# Eureka

A QUARTERLY **NEWSLETTER**

VOL 1 | AUGUST 2022

## TAKING ECO-CONSCIOUS MOBILITY MAINSTREAM

# AT A GLANCE





# FROM THE CHAIRMAN'S DESK

*FOR A DEVELOPING NATION LIKE OURS, WITH THE NEED TO INCREASE PER CAPITA INCOMES AND ADDRESS OTHER PRIMARY ISSUES, TRANSITING TO EV TECHNOLOGY REQUIRES A HUGE UPFRONT INVESTMENT."*

The world has reached the cusp of a transition where a rising tide no more lifts all boats but rather floods all houses. Increasing global carbon emissions is a reality we cannot ignore. The Earth's temperature has risen by 0.14° F (0.08° C) per decade since the late 1800s and is estimated to breach the 1.5°C mark by the early 2030s. Temperatures in India alone have risen by 0.7 °C (1.3 °F) between 1901 and 2018. This scenario makes it imperative to regulate rising global average temperatures immediately to curb carbon emissions. India is the world's third-largest emitter of greenhouse gases. Our domestic policies, particularly regarding transport, have the potential to significantly impact global emissions. Globally, transport emissions have increased steadily, accounting for 24% of the direct CO2 emissions from fuel combustion. India's transport sector with its small vehicle fleet relative to its large population already accounts for 13.5% of the country's energy-related CO2 emissions.

FROM THE **CHAIRMAN'S DESK**

Road transport accounts for 90% of the sector's final energy consumption and is projected to grow rapidly. There is a growing urgency for stakeholders, including industries and policymakers, to work together on rapid decarbonisation in transport and other sectors if India is to meet the objective of achieving net-zero emissions by 2050. The majority of India's transport fleet runs on conventional fuel consumption. Buses and heavy-duty vehicles account for almost 39% of this consumption, while passenger vehicles (cars and utility vehicles) account for about 22%. And these numbers are mounting each day. The volatility in the crude oil pricing, attributed to geopolitical tensions between Russia-Ukraine, only exacerbates the problem. It is critical, therefore, that the sector needs a radical transformation in terms of curbing on-road emissions. Interventions on diesel and petrol-fuelled vehicles must be the first course of action. While alternate fuel technology i.e., hydrogen fuel cell vehicles seems like the ideal substitute for our combustion-engined vehicles, the technologies and processes available in India at present are not as cost-effectively as fossil fuels.

Some of the challenges are also associated with consumer behaviour. In India, purchasing behaviour is economically motivated. In a value-driven market such as India, the high initial costs of EVs, especially in the heavy vehicle segment, is a major roadblock. There is a silver lining, however. The ever-rising fuel prices are stimulating market forces, motivating consumers to buy more fuel-efficient vehicles. Introducing policies like carbon taxes to stimulate the change in consumer behaviour and aggressively promoting the low cost of ownership of EVs, packaged with proactive incentives, subsidies, and tax breaks will enable the consumers to see and adapt the concept of sustainable profitability, catalysing a potent push for EV transition.

The dearth of a sturdy global supply chain of rare-earth metals, lithium, nickel, and cobalt for manufacturing batteries on the scale required for the higher proliferation of EVs is another hindrance to 100% electrification. Nevertheless, infrastructure building in the EV space has been significantly quicker compared to the centuries it took for combustion-engined vehicles. With technological advancements and efficiency improvements, the cost of operating has been substantially driven down, especially in the case of lithium-ion batteries (-84%) and solar (-87%) (TERI, 2020). Electrification of commercial passenger vehicles has picked up in Uttar Pradesh (29%) and Delhi (11.8%) (CEEW). The transition to EVs and hydrogen fuel cells will result in large energy savings. Such expeditious developments are necessary. Time is of the essence if we wish to reduce carbon emissions to achieve global abatement thresholds as set out in the Paris Agreement. Rapid electrification of the road transport sector, specifically the commercial vehicles segment, is imperative. But automakers and suppliers alone cannot go it alone. There is a need for an integrated approach to addressing the problem at every possible level, which includes making technology choices across sectors. Choices like Hydrogen-based production as a replacement for coal decarbonized or renewable electricity production, and harnessing wind, & solar energy. Despite being a nascent stage of development calling for a major investment, such technologies are expected to be beneficial in the long run, being more sustainable and ensuring a clean, green, sustainable & reliable future.

