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21/115/103

MaterialLFP/LMO+NCMDimension21*115*108mmVoltage3.2-3.7VCapacity24AhApplicationE2W,E3W,EV,ESS



15/119/129

MaterialLFP/LMFP/LMO+NCMDimension15*119*133mmVoltage3.2-3.7VCapacity23Ah/24AhApplicationE2W,E3W,EV,ESS



17/119/133

MaterialLFP/LMFP/LMO+NCMDimension17*119*133mmVoltage3.2-3.7VCapacity26Ah/27AhApplicationE2W,E3W,EV,ESS



30/110/300 *Coming 2023

MaterialLFP/LMFP/LMO+NCMDimension30*110*300mmVoltage3.2-3.7VCapacity100AhApplicationE3W,EV,ESS

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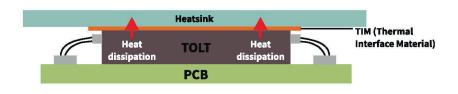
Infineon's OptiMOS[™] power MOSFET family expands its high performance package offerings with the introduction of the TO-Leaded top-side cooling (TOLT) package to its portfolio. The TOLT package offers the same high current low profile benefits as the TO-Leadless (TOLL) package with the additional advantage of top-side cooling for optimum thermal performance.

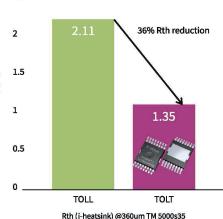
This innovative package combined with the key features of OptiMOS[™] 5 power MOSFET technology enables best-inclass products in 80V and 100V as well as high current rating >300A for high power density designs.

With top-side cooling, the drain is exposed at the surface of the package allowing for 95% of the heat to be dissipated directly to the heatsink, achieving 20% better RthJA and 50% improved RthJC compared to the TOLL package.

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- > Increased system efficiency enabling extended battery life time
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- Superior thermal performance which improves the overall system reliability with longer end product life time





2.5

Rth (K/W)

Rth (j-heatsink) @360um TM 5000s35 Toll on FR4 board without solder stop mask



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1 NEW PRODUCT LAUNCHES

Product	Vehicle type	Battery specifications	Other specifications	Price
Batt:RE Stor:ie	E2W (E-scooter)	• 3.1kWh	 Range- 132km Top Speed- 65km/hr 	INR 89,600
Evtric Rise	E2W (E-bike)	• 70v/40Ah lithium- ion	Range- 110km2000W BLDC motor	INR 1.60 lakh
Atumobile AtumVader	E2W (E-bike)	• 2.4kWh	 Range- 100km Top Speed- 65km/hr 	INR 99,999
Omega Seiki Mobility Stream	E2W (Passenger)	• IP65-rated Li-ion	 Power- 13.4 hp Torque- 535 Nm Range- 110km 	INR 3.4 lakh
Zero21 Teer	E3W (Passenger)	• 48V	• Range – 110km	N/A
Zero21 Smart Mule-X	E3W (Cargo)	• 72V	 Range – 125km Payload capacity – 750kg 	N/A
Switch EiV12	E-Bus	• Li-ion modular	• Range-100km-300km	INR 70 lakhs – 1 crore

Table 1.1: India Launches – June2022

Source: Industry news articles, JMK Research



Upcoming Launches

Product	Vehicle type	Known/ Revealed specifications	Expected Launch Date	Expected Price
PMV EaS-E	E-Car	 Battery- 10kWh Li-iron-phosphate Range- 120km-200km 	July 2022	INR 4 lakh

Source: Industry news articles, JMK Research

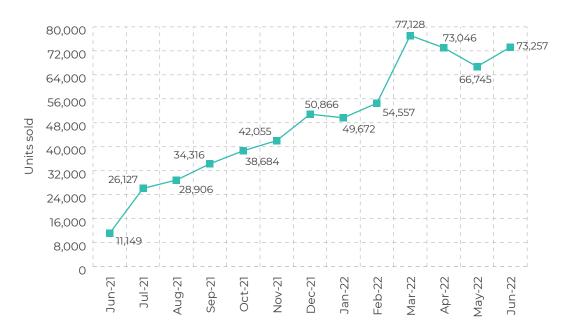
Bajaj Auto looks to expand electric vehicle portfolio

After the Chetak electric scooter, the company will now roll out electric three-wheelers in September 2023. The electric three-wheeler would be manufactured at the Waluj plant in Aurangabad under the Bajaj Auto brand, unlike the electric two-wheeler, which is produced by Bajaj Auto's subsidiary Chetak Technology..



2 EV SALES TRENDS

The overall EV sales in June 2022 increased m-o-m by 9.8% to reach 73,257 units. In addition, there was a y-o-y leap of more than 5 times.

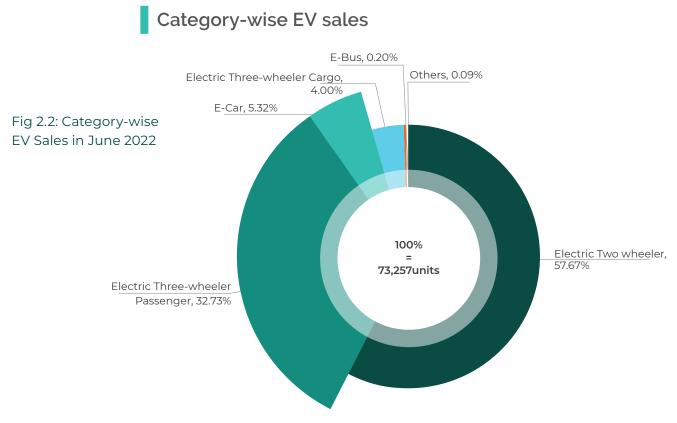


Registered EV Sales Trend in India (June 2021–June 2022)

Source: Vahan Dashboard, Company Press Releases, JMK Research Note: Sales figures represent EVs registered across 1,282 RTOs in 33 states/ UTs.

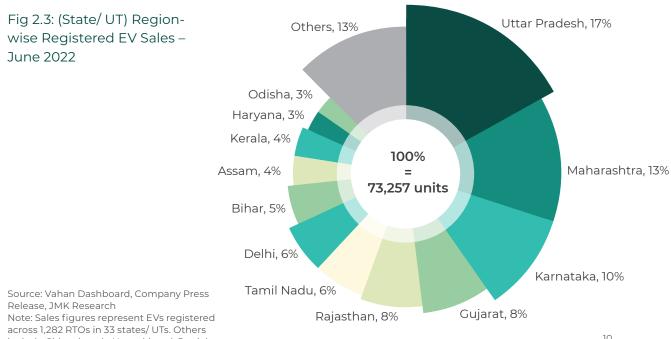
As depicted in the figure below, EV registrations in June 2022 were driven by electric two-wheelers and passenger-type electric three-wheelers, which together accounted for 90.40% of total registrations in the month. The shares of these categories were followed by E-Cars (5.32%), cargo-type electric three-wheelers (4.00%), and so on.





