers at over 100,000 in each of these cities since the potential for last-mile connectivity is endless. It is this belief that has also prompted companies like Hero Electric, Ather, Greaves Cotton, Okinawa and many others to throw their hat into the ring.



Ola Electric says it will set up 100,000 charging stations across 400 cities in India. Phase 1 will see 5,000 charging points across 100 cities in the first year.

Ola will potentially have a large buyer base which will want its electric scooter for businesses like Zomato, Swiggy and the like for home deliveries.

Beyond this obvious list of metros, there are others like Indore, Chennai, Chandigarh, Gurugram and Madurai where online buying is par for the course. Today's young generation likes to have their pizzas and burgers delivered piping hot at home. For suppliers, what better than an electric scooter to handle the task?

Slow returns likely

The challenge for Ola is to be able to change the name of the game from niche to mass since most electric scooter players understand the limitations in this space be it affordability, range anxiety and so on. This also puts in context why established companies or those transiting from ICE to electric are still in wait-and-watch mode. After all, this is a business which entails generous investments and the returns will be slow in coming.

Further, electric scooters are still perceived as more expensive products and rightly so since the technology here is of a different order compared to their mechanical siblings. For the likes of Bajaj and TVS, their product positioning is premium since it is not some run-of-the-mill offering but something on top of the value chain. These companies also know that numbers will be little to write home about at this point in time and it is only the affluent category that will buy an electric scooter.

There are other realities to be reckoned with in terms of imparting new skill sets for mechanics who need to get used to the idea of a completely different anatomy compared to the conventional ICE scooter. This is also the reason why the launches are being planned gradually before

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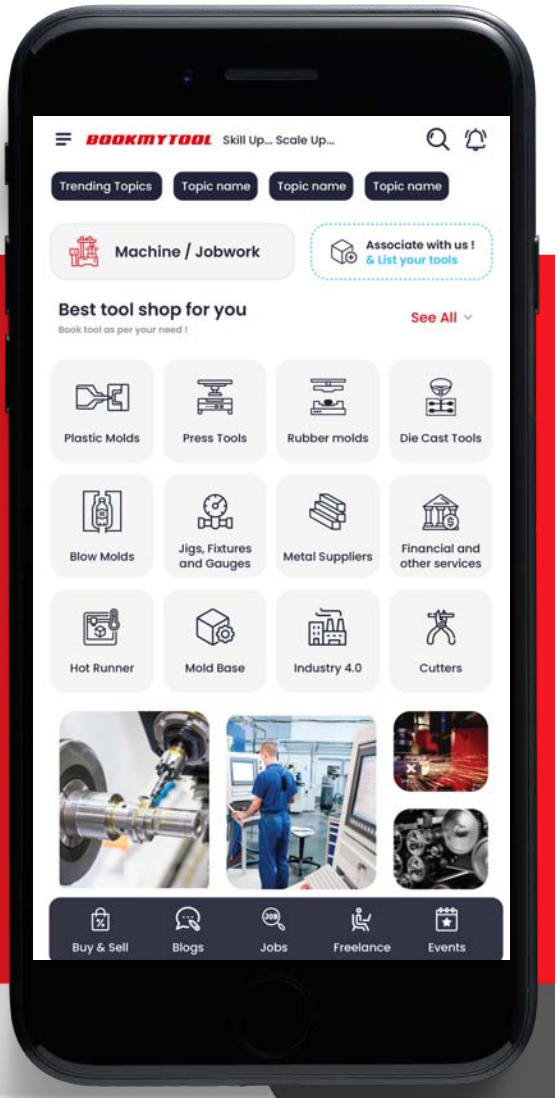

FEATURES

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they get on to a more pan-India presence in the coming months and years.

Will Ola be able to change this reality and make its scooter available to more Indians across every nook and corner of the country? The comfort of easily accessible charging infrastructure will be a huge motivation for customers to queue up for the product and change the dynamics of electric two-wheeler mobility.

In the process, what will this mean for those who have been patient and waiting for the transition to happen from ICE? Will they reduce their prices to take on the Ola juggernaut? Should this be the case, there will be a bloodbath in the market and only those with the financial muscle will be able to survive and carry on the fight.

It was a couple of years ago when the think-tank in NITI Aayog decided that the time had come for two-wheeler makers in India to abandon their ICE portfolio and embrace electric. In the process, one of the bright ideas was to ensure that all sub-150cc bikes transition to electric by 2025 with three-wheelers going down this route two years earlier.

For those manufacturers who spent big bucks on Bharat Stage VI emissions, this was impractical and they protested, saying this was an impossible task. Better sense prevailed within NITI Aayog even while the same companies have now begun working on electric and the bigger cause of clean air.

Tesla's Elon Musk is the poster boy for electric globally but it is very likely that traditional carmakers like Volkswagen and Daimler will do as good a job or even better. Ola is flying high right now but eventually it will have to walk the talk . . . and that is where the real challenge lies. ■

INTERVIEW HARISH BIJOOR, FOUNDER, HARISH BIJOOR CONSULTS

OLA'S FORAY INTO electric two-wheelers has created a lot of buzz but can the brand re-create the success it found in the cab-aggregator space? The founder of Harish Bijoor Consults, a private-label consulting firm specialising in brand and business strategy, speaks to *Autocar Professional*.

How do you view Ola's foray into the electric two-wheeler market?
Firstly, it is a fact that people are looking at individual mobility for travel to be the future, as possibly group travel is not considered as exciting especially in cities. Public transport has a stigma attached to it; private transport, on the other hand, has a certain degree of joy to it.

Secondly, electric mobility is the way to go and zero-emission is the way to be, particularly in the big cities where there is lot of air pollution. To that extent, I think these are the two factors that will work for Ola Electric. I do believe it's a good way to go. I think the company's founders are re-pivoting Ola altogether. It is a pivot moment for the company to expand from four-wheeler to two-wheeler vehicles.

Given the fact that Ola is known as a taxi aggregator, will the consumer accept the Ola brand as an OEM?
The baggage is something one has to shed because at the end of the day there is a market in the middle- and mass segment of India, which is willing to accept anything that is able to deliver on their choice. Forget brand imagery, at times it gets to become a niche way of looking at categories.

'The big challenge for Ola is its name, which is a burden and a solution too.'

The broader and mass way to look at it is from the new consumer's point of view, who is much more committed to look at utility as opposed to branding. I personally wouldn't worry for them but when you pivot your business, you should be careful of the imagery the old business has.

The old business, all said and done, has the image of taxi / cab-aggregator. Can a cab aggregator tomorrow become a toothpaste or an e-mobility brand? I wouldn't worry as long as the company has invested enough time, energy and passion in recreating the imagery for this part of the business. What came first was the taxi-cab aggregator business, but what comes first does not have to define end-imagery of an enterprise. It could be a tech player in the future. I think it is not an issue because in the long run, Ola as a cab aggregator has been around for 10 years, Ola as an EV company will be there for the next 40 years and to redefine that image is not an issue.

We need to have a time perspective on this. The old paradigm 'what came first defines it all' can be changed. The old generation used to think about branding differently; the new generation thinks differently.

What do you think are the challenges that Ola faces?
When you look at Ola's game-plan, the low-hanging fruit will be in cities and Tier 2 towns. In fact, I suspect it will be more in Tier 2 towns and then in cities because of commuting needs and attitudes being different, options being different.

I will put Tier 2 towns as the No. 1 play and big cities as the No. 2 play and the smaller towns of India not yet. The market is large enough at this point of time and the space itself. We are talking about 49 urban clusters and a million-plus towns in India.

At the end of the day, what touches the lives of the people in the big cities and Tier 2 towns will eventually touch the lives of everybody. The digital segment, especially the B2C (business-to-consumer), has evened the ground out today. In the old days, you would define geographies differently – Urban India and Rural India. But that definition is over . . . geography is history.

Today, it is all about positioning . . . B2C India versus Physical India. If you really look at it, there is a battle between Physical India and Virtual India. I do believe the brand (Ola) choosing B2C is a good choice and will enable quick entry in the market.

The big challenge is that the brand name is a burden and a solution too. Solution, because everybody knows the brand name and burden too because again everyone knows the brand name. There are clever ways of looking at branding. I hope that they have taken care of it and have spent equal amount of attention on branding as much as they have paid on product development, back-end, distribution and technology among others.
NILESH WADHWA

EXCLUSIVE

Pooja Kulkarni: 'Since the launch of our (EV) Policy, Tamil Nadu has attracted investments of around Rs 17,000 crore'

Tamil Nadu wants to earn a 'Detroit of India'-like tag in the emerging EV industry space too. **Pooja Kulkarni IAS**, the newly appointed **Managing Director and CEO of Guidance Tamil Nadu**, talks to **Sumantra Bibhuti Barooah** about how the Southern state plans to protect and also grow its turf as an investment destination for the emerging EV industry and optimise the potential going forward.

What are the new programs the state government is designing to enhance Tamil Nadu's position as an investment destination, with maybe some primarily for the automotive industry?
The investments that we have mobilised, or have received commitments for over the past two years, bear testimony to the fact that investors continue to repose faith in the state, Covid or no Covid. Despite the tough times, it has not really made a dent on the investments that we continue to attract, not only in any one sector but across sectors. Automobiles, of course, have been our strength, starting off with Ford and Hyundai. We have built large ecosystems, which have not been only about the OEMs but the automotive ecosystem as a whole where we have succeeded and that is something where we have learned a lot from.

So, whether it is the IC engine industry and now moving onto the EV sector, I think no one is more aware than they are about the challenges that the electrification (megatrend) brings in. In partnership with the government, we are well placed to take advantage of the EV sector with the existing large investors that we have and the new investors that are coming in.

We have taken quite a few initiatives over the past couple of years, such as the single-window portal. On July 21, our honorable

On July 21, the Tamil Nadu government announced receiving investment commitments worth Rs 28,500 crore, including those from Srivaru Motors (Rs 1,000 crore), ZF Wabco (Rs 1,800 crore) and ARaymond Fasteners (Rs 100 crore). These are likely to create over 83,500 jobs in the state.

SRICHARAN R

Plenty of electric two-wheeler activity underway in Tamil Nadu. Ather Energy's new smart manufacturing plant in Hosur, which went onstream in February, is among the new set of EV plants in the state.

Chief Minister launched 100 services, cutting across 24 departments. For the investors, 'the single-window portal' is the port of call. So, for all the major critical clearances that they need, they just have one common application form and time limits are set within which departments have to give the clearances. We have in place fairly strong structural mechanisms committees, headed by the Chief Minister himself, to sort out issues.

We also have a portal called 'BizBuddy'. It's not like we facilitate the investor just till the investment and then leave after that. It's a continuous process and a strong relationship that we would like to build with investors and give them the strength and confidence.

Early this year, we also launched the new industrial policy — our vision is to target Rs 10 lakh crore of investments in the next five years, generating employment opportunities for two million people. While we continue to support our core sectors or traditional sectors, we also target the new sunrise sectors whether it is pharma, renewable energy, the EV segment, battery manufacturing or biotech.

How much new investment did Tamil Nadu attract in FY2021 and how does it compare to FY2020? How is the run rate in the ongoing fiscal and what is the automotive industry's share in it?

