



# Manufacturer adds drives, cuts energy use Texas-style

Attaching drives to already-existing fan motors may not seem like a big deal to some, but for one Texas manufacturer, this seemingly-simple project is already paying out at over \$10,000 per month in energy savings. The plant's team worked with Siemens Energy & Automation, and its local distributor AWC, to come up with the plan, test and measure the first installation, and move forward to address all their motors. At an annual savings of over \$120,000 and a 5½ month return on investment, it was one of the few process improvements the factory MRO team was able to pull off in this tough economy.

## **Variable Frequency Drives – more valuable to the factory than ever before**

For decades, variable frequency drives (VFDs) have been successfully used by many types of commercial and industrial operations to introduce greater control over motor-driven applications. VFDs are used to adjust a motor's speed to closely match output requirements, resulting in typical energy savings of 10 to 50 percent. They are a proven approach to reducing the energy consumption of industrial motors that may be driving fans, pumps or a number of other services.

Unfortunately, many industrial plants have yet to apply VFDs to applications that plant managers and engineers consider as outside their traditional areas for drive use. This is a missed opportunity, since according to the U.S. Department of Energy, electric motor systems account for nearly 70% of the entire U.S. manufacturing sector's electricity usage. The application of VFDs in order to reduce the electrical current draw of industrial motors alone can deliver very substantial energy reductions leading to impressive cost savings.

## **The Challenge: Reduce energy used by dryer fans with Variable-Frequency Drives**

The MRO team had a big challenge. The product they manufactured requires large industrial fans to draw out moisture. Like nearly every factory, it has been hit by higher energy costs and the staff was seeking ways to reduce usage. The team decided to investigate the potential benefits of installing a VFD.



## Drives

Answers for industry.

**SIEMENS**

"A 50 horsepower motor with a 90% efficiency, operating 24/7 would consume more than \$25,000 in electrical costs every year, without a VFD." explained David Figari, a productivity specialist for AWC, Inc., the local distributor for Siemens Energy and Automation.

"When you start a motor it takes a significant amount of energy to overcome friction and inertia," said Figari. "A motor can easily draw 600 percent of its full load amps to overcome these forces and to reach its maximum operating speed. But when a variable-frequency drive controls the motor, this initial power surge is eliminated and you significantly cut energy use."

#### **The Siemens Solution: Big energy savings provided by the Siemens Micromaster MM440 VFD**

The manufacturing team decided to test one fan using a power monitoring device and software, borrowed from the Siemens Power Monitoring Group. They captured the electricity demands for one of the fans, both before, and after installing a 200 horsepower drive.

On-site plant monitoring verified the current draw to be 175 Amps per fan. When the Siemens VFD was connected to the fan, the current pull dropped to 95 Amps – a reduction of 54%. Of course savings of that magnitude turned out to be a key component to justify adding more VFDs to the fan operations.

The energy-saving drive solution is the Siemens Micromaster MM440 VFD inverter, a vector drive designed to handle a variety of demanding variable-speed drive applications. The drive is especially suitable for applications that require dynamic response, torque control, and tight speed regulation. The Micromaster MM440 VFD combines programming flexibility for various applications and ease of use.

#### **Results: Energy Use down, savings are up.**

In addition to using the Micromaster drive to run fans, the MRO team also uses it to run basic conveyors, rotary air locks, auger screws and entry-level motion control. There are 45 Siemens drives plant wide, with more to come.

"In this application the customer had a damper on the air intake (they old way of controlling air flow) by opening up the damper fully and reducing the speed of the motor, we were able to reduce the fan speed to about 70% this resulted in nearly a 50% savings on the energy usage said Nick Kitto of Siemens. Otherwise it is like running a car at full speed with your foot on the brake. Now, the Micromaster 440 VFDs are installed to control the fans, and the drives are now saving the company a considerable amount on their electrical costs."

Of course the biggest result for this Texas manufacture was the Texas-size savings. The plant has been able to cut energy use by 50%, bringing six-figure energy savings and productivity improvements to the company.



Siemens Energy & Automation, Inc.  
Industry Sector  
3333 Old Milton Parkway  
Alpharetta, GA 30005  
1-800-964-4114

info.sea@siemens.com

www.sea.siemens.com

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