Report on Distinguished Lecture on

# DC Fast Charging Technologies for Electric Vehicles

by **Professor Kaushik Rajashekara**

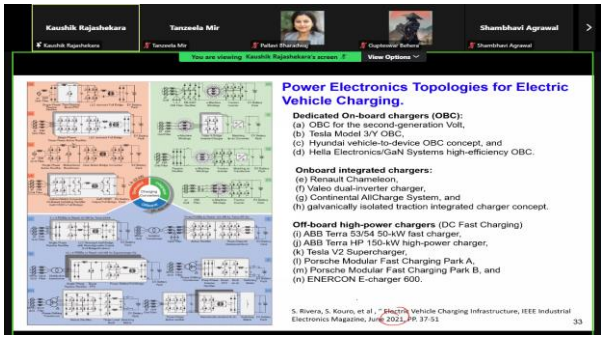
## Abstract of the Lecture

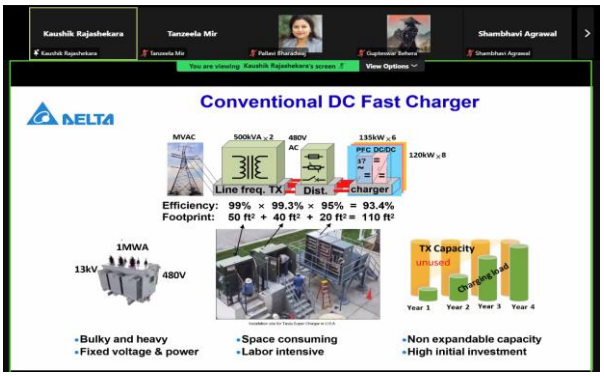
Fast charging of electric vehicles plays an important role in adoption and widespread use of electric vehicles. Fast charging offers a practical solution for drivers during their journeys to charge the vehicles in 10 to 15 minutes to drive for another 300 to 400km or even more depending on the vehicle and charger capacity. Hence, there is an increasing importance to advance the fast charging technologies of EV batteries and their deployment. In this presentation, the following topics will be discussed: Charging system configuration of EVs, Fast Charger requirements, technical specifications, requirements, fast chargers with ac and dc distribution network, ac/dc front end topologies, dc/dc converter topologies, partial power converters, and impact of fast charging on the grid. Future trends will also be discussed.