In CY2020, we received investment commitments worth around Rs 60,000 crore, which was a 200 percent increase over the previous year. This year at halfway stage, we have received investment commitments of Rs 45,000 crore. Our target is to surpass one lakh crore during the year. Within the overall investment that we have received, commitments from the automotive sector alone account for around Rs 16,000 crore.

We had a few marquee investors coming in like Ather Energy, which is a start-up that has received a fair amount of potential. Of course, the big-ticket investment was that of Ola wanting to manufacture its electric two-wheelers here. We have also had announcements from TVS, which is going to set up its two- and even three-wheeler EV manufacturing (here). We have also had other investors in the EV sector, along with battery cells, coming in and to support this whole sector, our focus has also been on R&D investments.

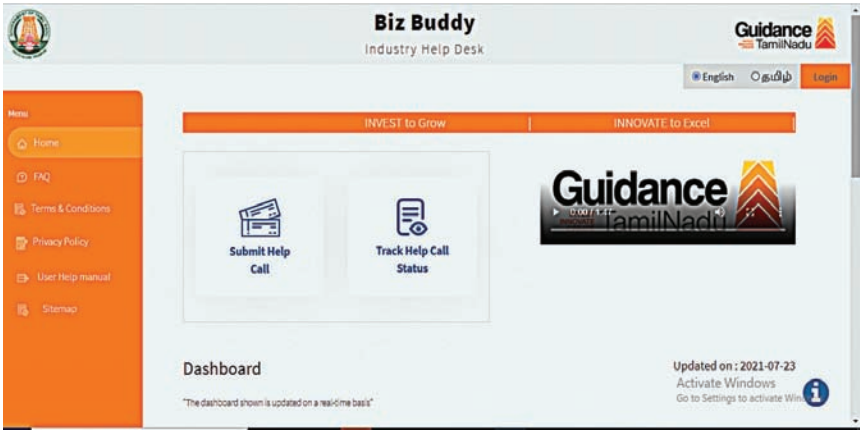
In Chennai, we have a few units already functional in the R&D space. Ford has its largest R&D setup here. And Renault-Nissan, Mahindra, Yamaha, Ashok Leyland, the PSA Group and Toyota Connected, all have their R&D units functioning here. This is what gives us the space for innovation and the confidence that we will continue to build in this sector. In our policy also, we have a special focus towards R&D as we have specific incentives.

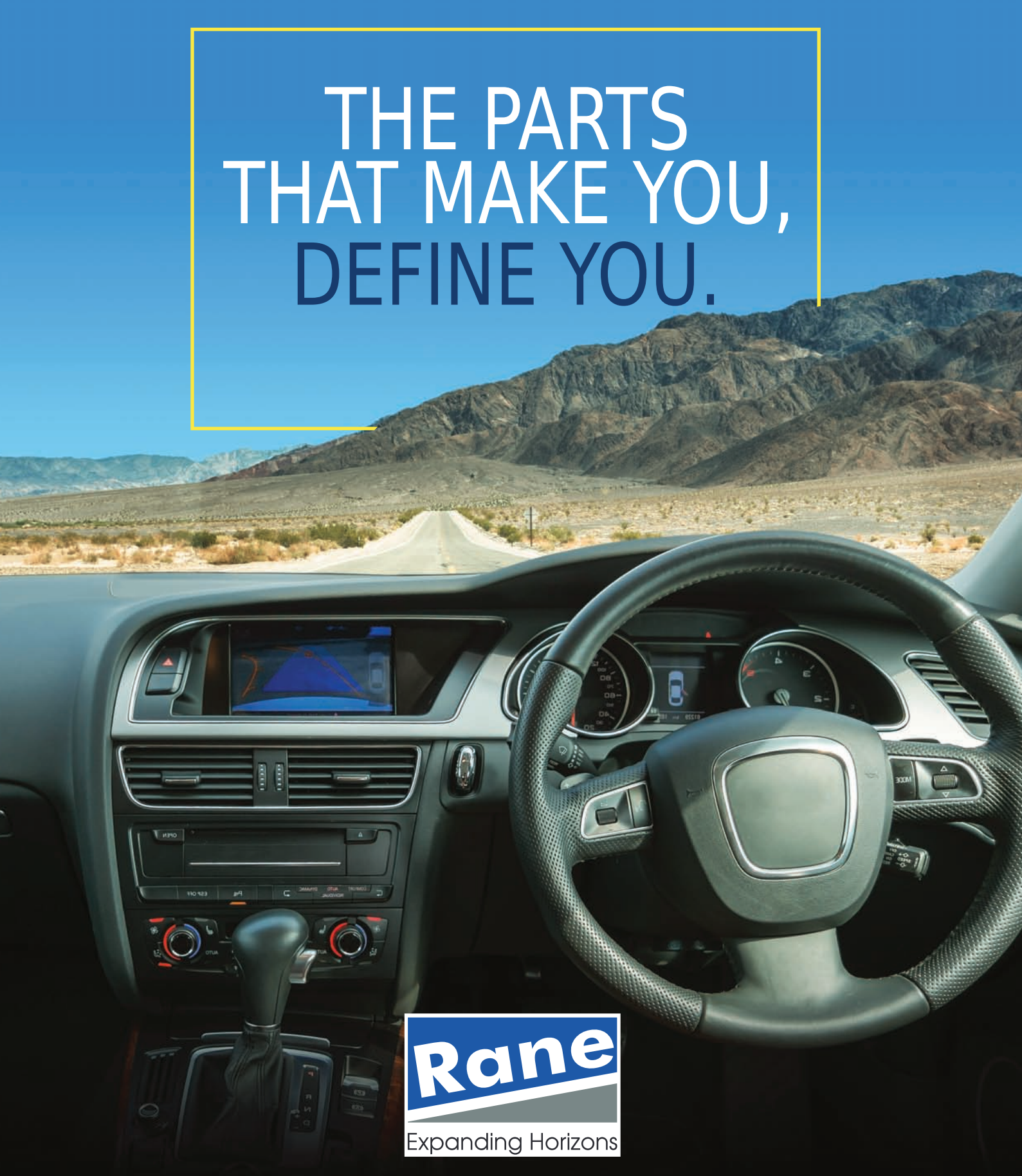
How much progress has Tamil Nadu made since the launch of the EV Policy, and have you made any tweaks based on feedback or just to make it more attractive?

We published our EV policy in 2019. Compared to other states, we offer slightly higher incentives for EV component and battery manufacturing. We understand that component manufacturing is critical to the entire EV value chain and these suppliers play as critical a role as the OEM itself. So, it is critical to build the ecosystem within the state. It's not sufficient if just an OEM comes in; the entire lot of component manufacturers also needs to come in so that they build upon each other's synergies. Thus, for component manufacturers, we have a much lower threshold for

'We have received feedback on EV charging infrastructure. So, that's something we would look at and possibly make necessary changes in the Policy.'

Tamil Nadu Biz Buddy is an industry helpdesk to facilitate monitoring and time-bound resolution of issues.





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investment and jobs.

Depending on the value addition or the niche segment they enter in, we can also offer a structured package of incentives to such manufacturers. Thanks to this, we have attracted investments covering almost the entire gamut of EV manufacturing chain – be it OEMs like Ola, Ather and TVS or component manufacturers. We have Li Energy (Energy Storage and Renewable Energy company) and Lucas TVS (which is into battery manufacturing), Ather (also making batteries) and BPL. We also have a few companies who have interest in the EV powertrain, which is again a critical component.

Since the launch of our (EV) Policy, we have attracted investments to the order of around Rs 17,000 crore and the expected employment that would be generated would be of the order of about 27,000 persons. We are constantly in touch with a large number of OEMs as well as component manufacturers so that the interest remains and we are quite hopeful that we will see greater traction in this sector.

Our policy is valid till 2025 after which we will see how the trend goes and whether we need to make some changes in the policy based on feedback. One feedback we have received is on the EV charging infrastructure, so that is something we would look at and possibly make the necessary changes in the policy.

You mentioned foreign investors from the emerging EV industry. Tesla seems keen in the Indian market too. How is Tamil Nadu moving in terms of competing with other states to attract investments from such 'marquee' EV industry players?

Attracting foreign investors is not new to us – be it Ford, Hyundai, Yamaha, Renault, Nissan, BMW or Daimler. You name them and they are here. We learn from our experience and from the investors themselves. We have been in touch with both Tesla and Fisker Inc and their higher management and I think we will see some good traction on this also. Whatever be their future plans, we will always be in touch with the marquee investors, the big names in the industry.

Tamil Nadu, which has a large parc of skilled technical personnel and several engineering colleges and polytechnics, is also implementing a skill development mission in partnership with different companies.

There is a growing trend of healthy competition amongst states to remerge as major EV hubs. What are the key factors that would differentiate Tamil Nadu as a preferred investment destination?

Firstly, it is the location itself. We already have a set ecosystem and investors would find it far more convenient to source components locally, which would clearly give them greater advantages in terms of costs, efficiency and logistics.

Our ports give us tremendous advantage. For instance, Hyundai has this now as its largest centre for exports and the (Chennai) port has contributed in no small measure towards that. So, this is what we offer manufacturers here – not just looking at the local market but also positioning it as a destination from where exports are incentivised.

The other highlight is our technical workforce, the number of engineering colleges, polytechnics and the ITIs that we have. We also have a very good skill development mission going on in the state, in partnership with different companies, to set up centres of excellence for skilling and training centres. ■

Renault India, which is seeing strong demand for its Triber MPV from overseas markets, ships its vehicles from the Chennai Port. The Triber sold 75,000 units in 21 months (August 2019-May 2021).

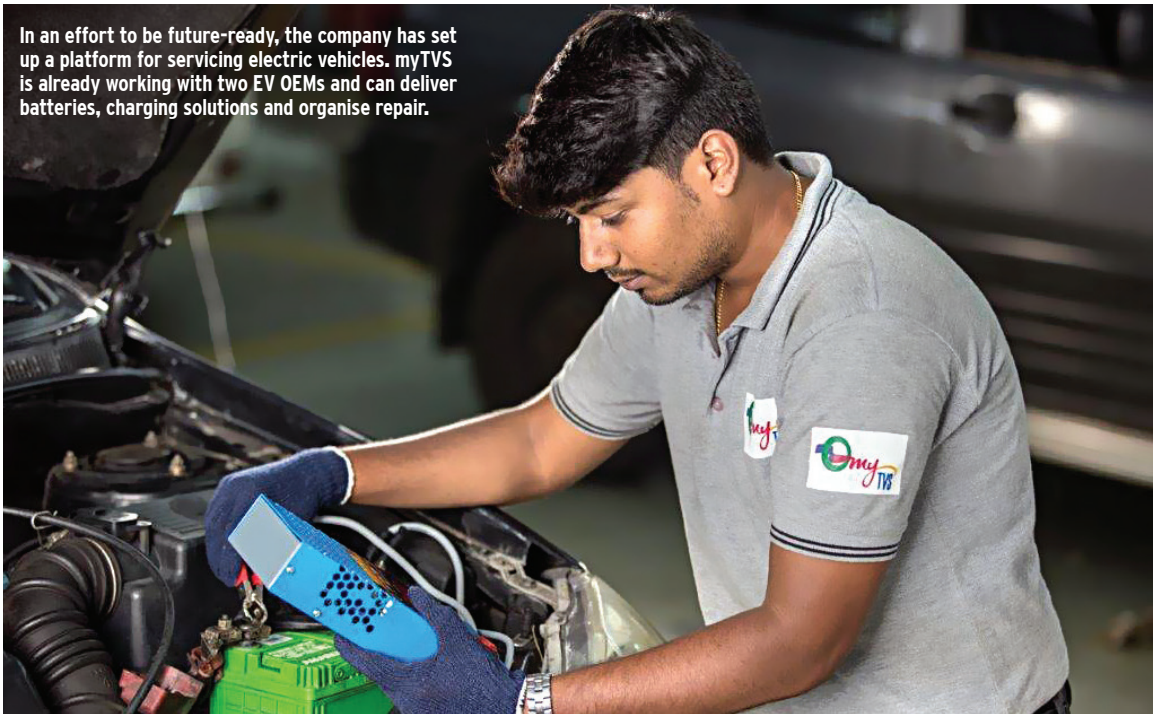
TVS ASL connects with cloud to revolutionise vehicle servicing

India's largest player in the independent automobile aftermarket business aims to expand its customer base three-fold to 11 million by 2023. To do this, it is ramping up its digital presence with innovative moves designed to enhance transparency in processes, customer convenience and cost efficiencies. **Sricharan R** reports on the shift from brick-and-mortar to digital.

