EVENTS

Volume 1

valuable information and ideas for better venting

Modulating draft inducers and automatic pressure controller helped solve chronic heating system problem

Operating problems began to surface soon after commissioning of heating systems in four buildings on the campus of Midwestern University in Downers Grove, Illinois. After months of repeated service calls and consultations with the mechanical equipment supplier and boiler manufacturer, Facilities Manager, Kevin McCormick was convinced that each system was incorrectly designed and provided inadequate draft for the boilers to properly operate.

Tjernlund Specified Systems were used in four buildings on the university campus. Shown are two Auto-Draft® rooftop mounted inducers.

The Basic Sciences building had a unique set of challenges. It was one of two buildings converted from a central steam plant to an autonomous system. The mechanical room was in a separate structure, approximately five feet from the main building. The room contained four Raypak boilers and two 35-hp steam boilers.

The original design seemed simple enough. Each boiler was individually vented through the roof of the mechanical room. However, there were problems from the start with the initial design according to Tony Ranallo, Sales Engineer for Meilner Mechanical of Arlington Heights, Illinois. The first problem was that three sides of the taller main building had fresh air intake louvers. Flue gases from the shorter mechanical room roof drifted up and

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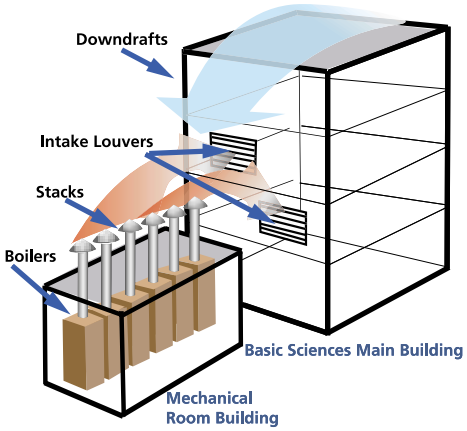

Before: **Flue gases and prevailing winds were being sucked into openings in the building. Boilers were not operating properly due to inadequate draft and combustion air.**

From Tom's Desk

by Tom Tjernlund, Vice President

We are excited to introduce our new CPC-3 Modulating Draft and Combustion Air Controlled Systems. Along with this second generation controller we have support materials to make selection, specifying and installation easier.

You are invited to learn about the many advantages of modulating draft, exhaust, and combustion air. Your local Tjernlund Rep is available to host lunch-and-learn sessions and sales meetings. A 25-minute narrated PowerPoint presentation is also available to view anytime.

Brochures, submittals, sample specs, wiring diagrams and installation manuals are also available on our web site: www.tjernlund.com.

Tech Talk

CPC-3: Smart system's 'brains' upgraded

The Patented (with Patents Pending) CPC-3 Controller is now available. It is the only controller sold in the U.S. that can simultaneously and independently control both draft/exhaust and combustion air. After marketing the CPC-2 control for over four years we took stock of what features installers and owners wanted and made them integral to the new CPC-3 design. An 80-character display provides real time system operation readouts. Limits, VFD activation status, auxiliary

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Sassafras River Marketing—growth on a strong foundation of exceptional service

Agency Spotlight

Since forming a partnership seven years ago, John Slack, President and Allen Wood, Vice President, have grown Sassafras River Marketing, located in Alexandria, Virginia, from a home office to a thriving organization comprised of five outside sales and two inside office people. The company represents Tjernlund in D.C., Virginia, and Maryland.

Sassafras sells a wide variety of heating and air conditioning related products for residential and commercial applications, including all of Tjernlund's product lines.

According to Wood, service is the company's major strength. "We strive to be exceptional about answering questions in a timely manner and are willing to go on job sites with customers to get the information they need."

Sassafras River Marketing Vice President, Allen Wood, and President, John Slack have built their business by going the extra mile to get customers the information they need.

Wood also believes Tjernlund enhances Sassafras' service strategy. "Their turnaround time is quick on submittals and answers to our questions. And we can always count on being able to get knowledgeable people on the phone to talk us through a situation... and they are always friendly," he said.

Sassafras Marketing can be contacted by phone at 703-317-4999 or email: srm@sassafrasriver.com

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University: Continued

were entering the adjacent Basic Science building's fresh air intakes.

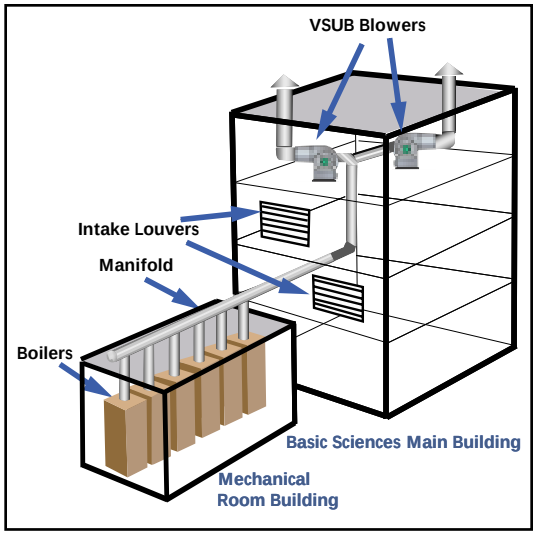
The second problem was that down drafts off of the taller Basic Science building produced erratic draft for the boilers.

