

EV Update Media

MAGAZINE APR-MAY 2024 ISSUE

INDUSTRY INSIGHTS ON

-  Key performance metrics defining battery system effectiveness.
-  Safety regulations in place for Quality control measures in battery industry
-  Comparative analysis of different batteries like Lithium ion, Lithium-sulfate and Solid State Batteries
-  Prominent partnerships between battery tech giants
-  Future milestones battery companies have set for themselves



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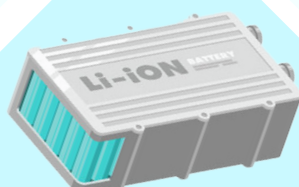


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MR. ADITYA VIKRAM

Founder
Renon



Nexus Solar Energy
CLEAN ENERGY
where smart get meet with solar & more
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MR. DEEPAK CHAUDHARY

CEO
Nexus Solar Energy



cygni

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MR. VENKAT RAJARAMAN

Founder and CEO
Cygni Energy



Zeta
ENERGY

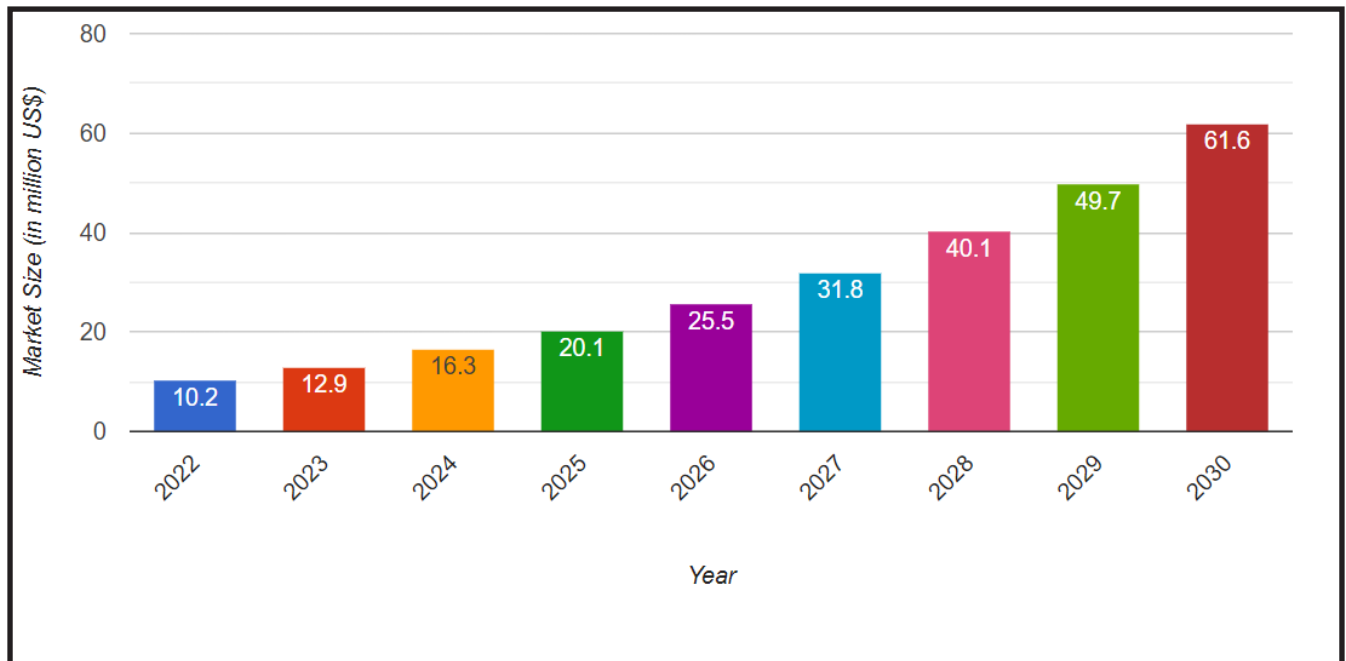
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MR. TOM PILETTE

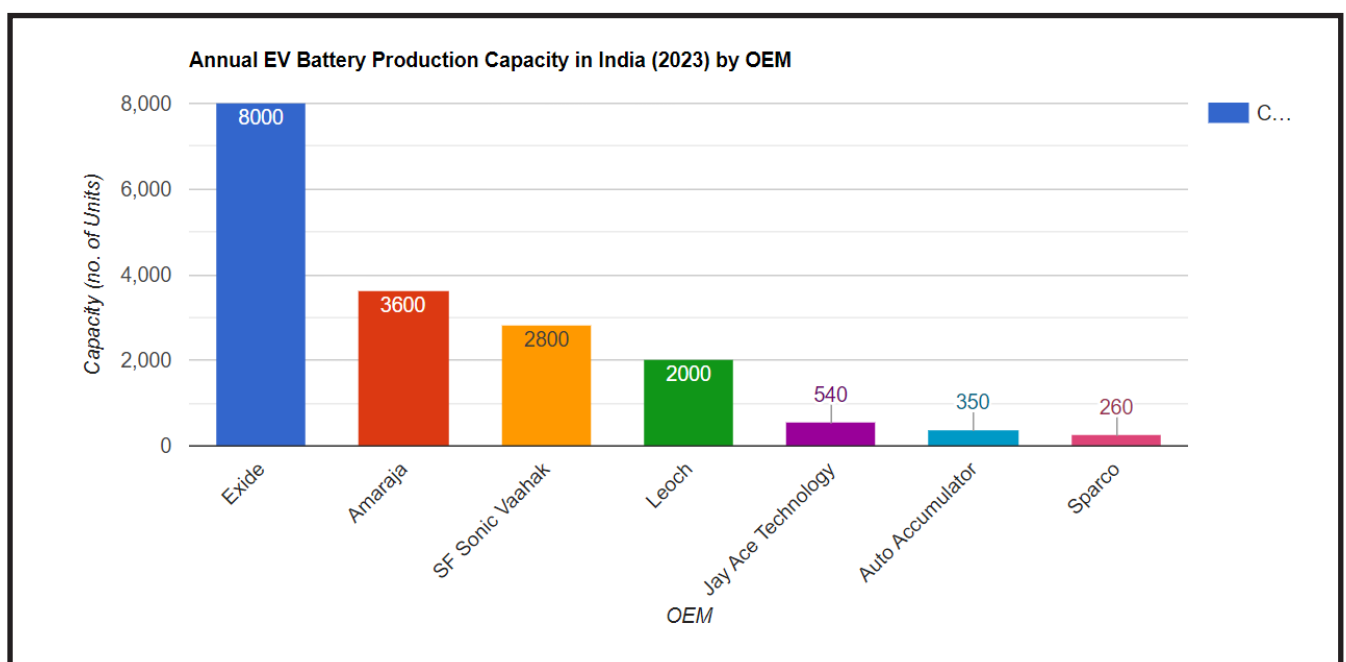
CEO
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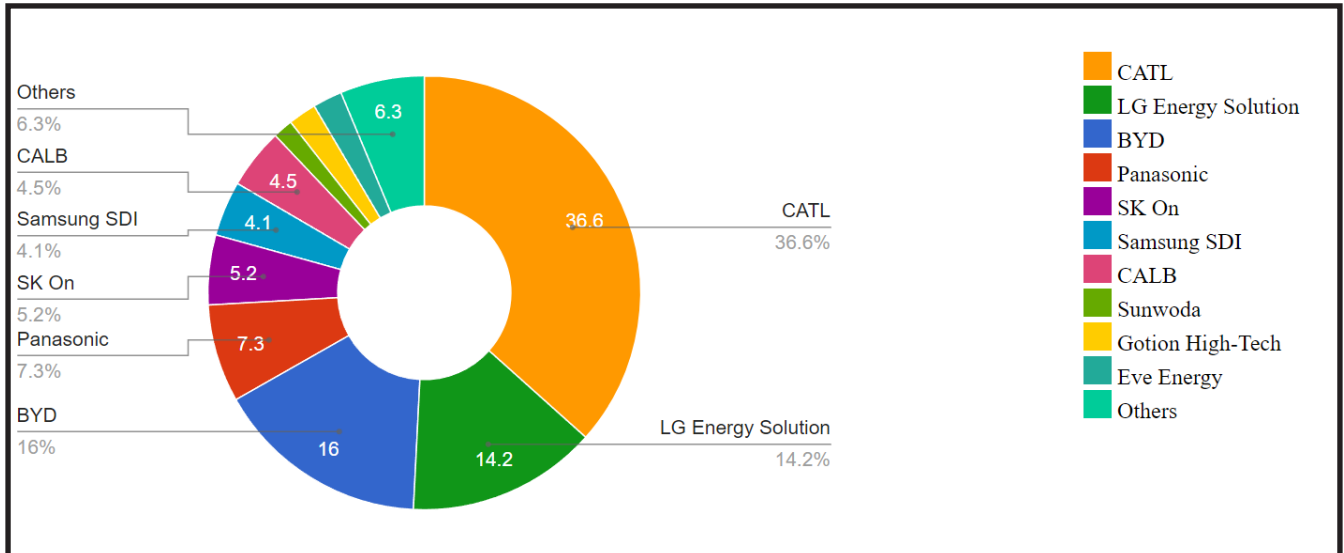
Indian Battery Swapping Market Set for Double-Digit GrowthSo Far



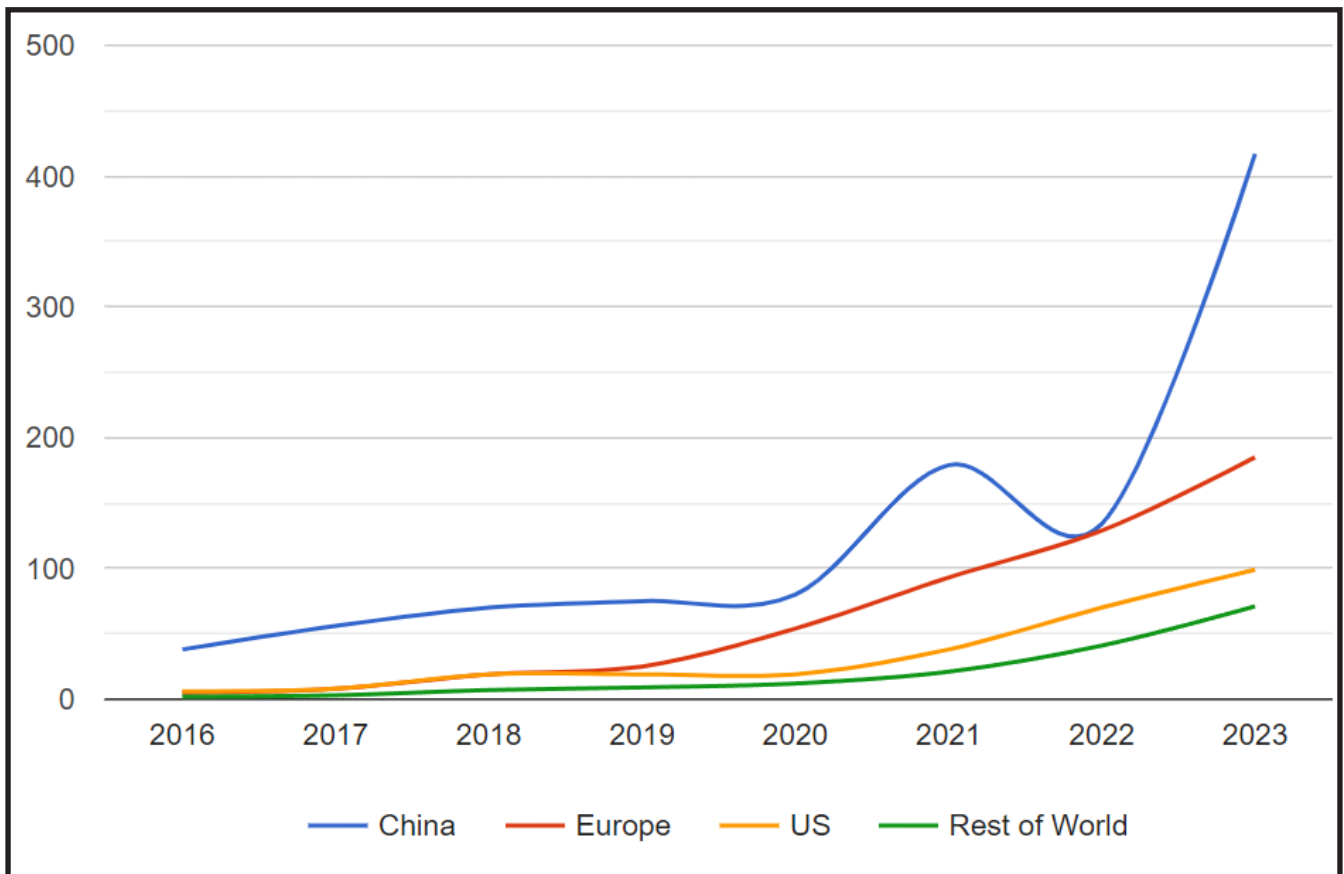
Annual EV Battery Production Capacity in India (2023) by OEM



Market Share of World's Top EV Battery Makers 2023



Electric Vehicle Battery Demand by Region (in GWh/year)



PARTNERSHIPS

DGI Partners With EVage Motors to Manufacture World-class Electric Motor in India



DG Innovate (LSE: DGI), the advanced R&D company developing pioneering solutions in sustainable mobility and energy storage, has entered into an MoU to establish a transformative joint venture (“JV”) with EVage Motors (“EVage”), the fastest-growing electric truck company in India. The planned JV will allow DGI to pursue a faster, lower-cost route to high-precision manufacturing in India, materially growing its market share in the critical Asian market and giving EVage Motors’ customers access to the one of the world’s most-efficient electric motors at 98.5% efficiency. The JV will also strengthen EVage’s proprietary EV stack as a vertically integrated company.

