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University of Strathclyde Engineering

Engineering insight

Engineering Students Succeed at Strathclyde

Issue 10, Summer 2013

Design Student Named Top UK Entrepreneur
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INTRODUCTION

Welcome from the Dean of Engineering

Welcome to the tenth edition of our Faculty magazine, Engineering Insight. This issue profiles a selection of our most recent student successes and highlights the achievements of a number of our female staff and students. It will also take a look into some of our more recent outreach activities and will update readers on some of the exciting research currently underway in the Faculty.

In the Faculty of Engineering, we take great pride in ensuring that our students gain the most from their time at Strathclyde so that they are equipped with the right combination of academic knowledge and practical skills to excel in the workplace. Students are encouraged to enhance their CV through applying for one of the many scholarship opportunities on offer in the Faculty, by seeking out internship positions and work placements and through entering local, national and international competitions that are available to engineering students.

Not only do our students fully embrace these opportunities, but they continue to impress with a success rate that is the envy of their peers. Against the toughest of competition, Strathclyde students consistently stand out, regularly securing more industry-funded scholarships and winning the most prestigious competitions when competing with students from other universities.

Notable illustrations of this include the IET Power Academy Scholarship programme where, since its introduction in 2004, our students have topped the annual awards table every year; and, the BP Ultimate Fieldtrip Competition which has been won by Strathclyde students for the last two years.

Most recently, Victoria Hamilton, a recent graduate from the Department of Design, Manufacture & Engineering Management, won not one, but two prestigious competitions within two weeks! Victoria is just one of the many successful women that are working or studying in the Faculty and who are excelling in their fields. This is helping to raise the profile of engineering as a career of choice for women.

The Faculty is engaged in a wide range of outreach activities which are aimed at widening access to the programmes we have on offer and diversifying our staff and student body. Indeed, more and more female school pupils are applying to attend our successful outreach programmes, such as the Scottish Space School and Headstart.

This year we reached a milestone with the Scottish Space School, celebrating our 1,000th participant. The Space School is now in its twelfth year at Strathclyde and every year the number of applications from school pupils around Scotland is growing, proving that the interest in studying STEM subjects and, notably, engineering is also growing – a trend that we hope continues in the years to come!

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Strathclyde Student Named Top UK Entrepreneur

A recent graduate from the Department of Design, Manufacture & Engineering Management (DMEM) has been successful in landing not just one but two high profile awards in a matter of weeks. Victoria Hamilton was first named top student entrepreneur in the UK at the Santander Universities Entrepreneurship Awards.

Victoria, who studied product design engineering, landed the top accolade after beating competition from 66 institutions across the UK.

Only 10 business plans from universities and business schools made the shortlist for the awards, with Victoria's project chosen as the outstanding entry in the undergraduate category – earning her the £5,000 first prize.

Commenting on her win Victoria said: "It is a real honour to win the award as I really didn't think I had a chance when seeing the projects I was up against. When I was announced as the winner it was a real shock and I am delighted to have won with such a high standard of projects in my category.

"Throughout the entire process the support I have had from the University has been fantastic, in particular from my own department where the lecturers have given me the encouragement to make a success of my idea. The Strathclyde Entrepreneurial Network also gave me support in producing the business plan and without that I doubt I would have won the award.

"I have just graduated from the University and winning the award has come at the perfect time. I will now look to take things forward and hopefully develop my technology further and take it to the marketplace."

Victoria with her Santander award on her graduation day

Following on from this award, two weeks later Victoria was awarded £50,000 in business funding by the Young Innovators Challenge (YIC) for her creative business idea.

The determined graduate impressed the judges with her business plan and fought off strong competition from other finalists, including another six from Glasgow, to be one of five to claim £50,000 business funding and one year of dedicated business support.

The Young Innovators Challenge - run by Scottish Institute for Enterprise (SIE) on behalf of the Scottish Government - is a national competition which encourages 18 to 24-year-olds to develop their entrepreneurial skills and understand the processes involved in setting up a business.

Victoria won the prestigious competitions with her innovative knee protector aimed at reducing the risk of osteoarthritis of the knee.

She now hopes to patent the technology and use her prize fund money to develop a further prototype and investigate the possibility of being able to use it in other markets – such as extreme sporting equipment.

Victoria graduated with a Masters in Product Design Engineering, with distinction, at a ceremony in the University's Barony Hall in July and is the latest student to benefit from the support offered by the Strathclyde Entrepreneurial Network – which supports innovation and enterprise across all levels of the University.

Professor Sir Jim McDonald, Principal of the University of Strathclyde, said:

"I am delighted that Victoria has been able to utilise the support from the University to make such a success of her innovative business concept.

"The University is committed to fostering entrepreneurial activity among our students and we are benefiting from our partnership with Santander Universities Global Division – providing students with the opportunity to make a positive impact on society with their research.

"Our students continue to benefit from exposure to world-class research and our strong collaboration with business and industry provides them with the necessary skills and experience to develop their careers beyond their academic studies."

Student Success

Carnegie Vacation Scholarship Goes to Good Use

Students from the University of Strathclyde have done extremely well in securing Carnegie Vacation Scholarships from the Carnegie Trust this year, with 31 out of 50 applications receiving awards. Of this number, eight of the scholarships were awarded to students in the Faculty of Engineering, in a number of different departments.

Daniel Chakraverty, a fourth year Computer and Electronic Systems student in the Department of Electronic & Electrical Engineering, was one of the successful candidates. He will now work on a summer project with Dr Scott Strachan in the area of sustainable energy for development. As part of his fourth year project Daniel developed a proof of concept design of a GPRS based communications architecture that will enable remote monitoring of solar photovoltaic (PV) installations in remote rural communities of developing countries, like The Gambia, using the 3G mobile phone network. Daniel's work builds on and interfaces with the work of the Sustainable Energy for Development (SEfD) Vertically Integrated Project, focusing on the data acquisition and monitoring of remote rural PV systems. Daniel's developed communications system will be used to transmit this data back to a remote hub for system condition assessment and analysis.

Daniel's Carnegie Vacation Scholarship is worth £1,400 and it will enable him to continue working on his fourth year project over the summer to complete a prototype that can be installed in the field during the next Gambia Solar Project expedition scheduled for later in the year. The prototype will allow the academic team to understand better how these systems are used, impacting on future designs, and also enable more efficient and effective assessment of the health of these systems, minimizing system downtime due to unreported failures.

Some of the Strathclyde Carnegie Vacation Scholarship Winners

Strathclyde Students Awarded Prestigious IBERDROLA Scholarships

At an event held at the Casa de América cultural centre in Madrid, the Fundación IBERDROLA, the charitable arm of ScottishPower's parent company, awarded scholarships to seven postgraduate students coming to study at the University of Strathclyde.

The foundation awarded a total of 50 scholarships for the academic year 2013-14 under the auspices of its Energy and Environment programme of scholarships for Master's degree studies in Spain, the UK and the US. The University of Strathclyde is one of only five UK universities involved in the scholarship programme. Of the successful students coming to study in the Faculty of Engineering at Strathclyde, three will join the MSc programme in Sustainable Engineering: Renewable Energy Systems and the Environment, two will study the MSc in Sustainable Engineering: Offshore Renewable Energy, one will study the MSc in Electronic and Electrical Engineering and one will study the MSc in Electrical Power Engineering with Business.

The goal in awarding these scholarships and grants is to contribute towards excellence in training and research in the field of energy, with a particular focus on the development of renewable energies and enhancing biodiversity, as well as the efficiency of the energy system.

The scholarship will cover the full cost of the academic registration fee and pay each recipient the sum of €1,200, £1,200 or US$2,100 per month, depending on the location.

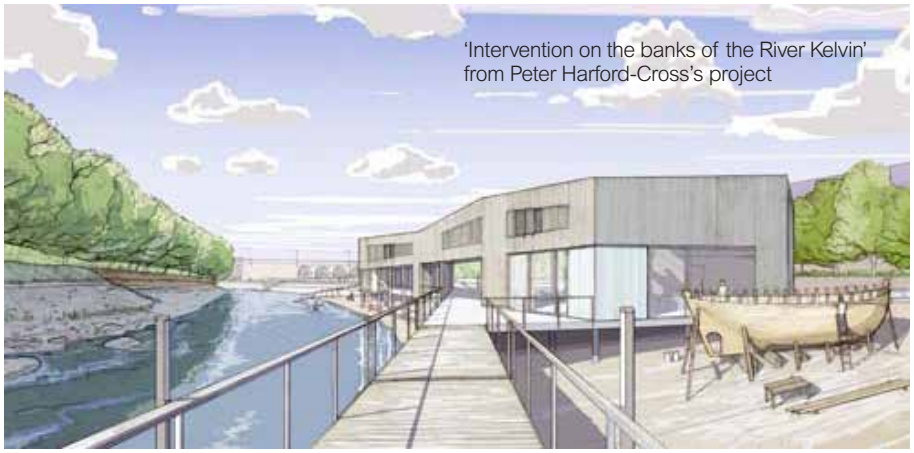
The award ceremony was attended by the Chairman of IBERDROLA, Ignacio Galán, the Chairman of the Fundación IBERDROLA, Manuel Marín, and lawyer, economist and scientific commentator Eduardo Punset. Also in attendance were the Ambassador of Great Britain and Northern Ireland to Spain, Giles Paxman, and the Counsellor for Economic Affairs at the Mexican Embassy in Spain, Gerardo Ezquerra.

In his speech, Mr Galán highlighted the positive impact that these scholarships and grants have on young people. He explained that the company wishes to give them confidence in their skills and abilities, a sense of hope for the future, a spirit of entrepreneurship and love for work, effort and constant perseverance.

He went on to say that the goal is to reward talent, innovative ideas and the will to try new things in the fields of energy, environment, sustainability and restoration. The Chairman of IBERDROLA also explained that another goal of the programmes was to foster international mobility in order that young people may benefit from the huge possibilities offered by today's global world.

Architecture Department Scoop Prestigious Award for Seventh Time

Department of Architecture student Peter Harford-Cross has won the 'Architecture + Design Scotland (A+DS) Sust. Award for Sustainable Design'. He was also highly commended in the 'Royal Incorporation of Architects in Scotland (RIAS) Best Fifth Year Student' category at the A+DS and RIAS Scottish Student Awards for Architecture 2013. The award ceremony, which is now in its eleventh year, was held at the A+DS Gallery in The Lighthouse in Glasgow on 4th July.



'Intervention on the banks of the River Kelvin' from Peter Harford-Cross's project

This win marks the seventh time in eight years that Strathclyde has won the Sustainability Award at these annual awards; something that the Department is very proud of.

Third year student Steven Dally was also commended in the 'A+DS Award for Best Third Year Student'.

The Scottish Government's Policy on Architecture makes a firm commitment to annual student awards. Architecture + Design Scotland and the Royal Incorporation of Architects in Scotland jointly promote the Scottish Student Awards for Architecture.

