SOUTHCENTRAL

CHP
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O'Hair Shutters

1.3-MW CHP System

O'Hair Shutters, the largest domestic shutter manufacturer in the U.S., uses CHP to reduce energy costs at its headquarters and manufacturing facility in Lubbock Texas.

Quick Facts

LOCATION: Lubbock, Texas
MARKET SECTOR: Plantation Wood Shutters
FACILITY PEAK LOAD: 1.5 MW
EQUIPMENT: Three 2G CHP systems, powered by five MAN recip engines
FUEL: Natural gas
USE OF WASTE HEAT: Paint drying; plans for kiln heating and absorption cooling
TOTAL PROJECT COST: $2M
ANNUAL ENERGY SAVINGS: $480,000
PAYBACK: ~4.2 years
CHP IN OPERATION SINCE: One system installed in 2011, two more in 2013

Site Description

O'Hair Shutters is the largest domestic plantation shutter manufacturer in the United States. The company produces interior and exterior shutters for homes, on a 40-acre facility in Lubbock, Texas. In operation since 1940 and run by the fourth generation of the O'Hair family, the company prides itself on the use of American hardwoods, solid construction, advanced design, respect for the environment, honesty, and reliability.

Reasons for CHP

O'Hair decided to install combined heat and power (CHP) to reduce its high electricity costs. The plant experienced a 24 percent rate increase from its utility in one year and expected prices to continue to rise. With success of its first CHP system in 2011, O'Hair installed two additional CHP systems in 2013.

"We can generate electricity at less than half the price that of what the utility charges," said Drew Tucker, P.E., O'Hair's Director of Engineering. Since installation, O'Hair has saved more than $40,000 per month on combined utility costs (electric and natural gas).

2G Patruus 280kWe unit (left) and 500kWe Agenitor Twinpack (right) at O'Hair's manufacturing facility in Lubbock, Texas

CHP Equipment & Configuration

O'Hair uses three CHP systems built by the German-based company 2G. All three units are powered by MAN reciprocating engines that burn natural gas. The first unit, installed in 2011, is a 2G Agenitor Twin Pack, consisting of two 250kWe engines. In 2013, O'Hair installed another 2G Twin Pack with two 265kWe engines, and a single 2G Patruus 280kWe engine.

O'Hair uses the waste heat from the single 280kWe CHP unit for a paint drying process. Exhaust gas from the engine is run through a series of heat exchangers to produce hot water at 196°F, which then heats the paint drying system. In the next 18 months O'Hair is planning to install an absorption chiller to cool one of its buildings, using the heat from one of the Twin Pack CHP units. O'Hair also has plans to use the waste heat from the other Twin Pack CHP unit to power a high-temperature (200°C) kiln. The company has reduced its total annual energy costs by about $480,000—and this will increase further when the waste heat from the other two CHP units systems is fully utilized.

CHP Operation

The three CHP systems generate about 85 percent of the site's electricity needs. They run 20 hours per day, five days a week (Monday through Friday), only running when the facility is in operation. The CHP systems run at steady throttle throughout operating hours, and are stagger-started and stopped to match the facility's loads. Staff at the O'Hair facility performs day-to-day maintenance on the systems, contracting out to MAN certified technicians for more complex work.

Lessons To Share

Tucker encourages other sites to look into CHP for reduced energy costs, and shared the following tips: "During the first few months of operation there were definitely growing pains for our staff—but the on-site power generation has more than paid for itself. We chose 2G because they provided systems sized to our electrical needs that also complied with all the air emissions requirements."

"Our largest benefit, and the main reason we looked into these generators in the first place, is our reduced energy costs. We are saving over $40k per month in energy costs by producing such a large percentage of our own power."

— Drew Tucker P.E., Director of Engineering

For More Information

U.S. DOE SOUTHCENTRAL CHP TECHNICAL ASSISTANCE PARTNERSHIP (CHP TAP)
www.scchptap.org

O'HAIR SHUTTERS
www.ohair.com

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www.energy.gov/chp

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