Happy vehicles, which are in the pink of their health, also bring happiness to their owners. A well-serviced vehicle, whether it is on two, three, four or more wheels, has three immediate benefits — it boosts the owner's and vehicle users' safety quotient, maintains its value and, importantly, lowers running costs. The aftermarket industry is an important — and vital — cog of the automotive supply chain that helps keep vehicles humming.

Given India's massive vehicle parc, the aftermarket translates into a huge business opportunity and TVS Automobile Solutions Ltd or TVS ASL is looking to make the most of it. Part of the $8.5 billion TVS Group and one of India's largest players in the independent automobile aftermarket business, it aims to provide an innovative, technology-based global service and parts delivery model to help vehicle manufacturers connect with customers, garages and retailers directly.

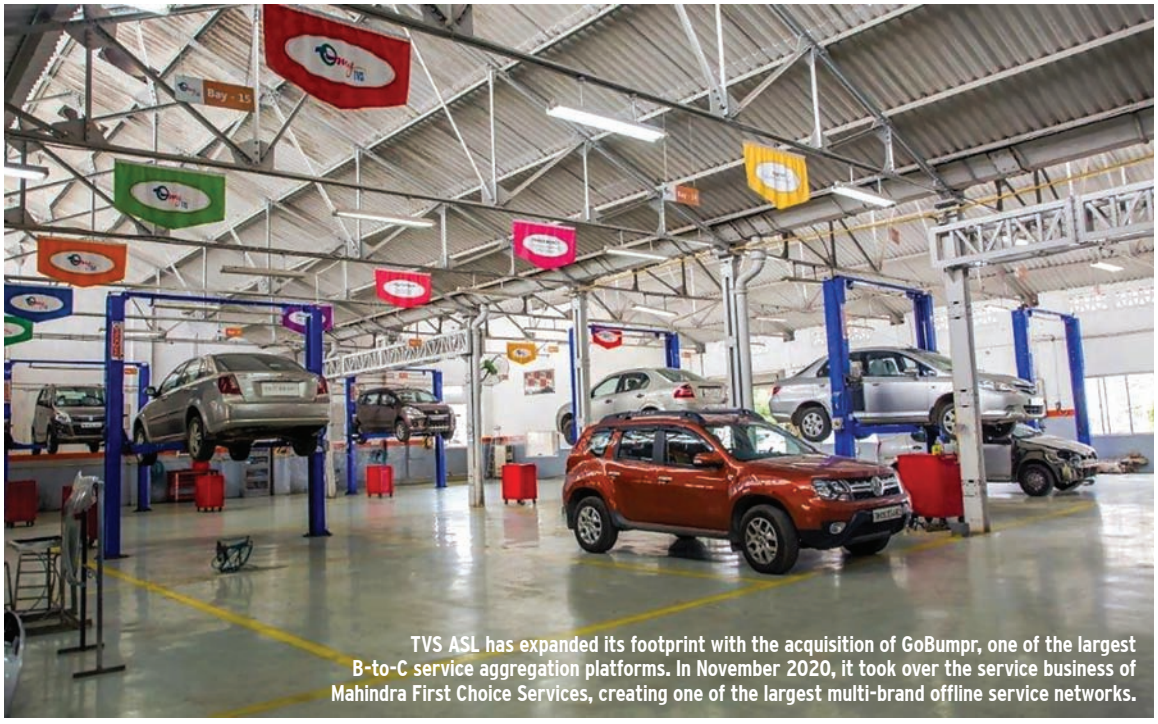
The Indian independent automotive aftermarket is estimated to be worth around $10 billion (Rs 74,010 crore) and growing at a CAGR of 7-10 percent over the past five years. However, in India, this market is highly fragmented with over 40,000 retailers, 100,000 garages and thousands of small distributors across



In an effort to be future-ready, the company has set up a platform for servicing electric vehicles. myTVS is already working with two EV OEMs and can deliver batteries, charging solutions and organise repair.

'DUSK-TO-DAWN' DIGITAL DRIVE

- In June, TVS ASL set up Ki Mobility Solutions, India's first full-stack O-to-O (online-to-offline) digital platform, designed to provide quality, transparent and cost-effective first-time-right service solutions.
- The digi platform will help reach and cater to vehicle owners through over 1,000 organised multi-brand garage owners in 270 towns across India.
- 'Dusk-to-Dawn' programme is about servicing vehicles at night and delivering the ready-to-roll vehicle early morning to the customer.
- TVS ASL, which has acquired MFCWL's service business and Gobumpr, aims to expand its customer base from 3 million to 10-11 million by 2023.



TVS ASL has expanded its footprint with the acquisition of GoBumpr, one of the largest B-to-C service aggregation platforms. In November 2020, it took over the service business of Mahindra First Choice Services, creating one of the largest multi-brand offline service networks.

the country. Unable to cope with this, a number of companies engaged in this business activity have already exited it or are thinking of doing so. But TVS ASL believes it has what it takes to survive and thrive and is coming up with newer ways of integrating service as a proper package.

The company has, over the past five years, expanded its reach and also achieved leadership in the sector. It currently has a customer base of over three million, 20,000 retailers, 10,000 garages and conducts fleet management services for over 70,000 vehicles. All these aftermarket stakeholders have been brought onto a seamless supply chain and technology platform, which ensures that TVS ASL delivers service or parts within 24 hours across the length and breadth of India — no mean task.

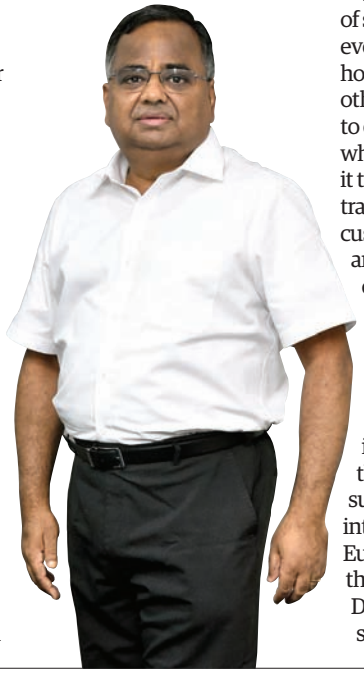
Speedy digital drive

As the Covid-impacted world comes to terms with a number of new normals, digital disruption and changing consumer behaviour are dynamics that aftermarket players have to contend with. The traditional rules of this industry are being rewritten and digitalisation is at the very top of the ladder.

In June this year, TVS ASL announced the setting up of a new digital subsidiary, called Ki Mobility Solutions, to support its growth strategy. This is India's first full-stack O-to-O (online-to-offline) digital platform which will cater to owners of two-wheelers, passenger cars and commercial vehicles. Ki Mobility Solutions aims to provide quality, transparent and cost-effective first-time-right service solutions to vehicle owners through thousands of organised multi-brand garage owners in 270 towns.

TVS ASL has also recently acquired GoBumpr, one of the largest B-to-C service aggregation platforms. And, as is known, TVS ASL had, in November 2020, acquired the service business operations of Mahindra First Choice Services Ltd (MFCSL) from Mahindra & Mahindra. MFCSL, an all-India chain of multi-brand car and two-wheeler service workshops with an all-India footprint, is now a TVS ASL subsidiary. The company has successfully rebranded the MFC network into myTVS, thereby creating one of the largest multi-brand offline service networks across 270 towns in the country.

G Srinivasa Raghavan: "We will soon be coming out with Dusk to Dawn, where we take the customer's vehicle after the return from office in the evening, service them and return it in early morning."



In the changed world of social distancing and even vehicle servicing at home, companies have no other option other than to embrace digitisation, which brings along with it the benefits of more transparent processes, customer convenience and importantly cost efficiency.

One of TVS ASL's new digital initiatives is 'Dusk to Dawn'. As the name implies, and akin to the Indian software industry, which works through the night to supply vital programs into the 'In-boxes' of European companies as they welcome a new day, Dusk to Dawn is all about servicing vehicles at night, ready to roll out when the new day dawns.

Speaking exclusively to *Autocar Professional*, G Srinivasa Raghavan, Managing Director, TVS Automobile Solutions, says, "Through the cloud system, it is all integrated now. We can see the real-time updates right from wherever we want to. So far, we have been following the Dawn-to-Dusk model, where a customer would leave his vehicle to be serviced at day and we deliver it by evening. Now, we will soon be coming out with Dusk to Dawn, where we take the customer's vehicle after the return from office in the evening. We service the vehicle at night and return it in early morning. This brings in a huge difference. This operation will start next month (August 2021)."

Not a monopoly

With TVS ASL acquiring smaller competition and many established players exiting the auto service aftermarket, does this leave the field completely open for the company? Raghavan begs to differ from this point of view. He says that the company has just taken an early step as a full stack player and does not want to be considered a monopoly. He says that the floor is still open and many players can still come in. But he also characterises the difference Ki Mobility Solutions will bring to the market.

"There are three ways where leadership can be characterised. Today, we have around three million customers. We expect to scale up to 10-11 million customers in the next two years. This means we will be having around 10-15 percent of the market share. Second is technology. We are creating a future and this platform can easily support e-mobility as EVs are all about connected and telematics. Any EV, two-

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With over 1,000 franchises in 270 cities, myTVS is targeting a 10-15 percent market share by 2023. It plans to achieve this through an ehnanced focus on digitisation, virtual and augmented reality tools.

While the MyTVS app will democratise service both for customers and vehicle technicians, the company has set up a Knowledge Centre in Chennai to help upskill its service personnel in digitisation.

wheeler and passenger car player can find Ki Mobility as an ideal platform to extend service. We can deliver batteries, charging solutions, repair et al. We have started working with two of them and the response has been great so far. Third, if the OEMs are not strong enough in a particular area, we can be a partner to them. We already have an OEM passenger car as a partner."

He adds, "We are not a competitor to anybody. We are just setting up a platform where we can partner with players."