Source: Vahan Dashboard, Company Press Release, JMK Research Note: Sales figures represent EVs registered across 1,282 RTOs in 33 states/ UTs; Others include adapted vehicles, fork-lifts, agricultural trailers, goods carriers, and omni bus.

Among all the states and UTs, Uttar Pradesh retained its top spot of EV share with 17% of overall sales, followed by Maharashtra with 13% share. Karnataka retained its third spot with 10% share, followed by Gujarat (8%), Rajasthan (8%), Tamil Nadu (6%), and Delhi (6%).



include Chhattisgarh, Uttarakhand, Punjab, and 18 other states/UTs.



High-Speed Electric Two-Wheeler (HS-E2W)

The overall HS E2W sales in the country in June 2022 stood at 42,245 units, signifying an increase of 7.12% m-o-m however a whopping more than 900% y-o-y leap in registrations. The Top 10 players accounted for 90% of the total registrations witnessed in the month of June 2022.



Fig 2.4: High-Speed E2W Sales Trend

Source: Vahan Dashboard, JMK Research

Note: Sales figures represent only high-range E2W (Top speed > 25 kmph) registered across 1,282 RTOs in 33 states/ UTs.

Okinawa retained its number one position this month as well while Ampere Vehicles moved to the second position. Further, Hero Electric moved to the third position this month from fifth position in May 2022. The Top 10 club witnessed the entry of Benling again this month by replacing Jitendra New EV Tech.



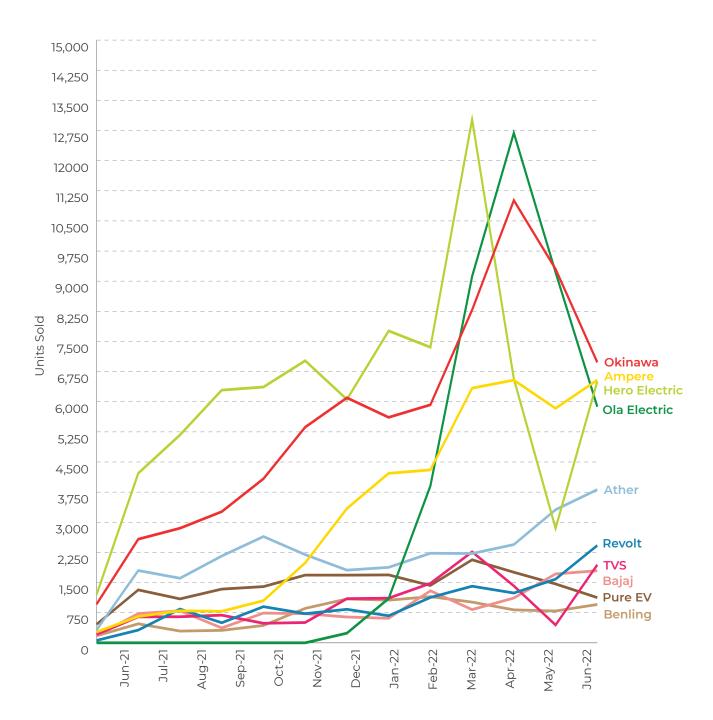


Fig 2.5: Top High-Speed E2W Players in June 2022

Note: Sales figures represent only high-range E2W (Top speed > 25 kmph) registered across 1,282 RTOs in 33 states/ UTs. Others include Jitendra EV Tech, Lectrix. GoGreen E-mobility Private Limited, MEW Electricals Ltd (BGauss), KLB KOMAKI, and 30 other players.



Electric Three-Wheeler (E3W)

The sales of registered E3Ws passenger and cargo-type in June 2022 stood at 23,979 units and 2,931 units respectively, signifying a m-o-m increase of 15.35% for E3W - Passenger and increase of 15.71% for E3W - Cargo.



Fig 2.6: Sales Trend of E3W – Passenger (Left) and E3W - Cargo (Right)

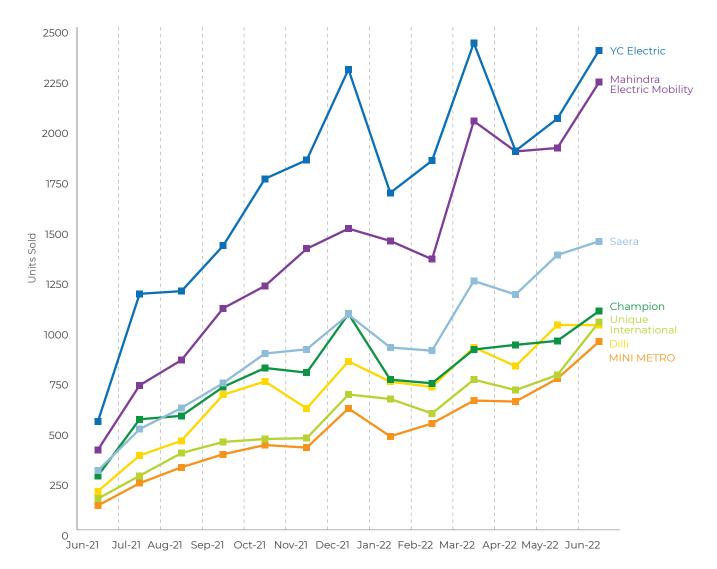
Source: Vahan Dashboard, JMK Research

Note: Sales figures represent E3Ws registered across 1,282 RTOs in 33 states/ UTs; E3W (Passenger and Cargo) sales shown in the figure takes into account both e-rickshaw and three-wheeler classes as categorized in the Vahan dashboard.



The cumulative sales of top 7 electric 3-wheeler players across passenger and cargo segments in June 2022 accounted for 37.61% share of the entire E3W market. YC Electric Vehicle continued to have the highest share of 8.86%, which was followed by Mahindra Electric Mobility (8.27%), Saera Electric Auto (5.33%), Champion Poly Plast (4.04%), Unique International (3.84%), Dilli Electric (3.78%), and MINI METRO EV L.L.P (3.48%).





Source: Vahan Dashboard, JMK Research

Note: Others made up 62.39% of the E3W markets in June 2022; sales figures for players are inclusive of both cargo and passenger offerings; Sales figures represent E3Ws registered across 1,282 RTOs in 33 states/ UTs; E3W (Passenger and Cargo) sales shown in the figure takes into account both e-rickshaw and three-wheeler classes as categorized in the Vahan dashboard.



Electric cars (E-cars)

The cumulative sales of E-cars in June 2022 stood at 3,894 units, witnessing a m-o-m rise of just 2.58% however a y-o-y surge of ~4 times in registrations. Tata Motors has been driving the E-car sales the entire year. This month, the Company accounted for 90% of the total registrations. BYD and Hyundai witnessed an increase in sales of their E-cars this month as well.

