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BIO

DQian (Michelle) Liu, Ph.D. Michelle has been in the EMC field for over 18 years; currently she is a staff EMC design engineer at Tesla, focusing on EMC designs for electric vehicles and energy products. Prior to joining Tesla, she worked at Intersil (acquired by Renesas Electronics) as an engineering manager. She also worked as a researcher at General Electric (GE) global research center at Niskayuna, NY. Michelle graduated from Virginia tech, Center for Power Electronic Systems (CPES) with her Ph. D degree. Her research and engineering area include EMC and EMI designs and modeling in sustainable energy applications. She has published more than 20 IEEE papers.

ABSTRACT:

EMC Designs and Considerations for Electric Vehicles (EVs)

Authors: Michelle Liu and Rodrigo Rodriguez Navarrete

Over the past twenty years, there have been increased EMC challenges in sustainable energy applications, which includes electric vehicles (EVs), Photovoltaic (PV) systems, energy storage systems and other renewable applications. The on-going change in EV EMC environment is one of the few constants, as high-efficiency Silicon-Carbide (SiC) power electronic systems, new onboard electronics, and communications media (both wired and wireless) are added. Consequently, in order to address this complex system-level EMC issue, both standards and design methodologies are evolving to assure the compatibility of vehicles and components in EVs. This presentation of the authors' recent research and engineering effort towards unveiling some complex EMC regulations, design process and practical design challenges in EVs. Some future engineering areas are also discussed regarding EMC design improvements through system-level optimization and integration.