The digital solution

So what exactly is Ki Mobility Solutions? It, essentially, is a one-stop-shop for all service requirements where vehicle owners can access repair management services, parts, accessories, tyres, batteries, insurance and also roadside assistance across the country.

Seen from a CSR perspective, this digital platform is also a maiden attempt in the industry to enhance the confidence of small automobile entrepreneurs. Ki Mobility Solutions will bring nearly 10,000 retailers and 20,000 garage owners on a single digital ecosystem. This will give them the opportunity to increase their business, access high-quality parts with better margins, and connect with a large pool of suppliers. What's more, they can also benefit from digital technology solutions to upgrade their skills, provide superior services to customers and financial solutions to manage their working capital.

TVS ASL's managing director puts the size of the aftermarket into perspective. "When the traditional aftermarket talks, it talks about value and parts. But in digital, it always talks to customers. That is the significant difference between the two. From a customer perspective of the whole aftermarket service, it is around 150-160 million vehicles. They are the people who are out of the warranty period and constitute the aftermarket. Around 100-110 million comprises two-wheelers, 40-50 million are cars and around 1-2 million are CVs that need to be serviced. Only around 30-35 percent of them go back to the dealership after warranty. This is primarily cars and it is very less in the CV industry. The rest is serviced in the aftermarket." It's a detailed comment which establishes just why TVS ASL foresees huge potential in this business in India.

At the launch of Ki Mobility Solutions two months ago, R Dinesh, Director, TVS ASL, had said: "Launching Ki Mobility is a milestone moment in the Indian automotive aftermarket industry and equally a logical next step of our technology investments. We will fully leverage the cutting-edge technology solutions and create a digital ecosystem for over 20,000 entrepreneurs to enhance their future relevance. Ki by itself was between Rs 575-600 crore, last year. We would like to cross Rs 100 crore by FY2022. Last year, at ASL, as a business vertical, we closed around Rs 1,180 crore last year. Going forward, we would see less growth in the traditional business model."

Ensuring trust, standardisation, data safety

One of the key parameters of success in the servicing business is the bond or trust that builds between customer and company – be it the local garage, a multi-brand service operator or even parts delivery. Standardisation of services

Ki Mobility Solutions will bring nearly 10,000 retailers and 20,000 garage owners on a single digital ecosystem. This will enable access to high-quality parts with better margins.

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does not have as much of a role here.

According to Raghavan, there are four major parameters that impact standardisation — technology, service quality, cost of the service and financing. Also, with increased urbanisation and costlier rents and real estate, local garages are being pushed to the city outskirts.

When it comes to standardisation, the Chennai-based aftermarket solutions provider has a parts catalogue of over 10 million parts and plans to also introduce diagnostics tools and scanners and integrate them on the cloud.

"In the past 3-5 years, a number of start-ups have entered this market. They are mainly into service aggregation and they start from the traditional business of left to right. From a parts perspective, it goes like this: Manufacturer — distributor — retailer— garage — customer. Unless you address the supply chain, you cannot add value to the garage. Therefore, we decided that if we really want to address the supply chain, we have to address it as a whole. Ki Mobility is a combination of all the services. A full stack platform which offers service demand aggregation through myTVS Hive Connect, cloud-based diagnostics through Drivnostics, spare parts procurement through Partsmart and more," states Raghavan.

To enable seamless operations, by using a single app, customers can book a service, arrange a pickup and drop, vehicle repair, learn about repair work status, make payments, check vehicle health records and also get a service reminder, among other things.

Standardisation across operations is achievable only with strict norms and a skilled workforce. In line with its move to embrace digitisation, TVS ASL has invested around a million dollars in the digital-first programme. The company has an all-encompassing facility, spread across 22,000 square feet comprising six digital classrooms and also residential accommodation for 100 people. Virtual and augmented reality tools are deployed as training mechanisms. It also plans to soon introduce its own dongle that will enhance understanding new-age vehicles. Once connected to the cloud, this open-platform dongle helps service engineers 'read' the vehicle enable servicing anywhere in MyTVS' 1,000 franchises across 270 cities. To put it briefly, customers can get their vehicle services and stay fully informed even while lounging in their home.

TVS ASL provides assured vehicle service or parts delivery within 24 hours across the length and breadth of India.

"It is very difficult to implement the Do-It-Yourself mantra in India. We do not even read a manual before setting up anything. Rather than DIY, we are keen to bring the 'Know It Before' concept. The dongles and the digital services will ensure that customers will have the knowledge of the repair."

According to TVS ASL's managing director, this digital model is an all-new business dynamic in the Indian automotive aftermarket and also unique in the global arena. The company now has plans to scale up Ki Mobility to the global level.

In view of the pandemic, MyTVS introduced its Express Sanitisation Service in key cities across India. This service is also available to customers at their doorstep.

"There are not many companies that complete the O-to-O model. This is on par with the global concept. Ki has helped us leapfrog from a brick-and-mortar offline push-driven aftermarket to a pull-driven full stack, which is B2C. Also, you have to be specific when you scale into a global brand. We are in the UK for a parts business, which is for premium cars. Soon, we will take Ki Mobility to the global market too," reveals Raghavan.

To summarise, the dynamics of business have changed thanks to speedy and seamless connectivity 24x7. This, like a host of other industry segments, is revolutionising aftermarket services in manner which would not have been thought of even a few years ago. TVS ASL is cleverly using the Cloud and disruptive technology to up the ante in automotive aftermarket services to achieve new efficiency and generate more value — for itself and its customers. ■

Jayakumar G: 'Valeo India's R&D centre has filed 122 global patents till now.'

French major Valeo, which equips one out of every three cars worldwide with its electrical systems, banks hugely on innovation. **Jayakumar G, Valeo's Group President — India** speaks to **Sricharan R** on the Indian R&D operation and its ongoing work on a number of niche technologies.

In 2019, global component major Valeo was ranked the world's leading French patent applicant, with 1,913 patents filed. The Chennai-based Valeo India R&D team contributed around 50 patents in the areas of innovation, product improvement and performance. Of the total patents that year, 53 percent were filed in France, 21 percent in Germany, 8 percent in China, 5 percent in Japan, 3 percent in the US, 2 percent in South Korea, 5 percent in Europe (excluding France and Germany) and 3 percent in the rest of the world.

In 2020, Valeo, whose innovations are protected by a portfolio of almost 35,000 patents worldwide, filed 819 patents. Its focus on innovation can be gleaned from the fact that expense on research and development in 2020 amounted to 1.66 billion euros (Rs 13,723 crore), or 12 percent of the Group's OE sales in 2020.

Autocar Professional spoke to Jayakumar G, Valeo's Group President — India, to learn about the local team's contribution.

How many patents has Valeo's Indian R&D filed thus far and what have been the focus areas?

A total of 122 patents have been filed from the Valeo India R&D centre till date. Further, we are working on a number of niche technologies which will contribute to several more patents in the future.

Valeo India's R&D domain is spread over our business areas — powertrain, thermal systems, lighting systems, wiping systems, ADAS and connectivity systems. The patents filed by Valeo in India are spread over our business domains. However, keeping pace with the trend in the automotive industry, the focus areas for patents were also in the powertrain electrification and driving assistance system domains.

Can you detail a few patents filed by Valeo India's R&D team?

There are many patents to quote here especially for technologies that help make mobility greener and safer. These include stator for electric rotating machines, capacitor block protection from water ingress, preventive burn heater pipe protection cover, and perception and planning systems using surround view cameras to mention a few.

Valeo India's 2,400-strong team of engineers at the Chennai Tech Centre has helped file 122 patents thus far. Fifty of these patents were in 2019.

Some of Valeo India's patents include stator for electric rotating machines, capacitor block protection from water ingress, and perception and planning systems using surround view cameras.

What is the latest update from the R&D facility in Chennai?

At Chennai Tech Centre, we are able to sustain a growth trajectory despite the ongoing pandemic and market-related slowdown situation. We have over 2,400 engineers spread across the mechanical, electronics and software domains playing a key role in Valeo's global R&D footprint. The growth is not only happening in our core design / engineering areas but also in the testing / validation activities. The testing laboratory, which was set up in mid-2018, continues to see growth. Today, the Chennai TC has a state-of-the-art testing setup catering to the needs of the company's global product R&D activities. Expansion of this development facility is ongoing for addressing future technologies.

The team in India is actively connected with Valeo's global R&D teams. What are the highlights of this operation?

The India R&D team has been a key contributor to Valeo's global R&D, and will continue this way with increasing competency development of people for achieving overall efficiency for the group. The Chennai team plays an integral role in the global R&D network.

The focus continues on building competencies and developing niche skills to support our ongoing efforts in making Chennai a key hub for the global R&D network.

The Chennai TC also has strong connections with

established universities through various engagement activities like research projects, testing, higher education for employees, custom training courses, internships, experts knowledge sharing to students and faculties, ensuring there is a strong link with the ecosystem.

Valeo India has recently partnered Omega Seiki for the supply of a 48V ePowertrain. With the growth in the EV market in India, will you ink similar collaborations?
For Valeo, electrification and clean energy solutions remain a top priority. As a part of this initiative, we are working on both 48V and high-voltage electrification solutions for India. Our engagement with Omega Seiki for supply of 48V ePowertrain is clearly a part of our priority tasks.

Such collaborations with EV manufacturers is important to build a strong portfolio of EVs in the country. This space is now becoming more and more contested, where we continue to build our competency and investments. Our focus on electrification will continue, supporting our customers and the industry at large in building a cleaner and greener environment.

Valeo has also been in the news for equipping 250 staff commuter buses worldwide with its UV purifier system. How many of them are in India and do you plan to introduce the solution in the Indian market?
The prevailing pandemic has changed the order of priority for everyone. As a consequence, personal hygiene and safety have assumed greater significance. Equipping our employee commuter shuttles with UV purifiers is a validation of our priority for the health and safety of our employees. We have equipped 11 employee shuttle buses with Valeo UV purifiers in India.

This also serves as a demonstration on performance of our UV purifier systems. We are in discussion with our customers for deploying our solutions in their vehicles. The purifier was named as the year's top innovation in Germany by the VDA (Verband der Automobilindustrie – the German association of automotive manufacturers and leading automotive suppliers) on World Creativity and Innovation Day 2021 on April 21, 2021.

What is Valeo India's growth roadmap after the lockdown? How have your goals changed?
As mentioned earlier, the pandemic has changed the order of priority for everyone – for us, our customers and our suppliers. This has resulted in preference and positive growth for health, hygiene and clean energy solutions. We will continue to focus on these technologies and products.

'The focus continues on building competencies and developing niche skills to support our ongoing efforts in making Chennai a key hub for the global R&D network.'

On the R& D front, we will continue our investments in building competency and our R&D infrastructure keeping in mind the needs of our customers and future. We are preparing ourselves for new technologies in the areas of electrification, autonomous drive and lighting systems. Even though the pandemic has affected the auto industry in the short term, taking a long-term view India's auto industry will grow significantly in the next few years. We will continue to increase capacities for growth in the existing products and invest in new technologies. ■

Of Valeo's 250 global staff buses equipped with its award-winning UV purifier solution, which is claimed to eliminate more than 95 percent of viruses, including Covid-19, 11 are plying in India.

