

Energy expert

urges sectors to **work together**



Inside **Page 1&2** Collaboration: "a priority", Secondary schools prepare for Big Green Challenge **Page 3** The Pentland Firth: the story so far **Page 4** My Life – Sian McGrath **Page 5** Top talent for region's marine energy, Thurso to host national grid event.

Collaboration: "a priority"

Collaboration between the oil and gas and renewables sectors must be made a priority if the UK is to maintain its lead in wave and tidal energy, the head of Britain's biggest subsea trade body told Scottish Renewables' annual marine energy conference in Aberdeen earlier this month.

Alistair Birnie, chief executive of Subsea UK, told more than 150 experts from both the oil and gas and renewables sectors

that a joint approach is needed if the country is to avoid "missing the boat in marine energy".

"The UK has a limited window of opportunity to take the lead in marine renewables and if we don't act now we will literally miss the boat," Mr Birnie said.

"The subsea oil and gas sector already leads the way around the world with a wealth of experience, expertise and technology.

"These valuable resources need to be transferred to the renewables market. Effective collaboration between the subsea oil and gas sector and the renewable energy industry in the UK to deliver a collective approach to marine renewables must be a priority.

continued...

Collaboration: "a priority"

"We have the skills and the technology to be a world-leading force in marine renewables. However, with the global demand for subsea oil and gas, we have less of an imperative than other non-hydrocarbon producing countries. Hydrocarbons are finite and already the subsea oil and gas market is maturing.

"If this country is serious about achieving a more sustainable balance of energy and if we want to see consumer energy prices driven down then we must be serious about our approach to marine renewables. The time for debating is over, now is the time to act for the sustainable future of the subsea industry and the UK's energy supply."

Scottish Renewables estimates that in 20 years the marine energy industry in Scotland could employ tens of thousands of people, providing enough power for more than 500,000 homes.

Jason Ormiston, chief executive of Scottish Renewables, said: "Over the course of the past 30 years the oil and gas sector in Scotland has developed skills which would be of great benefit to the development of marine energy.

"The sector works in similar environments off Shetland, Orkney and the wider North Sea where it has been identified that major wave and tidal energy projects could be sited and it understands the challenges that lie ahead.

"Through these sectors working hand in hand the UK, and in particular Scotland, will be able to maintain its lead in marine renewables as well as playing a significant role in combating the effects of climate change."

Heriot Watt's campus in Orkney, the International Centre for Island Technology (ICIT) has developed a programme called Marine Renewable Energy Development in Scotland (MREDS).

This research programme aims to overcome the technical, social and environmental challenges which could hinder the development of marine renewables through closer collaboration between the oil and gas and marine sectors.

The MREDS programme has already attracted substantial public sector support, with HIE Orkney and Orkney Islands Council each providing £240,000 for the initiative.

For more information on MREDS, please contact Jon Side on 01856 850605.

Secondary school pupils prepare for next stage of the **Big Green Challenge**

Debating teams from across the Highlands and Islands are preparing for the semi final of the Big Green Challenge, which takes place on Friday 28th November at Eden Court.

The eight teams of S1-S3 pupils have successfully won earlier local heats with schools from areas across the region from Arran to Lerwick and Portree to Keith competing. In total, 129 pupils from 25 schools, fielding 43 teams, took part and worked alongside local mentors to research both sides of the renewables debate.

The four top-scoring teams from the semi final will go on to the grand final in January, where they will be competing for the chance to win a group trip to Iceland to visit the country's famous Blue Lagoon waterfall and the geothermal area of Geysir.

The Big Green Challenge is part of a wider public relations programme run by Highlands and Islands Enterprise (HIE) to raise awareness and understanding of renewable energy.

Primary school teachers have also been involved in training workshops on renewable energy, during which they receive a specially designed toolkit packed with factsheets, games, activities and gadgets. Around 200 schools across the region are involved in the programme, which is closely linked to the Curriculum for Excellence and is designed to assist teachers in delivering lessons relating to renewables to primary 6 and 7 pupils.

Anna Allan, senior development manager at Highlands and Islands Enterprise says, "Renewable energy is one of a number of priority sectors which has been identified as key to the growth of the Highlands and Islands economy.



Pupils from Keith Grammar School, l-r, Caitlin Gould, Amy Adamson, Lucy Simmers

To effectively build this sector HIE aims to raise awareness and understanding of the important role that renewable energy and energy efficiency will play in the development of the region."

For further information on the Big Green Challenge log onto www.thebiggreenchallenge.co.uk

The Pentland Firth:

the story so far

The tremendous tides of the Pentland Firth have been attracting considerable media attention in recent months. Several multi-national companies have shown an interest in the vast potential of the stretch of water between Caithness and Orkney.

The Pentland Firth has been described as the Saudi Arabia of marine renewables, and there has been news of global financial services giant Morgan Stanley's interest in the region where it intends to harness the power of the Pentland Firth tides to power a green energy data centre.