The awards recognise the achievement of individual students and their schools of architecture. They are a mark of the continuing high standards of Scottish architectural education and ensure that both construction professionals and the public can enjoy the creativity and vision of Scotland's future architects.

Peter's project was entitled 'Weather, Water and Place, Banks of the River Kelvin, Glasgow'. The judges commented on his project: "This is design beyond the building. Small interventions are proposed to deliver substantial change. The proposal addresses issues of social disconnection, generating a more walkable city, enhancing the mobility of residents. This approach is about many strands of the sustainability agenda from the socio-economic down to energy and the details of the built environment are all brought together with consummate care."

Following the awards ceremony the winning entries will be on exhibition in the city centre in The Lighthouse until 29 September, offering a rare opportunity for the public to see work by the best students from all of Scotland's schools of architecture, together in one space.

IET Power Academy Scholarship 2013 Winners

Seventeen undergraduate students from the Department of Electronic & Electrical Engineering (EEE) have won Power Academy scholarships, out of a total of 54 awarded by the Institution of Engineering and Technology (IET) for 2012-13.

From the 17, four scholarships were offered by ScottishPower, one by Scottish and Southern Energy, two by Atkins Power, two by National Grid, one by NIE, one by Western Power Distribution, two by ABB and four by Northern Powergrid.

The Power Academy brings together eight leading UK universities and key power sector organisations with support from the IET and Energy & Utility Skills (the sector skills council), to deliver an engineering scholarship fund that combines financial support with workplace mentoring to students during their course. The fund aims to develop world class professionals with the technical expertise to meet the energy challenge and address the skills shortage in the power engineering sector.

The Department of EEE is one of the founding University members and the only department in Scotland included in the Power Academy and, since its introduction in 2004, its students have topped the annual awards table. Eilidh Malcolm studied the MEng in Electronic & Electrical Engineering with International Study, graduating in 2013. As a former Power Academy scholar, she reflects on the benefit of having the scholarship; "From my first year I was on the Power Academy Scholarship Scheme. I was able to apply some of the knowledge I learnt in the lecture theatres to a "real-life" situation. Also, it introduced me to a professional work place and directed some of my subject choices during third and fifth year. The scheme also enabled me to travel across the UK: from Glasgow to Southampton."

Outstanding Overseas Student Award for PhD Student

Jiebei Zhu, a PhD student from the Department of Electronic & Electrical Engineering (EEE) who is supervised by Dr Campbell Booth and Professor Graeme Burt, recently received an "Outstanding Overseas Student" award from the Chinese Government at the Chinese Embassy in London. The prize, accompanied by a substantial financial award, was in recognition of his doctoral research. He has already published one IEEE transactions paper relating to his work on the control of multi-terminal DC power systems, with another paper under review, and is now working for National Grid as an HVDC specialist.

Jiebei with Dr Campbell Booth after receiving his award

Dr Booth accompanied Jiebei to the awards ceremony, which was attended by the Ambassador for China to the UK, Liu Xiaoming. Dr Booth was invited to make a speech where he outlined the Department of EEE's successful activities with Chinese students, ranging from 2+2 undergraduate schemes through to Masters and PhD programmes.

Dr Booth said: "It is a great achievement for Jackie (Jiebei) to receive this award and testament to his hard work and excellent research. I believe that our work with Chinese students is extremely rewarding and increasingly important to our success in both teaching and research. Jackie's receipt of this award, and his securing of a very good job with National Grid in the UK, is an example of the excellent outcomes that are produced from our China Link programme."

Strathclyde Students Contribute to Construction of New Glasgow Hospital

The £575 million New South Glasgow Hospital project is having a massive impact across Glasgow. Brookfield Multiplex are committed to engaging with the local community throughout this project by creating jobs, training and providing opportunities for the local businesses.

As part of this process Brookfield Multiplex aims to work with local Universities, including Strathclyde, to give students a greater understanding of the construction process and showcase ways in which they can develop their skills as part of their studies.

The purpose of the Inter University Construction Challenge is to provide students with a real live case study to work on, as well as highlighting future career options, and to provide a personal development route for future graduates within the Engineering and Construction sectors.

The project presented students with real live examples of key construction activities at the New South Glasgow Hospital, putting them in a better position when applying for jobs or completing final exams. Students were given access to drawings, plans, the construction team and site tours to allow a greater understanding of the project.

Six Strathclyde students from the Department of Civil & Environmental Engineering participated in the challenge. Students were required to conduct a programme of in-depth research, outline solutions and methods of working in a 15 minute presentation and present findings and make recommendations to a small panel of industry experts. The challenge ran from February until July, with participating students meeting with Brookfield mentors and making site visits during this time. There were four groups, each consisting of eight students (two from each University and College involved), and the winning team was led by first year Strathclyde student Tiffany Wong.

Space Researcher Awarded IET Postgraduate Award for Outstanding Researcher of 2013

Alison Gibbings is a PhD Researcher co-located between the Advanced Space Concepts Laboratory (ASCL) in the Department of Mechanical & Aerospace Engineering at Strathclyde and the Systems, Power and Energy Research Division, University of Glasgow. Prior to this, she completed a Young Graduate Traineeship at the European Space Research and Technology Centre and two graduate positions at the NASA Goddard Spaceflight Centre and the NASA Ames Research Centre. Alison has an MEng(Hons) in Aerospace Engineering and Astronautics from Kingston University, London. Alison discusses her research and some of the recent successes she has had with ***Engineering Insight***:

"My research, partially funded by the Planetary Society and the European Space Agency (ESA), focuses on the contact-less deflection, exploration and exploitation of asteroids through laser ablation. It is one of the main research areas of my main supervisor Dr Massimiliano Vasile, from the ASCL. Laser ablation is achieved by irradiating the surface of an asteroid with a laser light source. The absorbed heat from the laser beam sublimates the surface of the asteroid, transforming it directly from a solid to a gas. The gaseous ejecta then forms in a plume, which acts against the asteroid, providing a continuous and controllable low-thrust. This low-thrust can be used for the ongoing manipulation and deflection of asteroids. My research involves designing, developing and implementing a range of laser ablation experiments. This supports the development of the numerical model and existing theory, and more recently has included the evaluation of different space-based mission options, architectures and operational scenarios.

Assessed competitively through the ESA SYSNova Challenge opportunity, the AdAM (Asteroid Ablation Mission) concept demonstrated the viability of laser ablation as a mature technology for asteroid manipulation and exploitation. It also highlighted how any interaction with the ejecta plume could be used to maximise the scientific capabilities of a remote sensing, in-situ analysis or sample return mission. This would enable scientists to further characterise the composition, formation and evolution of asteroid and other rocky bodies distributed throughout the solar system. The study was lead by Dr Vasile and a team of people in the ASCL at the University of Strathclyde (including myself, Massimo Vetrisano, Dr Pau Sanchez and Daniel Garcia), and was conducted in partnership with Dr Hopkins at the Fraunhofer Institute UK, Steven Eckersley and Alastair Wayman from EADS Astrium Ltd, Joao Branco from GMV Portugal and Dr Camilla Colombo at the University of Southampton.

The development of the experiment is conducted in partnership with Dr Ian Watson (my co-supervisor) of the Systems, Power and Energy Research Division, University of Glasgow and Dr John-Mark Hopkins and Dr David Burns of the Institute of Photonics, University of Strathclyde. Results to date have been reported in four independently peer-reviewed journal papers, five conference proceedings, four technical reports, twelve external presentations and a number of press releases. It has also been the recipient of a range of internationally recognised, academic and industrial awards. A selection includes the IET Postgraduate Award for the Outstanding Researcher of 2013, IAA Planetary Defence Student Paper competition (first prize in 2011, second prize in 2013), GU 68 Engineers Trust Award, Winner of the Space Generation Advisory Council Move an Asteroid Competition, finalist for the SET for Britain poster competition at the House of Commons, Westminster (2013, 2012), Sir Arthur Clarke Awards (short-listed in 2013, 2011, winner of Student Achievement in 2008). Together with my colleague Federico Zuiani, I was also awarded the Hans Von Award at the 2010 International Astronautical Congress, Prague. This was in recognition for the preliminary work on the mission analysis and flight dynamics of the European Student Moon Orbiter. I have also been invited to attend the 2013 International Graduate Summer School in Aeronautical and Astronautics at Beihang University, Beijing China.

I have always enjoyed pushing on the existing boundaries of science, technology and engineering, and working in an international and multi-cultural environment. Working at the ASCL has enabled me to broaden my research horizons, develop a professional network and learn from the top industrial and academic personnel. I remain continually grateful to the support offered by my supervisors and the facilities available at the University. I consider the development of the experiment platform to be my lasting legacy to the University. It will be used in future research activities and on more compressive laser ablation experiments."

For more information, please see - **http://www.strath.ac.uk/ascl/aboutus/staff/alisongibbings/**

Students Honoured by Award Winning Artists' Presence at Exhibition and Exam

This year, the Department of Architecture successfully established strong links with Glasgow's artistic community, allowing them to work with some of the city's leading contemporary artists. Turner Prize winner Martin Boyce and fellow graduates of the Glasgow School of Art, Toby Paterson, Alex Frost, Torsten Lauschman, Jacqueline Donachie and Roddy Buchanan agreed to act as the students' clients during their 'Façade for an Artist' and 'Gallery in the City' projects. This provided a more realistic simulation of the role of an architect to be undertaken by Year 1 students.

The initial façade project, sited in the East Lothian town of North Berwick, provided students with their first 'introduction' to their client with each student asked to research their client remotely. Students then used this research to understand the type of studio and living spaces their client would require, presenting their façade infill solutions on North Berwick's High Street whilst being considerate of the existing rules and materials of the town's urban fabric.

Before moving on to the design of the Gallery the students met their clients in their own studios, allowing them an insight into how they work, but also establishing a face-to-face relationship between 'client and architect'. Having visited the artists, students were then tasked with producing a piece of art in the style of their artist. They also acted as curators and opened their own exhibition of work within the Gallery of the Architecture Building. This was intended to provide students with an intimate understanding of the physical requirements of a gallery: the space in which to exhibit; the support spaces; the need to publicise; the need to host.

The students then embarked on an eight week design process to consider a Gallery in the City on one of three pre-determined sites. With six clients and three sites, the 66 designs produced were varied and unique, each responding to a set of very different parameters established through reaction to site, client and programme. The project concluded with formal examination of the work within the Department in May.

Strathclyde Presence at the South Baltic

Eddie Blanco, researcher for the Department of Naval Architecture & Maine Engineering (NAME), was recently invited to participate at a European Union's South Baltic Programme funded maritime training course in Klaipeda, Lithuania. The course named "Towards Green Shipping" was facilitated by the Faculty of Marine Engineering at the University of Klaipeda, and is part of a series of course modules comprised in a larger training programme, Generation Balt.

