Specified Systems Edition

EVENTS

Volume III

valuable information and ideas for better venting

Dryer Venting System solves lint problem, cuts heating bills

The problems: **Lint from two clothes dryer vent systems was being spread throughout a five-story dormitory. An exhaust fan in continuous high speed operation was significantly contributing to the dorm's heat loss.**

The solution: **Install a modulating fan on the roof to stop lint leakage as well as reduce electric heat bills.**

Ken Jenson of Williams College said energy savings from revised dryer vent system was in step with the school's goal of reduced energy consumption.

It started with a phone call from Ken Jensen of the Building and Grounds department at Williams College in Williamstown, Mass. to Four Seasons Heating & Cooling, Inc, in nearby Dalton, Mass. regarding a dryer exhaust problem in a dormitory. There were two laundry rooms on the first floor of the building, each containing five dryers. Lint was escaping from both exhaust systems, entering the HVAC system and being distributed throughout the three-story building.

Upon inspecting the installation, Tom Laureyns, President of Four Seasons, determined there were several reasons for the problem. "Besides the exhaust ductwork not being sealed well, the entire stack was under positive pressure because the existing inline exhaust fan was located in the ceiling near the dryers," said Laureyns. "These two factors were causing lint to leak out at every joint in the stack. Furthermore, the existing single speed fan, which was not designed to handle lint, ran continuously whether the dryers were being used or not. It was literally sucking tempered air out of the laundry room—a major energy waster."

HVAC Contractor Tom Laureyns (l) and Ken Jensen (r) of Williams College's Building & Grounds Dept.

Since finding energy saving opportunities along with fixing equipment operating problems is one of Four Seasons' primary objectives on every job, Laureyns recommended reconfiguring the system using a dryer venting system made by Tjernlund Products. It would not only cure the lint problem, the fan would modulate to match demand to reduce

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From Tom's Desk

by Tom Tjernlund, Vice President

For years multi-story hotels and residential buildings have relied on central ventilation shafts to exhaust air from bathrooms and laundry rooms. This method can have severe energy consequences since a fixed speed central exhaust fan always removes the maximum amount of air regardless of the true exhaust demand.

Our CPC-3 controlled exhaust systems always maintain a slight negative exhaust shaft pressure and automatically speed up to handle peek exhaust demand. Demand proportional exhaust saves energy by eliminating the need to heat or cool excessive amounts of outdoor make-up air.

See the accompanying story on dryer venting for the type of savings made possible through demand based exhaust.

FAQ

Q Is there any difference between a 230 and a 460 VAC system besides the voltage?

A Our 460 VAC VFD's include a transformer to step the voltage down to 230 VAC. This allows the installer to power both the CPC-3 and the VSAD-

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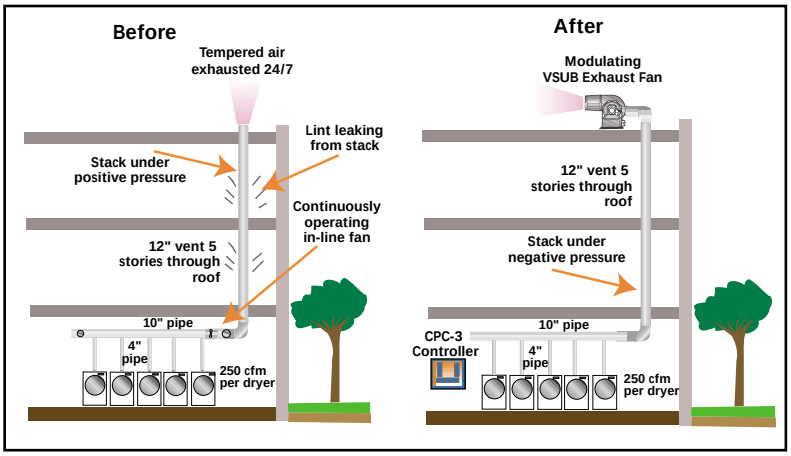
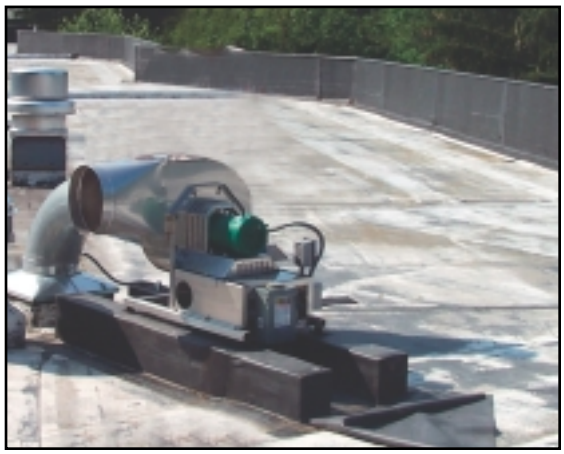
Dorm — Continued from front page





Roof-mounted Tjernlund VSUB fans (above) were selected to exhaust dryers because they modulate to save energy and are easy to clean.

tempered air being exhausted.