In recognition of the opportunity afforded by the resource in the area, HIE in conjunction with partners at the Crown Estate, the Nuclear Decommissioning Authority (NDA), Highland Council and the Scottish Government has set up the Pentland Firth Tidal Energy Project (PFTEP).

In September, The Crown Estate announced its application process for commercial sea bed lease options for marine energy devices in the Pentland Firth, Orkney and along the North Sutherland coast. The deadline for expressions of interest from companies to be registered is expected next month.

This announcement has put the area firmly on the map, and has made it the focus of attention in the marine renewables sector. The Highlands and Islands of Scotland is already playing a leading role in the development of the sector, with the European Marine Energy Centre in Orkney and several prototype devices being designed and built in the region.

There is no doubting the massive potential of the Pentland Firth - it contains six of the top ten tidal energy sites in UK waters and is one of the best tidal resources anywhere in the world.

But the Pentland Firth is also a complex stretch of water and a lot more information is needed before anyone can say with any certainty what the energy potential might be.



Louise Smith overlooking the Pentland Firth with Hoy in the background.

The next few months are important ones for the Pentland Firth Tidal Energy Project as Louise Smith, project manager, explains: "We've commissioned two studies, one on the grid which Xero Energy is undertaking, and the other carrying out data collection by Aquatera.

"These are critical pieces of work as they will inform future decisions on the project.

"Marine energy could be the most important new industry in Scotland and it could be a key contributor to the country's economy. The development of the marine energy sector in the Highlands and Islands presents us with a huge opportunity, and one we must seize now, so as not to lose the momentum we are already building.

"The Pentland Firth Tidal Energy Project has a key role to play which is why the two recently commissioned studies are so important to us. We are keen to ensure that the project reflects the Scottish Government's strategic objectives by looking at how schemes will fit with the environment and the activities of other sea users.

Dr David Woolf, Principal Investigator at the Environmental Research Institute in Thurso takes a similar view: "We don't know enough about the consequences of large scale energy extraction and there are no proven engineering solutions for the deepest (60-100m) water and strongest currents.

"However, we do need to get ready for large-scale developments through the analysis of the Pentland Firth as a whole and through encouraging smaller-scale developments which will be a learning experience for everyone involved."

Early indications on the Crown Estate leasing application suggest that there will be a number of developers signing up.

During this year there has been a series of inward missions to the area, the most recent taking place earlier this month, and altogether, about 40 companies have visited.

Three such companies, International Power, Tocardo and Morgan Stanley, have recently announced plans for activity in the region.

Dutch company Tocardo is the first tidal energy developer to move into Caithness and plans to establish a production facility at Wick. It will use the site for fabrication of a 10MW offshore tidal energy plant in the Pentland Firth.

Meanwhile, plans were announced last month by Singapore-based Atlantis Resources Corporation and investment bank Morgan Stanley for an international computer data centre which could be powered by an array of tidal turbines in the Pentland Firth. The development is expected to create 100 new jobs over the next three years.

International Power plc has also announced it has secured the grid connection needed for a 10MW tidal farm in the Firth. The company's marine developer James Minto has already moved to Thurso to take charge of stakeholder engagement and project management.

What is also clear is how both the Pentland Firth Tidal Energy Project and the Caithness and North Sutherland Regeneration Partnership have ignited a new wave of hope for this region of northern Scotland.

Fiona Macpherson, Inward Investment Executive for the Regeneration Partnership says: "I've been working away from Scotland in the United States for the past 20 years and I'm amazed at how much has changed.

"There is a huge 'can-do' attitude in the area and businesses here are so determined for things to work. In my view, this region really has something to teach the rest of the world."



Aquamarine's Oyster wave device, built by Isleburn at Nigg, and due to be installed at EMEC next year

My life

Hi-energy talks to **Dr Sian McGrath**, Head of Commercial Development at Aquamarine Power.

Q: What first got you interested in renewable energy?

I did my PhD on government regulation for natural resource management and one of the case studies was the Assynt crofters trust hydro scheme looking at community access. Back then it struck me that when it came to renewable energy, Scotland was sitting on an untapped but very valuable asset. So it's great to be working in a company whose goal is to add marine renewable energy to the mainstream electricity mix. When I'd completed my PhD I worked in Indonesia for three years leading a United Nations sponsored forestry network. When I came back I met Allan Thomson around the time he founded Aquamarine Power and I've been here ever since.

Q: What university did you study at and what was your PhD in?

I studied at Edinburgh for all my degrees. For my PhD, I studied the government framework for exploiting natural resources in Scotland looking at the balance of social, economic and environmental interests in decision-making.

Q: You're from the Western Isles originally - do you still visit?

I still have family living there, my granny, several great aunts, cousins, aunts and uncles. I try to go back once a year.

Q: What particular personal career highlights have there been since you joined Aquamarine Power in 2005?

