

## Fall 2016 PEIK Seminar Series

### **Title: From Solar Cars to the Industrial Development of Axial Flux Electric Motor Technology**

**Speaker: Dr. Greg Heins, Head of Research and Development, Regal Beloit Corporation, Asia Pacific**

**When: 2:00-3:00 pm, Friday, September 16, 2016**

**Where: Chemical and Physics Building Room 153**

Initiated in Australia, more than 30 years ago, the World Solar Car challenge has established a framework for both student and industrial engineering development and team racing. This framework has led the Solar Car to become a cradle for innovative technology for topics such as: aerodynamic structures, ultralight frames, photovoltaics, battery systems, electric motors and power electronic drives. The motor and drive development will represent the emphasis of the presentation. The first part of the talk will discuss the history of technological developments with examples from personal work as a student and later as faculty at Charles Darwin University. Dr Heins worked on the Melbourne based *Aurora* (2001) team and then the Darwin based *Desert Rose* (2005). While in Darwin, Australia, the starting place of the World Solar challenge circuit, Dr. Heins supported many visiting teams with last minute preparations. The innovative “in wheel” axial flux brushless permanent magnet (PM) motor technology originally developed for *Desert Rose* has been since acquired by Regal Beloit Corp., a Fortune 1000 company and a world leading manufacturer of electric machines and equipment. The second part of the presentation will cover axial flux motor design elements and recent developments in industry including manufacturing for different applications, such as fans and blowers. The talk will conclude with a discussion on future opportunities for solar car motor development.

Dr. Greg Heins is currently the Head of Research and Development for Regal Beloit Corporation, Asia



Pacific. He received the B.Eng. (Hons.) degree in mechanical engineering and the University Medal from the University of New South Wales, Sydney, Australia, in 2000 and the Ph.D. degree in electrical engineering from Charles Darwin University, Darwin, Australia, in 2008. Earlier in his career he worked as a Manufacturing Engineer with Robert Bosch Australia and as faculty at Charles Darwin University. In 2011 he was awarded an Australian Learning and Teaching Citation for Outstanding Contributions to Student Learning. He is the holder of six patents with many other applications pending.

*This seminar is presented in partnership with the IEEE Power and Energy Society, Lexington Chapter.*

*\*Each seminar is worth one Professional Development Hour (PDH) for industry and professional participants. Participants wanting to receive certificates for Professional Development Hours should sign in on the request form at the seminar.*



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