The only solution was to terminate the vents above the roof of the Basic Science building. However, stack lengths for the individual boilers would exceed Raypak specifications. Tim Troutt, Regional Sales Manager for Raypak, maintained the system would be improperly designed if individual vents were extended all the way to the roof of the Basic Science building.

"There was too much resistance and not enough draft or combustion air for the equipment to operate properly," Troutt said.

"The owner didn't want to have more chimneys degrading the the building's exterior appearance. Also, there was so much makeup air entering the building, they wanted a guarantee that they weren't sucking flue gases into the building," Ranallo said.

Troutt and Ranallo convinced McCormick the problem could be corrected by reconfiguring the stack and adding automatically controlled variable speed draft inducers made by Tjernlund Products. Components of the Tjernlund Specified System included a model VSUB Universal Blower, transducer, VFD and a CPC-2 Constant Pressure Controller. The CPC-2 automatically modulates the blower to maintain the draft set point that the boilers require to operate properly.



After: By using modulating mechanical draft blowers and a redundant control system supplied by Tjernlund, combined with reconfiguration of the stacks, operating problems were corrected.

The decision was made to combine the stacks from the six boilers in a manifold on the mechanical room roof, then run a common stack through the main building's second story wall and up the interior to the roof.

Because the Basic Sciences building housed many test animals used in experiments, constant temperature maintenance was of highest priority. McCormick felt that since the system had redundant boilers it should also have redundant mechanical draft. If the only fan failed, none of the boilers would run. The animals and experiments would be in jeopardy.

In response to McCormick's concern, Tjernlund's R&D department created a redundant constant pressure controller that automatically switched to a second inducer/ blower if the primary system faulted.

Two Universal Blowers, controlled by the redundant controller, were installed in a secondary "penthouse" mechanical room on the top floor of the main building where the single stack was teed and individual stacks were connected to each blower and then through the roof. The redundant controller automatically switches to the opposite blower every three days so each side of the system gets even use.

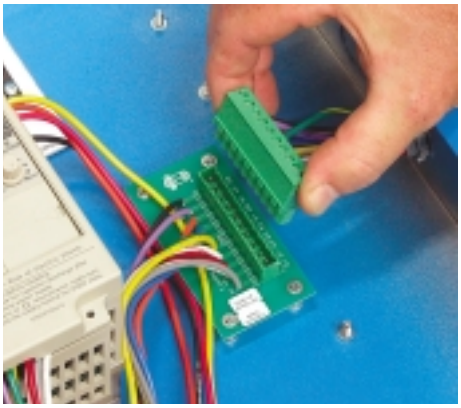
How have the heating systems at Midwestern University been performing since the first system was retrofitted with modulating draft systems four years ago? "They've been working great," McCormick said.

Upgraded specified systems offer many contactor-friendly features

Any mechanical system that cannot be easily commissioned is a failure in the eyes of the trades that install it. We have based most of the upgrades incorporated into the CPC-3 on feedback from the field. Our upgrades focus on wiring, checking the status of system components, system start-up and adjustments, and system trouble shooting.

Wiring:

All VFD's include a quick connect communications cable and an auxiliary power supply to the CPC-3 controller. Only one power source is needed (either 230 or 460 VAC).



New Specified System features a quick connect cable to make installation faster and avoid mistakes.

Component Status Check:

A Test Mode verifies transducer operation, VFD operation and inducer/blower rotation prior to system commissioning. Rotation can be switched from the CPC-3.

System Start-up & Commissioning:

Dedicated keys for setting draft and combustion air pressures eliminates scrolling through multiple screens. Heater status LED's on the face of the keypad indicate which heater is calling and when the CPC-3 completes the safety circuit to the heater. An 80-character display allows all operating conditions to be displayed with the keypad open or locked.

Trouble Shooting:

LED's on the face of the CPC-3 keypad indicate the status of all limit circuits, VFD's, auxiliary devices and interlocked burners. System faults are displayed in full text, not as "unknown" codes.

Tech Talk—Continued

device status, and operation states of up to 16 heaters are all displayed on the face of the CPC-3 keypad. All of our VFD's include a quick connect communications cable to interface with the CPC-3 Controller. This allows VFD faults to be reset from the CPC-3 keypad and also allows inducer/blower rotation to be reversed by changing dip switches on the CPC-3 circuit board. The CPC-3 includes two modes of combustion air operation—"Open" to maintain boiler room pressure and "Sealed" to maintain duct pressure for sealed combustion heaters. It also

Circuit board inside CPC-3 Controller

features an interface for controlling a combustion air damper and end-switch, or a CO detector's alarm contacts. The CPC-3 can interlock with four heaters and by adding expansion modules can interlock up to 16 heaters.

