CASE STUDY

Cogeneration System Provides Cost-Effective Power for Focus:HOPE

On Oakman Boulevard, on the west side of Detroit, a complex of renovated buildings that makes up Focus:HOPE lines both sides of the street. Within the walls of these buildings lies one hope for the American manufacturing's global dominance for the next century.

The complex is the vision of cofounders Father William Cunningham and Eleanor Josaitis. Since 1968, they have been steadily improving the quality of life in Detroit. Today, their vision includes a child development center, manufacturing technologies programs, and a state of the art manufacturing facility that turns out engine components for the Big Three auto manufacturers and Detroit Diesel.

Focus:HOPE's Center for Advanced Technologies is affiliated with six major colleges and seven corporate partners. They work together with Detroit city and suburban schools to prepare students for advanced degrees.

Father Cunningham's vision began as a vacant Ford engine plant. Today, the Center for Advanced Technologies includes everything from the latest machining equipment, engineering classrooms, electronic libraries, conference facilities, to its own power plant.

Powering this 250,000 sq. ft. facility, and others on the Focus:HOPE campus, is a cogeneration system designed by Cogeneration Consultants. The power is generated by three 1000 kW and two 500 kW natural gas fired reciprocating engine driven generator sets.

Large viewing windows allow visitors and building personnel to watch the cogeneration system at work. Father Cunningham requested the viewing ability as to showcase the state of the art generation facility as part of his national training demonstration. "It felt good that the experiment worked and the naysayers went away," said Father Cunningham proudly. "We have enjoyed 42 percent savings for this project. It's just another part of the breaking the manufacturing perception. Why buy electricity when we can generate it ourselves for one-third the cost?"

Steam recovered from the engines is used by the HVAC system for all of the facilities air conditioning and heating requirements. Chilled water is generated by the use of an adsorption chiller. Air flow, purity and temperature are very important on the shop floor.

The entire cogeneration system is controlled by a Direct Digital Controller that monitors over 1,000 operating input points. The DDC determines the optimum operating configuration based on the input data. Starting and stopping of pumps, fans, and the engines is controlled by the DDC.

If Father Cunningham's experiment continues to be successful, it's possible that other manufacturing facilities will enjoy the efficiencies gained by a well-designed cogeneration system.

<u>Plant Generation Data:</u>

Electrical Output:	4000 kW
Voltage:	4160 V
Thermal Output:	20,000 Lb/hr
Pressure:	15 psig

<u>Facility Consumption Data:</u>

"H" Building	
Electrical:	2000 kW
Chiller Capacity:	320 tons
Heating Capacity:	5 MMBtuh
"B" Building	
Heating Capacity:	2.8MMBtuh
"A" Building	
Chiller Capacity:	180 tons
Heating Capacity:	1.7MMbtuh
"G" Building	
Electrical:	500 kW
"I" Building	
Electrical:	200 kW

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