The Lovegreen rotating ring wind energy transfer concept.

An overview.
In the strictest confidence for the attention of Mr. Tim Yeo, his secretary Sarah Buckley and all the members of the Joint party Parliamentary Committee reviewing Energy needs for the United Kingdom.

The purpose of this work is to bring about a totally different attitude towards capturing energy from the wind to make electricity. The objective is total wind capture and usage over a given geographical line.

The suggested method is to set up an air intake at each site to capture all the wind at the face of the intake which might for arguments sake be 800 metres wide and 125 metres high. The equivalent of a row of eight V90 Wind turbines. The air intake is a guide for the purpose of directing the whole wind onto the wingsails of a rotating engine.

The wind inside the air intake will be directed radially over a ring of aircraft like wings mounted on a rotating complete ring itself moving on railway like tracks in a circular manner. The diameter of the ring and the number of wingsails will be determined by how big the air intake can be built or chosen.

The reasoning behind this proposal is detailed under.

The first step was to take a view of engineering world wide and decide what might be done on a very large scale if some designs came forward. Lovegreen was well aware of the Forth Rail Bridge, the London Eye, The Falkirk Wheel, The Wembley Stadium roof, The Tyne pedestrian bridge, a host of Suspension Bridges and a bigger number of TV masts plus the Sidney Opera House and the Scottish Exhibition Centre with its Armadillo roof.

Lovegreen decided that a wind driven machine of about 600 metres diameter should be possible as an engineering venture and worthwhile from the point of view of making enough electricity in a very much smaller space than a current 125 unit wind generating station. For example: compressing a project of about 16 square kilometres into about one square kilometre and at the same time vastly increasing the number of potential sites. The aim would be to create electrical power in excess of 250 Mega Watts per machine.

To plan a wheel with a central axle and any form of connection between the rim and the centre was not likely to be the best way forward so he suggested and remains of the view that a circular railway with maybe two sets of rails is the most flexible way forward.

He looked again at the existing wind turbines and concluded that if they were to be developed the likely solution would be to set five, or seven or even nine sails onto a circular manifold that could be connected to a single axle as at present but there the development would stop. The whole machine design would be taking the wrong critical path. There would be far too much heavy gear

up in the air for good maintenance or even construction. There might well be axle forging problems followed by machining ones. That way was not good value engineering. What was needed was a way forward with the moving gear on the ground.

The answer came by folding the present style of wind turbine wings forwards to close them into a bunch, turn the lot through 90 degrees and to place the manifold on the ground.

The indication then was that the sails of the turbine could now be mounted on the rotating ring and the wind coming down from the air intake passed over the wingsails. The next step was to make the wingsails rectangular because they no longer need to be cantilevers and to mount them between top ceiling plates and bottom floor plates to confine the wind. Thus increasing the effective area of each wing while at the same time making a lighter weight structure

At this stage Lovegreen carried out a Patents Search at the London Patent Office and determined that so far as he could see there were no patents claiming prior knowledge of this concept so he decided not to publish any more information but to review his situation.

However, in this instance as in wartime, HM Government might commandeer a patent in the national interest. Lovegreen has therefore in conjunction with his daughter decided not to file for a Patent unless asked to do so by HMG.

It is important to recap about where these machines are intended to be set up. The first condition is at the coast where winds are more frequent. The winds may change direction but they are usually present. The next thought was to use disused coastal airfields because they are disused, away from the public and already flat. Next up for consideration are such places as Dounreay, Dungeness and the like.

At this stage in the work as a check on his thinking and using some anemometers Lovegreen measured the wind striking his house wall and was encouraged to find how fast it was moving radially off it. There was enough to consider for experimental purposes that an air intake at eaves height might very well drive a horizontal turbine powerfully because the air intake could reasonably be 9 metres wide and up to 2.5 metres tall giving a potential of 22.5 square metres of wind capture area as against less than 3 square metres presentation area of a normal 2 metre diameter airfoil propeller style turbine.

