The MathWorks™

Presentation
Wed, July 16, 2014 at 1:00-2:30 PM
Event Center A

Modeling and Simulation of Photovoltaic Solar Power Vehicle Systems using MATLAB and Simulink

Abstract: This workshop will focus on the design, analysis and testing of photovoltaic solar power based vehicle systems in Simulink. Starting with techniques for modeling individual electrical components, like PV solar cells, arrays and batteries, we will build up to the power electronic circuits and controls algorithms required for an optimized implementation of a system model that includes electrical and mechanical dynamics of a solar powered vehicle. Throughout the presentation we will explore how a variety of MathWorks tools can help you with every step of this development process.

Highlights include:
- *Modeling fundamental electrical and electronic components such as PV cells, batteries and semiconductor devices*
- *Modeling power electronic devices such as power converters and electric motor drives*
- *Modeling vehicle dynamics and mechanical components such as transmissions, clutches and tires*
- *Using experimental and/or test data for automatic parameter estimation and model validation*
- *Designing, tuning and optimizing control algorithms including Maximum Power Point Tracking*
- *Performing trade-off studies and evaluating system level performance of different vehicles architectures*

Duration: 90 minutes

Presenter: Sneha Kadetotad is an application engineer at MathWorks in Santa Clara, California focusing on the use of physical modeling tools as an integral part of Model-Based Design. Much of her work gravitates around modeling and design of renewable and conservative power systems, including solar power, wind power and grid integration studies. She received a bachelor's degree in Electrical Engineering from Visvesaraya Technological University (India) and a master's degree in Electrical Engineering from Penn State.

Note: Even though scrutineering will still be in progress for some teams, we encourage teams to send a minimum of 1-2 team members to this presentation. Take advantage of this FREE learning opportunity! We thank MathWorks for being a consistent sponsor of the Formula Sun Grand Prix and the American Solar Challenge and supporting teams with their software!