Securing DTI funding of £1m for the Oyster wave energy device was quite exciting and acquiring the Neptune tidal device was great because it meant we became the only developer working on both wave and tidal devices in the UK. This has triggered quite rapid growth for the business and in the past year we've grown from four to 24 people, and we're still growing fast.

Q: Aquamarine Power is the only UK company testing and developing both wave and tidal power devices. Why did the business go for both?

We were approached by Scottish and Southern Energy (SSE) who owned the Neptune tidal device. It was looking for a partner to develop Neptune and transferred the business and assets of its tidal subsidiary to Aquamarine Power together with a sizeable investment to do so.

Q: Can you tell us more about the full scale tests on Aquamarine's Oyster device starting in 2009?

We are installing the pipeline at EMEC at the moment and will be installing the Oyster wave energy converter (WEC) in the first good weather opportunity we get next year. The high pressure pipe will connect that converter to the shore. The WEC is a simple mechanical device, much like a pump, that will feed high pressure water into a standard hydro electric converter onshore. This means the more complex parts of the system will be accessible 365 days of the year.

Q: Marine energy is a young industry sector. How do you see it developing over the next ten years?

I think there will be five or six successful prototype demonstrations and they will lead directly to farm demonstrations within the next five years.

Once you have those in place, things will move quite quickly following the same pattern as the wind industry.

The Forum for Renewable Energy Development in Scotland published a report stating that marine energy could produce 1.3GW by 2020. Aquamarine believes it could be more if we prove our technologies, get access to the grid and have the right government support in place.

Q: Alex Salmond has described his vision for an export-orientated renewable energy business in Scotland. What technologies do you believe we could successfully export and why?

There is a really rich marine energy IP portfolio in Scotland and if we can successfully hold on to that we will be exporting know-how, skills, services and technology around the world.

Q: There have been many headlines written about Scotland's wave and tidal capacity. If you had to write one what would it be?

It's more of a comment really. Scotland was famous for its North Sea oil in the 20th century; in the 21st century it will be famous for its Atlantic Ocean electricity.

Q: What's your favourite way to unwind?

I'm still trying to work that one out! I do like to escape on long, muddy, winter walks in the countryside.

Q: Best book of 2008?

'Two Caravans' by Marina Lewycka, the same author that wrote 'A Short History of Tractors in Ukrainian'. Two Caravans was hilarious and thought provoking.

Q: What's the best bit of business advice you've been given?

Each new crisis always seems like it's the worst... just keep going, you'll get through it.

Top talent for region's marine energy sector

A new programme to attract top talent to the marine energy industry in the Highlands and Islands gets underway in the new year.

Six PhD students are to be recruited as part of the SUPERGEN Marine Energy Consortium research programme in a move marking a further boost for the marine energy sector in the region.

Dr Axel Miller of SAMS says: "Post graduate students are the real power house for an academic institution.

"We'll be recruiting these students from across the UK and beyond which gives us access to the very best talent."

Highlands and Islands Enterprise (HIE) is putting £400,000 into the programme which will see SAMS and ERI working together in a formal partnership.

Dr Miller says: "There should be no underestimating the impact of the research work these students will be doing.

"Knowing what the environmental impact of putting [marine energy] devices into the water is crucial for this emerging industry.

"That's what these students will be researching and it reinforces the important link between academic research and the commercial sector."

Launched in October 2003, SUPERGEN Marine is now widely regarded as the UK's leading marine energy research programme.

Its aim is to understand better the implications of using marine energy - including potential environmental impact - to reduce investment risk and aid development.



SAMS diver at work.

Thurso to host national grid event

Energy bosses are due to visit Thurso next month (December) to outline plans for upgrading Scotland's ageing electricity grid network.

National Grid transmissions network manager Chris Bennett and a senior representative from Scottish and Southern Energy (SSE) will meet with business leaders in an event organised by North Scotland Industries Group (NSIG).

NSIG chief executive Ian Couper says: "Upgrading the grid system is a central issue if the renewables industry in the region is to grow.

"The worst scenario would be to have power ready to go but the grid not set up to take it."

National Grid and SSE will discuss timescales and plans for upgrading the grid before holding private meetings with businesses to hear about individual cases.

It is hoped there will be opportunity for local companies to meet with National Grid on a one-to-one basis to see how they can do business with them.

Delegates will also hear from EMEC managing director Neil Kermod.

The event is part of a series of networking meetings run by NSIG and takes place on Wednesday 3 December, 12 noon to 2.30pm at The Pentland Hotel. Tickets cost £20 for members and £30 for non members. Lunch is included.

For information and booking contact Ian Couper on 01349 854968, email: ian.couper@nsig.co.uk

www.hi-energy.org.uk

If you require further information, please contact the energy team at Highlands and Islands Enterprise
Tel: **01463 234171** Email: info@hi-energy.org.uk



HIGHLANDS AND ISLANDS OF SCOTLAND
HARNESSING NATURE'S POWER