DGI will partner with EVage to manufacture its proprietary Pareta® electric drive system in Punjab, India. Together, the companies will target the Asian EV market, offering far more efficient electric trucks, resulting in longer life and a reduced cost of ownership for fleet owners, with an average range increase of 5%-7% on the same charge. The JV is expected to be 60% owned by DGI and 40% by EVage, with both parties investing into the project in a show of confidence in the Indian market.

DGI will contribute the significant industry expertise of its team of former Tesla managers and engineers, bolstered by the recent appointment of Pierre Pellerey as a consultant to the Company. He brings over 15 years of experience in motor design: his work has been key to the development of the Tesla Model 3, Model Y, and Model S Plaid, as well as Dyson’s flagship V10 motor. Pierre’s motor designs power over 3 million electric vehicles to date, and his contribution will be key to driving the JV forward.

DGI and EVage will leverage EVage’s Modular Miniature Manufacturing (Mcube) micro factory, which already supports India’s first native commercial EV platform. The factory currently produces over one electric truck a day, for a total of more than 300 to date. Those trucks are servicing top FMCG, e-commerce and logistics companies throughout India, with top clients including Amazon.

Peter Bardenfleth-Hansen, DGI CEO, said: “This is a pivotal moment for DGI and we welcome our new partners at EVage. Asia is a critical market for the EV industry, and India in particular benefits from a leading manufacturing platform that will allow us to deploy our products at top speed and competitive costs. I also take this opportunity to re-iterate my welcome to Pierre, a true motor whisperer whose work powers some of the most iconic electric vehicles on the market. His expert advice will immensely enhance our partnership with EVage.”

Inderveer Singh, EVage Founder & CEO, said: “We are thrilled to bring cutting-edge motor technology to India and create new, high-value engineering jobs. Together with DGI, EVage will produce world-class products aligned with PM Modi’s vision of make in India, make for the world. We are particularly thrilled to see pioneering ex-Tesla leaders like Peter look at India as a place of opportunities for the EV sector.”

4,200 chargers across the country. This encompasses 2,000 chargers already in operation, along with 1,200 recently announced charging stations.



This collaboration between chargeMOD and A Plus Charge will significantly expand EV charging accessibility in the North East.

M Ramanunni, CEO and Co-Founder of chargeMOD, said, “Our collaboration will not only benefit drivers but also contribute to a cleaner and more sustainable transportation future for the region. Together we can replicate Kerala’s work in creating sustainable EV charging infrastructure in other parts of the country.”

Incubated under the Kerala Startup Mission, chargeMOD was established in 2019. It has a robust network of over 2,300 charging stations across 10 States. With a strong presence in Kerala, making it the State’s sole public EV charging provider for autos and the first to develop an indigenous mobile app for locating charging stations.

“North East holds immense potential for EV adoption, and this partnership is a significant step forward in making it a reality. In following Kerala’s model, we are sure to create a more robust EV environment in North-East India,” said Samyak Jain, CEO, A Plus Charge.

A Plus Charge, a division of AlternatEV Solutions Private Limited, is spearheading Assam’s transition towards electric mobility. The company plays a pivotal role in installing EV charging stations across diverse locations, catering to electric cars, rickshaws, and buses. Their services extend to public transportation with charging solutions for EV cab fleets and electric buses.

Bajaj Will Provide Over 1,000 Electric Three-wheelers for Last-mile Delivery to Flipkart Over the Next Two Years

Bajaj Auto and Flipkart on Saturday announced a strategic partnership to accelerate the adoption of electric vehicles (EVs) in the latter’s last-mile delivery operations. This collaboration signifies a significant step towards a greener future for the Indian e-commerce landscape.



The initial, non-binding commitment of supplying a minimum of 1000 technologically advanced electric three-wheeler cargo vehicles to Flipkart paves the way for further collaboration and potential fleet expansion in the future.

This collaboration positions both Bajaj Auto and Flipkart at the forefront of adopting sustainable solutions for India’s evolving e-commerce logistics landscape.

Talking about the MoU with Flipkart, Samardeep Subandh, a spokesperson from Bajaj Auto Ltd. said, “As e-commerce continues to scale up rapidly, the impact of last-mile logistics will increase significantly in India. Driving sustainability in last-mile logistics has been a key agenda for Flipkart, India’s homegrown e-commerce marketplace. Bajaj Auto, the global leader in three-wheelers and Flipkart will now join hands to drive this transition towards a 100 per cent sustainable last-mile fleet for Flipkart.”

over 15,000 charging points and focusing on enhancing customer experiences through strategic industry collaborations.

Tata Passenger Electric Mobility Signs an MOU with Vertelo to Accelerate E-mobility in India



Tata Passenger Electric Mobility Ltd. (TPEM), a subsidiary of Tata Motors Ltd., known for pioneering India's electric vehicle (EV) revolution, has signed a non-binding Memorandum of Understanding with Vertelo, a Macquarie managed integrated fleet electrification platform, for the delivery of 2,000 XPRES-T EVs. This partnership aims to bolster the plans to accelerate India's transition to sustainable e-mobility. The company will begin deliveries of the cars to Vertelo in a phased manner.

Speaking on the partnership, Mr. Vivek Srivatsa, Chief Commercial Officer, Tata Passenger Electric Mobility Ltd. said, “As market leaders of passenger EVs in India, we are committed to the uptake of sustainable mobility in the country. We are delighted to partner with Vertelo in their effort to increase EV adoption in India. With over 89% market share in FY 24, the fleet segment has seen a rapid adoption by Corporates and Institutions. The XPRES-T EV has proven to be an attractive option for both customers and operators in the commercial fleet segment. Such collaborations in the industry will further help strengthen our market position amidst India’s EV revolution.”

Commenting on the partnership, Sandeep Gambhir, Chief Executive Officer, Vertelo stated that “We are really excited to partner with Tata Motors on this long-term strategic partnership to buy up to 2,000 electric cars. This partnership aims to bring together two business that are at the forefront of fleet electrification and decarbonisation in India.

We hope that this partnership will help with accelerating the shift towards a more sustainable India by making bespoke leasing options available to fleet operators that help them onboard EVs in larger numbers.”

In July 2021, Tata Motors launched the 'XPRES' brand exclusively for fleet customers, and the XPRES-T EV is the first vehicle under this brand. The new XPRES-T electric sedan comes with 2 range options – 315km and 277km (ARAI certified range under test conditions). It packs a high energy density battery of 26 kWh and 25.5 kWh and be charged from 0- 80% in 59 mins and 110 mins respectively, using fast charging or can also be normally charged from any 15 A plug point, which is easily available and convenient. It comes with zero tail-pipe emission, single speed automatic transmission, dual airbags, and ABS with EBD as standard across variants. The premium interiors with standard automatic climate control and Electric Blue accents across its interior and exterior will give it a differentiated presence from other Tata cars.

Vertelo is a new platform providing end-to-end solutions in fleet electrification in India. The company aims to accelerate the transition of fleets to electric vehicles and build a robust EV ecosystem by offering bespoke solutions to customers including leasing and financing, charging infrastructure and energy solutions, fleet management services, and end of vehicle life management. The new platform has been established by Macquarie Asset Management and has received anchor investment from the Green Climate Fund which has committed to invest up to \$US200 million. Overall, Vertelo plans to invest \$US1.5 billion over 10 years with the aim to achieve a potential greenhouse gas emissions reduction.

Macquarie to Invest \$1.5 bn in EV Leasing, Charging Infra



Macquarie Asset Management (MAM) on Monday launched Vertelo, a platform to provide end-to-end solutions in fleet electrification, and committed to invest \$1.5 billion over 10 years in India.

The company aims to accelerate the transition of fleets to EVs and build an ecosystem by offering leasing, financing, charging infrastructure, fleet management services and end of vehicle life management.

Green Climate Fund, the world's largest dedicated climate fund with a portfolio of \$13.9 billion, has made an anchor investment of \$200 million into Vertelo. Another \$200 million will be invested by MAM.

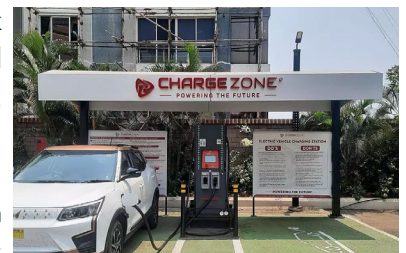
The platform will have 6,000-7,000 electric buses and 2,000 electric cars on board. Vertelo has signed a long-term lease agreement with transport technology startup Chalo Mobility, to supply 44 electric buses.

It has also signed agreements with JBM and Eka Mobility to source up to 2,000 electric buses from each over three to five years. Tata Motors will supply up to 2,000 electric cars over the next three years.

The company aims to set up a non-banking finance company, for which it will apply for a licence with the RBI, senior officials said at a press event held in Mumbai on Monday. Abhishek Poddar, India country head, Macquarie Group, said, “The transition to EVs will bring significant benefits to India, increasing its energy independence and mitigating the impacts of climate change.”

Charge Zone Secures \$19 Million From BII to Expand EV Charging Infrastructure

Charge Zone, an India-based electric vehicle (EV) charging network firm, has secured a commitment of \$19 million from British International Investment (BII), the United Kingdom's development finance institution, to accelerate the expansion of EV charging infrastructure in India.



The investment would enable Charge Zone to expedite the expansion of its high-speed charging network for electric cars, buses, and trucks across key cities and highways in India. The company also plans to roll out more than 1,500 super-charging stations over the next 18 months.

This charts the roadmap for Charge Zone to reach a portfolio of over 10,000 charging stations by 2027, which stems from the company's long-term plan to create a network of one million charging points by 2030. The company has successfully raised \$54 million from investors to fund the expansion.

“This strategic investment not only bolsters our capacity for network expansion but also serves as a testament to our shared vision for a sustainable future. With this infusion of capital, we will accelerate

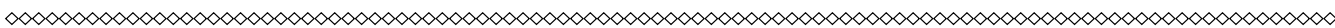
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capacity of at least 1 MW, enabling simultaneous charging for various vehicles, from small cars to buses and trucks. Moreover, these stations will offer amenities like eateries and shopping centers, ensuring rapid charging times—10 minutes for three-wheelers and 18 minutes for four-wheelers.

The company's expansion strategy is based on a revenue-sharing model for project funding. Despite the expansion and ongoing discussions with potential investors for additional funding options, it maintains complete control with 100 percent equity ownership.

Emphasizing the operational strategy, Santharam stated, "Our focus on maximizing utilization rather than solely expanding our network has enabled us to achieve operational profits from day one. Our in-house R&D and operations teams, coupled with our use of self-designed original equipment for charging stations, ensure minimal downtime and double the industry average asset utilization."



NEW LAUNCHES

IPO-bound Ather Energy Launches its First Family Scooter 'Rizta,' Priced Rs 1,09,999 Onwards



Ather Energy, known for its electric two-wheelers, has introduced its latest offering, the 'Rizta,' marking its entry into the family scooter segment. The pre-order price for this scooter begins at Rs 1,09,999.

Tarun Mehta, Co-Founder and CEO of Ather Energy, unveiled the new family scooter, 'Rizta,' at the company's Community Day event held in Bengaluru on April 6. Speaking about the scooter, Mehta highlighted its focus on strength, safety, and comfort, emphasizing the extensive development efforts invested in its design. The Rizta is available in five colors, each featuring dual tones, providing customers with a range of stylish options to choose from.

"We worked on this family scooter for a long time, for it to be strong, safe and comfortable," said Tarun Mehta.

Mehta earlier revealed that the company has been diligently developing the family scooter since 2019. "We have reduced the prices for our family scooter, and we expect it to be received well in the market," Mehta said.

Unlike Ather's other scooter models, Rizta features a curvier design and larger seats designed to comfortably accommodate both the rider and a rear passenger, according to the company.

In addition to larger seats, the company has also focused on enhancing storage options. TVS Motors' iQube and Bajaj Chetak are among the existing family e-scooters in the market. The TVS iQube achieved a sales milestone of over 200,000 units within the first 45 months of its launch.

Ather Energy has introduced 'smart helmets' under the brand name 'Halo,' along with a lightweight helmet named 'Halo Bit.' The Halo helmet is priced at Rs 12,999, while the Halo Bit is available at Rs 4,999.

