



## Coolkeeragh Power Plant >>



## Background and History ❖❖

**Coolkeeragh ESB** is a dynamic, cross border partnership bringing together Coolkeeragh Power and ESB International (ESBI), leaders in international investment development and management in the power sector.

Coolkeeragh ESB was established to successfully pursue a joint bid to construct the £200m 400 megawatt (MW) Combined Cycle Gas Turbine (CCGT) power plant, at the site of the former Coolkeeragh oil fired power station.

**Coolkeeragh Power Limited (CPL)** had been generating electricity on the site since 1959 and ceased operations at the end of March 2005.

**ESBI** has a proven and successful international track record in investing, building, operating and maintaining major power generation projects in over 100 countries worldwide and is a trusted partner in the energy industry. In addition to Coolkeeragh Power Plant, ESBI has power plants in development in northern Spain and southern England.

ESB International is a wholly owned subsidiary of ESB, the national electricity utility of Ireland since 1927.

The Coolkeeragh ESB plant generated its first power at the end of October 2004, following a programme of tests and commissioning and started commercial production in early June 2005. The plant was officially opened by the Parliamentary Under-Secretary of State, Ms. Angela Smith MP and the Minister for Communications, Marine and Natural Resources, Mr. Noel Dempsey TD on 22nd June 2005.

## Coolkeeragh Power Plant >>

The Coolkeeragh ESB power plant is a £200 million investment in the energy infrastructure of Northern Ireland using the latest technology to produce electricity from natural gas. It is the most efficient large scale power generation unit on the island of Ireland.

It is one of the largest ever inward investments in the region.

The principal contractor for the project was a consortium of General Electric of the United States and VA Tech Hydro of Austria. Many local sub-contractors also worked on the project.

## Construction Project >>

Throughout the construction phase Coolkeeragh ESB has worked with Invest NI to ensure that local suppliers and businesses directly benefited from the development. This initiative resulted in over £30 million worth of business for local firms and businesses. The success of this model has led to its planned use for all future major investment projects in the region. At the height of the two year construction programme more than 700 people - many of them local contractors - were employed on the site - making it the largest construction project in the north west.

Safety at the plant has been a key focus for Coolkeeragh throughout. Comprehensive safety plans were implemented in partnership with the main contractor to continuously improve safety awareness. During the final 15 months of construction these efforts contributed to the highest standards of safety on the project and resulted in only one lost time day in the 1.3 million work hours.

## Plant Operation >>

The plant of Coolkeeragh has switched from the outdated oil burning technology of the old power station to state of the art power generation technology.

The new CCGT plant operates using natural gas, which is delivered to the power plant via the newly constructed north west gas pipeline. To ensure continuity of power generation in all circumstances, the station may also operate on liquid fuel (low sulphur distillate) should the supply of gas be interrupted for any reason. Liquid fuel is delivered to the site in sea-going tankers via the existing jetty facilities.

A local management team of 40 people is in place to run and maintain Coolkeeragh. Now that it is fully operational, the plant is providing local business with supply contracts worth up to £7 million per year.

## Local Community »»

### COOLKEERAGH ESB: SUPPORTING LOCAL ENTERPRISE

The project benefited from cross community support. Coolkeeragh ESB would like to thank the local and wider community for their understanding as large scale construction took place.

Coolkeeragh ESB remains committed to the locality and has in place an ongoing programme of community projects and wishes to continue to play an integral part in the north west.



## Environment »»

### COOLKEERAGH ESB & THE ENVIRONMENT

Combined Cycle Gas Turbine technology, which is employed at the Coolkeeragh ESB plant, is the most energy efficient, environmentally friendly technology available for electricity generation from fossil fuels. For the same amount of input this CCGT plant, incorporating the very latest power generation technology, generates 50% more electricity than a traditional thermal plant. There are many benefits of CCGT to the environment over other forms of power generation in terms of efficiency, emissions and noise control.

Additionally, Coolkeeragh ESB provided a stringent Environmental Impact Study for submission as part of the licensing and planning process before construction could begin.

Visually the plant is less intrusive to the landscape as it is built within a smaller area of the old station, on a brown field site already zoned for industrial use. Wherever possible, the new facility used existing on-site services and infrastructure of the old facility and there was no need to construct any additional overhead powerlines.

# Main Contractors >>

## EPC Contractor

Consortium of General Electric Company, of the USA and VA Tech, of Austria

## Gas Turbine and Auxiliaries

General Electric Company

## HRSG and Auxiliaries

Standard Fasel Lentjes B.V

## Steam Turbine and Auxiliaries

Alstom Power Generation AG

## Design Engineering and Project

VA Tech. Management

## Main Civil Design and Construction

Farrans Construction Ltd., N. Ireland

## Natural Gas System

Petrogas, Gas Systems, Netherlands

## Main Transformers

### Steam Turbine

Elin Transformatoren GmbH, Austria

### Gas turbine

VA Tech Peebles Transformers Ltd

## DCS

ABB, Germany

## CW System and Associated Equipment

Joint Venture between Project Design Engineers, Allpipe Engineering and MiM

## Main CW Pumps

ABS Pumpen

## Medium and Low Voltage Switchgear

Natus, Germany

## Other Civil Contract

Brickiln Limited, N. Ireland

# Technical Data >>

## Key Performance Data >>

Plant Output	398.820 MW
Plant Heat Rate	6332.5 kJ/kWh (Eff. 56.85%)
Ambient Air	9 C
CW Temp./	12 C
Flow Rate	10 m3/sec
Fuel	Natural Gas LHV 45,893 kJ/kg
Liquid Fuel	Distillate Oil
HRSG	Triple Pressure
Steam Data	124/26/4.7 bar a. 567C/566C/267C
Flow Rate	275/324/30.5 t/h

## Plant Data >>

Main Power Block	
GT/ST/HRSG/Admin.	
Workshop & Stores	
Maximum Building	38m
Height	
Chimney Height	70m
Main Buildings	130,824 m3
Volume	
Main Buildings	4716 m2
Footprint	
Structural Concrete	15000m3
Yards, Roads etc.	8,500m2

## Emissions>>

### @15% O2 Dry 60-100% GT Load

Natural Gas (max)	NOx	50 mg/Nm3
	CO	19 mg/Nm3
Liquid Fuel (max)	NOx	120 mg/Nm3
	CO	25 mg/Nm3

## Electrical >>

Main Transformers	
Steam turbine	15.75kV/110kV
Gas turbine	15.75kV/275kV
Unit Boards	6.6kV/400V

# Coolkeeragh Power Plant >>

## Station Flow Chart >>

