

DUST COLLECTION

Collecting Dust and Saving Energy

When Karges Furniture needed to upgrade its 30-year-old dust collector, it turned to a new supplier for an energy-saving dust collection system

By Heather Vyvyan



Torit 484RF dust collector from KOGER installed at Karges.

Karges Furniture, a high-end furniture manufacturer in Evansville, Ind., produces its furniture mainly by hand. Because of this, Karges uses machinery for less than 10 percent of the time on average, making classically designed dust collectors that run 100 percent of the time a waste of energy for the company.

Karges used a classic dust collecting system for almost 30 years. For the last five years, the system needed repairs on a regular basis. It was also undersized for the growing company and used a lot of horsepower.

“Our biggest fear was to come in and find the dust collection system not working,” says David Woolston, production manager at Karges. “We needed to replace it before it was completely broken.”

Woolston and Russ Groeninger, facility director at Karges, spent several years searching for the right fit. The project goal was to design the highest efficiency dust collecting system available.

About two years ago, Karges heard about Ecogate, Inc., a producer of a dust collection system that is designed to save energy by only running the dust collector when it is needed.

The thought of running a system other than a traditional dust collector was initially met with some resistance.

“It almost sounded too good to be true,” says Groeninger. After seeing the research on the energy saved, the company decided this system was the most economical choice.

“It is not just a normal dust collector; it is a system that is very economical,” says Groeninger.

Together with Koger, Inc., of Martinsville, Va., Ecogate designed an “on-demand dust collecting system” for Karges with auto-start and auto-stop functions that use high-efficiency motors for fan, airlock, cleaning and transport fan. According to Ecogate, classical industrial dust collecting design creates a system for air-volume of 98,626 CFM with an approximately 400-hp fan motor running all the time to all woodworking machines, even if they are not used. The installed system at Karges uses a 250-hp high-efficiency Baldor motor, running at an average of 80 hp.

“The old system had to start one hour before the working shift and had to stay on for one and a half hours at the end of the day. This means the dust collector was running for 10 1/2 hours per

day,” says Groeninger. With the new system, the dust collector runs for about seven hours a day because it does not need to run before and after the shift and can be turned off during breaks.

“You get a high-powered dust collector that uses a minimal amount of electricity,” says Groeninger.

System Components

The system consists of a Torrit 484RF dust collector from Koger with blowpipe ductwork manufactured by Koger out of heavier gauge steel. The Ecogate system includes a computerized control unit and motorized gates at each machine. With sensors attached to each workstation, remote real-time workstation activity is monitored and the computer closes the gates for machines that are not running. Once a user turns on one of the machines, the computer reopens the gate.

The Ecogate Industrial System also utilizes a negative pressure/air-velocity sensor mounted in the main duct, which integrates into the control unit and guarantees optimal air velocity, according to Ecogate.

Sensors for the system are in most cases installed to open gates only during the cutting time. According to Ecogate's research, even if a CNC router is on almost 100 percent of the working hours, it is not cutting material the entire time. A user needs to move material in, program the CNC, move material out, clean the workplace and do the maintenance. Often not all heads are used during all operations (in this case, gates are installed separately for each head). The real cutting time is in average somewhere between 20 to 60 percent of working hours.

Ecogate says the average savings for all Ecogate industrial installations is 68 percent.

As OSHA standards become even stricter, it will be necessary for factories to increase the efficiency of dust collecting in order to comply with these standards, according to Ecogate. With this system the energy saved will never have to have been produced in the first place, resulting in the reduction of CO₂ emissions and waste reduction.

Ecogate recently won a “29th Annual Energy Efficient Building Award” from Energy User News for the Karges Furniture project. Awards will be presented in Atlanta on Nov. 13, during the World Energy Engineering Congress.

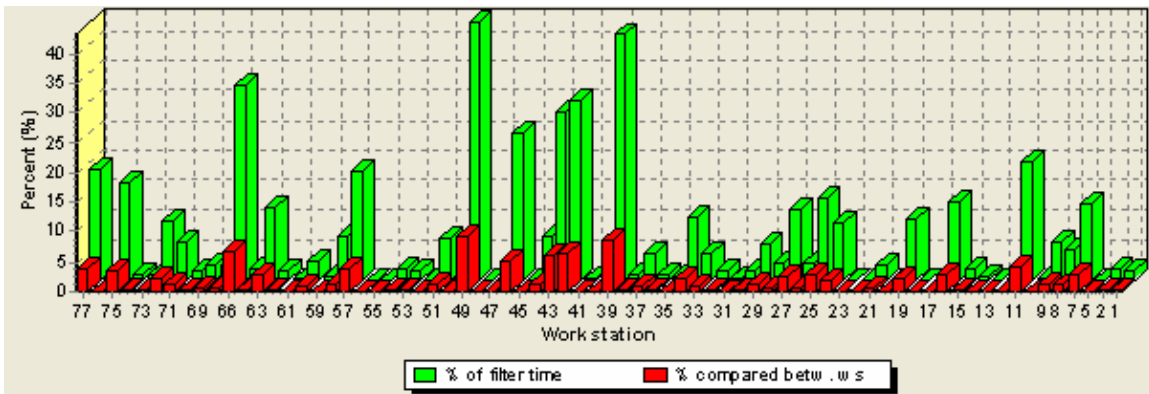
SOURCES

For more information on each of the sources cited in this article, contact information, product manufacturing and additional product photos circle the appropriate number on the inquiry card found in this issue.

Ecogate #142
Karges Furniture #143
Koger Air #144



The Ecogate Power MASTER is shown.



Activity of Workstations at Karges in percent of shift time. As you see, only nine workstations are working 20 percent of working shift or more.