“The helmets come with a slew of technology like music, voice-call enablement, wireless charging, and more. We took a lot of time to come up with this product as we wanted to engineer it well,” Mehta explained.

Ather was established in 2013 by Tarun Mehta and Swapnil Jain, who graduated from the Indian Institute of Technology, Madras. In 2022, the company secured around \$128 million in a series E funding round. This funding was led by the National Investment and Infrastructure Fund Ltd, along with existing shareholders like Hero MotoCorp Ltd, a prominent two-wheeler manufacturer.

Ather Energy’s losses surged by almost 150 percent to Rs 864 crore in FY23. However, its consolidated operating revenue in the same period soared by nearly 337 percent to Rs 1,784 crore compared to the previous financial year. In 2023, Hero MotoCorp announced that its board had approved an investment of Rs 550 crore in Ather Energy.

Tesla Power India, E-Ashwa Automotive to Launch India’s 1st Electric Two-wheeler With Fire Safety Technology



Tesla Power India Pvt. Ltd. and E-Ashwa Automotive have announced their partnership to introduce the first electric 2W vehicle (EV) in India with a built-in fire suppressant system. This new feature is expected to improve safety standards for EVs across the country.

E-Ashwa is known for its electric two-wheelers and three-wheelers while Tesla Power India makes energy storage solutions.

“We are proud to partner with Tesla Power India to bring this advanced and safe electric vehicle to the Indian market,” said Abhinav Bhadola of E-Ashwa Automotive. “Our joint effort will set new safety and technology standards for EV 2W in India.”

In a press release, Tesla Power India said it has contributed its technical expertise to the partnership”. Together, the companies aim to offer a safer and more sustainable option for drivers across India. Also being India’s First brand offering both E-Rickshaw batteries and E-Rickshaws within its diverse product range,” the company added

Kavinder Khurana, Managing Director at Tesla Power India Pvt. Ltd. “We’re eager to make a positive impact on India’s EV market with vehicles that are not only environmentally friendly but also safer than ever.”

The partnership also ensures that owners of these new EVs will have access to extensive sales and service networks throughout India, ensuring reliable support and convenience for all customers.

Tata Motors Launches Ace EV 1000 for E-cargo

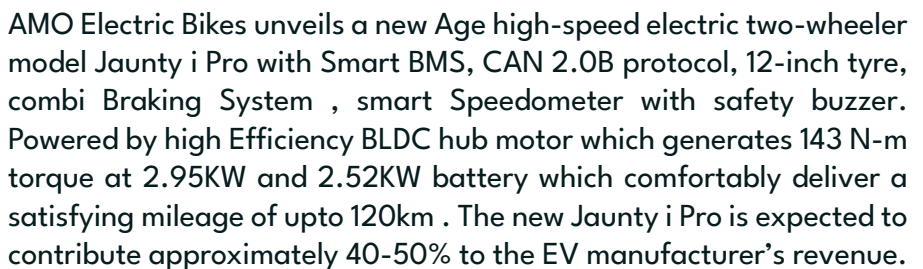
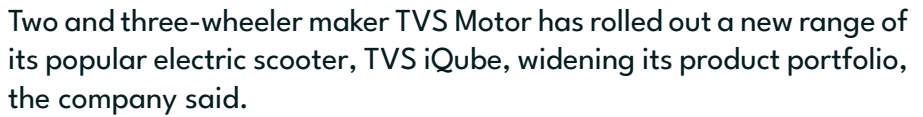
Tata Motors (NS:TAMO) (NYSE:TTM), India’s foremost commercial vehicle producer, has introduced the new Ace EV 1000, an electric mini-truck designed for last-mile deliveries. This latest addition to Tata’s electric vehicle (EV) lineup boasts a payload capacity of one tonne and a single-charge range of 161 kilometers, aiming to transform urban cargo transport with its zero-emission operation.



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Maximum Capacitance: 1000 pF

businesses.



The manufacturer hopes this home-grown indigenous model will contribute up to 50% to its revenue while supporting the government's 'Make in India' drive. With this launch, AMO Mobility expands its electric Two-Wheeler product line and aims to increase its shares in the rapidly growing segment of the Indian EV market. The company plans to manufacture 30,000 Jaunty i Pro models for the Financial Year 2024-25. Jaunty i Pro's Ex-showroom Launch Price is Rs. 1.15 lakh. It boasts a range of 120 km on a single charge and is equipped with an advanced 2.52 kWh battery, a Smart Battery Management System, and a fast charger that facilitates a charging time of approximately 3.5 hours. The two-wheeler has a load-carrying capacity of 151 KM and offers three-speed modes – Economic, City Ride, and Power Mode, which can go up to 60km/hr.

The model's best-in-class torque of 143 Nm and motor efficiency of over 90% further makes it power efficient. To enhance vehicle safety Jaunty i Pro comes loaded with advanced battery technology coated with anti-flame potting material and a buzzer that sends alerts about battery temperature. It also adopts CAN 2.0B protocol and features advanced combination braking system and safety communication systems to ensure rider safety and comfort.

Sharing his thoughts on the new model, the Founder of AMO Mobility Mr Sushant Kumar (Ex-Tata Motors), remarked, "Our much-awaited model Jaunty i Pro is a demonstration of our strides in innovation in EV technology. The model's key safety features and advanced BMS make it a smart vehicle that caters to the market demand. In addition, the battery capacity of 2.52 kWh and unparalleled mileage make up an incredible combination, which I believe will connect the most with the modern riders and facilitate the electric two-wheeler vehicle adoption rate in India's rural and urban areas. With all its parts manufactured in India, we expect Jaunty i Pro to make a Domestic Value Addition of over 90% at the supplier level while supporting our country's fight against emissions."

AMO Mobility's use of locally manufactured components for this new vehicle and its comprehensive warranty standards align perfectly with the new Electric Mobility Promotion Scheme's guidelines. After the launch, the EV manufacturer plans to explore more local partnerships like its previous tie-ups to expand market reach.

To celebrate the launch of the new Jaunty i Pro electric scooter and the release of the upcoming movie 'Maidaan,' AMO Mobility has partnered with Bollywood actor Ajay Devgn.

With this marketing strategy, the EV manufacturer taps into the growing trend of collaborating with celebrities and public figures to endorse the benefits of eco-friendly transportation.



INDUSTRY UPDATES

India's Passenger EV Market Will Hot up in Next 3-4 Years



In 2023, India's passenger vehicle sales grew 10% YoY, but its electric vehicle (EV) sales nearly doubled to account for 2% of the overall PV sales.

This EV surge in EV sales can be attributed to factors like, government incentive schemes like PLIs, infrastructure development like more EV charging points, increasing urban consumer interest, and government push to meet green target.

Now with reports of Tesla's entry in the Indian market, and its CEO Elon Musk India visit this month, experts say Indian EV market will see immense growth in next few years.

Currently Tata Motors held over two-thirds of the country's EV market, but Mahindra & Mahindra and BYD are emerging players in the Indian market.

Recording a 2476% increase with just one model in its portfolio, Mahindra & Mahindra was the fastest-growing brand in 2023, followed by Build Your Dreams (BYD) and MG Motor.

Mahindra's growth is attributed to the all-electric SUV XUV400 launched in 2023. BYD, with just two models in its India line-up, e6 MPV and Atto 3 SUV, grew over 1500% in 2023.

BYD's recent launch of the Seal model will further enhance its presence and competitiveness in the Indian EV market.

A recent research report by Counterpoint research, says India's EV sales in expected to increase by 66% in 2024, and EVs market share in passenger vehicle segment will double to 4% from 2% in 2023. The report also says by 2030, EVs are expected to constitute nearly one third of India's total PV sales.

Maruti Suzuki's too will enter the EV market with eVX in 2025. The Evx will be an SUV with a 60kWh battery pack and a range of up to 550 km.

The vehicle will be designed and developed by Suzuki Motor Corporation Japan and will be made Maruti Suzuki's plant in India.

Tesla and Maruti Suzuki's entry into the Indian market, is expected to shake up Tata's and Mahindra's dominance in the domestic market.

Vietnam's auto major, VinFast has also announced to build a factory in India's Tamil Nadu with an investment of Rs 4000 crore.

All this will not only increase competition but also evolve the landscape of India's automotive sector towards a sustainable and eco-friendly technology.

Government policy incentives have attracted many players like Reliance New Energy, Ola, ACC Energy Storage to start EV battery manufacturing in India.

Last week Exide has tied up with auto majors Kia and Hyundai to supply EV batteries for their vehicles. Domestic manufacturing of EV batteries will bring down electric vehicles cost and boost sales.

Government's PLI scheme for Advanced Chemistry Cells (ACC) and the recent policy change and reduction in import duties on EVs over to 15% are game changers.

This has not only attracted Tesla but also signal's that India is ready to welcome investments and also build a new ecosystem for EVs and their component suppliers.

The government initiatives are giving a clear sign that India is taking all required steps to become a major player in the global EV market.

An S&P global research says EVs will consume three times less energy than they use when compared to their ICE counterparts by 2050. Experts say next few years will be critical for India's energy space and increased use of EVs will be key to unlock end-use efficiency in India's road transport.

Energy Firms Create Alliance for EV Charging Via UPI-like System in India



At least 20 energy companies have joined hands to create an alliance for an open energy network called the Unified Energy Interface (UEI), which is a unified payments interface (UPI)-like system for EV charging, the firms said in a statement on Friday.

UEI is the recommended interoperability standard as per the Department of Science and Technology.

Aimed at facilitating seamless payment and transaction interoperability within EV charging networks, the alliance will help address interoperability challenges pertaining to EV charging and grid demand response by partnering with electricity distribution companies (Discoms).

The alliance includes member companies like ChargeZone, Pulse Energy, Kazam, Sheru, Trinity and Turbo, etc.

“As the transportation sector shifts towards greater electrification, it’s crucial to ensure that EV drivers can access charging infrastructure easily, regardless of their vehicle’s brand or the charging network,” said Raj Kumar, Executive Director, Trinity.

Leading public policy think tanks and research organisations such as the Rocky Mountain Institute and the World Resources Institute, have also joined the consortium in an advisory capacity to advance the initiative.

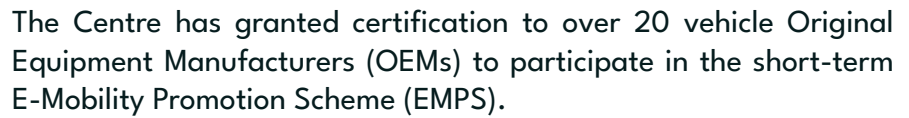
While ChargeZone enabled their chargers to be discovered and transacted over the UEI network, Kazam and Pulse Energy allowed their customers to discover, pay and charge at any of their chargers via the UEI network.

The alliance is committed to ensuring that the protocol in action remains relevant and adaptable to market needs, guiding technical evolution and governance.

Reji Pillai, CEO, India Smart Grid Forum (ISGF), said that with UEI, “we could enable peer-to-peer (P2P) payments directly between the peers while the energy wheeling charges for the utility can be levied in the electricity bills by the utility”.

“This is going to unleash a green energy revolution in the country, particularly with 10 million rooftop solar PV systems being rolled out on fast track under the PM Suryoday Yojana,” Pillai added.

The non-profit alliance is being formed to help fund the working group and any minimal infrastructure cost the network may have at the inception.



The sources, however, said it was a little early to know the exact form of incentives the government would offer, but New Delhi would try to take a cue from countries such as Australia and Canada.

Responding to Reuters queries, the Ministry of Mines said the government was taking various steps to ensure the availability of critical minerals for the downstream industry.

The government could offer subsidies and tax benefits to encourage investment in lithium processing, said Karthik Bansal, research analyst at the New Delhi-based Centre for Social and Economic Progress.

Last year, India, the world's third-biggest carbon emitter, listed 30 minerals, including lithium, as "critical" to meet the country's ambition for cleaner technologies in sectors such as electronics, telecommunications, transport and defence.

It found its first lithium reserves only last year and industry experts say the country needs to set up facilities to process lithium locally.

Companies including SoftBank-backed e-scooter maker Ola Electric, and miner Vedanta Ltd and Jindal Power are among those bidding for critical minerals blocks, which include lithium, with a shortlist expected by July.

Winners will receive licences to explore and mine lithium, and will also be responsible for processing it into lithium concentrates or lithium chemicals for the battery industry.



PARTNERSHIPS

PURE EV and PDSL Announce JV to Develop Next-Gen EV 2W in UK



PURE EV, India's leading EV 2W OEM, today, announced forming a JV with Pragmatic Design Solutions Ltd (PDSL), UK. With a shared vision to transform electric mobility and enhance transportation affordability, PURE EV and PDSL (UK) collaborate to cater to the evolving needs of consumers across domestic and international markets. "PDSL (Pragmatic Design Solutions Limited) has been delivering leading-edge engineering and digital technology solutions since 2010, for clientele like OEMs Jaguar Land Rover, Aston Martin, Volkswagen, Bentley, Lotus, McLaren, Rivian, VInFast, Polestar, Volta Trucks, Panasonic, LG etc"

PURE and PDSL set a roadmap to develop a high-performance EV 2W, targeting both Indian and International markets. The JV will be set-up at the Coventry University Technology Park, UK, which is known as the World's leading Automotive Hub including the EV Technology.

