

Volume 6, January 2013

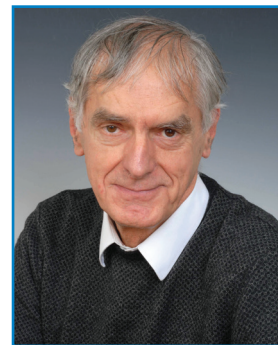
## Professor Stephen Salter receives top Academy Award

The Royal Academy of Engineering Sustained Achievement Award 2012 was presented to Professor Stephen Salter, whose career as an engineer holds many notable achievements including 'Salter's Duck' and his pioneering work in the desalination of sea water. He received the award at the Academy's AGM in London on 16 July.

Professor Salter has spent the last 37 years developing innovative and practical ways of mitigating the impact of climate change. His highly innovative research has resulted in very significant technology transfer through the spin-out of several companies, including Pelamis Wave Power and Artemis Intelligent Power.

His most famous invention is the iconic 'Salter's Duck', developed in the 1970s to generate electrical power from waves, and still regarded as one of the most efficient wave power designs. At the heart of the 'Duck' was an innovative digital displacement hydraulic power transmission that Professor Salter has since adapted for automotive use. It is currently undergoing vehicle testing and achieving fuel savings of 30%.

A pioneer in the field of geoengineering, Professor Salter has investigated the practicalities of brightening clouds to reflect sunlight away from the earth. Rather than cloud-seeding with low-flying aircraft, Professor Salter envisaged using a flotilla of radio-controlled Flettner craft (using a vertical rotating cylinder for propulsion) and spraying the clouds with sea water as a low carbon alternative. As the water evaporated from the ultra-fine spray, the remaining grains of salt would provide the nuclei for cloud condensation.



Professor Stephen Salter

## Teaching Awards

Congratulations go to Dr Tina Düren, Reader in Chemical Engineering, in being runner-up at the Edinburgh University Students' Association (EUSA) Teaching Awards. Tina was the runner-up of the Simon Van Heyningen Award in Science & Engineering in Teaching Awards. These awards recognise and reward academics who are committed to delivering great teaching for their students and are awarded on the basis of students' nominations.

**Student Comment** "Tina is always very friendly and approachable, keen to help students achieve their best. For Computational Methods she voluntarily gave up her Friday lunch hour each week to help us in the computing labs to ensure we all got through and understood the lab material."

Tina's success, combined with a record number of nominations by students for School staff, made the 2011/12 academic year the best ever performance for the School of Engineering in the Students' Association Teaching Awards.



Dr Tina Düren

## UK Carbon Capture and Storage Research Centre



*Advanced Capture Testing in a Transportable, Remotely-Operated Mini-lab: liquid and solid materials for CO<sub>2</sub> capture will be tested on power plant sites using real flue gases in this portable unit.*

The UK Carbon Capture and Storage Research Centre (UKCCSRC) was established in April 2012 with funding from the Engineering and Physical Sciences Research Council (EPSRC - £10M), the Department of Energy and Climate Change (DECC - £3M) and member organisations (£2M). Professor Jon Gibbins (Institute for Materials and Processes) is Director of the Centre, which is a virtual organisation bringing together academics across the UK, industry, regulators and others in the sector to collaborate on analysing problems and undertaking advanced research. A key priority is to support the UK economy by driving an integrated research programme that is focused on maximising the contribution of CCS to a low-carbon energy system.

The Centre (<http://www.ukccsrc.ac.uk/>), has announced the outcome of its first call for research projects, addressing DECC priorities for CCS research and totalling approximately £1.8M. A major exercise on Research and Pathways to Impact Development (RAPID) was carried out beforehand; this is currently being expanded by a series of RAPID workshops on CCS for industry processes. In addition to funding research, the Centre supports shared large-scale research facilities and is developing international collaboration programmes.

It will also continue to operate an expanded CCS Community Network (<http://www.ukccsc.co.uk/>), which supports early career researchers and organises regular meetings. Current funding runs for 5 years, and this will be supplemented by further support from a range of sponsors for specialised research projects.

## PhD Student wins 1st Prize in the ICE Scotland Papers Competition Final

Congratulations to David Connolly, a postgraduate student in the Institute for Infrastructure and Environment, who has won 1st prize in the Institution of Civil Engineers (ICE) Paper Competition Final in Dundee in April 2012.

The three judges made their decision based on his written paper, his oral presentation and his ability to answer searching questions. David was representing Edinburgh after winning 1st prize in the Edinburgh Area Branch ICE Paper Competition in February 2012.

The paper was co-authored with his supervisor Prof Mike Forde, entitled "The effect of embankment conditions on the propagation of ground borne vibrations from High Speed Railway lines".



Ken Laing (past ICE Scotland Chairman) with David Connolly



## Industrial Doctoral Centre for Offshore Renewable Energy

The University of Edinburgh is leading the Industrial Doctoral Centre for Offshore Renewable Energy (IDCORE) in partnership with the Universities of Exeter, Strathclyde, the Scottish Association for Marine Science and HR Wallingford. The IDCORE offers a four-year full time world-class Engineering Doctorate (EngD) programme in Offshore Renewable Energy. Our Research Engineers spend the first two terms attending an intensive programme of 12 taught courses delivered at the University of Edinburgh. Following this they join their sponsoring companies to work as researchers. The industrial research is supplemented by summer schools and online distance learning courses.