## DR. SUDHIR MEHTA

**CHAIRMAN**

# EKA UPDATES


EKA gets a new home! EKA has moved into a new office to streamline its operations and introduce more efficiency into its processes.

India's Road, Transport and Highways Minister, Hon' Nitin Gadkari inspected the EKA 9, the first fully 'Made-in-India' pure electric, zero-emission bus.

EKA **UPDATES**


At the recent EV State Summit 2022, Mr. Rajesh Sharma, Head of Sales & Marketing, EKA Mobility was invited to be a panelist for one of the key sessions where he discussed the scope of accelerating mobility as a service in Maharashtra and its electric future.


EKA displays its 9mtr electric bus at India Supplier Summit 2022. The EKA 9 proudly wore its green credentials and displayed its Zero-emission lineage at an event that was attended by some of the biggest players in the industry.


EKA signs pact with battery technology startup, Log9 Materials to leverage the RapidX battery solution for its bus and LCV.


EKA's 9mtr electric bus completes all certifications and approvals. Receives CMVR certification from ARAI (Automotive Research Association of India).


# AFTER GETTING NOD TO HIT STREETS, PUNE - BASED FIRM'S EKA E-BUS PLANS FORAY INTO VARIOUS CITIES

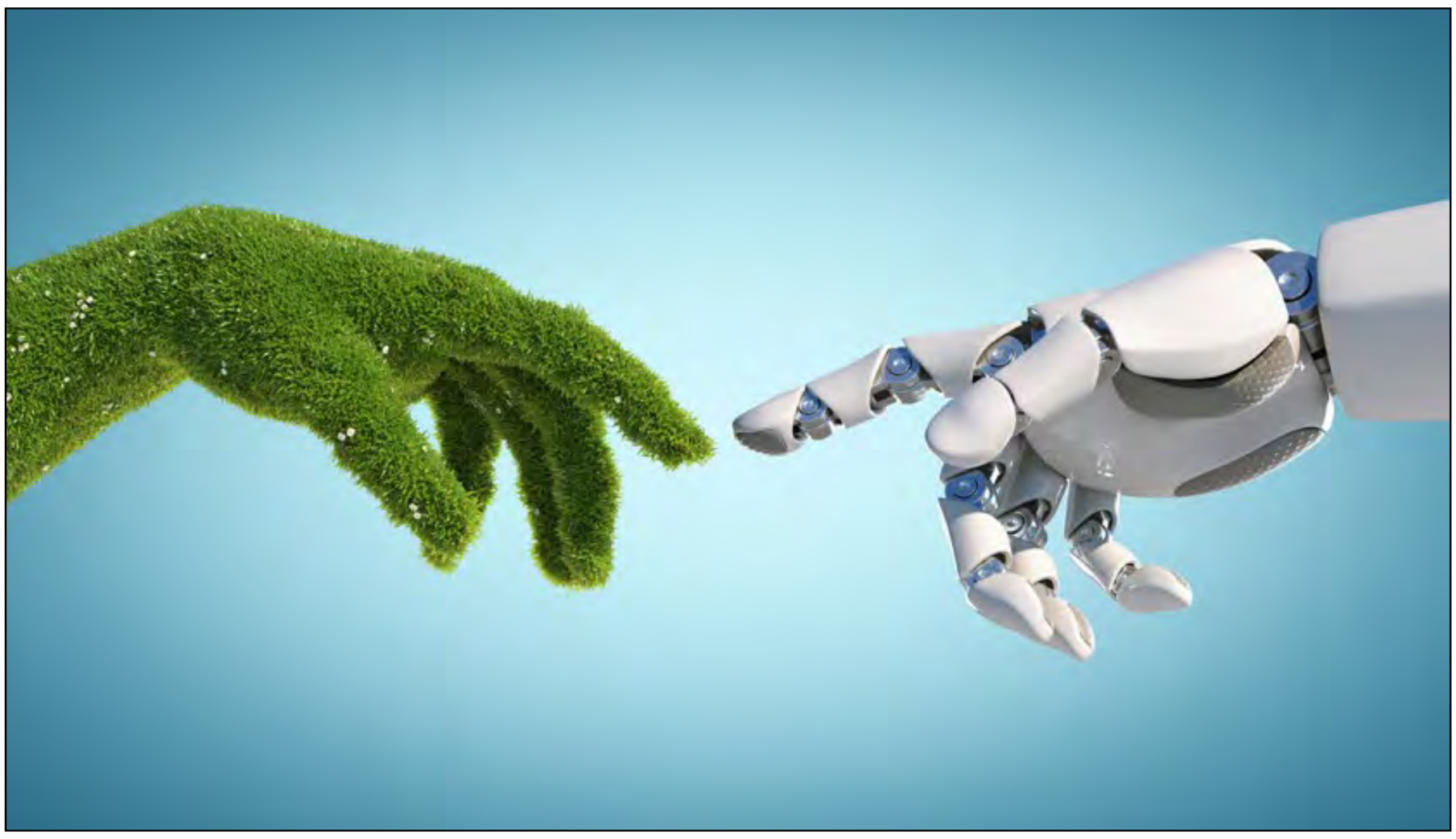
Pune-headquartered EKA, the subsidiary of Pinnacle Industries involved in manufacturing electric vehicles, is all set to bid for national and state tenders to supply its vehicles for public transport in various cities.

