

Innovations

This issue: 1 UK Innovation Forum - matching spin out companies with their perfect business partner 3 Sea2Sky on mission to solve global energy crisis at Daresbury 5 Particle physics used to mitigate natural disasters 6 RSE/STFC Enterprise Fellowships 7 Identifying new Environmental Services: Opportunities for ESA Funded Projects 8 Advances in Detector Technologies - Challenge Workshop

UK Innovation Forum - matching spin out companies with their perfect business partner

When it comes to successful spin out companies and exploitation of new, cutting edge technologies, finding and being matched with the right business individuals who can exploit these opportunities to their full potential is key. The UK Innovation Forum (UKIF) is new way for research institutions and the business community to join up and maximise the combined potential of their technologies and business acumen.

Supported by the Science and Technology Facilities Council (STFC), UKIF is a unique organisation designed to help British universities, institutions, research councils and government funded laboratories find the right management they need to help them commercialise their new technologies and turn their innovations into spin out businesses. Likewise, UKIF will provide business people, who wish to create spin outs, access to this innovative technology.

Created by Ian Tracey, of STFC's Innovations team, and Gerald Law, responsible for several successful spin out companies, the UK Innovation Forum can already count two other research councils, NERC and EPSRC, 10 of the UK's leading universities, and a number of knowledge transfer networks, science parks and funding bodies as committed members.



Ian Tracey explains: "The UK Innovation forum has been created to meet the needs of both the business community who want to be involved with spin outs, and the technology transfer offices who are always struggling to find the right business people needed to validate their new technologies and exploit their new companies. Until UKIF we had all operated on a very local basis and will have missed out on many individuals and conversations that could have identified new areas where technologies could be useful." [more](#)

Innovations
Club

UK Innovation Forum - matching spin out companies with their perfect business partner

Gerald Law commented: *" From the point of the potential executive, UKIF is a major breakthrough. Instead of the two or three opportunities a year to come out of a local university, by bringing the new ideas together in one place for the first time, executives will have the ability to hear about new technologies and ventures created all over the country, then put themselves forward for roles in those companies and even propose a different venture to the one the research institute had thought of originally."*

UKIF will also feature panels of experts for different sectors who will provide guidance on the commercial potential of new technologies. Technology transfer offices will be able to turn to these panels when looking for guidance on the commercial potential of a new technology. *" Through these knowledge transfer networks we hope to find exactly the sort of expertise that the technology transfer offices need."* added Ian.

For further information go to the UK Innovation Forum website.



Sea2Sky on mission to solve global energy crisis at Daresbury

The quest to develop a 'green' alternative to coal to reduce the world's dependence on fossil fuels is now hotting up. Liverpool-based green energy company, Sea2Sky Energy UK Ltd has brought its R&D operations to the Science and Technology Facilities Council's (STFC) Innovations Technology Access Centre (I-TAC) at Daresbury, to develop the technology in a co-operative effort with STFC to produce a low-carbon alternative to coal that could fuel existing coal-fired power stations.

It is a well known fact that coal-fired power stations and fossil fuels in general contribute significantly to global warming and a long term solution is high on the world's agenda.

Using the £3m high tech equipment available at I-TAC, that would normally only be available to academics and large budget companies, start up company Sea2Sky Energy UK is refining an existing technology known as torrefaction. This technology can be used to convert organic waste, such as roots, branches, leaves, in fact any biomass that would decompose and release greenhouse gases in the process after a tree has been cut down, to produce a biocoal that could either completely replace the coal used in existing power stations or at least be used alongside coal to reduce the amount of fossil fuels used. Either way, the existing coal-fired power station infrastructure would still be utilised, but in a much cleaner way.

Torrefaction is a highly complex process which involves the thermochemical treatment of biomass at 200 to 300 °C, carried out under atmospheric conditions and in the absence of oxygen. During the process the biomass partly decomposes, giving off various types of gas. The final product is a remaining solid, known as the torrefied biomass.

“Sea2Sky recognises the world's need for alternative fuels and more 'carbon neutral' heat and power sources. Daresbury Laboratory's I-TAC has given us access to an unrivalled range of equipment and specialists that would not have otherwise been available to us.”

