

University of Manchester

People

Prof. S. Williamson

Steve received his first degree and Ph.D. degree in electrical engineering from Imperial College. In 1989, he became a Professor in the Department of Engineering at Cambridge University, Cambridge, U.K., and shortly afterwards a Fellow at St. Johns College. In 1997, he took up the post of Group Technical director for Brook Hansen, which was then part of the BTR group. Several takeovers and reorganizations saw him back in academia, this time at the University of Manchester, where he is currently Head of the School of Electrical and Electronic Engineering. His expertise is in modelling electrical machines, notably induction motors, for which he has been awarded eight IEE Premiums as well as the 2001 IEEE Nikola Tesla Award. He has particular experience in modelling machines operating under fault conditions, and has acted as a consultant to most of the UK's current (and former) electrical machines manufacturers.



Dr Alasdair Renfrew

Alasdair received his first degree and PhD from the University of Edinburgh, with a 2 year period with British Rail in between. From 1974 to 1976 he was employed by GEC Traction Ltd. He moved to UMIST (now the University of Manchester) in 1976, where he is currently a Senior Lecturer specialising in control of drive systems.



Dr Alexander Smith

Sandy is currently Reader and Director of the Rolls-Royce University Technology Centre in Electrical Systems for Extreme Environments. His research interests lie in the design and analysis of electrical machines and drives and has published widely in these areas receiving three IEE journal publication premiums and two IEEE prize paper awards. Current projects include industrially funded work on high power wind generators and condition monitoring of large turbo-generator stator cores.



Dr Mike Barnes

Mike received his first degree and PhD from the University of Warwick. He then joined UMIST (now the University of Manchester) where he is now a Senior Lecturer in the Power Conversion Group. His current research focuses on the application of power electronic converters to integrate embedded generation into the power system. With Dr Smith he has just completed a project for FKIDeWind on DFIG converter control. Other research into power electronic grid interfaces include the EPSRC project 'Microgrids', investigating semi-autonomous operation of collections of embedded generation and loads.



Mr Sinisha Djurovich

Sinisha received his dipl.-Ing. degree from the University of Montenegro in 2002, before coming to the University of Manchester as a researcher on an EU-Tempus project. He is presently studying for his PhD and is working as an RA at Manchester.



Relevant Expertise

The Manchester Centre for Electrical Energy (MCEE) has extensive computational and laboratory facilities, including power electronics laboratories refurbished as part of the Rolls Royce University Technology Centre. The MCEE combines the activities of the University's Electrical Energy and Power Systems (EEPS) Group and the Power Conversion (PC) Group. It has 17 academic staff with approximately 60 PhD students and 20 RAs/research staff.

Recent research grants at the Manchester Centre for Electrical Energy have included the £500,000 'University Technology Centre' collaboration with Rolls Royce, a research platform to investigate future power supply systems in more electric aircraft. More than £1.5M has been invested by National Grid Transco to establish the National Grid Centre for High Voltage Research. The MCEE has been awarded the prestigious EPSRC Platform Grant "Sustainable Electric Power Systems".



5kW DFIG
Prototype test-rig



Embedded
Generation test-rig



M-Phase machine

Technical role within the Supergen

Our basic objectives in this project are:

- To devise a Matlab model for an induction generator and a Static Scherbius ac/ac converter and basic mechanical plant
- To simulate the effects of generator faults
- To detect these faults using external measurements
- To simulate external electrical and mechanical disturbances and discriminate between these and generator faults
- To verify the techniques developed through experimentation on a laboratory test rig



The 30kW DFIG
condition monitoring
test-rig under
development at the
University of
Manchester