The focus of Generation Balt is to improve the current maritime labour market, specifically in the South Baltic region, with a training programme which includes various course models, internships and even a training cruise. The programme deals with professions associated to the maritime sector such as shipbuilding, marine equipment, seaports, offshore supply and offshore wind energy.
It is open to eligible students from undergraduate to postgraduate levels.

Participants of the training course in Lithuania

"Towards Green Shipping" was attended by students from Sweden, Germany, Poland, Russia, Estonia and Lithuania.

Lectures were offered by industry and academic professionals, including members of the Coastal Research and Planning Institute, as well as staff from the Faculty of Marine Engineering, both from the University of Klaipeda; Det Norske Veritas classification society; and the University of Trieste, Italy; as well as the University of Strathclyde. The courses were complemented with a visit to the Air Pollution from Ships Research Laboratory, and additionally, a comprehensive visit to the port and the shipbuilding and ship repair facilities in Klaipeda.

Eddie's lecture included some topics of his current research focus, Life Cycle Assessment implementation, through a case study of ballast water treatment systems onboard. He was also able to introduce the Department of NAME, and some of the work being currently carried out. Eddie is also a Strathclyde MSc alumnus, and is additionally undertaking his PhD in the Department of NAME.

For more information about Generation Balt visit **http://www.generationbalt.eu/**

Strathclyde Students Join Prestigious Scholarship Programme

Twenty-two students at the University of Strathclyde have earned places on this year's prestigious Saltire Foundation Undergraduate Internship Programme. Eight of the students are from the Faculty of Engineering, studying in the Department's of Chemical & Process Engineering, Design, Manufacture & Engineering Management, Electronic & Electrical Engineering and Mechanical & Aerospace Engineering.

Strathclyde has the highest representation of any university on the business leadership programme for the sixth consecutive year. The 2013 total for participating students stands at a record of 103.

The Strathclyde students will be working with leading companies including Wood Group, GE, Barclay's Wealth and Investment and GlaxoSmithKline. They will be undertaking their internships in the USA and in the UK.

The programme will help students realise their potential through challenging work experience, an increasing knowledge of the commercial world, gaining a global perspective and enjoying superb networking opportunities.

The Strathclyde students were supported throughout their application process by the university's Careers Service, who were also instrumental in sharing information about opportunities with the Saltire Foundation with eligible students throughout the university.

Saltire Foundation Chief Executive Sandy Kennedy said: "Scotland has always sent people out into the world to seek opportunities and this wonderful 2013 intake for our Undergraduate Programme is following in a long and proud tradition.

"They have been selected from among the most able, talented and ambitious young people that Scotland has to offer and I am sure that they will do their country and themselves proud as they set out into the international arena, learning new skills and gaining first-class business experience that they can bring back to Scotland."

Some of the Saltire interns

Careers Service and Employability Manager Katy Gordon said: "The Saltire Foundation's Undergraduate Internship Programme has grown in recent years as universities and students increasingly recognise the value of practical experience working for world leading international companies.

"At Strathclyde, we pride ourselves on our record of producing high calibre graduates who are ready to take their place in businesses and industry. Participation in this programme is a great opportunity for our students to gain a grounding for their future careers."

Chemical Engineering Student Awarded Petroleum Bursary

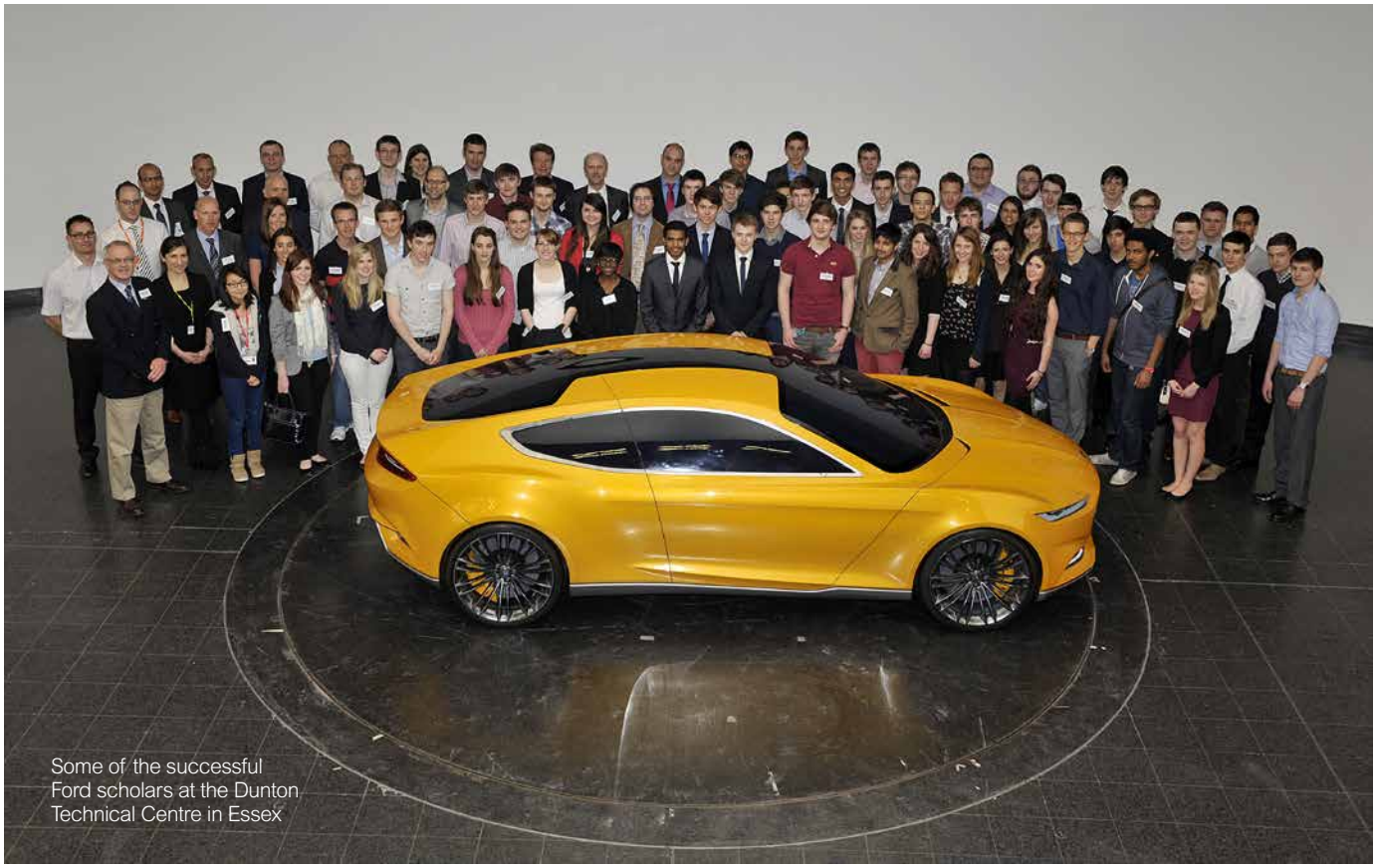
A third year Chemical Engineering student has been successful in being awarded a £2,500 bursary from the Society of Petroleum Engineers (SPE), through the Aberdeen Section. Tom Brawley was successful in gaining the prestigious award, of which only three are awarded each year throughout Scotland. The awards are given to students across Aberdeen, Robert Gordon, Heriot Watt, Dundee and Strathclyde universities, for both undergraduate and postgraduate students studying oil and gas related courses.

SPE is a large worldwide organisation, with thousands of members in the UK each affiliated to one of three UK sections in Aberdeen, London and Great Yarmouth. The Aberdeen section is the largest of these, with over 2,500 members. The SPE Aberdeen section has long encouraged high standards of academic achievement among petroleum engineers by providing bursaries to students studying petroleum engineering-related subjects.

Tom commented on his recent success; "I was genuinely surprised to have been awarded a bursary as I knew the competition would be extremely tough, considering it was a national award. I am very enthusiastic about a potential career in the oil and gas industry, and now through winning this bursary I will be even better placed to reach this goal, due to the direct involvement with the industry that I now have. I plan to put the award into use straight away, funding an international work placement I have gained in Istanbul, Turkey, this summer.

"Through winning the award, I plan to build my professional network, which is becoming increasingly important in fast tracking a career in today's society. I am very keen to get more involved with SPE's activities, by attending monthly meetings to begin with. However, I also plan to give something back to SPE in the future through giving a presentation of my design project next year. Certainly from being involved as a student, once I graduate I will be able to take full advantage of the opportunities SPE presents, including the training that they can offer."

Successful Strathclyde Students Invited to Ford Technical Centre



Some of the successful Ford scholars at the Dunton Technical Centre in Essex

Ford invited all 100 of its Centenary Blue Oval Scholars to the Dunton Technical Centre in Essex, to engage with their mentors and to experience the latest automotive technologies. Of these students, five are from the Faculty of Engineering at Strathclyde; Neil Wells and Andrew Wood, both Electronic and Electrical Engineering students, Michael Buchan and Sean Hughes, who are studying Mechanical Engineering and Andreas Assmann, who is studying Electrical and Mechanical Engineering.

The Blue Oval Centenary Scholarship programme was announced in May 2011 to encourage a new generation of engineers, scientists and innovators, and to mark 100 years of Ford's operations in Britain. Through 12 leading universities across the UK, 100 undergraduate students on a selection of engineering, science, manufacturing and technology courses, were awarded scholarships worth a total of £1 million over a three-year period.

As the end of the Blue Oval scholars' first academic year approaches, they, along with university staff, were able to visit Dunton's advanced research and engineering centre in Essex, which includes a state-of-the-art environmental test facility.

The students also met with Ford engineers and technical staff to gain an in-depth understanding of product development, as well as an insight into working at a multi-national blue-chip company. In addition, students experienced the all-new Ford Fiesta ST around Dunton's vehicle test track.

Mark Ovenden, Chairman and Managing Director, Ford of Britain, and Graham Hoare, Global Director, Vehicle Evaluation were both on hand to welcome the scholars and university staff to Dunton.

Mark Ovenden said: "I am delighted to welcome our Blue Oval students to Dunton. Ford is encouraging students through the scholarship programme to engage in courses which deliver the highest quality science and technology skills that are fundamental to our future industrial base in the UK. It is just one of the ways Ford hopes to inspire the next generation of engineers and scientists."

Double Win For Civil Students

At the 2013 Student Model Competition run by The Scottish Branch of The Institution of Structural Engineers, Joe Wong, Daniall Hashemizadeh and Jonathan Dunn, third year undergraduate students from the Department of Civil & Environmental Engineering, won the first prize. Twelve teams representing universities throughout Scotland took part in the event which was held at Napier University. This is an annual competition which has been running for many years and aims to promote ability at good conceptual design through an understanding of structural form, load paths and material behaviour to create efficient structures. The design brief is prepared by the host university each year and is revealed to the participants at the start of the event which lasts about seven hours. This year, the competition required each team of students to design a cantilevered roof canopy structure, and build a scale model for load testing.