Log 9 targets last-mile operators with rapid-charging graphene tech

Riding on the benefits of graphene, Bangalore-based start-up says it is ideal for last-mile connectivity, intra-city delivery and short-distance travel where long range is not really needed. **Sricharan R** reports on the lithium-ion rival which charges two- and three-wheelers within minutes rather than hours.

With petrol priced at over Rs 100 a litre in all four metros and many other Indian cities and diesel above Rs 94 a litre, cash-strapped motorists as well as businesses are actively looking to make the shift to electric mobility. As is well known, the battery per se is the key driver of this form of green motoring — and EV makers and battery developers are constantly looking to improve electrode density, achieve faster cycle times and reduced weight — all with a view to increase vehicle range.

While lithium-ion batteries power most of the EVs currently on roads, there are alternatives like graphene. Log 9 Materials, an IIT Roorkee-incubated start-up, is a nanotechnology company specialising in graphene. The Bangalore-based firm, which has been working in the e-mobility domain since 2019, claims it can rapidly charge batteries for electric two-wheelers in less than 15 minutes. This period has seen Log 9 develop technologically advanced power storage and power generation solutions.

Log 9 claims its grapheme-based rapid-charging batteries get fully charged in 15 minutes for two-wheelers and 30 minutes for three-wheelers. And they are long-lasting too — a claimed 15 years.

Focus on B2B business, last-mile connectivity

Log 9 has, at the outset, outlined its target audience of B2B last-mile connectivity as they log more kilometres and there more value propositions too. Also, with rapid charging, it is easier for aggregators to charge the EV and make a move within 15 minutes, which gives a travel range of over 60km.

"We do not say that Lithium-ion is bad. The chemistry is scaled up and is being adopted now. But it has its downsides too, which gives us the space to offer our solution to this segment. Be it rapid charging or aluminium fuel cells, we are ready with the technology. Also, rapid charging makes sense for last-mile connectivity, intra-city delivery and short-distance travel, where you do not require

(L-R) Log 9 Materials co-founders Akshay Singhal and Kartik Hajela are bullish on demand coming their way from last-mile EV operators who target speedy turnaround with daily deliveries.

a long range," says Kartik Hajela, co-founder of Log 9 Materials.

He points out that with such last-mile operators who aim at speedy deliveries across towns and cities, the real issue is the downtime to charge and battery degradation. These specifically are the two areas the graphene-based technology company is looking to resolve.

Log 9's batteries employ supercapacitor technology which enables a full charge in a scant 15 minutes but they also last for over 15 years – that's what Log 9 claims. Furthermore, these battery packs offer up to 5x power. These are also claimed to be five times safer in terms of fire-resistance and impact-resistance, when compared to the popular and widely-used lithium-ion batteries.

Hajela adds, "In the commercial vehicle market, battery degradation will be more due to the load. Our rapid charging gives full charge in 30 minutes for three-wheelers and in 12 minutes for a two-wheeler. Also, conventional Li-ion batteries degrade in 2-3 years. This technology has a longer duration too. We also give kits along with the battery, where our customers can charge at the normal public Bharat DC chargers. It is a 10-15 kW charger, but the connector we provide helps them to charge the vehicle faster."

Log 9 has already partnered some major players in India. One among them is Omega Seiki Mobility. Also, for three-wheeler LCVs, they will soon start pilots in Bangalore (Amazon, Porter, Micelio), Hyderabad (ITC, Porter, Ohmecar) and Delhi (Porter, Amazon, Bluedart, Flipkart). Also, Log9 has signed up with leading companies in the sector like Amazon, Shadowfax, Delhivery, Porter, Vogo, EBikeGo, ITC and Zoom Cars. Interestingly, the company has big plans for the passenger carrying three-wheeler market in the coming months.

"We have partners in the electric two-wheeler market. But we have a bigger proposition in the passenger three-wheeler segment," states Hajela.

The company also has long-haul trucks in its sights with the use of aluminium cells, which can enable inter-city travel of 200-300km. "We are ready with the product and as the ecosystem is mature, we are ready to put it in the market," adds Hajela.

Charging with partners

Log 9 is partnering with private players to ensure quality charging of batteries; it has OEM partners who are developing the solutions. Hajela points out that a Tier 1 city like Hyderabad has a fair number of chargers while Delhi and Bangalore come next.

Furthermore, current battery production capacity of 25 mWh per annum is slated to be doubled in FY2023. Log 9 has around 25 patents filed for its products.

"In five years, we are looking to have all our technologies out in the market and also to commercialise aluminium cells. We expect the battery market to grow 2-3 times in the coming years," concludes Hajela.

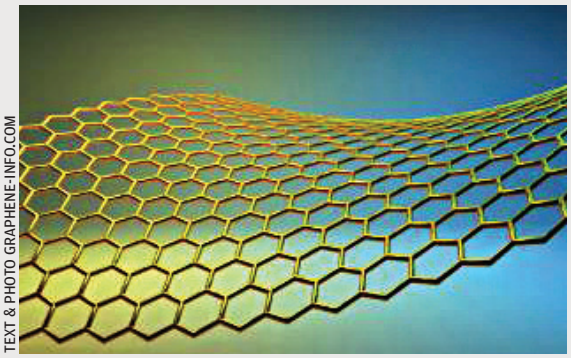
With the boom in the e-commerce and the growing need for speedy deliveries, it remains to be seen how many EV OEMs plug in to Log 9 for a speedy charge on graphene. ■

WHAT IS GRAPHENE?

GRAPHENE IS THE thinnest material known to man at one atom thick, and also incredibly strong – about 200 times stronger than steel. It is an excellent conductor of heat and electricity and has interesting light absorption abilities. It is truly a material that could change the world, with unlimited potential for integration in almost any industry.

Graphene is a 2D material, a single sheet of carbon atoms in a honeycomb structure. Many stacked graphene sheets create graphite. This extremely diverse material can be combined with other elements (including gases and metals) to produce different materials with various superior properties. Researchers all over the world continue to constantly investigate and patent graphene to learn its various properties and possible applications including superfast high-capacity batteries, computer chips and supercapacitors.

In EV batteries, graphene's USPs are higher capacity, faster charging, lightweight, flexibility and high temperature range.



TEXT & PHOTO GRAPHENE-INFO.COM

Use of graphene offers up to 5x power. It is also claimed to be 5x safer in terms of fire and impact resistance vs Lithium-ion.

The kits provided by Log 9 allows customers to charge their vehicles at the normal public Bharat DC chargers.

NO BOTS
NO TROLLS
NO HATRED

PrintWeek | WhatPackaging?

IIT Madras-born Grinntech sets out on an EV-charging mission

Tech-driven start-up has a range of lithium-ion batteries that promise to set new standards in electrical safety, energy density, durability, quality and reliability. And they can be custom-designed to deliver the goods to all electrified vehicles, says **Sricharan R**.

Grinntech's Falcon (96V) for LCVs, Shikra (48V) for e-rickshaws and Robin (72V) for electric two-wheelers is being well received in the US and Indian markets.

After emerging from its incubator in the Indian Institute of Technology Madras Research Park in September 2020, Grinntech, an investor-backed start-up is now eyeing speedy growth. Specialising in lithium-ion batteries for EVs and energy storage systems, the company recently closed bridge funding round of US$ 2 million. With adoption of electric vehicles beginning to take off in India, Grinntech has expanded its product lines focussing on a range of EVs including two- and three-wheelers and also farm-tractors / LCVs.

Founded by Nikhilesh Mishra and Puneet Jain, Grinntech has attracted industry leaders such as Dr V Sumantran, former vice-chairman of Ashok Leyland, and Lakshmi Narayanan, co-founder and former vice-chairman of Cognizant, as investors and to serve on its Board of Directors. Staffing is now in place and the new R&D and manufacturing facilities in Ambattur, Chennai employ 70 engineers and staff.

"The response has been in line with how we are placing our company. There are a lot of battery manufacturers but we hear (responses) from customers and others about the aesthetics and quality. People understand that our product is good, in terms of design, performance and reliability. We have got orders from the USA and we are also winning a lot of business in India too," says Nikhilesh Mishra, co-founder and director.

He says the demand for tractor batteries is strong. "The power demanded in tractors is huge, even when run on diesel. It is similar in electric and there are a lot of challenges. We are winning a lot of orders from tractor OEMs, have started giving out samples to some and are in the process of production too.

EMPOWERING EVS WITH THE RIGHT BATTERIES

- With its Finch (48V), Monal (60V) and Robin (72V) lithium-ion batteries, Grinntech meets all the two-wheeler needs in the Indian market.
- The company is now working jointly with EV makers to develop bigger batteries (10-15 kW) that will provide similar performance like a 500cc motorcycle.
- Grinntech has achieved weight reduction in batteries of 8-15 percent by using 21,700 battery cells.

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New manufacturing facility in Chennai will be able to cater to demand of up to 400 MWh.

We are working with three tractor makers. We also have orders for two- and three-wheeler EV batteries for which production has commenced."

The many lockdowns over the past year have impacted the development timeline for both Grinntech and its customers.

Battery weight reduction therapy

With the recent FAME II subsidy, EV makers are keen to source bigger batteries for the same price. A number of OEMs, who were earlier using 2kWh batteries, are now looking for 3kWh. This is a positive development, says Mishra, as this brings in more range. But he points out that Grinntech designs a battery based on specific product requirements else it could lead to mishaps.

"There are many who think they can cut corners by reducing weight to cut costs. We cannot just take something for granted and cut on parts to reduce battery weight. We have slightly changed the cell format. More companies are now changing to 21700. There is a weight reduction due it which is around 8-15 percent. This is not a big number and will be useful for two-wheelers. Maybe in the future, we will move to the level of the 4680 battery cells, which will give another 5-10 percent reduction. This is a constant development process," he affirms.

Nikhilesh Mishra: **"The cargo segment is where we foresee huge potential and our batteries suit their needs."**

New launches

The Chennai-based company has recently launched its new Finch and Monal series of batteries. It has also bagged a contract from a US-based manufacturer to develop a larger battery pack incorporating advanced thermal management utilising its proprietary battery management system.

Mishra says these batteries will also be introduced in the Indian market. Given the considerable traction electric three-wheelers are achieving in the fast-growing Indian market, it is not surprising that Grinntech is engaged in talks with original equipment manufacturers of these products and also LCV makers.

"These are the 48V and 60V batteries used for two-wheelers. Finch will have battery quality and will be available at a lesser cost. We have already covered 72V with Robin 72. These three together complete all the two-wheeler needs (for India) today. Going forward, we have started working with OEMs who have requirements for high-powered two-wheelers – 10-15 kW and providing performance similar to a 500cc motorcycle. These are of higher voltage – 120 to 144 V – and are designed and customised for manufacturers. Monal is for the autos which have higher speed and not the typical e-rickshaws."

The company's co-founder admits there is less traction on the electric CV front. While the Falcon battery is ready, tested and fully matured, the Hawk is in an experimental stage and the Pelican has been table tested. "It does not matter where the batteries go. Our customers can use our battery where they want and it is not going to affect their payload. The cargo segment is one area where we foresee huge potential and our batteries suit their needs," he says confidently.

Operations at the new manufacturing plant began in Q1 FY2022. A highlight of this facility is flexible manufacturing cells for multiple products, and Grinntech will be able to cater to demand of up to 400 MWh.

