



Project Case History

Tjernlund CPC-3 controller enables 'on-demand' make-up air system for 54-dryer laundromat

Benefits for owners include minimal exterior openings, lower construction costs and improved dryer performance with lower operating cost

A laundromat contractor and an equipment distributor teamed up to design a unique mechanical system for a new facility. The system provides up to 20,000 CFM of make-up air for 54 large commercial dryers from two four-square-foot roof openings. The brains of the system is a Tjernlund CPC-3 Constant Pressure Controller. It senses room pressure and automatically adjusts two roof-mounted modulating fans to deliver the amount of air needed by the dryers when they are operating. Multiple benefits for the owner include reduced construction costs, fewer roof penetrations, increased interior comfort for customers and expected energy savings. The system has been operating successfully since May 2005.



Fox Lake Laundromat is located in Fox Lake, Illinois, features 54 large commercial dryers that require up to 20,000 CFM of make up air.

are sized to handle the CFM requirements when all dryers are running at the same time. Air is typically delivered to dryers either through large exterior wall or roof louvers or by running ducts from each dryer through penetrations in the roof. These large openings provide enough outside air when all dryers are operational, but create problems when dryers are operating at minimum levels. Cold climate locations are subject to excess cold temperature.

Security can also be a concern as typical make-up air openings are large enough for an adult to fit through. Often, there is not enough square footage available on a roof or outside wall to accommodate the required area for entry of make-up air.

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A builder of Laundromats for the past 15 years, Jon Tumpack, owner of TCS Contracting in Romeoville, Illinois, has struggled with issues related to make up air supply. Tumpack teamed up with Cliff Curtis, a Business Development Specialist for laundry equipment distributor Mac-Gray, to design a better system for the Fox Lake Laundromat. They wanted an automated system that would overcome numerous installation and operational issues associated with traditional make-up air systems.

Traditional systems



Above: Tjernlund's CPC-3 Constant Pressure Controller senses room pressure and adjusts modulating roof mounted blowers to deliver volume of make up air required by dryers in operation.

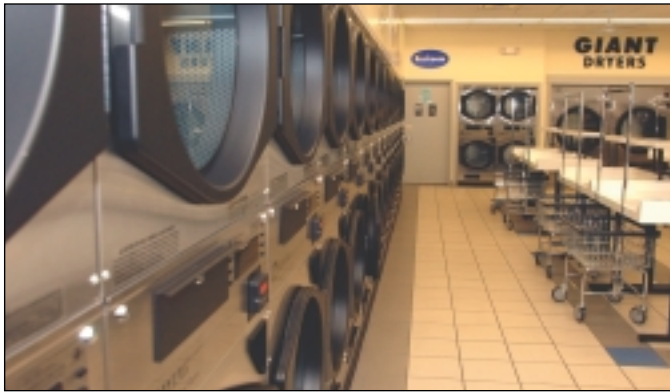


Conventional make-up air openings are typically too close to the dryer exhausts creating a problem as lint circulates back into the laundry through the make-up opening. Trying to distance multiple large openings from exhaust can add cost quickly.

Tumpack and Curtis' quest for a better system started with an Internet search for the latest venting technology that led them to Tjernlund's CPC-3 Constant Pressure Controller.

"We were looking for a way to create an "on demand" system...and that's why this controller interested us," said Curtis.

The CPC-3 controller senses pressure in the interior



Two modulating fans provide make up air for all dryers through two four-square-foot openings in roof.

space behind the dryers and ramps the modulating intake fans up or down to meet the demands of those dryers in use.

The CPC-3 controller is microprocessor-based and compatible with virtually all VFD controlled modulating fans. The controller is simple to program and operate and offers many options including interfaces with a motorized louver or CO detector. It also has a built in alarm relay that can be interfaced with a building management system.

"As a provider of the dryers, it is my responsibility to be sure make up air systems are properly sized," Curtis said. "Over the years, we've found many installations that are inadequate...mainly because some architects, installers and owners are reluctant to specify large openings in structures where they are needed or adequate space is not available."

Tumpack said with a conventional system in the Fox Lake Laundromat between 40 and 50 square feet of roof openings would be required to provide enough make-up air for the dryers. With the new system, there are only two four-square-foot openings.

"The other element we deal with in this part of the country is cold weather," said Tumpack. "A passive

make up air system is always at 100 percent opening, no matter if one or all dryers are in use, which means a tremendous amount of cold air entering the building on slow laundry days and uncomfortable customers."

Curtis noted that with the new system "You can go behind the dryers on a slow day and not feel any air coming down from the vents. However, on a busy day, when all of the dryers are going at once, there's quite a bit of air blowing down, but you hardly feel air movement at the service entrance behind the dryers."

Tumpack noted that the system is not creating a negative or positive pressure — it's balanced whether the fans are cranking out 10,000 CFM or 1,000 CFM.

Curtis and Tumpack's new system fits right in with the energy savings theme they are featuring in a new facilities development program.

"Since we're using laundry equipment, water heating and lighting systems that work together, it affords us the opportunity to create more high energy efficient installations," Curtis said. "Our industry is so dependent on utilities such as gas...and right now there is a lot of buzz about gas consumption."

Tjernlund CPC-3 Features:



- Large lit display and easy to use soft touch keypad.
- Primary functions can be programmed via dedicated keys, eliminating scrolling through multiple screens.
- Additional LED's indicate limit(s) status, VFD operation and fault status.
- Correct Inducer/Blower rotation is determined by display prompts and changed through DIP switches on the circuit board.
- System fault diagnosis readout and retrieval.
- Built-in alarm alerts building maintenance personnel if system faults. Alarm relay also allows interface with building management system.



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