Laureyns was familiar with Tjernlund's dryer system and contacted Buckley Associates, a HVAC rep firm in Albany, New York, to verify specifications, availability and pricing of the components. The system Four Seasons installed included a roof-mounted VSUB modulating fan, CPC-3 Constant Pressure Controller, VFD Variable Frequency Drive and pressure sensing Transducer.

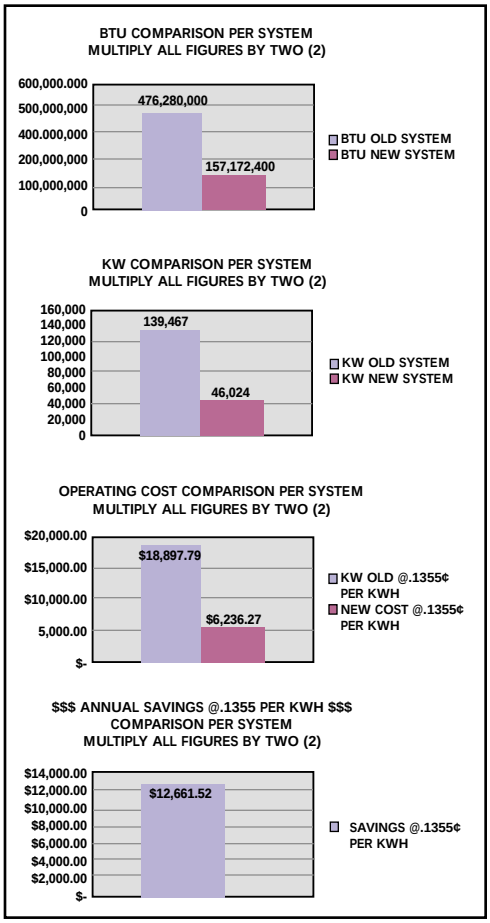
Laureyns explained that locating the fan at the stack termination on the roof instead of near the dryers creates negative pressure in the stack so lint cannot escape.

Exhaust fan speed is controlled by the CPC-3 Controller which senses static pressure in the common manifold above the dryers. By switching from a continuously running single speed fan to one that ramps up or down to handle the number of operating dryers, a minimal amount of tempered air is exhausted. This translates into major savings on electric heating bills for the college.

Laureyns presented Jensen with a proposal that included charts showing estimated energy and cost savings by switching to an on-demand modulating exhaust fan. The projected annual electric heat savings for the two systems added up to approximately $25,000 per year.

Jenson said Laureyns' savings estimate along with solving the lint was right in step with the school's proactive efforts to reduce energy consumption.

Additionally, Laureyns noted that there was easy access to the roof-mounted VSUB for cleaning. "To clean it, all you have to do is remove two bolts and slide the fan unit out of the housing."



Laureyns presented Jenson with a proposal that included charts (R) showing estimated energy savings and cost savings by switching to an on-demand modulating exhaust fan. Comparisons were made by calculating the BTU's/KW necessary to heat the dryer exhaust make-up air based on full time, full speed operation versus on demand, load based operation. The projected annual electric heat savings added up to $12,661.52 per laundry room, over $25,000/year for the dorm.

Q&A — Continued from front page

series cooling fan without a separate 230 volt power source.

Q What is the difference between "closed" loop and "open" loop VFD's?

A Our "closed" loop VFD's include a quick connect cable for connection to a CPC-3 and are programmed to respond to and communicate with the CPC-3. Our "open" loop VFD's include a relay for interface with our UC1 interlock control and are programmed so that fan speed can be manually adjusted.

Q Why do you often show a tee at the back end of a vent manifold? I typically use an elbow to connect the first heater.

A We recommend a tee with a capped end so that there is a stable place within the vent manifold to measure pressure with our TD-2 transducer. If the TD-2 sensing tube is installed where there is flue gas movement the resultant velocity pressures that are measured will not accurately reflect the true static pressure conditions within the vent.

Tjernlund In-Line Draft Inducers: The standard for fixing draft problems

For more than 50 years, Tjernlund In-Line Draft Inducers have been the preferred "go to" solution for heating contractors dealing with backdrafting problems as well as long horizontal vent connectors. Yet, surveys show that many recent additions to the ranks of field technicians are unaware of In-Line Inducers while others are under the misconception that they are not compatible with today's fan-assisted heating equipment.

Draft Inducers are mechanical fans installed between the heater's flue outlet and chimney termination. They ensure proper draft when restrictive heat exchangers, poor chimneys or negative pressures in buildings prevent proper exhaust of combustion gases.

As long as the heater in question is rated for category I (negative pressure) venting a draft inducer can be used to "boost" the draft. If the heater does not have a built in draft diverter or draft hood, a barometric draft control should be installed between the flue outlet and the draft inducer. This is the case with fan assisted burners.

