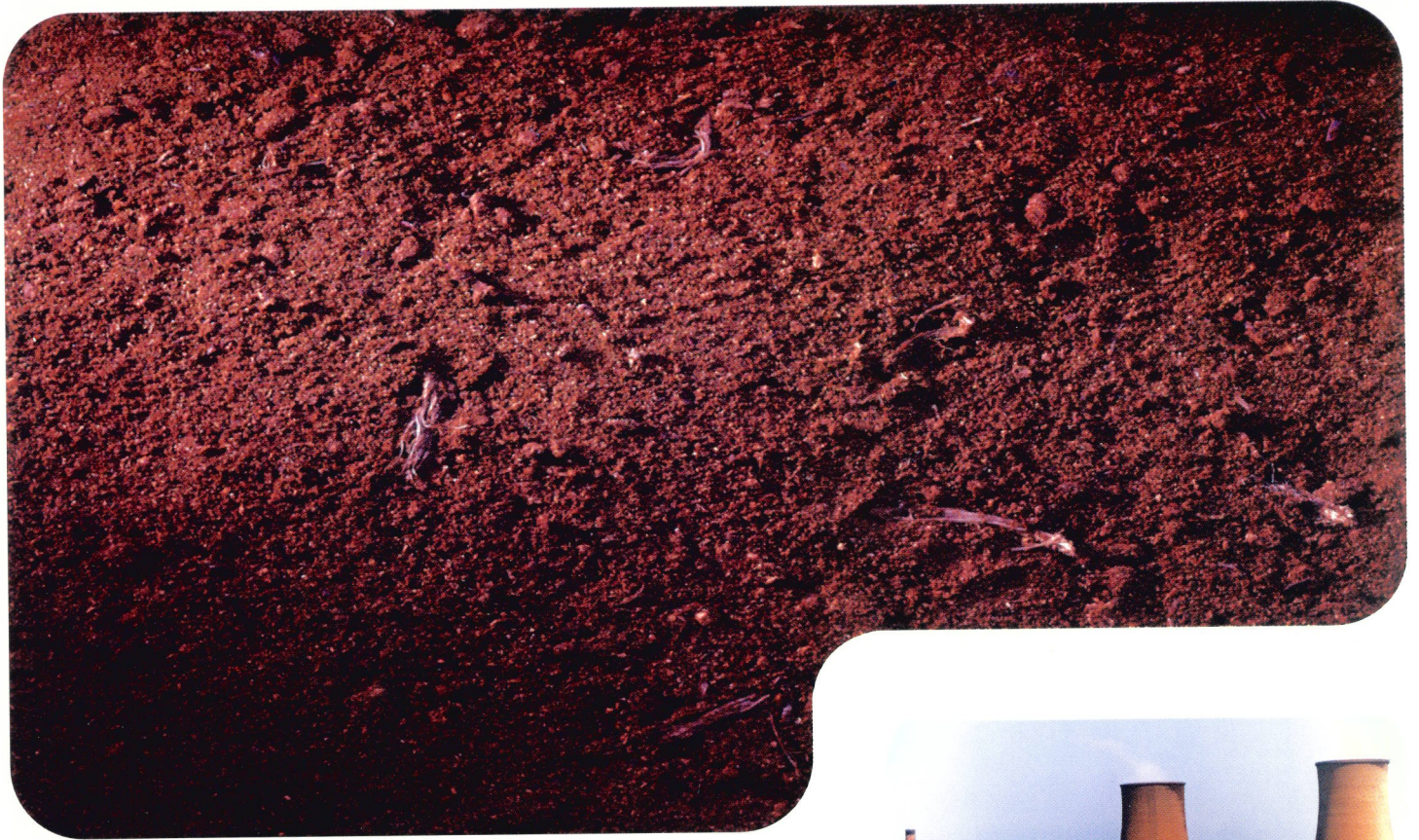




Rhode



Peat Station



www.esb.ie

P Rhode



About Rhode

Located in the north eastern corner of Co. Offaly, sixteen miles from Mullingar in neighbouring Westmeath, Rhode is truly in the heart of the midlands. Rhode Generating Station, which stands on seventy acres, produces electricity from the burning of milled peat

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



Coal



Peat



Gas



Oil



Hydro



Renewables
(other than
Hydro)

Introduction

Rhode Generating Station is located in the heart of the Midlands in the north corner of Co. Offaly, about eighteen miles from Tullamore. Constructed as part of the peat development programme in the early 1960's, the station is considered to be one of ESB's most efficient peat stations. The four other stations are at Ferbane and Shannonbridge, also in Co. Offaly, Lanesboro in Co. Longford and Bellacorrick in Co. Mayo.

The station was built on a 70 acre site, which was chosen on the basis of its close proximity to a large supply of peat, a solid foundation and a good source of water from the Yellow River.

History of electricity generation at Rhode

The commissioning of the Rhode plant in the 1960's played a crucial role in the development of the economic life of County Offaly. At the time ESB was also involved in the building of two other thermal peat power plants in the region, in Ferbane and Shannonbridge. Development of the bogs by Bord na Mona and the commissioning of the other plants in the region, provided the local young men with an opportunity to remain and work in Ireland at a time of mounting emigration.

Construction work on Rhode Generating Station began in earnest in 1958 at a time when the Government was placing a strong emphasis on the development of the country's native resources. At the same time demands from industry were beginning to grow as the country finally began to emerge from a lengthy and crippling economic slowdown. As a result of the Rural Electrification Scheme many parts of Ireland were beginning to benefit from easier access to electricity. Rhode was part of a new generation of power

stations, using milled peat as opposed to sod peat.