The JV aims to develop a revolutionary product that seamlessly integrates advanced technology with sustainable design principles, with mileage of 250 KM, Top Speed of 100+ KMPH, AI Based Power-train platform offering user friendly troubleshooting & fast on-board charger.

This strategic alliance brings together PURE EV's expertise in battery & electric vehicle design with PDSL's distinguished engineering services by on-boarding the global supply chain to the distribution network. The product will be equipped with new-age battery technology, a dynamic powertrain and advanced software features. The development of the product has begun, and the launch will be planned during early 2025.

Commenting on the Collaboration, Rohit Vadera, CEO, PURE EV, said, "Having tasted success in the EV 2W commuter segment, PURE is excited to be entering the premium Scooter segment. At PURE EV, we have continuously strived to push the boundaries of electric mobility, leveraging our robust R & D capabilities to deliver cutting-edge solutions to our customers. By joining forces with PDSL UK, we are poised to unlock new opportunities and bring to market products that not only meet but exceed the expectations of our customers. We aim to develop a premium product in every aspect that would be accepted in India and selected countries in the international market, and a JV with PDSL is the right step toward achieving this goal."

Dr. Steve Simplay, Director of MSME at PDSL, said, "Located in the heart of West Midlands, PDSL will leverage its unmatched electrification engineering and supply chain capabilities to bolster the future growth of PURE EV, through the establishment of a newly created Joint Venture for Research & Development. PDSL is currently supporting several EV OEMs through the electrification journey and will support development of solid state batteries. With a robust portfolio boasting over 120+ IP filings,

PURE EV already operates a network of more than 150 outlets with a vision of extending the business globally through expertise from PDSL. Together, we anticipate delivering even more innovative electric mobility solutions to customers, while concurrently developing a robust agile supply chain to facilitate future growth and expansion.”

Ned Jolic, Sr Manager at PDSL, said, “We at PDSL UK are excited to ignite this game-changing partnership to help revolutionize electric mobility with supporting the development of cutting-edge Solid State EV Batteries. The collaboration blends PURE EV’s innovative prowess in electric vehicle design with PDSL UK’s engineering excellence, targeting a product that redefines performance and sustainability. The JV sets the stage for a transformative journey towards affordable, high-performance electric mobility, driving the future of transportation both in India and on the global stage.”

A new electric two-wheeler with advanced features is under development in the UK, poised to launch in both the Indian and international markets.

XPENG And The Volkswagen Group Announce Entry into the Framework Agreement on E/E Architecture Technical Collaboration



XPeng Inc. (“XPENG”, NYSE: XPEV and HKEX: 9868), a leading Chinese smart electric vehicle company, and the Volkswagen Group, one of the world’s leading automobile manufacturers, are pleased to announce today that XPENG and the Volkswagen Group have entered into a framework agreement on technical collaboration with respect to Electrical/Electronic architecture (“E/E Architecture”).

XPENG’s in-house developed industry-leading E/E Architecture is core to its vertically integrated full-stack software and hardware technologies. It allows software including ADAS and Connectivity OS to decouple from the underlying hardware and vehicle platforms, achieving fast iteration of software across platforms. XPENG’s latest generation of E/E Architecture adopts central computing and

domain controller based architecture which provides high-performance in-car computing environment and competitive cost structure. The E/E Architecture supports Gigabit Ethernet high-speed data transmission between the central domain and ADAS domain controllers. Significant number of electronic control units have been integrated into the domain controllers, leading to highly integrated architecture and competitive cost structure. The E/E Architecture also supports highly efficient whole-vehicle OTA for both customers’ vehicles and vehicles at the end of manufacturing lines.

Under the E/E Architecture technical collaboration, XPENG and the Volkswagen Group, will jointly develop and integrate XPENG’s latest generation of E/E Architecture to Volkswagen’s China Main Platform (CMP) in China. The jointly developed E/E Architecture is expected to equip Volkswagen brand electric vehicles produced in China from 2026.

“The shared passion for technology and innovation brought XPENG and Volkswagen together. Both parties continue to contribute each other’s best to our strategic partnership. The technical collaboration based on our industry-leading E/E Architecture takes our partnership to the next level and on a much larger scale. The collaboration will allow our Smart EV products to be both technologically competitive and cost competitive,” said Mr. Xiaopeng He, Chairman and CEO of XPENG.

Ralf Brandstätter, Member of the Board of Management of Volkswagen AG for China, said: “With our ‘In China, for China’ strategy, we are strengthening the innovative power of the Volkswagen

Group in China. By expanding our partnership with XPENG and consistently integrating with China's industrial ecosystem, we will align our products even faster to the needs of Chinese customers. Both partners bring their strengths to the table. This increases efficiency, optimises cost structures and accelerates the speed of development. High cost-effectiveness and a fast pace of development are crucial for our competitiveness in China's dynamic market environment. Through such efforts, we are taking on a leading role in the age of intelligent connected vehicles."

ElectroTempo Partners with PG&E to Accelerate Deployment of Multi-Family EV Charging through a Department of Energy Award



ElectroTempo, in partnership with Pacific Gas and Electric Company (PG&E), California's largest utility, received funding from the U.S. Department of Energy (DOE) to research strategies to accelerate EV charging investment at multi-family housing sites in their service area.

**electro
tempo**

Access to at-home EV charging is critical to making EV ownership affordable and practical. According to the DOE, over 80% of all EV charging happens at home, but more than a quarter of the population cannot afford at-home charging. Improving access to EV charging at apartment buildings, condos, and other significantly lowers the barrier to EV adoption and is imperative to de-carbonize

ElectroTempo received this funding under President Biden’s “Investing in America” agenda to advance next-generation EV technologies and ensure the equitable deployment of clean mobility options in disadvantaged communities across PG&E’s diverse California service area. In the DOE press release announcing the projects for funding, U.S. Secretary of Energy, Jennifer M. Granholm remarked that “The selected projects reflect the Department’s commitment to advancing the clean transportation sector — from expanding convenient charging options, to growing the future workforce and developing the key technologies that will lead to our fully electrified transportation future.”

ElectroTempo was selected for its state-of-the-art EV charging demand simulation toolkit. Through its partnership with the UC Berkeley Smart Cities and Sustainable Mobility Research Center and Texas A&M's Engineering Experiment Station, they will identify latent consumer EV demand and assess the utility grid impact to identify a pipeline of multi-family properties best positioned to benefit from charging infrastructure investment.

ElectroTempo is partnering with Ecology Action, Waypoint Energy, and the East Bay Clean Cities Coalition to identify and scale outreach and engagement strategies with affected local communities and outline policy and incentive frameworks that will enable and encourage investment in EV charging.

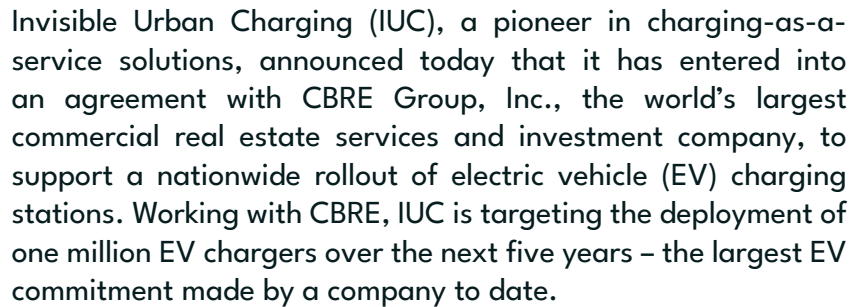
As of 2022, 70% of multi-family housing in California is occupied by households below the area median income. “Delivering charging solutions to multifamily housing is both impactful and challenging. It is impactful not only because of the sheer size of this market segment but also because reaching this segment will bring equitable access to charging to many of the disadvantaged communities. That’s why we choose to focus on this challenge. Moreover, our software solution, which utilizes large-scale, high-fidelity charging demand simulation to couple with power grid modeling, is uniquely positioned to address the key barriers to this segment: split incentives and siloed information. We are honored that the US DOE recognizes our capability to be working with PG&E in delivering the solutions,” said ElectroTempo CEO, Dr. Ann Xu.





peak power of 1500A and 1.3 MW charging

Invisible Urban Charging Partners With CBRE to Target Adding 1 Million EV Chargers Across the US



Under the terms of the agreement, CBRE will provide site selection, project management, installation, and ongoing maintenance services. In turn, IUC will provide the funding and the charging hardware and software as well as manage operations through its charging-as-a-service platform. Sites for EV charger deployment include, but are not limited to properties currently serviced by CBRE.

Eileen Murray, senior advisor to IUC, added, “Working with CBRE increases our ability to deliver an immense positive change to the EV charging space, providing critical infrastructure that the country desperately needs. This kind of partnership gets parties working together to support the transition to more sustainable operations through innovation and can serve as a model for tackling the large-scale challenges we face.”

IUC's comprehensive EV solution offers facilities operators a seamless charging experience, from hardware deployment at parking lots to a user-friendly mobile app for drivers. Through the IUC connected platform, clients gain centralized access to monitor, optimize, and report on all aspects of their EV infrastructure. Real-time insights into charger status, charging patterns, and energy consumption empower locations to deliver an optimized EV charging experience and enhanced satisfaction for both clients and tenants.

INVESTMENT & FINANCING

Kenya to Invest 1.9 mln USD to Boost EV Adoption in 3 years



Kenya Power, the country's electricity distributor, said on Monday that it will invest 1.93 million U.S. dollars in the next three years to spur the adoption of electric vehicles (EVs) in the country.

Kenya Power Managing Director Joseph Siror said the investment covers the cost of purchasing electric cars and motorcycles to support business activities as well as the establishment of charging stations at various places across the country.

"In addition to our need to charge our electric vehicles, we intend to use our EV charging stations to collect data that will inform the next steps in our support of the growing electric mobility industry," Siror told journalists in the national capital of Nairobi.

In September 2023, Kenya developed a framework for electric vehicle charging and battery swapping infrastructure to accelerate the adoption of EVs and guarantee the establishment of safe, reliable, accessible, and affordable charging services.

According to the Energy and Petroleum Regulatory Authority (EPRA), EVs accounted for 1.62 percent of the 165,913 vehicles registered in Kenya in December 2023, with the country aiming to reach 5 percent by 2025.

"In addition to the additional charging stations that we intend to install in the current financial year, we intend to install 10 additional facilities annually in 2025 and 2026," Siror said.

The EPRA said the country's energy mix is highly conducive to supporting e-mobility, with almost 85 percent of energy generation sourced from renewable channels.

CMA CGM Joins Renault and Volvo in Flexis Electric Truck JV

CMA CGM has joined the Flexis electric light van manufacturing joint-venture, formed between carmakers Renault and Volvo last month.

The French container shipping line announced this morning it had invested €120m in Flexis SAS to acquire a 10% stake in the venture through its PULSE energy investment fund.

Volvo and Renault initially signed the JV agreement last October and were issued regulatory approvals on 22 March. Under the terms of the agreement, each firm will invest €300m over the next three years.

Both have a 45% stake in the company, which has set out to build a new generation of electric vans equipped with advanced software for the European logistics market – CMA CGM said demand for



electric vans in Europe was forecast to grow by 40% a year up to 2030.

Thomas Cullen, lead automotive analyst at supply chain analyst Transport Intelligence, told The Loadstar that one possible motive for CMA CGM's involvement may be to secure access to electric vehicles over the coming years for its Ceva 3PL subsidiary, as well as its other e-commerce fulfilment services.

"CMA CGM is not just a 'shipping company' – it is an LSP with at least some exposure to last-mile, delivery to retail sites and so on, and I assume will be a big customer for these EVs."

Mr Cullen explained that electric delivery vehicles were particularly suited to providing logistics services in densely populated areas.

"Electric LCVs make a lot of sense – the pattern of usage favours EVs in urban areas and I'm a bit surprised there aren't more, although DP DHL had a similar project," he added.

DHL has targeted electric vehicles comprising 60% of its LCV last-mile fleet by 2030.

"The van itself will offer outstanding compacity for urban mobility, and high versatility for tailor-made solutions with different battery capacities, as well as the first 800V architecture on the market for vehicles in this category," CMA CGM noted.

"Adopting the new connected electronic platform, the vehicle will onboard unprecedented capabilities to monitor users' delivery activity and business performance, reducing up to 30% the global cost of usage for logistics players. The connected services enabled by the software-defined vehicle technology will enable customers to benefit from up-to-date vehicles during their whole lifecycle," it added.

The Flexis vehicles will be produced in a Renault-dedicated light commercial vehicle (LCV) manufacturing plant at Sandouville in France, which is set to recruit 550 people over the next four years.

They will be built on "a new fully electric LCV skateboard platform that will offer high modularity for different body types".

CMA CGM CEO Rodolphe Saadé created the group's energy fund, PULSE, in 2022 and has set up a €1.5bn budget for the "decarbonisation of the logistics value chain", with both direct and indirect investments in "innovative companies as well as sustainable industrial projects".

