K.S.INSTITUTE OF TECHNOLOGY, BANGALORE – 560109
DEPARTMENT OF
COMPUTER & COMMUNICATION ENGINEERING

REPORT
On
Industrial Visit to VOLTX EV Private Limited, Bangalore.

Date of conduction: 30th October 2025

Venue: Voltx EV Private Limited, Kadugodi, Bangalore.

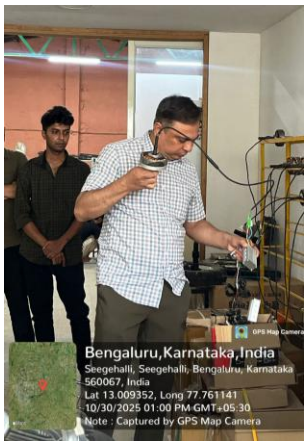
Voltx EV Private Limited, Kadugodi, Bangalore

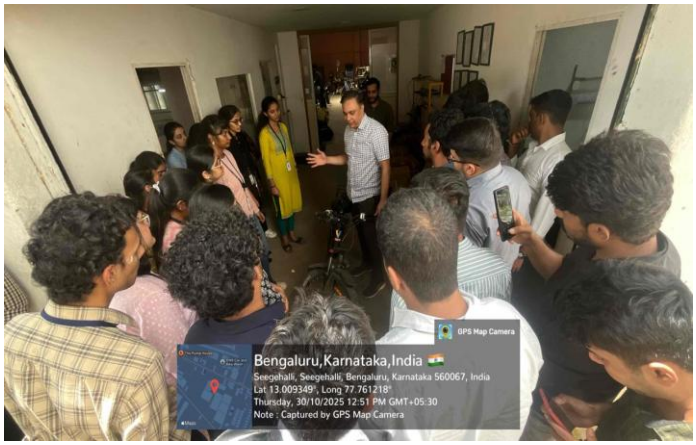
Voltx EV is a Bengaluru-based startup focusing on sustainable mobility solutions by designing and developing electric bicycles from scratch. The company works on in-house design, fabrication, assembly, and testing of its electric bikes. The startup's goal is to create affordable, efficient, and sustainable transportation options that reduce carbon footprint while encouraging eco-friendly commuting.

The exhibits and components that were shown to students are given below:

1. **BLDC Motor (Brushless DC Motor):** The BLDC motor served as the main drive unit of the electric vehicle. It operates using electronic commutation instead of mechanical brushes, ensuring high efficiency and reduced maintenance. Students learned how the BLDC motor delivers **high torque**, **smooth acceleration**, and **better energy conversion** compared to conventional DC motors. The instructor also demonstrated the motor's wiring configuration and its connection with the controller unit.
2. **Controller Unit:**

   The controller unit, often referred to as the **brain of the EV**, regulates the flow of power from the battery to the motor. It interprets throttle signals and adjusts the torque and speed accordingly.





Students observed how different control algorithms help maintain stability and energy efficiency during vehicle operation. The demonstration also included how regenerative braking is achieved through the controller system.

3. **Battery Management System (BMS):**

The BMS was explained as a crucial subsystem ensuring the safe operation of the battery pack. The demonstration showed how it continuously monitors voltage, current, and temperature of individual cells.

Students learned how the BMS performs **cell balancing**, protects against **overcharging, deep discharging**, and **overheating**, thereby extending the overall life and performance of the battery.

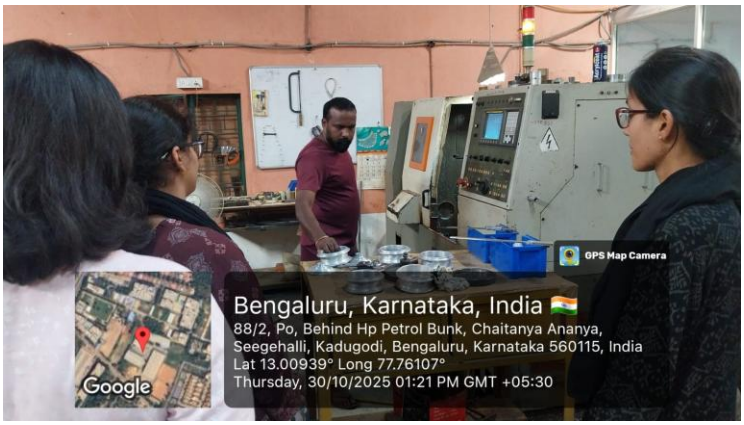
4. **Throttle and Display Unit:**

This unit converts driver input into control signals for the motor. The instructor demonstrated how **throttle position sensors** translate hand or foot movement into speed commands.

