



torrshydro

Annual Report 2010

**300,000kWh
generated by
September
2010**



**Record
32,673kWh
generated in
December
2009**



**20 volunteers
– over 500
hours of
volunteering!**



Plant progress

In May 2009 we were served with a Noise Abatement Notice that prohibited us from running Archie overnight, 10pm to 7am. However, by the beginning of November 2009 we had persuaded High Peak Borough Council's Environmental Health Officer that our proposed control method, control system and equipment could ensure that the plant would not run overnight if water levels meant that lower than 20kW could be generated; the point at which the problem noise began. Following a 2 month trial period and subsequent late night noise survey carried out in January by Environmental Health Officers, the Notice was discharged.

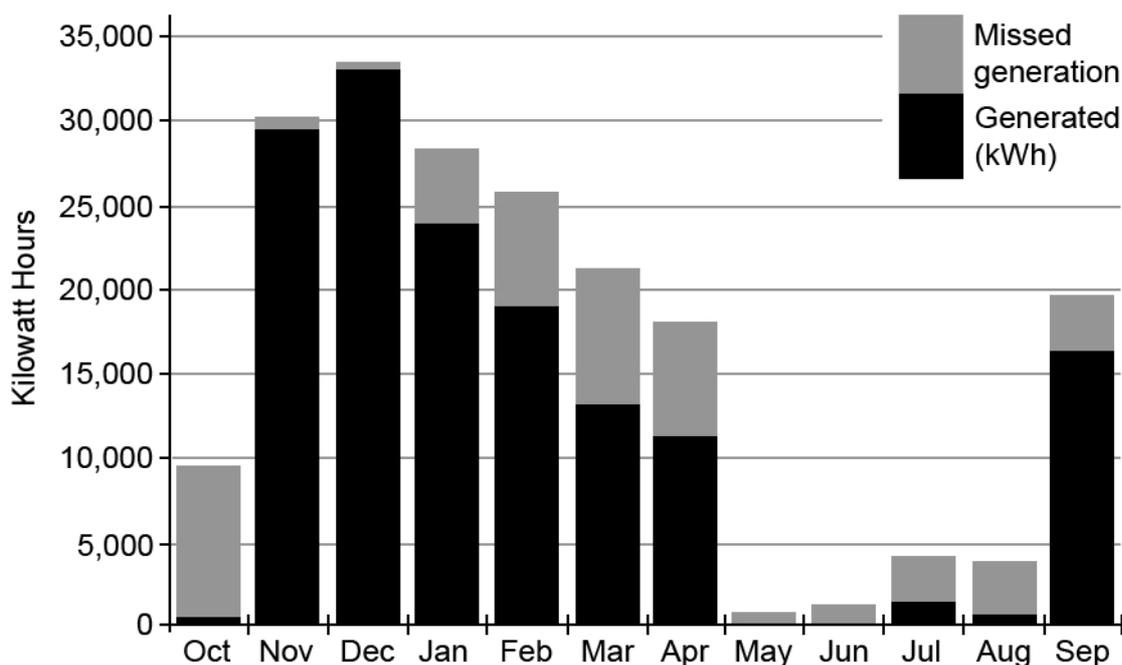
November 2009 also saw the installation of extra sensors in the power house – including generator and gearbox temperatures – together with a 3G router to allow some of the plant data to be monitored remotely via the internet. This was installed and is maintained at no cost to ourselves by Dave Mann of Mann Power Consulting Ltd. It's not perfect but it does allow us to check what the plant is generating and can indicate when some intervention is needed.

During our first 2 years' operation we've learned a lot about the system that we have and are now confident that we have enough knowledge to plan modifications that will make the plant more efficient and easier to control.

Power Generation

Between 1st October 2009 and 30th September 2010 Archie generated 146,078 kWh. This was down 5.2% from the previous year when 153,986 kWh were produced. The drop in output is largely due to drier conditions. Based on figures from the gauging station upstream the theoretical maximum output fell 15.4% from 228,222 kWh in 2008-9 to 193,268 in 2009-10. Although in total Archie produced less electricity we have captured a greater proportion of what was on offer. In 2008-9 we ran at 67.5% of potential but in 2009-10 we managed 75.6%, an improvement that we hope will continue.