After their success at Napier University, Joe and Daniall entered The Institution of Civil Engineers, Scottish Branch, Student Design Competition with fellow students Jamie Muir and Andrew Patterson. This year, the competition required each team to propose a design for a replacement crossing for the Forth Estuary, and then build a scale model for load testing. Their design, which used the specified amount of construction materials, was so good that there were not enough weights to collapse it! Their design skills won the first prize in this competition also!

Joe commented on their success; "I think the main reason for our team success is that our team embraces the motto of learning from failures (which was indeed the main theme of our first year curriculum).

"Both Daniall and I could recall the demoralising experience in the ICE competition during our first year. We spent the largest budget out of all the teams, but our structure was inherently unstable and collapsed under its own weight! With this memory still fresh in our minds, coupled with the knowledge that we have gained over the past few years, we were able to produce designs that were not only structurally robust (IStructE canopy), but aesthetically pleasing too (ICE bridge model). I feel strongly that participation in these events helps students to identify their shortcomings and develop a much better understanding of simple structural behaviour."

Degree for Strathclyde Space Project Leader

Ruaridh Clark, from Cumbernauld, was project manager on the StrathSat-R programme, in which undergraduate and postgraduate students in Strathclyde's Advanced Space Concepts Laboratory, in the Department of Mechanical & Aerospace Engineering, designed and built cube satellites (CubeSats) to be ejected from a sounding rocket at the highest point of its trajectory- 83 km- in a near vacuum.

The inflatable structure payloads have the potential to be used as lightweight, stowable structures, to help clear space junk or as sails for solar pressure. They were launched in an experiment, at the Esrange Space Center in northern Sweden in May 2013, and the overall project is aimed at developing the first university satellite programme in Scotland.

Ruaridh, 22, said: "StrathSat-R grew out of a student spacegroup, StrathSEDS- Students for the Exploration of Development and Space- which I founded at the end of my second year and where I served as president for two years. One of the reasons I came to Strathclyde was that, as well as being local, it was a good place to have opportunities like this.

"I got people together to look at doing an advanced aircraft design project which led us to get help from the Space Concepts Laboratory in setting up our branch of SEDS, which has groups around the world. In our first year, we had a project carrying out thermal analysis work for the UK's first CubeSat and we then heard about the sounding rocket opportunity.

A team of 11 students on the StrathSat-R project, led by Ruaridh, won the Hans von Muldau award for best team project at the 2012 International Astronautical Congress in Naples. He has also been selected by the British Interplanetary Society to represent the UK in the undergraduate paper competition at the 2013 Congress in Beijing.

In addition, Ruaridh has served as co-president of Strathclyde's branch of Engineers Without Borders, a student-led charity which gives engineering students the knowledge and skills to become involved in international development engineering. In this capacity, he worked on the development of a donkey ambulance programme for Afghanistan.

Ruaridh received his MEng degree with Distinction in Aero-mechanical Engineering at a graduation ceremony in July. During his degree, Ruaridh worked on a placement as a thermal engineer with aerospace company EADS Astrium. He will be remaining at Strathclyde to take a PhD in swarm engineering, a field which explores the development of verifiable behaviour for multi-agent systems to ensure they function properly.

Women in Engineering

Profile - Professor Rebecca Lunn

Professor Rebecca Lunn receiving her Aberconway Medal at the Geological Society of London

Professor Rebecca Lunn is the first female Head of Department of the Department of Civil & Environmental Engineering at Strathclyde. She is a Professor of Engineering Geosciences and an internationally leading researcher in geological disposal of radioactive waste. She leads two EPSRC research consortia in nuclear decommissioning and waste disposal, and since 2008 has been a member of the UK Government's advisory Committee for Radioactive Waste Management. In June 2011, Professor Lunn was awarded the Geological Society of London's Aberconway Medal in recognition of her industrially-facing research; she is both the first woman and the first engineer to be given this award.

Why did you choose to follow a career in science and engineering?

My undergraduate degree was in Mathematics and I just felt that it wasn't applied enough for me. What really inspired me was problem solving, so I went on to do a Masters and PhD in Civil Engineering. Since then my research has continued to be motivated by solving real problems, which often requires a multi-disciplinary approach.

What advice would you give to Early Career Researchers looking to pursue careers in academia?

I have benefited significantly from multidisciplinary collaboration; my collaborators have complimentary skill sets and they are my friends. I would also develop a network of international contacts. In terms of research ideas, think outside the box and take some risks. Failure of a research idea is not an academic failure!

How do you juggle work and family life?

With great difficulty!! Joking aside, family responsibilities are shared evenly with my husband, who is also a Professor. You have to prioritise tasks and learn to say no! It is really important to maintain your research and find some time for national and international meetings, even when you have small children.

What can universities do to improve the retention of women in STEM academia?

It's really important to have female academics at all levels that can act as role models and mentors for Early Career Researchers. Within our Department, we now have a critical mass of female academic staff (38%) which has a big influence on the working environment. The Faculty has also recently approved a new working group to support women in engineering at Strathclyde: Faculty WISE.

What makes the Department of Civil & Environmental Engineering at Strathclyde unique?

Our Department is unusually gender balanced and the research problems we tackle are exceptionally multi-disciplinary for a Civil Engineering Department. The University of Strathclyde is also very supportive of individuals. There is a community feeling; the successes of individuals are successes for everyone at the University! In recent years, the Faculty and the University have supported our Department, bringing in talented young academic staff, and are now investing in new laboratories and offices in the James Weir building. All of this will provide a great platform for future success in both teaching and research and enable us to compete with the top universities in our field.

Best of the West: Meet the Ladies

Dr Gráinne El Mountassir and Dr Michelle MacLean represented Strathclyde at the "Best of the West: Meet the Ladies" event held at Glasgow's City Chambers on Thursday 6th June as part of the Glasgow Science Festival. This special event celebrated the fantastic achievements of women working on topics ranging from offshore renewable technologies to reducing pharmaceutical pollution in surface waters. There were a series of rapid-fire presentations in the 'PechaKucha' format by female researchers from the University of Strathclyde, University of Glasgow, Glasgow Caledonian University and a marine renewable energy company, Trident Energy.

Dr El Mountassir, a Lecturer in the Department of Civil & Environmental Engineering, showcased her research on the use of bacteria to seal rock fractures for underground engineering works. She said: "It was fantastic to have the opportunity to present my research to such a wide audience. Only 12% of applicants for engineering courses in the UK are female; we need more of these kinds of events to encourage and inspire girls to take up science and engineering at University."

Also representing Strathclyde was Dr MacLean, a Research Fellow in the Robertson Trust Laboratory for Electronic Sterilisation Technologies, within the Department of Electronic & Electrical Engineering. She presented her research on the use of visible light, known as HINS-light to combat hospital-acquired infections. The HINS-light project was named Research Project of the Year at the prestigious Times Higher Education Awards in 2011.

Some of the participants from the Best of the West: Meet the Ladies event

Ciara's Success Presenting First Paper

Ciara McGrath is a fourth year student studying the MEng in Aero-Mechanical Engineering. She discusses with ***Engineering Insight*** her recent experience of presenting her first paper at a conference, which was well received and has led to further opportunities for her research.

"The 9th IAA Symposium on Small Satellites for Earth Observation, which was held in Berlin in April this year, provided me with a tremendous opportunity to present and publish my first paper as part of the student session. The paper, entitled "Thermal Analysis of the CubeSat First-MOVE in Preparation for Launch using ESATAN-TMS r4", was based on work I carried out during my time at the Technische Universität München (TUM) as part of the ERASMUS exchange programme and describes the thermal analysis I performed on the University's first satellite – First-MOVE.

Ciara with Dr. Rainer Sandau, Chairman of the Conference and Sias Mostert, CEO of Space Commercial Services (SCS)

The paper was extremely well received and I was presented with the third place prize in the student competition. This was an incredible honour as I was the only undergraduate student presenting and the competing papers were of extremely high quality. I was also invited to attend the Small Satellites Systems and Services (4S) Symposium in summer 2014 along with the first and second prize winners.

The experience I gained working with the First-MOVE satellite has been invaluable. Since then I have worked with Dr Malcolm Macdonald here at the University of Strathclyde to complete my Bachelor Thesis which involved designing a spacecraft to investigate the poles of the sun using solar sail propulsion – an exciting, new technology currently under development. I also received a wonderful offer to carry on my CubeSat thermal design work at the European Space Agency's European Space Research and Technology Centre (ESA-ESTEC) where I will be based for the next three months.

ESTEC has given me the opportunity to work at the forefront of space engineering and see the future of European space exploration. It's incredible how far I've come and how much farther there is still left to go."

Recent Graduate Helping Others in Singapore

Tabitha Quake qualified with a first class honours degree from the National Centre for Prosthetics & Orthotics (NCPO) within the Department of Biomedical Engineering at Strathclyde in 2012. She consistently achieved excellent grades winning several prestigious awards including 'the best performance in Orthotic Clinical Exam' and 'the Limbless Association prize' in 2009 and 2012. This prize is awarded to students with the highest overall marks in prosthetic examinations each year.

Her final year project and dissertation was entitled 'Microprocessor controlled prosthetic knees: A review of the literature' and Tabitha presented her thesis to clinical experts and manufacturers at the NCPO Stakeholders Day 2012. Subsequently, Tabitha was invited to present at the International Society for Prosthetics and Orthotics (ISPO) World Congress, Hyderabad where a high level of interest was generated, resulting in a visit by a major prosthetics components manufacturer to the University in April 2013. A poster presentation was also presented at the British Association of Prosthetists and Orthotists (BAPO) Annual Conference which also won first prize in the student poster presentation. This was subsequently published in the British Association of Chartered Physiotherapists in Amputee Rehabilitation (BACPAR) Journal.

Since graduating in 2012, Tabitha has been employed as a prosthetist/orthotist at Tan Tock Seng Hospital, Singapore providing expert intervention to assist patients with prosthetic and/or orthotic needs. She conducts regular paediatric clinics at the Cerebral Palsy Centre and Rainbow Centre and has presented at various events organised by Singapore hospitals to increase awareness and knowledge of prosthetic and orthotic related subjects within the local healthcare scene. She has also recently featured in the Care to Go Beyond (Allied Health Professionals) awareness campaign in Singapore.

Tabitha Quake

Boost Given to Carbon Capture and Storage Research

The Department of Civil & Environmental Engineering continues to play an important role in Carbon Capture and Storage research in the UK and internationally. Dr Stella Pytharouli and co-investigators Professor Rebecca Lunn, Professor Zoe Shipton, also from the Department of Civil & Environmental Engineering at Strathclyde, and Dr Mark Naylor, from the University of Edinburgh, have been awarded £73,000 from UKCCS to 3D map large-scale subsurface fractures - potential CO2 leakage pathways -using microseismic monitoring.

