

## **An outline for a totally enclosed wind driven power generation plant.**

The purpose of the project is to make obsolete the present day wind turbines mounted on towers by developing a different kind of turbine based on the ground, to reduce the area of operation to about one tenth of that employed by 2006 contemporary wind turbines mounted on high towers and to bring the wind to the turbine.

The next purpose is to confine the scale of the operation so that it becomes a power station in a more usual sense of size and volume with only normal roads and service facilities.

This specification is based firstly on the knowledge that the wind can be successfully and continually brought from a high level to a lower one by way of an air intake structure, secondly that air may be successfully conveyed under partial vacuum pressure from near to ground level into a low pressure zone behind the primary air intake. The partial vacuum being caused by the wind that passes the air intake causing a depression in its wake.

The intended conveyance paths will be structures of large dimensions and are in fact air intakes and air discharge manifolds that will form the roof and sides to the power station.

The station itself maybe about one kilometre square and 150 metres tall

Because the positive pressure on the windward side will be connected instantaneously to the negative pressure on the leeward side the turbine will be subjected to faster winds than current turbines would be in the same external wind and therefore should generate more thrust for a given blade surface area.

The design of the station is flexible at this stage but should aim to generate electricity over the period of an average year at minimum rate of 250 megawatts per hour. Each station should aim to replace not less than 200 conventional Vestas V90 or similar wind turbines.

The design shall be a standard design such that it can be replicated on any suitable site

Sites for first consideration shall be disused coastal airfields, then sites around the coasts that have no amenity value nor scientific interest at the present time, for example barren land alongside river estuaries and the like. Following these, attention should be given to remote places known to have high winds that are not of themselves attractive for their scenic value.

The choice of materials of construction is left to the tenderers.

As an example only, the following is offered as a basis of the kind of thinking anticipated.

The turbine might consist of a ring of connected vehicles forming one machine based on undercarriages like railway waggons running on twin railway tracks formed into a large circle for example 600 metres in diameter. This is the rotating ring concept.

Each vehicle may carry a base platform and a ceiling platform held apart by wingsails which are metal aerodynamic wings designed to make the best use of air flow at wind speeds normal to the United Kingdom. It is suggested that there shall be a minimum of three wingsails to each vehicle and for discussion purposes the base platform and the ceiling are to be 30 metres apart. The suggested machine is one ring and the ring travels in only one direction. The coupling between the units will not necessarily be at undercarriage level but having regard to where the energy is derived could be likened to a vertical hinge

Power may be taken from the machine in any desired form but for consideration are wheel driven electricity generators, wheel driven oil pumps, a common power transfer ring gear driving some static take off equipment but also electricity carrying coils around iron laminated cores set in the ground between the railways lines and sleepers with magnets carried on the moving vehicle to form a linear generator. The opposite of a train moving linear motor of Professor Laithewaites invention.

The wind maybe brought to flow across the wingsails by any shape of air intake formed of any material. As a basis for discussion the air intake may have a horizontal opening of 800 metres and a vertical height opening of 150 metres. To hold the shape in place and to resist the forces of the incoming wind as it changes direction the air intake is expected to be held in place by towers and cables properly anchored.

The air intake will need to face at least four ways and will have a shutter device to select which face to select to meet the wind. The air intake will bring the wind to ground level and enable a smooth change in direction to a radial flow to pass over the wingsails. There may well be a central flow controlling structure in the centre of the work area to direct the wind efficiently.

Behind the wingsails there will need to a manifold to collect the used wind and transfer it to the rear of the air intake such that the low pressure in that area is brought to play to suck the air through the engine.

Each station will be self sufficient in that it must continue to run in periods of no wind by utilizing some form of engine to produce power. However this engine must be fueled with hydrogen produced on site with electricity generated in times of surplus. However there is no objection to one station being devoted primarily to the production of hydrogen and conveying that by whatever means to the other stations. In the event of choosing gas turbine engines as the secondary mover it is accepted that the engines may move the ring and that the movement of air into the gas turbines and out of them may of itself create a useable wind for the rest of the machine.

Funding.

It is known that in the case of ordinary wind farms where a single V90 unit cost about £M1.25 and that the capital cost is repaid in under four years. These units have an expected life of about 25 years

Given that these new ground based style of machines have no financial history one cannot make that sort of statement but provided one takes an intelligent view of likely costs, makes sensible provision for research and development and adds a very high contingency figure one might conclude that the first three units will cost less £M1000 each and thereafter will cost less than a 2006 125 turbine windfarm and will have an unlimited life on the basis that all wear and tear will be replaced indefinitely.

Gross income.

Each station should aim to earn at £70 a megawatt hour in excess of the following:

250 x 70 x 24 x 7 x 52 £'s per annum = £152,880,000 per annum

The suggestion is that once a costed design of machine is available and a number of sites chosen, that £50 venture capital shares are offered on the open market with the general public able to buy them without limit but also by the purchase of £1 stamps at Post Offices and other shops. The initial share distribution to be for £M4000. This to allow for one machine in each country by year 2010. Of the £M1000 for each machine initially the set aside for R&D might well be £M100, design costs £M200, construction £M500 and contingency £M200. In this case the fifth machine might well cost £M500 and subsequent ones between £M250 and £M300 each at 2006 prices

Financial matters for consideration would be that these machines and the power from them might be sold to secure peoples pensions and that shareholders might have the opportunity to purchase their electricity at preferential rates say less ten percent.

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