

WESTRAY'S RENEWABLE ENERGY

This is a very active, busy and exciting time in the Renewable Energy scene in Westray. The Trust is working towards our declared goal of:

"The generation / production from Community Owned Renewable Energy projects of the equivalent amount of energy to all we currently use from all sources by 2012".

We have now had Colin Risbridger in post as Renewable Energy worker for about a year. His remit is to bring forward projects that will take us towards this goal and at the same time generate income sufficient for two full time posts.

Two companies have been set up to take these projects forward: Westray Renewable Energy Ltd for the big projects and Orkney Biofuels Ltd for the biofuels. Turnover in this company can be kept small enough to be below the VAT threshold, so you can get cheaper fuel.

Current projects are: The big Wind Turbine, the Anaerobic Digester plant, the electric car, biofuels and "wind to heat". **The fundamental purpose behind all these projects is the strengthening of the Westray economy and the creation of local jobs.**

BIOFUELS

Biofuels are fuels derived from crops or other biomass. Their importance is that they put no new carbon into the atmosphere. In displacing fossil fuels they make a positive contribution to reducing Carbon Dioxide emissions and the resultant global warming. Biodiesel exhaust is also 90% less carcinogenic. We are licensed to produce fuel and pay Customs and Excise duty on all fuel produced.



The Trust is taking a three pronged approach to producing fuel:

- Biodiesel from used cooking oil collected all around Orkney. Folk in Westray are familiar with the gentle deep fried chips smell coming from the maroon Vauxhall Astra. It has now done about 18,000 miles, almost entirely on 100% Westray produced biodiesel. Fuel consumption, tested recently, is little different from regular diesel. Torque at low speed is better, and performance at top revs is not quite so good.

We have deliberately used 100% biodiesel to really test the long term effects. When it goes on the market, we will probably be recommending a mix, maybe 50 – 80% biodiesel. There is no problem mixing the two fuels or going from one to the other.

- Biodiesel from crops. Highlands and Islands Enterprise has grant aided this project. Orkney College grew plots of oil seed rape, linseed and turnip rape for us. The oil seed and turnip rape were successfully grown and harvested. The linseed was grown successfully but the college was unable to harvest it in last autumn's weather. It is ready a little later than the rape crops. We have a special press, imported from Sweden, set up to extract the oil once the crop has been further dried and will then be making

biodiesel fuel from the oil. This will have its own set of challenges as raw oil is somewhat different chemically from used cooking oil.

- Bioethanol from crops. Part of the same HIE grant aided project is to produce ethanol for fuel from a crop of sugar beet (again grown by the College for us). The crop did not do particularly well, but from the trials, we do have enough sugar beet to work with.

First stage is to ferment the sugar in the beet to produce a simple beer like product. For this stage a "micro-brewery" will shortly arrive in Westray. This re-engineered food grade equipment is typically used elsewhere to produce local ales. There is obvious potential for this equipment when not producing fuel.

Second stage is to distill the "beer" to get 96% alcohol. We are currently building an electronically temperature controlled copper still to do this. The bioethanol produced will be blended with petrol.

The Trust is actively looking for alternative crops to utilise land that is no longer required for cattle grazing if cow numbers drop as predicted. There is considerable potential for neeps, potatoes even grass and tangles ending up as bioethanol fuel if this project proves economically sound.

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THE ELECTRIC CAR – POWERED FROM A WIND TURBINE

Pupils at the school did the original research and carried out the public survey for this in autumn 2003.

We put our bid into the competition for this early in 2004 and although we were told unofficially in the summer that we had won the bid, we did not get the go ahead until autumn 2004.

We had to do all the technical research, design work and purchasing of materials by the end of March 2005. Our bid included a technically innovative Lithium ion battery system.

We have chosen to do the actual conversion work here as it was difficult to find a company South that we had



confidence in and it was also going to be very expensive to have it done elsewhere.

Furthermore having done it we will be able to maintain it and possibly do more electric car conversions in the future.

Removal of the petrol engine fuel tank etc is complete and fitting the 144 volt DC electric motor, control system, batteries etc starts soon.

This, almost fully grant funded, project is

attracting considerable interest outwith Orkney and will attract visitors as well as, hopefully, proving a useful and worthwhile asset here.

There will be a "user group" set up to operate the vehicle. Its main running cost will be insurance as:

- The "fuel" is free
- Road Tax is zero for an electric car
- Maintenance will be carried out on the island
- The batteries should last ten years
- The wind turbines will still generate electricity and therefore revenue when not charging the car

Grant money we have sourced for these projects would have gone elsewhere if we had not gone out to get it and successfully brought it to Westray. Grant money usually buys equipment or pays someone else.

Our input as a Trust is mostly in the form of time, effort and work.

Trust directors are all volunteers and are not paid.

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