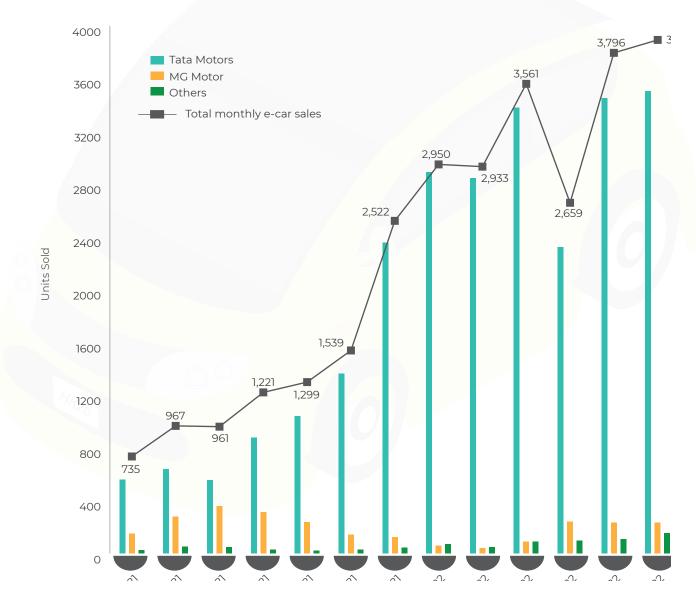


Fig 2.8: Player-wise E-car sales trend

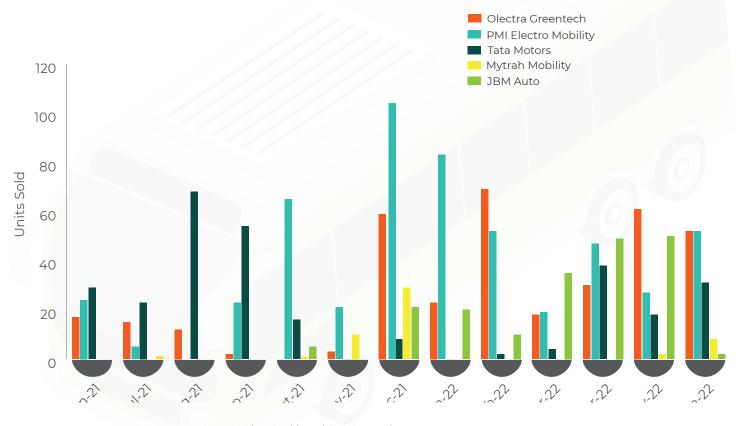
Source: Vahan Dashboard, Company Press Release, JMK Research Note: Sales figures represent E-cars registered across 1,282 RTOs in 33 states/ UTs; Others include Hyundai, BYD, Jaguar, Audi, Mahindra & Mahindra, Mercedes-Benz, BMW, and Porsche.



Electric buses (E-buses)

The cumulative sales of E-buses in June 2022 stood at 145 units, with a m-o-m fall of 8.23% and a y-o-y increase of 107%. This month's sales were driven by Olectra Greentech (36%) and PMI Electro Mobility (36%) followed by Tata Motors (21%). Mytrah Mobility sold eight E-buses this month.

Fig 2.9: Player-wise e-bus sales trend



Source: Vahan Dashboard, JMK Research Note: Sales figures represent E-buses registered across 1,282 RTOs in 33 states/ UTs.



3 POLICIES AND REGULATIONS

Delhi airport to replace all vehicles with EVs to cut greenhouse gas emissions

The Delhi airport will launch 62 EVs for its airside operations, which would help in reducing approximately 1,000 tonnes of greenhouse gas emissions annually. These vehicles would be inducted within 3-4 months.

BIS establishes performance standards for EV batteries in India

The Bureau of Indian Standards (BIS) has established standardised parameters for performance of lithium-ion batteries that are used in electric vehicles. This standard incorporates the test procedure for basic characteristics of performance, reliability and electrical functionality for the battery packs and system for either high power or high energy application.

GST on EV batteries could be reduced to bring down cost of electric vehicles

The Goods and Service Tax (GST) Council is planning to bring down the tax rate on lithium-ion battery. As per the current GST regime, tax rates on lithium-ion batteries and electric vehicle supply equipment (EVSE) are 18% and 5%, respectively. The reduction of GST on the EV batteries will help in making EVs more affordable.

To make Pune first EV ready city in India, PMC to announce new policy decisions from July 1

In its efforts to make Pune the first electric vehicle ready city in the country in the coming months, the Pune Municipal Corporation (PMC) is all set to make additional electricity load mandatory in all new residential buildings from July 1 for the provision of encouraging EV charging stations and also reserve parking for EV in public and off-road parking places.

Karnataka govt launches electric vehicle awareness portal

Promoting the use of electric vehicles in Bengaluru and providing citizens with all information related to buying and use of EVs, the state government in collaboration with NITI Aayog and the United



Kingdom (UK) unveiled a web portal 'EV Jagruthi'. The portal will provide citizens with state-specific information pertaining to e-mobility besides assisting the general public in switching over to EVs by providing insight into incentives, support mechanisms and e-mobility initiatives.

Electric cycle subsidy for buyers in Delhi

The Delhi government has rolled out an online portal through which customers can avail subsidy on the purchase of select electric cycles. The subsidy announced is not for all electric cycles. The Delhi government has approved as many as 11 electric cycle models from four companies which are eligible for subsidy so far. These include models from companies like Hero Lectro E-cycles, Nexzu Mobility Limited, Stryder Cycle Private Limited and Motovolt Mobility Private Limited.

EV firms availing FAME subsidies to face tighter scrutiny

Companies availing of subsidies under the government's flagship EV promotion scheme are facing increased scrutiny from the authorities, after it came to their notice that many manufacturers were providing misleading information. EV makers now must produce a certificate from a chartered accountant empaneled with the Comptroller and Auditor General, verifying the extent of imported components in their vehicles before their products can qualify for subsidies under the Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India (FAME-India) scheme.

Haryana approves electric vehicle policy; offers incentives to EV manufacturers

Haryana approved the electric vehicle (EV) policy for the state, offering several financial incentives to EV manufacturers. The policy was released after a meeting of the state cabinet ministers that met under the chairmanship of CM Manohar Lal Khattar. The state's EV policy offers financial incentives to EV manufacturers on fixed capital investment (FCI), employment generation, net SGST, stamp duty, etc. Government is also offering 100 per cent reimbursement of stamp duty along with exemption in electricity duty for a total of 20 years.