The initial generating plant comprised of two 190,000 pounds of steam per hour boilers driving two 20 MW turbo-alternator units. The first was commissioned on July 16th 1960. A boiler with an output of 380,000 pounds of steam per hour and a 40 MW turbo-alternator set were installed with the second development of the station. Civil engineering work began in March 1960 and the generating plant was commissioned on May 11th 1963.

In the middle of 1963, for a single week, Rhode had the biggest unit producing electricity to the national grid. By March 1968, one fifth of the country's electricity was generated by Offaly generating plants and a large percentage of ESB staff were based in Offaly.

How Rhode makes electricity

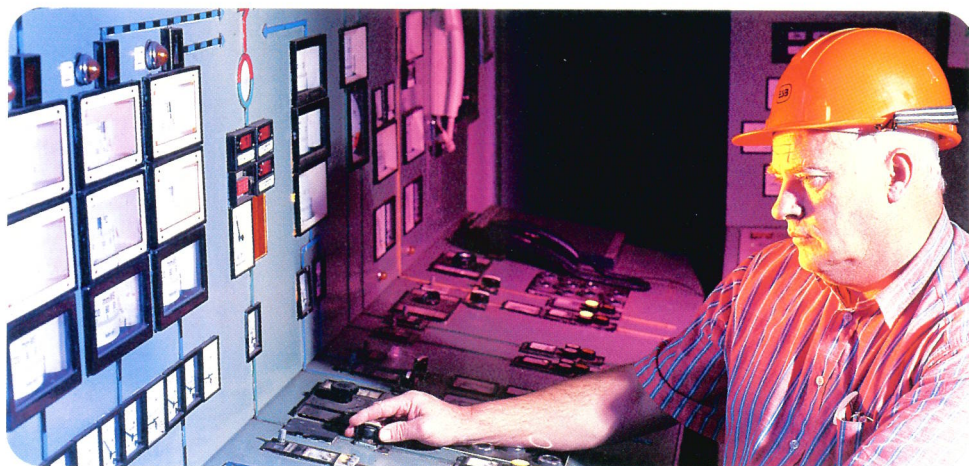
Milled peat is supplied by Bord na Mona from local production, and transported to the station by a narrow gauge rail system, which they own and manage.

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 its largest consumers.

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 a 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 wind and sun. 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 rate of drying depends on the weather and the density of the peat. The peat is 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 fuel 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, having 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 and it is then exhausted to water-cooled condensers. The condensate is pumped to a feedwater tank for re-use.



cooled down to it's original inlet temperature. The small water loss due to precipitation is made up automatically by the Yellow River pumping station, ensuring minimum usage of water from the river.

During an average year the station burns almost 450,000 tons of peat and generates about 300 million kilowatt-hours of electricity.



In order to prime the cooling water system, water for the condensers is taken from the Yellow River at the pumphouse and is delivered to the condensers via the cooling towers at a rate of 60,000 Gallons per minute. The cooling water is pumped from the cooling tower's reservoir (pond) through the condenser and returned to the cooling towers approximately 6°C to 7°C higher than the intake, where it is

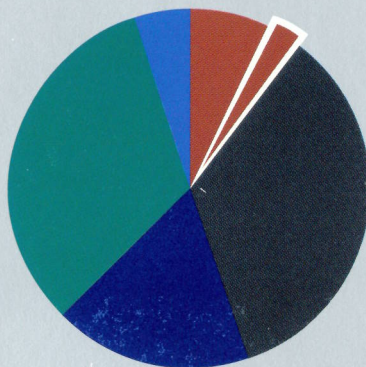
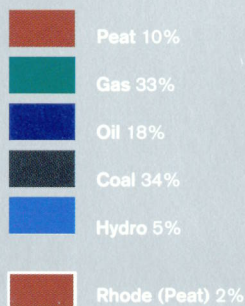
The turbine drives the generator to produce electricity at 10.5 KV, which is fed through an underground cable to a transformer where it is stepped up to 110 KV for transmission to the national grid.

The local environment

At Rhode station, as with all its facilities throughout the country, ESB follows the very best international practises to protect the surrounding environment. Awareness

Top
Control Panel
Centre left
Boiler 1
Centre right
Feedheaters
Bottom
Turbine Hall

ELECTRICITY GENERATION OVERVIEW (MegaWatt Hrs)



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

of environmental issues is actively promoted throughout the station and there is a significant emphasis on the achievement of waste reduction and product substitution. The station carries out in-house audits of its performance in this area and is constantly upgrading its environmental management procedures.

The area surrounding the station is noted for its many species of both plants and birds. A recent flora and fauna study of the station site and surrounding area showed that the most commonly observed species are; badger, fox, squirrel, rabbit, pheasant, rook and the grey crow.

Rhode and the local economy

Rhode Generating Station plays an integral role in the affairs of the local economy and

has done so since its initial commissioning. Rhode has a payroll of more than £4 million a year, providing a crucially important injection into the local economy.

The station contributes to the local economy by the purchase of materials in Ireland where and when possible, and also by providing both permanent employment and temporary employment including the use of contractors and temporary staff during major work periods.

Rhode and the local community

In a rural environment like Rhode, ESB recognises the important role that it has to play in the affairs of the local community and the social responsibilities that they have to the economy that supports them.

The station is an integral part of the fabric of the local society. Support is provided for a wide variety of local initiatives and sporting organisations. The station recently played host to a group of children from Belarus, scene of the Chernobyl nuclear disaster in 1986.

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

Visitors

The station remains a popular attraction for school tours and for organised groups, but it is essential that all visits be organised well in advance.

All requests to visit the station should be submitted in writing to: The Station Manager, Rhode Generating Station, Rhode, Co. Offaly.

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