Going forward, with fresh funding in place, Mishra says this is the time for growth. "It will be multiplied growth. We are running a quarter late due to Covid-19 but things will now get better. Falcon and Hawk will be setting the pace for Grinntech in the coming days. Also, we now have a stable battery for electric light commercial vehicles. We are in conversation with many OEMs in India and abroad for new business," he concludes on an optimistic note. ■

Collaboration, not competition, to foster EV ecosystem

Two years after it set up India's first seed fund focusing on clean mobility and EVs, Micelio Mobility is gearing up for the next phase of growth. **Nilesh Wadhwa** finds out how the company has been dealing with disruption, its logistics business and the plan to launch its own EV for last-mile deliveries.

In 2019, Shreyas Shibulal founded Micelio Mobility with a corpus of $20 million (Rs 150 crore) to focus on clean mobility and e-mobility.

Micelio Studio in Bangalore provides software and hardware support to EV start-ups to develop their products and solutions.

Among the business segments with the fiercest competition worldwide is the automotive industry, one which has led to the survival of the fittest. But when it comes to the electric vehicle ecosystem, for a country like India, it is not competition, but cooperation that will unlock the next phase of growth, believes Shreyas Shibulal, founder and director, Micelio Mobility.

Established in 2019, Bangalore-based Micelio is said to be one of the first seed-funding firms in India to focus on clean mobility and EV space. The organisation has four business verticals – Micelio Fund, Micelio Studio, Lighting Logistics and an EV product company.

Sharing the thought behind the firm's inception, Shibulal says, "I have been passionate about the automotive industry and sustainability has always appealed to me. With my background in technology, EVs naturally made sense. We started with two verticals of our business – the Discovery Studio and the Fund, which is probably India's first seed stage fund for EVs with a corpus of Rs 150 crore. In the past two years, we have seen a lot of traction. Most of the seed-stage EV start-ups have applied to us. I think it is very appealing to have an investor who has understanding of the space and can empathise with the start-ups who are working in the space."

"The Micelio Studio is a designer space which also goes hand in hand with the start-ups in the EV space, not just for our portfolio companies but anyone who wants to come and utilise the space. That has also received a lot of traction, the space hosts various kinds of equipment and the idea is to lower the barrier of entry into the EV space. A lot of equipment that you need to develop the prototype for an EV start-up can be quite expensive. We really want to foster the space by providing them with the necessary tools."

The Micelio Studio, which helps start-ups develop prototypes, is essentially meant to lower the entry cost barrier into the EV industry.

He adds, "The Discovery Studio in Bangalore has been operational for sometime now. In the commercial side, we have the Lighting Logistics business, which is a pureplay electric last-mile logistics service provider. We started out in Bangalore in early 2019, and now are present in three cities –Bangalore, Chennai and Hyderabad – with a fleet of 1,000 EVs. We are working with large customers in the e-commerce sector, mom-and-pop stores, courier companies and also grocery deliveries. We started with two-wheelers and now have inducted three-wheelers in the fleet. Lastly, we have a product development company and we are looking at developing our own form factor (e-2W) for electric last-mile logistics vehicle," explains Shibulal.

Lending a hand to start-ups

When it comes to the start-up ecosystem, the

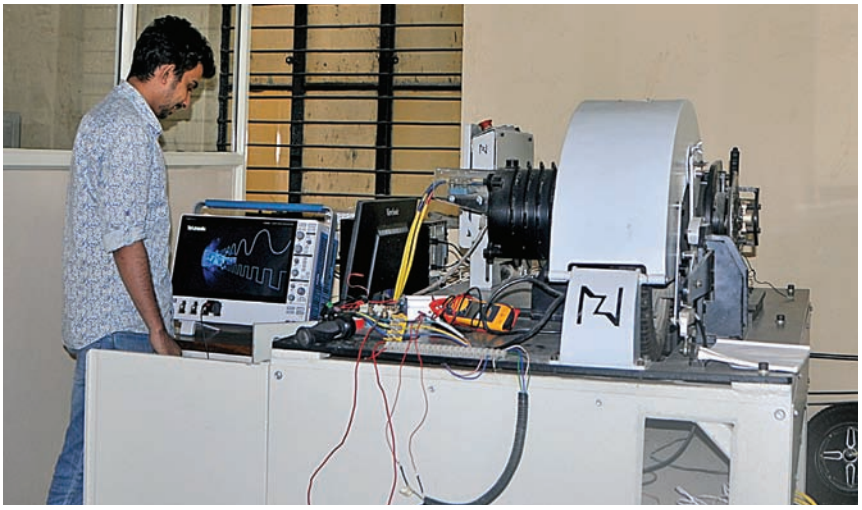
lack of relevant support be it financial, technical or mentorship, remains a key challenge most young entrepreneurs face. In addition to funding, the Micelio Studio also provides start-ups a place to connect.

Commenting on the solutions Micelio provides to start-ups, Shibulal says, "Broadly, this can be classified in two parts – one is the development support for components, sub-components, for instance motor test bench, battery test cycle, certain software for our members. That's the providing infrastructure aspect. The other is the community aspect. We are building a community of EV start-ups, where they can leverage each other in whatever way they see fit. Part of this is to connect them with each other and also release materials jointly created for the benefit of everyone. We believe the community aspect is very important as the space is very nascent. Ultimately, it is about collaboration than competition that you see in other industries. I believe collaboration will be a key, and competencies can be found in different ways in different start-ups."

Interestingly, since its inception, Micelio has received over 400 applications. On June 10, Bangalore-based EV start-up Cell Propulsion raised $2 million (Rs 14.8 crore) in debt and equity from its existing investors including Micelio. Cell Propulsion builds and deploys electric commercial vehicles (eLCVs and eHCVs) as part of its integrated solution. At present, the start-up is said to be working on Oryx Electric (e-LCV) and Beluga Electric (e-bus) that can attain top speeds of 60kph and 80kph respectively.

"Cell Propulsion is the only company we have invested in so far. But we are fairly confident that this year we will invest in a few more. The total corpus is of $20 million (Rs 150 crore), the average ticket size is Rs 100,000 to Rs 10 lakh," explains Shibulal.

In FY2022, Micelio expects to invest in another 2-3 potential start-ups. According to Shibulal, while there are plenty of ideas from entrepreneurs, the aim is "to look at core investment opportunities. At very early stage, it goes into taking a prototype development or creating the first prototype. It also depends on the kind of start-up, hardware, sub-component or an end-to-end solution of EVs and go to the market . . . these are longer gestation kind of companies. At such companies, we may come in just to get the product to the market or get the prototype development started. The start-ups that we generally see are more focused towards business solutions. For instance, companies running fleets, deploying charging infrastructure, financing, technology innovation (hardware) and business innovation (solution) – leasing finance, energy as a service. In those companies the capital is used more or less to scale," remarks Shibulal.



Micelio's studio provides the start-up community an opportunity to leverage each other in whatever manner they deem fit.

Lighting Logistics and B2B product development

Like it has done to businesses the world over, the pandemic delayed Micelio's plans to support the start-up ecosystem.

Shibulal says the pandemic has made it difficult for start-ups to "raise capital, as people (investors) are being risk averse. The demand for funding has definitely increased; we have got a lot of people already applying with us and are following up. With the Discovery Studio, we have the same kind of difficulty – how do we keep everyone safe?" As it is a shared space, the challenge is how to ensure everyone's safety. There is also the impact of lockdown and curfews.

On the other hand, the Lighting Logistics business, which comes under essential services, has seen improved demand. With the pandemic-associated lockdowns and curfews, it has meant more business and last-mile deliveries.

The plan to launch an EV for the last-mile delivery segment was also affected on the back of supply chain disruption. "It has pushed us to become more indigenous and serves as a wake-up call for the rest of the industry. We are currently working on a two-wheeler EV, which will be launched next year," reveals Shibulal.

When queried as to whether electric two-wheeler start-ups will be able to compete against the big players, he is fairly confident that there is room for start-ups here. "The deal flow for the EV space is increasing every year by significant magnitude. The availability of the capital is definitely increasing. There are pretty large start-ups which are well-funded."

He believes that when it comes to the debate of charging versus battery swapping, the fact that 'battery as a service is being encouraged,' means the choice will be based on the use case. "For two- and three-wheelers, there is a use case for battery swapping. For commuter vehicles, it's fixed batteries. Both offer different features, pros and cons. I believe it will be a mixture of both, until we are able to charge extremely quickly and have higher energy density battery," responds Shibulal.

With its first studio in Bangalore, Micelio is experimenting with the potential of such a setup in India. In fact, the company is open to establishing similar setups across the country. The overall mission is clear – become a key partner for entrepreneurs in the EV industry. ■

MICELIO: HELPING CHARGE NEW MOBILITY SOLUTIONS

- Founded in 2019 with an outlay of $20 million, Micelio Mobility is said to be India's first seed-fund company focusing on sustainable mobility and EVs.
- Micelio has four verticals – Micelio Fund, Micelio Studio, Lighting Logistics and Micelio Motors.
- Till date, Micelio has received more than 400 applications from start-ups looking for seed funding.
- Its logistics business has inducted over 1,000 EVs, mainly two- and three-wheelers.
- Micelio Motors is also working on an electric two-wheeler designed for last-mile logistics.

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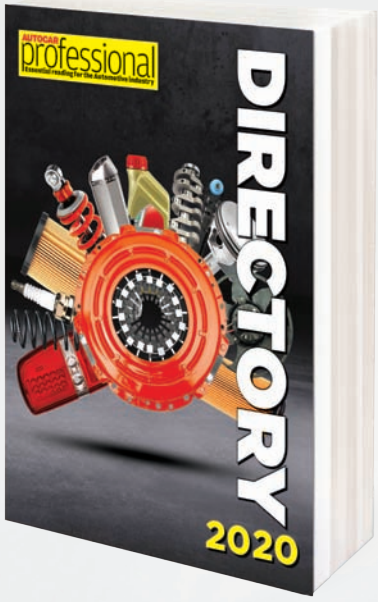

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TVS Srichakra targets Europe's growing two-wheeler tyre market

Earlier this year, the Chennai-based tyre maker entered the European market with its new scooter tyres. **Sricharan R** details the business strategy, the key role of the Milan R&D and Design Centre and also how the company plans to leverage the learnings from the new product launch in India.

A smart business mantra, which particularly helps in challenging times, is to be strong on exports. Not only does this help buffer difficult domestic market conditions but it also helps increase a company's global footprint. And that's just what TVS Srichakra, the Chennai-based tyre manufacturer, has done. In early May 2021, the company announced its foray into Europe with its new range of Eurogrip two-wheeler tyres. Its first product for the continent, called Eurogrip Bee Connect, is designed to shod scooters and will be available in 40 different sizes soon. This is also the first line of tyres launched after the setting up of TVS Srichakra's Product Design and Development Centre in Milan, Italy in 2019.

The move to enter Europe is part of a strategic move on TVS Srichakra's part and has been in the offing for some time.

In order to penetrate the European market effectively, the company conducted a thorough study, which began with exhaustive market research on consumer trends and riders' needs. The product concepts developed at its technical centre were subjected to various tests on European test tracks before getting the green light. Subsequent product development, cycles of prototyping and laboratory validations were done in India and Europe. And, as most tyre makers do, TVS Srichakra

Eurogrip Bee Connect is the first line of tyres after the setting up of the Product Design and Development Centre in Milan, Italy.

