

Solutions for willow drying and storage

EBIDS, the Energy from Biomass Infrastructure Development Scheme, provided grant aid for storage and drying facilities for farmers growing willows as a sustainable source of biomass energy. Eighteen projects in NI shared £632,000 of EBIDS aid for facilities that enable growers to offer customers biomass fuel with a consistent dry matter. Rodney Magowan reports from three very different farms where biomass energy production is underway with support from EBIDS

Energy recycled in Co Armagh

ARMAGH farmer James Woods and his son, Fergal, are boosting willow growth with partly treated effluent that they are paid to take from the nearby Linwoods bakery and milk processing plant.

With the co-operation of neighbours, a pipeline runs three quarters of a mile from the Linwood site to a tank that holds 87,000 gallons (400,000 litres). It is on a hill top from where effluent is applied to the growing willows by an irrigation system.

AWARD

This computer controlled 'little and often' irrigation system, installed for the Woods family by Rural Generation Ltd, recently won the Rushlight Waste Water Award in a competition open to developers of clean technology across the British Isles (for details visit www.ruralgeneration.com).

"Until the pipeline was installed, effluent was being transported by tractor and tanker to Armagh sewerage works at increasing expense and inconvenience," explained Willie Breadon, milk processing manager at Linwoods.

"Now, effluent is boosting willow growth and plans are afoot for Linwoods to install a 500kW hot water boiler, powered by willows, produced by James and Fergal. Further down the line, an investment of up to £3million could be made in a combined heat and power plant, again utilising

willows that are grown faster using effluent," said Breadon.

"Indeed, as technology improves our 70 delivery vehicles may one day be powered by electricity produced using willow chip biomass energy.

"An energy loop is being created in Co Armagh, with James and Fergal being paid to take effluent, which boosts willow growth — willow which is dried and sold as biomass fuel back to Linwoods," he said.

Though the award winning bio-filtration irrigation system was not supported under the EBIDS initiative, the equally vital willow drying facility was grant aided.

"Income from traditional livestock enterprises was far from satisfactory, so three years ago we started to plant 20ha in willows," recalled Fergal Woods.

"This is normally coppiced every three years for over 20 years, but applying creamery and bakery effluent could well allow us to harvest at two year intervals.

"However, the market for willow chip demands a standard product with a consistent dry matter, so an EBIDS grant was applied for in co-operation with Dr Andrew Kerr and Dr Sharon Proctor at Countryside Services," said Fergal.

WILLOW DRYING SHED

The willow drying shed is 29.5m by 10.2m, with a concrete drying floor of James and Fergal's own design. Though a wooden drying floor would have been almost 40% cheaper, the concrete option gave a more robust facility, which will also dry willows for other growers within a five mile radius.

A 180kW biomass boiler, fuelled by willow chips, will provide a heat source for the drying shed. Once the air is heated by a heat exchanger, it is circulated along an air corridor and underfloor ducting by a single 37kW fan unit



Biomass energy producer Fergal Woods, left, and Chris Johnston of Rural Generation Ltd with a UK wide Rushlight Waste Water Award presented for the computer controlled 'little and often' irrigation system installed on the Woods family farm near Armagh. This boosts willow growth by applying effluent pumped from the nearby Linwood milk processing plant and bakery, which will soon use willow chips as a source of biomass energy.

with a unique inverter speed control system allowing the ventilation rate to be adjusted.

Consulting engineer, Ian Duff, points out that this enables James and Fergal to dry willows economically at fast or slow rates to the moisture content sought by individual customers. Some boilers require willow chip at 20% to 40% moisture, but other models can utilise chips at 35% to 60% moisture levels.

The drying facility holds over 200 tonnes of drying willow biomass, with an existing nearby silo used to store dried willow chips.

James and Fergal Woods are looking at a five to six

year pay back on their investment, which will generate clean energy for Linwoods and a number of other businesses around Armagh City.

Fergal certainly has a positive view of future demand as

the EU and UK have set challenging targets for energy product from alternative sources such as biomass.

As agreed when accepting the EBIDS grant, James and Fergal will make their experi-

ence of drying willow chips available to fellow growers through Countryside Services at Dungannon — for further information contact Dr Andrew Kerr, CSL, tel: 028 8778 9770.

The market for willow chip demands a standard product with a consistent dry matter

Administered by Dungannon based Countryside Services Ltd, EBIDS has helped encourage the production of biomass energy for public buildings, retail outlets, housing developments and other important buildings.

Thanks to this scheme, biomass production has become an alternative enterprise for the rural economy and a secure source of energy for generations to come as the UK seeks to meet EU non fossil fuel production targets.



Smiles of success as 18 EBIDS projects are successfully brought to completion by the Countryside Services team, from left, Dr Andrew Kerr, consulting engineer Ian Duff, David Mark and Dr Sharon Proctor.

The scheme is funded under the EU Programme for Building Sustainable Prosperity with DARD, the Department of Agriculture and Rural Development, acting as managing authority for the programme in NI.