State University of New York at Buffalo

Gerster Trane Energy Services

Alumni Arena Microturbine Project Update NYSERDA CHP Presentation

New York City June 23, 2004

Presented By:

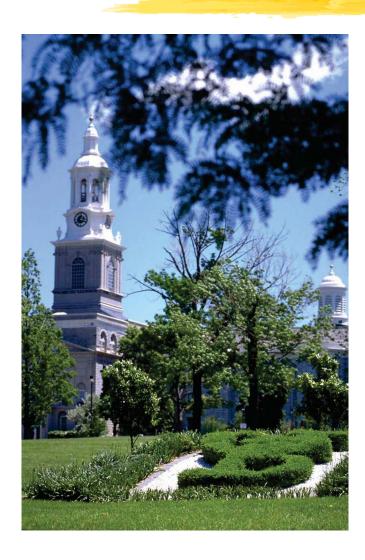
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University - Background



- Research based
- Largest in SUNY System
- The North Campus was built with all electric heat
- significant history in reducing costs/increasing efficiency



Demonstration Project Overview

Project Partners

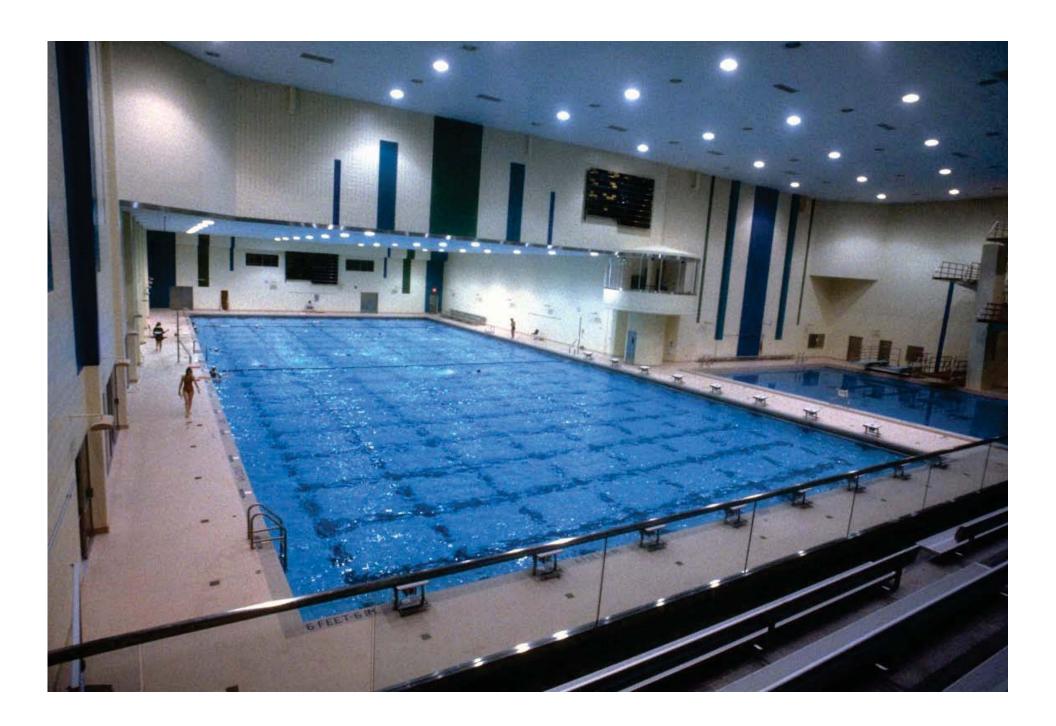
- University at Buffalo
- National Fuel
- Gerster Trane

Project technology

- Two 60 kW Capstone Microturbines with heat recovery
- Displaces 120 kW of electric pool heat Has become primary system

Project highlights

- 95% Availability
- 50% Annual Fuel conversion efficiency



Demonstration Project Concept

Problem statement

Demonstrate the viability of a unitary cogeneration system that reduces electrical costs, and increase fuel conversion efficiency with repeatable results

Project Approach

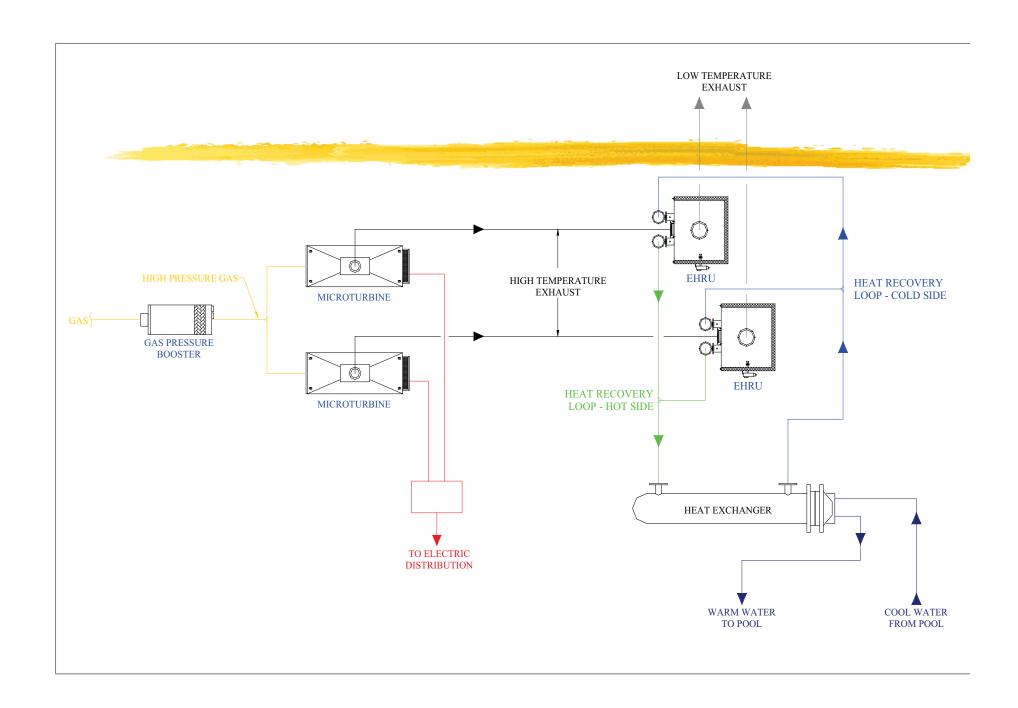
- look at loads that has matching electrical and thermal profiles
- electrically heated water domestic hot water
- pool base electrical loads with near constant thermal load

Project Plan

I run the pool pump motors(potentially parallel to grid) with microturbine power and displace electric heat with thermal output

Technology

- Two Microturbines
 - 60 kW output
 - heat rate 12,200 Btu/kWh
 - 541,000 Btu/hr available
- Two exhaust heat recovery heat exchangers
 - 288,000 Btu/hr recoverable
- Design fuel conversion efficiency = 61%



First Year Economics

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Cogen electric made 908,412 kWh	\$55,413
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- Electric heat avoided 800,149 kWh \$48,809
- Total electric avoided 2,160,000 kWh \$104,222

Gas consumed

12,832 MCF (\$87,770

- NIMO SC-7 costs (\$2,213)
- NIMO SC-3A savings \$7,891
- Net annual Savings \$22,130

Lessons Learned

- Capital cost savings ideas What we would do different
 - Integrated Heat exchangers
 - Simplified enclosure
- Filtration
 - increase air filter change frequency to twice per year
 - pre filter on enclosure

Questions?

Gerster Trane Energy Services

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