



MIDWEST
CHP
APPLICATION
CENTER

In Partnership with
the US DOE



NiSource
Energy Technologies
A NiSource Company

combined heat & power in industry

Utilimaster Corporation

70 kW CHP Application

Project Profile

Quick Facts

Location:

Wakarusa, Indiana

Facility Type:

Paint Shop and Production Facility

Manufacturing Product Type:

Custom Commercial Vehicles

CHP Generating Capacity:

70 kW

Prime Mover:

MT70 Ingersoll Rand Microturbine

Primary Fuel:

Natural Gas

Heat Recovery Type:

- Hot Water
- Direct Exhaust

Heat Recovery Rate:

551,000 Btu/hr

Heat Recovery Applications:

- Truck Drying System
- Small Parts Drying Line
- Small Parts Paint Curing Line
- Plant Space Heating

Thermal Technology:

Dryomatic Desiccant Unit

CHP System Efficiency:

80%+ Design Efficiency

Began Operation:

July 2004

Background Information

Utilimaster Corporation, located in Wakarusa, Indiana, has been building custom commercial vehicles since 1973. The vehicle and small parts finishing processes include acid-wash, drying, paint application, and paint curing lines. For many years the vehicle drying process proved difficult due to the use of a gas fired radiant tube heating system. This inefficient mode of drying vehicles consumed significant amounts of energy, created an uncomfortable working environment, and represented a bottleneck in Utilimaster's production process.



Custom Commercial Truck Body at Utilimaster

Project Overview

Faced with a need to improve the operating efficiency of their product finishing line and reduce emissions—all the while maintaining a high standard of product quality—Utilimaster looked to NiSource Energy Technologies of Merrillville, Indiana, for an energy solution. NET, a subsidiary of NiSource Inc., designed a CHP system centered on a natural gas fired 70kW Ingersoll Rand microturbine for baseload electric power generation. The system features a control scheme whereby thermal energy is dispatched to meet the requirements of varying production schedules. The integrated CHP system incorporates a desiccant dehumidification unit which enables vehicle drying at approximately four times the previous rate.

Project Benefits

The uniquely designed CHP system at Utilimaster provides a number of benefits to the customer including the following:

- Improved energy efficiency
- Decreased vehicle drying time
- Increased productivity
- Decreased environmental impact
- Drying room expansion deferral
- Presented with Indiana Governor's Award for Environmental Excellence
- Awarded CHP Certificate of Recognition by the US EPA in 2005

Distribution of Recovered Heat

Heat recovered from the microturbine is utilized at three different plant process locations via hot water and direct exhaust:

- Water heated by the microturbine is used to regenerate a custom designed desiccant dehumidification system which removes latent heat while adding sensible heat to the process air stream. Inside the dehumidification unit, a silica gel-impregnated, honeycomb-type rotating wheel is used to collect and transfer moisture from the vehicle drying room to atmosphere. Process air passes through the wheel, where moisture is chemically absorbed; hot, dry air is returned to the room to expedite the drying process. Waste heat from the microturbine is used to remove moisture from (regenerate) the desiccant wheel. This warm, humid air stream is routed either directly to atmosphere or to an adjacent area of the plant for comfort purposes when so desired.
- Subsequently, the hot water is sent to a tube and fin heat exchanger that is used as an economizer at the fresh air intake of the drying oven in the small parts finishing line.
- Clean exhaust exiting the microturbine is injected directly into the curing oven in the small parts finishing line.



Ingersoll Rand Microturbine



Dryomatic Desiccant Unit

State Recognition

On October 17, 2005, on behalf of Indiana Governor Mitchell E. Daniels Jr., Thomas W. Easterly, commissioner of the Indiana Department of Environmental Management, presented Utilimaster Corporation with the Governor's Award for Environmental Excellence for their energy saving CHP system. Utilimaster was one of 11 businesses and one non-profit bestowed with the honor and won in the energy/renewable resources category.

Thomas W. Easterly stated that the award recipients' decisions to invest in environmentally beneficial projects "positively affect the environment and make our state a better place."

For further information, contact:

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"This CHP application is an excellent example of Utilimaster's commitment to finding energy-efficient and environmentally-friendly solutions that allow the company to maintain its competitive edge in terms of product quality and value."

"A major environmental advantage of this system is that it emits 90 percent less nitrogen oxide (NOx) than a conventional coal-fired electric generation system. This reduction in emissions is the equivalent of removing about 73 cars from the road."

Dan Murray
Assistant Commissioner
IDEM's Office of Pollution
Prevention & Technical
Assistance

*Former Director of
Environment, Health and
Safety for the Utilimaster*

**CHP Certificate
of Recognition
by EPA**

