
Departmental Seminar

Seminar Title	: Analysis and comparison of charging speed of two-stage EV charger for different charging techniques
Speaker	: Susovon Samanta
Supervisor	: Susovon Samanta (Ph:2420)
Venue	: Seminar Room (EE-205)
Date and Time	: 08 Jul 2025 (5:00PM)
Abstract	: Looking at the advantages of future growth of electric vehicles (EV) much research is underway on EV chargers. In the literature, many studies are being conducted on charging infrastructure, converter topologies, control, and charging schemes. In this article, a two-stage grid integrated EV charger is designed to fix the DC link voltage and to have efficient charging through a Totem pole PFC rectifier and a non-isolated bidirectional DC/DC charger, respectively. Here, a model of the charging system is presented by combining the two stages together, which can be used to get a faster controller design for the system. According to studies, constant power-constant voltage (CP-CV) is the better way to charge a battery in terms of useful energy compared to constant current-constant voltage (CC-CV). Here, the above two charging techniques are compared on the basis of charging speed, and it has been found that CCCV gives faster charging than CP-CV which is validated by implementing the two charging techniques into a 3kw charger to charge a 72V,100Ah battery using MATLAB/Simulink. The hardware prototype is in progress, and in this paper the open loop hardware results of the second stage of the charger tested at low power level(250W) have been presented. The hardware has been developed using the SKM50GB12T4 IGBT module and is controlled by the TMS320F28379D DSP microcontroller.