The first students started in January 2012 and have now joined their sponsoring companies (EDF, E.ON, Rolls-Royce, Narec) to work on their research projects. The second cohort of students started in September 2012 and will start their industrial projects in June 2013. Our Research Engineers, recruited via a rigorous selection process, come from diverse backgrounds ranging from undergraduate engineering degrees to graduates of both UK and European masters programmes or graduates with industrial experience. Their one unifying quality is a passion for offshore renewable energy.

David Ingram, IDCORE Director, said: "This initiative provides an unrivalled opportunity for companies to work closely with leading research universities in the sector and to host highly qualified, motivated and enthusiastic students. Our initial intake of students demonstrated that they are more than capable of stepping up to the academic challenge we have set them and I am certain that the companies they work for will gain maximum benefit from sponsoring them". For further information please visit our website: [www.idcore.ac.uk](http://www.idcore.ac.uk)

We are currently recruiting for September 2013 start. Apply online: [www.ed.ac.uk/pg/785](http://www.ed.ac.uk/pg/785).



*IDCORE Research Engineers working in the Wave Tank Facility, the University of Edinburgh, March 2012*

## Student Awards

Our students have had another very successful year winning prizes in various categories including:

### James Truesdale wins SET Award for Best Chemical Engineering Student

James Truesdale, who graduated with a MEng degree in Chemical Engineering in June 2012, has won the AWE Award for the Best Chemical Engineering Student at the 2012 SET Awards. James won the award for his industrial project on "Application of lean manufacturing techniques to whisky production" which he did with Diageo at their Cameronbridge site.

### Student wins an EngD Fellowship from the Royal Commission for the Exhibition of 1851

Stuart Kennedy, Engineering Doctorate (EngD) Research Engineer sponsored by SELEX Galileo and supervised by Professor Bernie Mulgrew, has won an EngD Fellowship from the Royal Commission for the Exhibition of 1851. The award is worth £80K over three years and benefits ISLI, the University of Edinburgh, the sponsor and student.



*James Truesdale being presented his trophy by Keith Hall from AWE*

## Two New Fellows

Congratulations to Professor Stefano Brandani on his recent election as Fellow of the Institution of Chemical Engineers and Professor Rebecca Cheung who has been elected Fellow of the Royal Society of Edinburgh.

### Edinburgh technology firm, Sofant, unveils new smart antenna

Prof Tughrul Arslan, Ahmed El-Rayis and Nakul Haridas at the Institute for Integrated Micro and Nano Systems (IMNS) invented and pioneered a novel "smart antenna" that will make poor reception for smart phones and tablet PCs "a thing of the past".

They have been working on this technology since 2006, and established a dedicated research group, Advanced Smart Antenna Technology (ASAT) for enhancing this technology. With help from Scottish Enterprise and support from Edinburgh Research and Innovation (ERI - the commercialisation arm of the University of Edinburgh), the founders of this technology established a spin-out company, Sofant technologies Ltd in order to commercialise the technology. Sofant has attracted the interest of major mobile manufacturers around the world.

### Researchers have developed methods for 'seeing' cancer

Researchers at the School of Engineering - Dr Andy Downes, Dr Alistair Elfick and Dr Rabah Mouras - have developed methods for 'seeing' cancer, and together with the Edinburgh Cancer Research UK Centre and cancer surgeons, have been awarded funds for a new cancer imaging system from Cancer Research UK, the Medical Research Council, and the University of Edinburgh.

The first generation microscope, in the School of Engineering, has already been applied to imaging cancer in tissue biopsies. This microscope produces images of chemical composition and is able to distinguish healthy and cancerous cells or regions. The second generation microscope is nearing completion at the Edinburgh Cancer Research UK Centre, and will offer more sensitive detection and ease of use. It will be used deep in live tissue to follow the spread of cancer in real time, and to image the distribution of new anti-cancer drugs.

### Another Record Breaking Year for Research Income

In 2011/2012 the School was awarded £26.88M of new research grants and contracts which represented a 26% increase over our previous best year (2010/11).

## Alumni News

### Former Student, Richard Yemm, Awarded the Saltire Prize Medal 2012

Dr Richard Yemm, inventor of the Pelamis wave energy device has been awarded the Saltire Prize Medal 2012, for his outstanding contribution to the development of the marine renewables sector.



The iconic red 'sea-snake' wave energy converter has gained international recognition since Dr Yemm founded Pelamis Wave Power in Edinburgh in 1998.

### Studio Quality Home Audio

After graduating from studying Electronics at the School of Engineering, Gilad Tiefenbrun joined industry in the south of England before he returned to Scotland to join Linn Products, a top end hi-fi company based in Eaglesham near Glasgow, which was founded by his father. Since arriving at Linn, Gilad has moved the company on from supplying high quality turntable and CD products into audio streaming from the internet.

These new products provide much higher audio quality as they are based on 24-bit audio, rather than the 16-bit precision CD standard and, when combined with their innovative loudspeakers, demonstrate truly outstanding quality. Linn now has 170 employees and a turnover of £17M p.a.