



Shifting gears

London's Royal Lancaster Hotel was the setting for the 2008 Science, Engineering & Technology Student of the Year Awards. The awards are described as Britain and Ireland's most important awards for science and engineering undergraduates and are sponsored, supported and judged by industry leaders and professional institutions.

Hundreds of candidates from universities across the UK submitted projects for a variety of categories. Although each category was closely fought, it was the e2v Technologies award for best electronic engineering student that piqued most insiders' interest. The strength of the entries resulted in a tight battle for the freshest talent in the industry.

The three finalists were interviewed individually by a panel consisting of Carlos Huggins (e2v), Professor Bernard Weiss (University of Surrey), Professor Hugh McCann (University of Manchester) and David Nicoll (JTD Certax). The winner was Niall Oswald from Bristol University with his project – A 'more electric' Formula 1 gearbox.

Oswald designed an electrical drive system and dsp based closed loop controller for a previously developed prototype electromagnetic gear change actuator. The resulting gear change system was then incorporated into an F1 gearbox and used to demonstrate reliable selection of gear ratios in timeframes comparable with those achieved with current F1 gearboxes.

The idea of the project was to demonstrate the significant advantages in terms of reliability, weight reduction, ruggedness and controllability that can be achieved by the replacement of traditional



Niall Oswald, left, receives the e2v award for the best electronics engineering student from Keith Atwood, e2v's chief executive.

pneumatic, mechanical or hydraulic gear change systems with a 'more electric' gear change system. New F1 regulations allow on board storage of electrical energy that can be used to drive electrical systems of the type demonstrated in this project. The technology could also be applied to a range of vehicle transmission components, such as active differentials and clutches, found on high performance rally cars and the automatic driver assist systems commonly found in modern family saloon cars.

The project was led by Dr Derrick Holliday, senior lecturer in the electrical energy management group at Bristol University. He explained: "Niall designed and implemented a very impressive working prototype, based around an F1 gearbox, which will be the basis of a

demonstrator with which to attract future research funding. In addition, he produced some unique finite element simulation and experimental results, facilitating the enhancement and development of the actuator design. Niall's achievements are more notable when it is considered that, despite the varied nature of his project, he required very little assistance."

Presenting Oswald with his award, Keith Attwood, e2v's ceo, said: "In these difficult economic times, it is more important than ever that we support and encourage the development of our engineering talent. In the end Niall's idea stood out to the judges. It was original and innovative, which is a real achievement when considering the speed at which the F1 business moves forward with engineering firsts." ■