Thus a 2 metre diameter horizontal turbine could be placed at about waist height driving a normal 3KW generator. Such a machine would be cheap to make and would not need a tower to get it into the wind and should produce more than enough electricity for a typical household. The machine might usefully be the first commercial R&D project with £5000 as a likely selling price of a production model.

Three ways of collecting the converted energy came to mind for the bigger kind of machines. To put generators on the undercarriage axles was the obvious one. To have a toothed ring all round the machine to drive generators or oil pumps another, but then why not reverse Prof.Laithewaites methods and put coils with laminated iron cores under the train ring between the sleepers and carry magnets on the ring? It is worth some experiment because the ring has no beginning and no end. The faster you go the more electricity you could make with no extra moving parts or gear

wheels. The Japanese have taken the professor's ingenuity a long way to move trains. Lovegreen suggests we reverse the technique and move the train to make the electricity. The magnets will need to move upwards when not in use or the ring would be held fast.

On the subject of continuity of supply of electricity.

Lovegreen suggests putting a couple of powerful engines on the ring to rotate it when there is too little or no wind. In that way there will be no need to call on any other station for back up. It may be possible to so place some gas turbines to give both thrust and air to drive the machine normally. It makes sense to exhaust the engines inside the wing circle. The other key factor for these engines of whatever kind is that they shall run on a Hydrogen/Air mix with the hydrogen being made on site as is already done here in Scotland. A further step in a self sufficient system.

Consider the wings and give them an initial span of about 30 metres with parallel edges. There will be a need to keep the air between the wings so there will be a top lid in the form of an annular plate or plates with say two or three wings to a section and many sections forming the entire annular ring. . The wing spars joined to the moving annular ceiling and the floor will become very good structures. A three wing unit might be formed on one undercarriage of many.

The base ring to have a directing skirt to send the air between the wings. The used air will need space to expand into. On the windward side this space will be protected from the incoming wind by the lower edge of the air intake but on the other faces the lower edge must lift or open to let all the wind pass out.

The overall roof will be the air intake of inlets facing four ways with a spherical shutter to select the prevailing wind. Big and difficult this maybe but not impossible. Architecturally this part of the machine might eventually rate alongside the Sydney Opera house for innovative thinking. The materials for the construction could be a blend of metals with sail cloths with all the advantages of motor driven furling and reefing that latter would give. But sliding metal shutters are also a possibility.

Bearing mind that these machines are intended for erection at disused coastal airfields and similar out of the way places gone will be the needs for turbines on hill tops, in regional parks or out to sea but far more importantly the scope is opened to capturing far more wind than has so far been contemplated.

Finance.

Lovegreen has determined that money is available almost without limit for wind energy projects. He thinks the Stock Exchange might usefully float an initial Venture Capital Share Issue of a billion pounds at £1 a share. Of that at least £M100 might be set aside for R&D. With a capital repayment period of as little as four years from completion from the sales of electricity at not less £70 a Megawatt the shares should be a good buy.

Politics.

Both the UK Government and the Scottish Executive give the impression that they would fall over backwards to help any really worthwhile renewable energy project. The climate for this work is evidently right.

The Market is from a single house to a city.

The industrial prospect.

The wind energy conversion to electricity need is almost without limit. Given that it should be possible to capture the wind over a wide front of reasonable height and given the rest of the project is known methodology there is an enormous amount of engineering potential in a score of disciplines. Primarily these will be railway rails and selected moving gear, aircraft wing manufacture, Wembley Stadium kind of tube structures, heavy electrical engineering, ship building, architecture, civil engineering and possibly sail making.

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Postscript 29th May 2006. A spelling check has been made to the issue of 22nd. May. And this thought added. One is not limited to one between the rail lines electricity generator. There may be parallel rails with a second generator between the lines of the second track There could also be a third generator between the other two. It might follow that in a light wind but one capable of giving movement one generator is used. As the wind picks up a second generator is used and in a high wind a third is brought on line before any attempt to reduce the airflow is considered wise. To use Professor Laithewaites terminology the machine would be a linear generator in a closed circuit format.

Alan Lovegreen

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