Regulation for EV charging stations on the cards in Kerala

The Kerala State Electricity Regulatory Commission is planning to bring in a regulation governing the sale of electricity through EV charging stations. In determining the electricity tariffs for the 2022-23 fiscal, the Commission has fixed INR 8 per unit as the 'ceiling rate' that can be charged by EV charging stations/outlets. However, a fullfledged regulation is deemed necessary in this regard as the sale of electricity is essentially a licensed activity.

NITI Aayog proposes regulatory framework for electric mobility with enforcement expected in near future

NITI Aayog has proposed a regulatory framework for electric mobility even as it forecasts electric two-wheelers sales in India to jump to 22.01 million by 2031 as against 0.23 million in 2021 if demand incentives continue beyond 2024 and battery cost reduces while the power goes up due to significant development in technology. The Aayog expects enforcement of a regulation towards electric mobility or other clean transport options at some point of time in future.



4 CHARGING INFRASTRUCTURE & BATTERY SWAPPING

Stakeholder(s)/ Player(s)	Description
Ahmedabad Municipal Corporation (AMC)+A1:B17	 The Ahmedabad civic body will shortly be inviting private players to set up electric vehicle charging stations in the city, which will be run on PPP mode. Though the Ahmedabad Municipal Corporation (AMC) aims at setting up 300 charging stations on PPP mode as per the budget proposal for 2022-23, the civic body will initially begin with 25 to 30 stations.
Public sector Oil Marketing Companies	 In a bid to go green, Public sector Oil Marketing Companies (OMCs) of Tamil Nadu will be setting up 900 e-charging stations in the state with Indian Oil Corporation (IOC), Hindustan Petroleum Corporation (HPC), and Bharat Petroleum Corporation (BPCL) taking the lead. IOC has 133 e-charging stations in Tamil Nadu and is planning to install 400 more e-stations by the end of this financial year. HPC will be setting up 175 more e-charging stations from the 79 it has now. BPCL will be installing 145 more e-charging stations by the end of this financial year.
Goa government	 To create a web of EV charging stations with the aim to boost electric vehicle sales, the Goa government has decided to invite bidders to set up 50 charging stations on design, built, operate, finance and transfer basis (DBOFT). Of these, 10 will be reserved under the government of Goa's startup programme.
Maharashtra State Electricity Distribution Company Limited (MSEDCL)	• While the MSEDCL has proposed setting up as many as 2,375 EV charging stations across the state by 2025, it has built only 13 out of the 500 EV charging stations that were announced back in 2018.
Bangalore Electricity Supply Company (BESCOM)	 In a bid to strengthen the electric vehicles' charging network, the Bangalore Electricity Supply Company (BESCOM) said it will add 140 EV chargers in the next six months. Tenders have been invited to set up 1,000 EV charging stations across Karnataka in a PPP model.



Stakeholder(s)/ Player(s)	Description
Charge+Zone	 As part of the initial phase of expansion, Charge+Zone shall continue to build the EV charging station network with over 5,000 fast DC charging stations by 2025 and in the current FY23, there would be a minimum of 1,000 charging stations (with 2,500 points) available for electric buses and cars.
Tata Power	 Tata Power announced that it has installed 150 green energy-powered EV charging stations across residential societies, malls, commercial complexes and petrol pumps in Mumbai. These chargers are powered by renewable/clean energy sources like wind, solar, and hydropower.
SUN Mobility	 Energy infrastructure provider and services for electric vehicles, SUN Mobility announced the launch of its battery-swapping network for electric vehicles in Mumbai, Maharashtra, in collaboration with Amazon India. With the first set of stations placed at Amazon's sites in Mumbai and Pune, SUN Mobility plans to deploy over 2000 battery swapping points across Maharashtra by 2025.
MG Motor	 MG Motor India said it has inaugurated the first two residential community SMART electric vehicle chargers in Jaipur as part of its plans to set up more such charging stations in the Rajasthan capital. Under the company's MG Charge initiative, the automaker will install 1,000 AC fast chargers at residential localities across India in 1,000 days

Source: Industry news articles, JMK Research



5 E-BUS UPDATE

Nashik transport utility to roll out 50 e-buses over 5 years

The Nashik Mahanagar Parivahan Mahamandal Ltd (NMPML), the transport utility of the Nashik Municipal Corporation (NMC), is planning to roll out electric buses on city roads. The NMPML will operate 10 electric buses every year for the next five years beginning this fiscal. The NMPML plans to roll out 50 buses, in phases, over the next five years.

Nagpur to induct 144 electric buses in its intra-city public transport fleet

Nagpur Municipal Corporation (NMC) will add 144 electric buses to its intra-city public transport fleet, and these buses will be supplied by PMI Electro Mobility. The electric commercial vehicle manufacturer has won the tender for this, marking its foray into Maharashtra's electric public transport ecosystem. In the first batch, PMI Electro will supply fifteen battery powered buses to NMC that will be integrated into its operational fleet within the first three months.

Mumbai may get its first electric double-decker bus in August

Mumbai's first electric AC double decker with a capacity of 78-90 passengers per bus will be out by August. This is a part of BEST's initiative to preserve the city's iconic double deckers, which have dropped by 60% in the last two years, from 120 in 2019 to 48 in 2021, since most buses have reached the end of their lifespans.

Thiruvananthapuram: First batch of new e-buses to hit city

The first batch of electric buses to be pressed into KSRTC city service is about to hit the streets in a few days. Five electric buses have left from a factory in Haryana for the city. KSRTC was initially planning to induct 25 electric buses in its fleet in June, in two phases.

Second batch of 40 electric buses to come next month in Chandigarh

Chandigarh will get another fleet of 40 electric buses next month. As per the transport department's plan, these 40 buses will come in two phases: the first lot of 19 will reach by the second week of July and the remaining will take another week or two.



Bengaluru: 300 e-buses to operate on 14 long-distance routes

In September 2021, Ashok Leyland emerged as the lowest bidder in the 300 e-bus tender under the Centre's FAME II scheme after it quoted INR 48.95 per km. BMTC officials said Switch Mobility Ltd, a subsidiary of Ashok Leyland, will supply and operate all 300 12m non-AC e-buses.



6 OTHER MARKET UPDATES

Jupiter Wagons forays into electric mobility

Jupiter Wagons Limited, manufacturer of wagons, high-speed brake systems, and railway and engineering equipment, is entering the electric mobility market with the launch of 'Jupiter Electric Mobility' (JEM) focusing on commercial EV vehicles. The company has formed a joint venture with EA GreenPower Private Limited, a wholly-owned subsidiary of GreenPower Motor Company Inc, a publicly listed company in the United States and Canada specializing in ECVs (electric commercial vehicles) in the passenger transportation and freight transport markets.

Tata Motors to supply 10,000 XPRES-T EV units to BluSmart Electric Mobility

The deployment of 10,000 units makes this the biggest ever EV fleet order in India. With deliveries starting soon, these vehicles are an addition to the 3,500 XPRES-T EV order, which was signed by both the companies in October 2021.