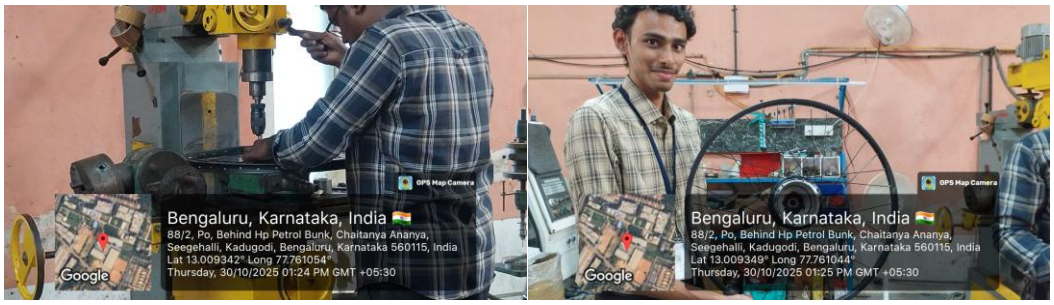
Students also observed the **digital display unit**, which shows speed, battery percentage, and power usage. This gave them a clear understanding of how control feedback is provided to the user.

5. **Frame Fabrication Section:**

In this section, the process of constructing the **vehicle chassis** was discussed. Lightweight **aluminum and mild steel** materials were shown, emphasizing the importance of **weight reduction** in improving EV performance and range. The welding techniques used for frame assembly were also demonstrated, and students were briefed about the importance of frame alignment, rigidity, and safety standards in vehicle design.



6. **Wheel Assembly and Testing:**



Students learned how motorized wheels are fitted with tires, how **spoke alignment** affects stability, and how **tire balancing** is carried out. The instructor also explained how testing is performed to verify wheel rotation, torque delivery, and alignment accuracy. Students were encouraged to perform basic testing under supervision to gain hands-on experience.

7. **Charging and Power Supply Unit**

   A live demonstration of the **charging setup** was given. Students observed the working of voltage regulation, protection circuits, and charging connectors. Safety measures such as proper grounding, overcurrent protection, and insulation during the charging process were also discussed in detail.

Objectives / Key highlights:

- To understand the design and manufacturing process of electric bicycles.
- To learn about EV components such as motors, controllers, and batteries.
- To explore prototype testing and real-time application of engineering principles.
- To motivate students towards research, sustainability, and startup culture.

Participant details:

No. of participants in total: 52 (50 Students and 2 Faculty Members)

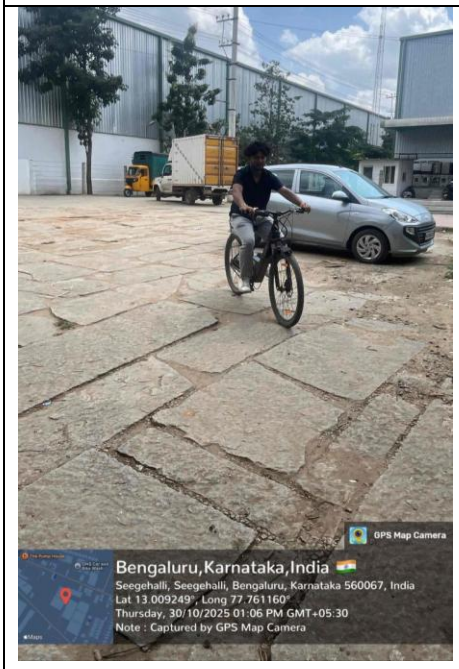
Faculty – Shilpa M, Assistant Professor

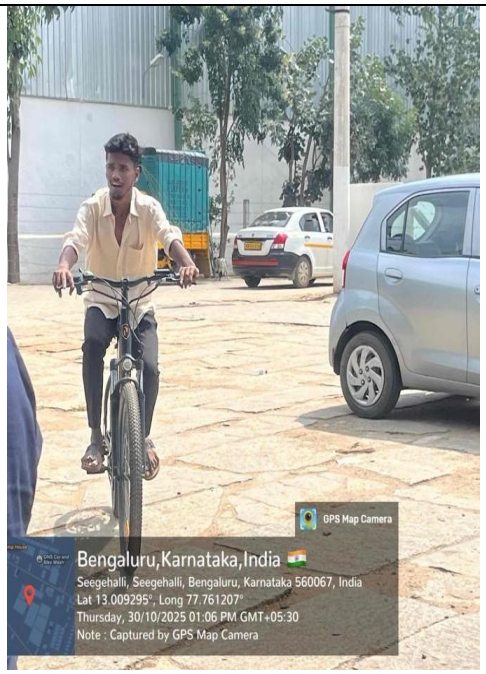
Mangala Hiremath, Assistant Professor

Outcomes / Benefits:

- Students gained knowledge on EV system integration and product design.
- Observed the real-world application of embedded systems, control engineering, and electronics.
- Developed awareness about the scope of electric mobility startups and green energy innovation.
- Understood the teamwork and interdisciplinary nature of EV manufacturing.
- Enhanced understanding of prototype development, testing, and project execution.

Photos:





Attachments:

- Communication with Voltx EV Private Limited.
- Evaluation and feedback forms.

CO/PO&PSO mapping -CCE

CO/PO & PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
Event (Industrial Visit)	-	02	-	-	02	02	-	-	02	02	-	02	02	02

PSO1: To understand and apply the concepts to design and develop solutions in computer and communication engineering.

PSO2: To use experiential learning for research and developing inventive solutions for social benefit while ensuring security, moral values, and ethics.

Mangala Hiremath	**Dr. Chanda V. Reddy**	**Dr. Dilip Kumar K**
Event Coordinator	Head of the Dept., CCE	Principal, KSIT