The award includes a six-month secondment for Dr Pytharouli to work on the Aquistore project in Canada, the first commercial CO2 injection site in the world. Aquistore aims to demonstrate that storing CO2 deep underground, is a safe, feasible solution for greenhouse gas reduction. The project is now on Phase 2 - the onset of commercial injection, starting in October 2013. Dr Pytharouli will be working closely with the Petroleum Technology Research Centre (PTRC) who coordinates the project, to design the geometry and deploy the Strathclyde's passive seismic monitoring arrays to suit the needs of the site and complement PTRC's 630 geophone array already installed. She will analyse the recorded data, collected prior to and during CO2 injection, to provide important information on potential migration pathways within the storage complex. This technology allows to image focused pathways for the first time at depth and, therefore, to inform injection, monitoring and remediation strategies. Results from this research will be used to develop and recommend strategies for micro-seismic monitoring of operational CO2 injection sites aimed at detection of leakage pathways through isolated hydraulic features.

Dr Stella Pytharouli

Female Students Participate in Constructionarium Project

The Department of Civil & Environmental Engineering has taken part in Constructionarium for the fourth summer since attending as the first Scottish University in 2009. This year, 24 students across years 1-4 attended and turned their theory into practice. Four third-year female engineers in training (Claire Cornes, Thais Barros, Natasha Tinlsey, and Gillian Smith) helped construct scaled versions of two real projects (Kinssgate Bridge & Millennium Galleries).The students were hosted by civil engineering contractor Laing O'Rourke (Expanded Structures Ltd) and assisted by consultant engineer Waterman.

Constructionarium provides the students with a hands-on construction experience where they gain practical experience to establish working links with industry - their future employers. The basic model consists of a Triangle formed by the department with a contractor and consultant working in partnership to deliver a new learning experience which combines the academic perspective with those of the design professional and practical site delivery. Students undertake to spend time preplanning their scaled down versions of bridges, buildings, dams and civil engineering projects, before working for five days in the field. Whilst the initiative does not form part of the department's formal assessment procedures, participants are expected to undertake the works to a budgetary control, methodology and timely completion. Constructionarium Scotland is held at the site of Sibbald Ltd in West Lothian. The two-acre site is currently being transformed to allow wet and dry projects to be undertaken.


Claire Cornes and Thais Barros

"The lesson that I think will stick with me the most is that as engineers what we design people have to build and what may seem simple on a drawing can be very hard to construct. Over the week we have really had to depend on the expertise of our joiner to help us construct complicated framework to construct what on the drawing is a simple arc." **Claire Cornes**

"Overall I have really enjoyed the experience. I believe it should be a compulsory part of the course. Seeing first-hand how designs are brought to life is invaluable and I would recommend the course to anyone doing civil engineering. The most important thing I have gained from Constructionarium is the realisation that no matter how good your work is on paper, you need to be able to translate it to real life." **Gillian Smith**

"It was a good experience and beneficial to actually see things in person, so when doing calculations I can now imagine what I am actually working on better. This helps me to understand the construction process and will make me a more considerate designer." **Natasha Tinlsey**

Outreach

Celebrating 1,000 Pupils to the Scottish Space School

The sun shone on this year's Scottish Space School students as they checked in to their accommodation at the start of the one-week summer school in June. One hundred S5 pupils from fifty-eight high schools across Scotland attended this year's event and they were joined by the winners of the Faculty's 2013 Reach for the Stars competition, Jayti Singh and Priyanka Garg, students from NIT Tiruchirappalli in Trichy, Tamil Nadu, India.

Many of the students took advantage of the good weather to meet informally in the gardens of the student village prior to attending the welcome meeting, and the student team mentors were on hand to introduce some ice-breaker activities and answer any questions the students had.

The students were joined throughout the week by two guests from Lockheed Martin, Vice President and former NASA astronaut, Rick Hieb, and rocket scientist, Amber Gell. This was Amber's fourth visit to the Scottish Space School and Rick's first, although he has previously visited the University as part of the Association of Space Explorers 20th Planetary Congress in 2007. Whilst with NASA, Rick completed three spaceflights, flying on STS-39 in 1991, STS-49 in 1992, and STS-65 in 1994, and has logged over 750 hours in space, including over 17 hours of extravehicular activity.

Rick and Amber joined the students in a number of engineering-based activities covering the broad range of engineering disciplines which the Faculty has to offer, including building a load-bearing space frame from pasta, flying a drone around the planet Mars before landing it safely back on earth, and launching rockets at Bellahouston Park. The students welcomed their input and took full advantage of the opportunity to chat informally with them and seek their advice regarding future university and career options.

Rick and Amber at Bellahouston Park for the rocket launches

The students also enjoyed a busy social programme during the week including an open mic night and a Gala Dinner which was followed by a ceilidh. Both the open mic night and ceilidh were organised by the student mentors who worked tirelessly to ensure that both events were a huge success.

As part of their visit to the Scottish Space School, Rick and Amber visited one primary school and two high schools, and participated in the interactive 'Ask an Astronaut' session which was run in conjunction with Education Scotland. Rick even found time to visit BBC Scotland to record a part in a forthcoming episode of 'Nina and the Neurons', which will be shown in the spring of 2014!

During the course of Space School, the students were assessed on their performance and skills both as an individual and as a team player, and at the end of the week staff and mentors had the difficult task of selecting 40 of the 100 students to attend the Houston selection workshop which will be held at the University during August. Following the selection workshop, 10 students will be selected for the Learning Journey to Houston which will take place in October 2013.

This year is a landmark year with attendance at the Scottish Space School now exceeding over 1,000 pupils since the first summer school was held in 2004. To celebrate this occasion, the Faculty of Engineering has announced the introduction of five Space School Engineering scholarships. Students who attended this year's summer school and who apply to the Faculty of Engineering and accept a place on any of its undergraduate courses for entry in September 2014 will be eligible to apply. The value of each scholarship will be £1,000 per annum, and subject to satisfactory academic performance, this will run for the duration of the student's undergraduate programme of study.

The Space School group following the Ceilidh on the final night

Civil & Environmental Engineering Influence School Pupils into Engineering

The Department of Civil & Environmental Engineering leads the way in promoting engineering to school pupils. The SCENA (SCience and ENgineering Ambassadors) team consists of more than 15 enthusiastic departmental ambassadors at all levels: academics, researchers, postgraduate and undergraduate students. The team is involved in a number of activities with schools in Scotland under the schemes of STEM ambassadors, Institution of Civil Engineers, Engineers without Borders, Construction Ambassadors and Meet the Expert/Glasgow Science Centre, as well as providing support for the Independent Learning Programme and the Faculty of Engineering outreach programmes, Headstart and the Scottish Space School.

The success in inspiring school pupils to a large degree can be attributed to the fact that staff working in the Department come from a diverse range of fields including civil engineering, environmental engineering, geology, microbiology, chemistry, mechanical engineering, geography, economics and maths. Its 36 members of academic and research staff also come from 13 different countries. Notably there is strong female representation in the Department at all staff levels, with 14 female academic and research staff and with Professor Rebecca Lunn being the first female Head of Department in the Department's 126 year history. This unusually high number of female staff, by British Higher Education Institution standards, has contributed significantly in positively influencing the professional orientation of female pupils towards engineering.

The SCENA team members find that, apart from enjoying immensely organising and delivering projects for schools, it is the satisfaction that they get from, and the passion that they have for their job that turns knowledge transfer into inspiration for younger generations.

Scottish Space School students working on their pasta bridge project with the Department

The Great IB Challenge: "Expectations Blown Out of the Water"

One-hundred and ninety international schools across Asia participated in the Faculty of Engineering's 'Great IB Challenge 2013' competition. The standard of entries was high and so it was against formidable competition that 'Team OSFA' from the British International School in Ho Chi Minh City, Vietnam were declared the winners. The challenge, based on a music delivery theme, was set by the Department of Design, Manufacture & Engineering Management in collaboration with Linn Products Limited, a world leader in music systems. Open to all pupils undertaking the International Baccalaureate (IB) Diploma, the prize was a weeklong activity-packed visit to the Faculty of Engineering and Linn Products.

The triumphant team of Max Rudert and Karvin Dassanakaye, accompanied by their teacher Mr Jon Ball, arrived in Glasgow on 16th June. Appropriately, their first day was spent at Linn Products. They were warmly welcomed by the Managing Director, Mr Gilad Tiefenbrun and the technical team at Linn Products and shown the range of products. They had an excellent time, commenting that it was "world class" and "superb". Later, Jon Ball commented that he was extremely impressed by the "high quality and the range of hi-tech companies based in Scotland". Max and Karvin were also enthusiastic participants in the Scottish Space School which is run annually by the Faculty for Scottish school pupils. They met astronauts from NASA and worked with the 100 Space School participants.

Scottish food was also sampled. Haggis, the quintessentially Scottish dish, was deemed by Karvin to be "really quite tasty". They danced the night away at a Ceilidh - energetic and fun Scottish country dancing - which Max nominated as "the best fun of the whole week". They toured Glasgow and Edinburgh and took the scenic West Highland line train to Fort William. The skipper of The Catalina, the yacht belonging to the Department of Naval Architecture & Marine Engineering (NAME), also gave the novice sailors some hands on experience during an exciting day of sailing.

The team's verdict on the week was; "Our expectations were blown out of the water by our experience".

Max and Karvin with Reach for the Stars winner Jayti and Priyanka on the NAME Yacht

Faculty Runs Successful 'Reach for the Stars' Challenge for Second Year

"Picture perfect" was the judgement on Scotland from Priyanka Garg and Jayti Singh, undergraduates from the National Institute of Technology at Tiruchirapalli, South India. Having competed against students from over 150 institutions across India to become this year's Reach for the Stars champions they really enjoyed a memorable month at Strathclyde.

Jayti and Priyanka with PhD student Lakshmy Sasikumar and Lady Eileen McDonald at one of the University graduation ceremonies

Priyanka and Jayti gave their impressions of their visit to *Engineering Insight*.

You participated in a wide range of activities during your month in the Faculty – what activities did you find the most interesting?

The week at the Scottish Space School was brilliant – we learned a lot, and met some nice Scottish students as well as NASA astronauts. The Gala Dinner and the Ceilidh on the last night of Space School were fabulous.

We also saw some very interesting research projects and we visited some fascinating hi-tech companies in the local area.

You also undertook a mini internship with a Scottish company – how did you find that?

Yes, we spent time with Steepest Ascent, a mobile communications company. It was a wonderful learning experience. At the beginning it was scary. We were set a tough challenge but we astonished ourselves with what we achieved!

Did you have time for leisure activities during your visit?

Lots of them! We learned so much about Scotland and its traditions and culture. We cycled around the island of Cumbrae, which is located off the west coast of Scotland and within easy reach of Glasgow, it was 10 miles round! We visited St Andrews, Stirling and Edinburgh as well as Ross Priory, the University's amazing historic house on the banks of Loch Lomond. The Department of Naval Architecture & Marine Engineering within the Faculty also has a yacht and we spent a day on the yacht sailing along the river Clyde – neither of us had sailed before – but with a bit of direction from the Skipper we managed a bit of 'hands on' which was really nice.