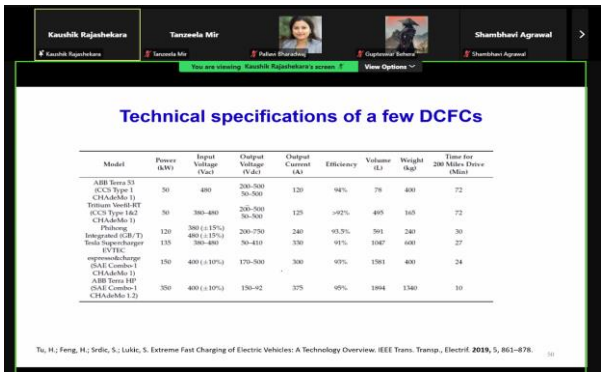
## Brief Bio of the Speaker

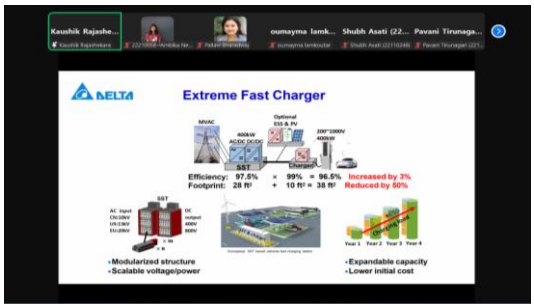
Kaushik Rajashekara (Fellow, IEEE) received the Ph.D. degree in electrical engineering from the Indian Institute of Science, Bangalore, India. In 1989, he joined the Delphi division of General Motors Corporation in Indianapolis, USA, as a Staff Project Engineer. In Delphi and General Motors, he held various lead technical and managerial positions, and was a Technical Fellow and the Chief Scientist for developing propulsion and power electronics systems for electric, hybrid, and fuel cell vehicle systems. In 2006, he joined Rolls-Royce Corporation, as a Chief Technologist for electric systems for electric and hybrid aircraft systems. In August 2012, he joined as a Distinguished Professor of Engineering with the University of Texas at Dallas, TX, USA. Since September 2016, he has been a Distinguished Professor of engineering in University of Houston, Houston, TX, USA. He has authored or coauthored over 300 papers in international journals and conferences, has 37 US and 15 foreign patents, and has written one book. He has received a number of awards including the 2022 Global Energy Prize and 2021 IEEE Medal on Environment & Safety Technologies for his contributions to electrification of transportation and renewable energy. He is Member of the US National Academy of Engineering and International Fellow of Indian, Chinese, and Japanese Academies of Engineering. His research interests include power/energy conversion, transportation electrification, renewable energy, and microgrid systems.

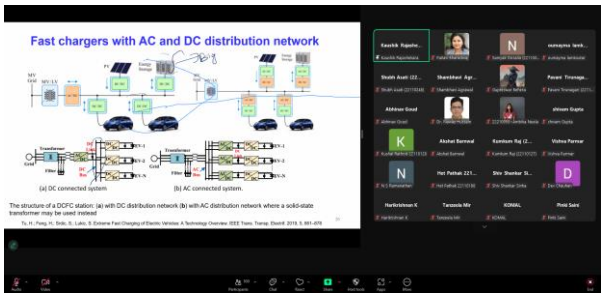
**Pictures During The Lecture:**

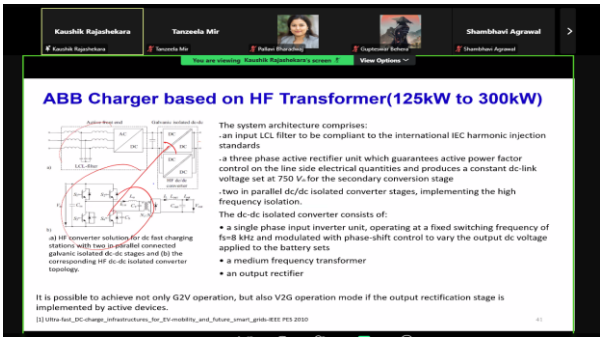


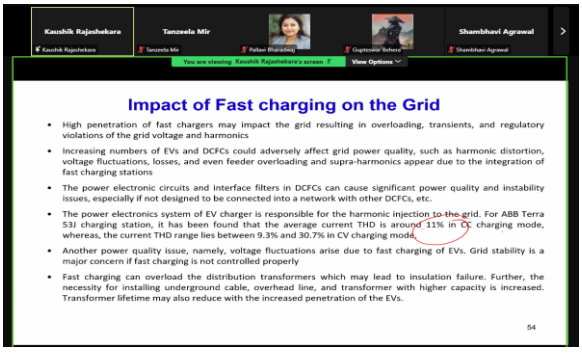




As a part of the **Industrial Electronics Society (IES) Day** celebration, we hosted a distinguished lecture by Professor Kaushik Rajashekara on the topic "**DC Fast Charging Technologies for**

**Electric Vehicles**" in **online** mode. The event was scheduled for **November 14th at 8:00 PM IST.** A total of 202 participants registered for this event. In the online lecture, a total of 105 participants attended the meeting. Most attendees were students from the Indian Institute of Technology Gandhinagar and other institutes. Many faculty from various institutes and industry professionals attended the event alongside students. Of 105 attendees, around 70 were students from IIT Gandhinagar and other institutes while the rest were faculty members and industry professionals. 75 attendees were male, while 30 attendees were female.