

# CAHIRCIVEEN GENERATING STATION CO. KERRY, IRELAND



ELECTRICITY SUPPLY BOARD  
BORD SOLATHAIR AN LEICTREACHAIS

## General

The energy necessary to make electricity can be supplied from water at a high level, fuels such as coal, peat, oil and gas or nuclear power. Other sources of energy being developed are solar, wind, wave and geothermal.

To avoid paying out large sums of money for foreign fuels and to ensure that some fuel supplies are available in emergencies, it is necessary for most countries to use their own native fuels to an extensive degree. In Ireland, there is very little coal, oil exploration continues and natural gas has only been used in recent years. The major sources of Hydro power have been utilised and nuclear energy is not used. However, the extensive areas of bog have provided turf as our most abundant source of native fuel.

After the Second World War, the government laid on a very extensive programme of bog development in the Midlands to be operated by Bord na Móna, and the Electricity Supply Board built several Power Stations to utilise the turf produced. All this gave much needed employment and to extend the benefits of this the Government decided to build four small turf burning Stations along the Western seaboard. These were located at Gweedore, Screeb, Miltown Malby and Cahirciveen. The four almost identical Stations, were built by Swiss and German firms and were completed in 1957 at a cost of about 500,000 each.



*Unloading and bunkering*



*Engine room*

## **Cahirciveen Station**

**T**he Station was designed to burn 30,000 tonnes of hand won turf annually. The main plant consists of a chain grate stoker boiler and a turbo-alternator. The boiler burns 7 tonnes of turf per hour and the hourly output of 5000 units of electricity is fed into the national grid. The Station may also supply electricity to the local area if required.

In 1990, a record 24,147 tonnes of turf was consumed producing a record 18,184,000 kilowatt-hours.

About 20 staff are employed at the Station, arranging turf supplies, handling the deliveries, operating the plant and carrying out maintenance.

## **Turf Supply**

**A**s distinct from the Midland Stations, where all the turf is produced by Bord na Móna, the turf for Cahirciveen Station is produced by about 250 local suppliers who cut, harvest and deliver specially for the Station or

have surplus to their own requirements. The total bog area is about 6,500 acres in areas from 1 miles from to 15 miles from the Station.

Both the quantity and quality of turf supplies is mainly weather dependent. The turf is cut between late March and June, harvested between May and August and drawn from the bog between August and October. Supply to the Station is from September to June/July of the following year.

The turf producers formed a Co-Operative Society in 1969 for the purpose of utilising turf cutting machines. Machine cutting reduces to a very large extent the dependence on both weather conditions and the availability of surplus labour. Hand cutting of turf has declined to a very small amount, is confined to smaller bogs and the bulk of which goes for domestic use. During the 1990 cutting season there were 12 cutting machines working in the bogs of the area - 5 ran by the Turf Co-Op and 7 privately owned. A recent development in the area is the fabrication to turf cutting machines. Methods of levelling the top surface of some of the bigger bogs for the use of harvesting machines are also being tried along with the use of bog drainage machinery.

From 1979 to 1982 bad harvesting conditions caused severe turf shortages. During this period wood chips and waste slack coal were used successfully as supplemental fuel with the turf.



*A typical reek of turf.*

## TECHNICAL DATA

### FUEL

Main Fuel .....	: Sod Turf
Supplementary Fuels .....	: Coal, Wood Chips
Total Bog area .....	: 6,500 acres
Quantity Consumed .....	: 7 tonnes per hour
Net Calorific Value .....	: 9.060 MJ/KG
Ash Content .....	: 0.5% to 2.0%

### BOILER

Manufacturer .....	: Walther & CIE (Germany )
Type .....	: Chain Grate, Vertical Tube Drum Boiler
Steam Output at M.C.R. ....	: 60,000 lbs/hr (7.56 kg/s)
Steam pressure .....	: 472 psig (32.5 bar)
Steam Temperature .....	: 824 F (440 C)
Furnace Temperature .....	: 1200 C
Grate Area .....	: 174 sq.ft (16m <sup>2</sup> )
Bunker Capacity .....	: 80 tonnes

### TURBINE

Manufacturer .....	: Brown Boveri ( Switzerland )
Type .....	: Single shaft, single cylinder
Speed .....	: 3.000 r.p.m.
Steam Pressure .....	: 412 psig (28)
Steam Temperature .....	: 800 F (426 C)
Speed Governing .....	: Hydraulic
Feedheaters .....	: 1 LP and 1 HP

### GENERATOR

Manufacturer .....	: Brown Boveri (Switzerland)
Rated Output .....	: 6.625 KVA @ 0.8 Pf
Power Output .....	: 5,300 KW
Output Voltage .....	: 10,500 volts
Generator Cooling .....	: Air

### OTHER STATION DETAILS

Main Transformer .....	: 6,000 Kva 10, 500 / 38,000 volts
Cooling Tower .....	: Counter flow , forced draught
Condenser CW Flow .....	: 4,830 GPM (366 l/s)
Water Make-up .....	: 30 tonnes/hr
Chimney Height .....	: 85 ft. (25.9m)