What was your most memorable moment?

We were invited as guests to the Graduation ceremony for Engineering and that was a traditional and magical occasion in a picture perfect setting. We were welcomed by Lady Eileen McDonald, the Principal's wife, and she told us that she had been in India the previous November at the launch of Reach for the Stars 2013!

What is your lasting impression of your month in the Faculty?

That the Faculty of Engineering at Strathclyde is the best! Thank you to everyone who made our amazing adventure possible. We will never forget it.

Jayti and Priyanka receiving certificates from Executive Dean of Engineering, Professor Scott MacGregor

Headstart Outreach Programme Provides Insight into Engineering for Forty Pupils

At the start of July 2013 the Faculty of Engineering ran the successful Headstart outreach programme for the thirteenth time at Strathclyde. The Headstart programme is a five-day residential summer school aimed at 16-17 year old school pupils with an interest in engineering. It gives participants an opportunity to find out more about the different engineering subjects on offer at university, often helping them to make a decision about what they would like to study. Headstart allows the pupils to experience student life, staying in the student accommodation on campus, and allows them to gain an appreciation for the various branches of engineering and what they involve.

The pupils at the NAME hydraulics tank sailing their structures

The Headstart week at Strathclyde brought 40 pupils from all over the UK, as well as a couple from further afield, to the city centre campus. The pupils had an extremely busy week, with a full programme of activities. They visited a number of departments in the Faculty to work on hands-on practical activities, experience lectures, and also to talk to staff and students to find out more about the different engineering subjects on offer. Project work and team-building featured strongly in the programme, with students working on various practical projects in different teams.

The main project that the pupils worked on over the course of the week, which was based in and run by the Department of Design, Manufacture & Engineering Management (DMEM), was the Pharaoh's Ro-Ro Project. Students worked in groups of four to design and build a barge style structure that was powered by a falling brick which drove a propulsion mechanism. At the end of the week the very varied designs competed against each other in the Department of Naval Architecture & Marine Engineering's (NAME) hydraulics tank to see which barge would go furthest.

As well as the main project the pupils visited several other departments to work on mini projects and find out more about the technologies and facilities on offer. They all spent an afternoon visiting the Department of Civil & Environmental Engineering's brand new laboratory in the James Weir building. During this time they worked in groups to build bridges made only from spaghetti pasta and glue! Each team then competed to find out which bridge could hold the heaviest load, whilst discussing the reasons behind why some bridges collapsed earlier than others. The pupils also visited either the Department of Biomedical Engineering or Chemical & Process Engineering, getting a chance to use some of the facilities whilst finding out a bit more about the subjects.

One highlight of the week was the industrial visit on the Wednesday morning. The pupils visited one of three companies; Coca Cola Enterprises, Spirit Aerosystems or Vascutek. The company visits allowed them to see firsthand where an engineering degree could take them. It also gave them a chance to speak to recent graduates about their time at university and career path following graduation.

In the evenings the pupils were kept busy with activities including a cinema trip, a quiz night, a sports night and the gala dinner on the final evening in Qua Italian restaurant in the Merchant City.

Headstart is a well established Engineering Development Trust (EDT) educational programme which runs in over 30 universities throughout the UK. EDT are the largest provider of STEM (science, technology, engineering and mathematics) enrichment activities for UK youth. They administer a number of outreach programmes for 11-21 year olds and aim to provide a real life exposure to industry, business and higher education.

The Headstart week at Strathclyde was organised by staff from the Faculty of Engineering office. The EDT provided two teachers who were in charge of the pupils during the week, and they were joined by three Strathclyde student helpers, who stayed on campus with the pupils and were able to share their experiences of student life with them.

Some of the pupils on their visit to Coca-Cola Enterprises

Research & Knowledge Exchange

Multi-Million Pound Electricity Grid Research Centre Opens

The University of Strathclyde's Power Networks Demonstration Centre (PNDC) has been officially opened by Scotland's First Minister, Alex Salmond.

The Centre, the first of its kind in Europe, has been established in response to growing demands for secure, reliable and environmentally-friendly electricity across the globe. The PNDC aims to accelerate the adoption of advanced technologies and convert ideas and research into low carbon solutions for the electricity industry of the future.

The world-class centre is home to researchers, engineers and industry specialists who are developing new research and technologies, from advanced grid control schemes to intelligent sensor systems, in the facility's controlled and safe environment.

The 900-square-metre building is equipped with high quality, innovative control and simulations systems and is home to a real-life, reconfigurable power network independent from the national grid. Located in Cumbernauld near Glasgow, the PNDC is a venture between the University of Strathclyde, ScottishPower Energy Networks, Scottish and Southern Energy Power Distribution, Scottish Enterprise and the Scottish Funding Council.

Mr Salmond said: "This is a truly world-class research centre and the first of its kind in Europe, clearly reinforcing that Scotland is leading the way when it comes to new ideas, new solutions and new practices that will help us meet the electricity and energy needs of the future.

"Smart grid technologies are increasingly important as we move to a low-carbon economy, helping to reduce energy waste and making it easier for homes and businesses to generate their own renewable energy. Our ambitious plans for this sector demonstrate that it has the potential to create up to 12,000 jobs by 2020.

"I am therefore delighted to open this hugely innovative research centre, which is a fantastic example of researchers, engineers and industry specialists working together to improve energy efficiency. This firmly puts Scotland at the forefront of smart electrical technologies and setting new standards in electrical distribution."

Professor Sir Jim McDonald, Principal of the University, said: "As a leading international technological university, our research capabilities and long-standing partnerships with industry put us in an ideal place to develop the next generation of electrical power systems technologies.

"The Centre will remove many of the barriers to these technologies, improve energy efficiency, ensure that we maintain a secure supply of power and define grids of the future – setting new standards in electrical distribution. The launch of the PNDC demonstrates our focus on useful learning across the University and our reputation for high quality research with impact and relevance continues to attract leading industry partners.

"Our close links to business and industry helped Strathclyde win this year's UK University of the Year title, and the PNDC demonstrates these close partnerships in action."

Frank Mitchell, CEO of ScottishPower Energy Networks, said: "The Power Networks Demonstration Centre is a state-of-the-art facility that has an important role to play in helping to drive innovation and develop the Smart Grid required for the 21st century. Smart Grids will allow many more customers to install distributed generation, support electric vehicles, reduce carbon emissions and improve services for our customers.

Professor Sir Jim McDonald and First Minister Alex Salmond at the opening of the PNDC

"We are on the verge of delivering the largest upgrades to our electricity networks in more than half a century - which will see billions of pounds of investment and create thousands of jobs. Partnerships like the Power Networks Demonstration Centre are a vital part of the energy industry's plans to ensure this investment meets the future needs of our customers in Scotland and across Britain."

Dr Iliana Portugues, Director of the Power Networks Demonstration Centre, said: "The challenges faced by the electricity industry are global and will require significant changes to the way we operate networks. One belief shared amongst all our founders is that this change, along with all the uncertainty and discomfort, really does bring opportunity. Our aim, as a group, is not to accept change passively, but to lead it and to manage it creatively.

"Initiatives such as the Power Networks Demonstration Centre achieve this through a new type of collaboration, one which does not affect objectivity, independence or uniqueness. For the health of our individual enterprises, for the good of the society we serve, and the fortunes of those who follow us."

Dean of Engineering Awarded Prestigious IEEE Peter Haas Award

Professor Scott MacGregor, Executive Dean of the Faculty of Engineering, has been awarded the prestigious IEEE Peter Haas Award at the 2013 IEEE International Pulsed Power and Plasma Sciences Conference in San Francisco. The IEEE Peter Haas Award is the major award in the field of pulsed power technology and is made by the IEEE Nuclear and Plasma Sciences Society every two years. This is the first time the award has gone outside of the USA and recognises Professor MacGregor's outstanding contribution to pulsed power technology through developing programmes of applied research, education, and information exchange. At the event, Professor MacGregor presented a plenary talk entitled "Electro-Technology Evolution for Microbial Inactivation at ROLEST: from Pulsed Power to High Intensity Narrow Spectrum Light (HINS-Light)" in which he described the progress and achievements in pulsed technologies and their practical applications.

At the conference Awards Banquet, Professor MacGregor was presented with the commemorative plaque which bears the following citation: "For fundamental contributions to research of pulsed power and high voltage switching technologies; for leading the transition of basic concepts from laboratory phenomena to industrial, environmental, and bio-medical applications; and for dedicated service to the current and future pulsed power community through the establishment of international educational programs, symposia, and conferences."

Professor MacGregor commented on his recent success; "I am really pleased to have received the IEEE Peter Haas Award. This recognition is also a positive reflection of the contributions from past and present colleagues in the Pulsed Power Group at Strathclyde, and colleagues internationally, whose support and collaboration over the last 25 years has been greatly appreciated."

Professor Scott MacGregor (centre) receiving his commemorative plaque from the Conference General Chair, Dr Brian Oliver (left), Sandia National Laboratories and Professor Juergen Kolb (right), Chairman of the Pulsed Power Science & Technology Executive Committee of the IEEE Nuclear and Plasma Sciences Society

Strathclyde Launches Space Institute

An innovative institute that will enhance the University of Strathclyde's space research activity has been launched with a keynote address from NASA's Chief Technologist, Professor Mason Peck.

The Strathclyde Space Institute will provide a platform for increased collaboration with the world's leading space organisations and the inaugural event took place during Engage with Strathclyde – a week of events aimed at strengthening links with industry. Professor Peck's lecture formed part of a two-day event looking at trending topics in space technology, addressing the research and technological challenges that will transform future space ventures and services.

Professor Colin McInnes, Director of the University of Strathclyde's Advanced Space Concepts Laboratory, said: "The University is developing an increasingly prominent role in the space sector and the launch of this Institute will ensure that we continue to develop our institutional space activities.

"Our strong collaborations with industry partners and other research groups continue to grow and I am delighted that our close relationship with NASA has given us the opportunity to have Professor Mason Peck take part in the institute's inaugural event."

The Strathclyde Space Institute will be a platform for four existing space research centres at the University: the Advance Space Concepts Laboratory; the Centre for Future Air-Space Transportation Technology; the Space Mechatronic Systems Technology Laboratory and the Centre for Space Science and Applications, in addition to the outreach activities of the Scottish Space School.

Professor Mason Peck's lecture, entitled 'NASA Technology Investments: building our future in space', provided an overview of NASA's ambitious programme of space exploration that builds on new technologies as it expands humanity's reach into the solar system.

Professor Peck said: "I am honoured to have been part of the Strathclyde Space Institute launch. Strengthening ties between our space communities is critical, especially as we engage in globally important activities.

"I'm looking forward to sharing more about what NASA is doing to develop technologies that will take humans to an asteroid and then on to Mars, and learning what opportunities exist here at Strathclyde and around the United Kingdom for cooperation and collaboration."

