Yorkland Controls Connection
SPRING 2002

Yorkland Announces New Employees

Dan Meloff has joined Yorkland Controls as an Account Executive. Dan has many years experience in the HVACR industry. At Yorkland, Dan will be focusing on promoting Yorkland's unique benefits to customers.

We are pleased to announce the appointment of ***Robert Mondelli*** as Product Technical Specialist. He will be focusing on providing technical backup to our counter and sales staff. Robert is a recent graduate from Sheridan College Co-Op Engineering program.

Honeywell Appoints Yorkland a ControLinks Distributor

Controlinks provides burner Fuel Air ratio control with low cost actuators and controllers. Burner efficiency can be maintained at maximum over the entire firing rate. Contact Paul Tervit for more details. ptervit@yorkland.net.

Yorkland Announces Pneu-Flush

Benefits

- Field-tested procedure
- Solvent is safe and non-flammable
- Process is flexible... it easily allows for flushing by floor, by section or even by controller
- Fits in with related work in any overhaul or conversion
- Avoids troubleshooting call-backs
- Process allows for cleaning & flushing in one service call. A flushing and cleaning system specifically designed for pneumatic control air lines. It utilizes DuPont® Vertrel® XM, a premier ozone-safe HFC cleaning solvent. Pneu-Flush works quickly and easily to clean and purge the compressed air lines in HVAC control and other pneumatic systems.
- The Pneu-Flush System (patent pending) consists of a pressure-tested canister charged with approximately two quarts of Vertrel XM, a revolutionary HFC solvent that has excellent solvency and performance characteristics.

In this Issue

One Pipe or Two?

The contractor was not very happy. He had taken over a pneumatic control system that was in a very poor state. The air compressor station had not been properly maintained allowing oil to spread throughout the system. By purging with Pneu-Flush most of the system was now clean and functioning properly, so far so good. However one thermostat was defective and had to be replaced.

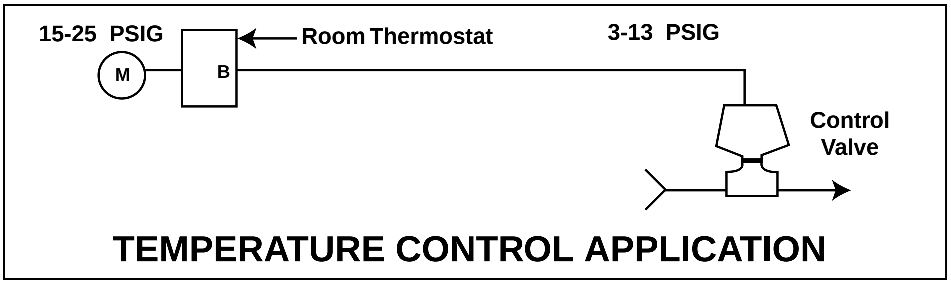


Figure 1

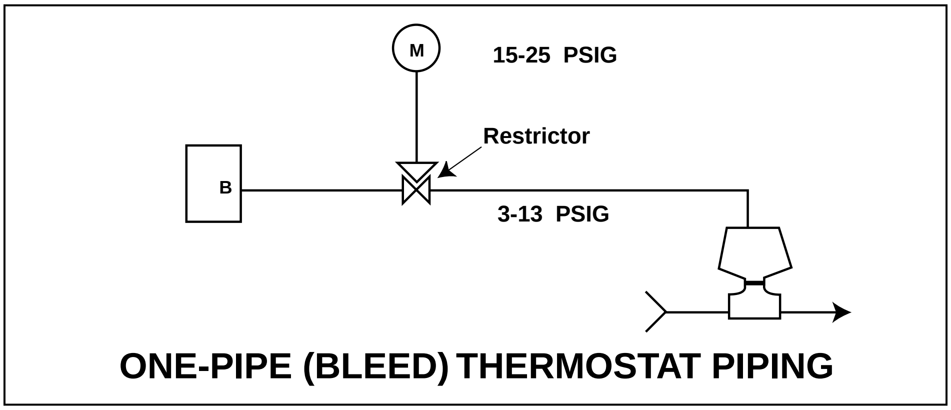


Figure 2

The existing thermostat was a one-pipe, low volume type and the correct replacement was selected to replace it. As soon as air was supplied to the thermostat the valve slammed closed and then would not open again. Obviously something was wrong, but what?

The one pipe thermostat is a bleed type controller; it regulates the branch pressure by bleeding air to atmosphere, a typical connection is shown in figure 1.

