

RENEWABLE ENERGY BEST PRACTICE CASE STUDY
IRISH ENERGY CENTRE, RENEWABLE ENERGY INFORMATION OFFICE

RESTORATION OF CAHIR MILLS

Site: Cahir Mills, County Tipperary

Starting-up date: 1996

1. AIM OF THE PROJECT

The aim of the project was to restore a disused hydropower plant in order to supply power to an adjacent sawmill and generate income from the sale of surplus electricity.

2. DESCRIPTION

Cahir mills is located beside the historic Cahir Castle on the River Suir. Two Francis turbines were installed at the site in 1907, and a third Francis turbine was added in 1937. A fourth, larger turbine, believed to be a Kaplan, is of unknown origin.

Resource assessments were carried out at the site during the 1980s, revealing a mean flow for the river of 33.97 m³/s and a head of 1.7 m.

When the mill was purchased by its present owner in 1991, the 4 turbines had fallen into disuse but were in good working order. Restoration work, initiated in 1995, was managed by the owner and involved connecting new runners, gearboxes and 30 kW generators to each of the 3 Francis turbines. In addition, new electronic control equipment was fitted and preexisting grid connections at the site were re-established.

3. OWNER

The hydropower plant and water rights were included in the sale of the adjacent sawmill in 1991.

4. INVESTMENT AND FINANCING

The cost of restoration work carried out to date totals about IR£45,000, excluding labour. The project was financed privately without grant aid. Revenue is derived from electricity sales via a power purchase agreement secured through the Alternative Energy Requirement. Two different tariff rates apply: IR£0.0667 / kWh for peak-time generation and IR£0.026 / kWh for all other times. Both of these rates are linked to the Irish consumer price index.

Savings to electricity bills for the sawmill are estimated at about IR£1,000 per year. Meanwhile, annual operation and maintenance costs for the plant are estimated at IR£1,500. A simple pay-back period of just over 4 years is envisaged.

5. RESULTS (ENERGY DETAILS)

Annual energy production, at about 270,000 kWhrs, is lower than anticipated but nevertheless provides a commercial return and should increase when excavation work has been completed on the head and tail races. The overall energy output from the plant will increase further when the fourth and largest turbine is brought into operation.

6. ENVIRONMENTAL IMPACT

The hydropower plant contributes to environmental protection by displacing emissions of carbon dioxide, sulphur dioxide and oxides of nitrogen, released with the combustion of fossil fuels. Local visual impact is minimum.

7. USERS

There is wide-scale potential for replication of this project at the many disused small hydropower sites that exist around the country. In the longer term, the owner has plans to disseminate information about the project through a visitors' centre at the site.

8. MAIN MANUFACTURERS AND SERVICE SUPPLIERS

Overall Project Management

Patrick Fitzgerald, Cahir Mills, Cahir County Tipperary.

Tel +353 52 42575

Supply and Installation of Control System

Inch Hydro, Inch Mills, Sion Road, Kilkenny.

Tel +353 56 71144 Fax +353 56 71145.

Supply of Gearboxes and Generators

Brevini Ireland Ltd., Unit F1, Clane Business Park, Kilcock Road, Clane, County Kildare.

Tel +353 45 868555 Fax +353 45 868021.

9. MORE INFORMATION

Irish Energy Centre,
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- Restoration of Cahir Mills
- Kenmare Hydropower Station
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