Continued...


*THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA (ARAI) HAD RECENTLY GRANTED THE CENTRAL MOTOR VEHICLES RULE (CMVR) CERTIFICATION FOR ITS NINE-METRE, ZERO-EMISSION BUS EKA 9, WHICH ALLOWS THE PURE-ELECTRIC\ BUS TO HIT THE STREETS.*

Sudhir Mehta, founder and chairman of EKA, told The Indian Express that unlike other such buses, the software of EKA was developed in India. “For Chinese imports, the software control is based outside the country and that can be a concern for national security. Our whole operation and software is developed in India and thus that risk is negated,” he said, adding that bidding for the buses would start from the third and fourth quarter of this fiscal.

The 33-seater EKA bus can accommodate 33 standing passengers as well and is the widest in its category at 2.5 metres. Mehta said electric vehicles in India operate in three major categories – staff transport, public transport and school transport. The company is now aiming to bid for public transport with all major cities making a shift towards electric vehicles for public transport needs. Maharashtra deputy chief minister Devendra Fadnavis had recently stated that the state would go electric for all its public transport needs and his statement would serve as a boost to the sector, Mehta said. At present, the company’s Pitampura facility in Madhya Pradesh has a production capacity of 500 buses a month.



# EKA JOINS NUPORT ROBOTICS TO INTRODUCE LEVEL-2 ADAS FOR ITS E-BUSES

EKA, an electric vehicles & technology company, and a subsidiary of Pinnacle Industries Limited, is once again leading the way as they enter a partnership with NuPort Robotics to introduce Level 2 autonomy, advanced driver assistance systems, to their electric bus models. This is a first-of-its-kind-in-the-country initiative towards the utilization and incorporation of progressive Level 2 autonomy and Artificial Intelligence (AI) for Electric buses on Indian roads.

EKA begins testing on a range of autonomous features developed by NuPort, an advanced technology that promises to contribute to notable improvements in safety, reducing environmental footprint, and increasing operational efficiency. More importantly, when such technologies are deployed in commercial vehicles, they have been associated with reducing crash rates by nearly 50 percent. NuPort Robotics, a Canadian company announced its plans earlier this month to set up operations in India and fully develop and deploy its technology in India for commercial vehicle manufacturers, beginning with electric vehicle manufacturers. NuPort will be following a “Made in India” approach thereby contributing to the advancement of economic development and innovation ecosystem within the country. NuPort’s technology provides level 2 autonomy features specifically targeted for Indian roads, considering the complex nature of Indian traffic, and understanding the Indian driving mindset. NuPort’s partnership with EKA is strategic, as it allows both NuPort and EKA to offer Indian customers cutting-edge innovative vehicles that can be continuously updated to retain that innovative advantage. NuPort is using proprietary AI technology which will progressively enable autonomous features thereby increasing safety, operational efficiency, and reduced carbon footprint.

Continued...

