BRECON BEACONS NATIONAL PARK

HIGH HEAD HYDRO ELECTRICITY IN THE BRECON BEACONS

OVERVIEW

This information sheet is for individuals who are considering the installation of small scale high head hydro electricity generators on their property. The NPA acknowledge the significant environmental benefits of energy efficiency and renewable energy and believe that their potential is vast and under utilised. We recommend that energy efficiency improvements should always be considered before fitting renewable energy.

HOW DO THEY WORK?

Hydro power works by using falling water to drive a turbine, which generates electricity. The amount of energy produced by a hydro power scheme depends on how far the water is falling (called head) and the flow rate (i.e. how much water is flowing past each second).

Micro hydro power systems usually have a water intake above a weir or dam. Some of the water flowing along a river is re-directed into the intake which screens for debris and fish to prevent them entering the turbine. From the intake water leads into a channel or pipe (called the penstock) where it falls down through one or more turbines.

The water passing through the turbines, generates electricity and is returned to the river afterwards (see diagram below). Micro hydro, or small-scale hydro, is one of the most environmentally benign energy conversion options available, because unlike large-scale hydro power, it does not attempt to interfere significantly with river flows.

In contrast to water wheels and the early turbines, modern turbines are compact, highly efficient and capable of turning at very high speed.

Hydropower is a well-proven technology, relying on a non-polluting, renewable and indigenous resource, which can integrate easily with irrigation and water supply projects.

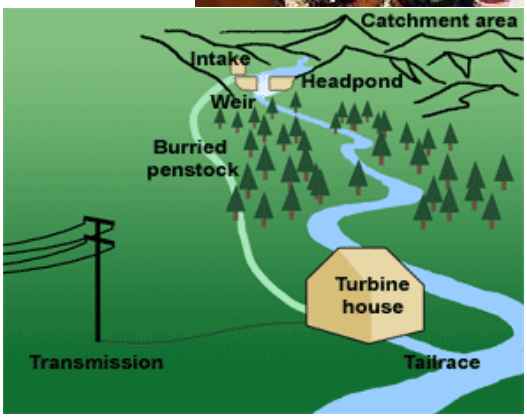
ABSTRACTION AND CONTAINMENT LICENSES

You will almost certainly require and abstraction and containment license for any hydro scheme. These licences are granted by the Environment Agency (EA).

By their nature, hydropower proposals often require the EA to balance the requirements of developers with protection of the environment.

The EA recognises the potential benefits of small-scale Hydropower to rural communities and in meeting local needs for power. Where a proposed scheme is inappropriate for its location it will advise a prospective developer at as early a stage as possible. The EA will take a positive view of reasonable and well designed proposals for hydropower schemes and will work with developers and others in attempting to agree a viable, sustainable project.

Above: Large Hydro Turbine



Right: A Typical High Head System

COST AND MAINTENANCE

High head hydro systems have proved to be very reliable and can have a design life of 25 years or more. Costs vary due to a range of factors such as length of penstock, size of turbine and geographic location.

Hydro systems generally require very little maintenance other than ensuring they are kept relatively clean and checking that the amount of flow in the watercourse is not at a low level (thus affecting your license to use the water).

Grants

A number of grants are available for high head hydro systems. Please contact the NPA for current information.

Which installer do I Choose:

The NPA has a list of certified local installers on their website. Alternatively please contact the NPA on the number below for further information.

For further information contact:

Brecon Beacons National Park Authority

Plas y Ffynnon, Cambrian Way, Brecon,

LD3 7HP

Tel: (01874) 624437

www.beacons-npa.gov.uk

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