NORTHEAST

U.S. DOE

CHP Technical Assistance Partnerships

PROJECT PROFILE

Rochester Airport

1.5-MW CHP System

Site Description

Greater Rochester International Airport (GRIA) is located four miles southwest of Rochester, NY on the west side of the city and operated by Monroe County. The terminal totals 380,000 sq. ft., with 22 passenger gates. The county strives to maximize the benefits it provides local taxpayers. Reducing energy costs is one of many ways the county seeks to fulfill that goal. At GRIA this was achieved by installing two 750 kW engine-generators that produce about 90% of the site's electricity. Hot water recovered from the engines provides seasonal heating and cooling at an overall efficiency that can exceed 80% HHV on the coldest days of the year

Quick Facts

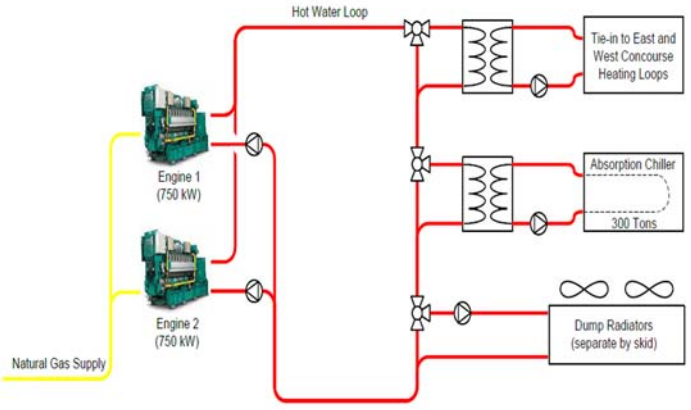
LOCATION: Rochester, NY (RG&E)
MARKET SECTOR: Transportation
FACILITY SIZE: 380,000 square feet
FACILITY PEAK LOAD: 1.5 megawatts (MW)
EQUIPMENT: Two Waukesha 750 kW Generators, one 300 Ton absorption chiller
FUEL: Natural gas
USE OF THERMAL ENERGY: Building heat and cooling
CHP IN OPERATION SINCE: 2002
TOTAL PROJECT COST: $2 million
ESTIMATED PAYBACK: 10 years
ENVIRONMENTAL BENEFITS: Carbon dioxide emissions reduced by 2,260 tons, Energy consumption reduced by 50%

Reasons for CHP

The county worked with Siemens Building Technologies, Inc., to implement a number of energy conservation measures (ECMs) at the site through an energy services performance contract that guaranteed the county a minimum level of monetary savings:

- The airport operations require backup electricity in the event of a blackout.
- The CHP provides additional economic savings by using the recovered heat for building heat in the winter and to power an absorption chiller for cooling in the summer.

Rochester International Airport installed a CHP system to save on energy costs. The system includes two 750 kW reciprocating engine-generators (left) and a 300 Ton absorption chiller that runs on waste heat (right).



The CHP system at Greater Rochester International Airport includes new modular generator Package (left) and waste heat recovery loop (right).

CHP Equipment and Operation

GRIA's CHP system is configured on two 750 kW, natural gas fueled engine-generator sets. The generators and related ancillaries were pre-packaged on separate skids to facilitate connection with the independent feeders that serve the airport's east and west concourses. Electricity is produced in parallel with the local utility. The generators' output is modulated to follow the site load; no electricity is exported to the grid. Both units are equipped with synchronous generators and can supplant use of the normal emergency power systems. Heat is recovered from each engine as hot water that can be used for spacing heating or circulated through an absorption machine to produce chilled water for air conditioning.

Excess heat is rejected to atmosphere through radiators included on the equipment skids. GRIA is guaranteed annual savings of $500,000 for all of the ECMs implemented through the contract with Siemens. This ensures the county's $2 million capital outlay will be recovered within ten years. However, payback is likely to be achieved in less time as energy prices continue to escalate. Carbon dioxide emissions should be reduced by 2,260 tons annually due to the greater overall efficiency of the CHP system compared to the conventional operation. Monitored data are being collected from the site and are available in an hourly format on NYSERDA's DG/CHP website from July 2006 through June 2011.

Lessons to Share

- Modular system provides redundancy and reliability.
- Absorption chiller offsets additional summer peak electrical loads.
- The interconnection process is complicated and takes time.
- Economic performance guaranteed by project developer.

For More Information

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