Richard Walton
Managing Director, Sea2Sky Energy UK Ltd

As a technology, torrefaction, though not widely understood has been proven on a small scale by several Scientists, however any previous attempts to design a commercially viable device that would turn waste wood into biocoal using this process have so far been unsuccessful. However, combining the analytical capabilities provided by I-TAC and the on-site expertise from Daresbury Laboratory's leading scientists, Sea2Sky is able to analyse, tweak and perfect the process stage by stage, overcoming all the problems and hurdles that have presented themselves in the past. Furthermore Sea2Sky is able to recycle and reuse the gasses emitted during the torrefaction process to fuel the device, which is being designed and built by Daresbury's Laboratory's Technology division. Daresbury's computational scientists are also considering that it might be possible to model the fluid dynamics process of torrefaction on supercomputers. This would mean performing high resolution simulation to an accuracy and magnitude that has not been done before for this kind of technology, giving Sea2Sky a unique and valuable insight to the process. [more](#)

Sea2Sky on mission to solve global energy crisis at Daresbury

Richard Walton, Managing Director at Sea2Sky said “ *Sea2Sky recognises the world’s need for alternative fuels and more ‘carbon neutral’ heat and power sources. It is our mission to identify and develop the best technology to address this issue. Using managed forests the world has a sustainable and environmentally responsible supply of biomass for the technology we are developing, and any waste from the process can even be recycled to fertilise these forests. Daresbury Laboratory’s I-TAC has given us access to an unrivalled range of equipment and specialists that would not have otherwise been available to us.*”

Managed by STFC, one of the world’s largest multi disciplinary scientific organisations, I-TAC provides start up businesses and researchers from across the UK, with affordable and flexible access to cutting edge scientific equipment, backed up with scientific support from STFC’s own scientists. Participating companies also benefit from the wider business support services and collaborative R&D, networking and innovative opportunities offered by Daresbury Science and Innovation Campus. Businesses can make full use of the wide range of facilities available at the Centre including leasing their own exclusive-use, ‘lock and leave’ laboratories. Companies not located at the Centre are also able to access a number of multi-user laboratories that are available on an hourly basis.

Paul Vernon, Founder of I-TAC said: “ *I-TAC provides the perfect environment to perform high tech and development work such as that being carried out by Sea2Sky. The combination of services and facilities provided by I-TAC, STFC at Daresbury Laboratory and by the wider campus in general can enable businesses to discover, develop and prove their own technology and achieve that competitive edge necessary to succeed in tomorrow’s global economy. We wish Sea2Sky all the very best in their quest to provide a viable alternative energy solution for the power generation industry in its drive to stop global warming.*”



Particle physics used to mitigate natural disasters

Behind some of the smoothest systems that resolve some of the most complex problems lies a whole world of physics. Tapping into that world are a group of scientists whose work goes largely unseen yet has enormous potential for improving life on an international scale.

Talk of the Large Hadron Collider (LHC), the world's single biggest scientific instrument, has mostly focused on the search for the mysterious Higgs Boson, the as yet undetected particle that scientists hope will reveal the secrets of the physical make-up of the universe.

The wealth of physics the data hold is also being analysed by researchers from across the globe, from Argentina to Uzbekistan, using an international 'Grid' of computers. Just like the National Grid, that provides us all with electricity, behind the Worldwide LHC Computing Grid (LCG) sits a complex web of infrastructure, connecting together computer centres, and allowing petabytes worth of data to be stored and processed transparently. Physicists at the University of Bristol have nick-named the system they developed as part of the LCG, PHedEx, a play on the name of the express courier service, denoting how the system allows data to be moved around the world at high speed, reliably in a completely transparent way.

Now particle physicists from Bristol have secured funding to take that technology and apply it to problems faced in the developing world. The ultimate aim is to create a web portal that would allow engineers working in the developing world to have access to complicated landslide risk calculations at the click of a button to provide vital input to infrastructure work.

The project also involves a team from the University's School of Geographical Sciences, who have already made huge international progress in the modelling of landslides. A proof of principle portal has already proved



beneficial and is helping to ensure that roads in the Caribbean are built with a view to militating against potential hazards. The next stage is to allow more sophisticated calculations, based on analysis of the probabilities and risks presented by, for instance, rainfall and soil composition, to be performed and visualised.

