

# Ringsend Generating Station

DUBLIN



# *Ringsend Generating Station*

This is the largest station in the Irish Electricity network. It was developed in two stages, Ringsend "A" of 90,000 kW capacity, commissioned in 1955-56 and Ringsend "B" of 180,000 kW capacity, commissioned in 1965-56. RINGSEND "A" – comprises four Babcock and Willcox 200,000 lb./hr. boilers delivering steam at 625 p.s.i.g. 865°F to a receiver for distribution to three Parsons 30 MW turbo-generators. The boilers were specially designed for running on either pulverised coal or fuel oil, depending on the current world fuel prices.

RINGSEND "B" – comprises three units, each having a VKW boiler delivering 550,000 lbs./hr. of steam at 1,175 p.s.i.g. 960°F to a 60,000 kW turbine. Two of the turbines are Siemens impulse reaction type and the third machine is a Parsons impulse reaction turbine. The boilers are by VKW and are of modern design. Fuel oil is fed to 9 pressure atomising burners at 600 p.s.i. 250°F. Combustion can be maintained without smoke or unburnt loss with only 2½% excess air, while steam at rated temperature is available down to half load. These boilers are designed to operate on fuel oil only.

The generators are cooled by hydrogen automatically maintained at 30 p.s.i. and 98% purity within the generator casing.

## **Fuel Supplies:**

Coal and oil storages are 30,000 tons and 82,000 tons respectively, giving 10-15 weeks capacity at normal

demand. Coal supplies are shipped in from England but Irish coal from Arigna and Castlecomer were used to a significant extent.

Fuel oil supplies come from various sources, such as the Middle East, Whitegate Oil Refinery, Libya, etc. The tankers berth at the wharf at the station and pump direct to the storage tanks.

### **Electrical Output :**

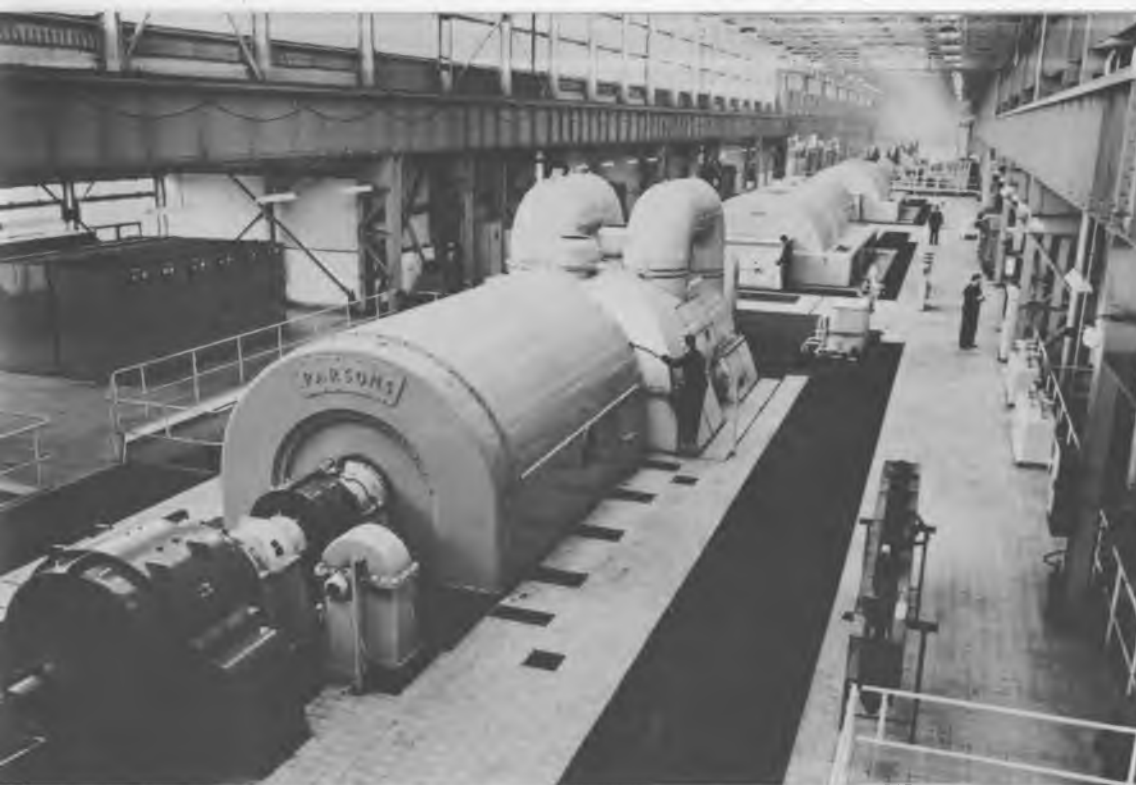
Total maximum output capacity is 2,268 million units per annum or 6.48 million units per day, corresponding to a fuel consumption of 567,000 tons of fuel oil. The generator output is at 10,500 volts and this is stepped up to 38,000 volts and 110,000 volts in transformers at the station and fed to the main transmission system.