In order to function properly a flow restrictor is required in order that the volume of air being supplied to the branch line can be controlled by the bleed action of the thermostat.
The original flow restrictor was removed and not replaced when the old thermostat was replaced. The unrestricted main line was able to supply more air than could be vented through the thermostat so the pressure could not be regulated.

When a new restrictor was installed the thermostat was able to regulate the branch pressure being supplied to the heating valve allowing the valve to open slowly and modulate smoothly. The room was now under control and maintained at a stable, comfortable temperature.

If a modern two-pipe thermostat were installed we would not require a restrictor. The thermostat regulates the volume of air being supplied to the branch line. However, the existing piping would have to be reconfigured as shown in figure two.

Linkageless Burner Systems Achieve Maximum Burner Energy Efficiency

The efficiency of a modulating burner system is maximized by keeping the air to fuel ratio to a minimum to ensure complete combustion, across the firing rate, as the heating load changes.

The inherent hysterisis of mechanical systems, that have traditionally involved cams, mod-motor and linkages to set the fuel- air ratio across the firing rate of a burner, have made achieving maximum efficiency a near impossibility. Burner mechanics armed with a combustion analyzer typically set the linkages at definite positions: low fire, high fire and a few points in between. At each point, an efficiency reading is made utilizing samples of O_2, CO_2 and CO, with the goal of achieving efficiencies in the 80 to 85% range. The process is time consuming and efficiencies measured are not repeatable through the firing rate.

The process becomes more complex with multi-fuel burner systems where the burner, for example, runs natural gas and methane at different times of the year. In these cases, the linkages would need to be set every time the fuel was switched from one to the other.

Figure A shows the relation of the gas valve and air damper through different firing positions of a typical natural gas burner.
In the example, we show that although the valve position may be linear with respect to the increasing load, the damper position is not.
The burner mechanic is left with attempting to "finesse" the relationship between the gas valve position and that of the air damper. Burner efficiency is compromised.

Typical fuel savings in the 5 to 15% range can be expected for Linkageless burner systems.

As fuel costs increase and pressure mounts for reducing combustion emissions, customers are beginning to look at linkageless systems as an Energy Conservation measure.

New Linkageless burner systems remove mechanical linkages and mod-motors and replace them with servo motors and microprocessors. With these systems, many more points of O_2, CO_2, and CO are measured and stored in a control which "memorizes" the position the of servo-motors at maximum efficiency across the firing rate. The positions and therefore the efficiency is infinitely repeatable and removes the guess work of setting the mechanical linkages.
.
Figure B shows how the savings between linkageless and traditional mechanical systems.
Energy saving estimates can be made by making reasonable assumptions about how long and at what efficiency the burner was running at various loads. More accurate estimates can be made by utilizing energy saving software available from linkageless burner control manufacturers.
The potential for energy and operating savings have made Linkageless systems an attractive selling feature for major burner manufacturers. Honeywell and Fireye have recently introduced their own versions of these systems and have made them available to OEMs and Yorkland Controls.

Several projects have been designed and supported by Yorkland which have shown documented energy savings for customers. Feel free to contact Paul Tervit at Yorkland Controls for further information.