TVS Srichakra's Eurogrip Bee Connect scooter tyre, which will be available in all of 40 sizes, has been extensively tested on European roads. Two Piaggio and Sym scooters, shod with the tyre, seen here.

TVS SRICHAKRA LOOKS TO STRENGTHEN GRIP ACROSS MARKETS

- The tyre manufacturer is looking to expand its product offerings in other segments like sport touring, on and off-road as well as enduro.
- The designed-for-Europe scooter tyres are made at a dedicated manufacturing facility in Madurai, Tamil Nadu.
- TVS Srichakra is to invest around Rs 1,000 crore to ramp up manufacturing facilities at Madurai and Pantnagar over the next three years.
- This investment will help increase two- and three-wheeler tyre capacity by 25-30 percent and double off-highway tyre capacity from current levels.
- TVS Srichakra has an existing network of strong domestic aftermarket supply with over 2,400 dealers and 34 depots
- The motorcycle segment is the primary target segment for the company.

conducted comprehensive tests – both internal and independent – covering thousands of kilometres to ensure the product performance, mileage and durability are at par with global standards.

Speaking to *Autocar Professional* recently, **P Madhavan, Executive Vice-President - Sales and Marketing**, says: "The introduction of TVS Eurogrip in 2019 was an important milestone in an internationalisation process, which already sees us exporting tyres to over 85 countries. Our expansion in Europe, which is soon to be followed by more countries in APAC and MEA, testifies our commitment and copious investments in product quality and performance that is further accentuated by the R&D and Design Centre established a few years ago in Milan, Italy. Establishing our direct presence in developed as well as emerging markets is an important step for us towards building Eurogrip as a strong global brand and goes hand in hand with the research studies we've been conducting on new technologies, which will benefit all markets including India. With our expertise as a manufacturer of two-wheeler tyres for over three decades, we are confident of making a mark in European markets."

Banking on in-house R&D

Adding more perspective to Madhavan's comment, **Andrea Bianchi Milella, Marketing Manager, Italian Center of TVS Srichakra**, says: "Scooters in Europe are the most popular segment amongst two-wheelers riders and are used both for urban commuting as well as trips in the countryside. Our forecast is that the period after the pandemic will see an increase in their usage as people will tend to avoid shared mobility solutions and public transport. Scooters offer a cost effective, reliable, and quick alternative to this. It's also a segment where our expertise really gave us a push while developing this product, of course in constant synergy and coordination with our Milan Research & Development and Design Centre, whose role was crucial in defining product target performances, tyres' technical features and organisation of testing sessions that were held in European roads and racetracks as well as in India. Having said that, we are keen to expand our product offerings in other segments like sport touring, on- and off-road and enduro."

TVS Srichakra's Milan R&D and Design Centre played a key role in defining the Eurogrip Bee Connect's target performance, technical features and also testing sessions on European roads and racetracks.

Following its foray into Europe, the company now plans to make an entry into new markets in Asia Pacific and the Middle East Africa region.

Madhavan says the company is going all out to be competitive and develop world-class products for both Indian and international markets. It plans to soon introduce an off-road and a street tyre for medium and big-displacement motorcycles, both in radial and cross-ply construction. These are lined up for launch in the next few months in India. According to TVS Srichakra's **Chief Technology Officer V Sivaramakrishnan**, the off-road tyre will enable enduro and motocross riders to train, compete or simply ride for multiple sessions.

"Early feedback from our independent testing teams has been very promising. Our street tyre, developed in both radial and bias constructions, aims to be a trustworthy companion for riders of middle to high-displacement naked, touring and sport motorcycles, focuses on dynamic performanc, safety and mileage," said Sivaramakrishnan.

Customising tyres for European roads and races

TVS Srichakra's Milan R&D team and the research centre in Madurai work closely in defining the product specifications and technical aspects while developing new products. Also, the Milan centre plays a key role in defining product target performances, product concept design, technical features and organisation of testing sessions held on European roads and race tracks as well as in India.

P Madhavan: "Establishing our direct presence in developed as well as emerging markets is an important step for us towards building Eurogrip as a strong global brand."

Andrea Bianchi Milella: "We are keen to expand our product offerings in other (two-wheeler tyre) segments like sport touring, on- and off-road and also enduro."

V Sivaramakrishnan: Tyres for Europe require a different set of materials, compounds and specifications to handle "different terrains" and meet the "regulatory requirements".

Speaking about the major difference between the new Eurogrip tyres for Europe and those meant for India, V Sivaramakrishnan says that the European markets' products require a different set of materials, compounds and specifications to handle "different terrains" and meet the "regulatory requirements" of the region.

"Each type of tyre is tailored for the motorcycle segment, which is the primary target. So the differences in two-wheelers being used in India and Europe play a crucial role in defining tyre performance and features. Europe is much smaller in terms of numbers – as cars are the primary means of transportation there, they largely outnumber scooters and motorcycles. At the same time, bikes in Europe have considerably larger average displacement, accessories, electronics and higher prices, and often are a status symbol just as much as they are used to riding. Another crucial difference is that in Europe there is a closer balance between commuting, touring, sport, racing, trail riding, off-road and more. It is for these reasons, the differences in vehicles and tyre segmentation is more pronounced," he points out.

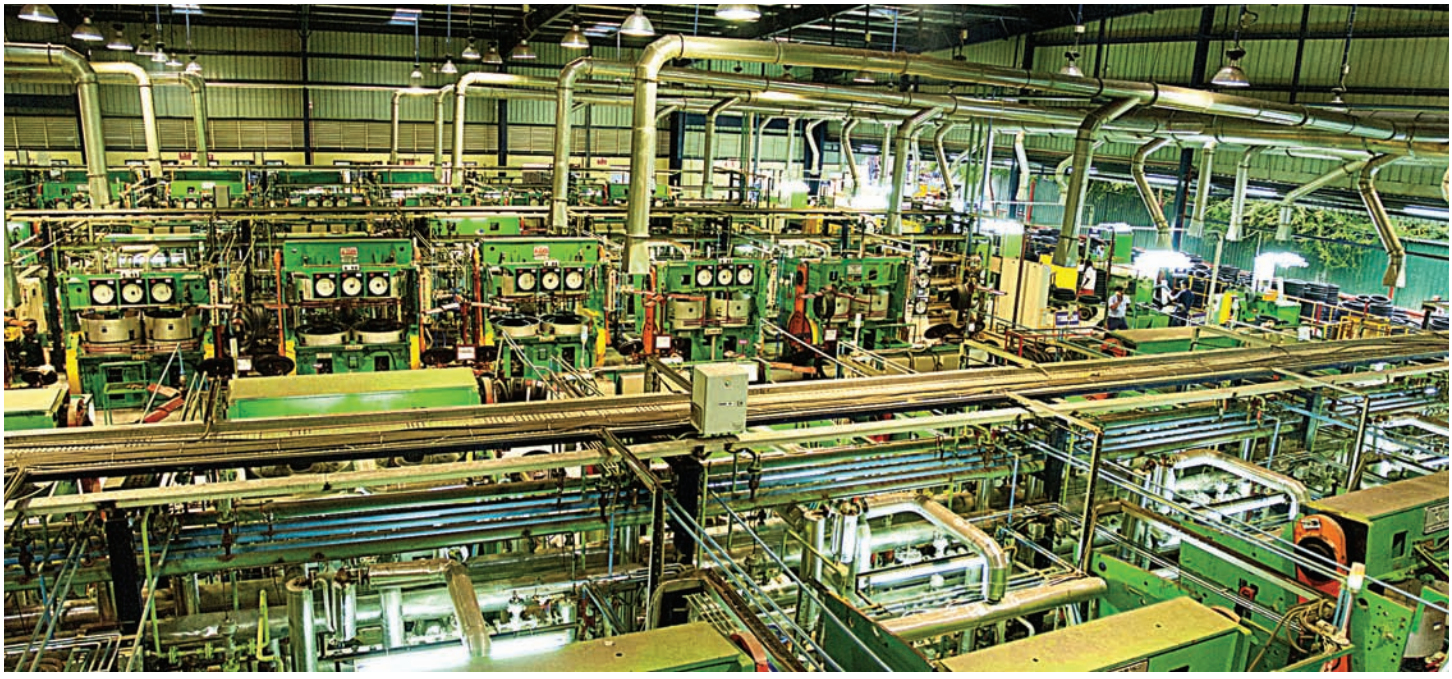
The designed-for-Europe tyres are produced at a dedicated manufacturing facility in Madurai, Tamil Nadu. TVS Srichakra has another plant in Rudrapur (Uttarakhand). In India , it is a supplier to many OEMs and major players in the aftermarket. Its domestic aftermarket supply is backed by a strong network of over 2,400 dealers and 34 depots. The company, which exports to over 70 countries, is now expanding its presence in the USA, Europe, South America, Africa and Australia.

Production ramp-up

"We are investing in expanding both the two-wheeler as well as the OHT capacities. It will help us in catering to demand across the world. We will invest around Rs 1,000 crore to ramp up manufacturing at our Madurai and Pantnagar plants. The proposed investment will be made over a three-year period. The investment, when fully made, will result in an increase in two- and three-wheeler tyre capacity by 25-30 percent and doubling of off-highway tyre capacity from current levels," reveals the company's executive vice-president.

There is little doubt that TVS Srichakra will leverage the learnings from the made-for-Europe scooter tyres. "Even though the Indian and Europe markets are quite different, the emerging new Indian rider is evolving. This will result in bringing the two worlds closer, making it even simpler to establish a unique worldwide range. Soon, new products introduced in Europe will be launched in the Indian market as well as all countries where TVS Srichakra has established a distribution network," concludes P Madhavan.

Clearly, these are exciting times for the company. With most of Europe more or less back on track, TVS Srichakra will be looking forward to seeing how its new Eurogrip Bee Connect tyre is received in the scooter market. That reception will also have key takeways for similar product rollouts in India. ■



Production ramp-up at the Madurai (below) and Pantnagar plants will see two- and three-wheeler tyre capacity increase by 25-30 percent. Off-highway tyre production will be doubled.

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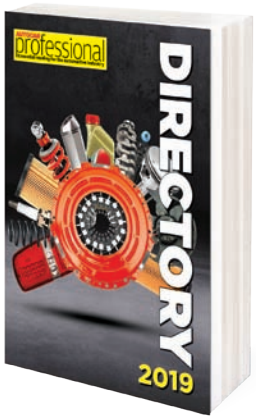

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MTAP Tech eyes SaaS potential in transport management

Bangalore-based Software-as-a-Service start-up is deploying technology to assist companies in better managing transportation of thousands of blue-and-white collar employees. **Mayank Dhingra** reports.

With an increasing foray of technology into everyday lives, the transportation sector too is no stranger to the modern suite of software solutions that enable fleet operators manage their services and business better.

Making its mark in this space is Bangalore-based Software-as-a-Service (SaaS) start-up MTAP Technologies, which started off in 2014 with a vision to automate B2B transportation management at corporates and even private schools. The company conducted an initial market study as well as proof of concept to arrive at the conclusion that potential for such a high tech back-end solution is huge in India. With an intent to introduce transparency, compliance and safety with its full-stack software solutions, the company very quickly figured out that the corporate world wanted something more tangible to latch on to its services.

