AIMS^2 Research Project in Electrical and Computer Engineering

Research Duration:	Fall 2019 (August – December 2019)
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Title of Project:	Renewable Energy and Energy Storage in Electric Transportation

Goals and Objectives of the Project, Expectations and Outcomes

Lithium-Ion, advanced lead-acid, and flow batteries among others make up the global battery market across different energy systems. The development of energy storage systems (ESS) are to improve reliability and efficiency at the same time.

As far as the Electric Vehicle (EV) and other relevant modes of transportation, there is an unprecedented increase in sales because of the declining cost of battery and increased range. The manufacturing of electric light trucks, SUVs and other modes of transportation are competing head to head with their combustion engine counterparts. All this is due to the decrease of cost of energy storage over the next decade.

The first part of this research project is the modeling and analysis of ESS, EV, and solar and wind generation. The second is the study of reduction of CO_2 production. Students will participate in this research with the mindset that the primary goal is zero emissions and clean energy generation and storage.

The team for this research will be composed of three to four AIMS2 students. Those students will be expected to work every week three to five hours. Every week we will have a mandatory meeting to show the progress, in the form of literature research, presentations, and simulations. In addition, towards the end of the semester, students will write a technical paper related to their findings using the IEEE technical paper format as well as preparing a poster.