Successful Faculty of Engineering Spring Lecture Series

As part of an expanding outreach and engagement programme, the Faculty of Engineering hosted a series of three successful evening lectures during spring 2013. Each lecture was given by an outstanding leader in their chosen field of expertise from a globally connected company.

Professor Sir Jim McDonald and Professor Scott MacGregor in the McLaren car brought by Dick Glover

In April, Professor Mason Peck, Chief Technical Officer at NASA presented an overview of the NASA technology roadmap for the next 25 years. He reflected on the past successes of the NASA programme and showed how science and engineering, combined with ambition and vision led to amazing achievements over the past 50 years including manned missions to the moon, the international space station, the space shuttle and satellite global communications coverage. He outlined the range of practical benefits to industry and wider society which had emerged from the NASA technology programme and showed that the financial impact over the same period was several times the original investment. In addition, he presented an exciting vision of what NASA could do during the next 25 years and challenged the audience to get excited and share this with young engineering students.

May saw Dr Steve Otto, Head of Research at the R&A, St Andrews presenting a highly entertaining lecture on the Science, Engineering and Art of Golf: from tee to green. In this, Steve, a former mathematician and NASA staff scientist, reflected on the heritage of golf in Scotland and how technology had advanced the game over the years. He reviewed the current technologies in use within the industry including club materials and manufacturing processes, ball characteristics and state of the art measurement techniques which are employed to examine swing behaviour and ball trajectories. More importantly, Steve revealed the many myths and secrets surrounding the use of technology and entertained delegates with many humorous anecdotes involving laser sighted clubs and club mounted cameras with mini TV screens. Steve delighted the audience at the end of the lecture by revealing the Claret Jug, the prize for the winner of the Open Championship.

Finally, in June, the Faculty were privileged to host Dick Glover, Head of Technology of McLaren Automotive. Dick has a strong background in the automotive industry having worked for engine development firm, Ricardo, followed by a move to Shell where he became technical lead on the company's Formula One fuels. He became Technical Director in 2005 and was responsible for the MP4-12C, a twin turbo V8 capable of 0-100km/h in 3.1 seconds and a top speed of 330 km/h. In McLaren's 50th Anniversary year, the 12C and P1 supercars are the first of a range of products being launched by McLaren Automotive. During his lecture, Dick focussed on the F1 technologies used in these new supercars and how they were adapted to road car use. During his time at Strathclyde, he, along with Andy Smith, the company's Principal Composites Engineer, also visited the Advanced Forming Research Centre and explored future research opportunities. Attendees at the evening lecture were thrilled to be given the opportunity to view and explore an MP4-12C supercar up close before and after the lecture that Dick and Andy brought with them.

Professor Scott MacGregor with Dr Steve Otto and the Claret Jug

Strathclyde and Dalhousie University Research Collaboration in Tidal Energy

The Energy Systems Research Unit in the Department of Mechanical & Aerospace Engineering, at Strathclyde and the Department of Mechanical Engineering, Dalhousie University, Nova Scotia, Canada launched their collaborative research initiative in tidal energy earlier in July. A Memorandum of Understanding (MOU) detailing the focus of the research collaboration was signed by Professor Scott MacGregor, the Executive Dean of Engineering at Strathclyde and Professor Josh Leon, the Dean of Engineering at Dalhousie University, and witnessed by Cameron Johnstone, Director of the Energy Systems Research Unit at Strathclyde and Professor Mike Pegg, Head of the Department of Mechanical Engineering at Dalhousie University.

Professor Scott MacGregor and Professor Josh Leon from Dalhousie University signing the MOU

This three-year research collaboration will focus on the development of robust engineering solutions to reduce the capital and operational costs of tidal energy technology. The research will investigate new, novel engineering solutions to passively regulate and control power capture and take off from tidal rotors. While the research being undertaken is complimentary, each partner has their own exclusive research activity to address. Dalhousie University will lead the development of bend-twist compensated composite blades which change shape as the tidal flow velocity increases. This change of shape reduces the efficiency inducing passive self regulation of the power capture. The research challenge is to develop the optimum material selection and lay up within the construction in order to match the rate of change of the blade profile and morphology to the desired performance envelope of the rotor.

The University of Strathclyde will lead the development of blade feather regulated rotor control. The research focuses on investigating and the development of optimum blade geometry and profile to regulate and reduce rotor efficiency in line with increased rotor speed. The geometry and profile of the rotor blades needs to be matched to the envelope of flow velocities experienced at tidal sites. Researchers from both institutions will work together to undertake the research and an extended bilateral exchange programme is being undertaken where researchers initially based at Strathclyde then Dalhousie University will produce prototype rotor blades against the new design specification and test them in controlled laboratory testing facilities to verify performance.

The research is being supported by: UK Science and Innovation; the Offshore Energy Research Association, Nova Scotia; Scottish Development International; RC UK Supergen Marine; and the Faculties of Engineering at the University of Strathclyde and Dalhousie University. Industry support is coming from tidal blade manufacturer Airborne Composites, Netherlands; and University of Strathclyde spin out company and Tidal Energy Developer, Nautricity Limited.

Strathclyde Researchers Work with Scotland's Fastest-Growing SME

Researchers in the Department of Electronic & Electrical Engineering are working with Scotland's fastest growing private firm, energy company Gaia-Wind, to develop new wind turbine systems that will enhance the technology's efficiency.

The University's Centre for Advanced Condition Monitoring (CACM) is working with engineers at Gaia to develop technology to maximise performance and availability for the current and future product range.

Gaia-Wind, a world-leading producer and exporter of Scottish manufactured farm scale wind turbines, was first in the Sunday Times' Fast Track 100 rankings for 2012, with sales reaching £6.7 million by 2011 - a growth of 168% a year over three years.

Strathclyde Principal, Professor Sir Jim McDonald, paid a recent visit to the Glasgow headquarters of Gaia-Wind. He said: "Our research partnership with Gaia-Wind is developing next generation tools and solutions to enhance Scotland's reputation as a world leader in renewable energy.

"The University of Strathclyde has a proud tradition of applied research and is an acknowledged leading international technological university. Our founding principles are demonstrated in strong collaboration with strategic industrial partners to ensure that our world-class research makes a significant impact on the challenges facing the renewable energy sector through technological innovation."

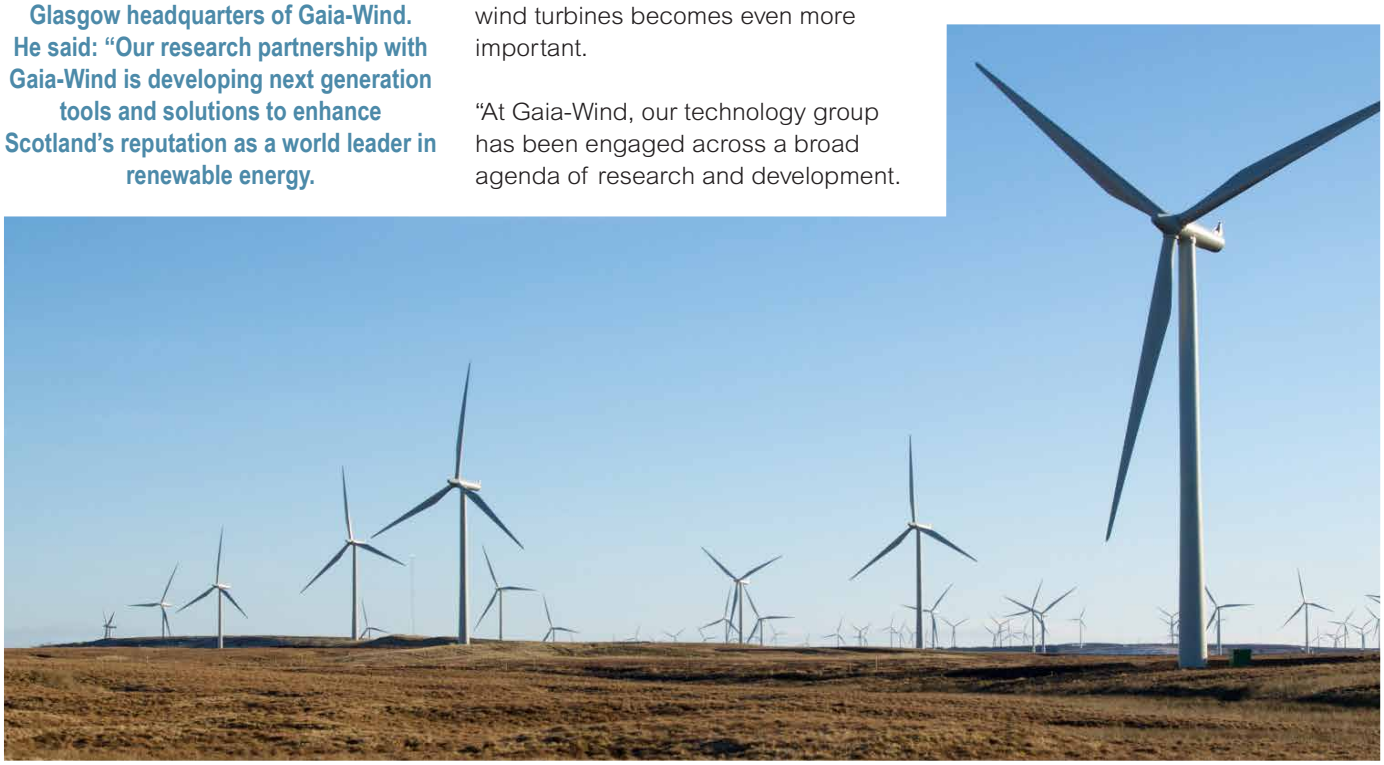
Dr Francis Quail, Director of CACM said: "The novel research is focused on technologies that will assist Gaia-Wind in its ambitious growth plans and is now underway, as engineers at the University work together with the industrial partner in several research projects."

Johnnie Andringa, Chief Executive at Gaia-Wind said: "As energy prices continue to rise, development of the efficiency and reliability of our small wind turbines becomes even more important.

"At Gaia-Wind, our technology group has been engaged across a broad agenda of research and development. We are delighted to be part of this exciting partnership which allows us to work together with a leading academic research team to develop these novel systems."

CACM's test resources will become part of the University's new £89 million Technology and Innovation Centre – a world-leading research centre bringing together academics and industrialists in the heart of Glasgow.

CACM is also part of the Scottish Energy Laboratory, which was launched to strengthen collaboration across Scotland's key test and demonstration facilities. The network of facilities has a combined investment value of £250 million across all key energy sectors and will be a hub for national and international companies to identify and access the most appropriate of Scotland's test and demonstration facilities for their technologies.



Researchers discover world's most extreme hearing animal

Researchers at the University of Strathclyde have discovered that the greater wax moth is capable of sensing sound frequencies of up to 300kHz – the highest recorded frequency sensitivity of any animal in the natural world.