Bajaj's Chetak Tech inaugurates new EV plant at Pune

A wholly-owned subsidiary of Bajaj Auto Ltd, Chetak Technology Ltd on June 10th inaugurated their newly built EV manufacturing plant at Akurdi, Pune. This plant's capacity can be expanded to manufacture 500,000 electric two-wheelers per annum. Chetak Technology and its vendor partners will be investing nearly INR 750 crores in this new EV manufacturing plant.

Volvo Car SUV XC40 Recharge will be locally assembled

Volvo Car would locally construct the XC40 Recharge, a pure electric compact SUV, at its Hosakote manufacturing facility in Bengaluru to serve the domestic market. The XC40 Recharge, an electric compact SUV, is set to debut in India in July.

Ellysium Automotives launches electric two-wheeler brand EVeium in India

UAE-based META4 Group's auto arm Ellysium Automotives announced the launch of its electric two-wheeler brand Eveium. The company said it is planning to launch three 'Made-in-India'



e-scooters within one month, which will be manufactured at the group's proposed Voltly Energy manufacturing facility in Zahirabad (Telangana) at a planned investment of INR 250 crore.

Yamaha to accelerate India EV entry

Japanese two-wheeler maker Yamaha Motor is developing an electric scooter for the Indian market which could hit the roads in the next two-three years. India could also turn into a key hub for the company to export electric scooters to Europe and emerging markets. The product is currently being developed by its R&D team in Chennai. It is likely to be manufactured at Yamaha's facility at Kancheepuram in Tamil Nadu.

Kia EV6 rivaling Volkswagen ID.4 electric car to start testing in India

Volkswagen AG has confirmed to initiate testing of its internationally available electric car, ID.4, in India later this year. The new model has already made its official debut in the global market and is now also headed for India.

Electric vehicle sales to treble to 8-9 lakh units this fiscal: SMEV

India's electric vehicle sales are likely to jump almost three times - from 340,000 units in FY21-22 to about 800,000-900,000 units this financial year, according to Society of Manufacturers of Electric Vehicles (SMEV). According to SMEV, sales of electric two wheelers, three wheelers, buses, cars and other vehicles almost doubled twice over in the January-May period from 78,903 units in 2021 to 3,17,890 units in 2022 despite the fire incidents.

Switch India to synergise parent Ashok Leyland's assets for its new India plant

Switch Mobility, Ashok Leyland's global e-mobility subsidiary, will use synergies with the parent company and pick an existing Ashok Leyland plant location for its new Switch India factory. The company is looking at Hosur, Ennore, Pantnagar and other locations countrywide where Ashok Leyland has assets.

Noida-based EV startup One Electric Motorcycles starts export to eighth country

Noida-based electric vehicle startup One Electric Motorcycles has



announced that it has started exporting its products to the eighth market i.e., Dubai along with its domestic operations. Apart from five African countries, the United States and Nepal, it will now start trials in the Middle East region. Also, the EV company is currently planning to achieve 20,000 unit sales per month across three continents by the end of 2022.

Hero MotoCorp-backed EV maker Ather Energy in talks with states to set up third manufacturing plant

Hero MotoCorp-backed electric two-wheeler maker Ather Energy is in talks with several state governments to set up a new manufacturing facility in the country. The company is said to be in talks with officials of several state governments, including Andhra Pradesh, Maharashtra, Gujarat, Telangana and Karnataka, to set up an additional manufacturing plant with an annual capacity of about 15 lakh units.

Omega Seiki opens electric three-wheeler manufacturing plant in Pune

The new manufacturing plant at Chakan in Pune will start by manufacturing electric cargo three-wheelers and later on add electric passenger three-wheelers. The company would be investing around US\$25 million at this plant, which would have the capacity to manufacture 500 vehicles per month. The company already has three plants in Faridabad and will now add a facility in Pune to cover the western region, and two more plants are coming up in the south, in Karnataka and Andhra Pradesh.

Saera Electric Auto starts production at Bawal plant in Haryana

Electric vehicle maker Saera Electric Auto Pvt Ltd (SEAPL) has commenced production at its Bawal plant in Haryana, which it acquired from American bike maker Harley Davidson. The firm, which first introduced e-rickshaw under the Mayuri brand, is producing e-rickshaws and e-carts at the plant spread across five acres, where it has invested over INR 350 crore.

Okinawa to invest INR 500 crore to set up EV manufacturing plant in Rajasthan

Electric two-wheeler manufacturer Okinawa Autotech announced that it will invest INR 500 crore to set up an EV manufacturing plant in Karoli, Rajasthan. After setting up two factories in Rajasthan, this



is the third manufacturing plant from the manufacturer that will be spread across 30 acres of land.

In a first, Tata's electric four-wheeler catches fire; govt orders probe

In a first for an electric car in India, a Tata Nexon EV caught fire recently in a Mumbai suburb. This comes against the backdrop of numerous reports of fire mishaps involving electric two-wheelers. Tata Motors said it is investigating the incident and remains fully committed to all aspects of safety. A detailed investigation is currently being carried out to ascertain the reasons for the incident. Meanwhile, the government has also ordered an independent enquiry.

Ola Electric crosses Rs 500 cr revenue in Apr-May

Electric two-wheeler maker Ola Electric reported that it has crossed INR 500 crore revenue in the first two months of FY2022-23. Amid reports that the company's sales have slowed down, Ola Electric asserted that it is on track to cross the US\$1 billion (over INR 7,800 crore) revenue by the end of this year.

EV startup Mecwin India to set up INR 50 cr manufacturing plant in Bengaluru

Electric vehicle startup Mecwin India recently said it is going to invest INR 50 crore for setting up a manufacturing plant in Bengaluru for EV motors and controllers. The facility will cater to the demand for indigenous mid drive and hub motors along with controllers from EV OEMs in India.

Taiwanese electronics giant Foxconn looks at manufacturing EVs in India

Taiwanese electronics giant Foxconn is looking at making electric vehicles in India, part of a larger diversification plan to expand its Asian manufacturing supply chain beyond China. Foxtron—the company's EV venture—may consider manufacturing in India in addition to other locations in South East Asia such as Vietnam and Indonesia.

Electric vehicle maker OSM to setup retrofit plant in Punjab at \$25 million

EV maker Omega Seiki Mobility is setting up a retrofit facility to



convert internal combustion engine (ICE)-powered vehicles into electric vehicles near Chandigarh at an investment of USD 25-million, which is expected to be operational by the December quarter.

EV maker Okinawa to adopt government's Open-BMS

EV maker Okinawa will adopt the government's open battery management system (Open-BMS). Government think-tank Niti Aayog, in collaboration with IITs, battery makers, the Department of Science and Technology, World Resources Institute and other industry bodies, is coming up with an Open-BMS for EVs that any manufacturer can adopt.

