Seminar – Fall 2018
Monday, October 01, 2018
3:00 p.m. – 4:00 p.m., ETB 1003

Types of Electrified Vehicles and Selection of Electric Motors for Such Vehicles

Khwaja M. Rahman
Technical fellow, Technical Lead of the Electromagnetic Machine Design Group
General Motors

Abstract

General Motors (GM) is actively working on developing battery electric vehicle (BEV), hybrid electric vehicle (HEV), plug-in hybrid electric vehicle (PHEV), extended range electric vehicle (EREV), and fuel cell electric vehicle (FCEV) over the past several decades. GM has already brought several electrified vehicles in the market such as the EV1 BEV, Chevrolet Tahoe HEV, Gen1 and Gen2 Chevrolet Volt EREV, Gen1 Chevrolet Spark, and Gen2 Chevrolet Bolt BEV etc. In this presentation an overview of different types electrified vehicles and a summary of relevant hybrid architectures will be presented. Electric motors are integral part of the propulsion systems of these vehicles. This presentation will also cover the selection of electric motor topologies for electrified vehicles. Relative merits and demerits of each motors will be presented citing examples from specific applications.

Biography

Khwaja M. Rahman received B.Sc. and M.Sc. degrees from Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh, in 1987 and 1990 respectively, and M.S. and Ph.D. degrees from Texas A&M University, College Station, Texas, in 1992 and 1998 respectively, all in electrical engineering. Currently he is GM technical fellow and the technical lead of the electromagnetic machine design group of the General Motors (GM) Global Electrification division. He has received several awards from GM including the most prestigious Boss Kettering awards for his innovations in the Chevy Volt electrical propulsion system and Chevrolet Bolt Electric Motor. He has written more than sixty journal and conference papers and is co-inventor of more than fifty US patents. His research interests are in the areas of design, analysis, and control of ac motors for electric, hybrid, and fuel cell vehicle applications. He is a Fellow of IEEE.