Typical applications of In-Line Draft Inducers include boilers, furnaces, water heaters, modular boiler systems, multiple heaters, bakery ovens and factory processes.

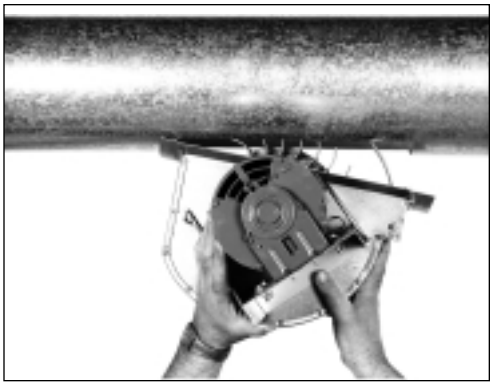
Other problems solved by In-Line Inducers include undersized chimneys, long horizontal vent connectors that don't meet codes, downdrafts and cold equipment starts. Additionally, Inducers are often used when replacing heating equipment where existing flues are too big or too small to provide adequate draft.

Tjernlund inducers are available in six sizes with capacities ranging from 40,000 to over 5,000,000 Btu's/hr. They can be installed in vent pipe diameters from 3 to 24 inches. Our Vari-Draft control permits adjustment to individual job requirements.

National codes dictate that draft inducers must be interlocked with the heaters that they serve. We make this easy with our UC1 Universal Interlock Control and PS1505 Fan Proving Switch. The UC1 interlocks any 24 or 115 VAC burner control circuit with any of our inducers. Milivolt gas valves require the addition of the model WHKE. Multiple heaters can be served by a single draft inducer by adding the MAC1E or MAC4E multiple heater interlock controls.

Tjernlund In-Line Draft Inducers

Typical In-Line Inducer and Safety Interlock using UC1 Control and PS1505 Fan Prover



In-line Draft Inducers are easily installed inside vent pipe.

Typical sequence of operation:

1. Call for heat
2. The UC1 intercepts the call signal and activates the draft inducer.
3. The PS1505 fan proving switch senses the negative pressure within the inducer housing and closes the UC1 safety circuit.
4. The UC1 safety circuit relay closes returning the intercepted call signal to the heater so that the normal burner cycle can occur.

The UC1 Control features adjustable pre and post-purge. LED indicators confirm proper operation and display any fault codes that may be present.

Additional information on Tjernlund In-Line Draft Inducers can be found on Tjernlund's web site at www.tjernlund.com.

Tjernlund Products
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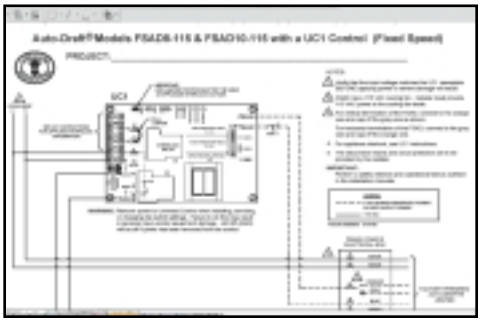
Web Site Features

Our web site is constantly updated with new and revised materials. It includes:
Literature, sample specs, submittals, I/O manuals, wiring diagrams, replacement parts lists, newsletters and case studies. Sample specs are available in both .doc and .pdf formats. Wiring diagrams are available in both standard and 11x17 formats. We like it so well that our inside tech services references www.tjernlund.com on a daily basis.



Multiple office rep agency expands sales of Tjernlund Specified Systems to all branches

Agency Spotlight

After successfully representing Tjernlund's Specified Systems for the past two years from its Albany New York branch office, Buckley Associates, a multi-office HVAC representative and manufacturing firm, has expanded to all of the firm's five offices in Conn., Mass, and New Hampshire.

Dan Buckley, Albany Branch Manager, said Tjernlund's product line is a natural fit because Buckley's reps are HVAC specialists servicing mechanical engineers. They handle a range of associated products such as positive pressure chimneys, flexible ducts, fire dampers and roof curbs. Buckley believes that because his company and Tjernlund are family owned and operated "they share a lot of the same core goals…to provide superior service. Tjernlund wants to grow with us and we with them. They have an excellent name on the residential side. It's our job to get their name and products known on the commercial side. Now that we have all our branches pushing Tjernlund, perhaps we can surprise a lot of people in the industry."

After two years of successful experience in his territory, Buckley Associates' Albany Branch Manager Dan Buckley says his family is excited about expanding representation of Tjernlund Specified Systems to all five company branches throughout New England.

Buckley Associates was founded in 1970 by Dan's father, Robert Buckley. A total of six family members are active in the company. His brother, Robert Buckley II is President and Thomas Buckley is Vice President. The company is headquartered in Hanover, Mass. It's web site is www.buckleyonline.com.