Tribunal permits Hero MotoCorp to sell EVs under 'Hero' trademark

An arbitration tribunal, appointed by the Delhi High Court, on Thursday permitted Pawan Munjal-led Hero MotoCorp to manufacture and sell electric vehicles under the trademark 'Hero'. The tribunal observed that Hero MotoCorp had publicly asserted its manifest intention to use the name 'Hero' for its business of electric vehicles since 2012 and that it was close to the commercial launch of its electric vehicles under the brand 'Vida – powered by Hero'.

Ather Energy sees five times jump in revenues for FY22

Electric vehicle maker Ather Energy's revenue for the year ended March jumped over five times to INR 408 crore from INR 79 crore in FY21, but its losses increased 47% on year to INR 344 crore. Ather sold 23,408 units of electric scooters in FY22, a 4.2 times jump from 5,523 units sold in FY21.

Electric two-wheelers to see 100% penetration in Indian market by FY27: Report

Electric two-wheelers will see one hundred per cent penetration in the Indian market by fiscal year 2026-2027, as per a report by public policy think tank NITI Aayog and Technology Information, Forecasting and Assessment Council (TIFAC) - an autonomous organization set up under the Department of Science and Technology. The report notes that if the range and power of electric two-wheelers is increased by 5 per cent annually between FY 2023-24 and 2025-26, and by 10 per cent in FY 2026-2027, the EV two-wheeler penetration is expected to reach about 72 per cent in FY 2031-32, even if there is no extension of the demand-side incentives.



7 DEALS & INVESTMENTS

Company name	Company type	Deal type	Investor(s)	Deal value (US\$ Mn)	Details
Revamp Moto	E2W Manufacturer	Equity	Veda VC, Venture Catalysts and other investors	1	EV manufacturer Revamp Moto raises over \$1 million in funding
Greaves Electric (Ampere)	E2W Manufacturer	Equity	Abdul Latif Jameel	220	Rivian's Saudi backer makes Rs 1,700-crore bet on Greaves Electric
Statiq	EV charging infra- structure provider	Equity	Shell Ventures	25.7	EV charging infra startup Statiq fetches \$25.7 mn in Series A
BatX Energies	Battery recycling	Equity	JITO Angel Network	1.6	BatX Energies raises USD 1.6 mn in funding round led by JITO Angel Network
Upgrid Solutions Pvt. Ltd (Battery Smart)	Battery- swapping network provider	Equity	Tiger Global, Blume Ventures and Orios Ventures	25	Tiger Global leads round in EV battery solutions company Battery Smart
Matter	EV platforms and energy storage solutions	Equity	Capital 2B	10	Electric mobility startup Matter raises USD 10 mn
Bubble Pvt Ltd (Turno)	EV startup	Equity	Stellaris Venture Partners, Avaana Capital and other angel investors	3.1	EV startup Turno raises funding led by Stellaris, Avaana Capital

Source: Industry news articles, JMK Research



TVS looks to raise up to Rs. 5,000 cr in EV push

TVS Motor Co. Ltd is in advanced talks to raise INR 4,000-5,000 crore from private equity firms to fund the expansion plan of the group's newly formed electric mobility arm.

KKR, TPG in talks to invest \$300 m in TVS's EV business

Private equity giants TPG Capital and KKR & Co. are in talks with TVS Motor Co. Ltd to invest at least US\$300 million to fund the expansion of its EV business. TVS Motor Co. may raise the money in the September quarter by selling 20-25% of TVS Electric Mobility Ltd.

Varroc Engineering sets aside INR 600 cr capex till next financial year

Tier 1 auto components manufacturer Varroc Engineering has planned a capital expenditure of INR 600 crore till next financial year to fund capacity and electric vehicle portfolio expansion. On the electric vehicle business front, the company has won new business with revenues of over INR 1,050 crore in the last financial year.

E-scooter maker Ather Energy tests IPO waters

Bengaluru-based electric 2-wheeler maker Ather Energy has initiated discussions with investment banks, exploring the possibilities of going public in the near future. Last month Ather raised US\$128 million in its Series E round of funding from National Investment and Infrastructure Fund Ltd's Strategic Opportunities Fund and Hero MotoCorp.

Electric motorcycle maker One Electric raising capital to fund overseas expansion

Having already tested waters in eight export markets, Noida-based electric motorcycles maker One Electric is now looking to raise capital to fund its overseas expansion plans, including an assembly plant in Nairobi, Kenya. The company is looking to raise US\$5 million immediately as part of its pre-series round of funding followed by a US\$20-million Series A round towards the end of this fiscal year.



8 JVs & PARTNERSHIPS

Companies involved	Purpose of Partnership			
eBikeGo and Log9 Materials	 eBikeGo has partnered with Log9 Materials to launch their 10-minute fast charging technology (InstaCharge) for their upcoming electric trike, Velocipedo. Both the companies have entered into a long-term partnership by signing a Memorandum of Understanding (MOU). The production of Velocipedo will begin by the starting of 2023. The basic model can accommodate two people, has a top speed of 95 Kmph and a range per charge of 100 kilometres. 			
Bounce Infinity and Bharat Petroleum	 Bounce Infinity has partnered with Bharat Petroleum to set up battery swapping stations across 19,000 Bharat Petroleum fuel stations, in a phased manner. The Infinity swapping stations work on similar principles to a fuel station. The battery swapping stations will have charged and ready-to-go batteries that customers can be swap with their near-empty batteries. Bounce Infinity has recorded over 1.2 million battery swaps on its energy infrastructure. 			
Hero Electric and Zypp Electric	 EV Company Hero Electric extended its partnership with Zypp Electric, an EV-as- a-Service platform, to support the growth of the logistics and delivery segment Under the partnership, Hero Electric will be deploying 1.5 lakh electric scooters for Zypp Electric's fleet in the next three years. 			
MG Motor India, Castrol India and Jio-bp	 MG Motor India and Castrol India entered into a partnership with Jio-bp to explore mobility solutions for electric cars. With this partnership, the companies will explore establishing a four-wheeler EV charging infrastructure and expand Castrol's existing auto service network to cater to EV customers. 			
Omega Seiki Mobility and Grip	 Omega Seiki Mobility (OSM), and Grip, an alternative investment platform for retail investors, have entered into a strategic partnership for providing lease financing solutions to retail investors. Under the partnership, Grip will finance 1,000 units of electric three-wheelers Rage+ Rapid of OSM. Presently, both the companies will expand this partnership to lease a minimum of 5,000 electric vehicles by the end of 2023. 			



