



SNC Lavalin Constructors Inc.—
Toronto, Ontario, Canada

Greater Toronto Airports Authority, GTAA Cogeneration Plant

Project Description

The GTAA Combined Cycle Power Plant was constructed in 2005 to provide electrical power, cooling and heating for the Lester B Pearson International Airport. The 112 MW power plant is optimized to achieve low cost operation and reliable power delivery for Toronto's main airport.



IST was contracted to supply two (2) OTSGs for the GTAA Combined Cycle plant. The OTSGs were built with HP and LP steam circuits, and also included supplemental burners, Provisional SCR and CO systems for emissions control. The plant also features two (2) x 43 MW LM6000 gas turbines and one (1) steam turbine.

The customer selected OTSGs because they are ideally suited for a combined cycle application due to their efficient steam production and flexible operation. OTSGs are capable of extremely fast start-ups and are typically able to supply full steam loads within 60 minutes. Since OTSGs start from a dry condition, there is no requirement to slowly heat the water contained within the drum. The fast start-up of OTSGs allow both the gas turbines to reach full load and the SCRs to achieve their minimum operating temperature much quicker than traditional drum HRSGs.





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 at GTAA was mechanically installed on site in three to four weeks and required approximately 3000 installation man-hours.

Each unit consists of five modules: inlet duct, plenum, steam generator module, hood and the stack, which reduces 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 natural circulation drum-type units. They offer high availability, high efficiency, simple operation, dry running, and the lowest installed and life cycle costs in the industry.

CONTRACT SUMMARY

Gas Turbine	Turbine Output (MW)	Exhaust Weight (lbs/hr)	Fuel	Exhaust Temp. (°F)	Firing Temp. (°F)	Feedwater Temp. (°F)
LM6000	43	1,018,000	Natural Gas	852	1078	128
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)
174,884	760	703	11,476	179	398	245,970