Professor Nick Brook from Bristol university's Particle Physics Group (PPG) compared the portal to the world wide web – just as that was developed to allow collaborations between physicists from across the world, the new portal could act as a global communications tool for industry and the developing world: *"When people think of the LHC they think of an esoteric search for a particle [the Higgs Boson] that has never been seen before. We've taken these technologies that have been developed to explore the unknown and tried to give them a real life, every day application."*

Once the project is established it could be expanded to other areas in Geographical Sciences and could have significant commercial potential. A prime example relates to the large and increasing economic significance of flooding in the UK. The modelling of floodplain inundation as a risk assessment tool for the Environment Agency, insurance companies or other planning agencies would be an ideal direction for further development. In this sense, the IPS project proposed here is a pathfinder for the exploitation of STFC Grid technology across a wide range of economically relevant areas in the UK and beyond.

The work is supported by a grant from the Science and Technology Facilities Council (STFC), and the technology will ultimately be marketed by the university's spin out company, Bristol Innovation Software Sales Ltd.

Please contact Aliya Mughal for further information.

RSE/STFC Enterprise Fellowships

Following the 2010 call for applications for the Royal Society of Edinburgh and STFC Enterprise Fellowships, STFC is pleased to announce successful applications from:

Dr Alexandre Pechev, University of Surrey

Joanna Davies, RAL, STFC

Please see <http://www.scitech.ac.uk/funding+and+grants+grants/1124.aspx> for more information on the scheme



Identifying new Environmental Services:

Opportunities for ESA Funded

Projects - Tuesday 19th October 2010 10.00-16.00

Victory Services Club - Marble Arch, London

Although climate change is without doubt the greatest global challenge to the environment, there are many other challenges that will require high levels of innovation to protect and improve the quality of our air, land and sea environment.

The UK has set aggressive goals in the reduction of greenhouse gases – 80% reduction by 2050. There are many sectors that will play an important role in meeting these targets and managing these and other UK environmental challenges. This event will specifically focus on the use of space-based services for the following:

- **Carbon Footprint Monitoring for Carbon Trading and Asset Evaluation**
- **Optimisation of Wind Farms and other Renewable Energy sources**
- **Maritime, Estuarine and Riverine Pollution Monitoring and Control**

The Technology Strategy Board (TSB) is collaborating with the European Space Agency (ESA) who have initiated a new programme, called Integrated Applications, to fund novel uses of Space-based services from Earth Observation, Communications and Navigation in a variety of industries including Transport, Energy, Healthcare and the Environment. ESA are looking to use this event as a forum to help shape future open competitive tenders in each of the three areas noted above, as well as to stimulate proposals from consortia of industry and academia on associated topics. Attendees will therefore have the chance to influence the definition of future ESA calls in these areas and to start forming consortia to respond to them.

This event therefore brings together leaders from industry, government agencies and academic organisations as well as Space service providers to explore potential opportunities for new services and applications in the Environmental sector.

Benefits of Attending:

- **Help frame future ESA funded projects addressing environmental challenges in the UK**
- **Understand key relevant capabilities of space based services**
- **Find potential partners for future TSB/ESA funding calls**
- **Network with industry leaders and Space service providers**
- **Learn about the ESA Integrated Applications funding scheme**

This event will take place on Tuesday 19th October 2010, at the Victory Services Club, 63 Seymour Street, London W2 2HR. For more details about the venue, view the location map.

You can register for FREE by following the link below.

<http://www.qi3.co.uk/archives/3547>

For further information, please contact:

Dr. Amir R. Mirza or Jane Leeks

Tel: +44 (0)1223 422416

Email: amir.mirza@qi3.co.uk/jane.leeks@qi3.co.uk

Technology Strategy Board
Driving Innovation



Advances in Detector Technologies - Challenge Workshop

Centre for Earth Observation Instrumentation (CEOI) 2010

The next CEOI Challenge Workshop will be held on

Monday 1st November 2010 at Stratford-upon-Avon.

The purpose of the workshop is to identify advances in detector technologies that have the potential to open up new opportunities in Earth Observation and meet the instrumentation challenges identified in the previous science-based workshops.

Further details and an agenda will be issued soon, but in the meantime further information can be found on the CEOI website by following the link.

To register your interest, please contact:
Dr Chris Mutlow
Tel: 01235 446525
Email christopher.mutlow@stfc.ac.uk

