



# Conestoga-Rovers & Associates Project Summary

## KEY PROJECT ELEMENTS

- District Energy System
- Electricity Generation and Heat Recovery
- Geotechnical Investigation
- Foundation, Structural, and Systems Design
- Utility Interconnection Coordination
- Plant Construction
- Plant Commissioning

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## COMBINED HEAT AND POWER NATURAL GAS COGENERATION PLANT MARKHAM, ONTARIO



OWNER: MARKHAM DISTRICT ENERGY INC.  
DURATION: FALL 2006 TO SUMMER 2008

Markham District Energy Inc. (MDEI) contracted Toromont Power Systems (Toromont) to undertake a turnkey project for a natural gas fuelled combined heat and power plant to support a district energy system in the Town of Markham for the purposes of electricity generation and the recovery of heat for beneficial use.

Toromont Power Systems retained CRA Contractors Limited (CRACL) to undertake the detailed design, construction, and commissioning of the natural gas cogeneration plant.

CRACL's scope of work included geotechnical investigation, foundation design, structural design, fuel gas system design, thermal heat recovery and rejection design, ventilation design, electrical systems design, plant control systems design, and utility interconnection coordination. Furthermore, CRACL was responsible for all construction activities and the plant commissioning process.

The initial phase of the project was to construct a new building enclosed by precast wall panels constructed to match the surrounding buildings. The scope of construction included reinforced concrete foundations, structural steel, hydronic heating systems, and building services. From a process perspective, the 5.2 MW plant facility consists of two Caterpillar G3612 natural gas driven reciprocating engine generator sets; jacket water, aftercooler, oil cooler, and exhaust heat recovery systems; waste heat rejection systems; natural gas fuel systems; compressed air systems; ventilation systems; high voltage switchgear; medium voltage switchgear; power transformers; motor controls; plant controls; and automation.

Electricity is delivered into the local electrical grid. Recovered heat in the form of hot water is supplied to a district energy system.

The design phase of the project began in fall 2006. Commissioning was completed in the spring of 2008.