

## Case Study: 13kW Turgo Hydropower Scheme

Location: Llanaber, Barmouth, North Wales

Installed: November 2012

Total Fall (Gross Head): 63m

Design Flow: 31 litres/second

Turbine Type: 2 jet Turgo, Direct Drive

Generator: 13kW Induction, 4-pole, Single Phase

Penstock: 376m of 200mm HPPE Pipe



The powerhouse layout



The intake weir



The power house

The project made use of an existing garage adjacent to the owner's home. The garage was extended slightly to encompass the turbine and this meant another building was not required in the Snowdonia National Park landscape. This meant that 100 metres of tailrace pipe was required to return the water to the stream but another benefit was having the turbine very close to the existing power supply in the garage. The scheme will produce 37 MWh per year, enough to supply 10 typical UK homes, and saving around 20 tonnes of carbon dioxide from being released into the atmosphere each year. The owner uses electric heating in the home and so is able to use a large percentage of the electricity with the excess exported to the National Grid. The scheme provides an alternative revenue stream for the farmer worth around £12,500 / year. This is index-linked so that it will increase each year in line with inflation, and the scheme should pay for itself in 5-6 years.