Figure A

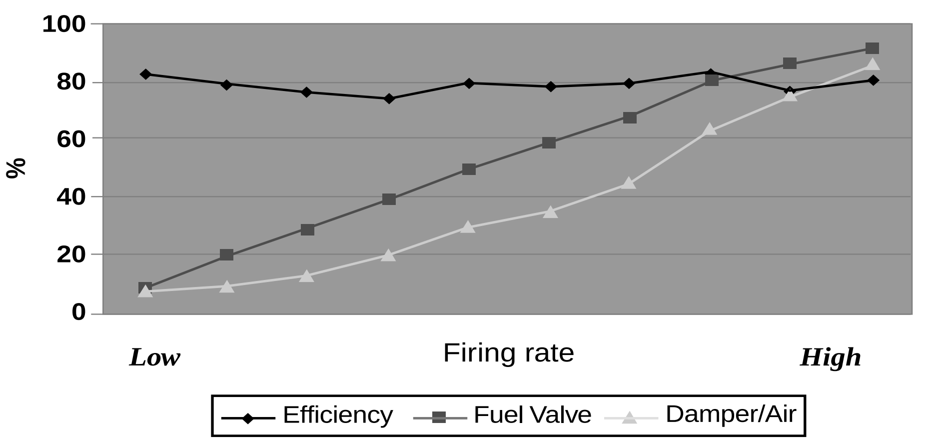
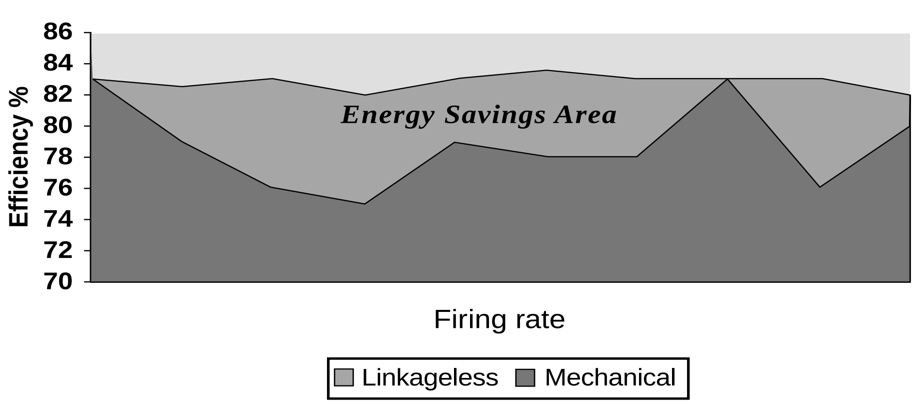


Figure B



At the Sound of the chirp, the Temperature is...

There are 2,400 species of crickets that make a chirping sound by rubbing a scraper on one forewing along a row of "teeth" on the opposite forewing. Because crickets are cold blooded, their activity and metabolism are governed by temperature – increasing with heat, decreasing with cold. As a result, they rub their forewings faster in hot weather than cold. The relationship between number of chirps and temperature is surprisingly exact.

To calculate the air temperature in degrees Fahrenheit (T) from the chirp of the snowy tree cricket (Oecanthus fultoni), which is common all over North America, count the number of chirps per minute (n), subtract 40, divide by 4 and add 50.

Thus the formula is T (temperature *f) = { (n – 40) / 4 } + 40

(courtesy of " Man Eating Bugs" ..November 2001 edition)

New Schedule

REGISTRATION FORM
YORKLAND TRAINING SESSIONS 2002

REGISTER ONLINE AT www.yorkland.net

PLEASE INDICATE WHICH SESSION YOU WILL BE ATTENDING

FAX OUR OFFICE AT: 416.661.3320

SESSION	DATE	DETAILS	FEE $ (TAXES EXTRA)	PLEASE CHECK BELOW
IAQ, HAZARDOUS GAS, ECONOMIZERS, DEMAND VENTILATION	MARCH 26, 2002	JTAC	$25	❑
DX9100 TRAINING	APRIL 5, 2002	RHCC	$150 Full Day	❑
METASYS CONFIG TOOLS	APRIL 26, 2002	RHCC	$150 Full Day	❑
VALVES & ACTUATORS BY BELIMO	APRIL 11, 2002	MISS	$25	❑
HONEYWELL LCBS, RAPID ZONE	MAY 17, 2002	MISS	$150 Full Day	❑
PNEUMATIC BASICS	SEPTEMBER 6, 2002	RHCC	$150 Full Day	❑
FLAME SAFEGUARD	SEPTEMBER 19, 2002	JTAC	$25 EVENING	❑

TORONTO LOCATION: 2689 Steeles Avenue West, Toronto, Ontario M3J 2Z8
T: 416-661-3306 F: 416-661-3320

MISSISSAUGA LOCATION: 855 Matheson Boulevard East, Unit 4, Mississauga, Ontario L3W 2L6
T: 905-624-3301 F: 905-624-9003

MISS. = Mississauga Location, Evening Session 5:00pm to 8:30pm
JTAC = Joint Training & Apprentice Committee 5:30pm to 8:30pm
RHCC = Richmond Hill Country Club, Full Day Session

REGISTRATION INFORMATION:

COMPANY NAME: ______________________________

CONTACT NAME: ______________________________

ADDRESS: ______________________________

E-MAIL: ______________________________

TELEPHONE: (_______)______________________________

FAX: (_______)______________________________

FAX THIS FORM TO: 416-661-3320

DETAILS OF SESSION WILL BE FORWARDED UPON REGISTRATION

PAYMENT: ❑ VISA ❑ Mastercard ❑ Invoice (Current Accounts)

Signature: ______________________________

Exp. Date: ________/________ Purchase Order ______________________