Scientist hails Firth potential

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TIDAL energy in the Pentland Firth could be converted to supply Scotland's power needs twice over, according to a leading scientist.

Professor Stephen Salter, of Edinburgh University, claims tidal energy potential in the far north may have been significantly underestimated and has urged the new Scottish government and industry leaders to invest more resources in research.

The eminent scientist believes the Firth's most powerful currents, found in depths previously considered out of reach, could be converted to between 10 and 20 gigawatts of electricity – rendering endless supplies for the country's homes and businesses. Prof Salter, who produced an energy review for the SNP, warned that investment would be needed to explore and understand the Firth's varying currents and waves.

"If Scotland truly wants reliable marine current energy with generators which are strong enough... we must build a model test tank with complete control of both waves and currents," he says. "The size of the resource in the Pentland Firth may be larger than that predicted from studies which assumed only shallow-water turbines and ignored bottom friction losses. With turbines designed for deployment in 70 metres' depth, the resource could exceed present UK nuclear capacity."

Prof Salter has spent 10 years exploring the potential of tidal energy and has developed a cylindrical turbine which he believes could reach down to depths of 50m. His turbines could operate in conjunction with seabed-based turbines which could reach 20m upwards from the bottom.

Prof Salter explained that the positioning of the underwater turbines in the firth would be flexible but would be built progressively from the east.

"It would be best if the lines of turbines could be placed towards the easterly end of the channel so as to avoid the largest Atlantic waves. A line from Duncansby Head to Muckle Skerry looks a good place to start," he states.

If sufficient investment materialises the turbines could be installed in eight to 10 years' time. A seabed cable running underwater along the east coast to Peterhead could also be constructed, perhaps carrying direct current.

Ships passing through the Pentland Firth would have to take a longer route to avoid the turbines but Prof Salter points out that there are already plans to stop large oil tankers taking short-cuts past sensitive coastlines.

All shipping could also be directed north of Muckle Skerry and cross-Firth traffic would not be affected.

Prof Salter added he was worried but "not completely devastated" by the impacts the underwater machines could have on sea life. There would be considerable gaps between the turbines which could rotate at eight metres per second.

"To get it right, it needs local input. What we also need is for people to really understand what the issues are. It lasts forever, there will be a lot of jobs going on this, and it [Caithness] will be a cheap place for energy which could attract other industry," he said.

Recently, Highlands and Islands SNP MSP Rob Gibson highlighted the announcement of a new partnership between ScottishPower and Statoil to produce a commercially viable tidal energy device. It is hoped the Pentland Firth will be the base for a full-scale trial to be run within two years.

Speaking to the Caithness Courier yesterday, Mr Gibson said there were a number of competing schemes being put forward which would have to be considered.

"All these schemes have to be tried out," he said. "We have to embed these machines in the Firth to see which ones are going to work. The SNP government is committed to creating a Scottish energy strategy. If we had one then we wouldn't have this mad scramble."

Mr Gibson described the potential of tidal energy schemes as a "bonanza" for the Far North and stressed that, wherever possible, work to develop machinery should be done in Caithness and Orkney.

He emphasised that working in collaboration would be needed to "find the route to commercialisation".

"The government is committed to 80 per cent reductions in carbon emissions by 2050 – a tremendous target," he said.