"That is when MTAP Technologies came up with solutions that would reduce the employee transportation costs for these MNCs," says Srinivas Chitturi, an IIT Madras alumnus, who is the company's co-founder and CEO.

Based on the type of operations, number of shifts and employees and deployment of its solutions, MTAP claims it was able to register savings in overhead expenditure of up to 30 percent for its first customer in Bangalore — SAP Labs. It was with SAP Labs that the company launched its first product, Safetrax, in 2015.

Thus far into its entrepreneurial journey, MTAP has expanded into the major metros including Delhi-NCR, Mumbai, Pune, Hyderabad and Chennai, and primarily serves companies in the IT sector, BPOs as well as in the manufacturing space with the likes of Renault-Nissan being a customer in Chennai.

Employee transportation cost accounts for a significant portion of overhead expenses. MTAP Technologies says its SaaS solutions help deliver up to 30 percent cost savings for corporates.

It has also ventured overseas into Vietnam, China and Malaysia with its domestic customer Intel, to whom it provides solutions in Hyderabad and Bangalore. Moreover, full-EV fleet operators like Lithium Urban Technologies and EEE Taxi have completely switched their back-end fleet

APPLICATION OF SOFTWARE AS A SERVICE

- MTAP Technologies set up in 2014 by IIT Madras alumnus Srinivas Chitturi, who is the co-founder and CEO.
- Company conducted initial studies to identify potential of software-as-a-service model in employee transportation.
- SAP Labs, Intel, Omega Healthcare and Renault-Nissan key clients for Safetrax back-end management platform.
- MTAP working with Lithium Urban Technologies and EEE Taxi to manage all-electric fleets deployed in B2B transportation.
- Safebus suite for school transportation management and Autoroutes for management of last-mile delivery services are key growth drivers.
- MTAP's Autologix suite introduced last year to streamline operations of small-and-medium taxi-fleet operators.

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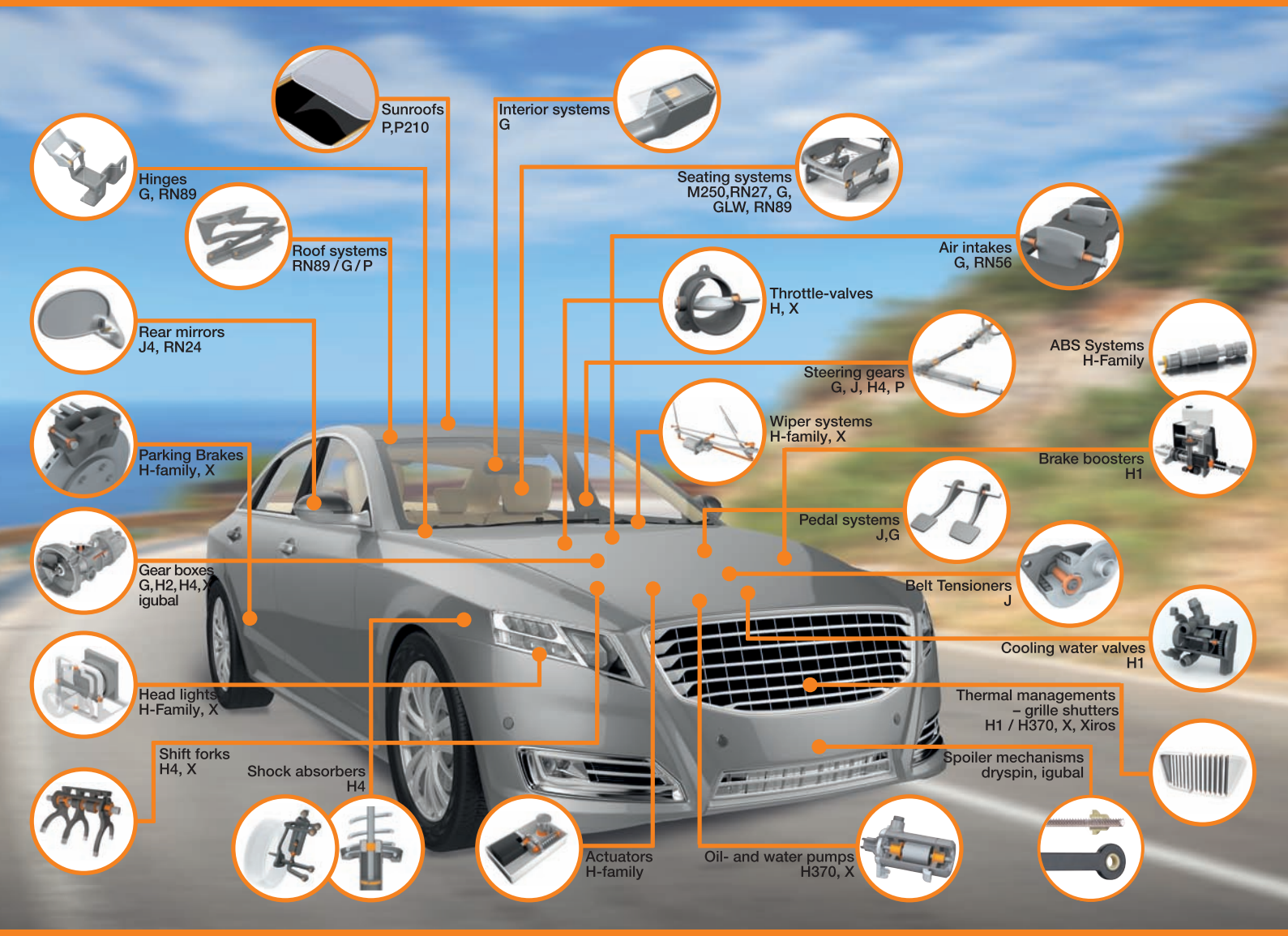

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management to MTAP's suite.

While its next foray was a school transportation segment in 2016 with its software suite christened 'Safebus', which was deployed at some of the "premium" schools in Bangalore,for instance, the American Embassy School and Bangalore International, the advent of Covid badly impacted business. "Undoubtedly, there has been a huge hit to our revenues . . . to the tune of 60 percent, as we generally operate on a pay-per-use model. However, while the IT sector, BPOs and manufacturing industry have started opening up, there is still no clarity about schools in the near future," Chitturi points out.

Safebus has also given MTAP Technologies the opportunity to tap the underlying potential in overseas markets including Australia, New Zealand as well as the USA.

"Most of the solutions providers in the US are school-ERP system providers and not dedicatedly focused on transport management. Hence, we see a significant potential and are also trying to tie up with existing ERP players so that it's a win-win for both of us. We are expecting to scale this vertical to 6-7 times in the next couple of years," says Chitturi. MTAP solutions are majorly seeing an offtake in cities like New York and New Jersey.

Back home though, the company believes the realisation of margins within Safebus will be much lower for the primary reason that schools in India are still wary of spending too much on infrastructure. "Most schools are happy with conforming to the legal compliances, which mandate a GPS tracking device in a school bus, however, very few are willing to spend more," adds Chitturi.

Diversification strategy

In an effort to diversify and tap more segments within the transportation sector, the company launched two more SaaS platforms – Autologix and Autoroutes – in the past year.

Autologix is targeted at taxi-fleet operators, many of whom fall in the unorganised segment and could benefit from a high-end technology platform that could help streamline their business to a great extent. MTAP says about 70 percent of all taxi trips in India happen outside of the app-based aggregator ecosystem. With Autologix, it is looking to provide a similar online platform like Ola and Uber for small and medium fleet operators. "The idea is to provide technology to these operators to automate the over-one-billion annual trips that happen in India – all being managed manually by these fleet operators," explains Chitturi.

While MTAP Technologies has on-boarded more than 3,000 vehicles on the Autologix platform, it first aims to plug the supply-side gaps in the taxi business. "Once we have enough number of vehicles across cities, our plan is to offer demand-side services similar to Ola and Uber, while not charging a high commission fee from the vehicle operators as in the case of these aggregators," he says.

MTAP Tech co-founder and CEO Srinivas Chitturi: "We aim to help automate the over one-billion annual trips that happen in India – all being managed manually by small and medium fleet operators."

By April 2022, the company will roll out demand-generation services that would allow small fleet operators to get in touch with the end customer. Around this time, it also expects to reach a threshold of 30,000-odd vehicles on the Autologix platform across cities including Bangalore, Mumbai, Pune, Hyderabad, Chennai and Delhi-NCR.

The last product to be rolled out during the grim Covid phase has been Autoroutes – a SaaS platform to solely manage the back-end operations of last-mile delivery service providers. MTAP Technologies is presently running beta trials with a Nagpur-based last-mile logistics provider as well as an operator based in the US.

The plan is to eventually provide a full technology stack for the logistics segment, particularly in the first and last mile delivery segment to benefit small players. The company has outlined October 2021 to go to market with Autoroutes across the country.

Expansion plans

With a software development team of 30 engineers sitting at its head office in Bangalore, MTAP Technologies has satellite offices across metros as well as in the Philippines. The company aims to scale up Safebus internationally and Autologix in the domestic market over the next couple of years.

These are the new growth avenues apart from its traditional Safetrax SaaS contracts with MNCs, which are increasingly switching onto such platforms as a large number of electric vehicles also become a part of the corporate employee-transportation fleet. A high-tech, cloud-based solution then is the clear answer to plan routes and maximise vehicle utilisation by taking into account the range and recharge time of an EV.

From its initial seed funding of Rs 11 crore to already becoming profitable, MTAP Technologies is now looking to raise a couple of more million dollars to get on an aggressive growth path for its two high-potential products – Safebus and Autologix. ■

MTAP Technologies is offering its Safebus platform in Bangalore and New York to help assure parents of their kids' safety by being able to remotely track the school bus.

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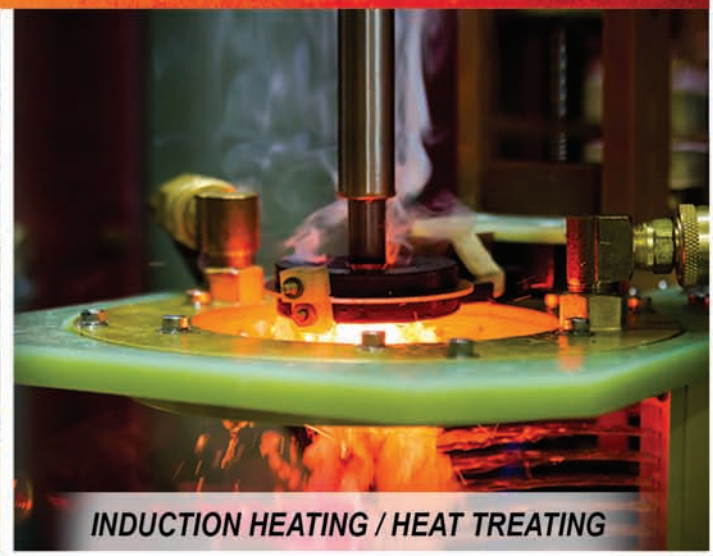

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- 24x7 aftermarket support network
- Highest holding temperature with A.C. unit range from -25^{0}C to 25^{0}C

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HINDUJA GROUP

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