Lanesboro

P

Peat Station

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Lanesboro

About Lanesboro

Beal Atha Liag, the ancient name of Lanesboro, says much about the origins of this town. Translated, the name means the mouth of the ford of the flagstones. Here the River Shannon is faced with a ridge of limestone rock where it enters Lough Ree. The resultant ford provided the first crossing point on the river north of Athlone and thereby occasioned the first settlement of people here.

About ESB Power Stations

ESB power stations are classified as either thermal or hydro. Thermal stations convert the chemical energy in fossil fuels into electricity by burning coal, gas, oil or peat. Hydro stations convert the potential energy in water at a height into electricity by dropping the water through turbines to a lower level. Increasingly electricity is being generated from alternative sources such as wind and biogas.

Types of ESB Power Station

C Coal

P Peat

G Gas

O Oil

H Hydro

R Renewables (other than Hydro)

Introduction

Located on the east bank of the river Shannon at the north end of Lough Ree, Lanesboro Generating Station, with a generating capacity of 85 megawatts (MW), is considered to be the most cost effective and efficient peat fired electricity generating station in Ireland.

The County Longford plant, one of five ESB power stations fuelled by milled peat, began its operations in 1958 and continues to play a vital role in the development of the Irish economy. Through its use of locally produced peat, it has helped in the ongoing task of reducing Ireland's dependence on imported fossil fuels.

A Brief History

The Lanesboro plant has a long and illustrious history with its origins stretching back to 1934 and the establishment of the Turf Development Board under the de Valera Government of the day. During the Second World War, the State relied heavily on turf as a source of energy and on many ordinary citizens to cut it. At the end of the War, the Government decided to embark on a programme of expansion. In 1946 a new semi-state body, Bord na Mona, came into existence. It was given extensive powers to acquire and develop bogland.

The development of the bogland area around Lanesboro began in earnest in the early 1950's when discussions got underway between Bord na Mona and ESB with a view to establishing a series of turf generating stations. New methods of production were introduced with the aim of making the harvesting of turf much more economic. The result was the harvesting of milled peat, cut off the top of the bog by machines using rotating disks. This transformed the relationship between Bord na Mona and ESB, as milled peat, unlike traditional hand cut peat is suited to large-scale electricity production.

The station at Lanesboro consists of three main developments:

Station 'A'
20 MW electrical, commissioned in 1958 and fired by sod peat, this unit was decommissioned in 1982 after running for 114,328 hours.

Station 'B'
40 MW electrical, commissioned in 1966 and fired by milled peat.

Station 'C'
45 MW electrical, commissioned in 1983 also fired by milled peat.

How Lanesboro makes electricity

Milled peat is supplied by Bord na Mona from local production and transported to the station by a narrow gauge rail system owned and managed by Bord na Mona. This is supplemented when necessary by road deliveries from points as far as forty miles east and west of the station.

Peat is an organic material, which developed from the incomplete breakdown of wetland vegetation. There are peat reserves in approximately eighty countries. In Western Europe, Finland and Ireland are the largest consumers of peat.

The peat is chopped off the surface of the bog during the summer and then harvested into stockpiles. When it is cut, the peat is quite wet, with moisture content of up to eighty percent.

Milled peat is produced in crumb or powder form, the raw bog is milled on the surface, and harrowed a number of times to accelerate the natural drying action of the wind and sun. The

rate of drying depends on the weather and density of peat. During the milling process, the moisture content is reduced to around fifty-five percent, leaving the peat with a similar consistency to that used by gardeners.

The peat is then carried by rail wagons to the power station where it is transported to the station bunkers by a conveyor system.

Each unit consists of a boiler and a turbine/generator. The boiler operates on a pulverised fuel system (PF). When the station is on load, peat is conveyed from the bunker by variable speed feeders to the pulverising mills where it is mixed with hot gasses taken from above the vapour burners in the furnace. This process further dries and grinds the fuel. The fuel and drying gases exit the mill at 180°C, with the peat now having a content of fifteen percent moisture. The mixture is now blown into the furnace via four tangentially arranged corner burners.