Power Generation October 2009 - September 2010



There are a number of reasons for loss of production. The bulk of the loss this year has been due to low water levels. The machinery is now much more reliable.

2009-10 loss - % of operating time	2008-9 loss - % of operating time	Reason	Comments
29.9%	5.7%	Very low water level	When the water level is too low directing it through Archie would mean that the weir would dry out. It has to be kept wet to prevent collapse. With luck 2010-11 will be wetter.
27.5%	19.8%	Insufficient water to generate 20kW or more	There is more water than in the previous case so Archie could operate but at low power outputs it produces a noise so currently it can't be run. With luck 2010-11 will be wetter.
1.3%	9.5%	Plant failure	Archie is been much more reliable in 2009-10 than earlier. Lost power output due to equipment failure fell from 20,000kWh to 5,000kWh
1.1%	1.3%	No one available	Archie has to be turned on manually when conditions improve enough for it to be run. A volunteer is not always available to do this immediately
0.5%	1.3%	Too much water – high water	When the water level is high, water can't leave the tailrace fast enough, and thence power generation drops. The control system can't currently distinguish between power dropping because of high water and insufficient water
0.1%	0.3%	Planned maintenance	Archie has needed less maintenance in 2009-10 than earlier.

Late night sound testing by High Peak Borough Council in January 2010 concluded that there was no underlying noise problem and subsequently the noise abatement notice was lifted provided that we don't run when there is insufficient water. We therefore continue to turn the screw off when the power generation reduces to 19 KW. This made very little difference however from mid-April through to September as the river was so very low that it could not have been run anyway. As the power generation graph shows, we are losing a significant amount of power by not running when there is insufficient water to generate 20kW or more. Because of this the board are treating the search for solutions as a priority for the next year.

The reliability of the plant in this second year has been excellent, with a blown capacitor in February the only problem that we couldn't manage ourselves.

Interpretation Boards and Environmental Improvements around Archie

Thanks to support and collaboration from the Environment Agency and New Mills Town Council, two interpretation boards were erected in the parkland close to Archie early in 2010. One faces the generator shed and provides information about the Torrs Hydro project. The other, at the foot of the screw, details the flora and fauna that can be seen in the area. We now also have a notice board on the generator shed where we can display current information such as dates of forthcoming open days.

As part of this same collaborative project, work has been done downstream of Archie to improve water quality in the river. This has involved the creation of a pond and reed bed which will help to remove ochre from a stream feeding into the River Goyt.

"This was a great opportunity to work with Torrs Hydro and New Mills Town Council to improve the local environment. We've received a number of positive comments regarding the interpretation boards, and the new pond is already benefiting local wildlife. We hope to continue and deliver further environmental improvements in the Goyt valley through our Mersey Life Project."

Duncan Revell, Biodiversity Officer

In March 2010 over a hundred children from four local primary schools took part in a mass planting day in the Torrs Riverside Park. They planted hundreds of native species and sowed wildflower seeds to encourage biodiversity. It was also an opportunity for the youngsters to be introduced to Archie

We measured the lowest head over the weir on July 7th 2010; the weir was only about 40% covered. Older locals visiting the Torrs commented that they had not seen the rivers so low in their lifetime.

Financial Report

Our primary source of income continues to be the sale of electricity. The exceptionally dry periods during the year led to reduced power production compared to the previous year, and a corresponding loss of income of about 7%. Fees and donations from visits and talks again contributed nearly 10% of our income. The Environment Agency made a substantial financial contribution towards the signage and environmental improvements, which was matched in time contributed by Torrs Hydro volunteers.

Our major outgoings continue to be the loan repayments, which amount to £9,500 per annum, and the insurance premiums, which have reduced slightly compared to last year but are still very high. The plant has become much more reliable, and this is reflected in the maintenance costs reducing by approximately £1,200. A key administration cost is our annual Financial Services Authority (FSA) registration fee of £235 (as a Community Benefit Society we are registered with the FSA rather than Companies House). We are grateful to those of our members who have agreed to receive mailings electronically, thus helping to keep our other administration costs to a minimum.