*FOLLOWING A PERIOD OF RIGOROUS TESTING, THE TECHNOLOGY WILL BE DEPLOYED WITH OVER 5000 BUSES, REPRESENTING A MINIMUM INVESTMENT OF NEARLY INR 150 CRORES IN INNOVATION AND CONTRIBUTING TO THE FUTURE OF TRANSPORTATION & SUSTAINABILITY.*

Speaking on the partnership, Dr. Sudhir Mehta, Chairman, EKA & Pinnacle Industries Limited, highlighted, “Our partnership with NuPort ensures that our electric buses are not only environmentally friendly but also futuristic through incorporation of Artificial Intelligence thereby making our buses efficient and safer to operate on Indian roads. This collaboration strengthens our goal of positioning EKA as the leader in the electric vehicle industry in India. I am confident that both EKA & NuPort will provide a safer, greener, and much more efficient transportation for Indian roads.” Speaking on the collaboration, Raghavender Sahdev, CEO of NuPort Robotics said, “The current project with EKA allows us to set the first precedent in India for a Level 2 AI-enabled smart Electric bus. Partnering with EKA on this initiative allows us to work with a leading national manufacturer and learn and develop technology solutions specifically for Indian driving conditions. NuPort’s focus on innovation, sustainability, automation, and artificial intelligence is aligned perfectly with EKA’s principles and vision leading to this strategic partnership between the two companies.”

# E-BUS ROLLOUT IN SEPTEMBER; EV FINANCE NEEDS ATTENTION: EKA'S DR. SUDHIR MEHTA

The chairman of the city-based auto components maker Pinnacle Industries, as well as its fully owned electric mobility firm Eka, Sudhir Mehta, said in an interaction with TOI that the company is readying to roll out its "indigenous" 9mtr electric bus in September with a private fleet operator, while it is also readying to bid for government "We have completed the homologation process with the ARAI.


Continued...

*"WE HAVE COMPLETED THE HOMOLOGATION PROCESS WITH THE ARAI. OUR FIRST BUSES WILL BE ROLLED OUT WITH A PRIVATE FLEET OPERATOR BETWEEN SEPTEMBER AND DECEMBER. HOWEVER, AROUND 95% OF THE ELECTRIC BUSES RIGHT NOW ARE BEING PROCURED BY GOVERNMENT AGENCIES. SINCE WE ARE NOW ELIGIBLE TO PARTICIPATE IN TENDERS, WE ARE TARGETING THE CESL TENDER FOR 50,000 BUSES THAT IS BEING FLOATED"*

*DR. SUDHIR MEHTA*

Our first buses will be rolled out with a private fleet operator between September and December. However, around 95% of the electric buses right now are being procured by government agencies. Since we are now eligible to participate in tenders, we are targeting the CESL tender for 50,000 buses that is being floated" - Dr. Sudhir Mehta transport utility tenders.  Mehta also added that the company is readying a new plant for the manufacture of these buses at Pitampur in Madhya Pradesh, to be operational in around nine months and with a manufacturing capacity of 300 buses per month, and is also talking to the state government in Maharashtra for an additional bus manufacturing plant, to be constructed "preferably near Pune", due to the auto manufacturing ecosystem in the region. The company, which has been selected by the Centre for the auto sector production-linked incentive (PLI) scheme, is scheduled to invest around Rs 2,000 crore over five years.

# RAPID EV ADOPTION VITAL FOR A LOW-CARBON FUTURE

The world has reached the cusp of a transition where a rising tide no more lifts all boats but rather floods all houses. Increasing global carbon emissions is a reality we cannot ignore. The Earth's temperature has risen by 0.14° F (0.08° C) per decade since the late 1800s and is estimated to breach the 1.5°C mark by the early 2030s. Temperatures in India alone have risen by 0.7 °C (1.3 °F) between 1901 and 2018. This scenario makes it imperative to regulate rising global average temperatures immediately to curb carbon emissions.

Read more...

# AIM IS TO BECOME A GLOBAL VOLUME LEADER IN COMMERCIAL EVS: DR. SUDHIR MEHTA,

## CHAIRMAN, PINNACLE INDUSTRIES

Automotive components manufacturer Pinnacle Industries, which makes seats and interior products for commercial vehicles, recently entered the electric mobility space by introducing a range of precision electric vehicle (EV) components for two- and three-wheelers. The company's newly set up subsidiary - EKA - also unveiled a nine-metre pure electric bus called the EKA 9. Sudhir Mehta, chairman of Pinnacle Industries, shares the company's plans with FE's Vikram Chaudhary. Excerpts:

Read more...

