IET Toronto Local Network Event

Technical Presentation followed by IET Toronto Local Network Annual General Meeting and tour of the McMaster Automotive Resource Centre (MARC)

Date: 18th September 2014

Time: Arrive at MARC at 18:30, presentation starts at 18:45 for approximately 1hr with Q&A session. Presentation will be followed by AGM and tour of MARC facilities.

Title: "Challenges for the Future of Power Electronics, the UK Power Electronics Strategy"

Power electronics is vital to developing economies world-wide; globally the sector is worth £135 billion a year. However, there is an accepted consensus within the industry that there is a serious shortage of personnel with the prerequisite skill base and experience and coordination of developmental activities.

The speaker will discuss a UK perspective on the industry, how power electronics is vital to the UK economy and its international competitiveness, and how the UK is well placed in playing a leading role in the power electronics sector. In total the engineering sector makes up nearly a fifth of the UK economy (19.6% of GDP) and employs over 4.5 million people. Within this, the electronics industry directly contributes in excess of £16 billion to the UK GDP and provides direct employment for over 300,000 people in 12,000 companies. Power Electronics contributes significantly to this, and has an indirect economic impact many times this size through an infrastructure of suppliers and dependent trades.

The UK has made very significant contributions to research, based on the number of papers published in international journals and conferences. With expertise in both industry and universities, and with excellent educational facilities and an outstanding research infrastructure, the UK has an excellent base from which to compete and grow in the world market.

However, the UK is facing a lack of engineers and technicians in the talent pipeline threatening the UK from sustaining a leading position. In addition the UK is lagging of strategic funding for highly innovative, relatively high-risk projects, stifling the aspirations of SMEs and start-ups. Finally the UK may face disengagement with emerging disruptive technologies that can rapidly transform sectors in the market away for UK's existing strengths.

On the 18th of October 2011 at the Department of Business, Innovation and Skills the government has launched "The UK National Strategy for Power Electronics". Expert insight was collated from companies and universities to determine how the UK power electronics sector can best meet the threats to future growth and identify ways the UK government can support this expansion.

This presentation will provide an overview of the UK power electronics strategy including a snap shot of UK's power electronics roadmap. The presentation will highlight threats and opportunities for UK power electronics manufacturers and will provide a vision to improve UK's leadership in the power electronics sector. In addition, the presentation will reflect on the European power electronics status quo and the European development for comparison.

The Speaker

Prof. Volker Pickert (MIET/MIEEE) studied Electrical and Electronic Engineering at RWTH Aachen, Germany, and Cambridge University, UK. In 1994 he received his Dipl.-Ing. degree from RWTH Aachen and three years later he received his PhD from Newcastle University, UK. After the completion of his PhD work he started working with Semikron Ltd., Germany, as application engineer and later as product manager. In 2000 Prof Pickert became group leader at the electric vehicle R&D department at Volkswagen AG, Germany, responsible for the electric drive train development.

In 2003 he was appointed as Senior Lecturer at Newcastle University and he received full professorship in 2011. Prof. Pickert is now Head of the Power Electronics, Drives and Machines Research Group (PEDM) at Newcastle University. The Group counts one hundred academics, research associates and PhD students all working on power-dense, cost-effective and novel electrical power solutions. Prof. Pickert has made over 100 contributions at conferences, journals and book chapters. In 2011 he received the IMarEST Denny Medal for the best journal paper in Marine Engineering on applied power electronics to wave power and in 2013 he received the Faculty Innovator Prize for work on high reliable power modules. Prof Pickert works continuously with power electronics companies and academic institutions and had more than 35 funded research projects over the last 10 years. His research has led to several practical innovations including the development of a precise method in calculating the chip temperature of power modules during operation. This method is now embedded in all advanced electric drives manufactured by an global electric drives manufacturer. Another example is the development of an in-situ health monitoring circuit for a UK start-up company.

Prof. Pickert is the Editor-in-Chief of the IET Power Electronics Journal. He was chairman of the IET bi-annual international PEMD conference in Brighton 2010 and he was the IET Technical Advisor for TTXGP - World's First Zero Carbon, Clean Emission Electric Bike Grand Prix in 2009. He also worked as an advisor on the NMI Power Electronics Strategy Group on the "Power Electronics – The UK Strategy" government report for Mark Prisk, Minister of State for Business and Enterprise. Prof Pickert works as grant reviewer across the globe and he also advised the Natural Sciences and Engineering Research Council of Canada for electric drives and power electronics related proposals.

The Venue

Room: MARC 266

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https://mcmasterinnovationpark.ca/mcmaster-university-automotive-resource-centre