Transport Intelligence analyst Richard Shrubbs quoted International Energy Agency statistics from 2022 that showed a 90% global growth in electric LCV sales during the year and said despite potential challenges the European market had healthy prospects.

"Europe is one of the big growth regions, with EU regulation ranging from Euro 7 potentially coming in soon; government vouchers for eLCVs; and preferential road tolls on its strategic road network all contributing to a much lower total cost of ownership of eLCVs – there is the potential for eLCVs to be cheaper than combustion engine LCVs in the near future as a result.," he told The Loadstar.

"There could be headwinds as the macroeconomic environment hits governments' willingness to implement green regulation. As things stand though, electric transport in the commercial sector is the next big thing in global greenhouse gas reduction.



Honda Announces \$15B Investment in Four Ontario EV Plants



Tokyo-based Honda Motor Co. will invest C\$15 billion in four new electric vehicle assembly and battery manufacturing plants in Ontario, Prime Minister Justin Trudeau and Premier Doug Ford announced Thursday.

Trudeau called the deal the “largest investment in Canada’s history,” while Ford declared it “a game changer for the industry” and a “tremendous win for Ontario,” CBC reports.

Honda will build an EV assembly plant and stand-alone battery facility in Alliston, Ontario, as well as a cathode active material and precursor (CAM/pCAM) processing plant and a separator plant in communities that have yet to be named, the company said in a statement. The federal and provincial governments sweetened the deal with up to \$2.5 billion each in subsidies, the Globe and Mail writes, with the federal dollars flowing from the investment tax credits it announced for clean technology in 2023, and for EV supply chains in last week’s 2024 budget.

“This announcement is not just about creating good jobs. It’s about securing good jobs and careers for the coming years, and even the coming decades,” Trudeau said.

“Once the assembly plant is fully operational in 2028, it will produce up to 240,000 vehicles per year and create more than 1,000 ‘well-paying manufacturing jobs’,” CBC states, citing releases from Honda and the federal government.

“Both the scope of Honda’s investment and the way that governments will back it mark a pivot in Canada’s strategy to establish itself a major player in the global race to build EV supply chains, as the auto sector shifts away from making vehicles powered by fossil fuels,” the Globe adds. The announcement identifies South Korea’s POSCO Future M Co. as a partner for the CAM/pCAM processing plant and Japan’s Asahi Kasei Corp. with a role in the separator plant.

Honda CEO Toshihiro Mibe said project details will be announced over the next six months, making the Alliston plants the first to take advantage of the EV supply chain tax credit. When it was announced last week, the credit was pegged at 10% through 2032 and 5% for 2033 and 2034, at a cost of \$80 million through 2029 and \$1.02 billion in the five years that follow. The federal Conservative opposition threw cold water on the deal, pointing to a previously-announced battery plant in Windsor where NextStar Energy, a partnership between automaker Stellantis and battery manufacturer LG Energy Solution, will be hiring 900 workers from South Korea for a key stage of the project.

“Windsor Mayor Drew Dilkens said those workers were coming to install specialized proprietary equipment in the plant and would only work at the site for periods of three to 18 months—and would not get permanent jobs,” CBC reports. “NextStar Energy has committed to hiring 2,500 Canadians for full-time positions at the plant,” on top of 1,600 tradespeople involved in construction. But the use of foreign workers at the Windsor plant is still raising flags with Canada’s Building Trades Union. In a letter to Trudeau, the union “said the work could easily be performed by local tradespeople despite claims from NextStar that it was only bringing over workers because it needed their ‘specialized knowledge’.

“This has never been a case of ‘knowledge transfer’ or ‘specialized knowledge’,” wrote CBTU Executive Director Sean Strickland. “This is the brazen displacement of Canadian workers in favour of international workers, by major international corporations thumbing their nose at both the Government of Canada, taxpayers, and our skilled trades workers.”

NextStar said almost all the workers have been “hired temporarily by the suppliers to install proprietary equipment and are a requirement of warranty obligations,” iPolitics writes. But “the CBTU said it had proof of foreign workers offloading equipment for module lines, using forklifts, and conducting equipment installation work previously contracted to Canadian workers.”

Carrar Raises \$5.3 Million to Deliver Commercial Battery Modules for EVs that Triple Battery Lifetime



Carrar, a provider of battery modules and thermal management systems for electric vehicles (EVs), today announced the closing of its \$5.3 million Series A funding round to deliver commercial automotive-grade battery modules for electric vehicles with novel internal thermal management based on two-phase immersion technology.

The round included new investors Salida B.V., OurCrowd, and NextGear, and current investors Gentherm, Next Leap Ventures, Dive Digital, and others.

Carrar is transforming e-mobility with battery modules and thermal management systems that dissipate twice the amount of heat of existing solutions, increasing battery lifespan three-fold.

Carrar also improves EV safety by preventing the temperature spirals caused by battery exothermic processes, which lead to thermal runaway and battery fire.

“I’m happy to begin this new stage in our company’s growth,” said Avinoam Rubinstein, Carrar’s CEO. “We thank our investors for the

vote of confidence in our capabilities and vision. This investment will enable us to achieve the last mile of bringing our modules to market.”

“We are working with Tier-1 companies Gentherm and Röchling to build a first-of-its-kind battery module that presents outstanding cooling capabilities,” Rubinstein said.

“A safety test we conducted on a module developed with a global heavy-duty EV manufacturer achieved excellent results in preventing thermal runaway and battery fire,” he said.

“We are confident in our vision of optimal performance for electric vehicles in all weather conditions and improved passenger safety while reducing the environmental impact of EV batteries,” Mr. Rubinstein added.

“A considerable advantage of Carrar’s system is heat dissipation and enhanced safety, which represents an exceptional business opportunity in the EV market,” said Sake Bosch, Key Principal at Salida B.V.

“Carrar addresses some of the main challenges of the e-mobility industry—battery safety, longevity, and cost,” added Tal Cohen, Founding Partner at Next Gear Ventures. “Carrar brings tangible benefits to consumers that will help increase adoption of electric vehicles worldwide.”

OurCrowd CEO Jon Medved said, “We are excited to invest in Carrar, a leader in thermal management for the fast-growing EV market. Anyone who experienced problems with their electric vehicles in North America this winter understands how critical it is to manage the temperature of EV batteries. Carrar is poised to provide a must-have solution to this problem. With a growing list of customers and partners, joined by an A list of value-added investors, Carrar has the key ingredients for potential success.”

“Carrar’s offices and team in Sderot, near Gaza, were attacked by Hamas on October 7th. Avinoam and his team have shown outstanding perseverance in adhering to the company’s development and business roadmap and completing a successful investment round despite these huge challenges. We salute them and are proud to be among their investors,” Medved added.

NEW LAUNCHES

Zero Motorcycles Launches Tesla Tap Mini | The Key to Expanded Charging Options



Zero Motorcycles, the global leader in electric motorcycles and powertrains, is thrilled to announce the launch of the Tesla Tap Mini, a pathbreaking accessory that significantly expands charging options for Zero owners. This launch marks a pivotal step in Zero Motorcycles' mission to enhance the electric motorcycle experience with advanced technology and user-centric solutions.

The Tesla Tap Mini is a compact, versatile adapter designed to unlock access to an additional 40,000 Tesla Destination Chargers, UMCs, and Wall Connectors in North America. This accessory is not compatible with the Tesla Supercharger network but opens the door to thousands of additional charging points, significantly enhancing the charging infrastructure available to Zero riders and underscoring the company's commitment to leading the electric mobility revolution.

Key Features of the Tesla Tap Mini:

Universal Compatibility: Seamlessly works with all Level 2 Destination Tesla chargers (excluding Superchargers), offering Zero owners unparalleled access to a broad charging network.

Safe & Secure: Equipped with circuitry to maintain full functionality and adhere to safety protocols.

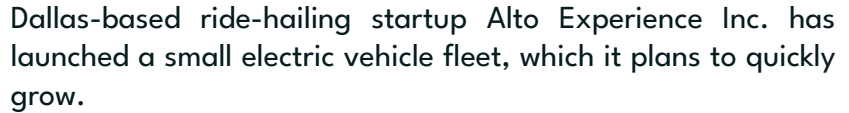
Wide Range Charging: Capable of charging from any stationary or portable EVSE ranging from 110V to 250V with a NACS charging pistol, providing flexibility for riders on the go.

U.S.-Built EV Friendly: Designed to be compatible with any US electric vehicle and charges at up to 60 AMPS @ 250VAC (15 kW), making it a versatile addition to any electric vehicle enthusiast's toolkit.

Peace of Mind: Features two padlock slots for securing the adapter to your Tesla connector and your Zero Motorcycle, ensuring your charging setup is both safe and secure.

"We're excited about what the Tesla Tap Mini means not only to the Zero Motorcycles community, but also for the continued progress of EV motorcycles within the broader market. This adapter unlocks tens of thousands of new charging opportunities for electric motorcycle riders and provides our customers with an added peace of mind to be able to rely on charging infrastructure when it's needed on their electric adventures." — Brian Wismann, Zero Motorcycles Sr. VP of Product Development

The Tesla Tap Mini is available for purchase at authorized Zero Motorcycles dealerships. This launch is part of Zero Motorcycles' broader strategy to continuously improve and expand the electric motorcycle riding experience through innovative technology and rider-focused solutions.

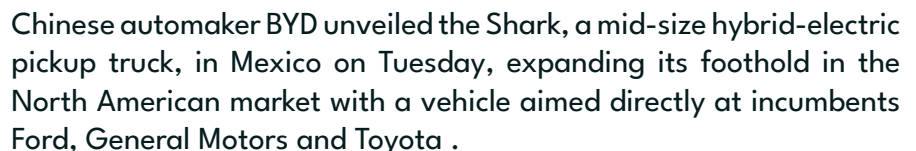


Not much information was disclosed about the Kia partnership but Alto CEO Will Coleman said his company has a “long history of working with [original equipment manufacturers] to obtain favorable rates for vehicles given our fleet scale across the U.S.”

Alto offers a service is similar to Uber and Lyft, but the Dallas company uses a membership model that generates upfront revenue. Another major difference is that instead of using contract drivers, Alto employs them as W2 workers and provides safety and driving training. Alto also owns its fleet of SUVs, which can be found around Dallas-Fort Worth, and as the one of the curbside ridesharing services at Dallas Love Field Airport.

After expanding into the San Francisco and Palo Alto markets in 2022, Alto exited those areas in 2023 to “reallocate resources to higher growth markets.” Alto said it’s seen strong demand and growth in Los Angeles, Miami, Dallas, Houston and Washington, D.C.

China's BYD Launches Mid-size Hybrid Pickup in Mexico



The Shark is only available in the Latin American nation, executives said, and is the first time the world's largest electric-vehicle (EV) maker has launched a new product outside its home country.

The model is meant to tackle common downsides to pickups, such as high fuel consumption as well as poor handling and control, Li added.

It will go head-to-head in Mexico with compact and medium-sized trucks such as the Toyota Tacoma and Ford Ranger. It is, however, costlier than most makes of both of the competing vehicles with a starting price of 899,980 pesos (USD 53,442.68) for the Shark GL and 969,800 pesos (USD 57,588.73) for the premium Shark GS.

The Shark's size and features are consistent with those of vehicles offered in the U.S., a market BYD did not address in its presentation Tuesday. U.S. President Joe Biden on Tuesday announced new tariffs on Chinese products, including a new 100% duty on Chinese EVs. U.S. Trade Representative Katherine Tai later said that the United States is weighing tariffs on imports from Mexico.

The Shark can travel up to 100 km (62 miles) in EV mode before needing to be recharged, according to a brochure from BYD, and up to 840 km using both electric and combustion methods.

Autel Energy Europe Releases MaxiCharger Launch Plan



Autel released the MaxiCharger Megawatt Charging System satellite launch plan at the Nordic EV Summit 2024. This system not only promises a surge in charging capabilities, but also ensures a swift and streamlined charging experience, according to the company.

“Introducing the MaxiCharger Megawatt Charging System at the Nordic EV Summit signifies a monumental stride toward achieving sustainable transportation,” Ting Cai, CEO of Autel Europe, said. This sentiment was echoed by Per Jeppsson, sales VP Nordic of Autel Europe, emphasizing the system’s role in propelling the sector toward a cleaner, greener future.

In collaboration with Hubei, Autel Energy said it is set to conduct comprehensive tests to ensure the MaxiCharger's seamless integration with the premier charging network platform. This partnership aims to bolster the accessibility and convenience of EV charging, offering a seamless experience for users across Europe.

Cai announced the availability of the Megawatt Charging System for pre-orders, saying it marked a pivotal moment in Autel Energy's mission toward environmental stewardship.

INDUSTRY UPDATES

Over 4 Million Plugin Vehicles Sold Globally in 2024



Global EV sales reached 1.1 million units in April 2024, according to EV research-house, Rho Motion, bringing year-to-date (YTD) sales to 4.3 million, 22% greater than the same period in 2023. Battery Electric Vehicles (BEVs) represent 64% of units sold so far in 2024, with the remaining 36% Plug-in Hybrid (PHEV).