# WITH EKA, WE'RE TRYING TO BRING ALL E-MOBILITY ELEMENTS TOGETHER


Sudhir Mehta, Chairman & Managing Director, Pinnacle Industries said, the EKA 9 is also designed to accommodate hydrogen technology but is not suited for conventional internal combustion engines.

Watch the video...

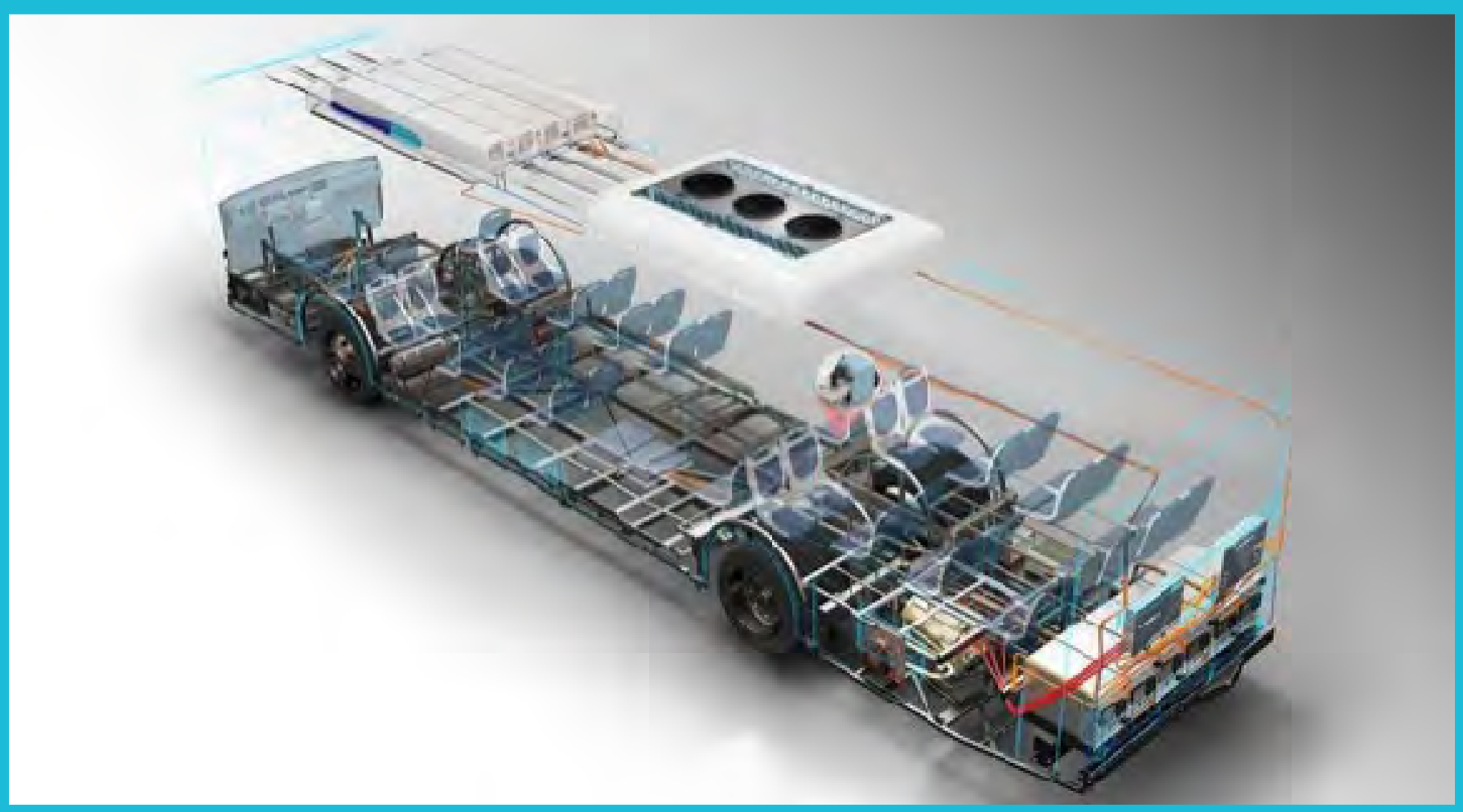
# "WE MUST CREATE A SUSTAINABLE ECOSYSTEM TO ENCOURAGE MASS ADOPTION" - DR. SUDHIR MEHTA AT EVCON INDIA 2022


Speaking at EVConIndia 2022, Dr. Sudhir Mehta stressed the importance of creating a sustainable ecosystem to encourage mass adoption. China dominates the current EV market, so the world is looking for alternatives to China

Watch the video...