Companies involved	Purpose of Partnership
Tata Power and Kolte-Patil Develop- ers	 Tata Power has partnered with real estate company Kolte-Patil Developers Ltd (KPDL) to set up e-charging stations across its projects in Pune, Mumbai, and Bengaluru for convenience of electric vehicle owners.
Trehan Iris and Bolt	 EV charging network BOLT signed a Memorandum of Understanding (MoU) with Trehan Iris, a veteran, and real estate player to set up 10 EV charging stations in Iris Tech Park in Sohna Road and Iris Broadway Mall in Sectors 85 and 86 in Gurugram According to the MoU signed, BOLT will be responsible for the maintenance and upkeep of the charging stations.
Ather Energy and SBI	 Electric two-wheeler maker Ather Energy has partnered with the State Bank of India (SBI) for vehicle financing for its customers. The collaboration will enable Ather Energy's customers, having pre-approved loan offers from SBI, to avail instant loans at low interest rates starting from 9.55% per annum, depending on customer credit profile.
Amplus Solar and Tata Motors	 Amplus Solar's Electric Mobility vertical, entered into a MoU with Tata Motors Limited for the procurement of the all-new Ace EV, strengthening its fleet for clean mobility solutions. As part of its clean mobility solutions, Amplus Solar provides electric vehicle fleets for cargo delivery to the nation's top e-commerce, on-demand logistics and other companies on various subscription models.
Jio-bp and Omaxe	 Real estate developer Omaxe Ltd, has partnered with Jio-bp Jio-bp will set up EV charging and swapping infrastructure at various Omaxe properties across Delhi, Noida, Greater Noida, Faridabad, Ghaziabad, New Chandigarh, Ludhiana, Patiala, Amritsar, Jaipur, Sonipat and Bahadurgarh in a phased manner.
Euler Motors and LetsTransport	 Euler Motors announced that it has collaborated with LetsTransport, a Bengalurubased urban logistics aggregator. Under the partnership, the EV-maker will deploy 1,000 HiLoad EVs. These EVs will be deployed in cities such as Bengaluru, Hyderabad, Delhi-NCR and will also reach other key Indian cities over the period of next 12 months.



Companies involved	Purpose of Partnership		
Jiobp and Zomato	 Jio-bp, will provide battery swapping facility to EVs of food delivery app Zomato. Jio-bp has entered into an agreement with the food delivery firm ""to support Zomato's commitment towards The Climate Group's EV100 initiative of 100 per cent EV fleet by 2030. 		
Crayon Motors and Bounce Infinity	 Electric two-wheeler startup Crayon Motors and EV battery swapping network provider Bounce Infinity have entered into a partnership to establish the first interoperated battery-swapping network. Under this partnership, the EV startup's customers can choose to buy a 2W or 3W without a battery and make use of Bounce Infinity's "Battery-as-a-Service". Bounce Infinity will also be extending its "Battery-as-a-Service" to Crayon's sister 3W brand, 'Singham'. 		
EVI Technologies and HPCL	 Electric vehicle (EV) charging infrastructure startup EVI Technologies (EVIT) has partnered with Hindustan Petroleum Corporation Limited (HPCL) to set up EV chargers at the OMC's fuel pumps. The startup will install stations at HPCL pumps located in major cities and highways in Uttar Pradesh, Bihar, Uttarakhand. 		
Jio-bp and Nexus Malls	 Fuel and mobility company Jio-bp, has partnered with Nexus Malls for facilitating EV charging stations and battery swapping stations. The partnership includes the installation of various 24x7 EV charging stations for two and four-wheelers. All in all, the installations would be done in 17 malls across 13 cities. 		
Bounce Share and Howdyy	 Bengaluru, Mumbai, Pune, Chennai, and Hyderabad are set to get over 10,000 e-scooters within the next two years from EV rental firm Bounce Share in collaboration with logistics startup Howdyy. Bengaluru-based Howdyy, which entered the market in 2020, provides an electric vehicle-driven fleet for mid and last-mile deliveries. Bounce Share is the EV rental arm of electric two-wheeler maker Bounce." 		
goEgoNetwork and VITS-Kamats Group	 Pune-based EV charging infra startup goEgoNetwork will install charging stations at the VITS-Kamats Group hotels across the country under an initial pact. The charging stations are equipped to charge all electric vehicles across brands currently on the road and are accessible and usable via the goME app, which provides EV owners real-time notifications regarding the charging status. 		

Source: Industry News Articles, JMK Research



TENDERS

Tender Name	Tendering Authority	Requirements	Bid Submission Date	Tender ID
Supply and Maintenance of 945 numbers of electric 2- Wheelers with Carriage box to Health Medical & Family Welfare Department, Mangalagiri and its delivery locations	New and Renewable Energy Development of Andhra Pradesh Ltd	 Tender Value: INR 18.00 Crore Total number of electric 2-wheelers: 945 	08 July 2022	NREDCAP/EV/ H&M/17-106/945/2022-23
Supply and maintenance of 136 numbers of 3- Wheeler Electric Garbage Collection Autos to Tirupati District	New and Renewable Energy Development of Andhra Pradesh Ltd	 Tender Value: INR 4.50 Crore Total number of electric 3-wheelers: 136 	04 July 2022	NREDCAP/EV/E- Garbage Autos/Tirupati /17-129/2022-23
Supply and delivery of electric Cyles in Rameswaram Municipality	MAWS, Rameswaram Municipality	 Tender Value: INR 24.00 lakhs Total number of electric cycles: N/A 	01 July 2022	2018_502_A4_MPLAD 2022_MAWS_236769_1
Supply, operation and maintenance of Electric Bus for operating as feeder service to Kochi Metro Rail Limited	Kochi Metro Rail Ltd	 Tender Value: INR 2.19 Crore Total number of electric bus: 10-15 	27 June 2022	KMRL/0&M/MMT/2022-23/12
Supply of 4-Wheeler Electric Garbage Loader- Tipper/E-Cart Vehicles etc in Workshop Department Gwalior Municipal Corporation	Directorate Urban Administration and Development, Municipal Corporation-Gwalior	 Tender Value: INR 1.76 Crore Total number of electric 4-wheeler garbage loader: N/A 	20 June 2022	MPGMC/50/22X4/19/ WS/2022-23

Source: Industry News Articles, State Municipal Corporations, JMK Research



9 GLOBAL MARKET UPDATES

Ford to invest \$3.7 bln for production of EVs, gas-powered vehicles

Ford Motor Co will invest US\$3.7 billion in assembly plants in Michigan, Ohio and Missouri for production of both electric and gasoline-powered vehicles. Ford said US\$2.3 billion of the total investment will be spent on EVs, part of the US\$50 billion in EV spending through 2026 it previously outlined.

Cross-border networks charge EVs across Thai-Singapore-Malaysia corridor

Energy companies in Singapore and abroad are setting up networks of electric vehicle charging stations that span Singapore, Malaysia and Thailand, anticipating rapid market expansion on the back of economic growth. City Energy, a gas supplier under Singapore's state-backed conglomerate Keppel Corp., entered the EV charging market through a collaboration with Malaysia's EV Connection. Using City Energy's Go app, drivers can search for charging stations, schedule a recharge and make payments whether they are in Singapore or Malaysia.