Humans are only capable of hearing sounds of 20kHz maximum, dropping to around 12-15kHz as we age, and even dolphins, known exponents of ultrasound, can't compete as their limitations are around 160kHz.

The research, conducted in the Department of Electronic & Electrical Engineering's Centre for Ultrasonic Engineering, has identified the extraordinary sensory characteristics of the moth, paving the way for developments in air-couple ultrasound.

Dr James Windmill, who has led the research at Strathclyde, said: "We are extremely surprised to find that the moth is capable of hearing sound frequencies at this level and we hope to use the findings to better understand air-coupled ultrasound."

"The use of ultrasound in air is extremely difficult as such high frequency signals are quickly weakened in air. Other animals such as bats are known to use ultrasound to communicate and now it is clear that moths are capable of even more advanced use of sound.

"It's not entirely clear how the moths have developed to be able to hear at such a high frequency, but it is possible that they have had to improve the communication between each other to avoid capture from their natural predator – the bat – which use similar sounds."

The research findings will allow Dr Windmill and his colleagues to further develop their understanding of ultrasound and how to transmit and receive ultrasonic pulses travelling in air.

With frequency sensitivity that is unparalleled in the animal kingdom, this moth is ready for any echolocation call adaptations made by the bat in the on-going bat–moth evolutionary war.

Dr Windmill's multi-disciplinary research team is now working to apply the biological study of this, and other insect ears to the design of micro-scale acoustic systems. It is hoped that by studying the unprecedented capabilities of the moth's ear, the team can produce new technological innovations, such as miniature microphones.

Year-Long Research Sabbatical in the USA Builds Collaborative Links

Dr Tom Scanlon from the Department of Mechanical & Aerospace Engineering has just returned from a year-long research sabbatical in the USA on the EPSRC Grant: International Collaboration Sabbatical - Beyond Navier-Stokes: Computational Gas Dynamics for Rarefied Flow Technologies. The aim of the sabbatical was to build-up collaborative links and carry out fundamental research with the University of Michigan (UoM) in the area of high-speed aerodynamics and the Lawrence Berkeley Laboratory (LBL), California in the area of low-speed rarefied gas flows.

State-of-the-art algorithms conceived at Strathclyde were developed at UoM to include for the effects of air chemistry in hypersonic re-entry applications with input from ex-NASA researcher Professor Iain Boyd and his group. Code development at LBL considered density fluctuations in rarefied gases as a mechanism for the resolution of gas transport properties such as thermal conductivity with input from Professor Alejandro Garcia. The newly developed code, called dsmcFoam, will be disseminated to the wider academic community as an open-source resource, coupled with a Continued Professional Development (CPD) programme to take place at Strathclyde.

The work will be of direct benefit to researchers in the James Weir Fluids Laboratory and the Centre for Future Air-Space Transport Technology, both at Strathclyde. Four PhD students from the Department of Mechanical & Aerospace Engineering also spent a one-month period in the USA as part of the grant award. This gave them exposure to the research environment in two world-leading research institutes in the students' own areas of research and will impact on their PhD studies. Dr Scanlon also gave an invited talk to the Department of Physics at San Jose State University on the subject of current hypersonic flow research at Strathclyde.

Dr Scanlon comments; "It was a fantastic opportunity for myself and the four PhD students and a real intellectual adventure to work with two of the world's leading academics in the area of high-speed aerodynamics and rarefied gas fundamentals. This will help develop collaborative research between Berkeley, Michigan and Strathclyde. The weather was also much better!"

Links have now been firmly established with UC Berkeley and the University of Michigan while collaborative research is on-going. Staff exchanges have already take place, with Dr Erin Farbar from the University of Michigan visiting the Department of Mechanical & Aerospace Engineering in March of this year.

Faculty Success

Several Departments Score Highly In League Table Rankings

A number of the Departments in the Faculty have performed extremely well in recent worldwide and nationwide rankings.

Quacquarelli Symonds (QS) recently published their World University Rankings (WUR) by Subject. The WUR by Subject is a 'spin-off' from the main QS WUR published in September 2012, in which Strathclyde was positioned 254th overall. QS evaluated almost 3,000 institutions and ranked 678 institutions in total.

Strathclyde has 11 subjects featuring in the world's top 200, including four from the Faculty. Electronic & Electrical Engineering (EEE) did particularly well, and are ranked in the top 100 Electronic & Electrical Engineering Departments in the world. Mechanical & Aerospace Engineering are ranked in the top 150, and Chemical & Process Engineering and Civil & Environmental Engineering also featured in the world's top 200.

The QS World University Rankings by Subject are designed to help students identify the best universities in the world in their discipline. Launched in 2011, and now in its third year, the rankings series reveals the top 200 universities in the world for 30 individual subjects.

Professor Stephen McArthur, Head of the Department of EEE said: "This is a great achievement and recognises our consistent hard work and delivery of tangible outputs across all of our activities. It is very pleasing to see this being reflected in an international ranking."

Further to this success, two departments have also scored highly in The Independent Complete University Guide rankings. Strathclyde was ranked number one in the UK for Medical Technology, which includes the following subjects within the Department of Biomedical Engineering: Biomedical Engineering; Prosthetics & Orthotics and Rehabilitation Studies. The Department of Mechanical & Aerospace Engineering was also ranked number nine in the UK, and number one in Scotland. Three further subjects, Architecture, Chemical Engineering and EEE, were ranked in the top 20 in the UK.

Following on from this, the Guardian have released their own league tables for the year. For the listed Engineering subjects; Architecture, Chemical Engineering, Civil Engineering, Mechanical Engineering and Electronic & Electrical Engineering; Strathclyde rated higher this year, and had also climbed the tables last year as well. This includes a jump for the Department of Architecture up eight places, to now sit at number 16 in the UK and number 2 in Scotland.

Faculty of Engineering joins Scottish Engineering

The Faculty of Engineering has become a full member of the leading trade and industry body, Scottish Engineering. The organisation, which has been in existence in one form or another since 1865, is the major support and lobbying voice for the manufacturing engineering industry in Scotland.

Scottish Engineering is a successful, highly visible, non-profit making organisation owned by its member companies. It has a membership of around 400 and covers all sectors of the manufacturing industry. Its members include some of the country's largest employers such as ScottishPower, Babcock Marine, Wood Group and National Semiconductor along with many successful and innovative smaller companies.

Until recently, the membership of Scottish Engineering was comprised solely of company members. However, after recent discussions with the Scottish Engineering Chief Executive, Bryan Buchan, it was clear there was a significant opportunity for Scottish Engineering to engage with the Faculty of Engineering to exploit its research and knowledge exchange base, and this would be best achieved by the Faculty becoming a full member. As a result, the Faculty of Engineering now sits alongside the core of Scotland's industrial companies and will work towards strengthening existing relationships and building new links to grow and develop the national engineering economy.

Professor David Nash, Vice Dean (Knowledge Exchange) commented; "Being a full member of Scottish Engineering builds and reinforces strong links with the Faculty and the membership will accelerate joint knowledge exchange activities thus allowing wider collaboration for CPD training, Knowledge Transfer Partnerships (KTPs) and other university based industrial services."

Successful Alumnus

Theresa Yamson studied the MSc in Process Technology and Management, via distance learning, at the University of Strathclyde. The part-time modular programme for industry-based students focuses on Process Technology, Management/Business and IT and is accredited by the Institute of Chemical Engineers (IChemE).

Theresa completed the programme, which is run by the Department of Chemical & Process Engineering, after three years of studying and graduated in November 2012. Previous to this she studied her undergraduate degree at Queen's University in Canada, graduating in May 1995, and she also studied a PgDip in Management with the Henley College via distance learning.

Her career began working for Unilever Ghana in 1995 as a Product Development Specialist, a company she would stay with for many years, working in a number of different locations and in a number of different roles, including as Food Developments Manager, and Regional Process Development Manager. In 2010, shortly after commencing her study with Strathclyde, Theresa moved to Nestlé Central West Africa Ltd, to handle innovation and renovation for Culinary in Marketing. Theresa shares her experiences of studying a distance learning programme, whilst still working full-time and making time for her family, with *Engineering Insight;*

What made you decide to study by Distance Learning?
I previously studied via distance learning and enjoyed the challenge it offered and wanted to develop myself personally. I realised that it was important to remain in the business world if I did not want to slow down my career progression, so a distance learning programme seemed the best option to balance career and home as well as my quest for knowledge.

What made you choose to study at Strathclyde?
Strathclyde offered a unique degree of Engineering and Management, which suited my desire for improving my technical expertise with the combination of managerial courses needed for a more business oriented person such as myself.

Did the Distance Learning course fit with your needs?
Yes, it provided the flexibility of combining a full-time career with further education. I have three young children, and a busy work schedule. I could work from home once my children were tucked into bed, or during trips and generally manage my time around the course work.

Did you find the materials provided helpful?
Extremely helpful. For each semester I would receive my set of books as well as access to internet sites for studying. I could follow at my own pace and used many a free moment waiting in an airport or hotel to study. Assignment schedules were always included and that was for me very important so that I could ensure I stayed on track.

Were the staff at Strathclyde helpful?
Yes they were. Our Distance Learning Administrator would always send us all the information ahead of the semester, which allowed me to plan my work, holiday and business trips around assignments and interactive sessions. I used email to contact my professors whenever I needed them, and they always responded promptly.

How much time did the programme take up?
Initially we had between 2-3 modules each and I found this meant at least 20 hours a week of study. I had to be quite hard on myself sometimes, and say no to social activities and even time with my family, just to study. Writing examinations was also something I had to organise myself, and coordinate the times with my line manager, the Distance Learning Administrator and the British Council here in Ghana.

Were your employers supportive of you studying the programme?
My line manager was very supportive. He clearly appreciated it when I used one of our more difficult projects for my dissertation and was able to help our Engineering team find some novel solutions for the work involved.

Give some details of how your career has changed since completing the programme?
Since completing the programme I have now moved into a Business role managing the MAGGI brand for a cluster of countries. This is new territory for me, but I'm enjoying the challenge it brings. I'm now trying to apply my analytical skills within a marketing functional role as well as learn more of the key drivers to consumer engagement and ensuring market leadership in developing markets.

What advice would you give to those who are considering studying by Distance Learning in the Department of Chemical & Process Engineering at Strathclyde?
Process Engineering is an excellent domain for broadening your evaluation and analytical capabilities. Studying by distance learning is not easy, especially if you have other priorities of career and home to consider. You have to be prepared to study at all times and sometimes this can hinder your understanding and full appreciation of a topic, especially when you are fatigued or stressed. But you must remain really focused and proactively contact colleagues and the staff to provide you with the support you need. Be aware that your family and social life will suffer at key times, so do find time to return the favour of giving you that space to do this. Above all do it for yourself and your self-worth as I believe this helps to build your character also. The career opportunities will follow and may take unexpected turns, especially if you intend to move into top management.

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