EU & EFTA & UK has grown by 8% YTD, with France growing by 20%, the UK by 15%, and Germany falling by 2% following the elimination of all EV

subsidies there at the end of 2023. Despite narrowing subsidy requirements in France, now favouring home-grown manufacturers, the market has grown by 20% YTD. However, sales of Chinese-made EVs in France, such as the popular Dacia Spring and MG models, have fallen over the past two months. Elsewhere, the Volvo EX30 has made a strong start to sale, already making it into the top 10 BEVs sold in Europe YTD. The Volvo EX30 features an LFP battery for its standard range model and NCM for its extended range option.

“April’s electric vehicle sales figures shows a strong global market as sales grow 22% year-on-year. In Europe, France has managed to walk the line between cutting subsidies for foreign cars without dampening demand, while Germany’s sudden cut to all subsidies has had a devastating impact on the market there which has shrunk 2%.”

The North American market has increased by 7% YTD, with Canada leading EV sales growth in the region with 27% YTD.

The Chinese market continues to march ahead of the pack, expanding by 30% YTD. BEV sales have increased by 10% YTD and PHEV sales by 74%, owing to growing PHEV production by BYD and the rising sales figures of Range Extender Electric Vehicles (REEVs). BYD also reported record NEV export sales of over 40,000.

Few Chinese Electric Cars are Sold in U.S., But Industry Fears a Flood



The Biden administration’s new tariffs on Chinese electric vehicles won’t have a huge immediate impact on American consumers or the car market because very few such cars are sold in the United States.

But the decision reflects deep concern within the American automotive industry, which has grown increasingly worried about China’s ability to churn out cheap electric vehicles. American automakers welcomed the decision by the Biden administration

Tuesday to impose a 100% tariff on electric vehicles from China, saying those vehicles would undercut billions of dollars of investment in electric vehicle and battery factories in the United States.

“Today’s announcement is a necessary response to combat the Chinese government’s unfair trade practices that endanger the future of our auto industry,” Sen. Gary Peters, D-Mich., said in a statement. “It will help level the playing field, keep our auto industry competitive, and support good-paying, union jobs here at home.”

On Tuesday, President Joe Biden announced a series of new and increased tariffs on certain Chinese-made goods, including a 25% duty on steel and aluminium, and 50% levies on semiconductors and solar panels. The tariff on electric vehicles made in China was quadrupled — from 25% to 100%. Chinese lithium-ion batteries for electric cars will now face a 25% tariff, up from 7.5%.

The United States imports only a few makes — electric or gasoline — from China. One is the Polestar 2, an electric vehicle made in China by a Swedish automaker in which Chinese company Zhejiang Geely has a controlling stake. In a statement, Polestar said it was evaluating the impact of Biden's announcement.

“We believe that free trade is essential to speed up the transition to more sustainable mobility through increased EV adoption,” the company said.

In the first quarter of this year, Polestar sold just 2,200 vehicles in the United States. Later this year, however, it is scheduled to start producing a new model, the Polestar 3, at a South Carolina plant operated by Volvo Cars, which Geely owns.

Volvo sells a Chinese-made plug-in hybrid sedan, the S90 Recharge, in the United States, and plans to start importing a new small sport utility vehicle, the EX30, to the United States from China this year. The car is expected to start at \$35,000, making it one of the most affordable battery-powered models available in the country. The model has quickly become Volvo's top selling vehicle in Europe.

Volvo said Tuesday that it was evaluating the potential impact of Biden's new tariffs on its plans.

Internal combustion models that are made in China and sold in the U.S. include the Buick Envision SUV made by General Motors, and Ford Motors' Lincoln Nautilus. They are unaffected by the tariffs.

Tesla, GM, Ford, Volkswagen, Hyundai and several other automakers have invested tens of billions of dollars in battery and electric vehicle factories in the United States. But with the exception of Tesla, automakers in the United States, Europe and Japan trail Chinese companies in scale, raw materials production and key technologies.

Contemporary Amperex Technology Co. Ltd., or CATL, a Chinese manufacturer that is the world's largest producer of electric car batteries, said last month that it had developed a battery that could charge up enough in 10 minutes to allow a car to travel about 370 miles — a major leap compared to the batteries used by established Western and Asian automakers, including Tesla.

China's lead in electric vehicles, which are seen as central to the auto industry's future, has spurred concerns that Chinese cars could hit the U.S. market at prices that GM, Ford and other traditional automakers wouldn't be able to compete with.

BYD, a leading and fast-growing Chinese car and battery company, already sells a compact electric car, the Seagull, for less than \$15,000 in China. And on Tuesday, it said that it would begin selling a

plug-in hybrid pickup truck in Mexico, although it added it did not yet plan to sell the vehicle in the United States.

Chinese automakers like BYD, Geely and SAIC have been increasing car exports to Europe, Latin America and various Asian countries. The European Commission, the executive arm of the European Union, is investigating Chinese state subsidies to electric carmakers.

Some representatives of the U.S. auto industry have said that the Chinese government's support of its automakers has left factories there with the capacity to make vastly more cars than can be sold in the country.

"They've got a major EV overcapacity problem," John Bozzella, president of the Alliance for Automotive Innovation, the main lobbying arm for U.S. automakers.

"They're building too many EVs — too many heavily subsidised EVs — for the domestic market and have no choice but to look abroad to offload those vehicles at budget prices," Bozzella added. "The competitiveness of the auto industry in the U.S. will be harmed if heavily subsidized Chinese EVs can be sold at below-market prices to U.S. consumers."

Chinese officials have denied the country is overproducing electric vehicles, solar panels and other products targeted by the Biden administration. "We hope the U.S. can take a positive view of China's development and stop using overcapacity as an excuse for trade protectionism," a spokesperson for the Chinese Embassy in Washington, Liu Pengyu, said Tuesday.

Automakers have already had a taste of how price competition can disrupt their electric vehicle plans. Over the past year, Tesla has cut prices on its models several times, reducing the costs of some models by more than 20% in total. Those cuts, combined with a slowdown in the growth of electric car sales, has made it extremely hard for GM and Ford to make money on battery-powered models.

In the first three months of the year, Ford's electric vehicle division lost \$1.3 billion before taking into account some expenses. Both Ford and GM have slowed electric vehicle production and delayed the introduction of new models. While GM is losing money on electric cars, the company has said it expects those vehicles to begin generating profits later this year.

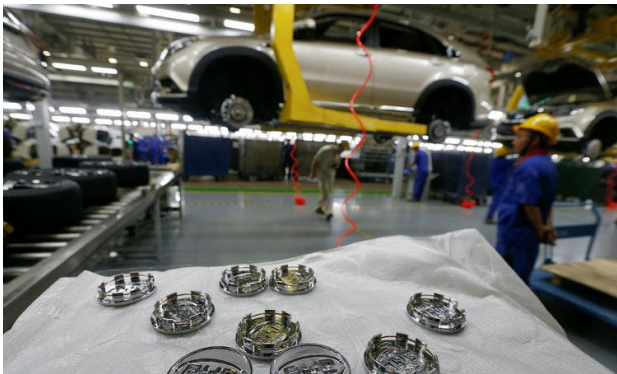
The Biden administration has sought to support and encourage the production of batteries and electric vehicles in the United States to address climate change and encourage more domestic manufacturing.

China isn't the only obstacle. Americans' enthusiasm for electric cars has waned over the past year, mainly because such vehicles sell for relatively high prices. Some are also reluctant to buy because they are not sure there will be enough places to charge those cars easily and quickly.

In the first quarter of this year, 269,000 EVs were sold in the U.S. market, according to Kelley Blue Book. That's an increase of just 2.6% from a year earlier. Total sales of cars and light trucks grew more than 5% to 3.8 million vehicles.

"In a lot of ways, buying an EV requires a lifestyle change," said Jessica Caldwell, executive director of insights at Edmunds, a market researcher. "A lot of people just say, 'I don't want the hassle of an EV.'"

China EV Stocks Sink on Reports of US Tariffs



Shares of major Chinese electric vehicle makers fell on Friday, after multiple reports said that the U.S. was preparing more tariffs against Chinese companies, specifically aimed at EVs and other key sectors.

Li Auto Inc (HK:2015) (NASDAQ:LI), NIO Inc (HK:9866) (NYSE:NIO), BYD (HK:1211) and Geely Automobile (HK:0175) fell between 1% and 4% in Hong Kong trade, lagging a 1.5% jump in the Hang Seng index.

Xiaomi (OTC:XIACF) Corp (HK:1810), which recently entered the EV sector with its SU7 model, fell 0.9%, while battery making giant Contemporary Amperex Technology (SZ:300750) fell 2.2% as the reports said China's battery industry will also be targeted.

U.S. President Joe Biden could announce new tariffs on China as soon as next week, extending certain levies that were imposed by former President Donald Trump. But the new tariffs will be far more targeted than the Trump-era levies, and will focus on key strategic sectors such as EVs, batteries, and solar energy equipment. Any U.S. tariffs on Chinese EV makers are widely expected to quash their plans for international expansion. But fears of cheap Chinese EVs dominating U.S. and European markets have also been a point of concern for other major automakers.

Tariffs on China's battery industry could also provide headwinds to U.S. EV makers, given their reliance on China for battery technology. CATL, for instance, has multiple partnerships with Tesla Inc (NASDAQ:TSLA) and Ford Motor Company (NYSE:F) to supply battery technology for their vehicles.

Any more trade tariffs also threaten retaliatory measures from China, given that relations between the world's two biggest economies are already frayed.

But the actual impact of tariffs on Chinese EV makers remains unclear, given that they still sell most of their cars in the domestic market. Chinese EV demand has remained a key bright spot in an otherwise weak global automobile market.

Electric 3-wheeler Market worth \$1.5 billion by 2030 Globally, at a CAGR of 2.2%



The electric 3 wheeler market is projected to grow from USD 1.3 billion in 2024 to USD 1.5 billion by 2030, at a CAGR of 2.2%. With the increasing stringency of government mandates, 3 wheeler manufacturers' focus has shifted to efficiency, emission-free propulsion, innovative technologies, and revised environmental standards. The growing adoption of electric 3 wheelers with improving charging infrastructure in various countries will change the market scenario in the coming years. With the introduction of new technology, batteries with improved specifications are being launched for use in EVs including 3 wheelers.

Government initiatives have been driving market growth for electric 3 wheelers. India for instance, has set an ambitious target of making 80% of all 3 wheelers sold in the country to be electric by 2030. The Indian government has also established a project called the Faster Adoption and Manufacturing of (Hybrid and) Electric (FAME) Vehicles for the faster production and adoption of electric vehicles

in India. Similarly, in China, the government is vigorously promoting electric 3 wheelers, which are quickly becoming the preferred means of transportation for many people. The Malaysian government aggressively encourages the use of electric 3 wheelers by providing subsidies. The government of Bangladesh has taken several initiatives to promote the use of electric 3 wheelers, including providing subsidies and tax exemptions. Further, the government of South Africa has implemented measures aimed at promoting the adoption of EVs within the nation.

Electric 3-wheeler load carriers of medium-weight goods have a payload capacity of 300–500 kg. Many e-commerce and logistics companies use electric 3-wheelers with a 300–500 kg payload capacity. The electric 3-wheeler market has rapidly evolved with ongoing engineering and loading capacity developments. This is driving the 300–500 kg payload capacity segment. Companies such as Mahindra&Mahindra Ltd., Atul Auto Ltd., Piaggio Group, Lohia Auto Industries, and Kinetic Green offer electric 3-wheelers with a 300–500 kg payload capacity. Jiangsu Jinpeng Group Co., Ltd. also offers Electric Rickshaw (X3) and Electric Tricycle (TL) with a payload capacity of 400 kg and 332 kg, respectively. Developments by leading OEMs and large sales volume of such cargo electric 3 wheelers is expected to drive the electric 3 wheeler industry during the forecast period.

Asia Pacific to be the fastest-growing market for electric 3 wheelers during the forecast period.

Asia Pacific to be the fastest-growing market for electric 3 wheelers during the forecast period. Countries such as Sri Lanka, Bangladesh, Vietnam, and Thailand plan to rapidly increase the demand for electric 3 wheelers. The region also has established market such as China and India. During the forecast period, Sri Lanka is expected to be the fastest-growing country in Asia Pacific. There is an increasing demand for green technology vehicles in Sri Lanka. SL Mobility and Ideal Motors are the prominent manufacturers of electric 3 wheelers in the country.

Due to the growth in sales of overall alternate fuel vehicles, the Sri Lankan electric 3 wheeler market is expected to grow. Similarly, The Thai government is rolling out policies to promote EVs as part of its plans to create an EV manufacturing hub. The government is determined to improve air quality, develop smart cities nationwide, and meet its target of reaching carbon neutrality by 2050 and net-zero greenhouse gas emissions by or before 2065. Such initiatives will drive the electric 3 wheeler market in Asia Pacific region.





1) Can you share any data or insights regarding the efficiency and performance gains achieved by using Renon battery packs?