2023 Volkswagen ID. Buzz enters series production to mark the return of an icon

Volkswagen Commercial Vehicles has finally pressed the start button on the revival of the electric ID. Buzz. Deliveries to European customers will begin this fall while US buyers are in for a long wait as shipments won't commence until late 2023. Production of the ID. Buzz Cargo has already begun and now VW is doing the same for the passenger-oriented version.

Biden-Harris Administration proposes new standards for national electric vehicle charging network

The Biden-Harris Administration announced new steps to meet President Biden's goal to build out the first-ever national network of 500,000 electric vehicle chargers along America's highways and in communities. The Biden Administration had secured historic investments in the Bipartisan Infrastructure Law – US\$7.5 billion





for EV charging infrastructure and more than US\$7 billion for the critical minerals supply chains necessary for batteries, components, materials, and recycling.

Porsche accelerates its electric bike expansion, buys up German e-bike motor manufacturer

Porsche's latest power move in the two-wheeled EV industry just saw it buy up Fazua, an innovative electric bicycle drive manufacturer. Fazua makes a number of interesting electric bicycle drives and components, but the company's flagship product is an e-bike drive that allows both the motor and battery to be completely removed from the bike.

Ferrari plans expansion of its Italian factory for electric vehicles

Ferrari is planning to expand its northern Italy factory significantly as part of its electrification goals. According to a report by Bloomberg, Ferrari has acquired space near its Maranello plant and is already in the process of clearing up the way for setting up a third production line that will focus on hybrid and electric vehicles.

Thailand approves \$1 billion Foxconn-PTT venture for battery electric vehicles

Thailand's investment agency approved a joint venture worth 36.1 billion baht (US\$1.04 billion) between Taiwan's Foxconn and Thailand's PTT to produce battery electric vehicles (BEV). The Horizon Plus Co project is one of several investment applications worth a total of 209.5 billion baht in manufacturing and infrastructure that were approved.

UK scraps subsidies on electric vehicles as demand grows

The United Kingdom announced it will remove the last remaining subsidies for electric cars.

The Department for Transport stated that the £300 million (US\$349 million) grant-funding program will close to new orders.

Tesla plans to build a new production facility in North America

US EV giant Tesla is planning to build a new production facility in North America but it might not be in the US this time. Location





options being considered by CEO Elon Musk include Canada and Mexico. He also highlighted that the priority at present is to ramp up production at Gigafactory Texas.

Ford recalls 49,000 U.S. Mach-E EVs over potential power loss

Ford Motor Co is recalling about 49,000 Mustang Mach-E electric vehicles in the United States because a part could overheat and result in a loss of propulsion power. The No. 2 U.S. automaker said DC fast charging and repeated wide-open pedal events can cause the high-voltage battery main contactors to overheat. Ford said it will address the issue that covers Mach-E vehicles built from late May 2020 through late May 2022 with a software update it expects to begin next month.

Apple supplier Foxconn begins work on its 1st EV battery plant

Largest iPhone manufacturer Foxconn has broken ground on its first battery cell plant in the southern Taiwanese city of Kaohsiung. The move came after the company said it aims to become the first EV maker that is "not short on material supplies". Foxconn aims to capture nearly 5 percent of the global EV market by the end of 2025.

Ferrari to pump in billions as it 'snubs' engines to 'woo' electrics

Supercar maker Ferrari is planning to invest around 4.4 billion euros or US\$4.6 billion to develop fully electric and plug-in hybrid models. It is aiming for these models to make up 60% of its portfolio by 2026. By 2030, the company aims to have cleaner vehicles making up 80% of its sales.

Sony, Honda pair up to form new mobility company with eye on electric vehicles

Sony Group Corporation and Honda Motor Company officially signed a joint venture to form a new company by the name of Sony Honda Mobility Inc which would focus on development and sale of high value-added EVs. The possibility of such a partnership between Sony and Honda had been doing the rounds in recent times but the official signing gives a definite direction in evolving mobility space to both Japanese powerhouses.



Tesla's Berlin Gigafactory producing 1,000 Model Y per week

Tesla Berlin Gigafactory which finally started production in March after a long delay achieved the milestone of manufacturing 1,000 Model Y electric cars in a week. Tesla is aiming to achieve an annual production rate of 50,000 electric vehicles, though this might be an early deduction as the factory is expected to produce more than 50,000 units per year.

Honda's Chinese venture starts construction of Guangdong EV factory

Honda Motor Co Ltd said its joint venture in China with Guangzhou Automobile Group Co has begun building an electric vehicle factory in Guangdong province with an initial investment of CNY 3.49 billion (US\$522 million). The Japanese automaker is aiming to start the factory's operation in 2024. The new factory has an annual production capacity of 120,000 units.

CATL has supplied EV batteries to S.Korea's Kia

Chinese battery giant Contemporary Amperex Technology Co Ltd (CATL) has supplied EV batteries to South Korea's Kia Corp, marking Kia's first use of non-Korean EV batteries for sales at home. The South Korean automaker, an affiliate of Hyundai Motor Co, has chosen batteries from CATL for its electric Niro crossover SUV, aiming at expanding its range of battery suppliers.

BMW moves to top gear in China, \$2.2 billion plant to help boost EV production

BMW has officially started work at its latest facility located in the northeastern city of Shenyang in China from where it hopes to rapidly increase its EV output, both for the local market as well as select overseas markets. BMW underlines that the Shenyang facility has flexible manufacturing lines that would allow for EVs to be manufactured as per market demand.

China's CATL unveils new EV battery with range of 1,000 kms on single charge

Contemporary Amperex Technology Limited, or CATL, has unveiled a new EV battery that can change the EV game significantly. The



world's largest EV battery manufacturer has showcased a new electric-car battery called Qilin, which it claims can offer a range of more than 1,000 kms on a single charge. Named after a mythical Chinese creature, CATL claims the new EV battery is at least 13% more powerful than the one being planned by world's largest electric vehicle manufacturer Tesla.

Toyota recalls first mass-produced EVs less than 2 months after launch

Toyota Motor Corp said it would recall 2,700 of its first mass-produced EVs for the global market because of a risk the wheels could come loose. The world's largest automaker by sales submitted the recall of the bZ4X SUVs to Japan's transportation ministry. Of the 2,700 vehicles, 2,200 were earmarked for Europe, 260 for the United States, 20 for Canada and 110 for Japan.





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- Evolving business models in EV space
- Risk and challenges faced by the sector
- Role of government policies
- Financing issues and challenges
- New market opportunities
- Impact of PLI ACC scheme
- Indigenization of EV Component Manufacturing

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