The Torrs Hydro Story.....

The Torrs Hydro story continues to travel wide and far. Interviews, case studies, presentations given locally and around the country, and guided tours of one sort or another keep directors and volunteers busy several times a month. Interest in the venture continues to be mixed – some are simply curious as to what is going on in the New Mills area, some in the technical details of how the plant works; others are interested in the community aspects of the project, either from a community action on energy, environmental or climate change view point, or as an example of community ownership and investment.

Most visitor sessions this year have taken one of two formats:

- Relatively brief and informal guided site visits, usually on a Saturday or Sunday afternoon, where individuals and small groups have met with a tour leader at the Heritage Centre for a walk down to look at the site
- Bespoke ‘talk and tour’ visits – these are longer visits tailored to the interests of each group or organisation, and usually comprising an indoor presentation, visit to the site and opportunity to discuss elements of the project in detail

Volunteering with Torrs Hydro

Our team of volunteers has grown in the year 2009 – 2010 and is now about 20 strong. Their combined knowledge, skills and experience is vast, and a fantastic resource for Torrs Hydro.

In the course of the year volunteers have undertaken a range of tasks around the plant, some glamorous and some definitely not, including

- Starting up the plant after a period of switch-off
- Doing the regular checks on Archie
- Clearing both the fish pass and intake from the riverside or in the river in waders
- Regular greasing of bearings
- Cleaning out the head sensor
- General DIY in the powerhouse
- Helping at one-off events such as clearing tail race, moving large stones in the riverbed, and river walks in low water to remove litter that might ultimately fetch up at the intake!
- Removing rubbish from the site

Away from the plant itself, other volunteer activities have included

- Advice on health and safety
- Preparation of financial accounts
- Providing technical system and control expertise to feed into planned modifications to Archie
- Meeting, greeting and talking to visitors to the site at Open Days and other specific group visits
- Maintaining the web site and the blog
- Preparing and presenting talks to visiting groups both on and off site, and at meetings and events elsewhere

Over the year, this equated to a contribution well in excess of 500 hours of volunteer time.

During the year October 2009 - September 2010 Will Griffin received the prize for the biggest rise in Archie's output following a clearance of the intake - which on this occasion included a wheelbarrow! He raised the power being generated from 21kW to 51kW!

Going forward ...

During the coming year we plan to modify some parts of the system to enhance their longevity and to hopefully increase efficiency. It is intended that the following modifications will be made during a planned prolonged shut down in the Summer months of 2011.

- The sluice gate will be strengthened and hydraulics modified to overcome identified problems which occur when it is asked to open in some conditions and to ensure a quicker, more reliable closing in the event of unplanned shut downs. This is particularly important for when we are in a position to allow fully automatic running of the plant.
- The bottom bearing will be replaced with a more reliable design.
- We are planning to modify or replace the generator to allow us to run at lower water levels without creating the problem noise. Currently a group of volunteers are working with one of our directors, Dr. Paul Hopewell, to evaluate the possible configurations and their associated costs.

Along with these changes the control system will need to be reconfigured. The opportunity will be taken to upgrade to allow monitoring and use of additional parameters identified during current operation as being essential for better control and operation of the plant.

Our hope is for a more reliable, more efficient plant that is able to operate under a wider range of conditions thus generating more power and income in future years.

New WEBSITE launched in January 2010, looking much more professional thanks to Peak Digital, and with a new address – www.torrshydro.org

Wildlife visitors to the River Goyt next to Archie include

Grey heron	Mallard	Pipistrelle bat
Goosander	Dipper	Roe deer
Kingfisher	Grey wagtail	Young cormorant

Photos supplied by Richard Body and Steve Essex

Torrs Hydro New Mills Ltd is a Community Benefit Society

Website: www.torrshydro.org

Blog: torrs-hydro-new-mills.blogspot.com

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