KNOWLEDGE CENTRE

# SYSTEM MODELLING & PERFORMANCE ANALYSIS OF E-BUS USING ALTAIR ACTIVATE - AMAN AKOTKA, DEVDRON DUTTA, YASEEN KHAN

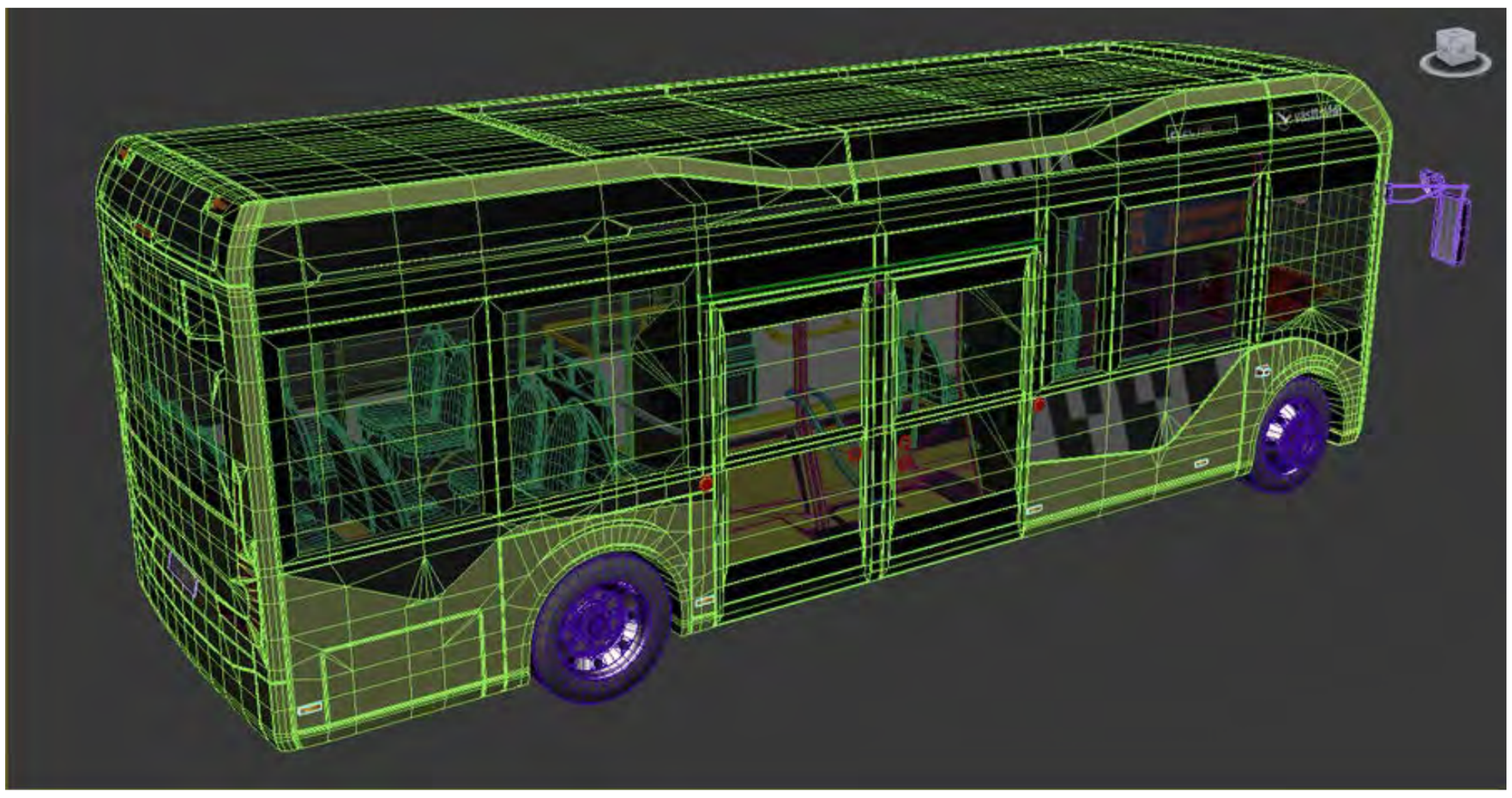


Over the last few years, there has been a focused traction of eco-friendly E-mobility technology. Although conventional vehicles could give longer driving range today, exhaust emissions causing huge environmental pollution are leading to rapid growth and innovations of technology in the field of E-mobility. One of the key challenges in EV development is to optimally size key components like battery and motor early in the product development life cycle.

