

## **Micro-hydro power for a Dartmoor farm**

### **Summary**

Miles and Gail Fursdon designed and built a 90 kW micro-hydro scheme at Old Walls, their family farm which lies within the Dartmoor National Park in Devon. It generates about 400 MWh/year of electricity, equivalent to the consumption of 80 homes.

The Ashden judges commended the Fursdons for developing a scheme that was acceptable to the strict environmental requirements of a National Park, and for undertaking the entire project themselves. Their work is encouraging others to consider similar schemes, and they are actively raising awareness of the importance of sustainable energy.

### **The organisation**

Old Walls Farm is run by Miles and Gail Fursdon. They own a 14-hectare holding, and are tenants on a further 31 hectares.

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### **Context**

The primary need for this project was to provide an additional source of income for a hill-farming enterprise, so that the whole family could continue living and working in the area. The Fursdons also recognised that such a practical demonstration of the way in which energy needs can be met from a local source could play a major role in helping galvanise popular interest and understanding.

The direct benefit is an income from the sale of electricity, currently sold under a NFFO contract. NFFO is a UK government scheme to promote renewable electricity, and provides Old Walls Hydro with a guaranteed premium price of 5.7 pence per kWh for a 15-year period. Supported by this and other income-generating activities, both children of the Fursdon family will return to live and work in the neighbourhood when they have completed their higher education, and will set up a family energy consultancy business, drawing on their own experience.

The benefit to the global environment is the avoidance of about 170 tonnes of carbon dioxide emissions per year. Locally, the family planted two acres of mixed hardwoods in parallel with the hydro development, and this has become a popular site for wildlife photography.

Other enterprises have made use of the scheme. The Environment Agency uses fish from the leat to re-stock local rivers. An electronics firm has used the turbine and generator to test control equipment for mini-grid electrification schemes in Nepal.

One critical issue was to gain planning consent from the Dartmoor National Park Authority, which is a jealous guardian of the area's fragile environment and natural beauty. By careful planning and consultation, the Fursdons overcame initial opposition which cautioned that "...the proposed works would have an adverse effect on the landscape, natural habitat and wildlife". By contrast, the Authority now believes that "Fursdon's micro-hydro plant ...successfully links the historic infrastructure with modern technology without damaging the local environment" - an endorsement which should give confidence to planning authorities in other remote locations.

The Fursdons have welcomed visits from local schools and colleges, and they also provide site visits and talks to special interest groups. They have actively promoted the use of micro-hydro and other renewables through media interviews and talks.

## **Technology and use**

Water for the micro-hydro plant is taken from the West Webburn river, and channelled through a 460 m long channel or 'leat', which was dug along the valley side. Leats are familiar in the Dartmoor landscape, because they were widely used in the past to supply water for local mines. The water passes through a screen which blocks fish and debris, and then falls down a 100 m pipeline or 'penstock' to the 90 kW turbine. The turbine, generator and control equipment are housed in a powerhouse, which is built from local wood. Power cables connect the output to the mains grid. The Fursdon family provided nearly all the labour to undertake the construction, which took eight months to complete. Local builders, welders and hauliers were employed when additional skills were needed.

The project needed planning approval from the Dartmoor National Park Authority, since the farm lies within the Park boundary. The Environment Agency approved the abstraction of water from the river.

The Fursdon family used their own skills and resourcefulness to plan, design and execute the project. Part of their present work is providing advice to others on setting up similar schemes, and in general raising awareness of micro-hydro's potential in the UK.

## **Management, finance and partnerships**

The entire management of the project has been undertaken by the Fursdon family. They received an initial start-up grant, but funded most of the development themselves.

Although no other organisations have been directly involved, the project has been successful because of the care taken to work alongside the Dartmoor National Park Authority and Environment Agency. There is enthusiastic support for the project in the local village.

*This report is based on information provided to the Ashden Awards judges by Miles and Gail Fursdon, and findings from a visit by one of the judges to see their work.*

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