Efficiency and Performance Gains with Renon Battery Packs Renon's lithium-ion battery packs, utilizing both LFP and NMC chemistry, are engineered to deliver exceptional efficiency, performance, safety and reliability across various applications such as Mobility applications (E-2w, E-3w, E-bicycle) and Stationary solutions (BESS, Solar applications). Here are key insights into the efficiency and performance gains achieved by using Renon battery packs:

1. Energy Efficiency:

- Renon's battery packs are designed with advanced cell chemistry and optimized configurations to maximize energy efficiency in charging and discharging cycles.
- The use of high-quality materials and precise manufacturing processes ensures minimal energy loss, resulting in higher overall system efficiency.

2. Enhanced Cycle Life:

- Renon's LFP and NMC battery packs exhibit superior cycle life performance, with LFP batteries lasting up to 2,000 cycles and NMC batteries lasting up to 1200 cycles providing extended longevity compared to conventional options.
- The robust construction and quality control measures employed by Renon contribute to prolonged battery life, reducing the need for frequent replacements and enhancing overall system reliability.

3. Thermal Management Innovation:

- Renon integrates innovative thermal management solutions using wax materials to efficiently regulate battery temperature during operation.
- By leveraging wax-based cooling systems, Renon battery packs effectively dissipate heat, maintaining optimal operating temperatures and enhancing overall battery efficiency and longevity.

4. Safety and Reliability:

- Renon prioritizes safety in battery pack design, implementing stringent quality control measures and safety features to mitigate risks of thermal runaway and ensure reliable performance.
- The combination of advanced thermal management and safety protocols enhances the overall safety profile of Renon battery packs, instilling confidence in their use across diverse applications.

5. Cost-Effectiveness:

- Renon's focus on efficiency, performance, and longevity translates into cost-effective solutions for customers, offering a balance between initial investment and long-term operational savings.
- The durability and efficiency of Renon battery packs contribute to reduced maintenance costs and enhanced overall system economics. In conclusion, Renon's commitment to technological innovation, quality control, and thermal management excellence results in battery packs that offer superior efficiency, performance gains, and reliability for both Mobility and stationary applications. By leveraging cutting-edge solutions and a customer-centric approach, Renon sets a benchmark for excellence in the lithium-ion battery industry.

2) What quality control measures are in place to ensure the battery components meet industry standards?

In the realm of lithium-ion battery manufacturing, adherence to stringent quality control measures and compliance with industry standards are paramount to ensure product safety, reliability, and performance. Renon, as a leading player in the industry, aligns its practices with various industry standards and quality control protocols to uphold the highest quality standards. Here's how Renon incorporates industry standards and quality control measures in its lithium-ion battery production:

Industry Standards and Regulations:

Renon's manufacturing processes adhere to industry-specific standards and regulations to guarantee the quality and safety of its lithium-ion batteries. These include:

1. AIS-156 (Automotive Industry Standard):

- Renon complies with AIS-156, an Indian standard that sets guidelines for lithium-ion battery safety and performance in automotive applications. This standard ensures that batteries meet the necessary safety and quality benchmarks for use in electric vehicles.

2. ISO 9001 and ISO 14000:

- Renon is certified under ISO 9001 for quality management systems and ISO 14000 for environmental management systems. These certifications demonstrate Renon's commitment to maintaining high-quality manufacturing processes and environmental sustainability in its operations.

3. NABL Approved Battery Capacity Testing:

- Renon conducts battery capacity testing through NABL (National Accreditation Board for Testing and Calibration Laboratories) approved labs. This ensures accurate and reliable testing of battery performance metrics, providing customers with verified capacity data.

Also Renon's internal test lab conducts a comprehensive range of tests to ensure compliance with industry standards and to guarantee the safety, performance, and quality of its lithium-ion batteries.

Battery Failure Analysis:

- Renon's internal test lab conducts detailed battery failure analysis to identify the root causes of any battery failures. This analysis helps in understanding failure modes, improving design, and enhancing overall battery reliability.

Battery Safety and Performance Testing:

- Renon's internal testing includes rigorous safety and performance evaluations to ensure that its batteries meet the highest safety standards. This testing covers aspects such as voltage, internal resistance, capacity, self-discharge rate, cycle life, and sealing ability.



Battery Fire & Abuse Testing:

- Renon's internal test lab conducts battery fire and abuse testing to assess the battery's response to extreme conditions like overcharging, over-discharging, and physical abuse. This testing ensures that the batteries remain safe and stable even under abusive scenarios.

Battery Modelling and Simulation:

- Renon utilizes advanced battery modelling and simulation techniques to predict battery behaviour under different operating conditions. This helps in optimizing battery performance, efficiency, and longevity.

UN 38.3 Testing for Lithium Batteries:

- Renon conducts UN 38.3 testing, which is essential for the safe transportation of lithium batteries. This testing covers a series of tests to evaluate the batteries' performance under transportation hazards.

IEC 62133-2: Safety Standard:

- Renon's internal testing aligns with IEC 62133-2 safety standard for lithium-ion cells and batteries. This standard addresses chemical, electrical, and mechanical hazards to ensure consumer safety and environmental protection.

UL 2272 Certification:

- Renon ensures that its batteries meet UL 2272 certification requirements, which focus on the safety of lithium batteries used in electronic products. This certification validates that Renon's batteries adhere to stringent safety standards.

By conducting these internal tests and adhering to industry standards and certifications, Renon demonstrates its commitment to producing high-quality, safe, and reliable lithium-ion batteries for various applications.

3) Are there any emerging trends or technologies that could significantly impact the battery recycling industry specifically for electric vehicle batteries?

Based on the provided sources, there are several emerging trends and technologies that could significantly impact the battery recycling industry, specifically for electric vehicle (EV) batteries:

Recycling Technologies Advancements

- The recycling of lithium-ion batteries, especially from electric vehicles, is gaining importance due to the increasing demand for sustainable energy solutions.
- Advanced recycling technologies are being developed to recover valuable materials like lithium, cobalt, and nickel from used batteries, which can then be reused in the production of new batteries.

Circular Economy Focus:

- The concept of a circular battery economy is becoming critical in the energy transition, emphasizing the need for efficient recycling and reuse of battery materials to reduce waste and optimize resource utilization.
- Nations and companies are increasingly focusing on developing domestic recycling capabilities to support the circular economy and ensure sustainable battery production.

Growth in Electric Vehicle Market:

- The rising demand for electric vehicles is driving the need for efficient battery recycling processes to manage end-of-life batteries effectively.

- As more electric vehicles reach the end of their battery life, the recycling industry is expected to grow significantly to handle the increasing volume of retired batteries.

Technological Innovations in Recycling:

- Innovations in battery recycling technologies are expected to streamline the recycling process, making it more efficient and cost-effective.
- These advancements aim to recover valuable materials from spent batteries with higher efficiency, contributing to the sustainability of the battery supply chain.

Focus on Resource Efficiency:

- The emphasis on resource efficiency and sustainability is driving the development of innovative recycling methods that can extract and reuse critical materials from EV batteries.
- Recycling technologies are evolving to address the challenges of resource scarcity and environmental impact associated with battery production and disposal.

Policy Initiatives and Regulations:

- Government policies and regulations promoting sustainable practices and circular economy principles are expected to shape the future of battery recycling for electric vehicles.
- These initiatives aim to create a supportive regulatory environment for battery recycling and encourage the adoption of environmentally friendly practices in the industry.

In conclusion, the battery recycling industry, particularly for electric vehicle batteries, is witnessing significant advancements and trends that focus on sustainability, resource efficiency, and technological innovation. These emerging trends are poised to reshape the battery recycling landscape and drive the industry towards a more sustainable and circular approach to managing end-of-life batteries.

4) Solid-State Battery is one such battery technology that offers a possibility of achieving 100% EV mobility in the future. How are these batteries different from the traditional lithium-ion ones and what challenges lie ahead of today's EV mobility industry in aiming to replace the Lion batteries with the Solid-state batteries.

Solid-state batteries represent a promising technology that could potentially enable 100% electric vehicle (EV) mobility in the future.

Here is a comparison of solid-state batteries with traditional lithium-ion batteries and the challenges facing the EV mobility industry in transitioning to solid-state batteries:

Differences Between Solid-State and Lithium-Ion Batteries:

> Electrolyte Composition:

- **Solid-State Batteries:** Solid-state batteries use a solid electrolyte, typically ceramics or polymers, instead of a liquid electrolyte used in lithium-ion batteries.
- **Lithium-Ion Batteries:** Lithium-ion batteries rely on a liquid electrolyte solution for ion transport within the cell.

>Energy Density:

- **Solid-State Batteries:** Solid-state batteries offer higher energy density compared to traditional



lithium-ion batteries, potentially leading to extended ranges for electric vehicles and longer-lasting charge for portable devices.

- **Lithium-Ion Batteries:** While lithium-ion batteries have respectable energy density, they may not match the potential of solid-state batteries, limiting the range of electric vehicles and charge duration of electronic gadgets.

> Safety

- **Solid-State Batteries:** Solid-state batteries are known for enhanced safety due to the absence of flammable liquid electrolytes, reducing the risks of overheating and fires.
- **Lithium-Ion Batteries:** Lithium-ion batteries have safety concerns, particularly the risk of thermal runaway leading to fires and explosions, necessitating battery management systems for risk mitigation.

>Lifespan:

- **Solid-State Batteries:** Solid-state batteries tend to have a longer cycle life and reduced degradation, potentially retaining their performance over an extended period.
- **Lithium-Ion Batteries:** Lithium-ion batteries degrade over time, with factors like dendrite formation affecting their longevity and limited number of charge cycles.

>Charging Speed:

- **Solid-State Batteries:** Solid-state batteries support faster charging, crucial for electric vehicles and consumer electronics, due to the absence of liquid electrolytes enabling more efficient charge and discharge processes.
- **Lithium-Ion Batteries:** While lithium-ion batteries have seen improvements in charging speed, limitations persist due to the liquid electrolyte.

Challenges in Transitioning to Solid-State Batteries for EV Mobility:

1. Manufacturing Cost and Scalability:

- Mass production of solid-state batteries at an affordable cost remains a significant challenge, hindering their widespread adoption in electric vehicles.

2. Technological Hurdles:

- Certain aspects of solid-state battery technology, such as longevity and manufacturing scalability, need further development to address challenges like solid electrolyte degradation and cost-effectiveness.

3. Durability and Testing:

- Solid-state batteries require extensive testing for durability on roads and lifespan for everyday driving to ensure their reliability and performance under real-world conditions.

4. Consumer Acceptance and Affordability:

- Solid-state batteries are currently more expensive and difficult to produce at scale compared to lithium-ion batteries, posing challenges in consumer acceptance and affordability for electric vehicles.

In conclusion, while solid-state batteries offer significant advantages in terms of energy density, safety, lifespan, and charging speed, challenges related to manufacturing cost, technological hurdles, durability, and consumer acceptance need to be addressed for the EV mobility industry to successfully

transition from lithium-ion to solid-state batteries. Overcoming these challenges will be crucial in realizing the full potential of solid-state batteries for achieving sustainable and efficient electric vehicle mobility in the future.

5) Can you suggest our readers some useful and practical tips to maintain the EV's battery efficiency, especially during summers? Here are some useful and practical tips to maintain an electric vehicle's battery efficiency:

Charging Practices

- Avoid charging the battery to full capacity in extreme heat. Charging up to around 80% can be more efficient and help prolong the battery's lifespan.
- Charge the battery to a slightly lower state of charge (SOC), as the battery may lose charge more quickly in hot conditions.

Parking and Storage

- If possible, park your electric vehicle in a shaded area to protect it from direct sunlight and high temperatures.
- shaded areas help maintain a more moderate temperature for the battery, preventing excessive heating that can impact efficiency.
- Consider using a sunshade or car cover designed for electric vehicles to keep the battery cool when the vehicle is not in use.

Driving Habits

- Avoid aggressive driving, such as rapid acceleration and braking, as it can drastically increase an electric vehicle's energy consumption in hot weather.
- Use eco-mode whenever possible to help preserve battery efficiency by limiting power to the drive motor and cabin cooling.
- Maintain a consistent speed and keep a safe distance from other vehicles to save battery life and improve driving safety.

Tyre Maintenance

- Check tyre pressure regularly, as hot weather can cause pressure to rise. Maintain optimal pressure for your vehicle.
- Ensure your tyres are in good condition, as worn or damaged tyres can reduce efficiency and increase energy consumption.

By following these tips, EV owners in India can effectively maintain their battery efficiency during the summer months also, ensuring optimal performance, range, and longevity of their electric vehicles even in hot climates.





1. Please provide an overview of Nexus solar energy and its mission in the field of battery technology for electric mobility.

Overview of Nexus Solar Energy and its mission in the field of battery technology for electric mobility: Nexus Solar Energy is committed to revolutionizing battery technology for electric mobility. Our mission is to develop and manufacture advanced solar batteries that enhance the performance and range of electric vehicles. We strive to provide sustainable and reliable energy storage solutions to promote the widespread adoption of electric mobility.