In this study, a 1D system simulation model is developed by utilising Altair Activate to evaluate the performance of an EV bus. In order to build system level 1D model, the First principles/signal-based modelling approach is used. All the necessary system design parameters are captured, and various drive cycle patterns are simulated to understand the behaviour of key system parameters like state of charge of battery, range estimation and Torque vs Speed characteristics of the E-motor. Studies are then conducted to review and correlate the performance characteristics obtained from virtual simulations and physical prototype tested at ARAI for a set of standard drive cycle patterns. These system level 1D model development gave us insights to derive upfront the overall system behaviour, key performance metrics and enable model-based product development life-cycle process using Activate.

# SIMULATION ANALYSIS OF ELECTROMAGNETIC INTERFERENCE (EMI) AND ELECTROMAGNETIC COMPATIBILITY (EMC), TESTS PERFORMED ON AN ELECTRIC VEHICLE

DEVDRON DUTTA, AMAN AKOTKAR, YASEEN KHAN



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# INDUSTRY REPORT


## THE FUTURE OF ELECTRIC VEHICLES & MATERIAL RESOURCES: A FORESIGHT BRIEF

Electric vehicles (EVs) offer an opportunity to replace fossil fuels in the transport sector. Electrification of the transport sector can also bring benefits in terms of increased energy efficiency and reduced local pollution. However, there are genuine concerns about meeting the future energy demand for charging EV batteries with clean and renewable sources. More importantly, the issue of longterm sustainability of EVs is underscored by the supply risks of critical material resources used in the EV batteries. Extraction of some of these material resources are linked to significant environmental impacts as well as social and ethical issues. The Future of Electric Vehicles and Material Resources: A Foresight Brief is developed by the UNU/ UNITAR-SCYCLE Programme and UNEP-IETC. It provides a snapshot of the recent developments in the EV sector.

It highlights major challenges and opportunities in the mainstreaming of EVs and in ensuring a sustainable supply of material resources with a focus on the endof- life (EoL) management of EV batteries. The Foresight Brief also provides an overview of recent policy developments concerning the promotion of EVs and the management of EoL batteries. Finally, it offers policy recommendations for ensuring the long-term resource sustainability of EVs.

# TEAM CORNER

The BIG moment when EKA's 9mtr electric bus was finally unveiled to the world in its full glory.


The team, along with Dr. Sudhir Mehta, celebrated the World Environment Day renewing their pledge for a greener future with NITI Aayog's 'Shoonya' Initiative.

# COMMUNITY OUTREACH

**PINNACLE SOCIAL & CHARITABLE FOUNDATION**

**RIGHT TO FREEDOM OF MOVEMENT**

**LEVERAGED FREEDOM CHAIR**

**ASSISTED LIVING DEVICES**

### *PUNE PLATFORM FOR COVID-19 RESPONSE PUNE*

Platform for COVID-19 Response (PPCR) is a volunteer effort led and coordinated by Dr. Sudhir Mehta that works to minimise the impact of COVID-19 in Pune. It raises funds, channelises resources, distributes ration kits, arranges for ventilators/HFNOs, trains medical staff and counsels citizens.

### *UNPARALLELED MOBILITY*

Committed to bringing differently-abled people to the forefront of society by providing unrivalled mobility. We work proactively to improve infrastructure, create awareness platforms, manufacture assisted living devices, and actively promote rehabilitation.

### *CHILD EDUCATION*

The literacy rate suffers due to inadequate allocation of resources, poor management, and lack of modern facilities. We provide children in rural areas access to advanced learning tools, help them overcome financial constraints, provide avenues for digital literacy, and create hygienic sanitation facilities.

### *WOMEN EMPOWERMENT*

Women Empowerment is at the heart of our social efforts. We aim to empower women to live with dignity and reach their full potential. Women must be empowered for a country's economic and social development to be successful.

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Eureka

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