



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 GTAA 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, 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 the OTSG because it is ideally suited for a combined cycle application due to its efficient steam production and flexible operation. The OTSG is capable of extremely fast startups and is typically able to supply full steam loads within 60 minutes. Since the OTSG starts from a dry condition, there is no requirement to slowly heat the water contained within the drum. The fast startup of the OTSG allows both the gas turbine to reach full load and the SCR to achieve its minimum operating temperature much quicker than a traditional drum HRSG.



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## OTSG Common Benefits

IST's unique Once Through Steam Generators are designed to run dry, eliminating the need for a bypass stack, diverter valve system and stack silencer. The system has a once through flow path; therefore no steam drums or blowdown systems are required.

The lack of drums and the modular design and manufacture of the OTSG facilitates easy and rapid shipment and erection of the unit. Each unit at GTAA was mechanically installed on site in three to four weeks and required approximately 3000 installation man-hours.

The unit is made up of at least five modules; inlet duct, plenum, steam generator module, hood and the stack, which reduces erection time and limits the crane requirements. The use of small diameter tubes and modular construction allow for a light weight and compact design that is definitely suited for projects that have weight and size restrictions.

The OTSG demonstrates a significant improvement over the natural circulation drum-type units. It offers 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
Steam Flow (lbs/hr)	HP System Pressure (psia)	Temp. (°F)	Steam Flow (lbs/hr)	LP Steam Pressure (psia)	Temp. (°F)	OTSG Total Heating Surface (sq ft)
174,884	760	703	11,476	179	398	245,970