FAQ

Q Will you help select the correct system for my application?

A A major part of our product support is packaging the best system to solve your draft, combustion air and ventilation issues. We help determine optimum vent and duct diameters and also provide direction on electrically interlocking with virtually any burner control.

Q What voltages are your systems available in?

A 230 VAC single or three phase and 460 VAC three phase. VFD's include power supply terminals for the CPC-3 so that only a single power source is required. (460 VAC models include a prewired step down transformer.)

Q How many Tjernlund modulating draft and combustion air systems have been installed?

A Over 1,000 modulating systems are in operation throughout North America. We have over 1,000,000 fixed speed inducers and power venters installed worldwide.

Q What is the typical lead time to get systems?

A Our standard lead time is two weeks, but we often can respond more quickly if necessary. Most of our systems are custom packaged from stock components that we manufacture in our White Bear Lake, Minnesota facility.

You are invited to send us questions via email at: fanmail@tjfans.com. If your question is published, you will receive a gift.

Tjernlund Products
1601 Ninth Street
White Bear Lake, MN 55110
1-800-255-4208

Web Site Features

Remodeled Tjernlund site easier to navigate

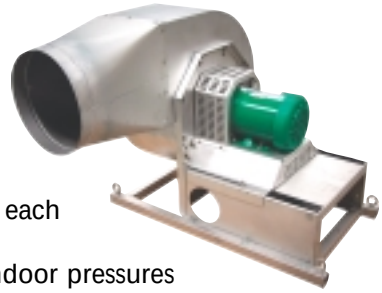
Visitors find more information in less time

Whether you're a specifying engineer, contractor, architect or facilities manager, there's a plethora of valuable information related to draft, combustion air and other venting subjects available on Tjernlund's

web site at www.tjernlund.com. The site is designed to get you useful information as efficiently as possible. On the home page, products are broken into two categories, Distributor Stocked Products and Engineer Specified Systems. There's also a site map containing links directly to all products. Each product category includes a features and benefits overview with links to product specific literature, specifications, submittals, wiring diagrams and installation instructions. The document library is another easy method for finding the information that you are looking for. Put www.tjernlund.com in your favorites to always have our most up-to-date information one click away.

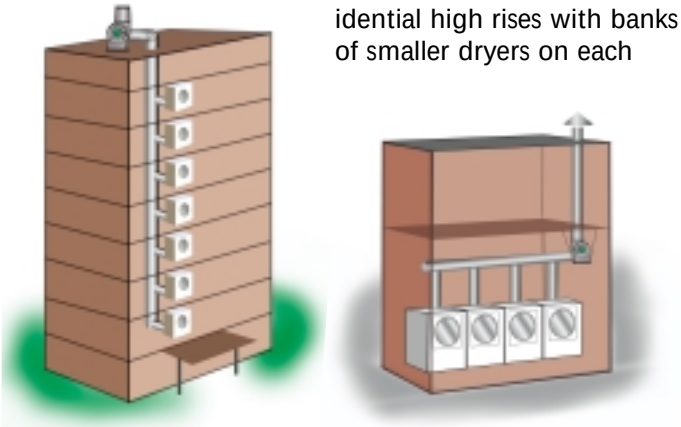
Product Profile

Take the guesswork out of venting multiple clothes dryers



Venting large commercial clothes dryers in a common exhaust vent can be tricky. Do all of the dryers always operate at the same time? If not, will exhaust from operating dryers back-draft through non-operating dryers? How long can the exhaust vent be and how do you know if all of the dryers are exhausting correctly? All these issues will affect how efficiently the loads get dried.

Similar issues exist for residential high rises with banks of smaller dryers on each floor. What is the best way to exhaust them without installing individual vent for each dryer?



Above illustrations show Tjernlund's dryer exhaust systems in typical multiple dryer, common vented commercial and multi-story residential applications.

In both of these cases, indoor pressures and outdoor winds and temperature swings also dramatically affect how well dryers exhaust.

CPC-3 controlled Universal Blowers modulate to "perfectly" exhaust common vented clothes dryers, regardless of the number of dryers operating. They also automatically compensate for changing pressures, temperatures and winds.

Universal series blowers stand up to moisture because they are constructed from 316 stainless steel. They feature material handling, backward inclined blower wheels and slide out motor/blower wheel assemblies for easy servicing. To best match the needs of all applications, Universal Blowers can be installed indoors or outdoors. Special construction extras include TEFC, EPACT rated, artic duty motors.

Don't take chances next time that you spec the mechanicals for high rise and commercial clothes dryers. Make sure that they perform from the start by specifying a CPC-3 controlled Universal Blower.