### **Water Supplies :**

Two separate types of water supplies are required. River water is used for cooling the turbine condensers. For this purpose nearly  $1\frac{1}{2}$  million tons of water are pumped through the station per day, being raised in temperature by about 15°F in the process.

About 200 million gallons of city water per year are used for auxiliary plant cooling and boiler make up. Recently a motor driven fan cooling plant has been installed to enable hot water to be re-used after cooling, thus saving the cost of town water.

The city water for make up to the boilers is purified in resin-filled Ion Exchange Plants and to meet the exacting demands of these high pressure boilers the solids content is reduced to nominally zero, while the conductivity is reduced to about one hundredth of that in normal city drinking water.



Above: Generating Hall



Below: Electrical Control Room

## TECHNICAL PARTICULARS

### Fuel

Coal; nett calorific value 10,900 Btu/lb.

Oil; nett calorific value 17,400 Btu/lb.

Fuel storage capacity:

At present (1971): Coal 30,000 tons; Oil 82,000 tons.

### Boilers

	1, 2, 3 and 4	5, 6 and 7
Maker	B & W	V.K.W.
Firing	Coal or Oil	Oil
Economic rating k lb./hr.	160	410
M.C.R. k lb./hr.	200	550
Pressure p.s.i.	625	1,175
Temperature °F	865	960

### Turbo-Alternators (There is no turbo-alternator No. 4)

	1, 2 and 3	5 and 6	7
Maker	Parsons	S.S.W.	Parsons
Type	Reaction, twin cylinder	Impulse reaction, twin cylinder	Impulse reaction, twin cylinder
Economic rating MW	24	50	50
M.C.R. MW	30	60	60
Speed r.p.m.	3,000	3,000	3,000
Pressure p.s.i.	600	1,150	1,150
Temperature °F	850	950	950
Voltage kV	10.5	10.5	10.5
Power factor	0.8	0.8	0.8

### Electrical Equipment (Ratings, etc. given in Line Diagram)

10/110kV and 38/110kV transformers	A.C.E.C.
10/38kV and 38/5/3.3kV	Parsons
110/6.6kV	A.E.G.
10, 6.6 and 3.3kV transformers	A.C.E.C. and Parsons
110 and 38kV arc suppression plant	A.E.G., A.S.E.A. and Brown-Boveri
110, 38, 10 and 5kV switchgear	Brown-Boveri
6.6kV switchgear	Laur Knudsen
3.3kV switchgear	Cook and Ferguson
380V switchgear	G.E.C. and Voigt & Haeffner
Electrical control room equipment	Charles Maier
Thermal control room equipment	Hartmann & Braun

# One of our many Stations

Of the 28 generating stations 9 are hydro, 4 operate on milled peat, 6 on sod peat, 1 on native coal, 6 on oil, 1 on sod/milled peat and 1 on coal or oil.

<b>HYDRO STATIONS</b>		<i>Capacity Mw.</i>	<b>STEAM STATIONS</b>		<i>Capacity Mw.</i>
River Shannon:	Ardnacrusha	85	Portarlinton (Co. Laois)		
River Liffey:	Pollaphuca	30	<i>sod peat</i>		38
	Golden Falls	4	Tarbert Island (Co. Kerry)		
	Leixlip	4	<i>oil</i>		120
River Erne:	Cathaleen's Fall	45	Allenwood (Co. Kildare)		
	Cliff	20	<i>sod peat</i>		40
River Lee:	Inniscarra	19	Ferbane (Co. Offaly)		
	Carrigadrohid	8	<i>milled peat</i>		90
River Clady:	Clady	4	Lanesborough (Co. Longford)		
			<i>sod and milled peat</i>		60
		219	Rhode (Co. Offaly)		
			<i>milled peat</i>		80
<b>UNDER CONSTRUCTION</b>			Bellacorick (Co. Mayo)		
Pumped Storage			<i>milled peat</i>		40
Turlough Hill, Co. Wicklow		292	Shannonbridge (Co. Offaly)		
			<i>milled peat</i>		40
<b>STEAM STATIONS</b>	<i>Capacity Mw.</i>		Arigna (Co. Roscommon)		
Pigeon House "A" (Dublin City)			<i>native coal</i>		15
<i>oil</i>		90	Miltown-Malbay (Co. Clare)		
North Wall (Dublin City)			<i>sod peat</i>		5
<i>oil</i>		48	Screeb (Co. Galway)		
Ringsend-(Dublin City)			<i>sod peat</i>		5
<i>coal/oil</i>		270	Cahirciveen (Co. Kerry)		
Marina (Cork City)			<i>sod peat</i>		5
<i>oil</i>		120	Gweedore (Co. Donegal)		
Pigeon House "B"			<i>sod peat</i>		5
<i>oil</i>		268			1,459
Great Island (Co. Wexford)			<b>Total Capacity,</b>		
<i>oil</i>		120	<b>Hydro and Steam</b>		<b>1,678 Mw.</b>

*Thermal Control Room*