2. The company's Solar Battery is equipped with a state-of-the-art Battery Management System (BMS). How does BMS ensures optimal performance and enhances the overall safety and reliability of the solar energy storage system.

Battery Management System (BMS) and its impact on performance and safety: Our Solar Battery is equipped with a state-of-the-art Battery Management System (BMS). The BMS plays a crucial role in ensuring optimal performance and enhancing the safety and reliability of the solar energy storage system. It monitors and manages various parameters such as voltage, current, temperature, and state of charge, thereby maximizing efficiency and protecting the battery from potential risks such as overcharging, overheating, and short circuits.

3. What are your predictions for the future of solar energy driven batteries in India, considering the evolving technological landscape and consumer preferences.

Predictions for the future of solar energy-driven batteries in India: Considering the evolving technological landscape and consumer preferences, we believe that solar energy-driven batteries have a bright future in India. As the government and consumers increasingly prioritize renewable energy sources, there will be a significant surge in the demand for solar-powered solutions. We anticipate a rapid growth in the adoption of solar energy-driven batteries, not only for electric vehicles but also for residential and commercial applications.

4. Considering the rising global demand for solar products and batteries, does Nexus have any plans to explore export opportunities and establish itself in the international market?

Nexus's plans for exploring export opportunities and entering the international market: Given the rising global demand for solar products and batteries, Nexus Solar Energy is actively considering exploring export opportunities and establishing a presence in the international market. We recognize the potential of expanding our reach beyond domestic boundaries and contributing to the global transition towards clean energy. While specific plans are currently in the development stage, we are committed to expanding our operations to cater to the growing international demand.

5. Looking ahead, what are some emerging trends or developments in the battery industry that Nexus is closely monitoring and preparing for?

Emerging trends and developments in the battery industry that Nexus is monitoring: At Nexus Solar Energy, we closely monitor emerging trends and developments in the battery industry. We believe that staying at the forefront of technological advancements is essential to meet the evolving needs of our customers. Some of the trends we are closely monitoring include advancements in battery materials, increased energy density, faster charging capabilities, and the integration of artificial intelligence for enhanced battery management and performance.

Regarding the specifications mentioned in your email, we understand that the submission date was on or before 15th May. We apologize for the delay in our response, and we will ensure that all the requested information, accompanied by a professional photograph of Mr. Deepak Chaudhary and our company logo, is submitted to you as soon as possible.



1) What is your take on battery recycling and reuse for Lithium-ion batteries used in electric vehicles, and how will this impact the overall sustainability of electric vehicles?

Battery recycling and reuse for lithium-ion batteries is essential for enhancing the sustainability of the EV ecosystem. With the recent amendment to the Battery Waste Management Rules 2023, Extended Producer Responsibility (EPR) for Lithium recycling is made mandatory. Recycling helps recover valuable materials like lithium, cobalt, and nickel, reducing the need for environmentally damaging mining activities and conserving natural resources. Additionally, repurposing batteries for second-life applications, such as stationary energy storage, extends their lifespan and efficiency. These practices lower the overall carbon footprint of battery production, decrease environmental pollution from battery waste, and contribute to a circular economy. By ensuring a steady supply of critical materials and promoting eco-friendly disposal, battery recycling and reuse play a crucial role in making electric vehicles a more sustainable and viable transportation solution.

2) How scalable is the production of battery technologies by Cygni energy to meet the growing demand for electric vehicles?

The scalability of battery production to meet the growing demand for electric vehicles (EVs) is a multifaceted challenge that hinges on advancements in manufacturing processes, supply chain management, and technological innovations. At Cygni, our current battery production capabilities are being rapidly expanded through significant investments in our upcoming Giga factory in the EV Cluster in Hyderabad along with automation technologies, which enhance production efficiency and output.

However, scalability is also dependent on the availability of critical raw materials such as lithium, cobalt, and nickel, necessitating robust supply chain strategies and sustainable sourcing practices. Innovations in alternative materials such as Sodium-Ion and battery recycling are crucial to mitigating resource constraints.

Additionally, supportive government policies and industry collaborations are vital to accelerating the expansion of production capacities. Overall, while there are challenges, we are giving concerted efforts for scaling up battery production to meet the surging demand for EVs and Energy Storage Systems (ESS).

3) Can you share your perspective on the current state of safety regulations for EV batteries in India? What are your recommendations for improvement?

Safety regulations for electric vehicle (EV) batteries in India have been steadily evolving to address concerns regarding battery safety and performance. The Bureau of Indian Standards (BIS) has been working on establishing standards for EV batteries to ensure their safety and reliability. However, there's

still a need for more comprehensive regulations that cover aspects like manufacturing standards and disposal of EV batteries. It's crucial for these regulations to keep pace with technological advancements and international standards to maintain the safety of EVs and encourage their adoption.

Recommendations for improvement would include fostering collaboration between regulatory bodies and industry stakeholders, and investing in research and development for advanced battery technologies. Additionally, promoting public awareness about battery safety practices and establishing guidelines for proper handling and disposal of end-of-life batteries would be critical for ensuring overall safety and sustainability in the EV ecosystem.

4) As a key player in the electric battery manufacturing sector, how does Cygni Energy perceive competition from other major names in the market? What strategies does the company employ to maintain a competitive edge?

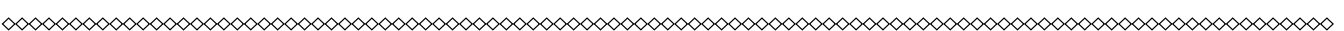
In battery pack manufacturing, competition from other major names in the market is driven by the increasing demand for electric vehicles and energy storage solutions. To maintain a competitive edge, we adopt several strategies. Firstly, we invest in research and development to innovate and improve battery technology, such as enhancing energy density, pack level engineering and durability, and fast charging. Additionally, we focus on manufacturing efficiency and scalability to drive down production costs to help stay competitive in pricing. We have also established strategic partnerships with automotive manufacturers, energy companies, and research institutions to provide access to new markets, technologies, and resources. Moreover, we emphasize on sustainability and environmental responsibility in battery production processes to drive the regulatory requirements. Finally, we maintain a strong brand reputation for reliability, safety, and we believe customer service is essential for long-term success in the competitive battery market.

5) In your opinion, what are the key factors that will drive the growth of the Indian EV battery market in the coming years?

Several key factors are poised to drive the growth of the Indian EV battery market in the coming years. Firstly, government initiatives and policies promoting electric mobility, such as subsidies, tax incentives, and favourable regulations, will play a significant role in boosting adoption. Additionally, the growing awareness of environmental sustainability and the need to reduce carbon emissions will drive consumer demand for electric vehicles, thereby increasing the demand for EV batteries.

Technological advancements in battery technology, including improvements in energy density, charging infrastructure, and battery cycle life, will enhance the attractiveness of electric vehicles to consumers. Furthermore, the expanding manufacturing capabilities and investments in the Indian EV ecosystem, coupled with collaborations between domestic and international players, will contribute to the growth of the EV battery market.

Lastly, the increasing affordability of electric vehicles and decreasing costs of battery production are expected to further accelerate market growth, making electric mobility a viable and appealing option for a wider segment of the population.





1. Referring to your claim, Zeta Energy has created the world's first and only successful lithium-sulfur battery. On what key metrics does this technology offer better performance than the traditional lithium ion batteries?

Our batteries utilize a proprietary sulfurized carbon cathode and an innovative 3D structured lithiated anode. This combination gives us a battery that has competitive advantages in energy density, cost, supply chain simplicity and resiliency, and environmental sustainability. First, with respect to energy density, Zeta Energy's batteries will offer 450 Wh/kg in 2025, and potentially higher in the future. Today's lithium-ion batteries offer an energy density of only around 200 Wh/kg so you can readily see that our density advantage is big. This will enable, for example, cars to have much greater range. It will also dramatically enhance the potential for electric flight (where weight is a major factor in performance). Almost every industry can benefit from higher density batteries.

Lithium-sulfur also provides major advantages in cost and supply chain efficiency. Lithium-sulfur batteries do not use nickel, graphite, cobalt, manganese, or other scarce and expensive materials used in today's lithium-ion batteries. Instead, the cathode is primarily made of carbon and sulfur, which are both inexpensive and abundantly available. In fact, Zeta's batteries can use industrial grade sulfur that is a waste byproduct of other industries without any further refining. This slashes the material cost of the battery, enabling us to offer batteries that will have exceptionally low cost (<\$60/kWh), which is less than half the cost per kWh of today's lithium-ion batteries. Furthermore, because all the materials used in Zeta's batteries are widely available, they can be manufactured with a short domestic supply chain, which lowers cost, lowers the CO2 footprint of the supply chain, and eliminates foreign dependence for supplies. As I'm sure you have seen in the news, all the major governments around the world are currently very concerned about access to critical materials for batteries; Zeta Energy's batteries eliminate that problem.

Finally, Zeta Energy's batteries will have the lowest CO2 footprint of any battery made today. In addition to the short supply chain, Zeta's battery manufacturing process utilizes waste methane, and every part of the battery will be recyclable. That makes Zeta Energy's lithium-sulfur battery the most environmentally sustainable battery in the marketplace.

It's important to note that scientists and manufacturers have long known about the potential advantages of lithium-sulfur batteries – sulfur is a very desirable battery material because of its potential for great energy capacity, its light weight, and its low cost. However, historically, lithium-sulfur batteries were held back by a problem known as the "polysulfide shuttle effect" whereby sulfur tended to become trapped in the electrolyte. This led to rapid battery degradation and limited cyclability of a battery (i.e., a battery that could only be charged and discharged a handful of times). One of Zeta Energy's big breakthroughs is our patented process for creating a sulfurized carbon cathode that fuses the sulfur irreversibly to a carbon matrix, preventing it from leaking into the electrolyte. As a result, we don't have a polysulfide shuttle problem.

Furthermore, on the anode side we use vertically-aligned lithiated carbon nanotubes grown directly on the current collector, giving us an anode that has a similar energy profile as lithium metal but with a lower cost (because we can use lithium salts rather than lithium metal foil) and it does not grow dendrites (which are a major problem for most battery makers using lithium metal batteries). Dendrites are one of the reasons that many battery companies are developing sophisticated and expensive separators or solid electrolytes– they need that separator or solid electrolyte to block the dendrites and prevent the battery from short circuiting. Because Zeta Energy’s anodes do not grow dendrites, our batteries do not need a special separator or electrolyte. We can use inexpensive and widely available industry standard separators and electrolytes.

2. What is the expected life span of these lithium-sulfur batteries and how will they be disposed of or recycled?

Zeta’s lithium-sulfur batteries will achieve >2000 cycles and can be recycled at end of life. There are many new developments in battery recycling that are currently being developed and deployed so we have not committed yet to a particular model, but we are passionate about recycling and are eager to see what emerges as the best value chain for battery recycling. It is also interesting to note that our lithium-sulfur batteries have extremely low self-discharge. You can set them on a shelf for years and the battery will retain 99% of its charge, even at a 100% charge.

3. What is the cost structure of these batteries, and how will they be priced for the market.

As you likely know, the biggest part of the cost of today’s batteries are the materials in the cathode. While firms have worked very hard to refine the manufacturing cost of batteries, those improvements have generally not made a dent in the materials cost of the battery (i.e., the cost of the lithium, graphite, cobalt, manganese, nickel, etc.) Furthermore, as demand increases for batteries, those materials can become more expensive as they become scarcer. Our battery has a big cost advantage due to its materials. The cathode is just sulfur and carbon -- both of which

are widely abundant and inexpensive. Our anode is similarly inexpensive as we grow in situ vertical aligned carbon nanotubes directly on both sides of the copper current collector simultaneously, in a process that is fast and cheap. Our materials cost is thus very low, and this is why our batteries have a huge cost advantage over competing battery technologies. Right now, our cost is under \$60/kWh to produce our batteries, and that will come down with scale.

4. What are a few areas with a scope of improvement in the battery system that Zeta Energy is currently working upon?

We are currently refining our electrolyte, and doing significant testing across a range of temperatures, pressure, voltages, etc. so that we can provide batteries in a wide range of formats for different markets. We are also in the process of demonstrating the scalability of our manufacturing process and are building a new manufacturing facility near Houston. We currently manufacture cells in pouch and cylindrical formats and have plans to manufacture cells in all form factors, and with a range of capacities per our customers’ specifications.

5. How does your recent partnership with Log9 Materials, a leading developer of advanced battery cell technology and EV Mobility Ecosystem products, offer a potential for the growth in efficiency and applications of your batteries?

Log9 is a leader in building battery manufacturing capability in India. They were the first company, in fact, to manufacture lithium-ion batteries in India, and are highly valued by the government of India for indigenizing battery production. Through our partnership with Log9, they will integrate our cells into their battery packs and systems and test them in automobiles and other applications. This will help accelerate the rate at which we can produce, test, and demonstrate our products. We are also excited to work with Log9 to serve the rapidly growing market in India. We already have several large potential customers in India that are eager to work with Zeta Energy batteries, so working with Log9 to rapidly scale battery pack assembly in that market was a natural choice.

