



Project Case History

Dryer venting system in dorm solves lint problem, cuts college's heating bills

The problems: Lint from two clothes dryer vent systems was being spread throughout a four-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.

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 four-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."

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 tempered air being exhausted.

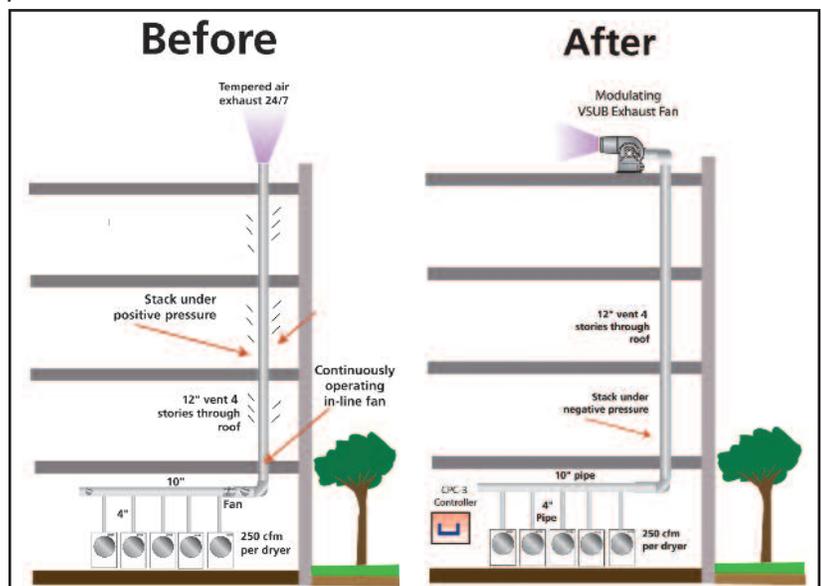
Laureyns was familiar with Tjernlund's dryer system and contacted Buckley Associates, a HVAC rep firm in Albany, New



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

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.

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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



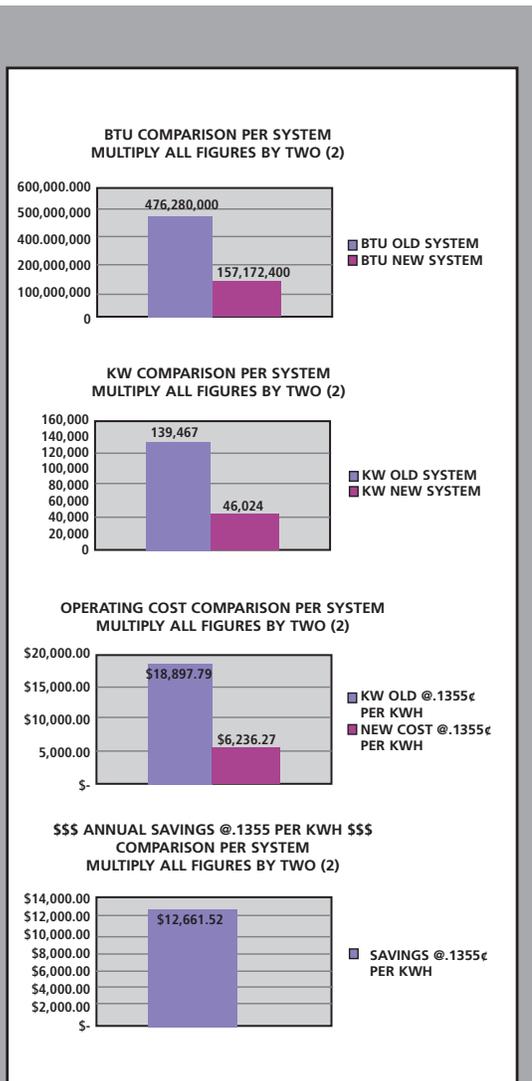
HVAC Contractor Tom Laureyns (l) and Ken Jensen (r) of Williams College's Building & Grounds Dept.

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.

Jensen 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 Jensen with a proposal that included charts (L) 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.



Roof-mounted Tjernlund VSUB fans (shown on dorm roof) were selected to exhaust dryers because they modulated to save energy and are easy to clean



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