

# Power Area Graduate Seminar

Monday, April 1, at Noon

Room 104 Emerson Electric Company Hall

## Improving the Dynamic Response of a Flying-Capacitor Three-Level Buck Converter

*Presented by Bhanu Prashant Baddipadiga, Missouri S&T*

**Abstract:** This study presents a modified flying capacitor three-level buck dc–dc converter with improved dynamic response. First, the limitations in the transient response improvement of the conventional and three-level buck converters are discussed. Then, the three-level buck converter is modified in a way that it would benefit from a faster dynamic during sudden changes in the load. Finally, a controller is proposed that detects load transients and responds appropriately. In order to verify the effectiveness of the modified topology and the proposed transient controller, a simulation model and a hardware prototype are developed. Analytical, simulation, and experimental results show a significant dynamic response improvement.

**Biography:** Bhanu Prashant Baddipadiga received his Bachelor's degree in electrical and electronics engineering in 2011 from Sreenidhi Institute of Science and Technology, Andhra Pradesh, India. He is currently working towards his Ph.D in electrical engineering at Missouri University of Science and Technology, Rolla. His research interests include power electronics, electric/hybrid vehicles, and smart grids.