The boilers are a conventional re-circulating type with an economiser, a steam drum, generating tubes and superheaters. The main steam range brings the superheated steam to the high pressure turbine inlets where the steam gives up most of its energy. It is then exhausted to water-cooled condensers. The condensate is pumped to a feedwater tank for re-use. Cooling water for the condensers is taken from the river Shannon at the pumphouse and is delivered to the condensers via underground culverts at a rate of 60,500 gallons per minute. The water is returned to the river at the cooling water outfall approximately 6°C to 7°C higher than the intake.

The turbine drives the generator to produce electricity at 10.5 kV, which is fed through an underground cable to a transformer where it is stepped up to 110 kV for transmission to the national grid.

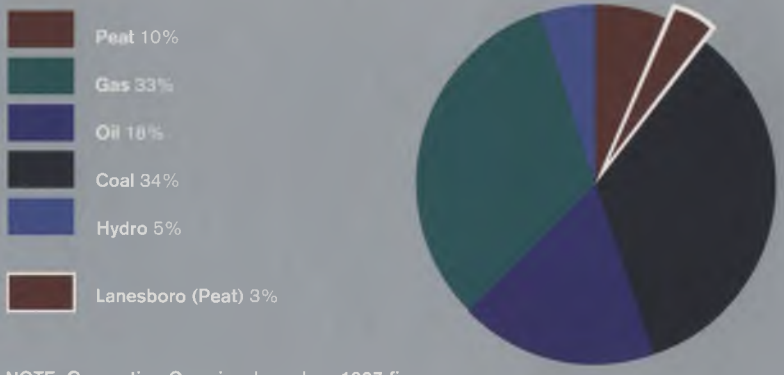
The environment

At Lanesboro, as with all ESB facilities throughout the country, ESB is committed to maintaining the very best environmental management practices. Attention, in particular, is paid to the control of fuel emissions into the atmosphere.

The flue gases leave the boiler under suction of the induced draft (ID) fans and are drawn through grit arrestors where ash and any unburned carbon are removed. The flue gases are then discharged through the chimney stacks to the atmosphere. Just as sod peat or coal burned in a domestic fireplace produces grit, so too does milled peat or coal burned in a large scale power producing boiler, only a lot more of it.

Top
Control Room
Centre left
Unit 2 Turbine Hall
Centre right
Unit 3 P.F. Mill
Bottom
Water Sampling Point

ELECTRICITY GENERATION OVERVIEW (MegaWatt Hrs)



NOTE: Generation Overview based on 1997 figures
Total Generation for 1997 was 20 million MW's

Drainage from the ash settling ponds is passed through a series of conditioning channels before being returned to the river. Other waste materials are segregated on site and disposed of in an environmentally friendly manner.

Role within local economy

Lanesboro Generating Station has played an integral part in the surrounding community since the first unit was opened in 1958. It is currently injecting about £4 million into the local economy.

Lanesboro also contributes to the local economy with the purchasing of materials in Ireland where possible. The plant is confident that it will remain a major contributor to the local economy as it prepares, for the first time, for direct competition with the opening of a new £110 million, 120 MW Euro-Peat Plant in the East Midlands.

Role within the community

It has long since been a philosophy of ESB that management and staff have a central role to play in the affairs of the local community. They feel that they have social responsibilities to the community that supports them.

Lanesboro Generating Station is a willing supporter of local initiatives, sponsoring local schools, sporting clubs and other civic organisations as well as various charity events. ESB Lanesboro, in 1998 was the major sponsor of the inaugural Lough Ree Environmental Summer School and Arts Festival and the Lanesboro International Fishing Festival.

The station continues to maintain a strong community focus. It is essential that measures to encourage competition in the generation and supply of electricity take this vital community role into consideration.

Visitors

Electricity Generating Stations, particularly those fuelled by peat provide a fascinating experience for young and old alike. Although Lanesboro is a very busy generating station, providing an essential part of everyday infrastructure, we are always keen to show off our station where possible.

All requests for visits to the plant must be arranged in advance by writing to: The Station Manager, Lanesboro Generating Station, Lanesboro, Co. Longford.

You can find out much more...
about Lanesboro including Quicktime Video and 360° scans of the station by visiting us at www.esb.ie