



NEL Power—Isle of Man

# Manx Electricity Authority, Pulrose Power Station

## Project Description

The Pulrose Power Station was constructed to provide the Isle of Man with its own source of economical power allowing the Island to be less dependent on diesel engines and cable power supplied from England. In addition to efficiency, the size and visual appearance of the plant was critical. The plant is located within a populated tourist area with limited space availability to house the generating equipment. Because of the tight schedule for the combined cycle plant, the two (2) OTSGs, gas turbines and steam turbines were installed after the construction of the building. The plant (2x2x1) has a full dry run capability, eliminating the requirement for a bypass stack and diverter valve.



The steam generation equipment was selected to provide the plant with safe and reliable operation for 365 days a year, fast start-ups, small footprint, and a simple cycle dry run capability at the most cost-competitive price.

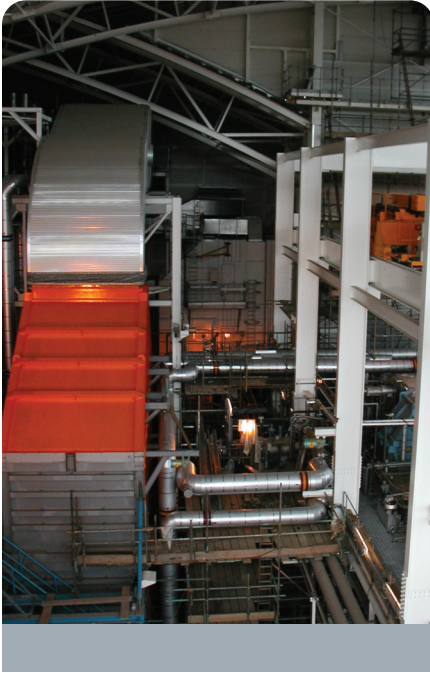
IST's two (2) OTSGs were built with HP and LP steam circuits and they also included exhaust ducts which combined with the three (3) diesel engine exhausts streams to form one main plant stack.

## Special Conditions

OTSGs are ideally suited to cycling applications due to the elimination of drums and other thick-walled pressure parts. The thin-walled tube design and high-grade tube material permits regular start/stop operation without the thermal stress concerns usually associated with drum-type HRSGs.

The design of OTSGs allow the Pulrose Power Station to cycle daily and dry run in simple cycle mode.





## OTSG Common Benefits

IST's unique Once Through Steam Generators are designed to run dry, eliminating the need for bypass stacks, diverter valve systems and stack silencers. OTSGs have once through flow paths; therefore no steam drums or blowdown systems are required.

The absence of drums and the modular design and manufacture of OTSGs facilitate easy and rapid shipment and erection of the units. Each unit consists of five modules: inlet duct, plenum, steam generator module, hood, and the stack, which reduce erection time and crane requirements. The use of small diameter tubes and modular construction allow for a lightweight and compact design that is suited for projects that have weight and size restrictions.

OTSGs demonstrate a significant improvement over the natural circulation drum-type units. They offer high availability, proven experience, and cost saving benefits.

### CONTRACT SUMMARY

Gas Turbine	Turbine Output (MW)	Exhaust Weight (lbs/hr)	Fuel	Exhaust Temp. (°F)	Firing Temp. (°F)	Feedwater Temp. (°F)
LM2500PK	31	705,688	Natural Gas/42 Oil	928	NA	97
HP Steam Flow (lbs/hr)	HP System Pressure (psia)	HP Temp. (°F)	LP Steam Flow (lbs/hr)	LP Steam Pressure (psia)	LP Temp. (°F)	OTSG Total Heating Surface (sq ft)
76,364	827	903	17,777	100	496	172,954