



Name of the Guest Talk	Insights into Control Systems for Electric Vehicles
Date	22/04/2024
Resource Person	Dr. Arjun Mudlapur
Designation	Lead Engineer- Systems Engineering
Company	Bosch Global Software Technologies Pvt. Ltd.
Number of Participants	58
Venue	M V Seminar Hall
Organizers	Dr. Raghavendra Rao P Dr. Asha C S Dr. Jeane D Souza

Invitation:

The poster features the MANIPAL Institute of Technology logo at the top left, with the text 'MANIPAL INSTITUTE OF TECHNOLOGY (A constituent unit of MAHE, Manipal)'. To the right are three icons representing Sustainable Development Goals: 7 (Affordable and Clean Energy), 9 (Industry, Innovation and Infrastructure), and 11 (Sustainable Cities and Communities). The main title is 'DEPARTMENT OF MECHATRONICS GUEST TALK ON INSIGHTS INTO CONTROL SYSTEMS FOR ELECTRIC VEHICLES'. Below this is a photo of Dr. Arjun Mudlapur, with his name and title: 'DR. ARJUN MUDLAPUR, LEAD ENGINEER - SYSTEMS ENGINEERING, BOSCH GLOBAL SOFTWARE TECHNOLOGIES PVT. LTD.'. A cutaway diagram of an electric vehicle is shown in the center. At the bottom left is a calendar icon for April 22, 2024. At the bottom center is a clock icon with the time '10:00 AM TO 11:30 AM'. At the bottom right is the text 'VENUE: M V SEMINAR HALL'.

Report:

Department of Mechatronics organized a guest talk on April 22, 2024 on the topic, "Insights into Control Systems for Electric Vehicles" from 10:00 AM to 11:30 AM at MV Seminar Hall. The resource person for the talk was Dr. Arjun Mudlapur, Lead Engineer from Bosch Global Software Technologies Pvt. Ltd. Dr. Jeane D Souza, Assistant Professor (Selection Grade) from the department welcomed the gathering and introduced the chief guest to the audience. Dr. Arjun initiated the talk highlighting the importance of control systems in Electric Vehicles (EV). He highlighted that, most of these systems have power converters as their power processing units. Such power converters exhibit non-linearity in their behavior and are sensitive to variations in load current and input voltages. More challenging is that the dynamics offered by these disturbances are fast and at times abrupt. Hence it was necessary to build a control system that can regulate the voltages (currents) that is immune to these disturbances.

The challenges faced in the EV domain was briefly discussed. Dr. Arjun also focussed on the complete product life cycle of EV that started from the customer specifications till the final product. The mathematical modelling of translational systems into electrical systems was discussed with an example. Furthermore, the importance of transfer function for simulations and frequency domain analysis was highlighted by quoting examples. The role of PI controllers for the converter designs was focussed additionally. The effect of poles and zeros on the right hand and left-hand side of the s-plane for the system stability was briefed during the talk. The real time examples of the customer specifications about power supply design was also discussed in the talk. Dr. Arjun also gave insights on the EV hackathon that would be conducted soon. He mentioned about internship opportunities to the students through hackathon program.

The talk ended with Q&A session with students followed by thanks giving by Dr. Jeane D Souza. Dr. D V Kamath, HoD, Dept. of Mechatronics, handed over memento to Dr. Arjun as a token of gratitude and appreciation. Overall around 75 students and faculties participated in the guest talk.

Photos:

