Yorkland Controls
ENVIRONMENTAL SOLUTIONS
FALL 2004

# Controls Connection

# What's New

## London, Ontario Location Opens!

Our sales office in London is now open for business! John Paleczney has joined Yorkland Controls to bring parts, systems and services to the southwestern Ontario region. John's contact information is:

(t) 519-473-1307
(f) 519-473-1988
(m) 519-808-4111

(email) jpaleczney@yorkland.net

## LON Communicating Thermostats by Viconics

Viconics, a manufacturer of communicating and non-communicating thermostats has released the economically priced T7600 from Viconics. The T7600 is LON based and suitable for use in conventional thermostat applications including: 2 Heat-2Cool, HeatPump and economizer control. Additional LON information on the product maybe downloaded at www.viconics.com. By visiting www.yorkland.net, additional information on Johnson Controls N2 communication thermostats may also be downloaded.

## VisionPRO by Honeywell

Finally, a programmable thermostat made effortless. Honewell's new VisionPRO thermostat has intuitive programming logic that responds to contractor's needs and homeowner's choices with simple, touchscreen interaction - no owner's manual necessary.

**Features include:**
- Smart Looking Touch Screen
- Easy Menu Driven SetUp
- Energy Saving Programming Schedules

## Yorkland WWW Site Membership - Membership Priviledges

Visit our site and become a member. Benefits include:

- ***Access to Price Sheets***
- ***Special Member Offers***
- ***Supplier Applications Sheets***
- ***Sales and Marketing Information***
- ***Application and Energy Saving Software***

## Linkage-less Burner Systems Popularity Increases!

Yorkland has assisted in providing product and application support for the Honeywell ControLinks and Fireye Nexus product. The savings generated by these retrofits are real and meet or exceed expectations. For further information contact Paul Tervit at 905.624.3301 or email ptervit@yorkland.net

## In this Issue



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# Control Networks

## The Field Bus

As control systems evolved from centralized systems to distributed systems, the need arose to interconnect distributed input and output points over a communications network. Individual controllers were joined together via a 2 or 3 wire network, usually in a “daisy chain”.
These 2 or 3 wire networks, called Field Buses, are important as the trend to distribute control to the sensing/actuating devices continues. There are numerous Field Bus networks on the market, each with their own benefits and drawbacks, but the future of control networks looks to be based upon internet standards.

As building control systems transformed from a pneumatic industry to electronic industry -Electronic Control Systems were born. Originally, the cost of computing power was high, electronic control systems tended to consist of a large central computer “home run” wired to sensors and actuators. It was common to see “fist” sized bundles of wires running hundreds of feet from a control panel to the actuators and sensors used in the control loop. While providing effective control, these systems were difficult to maintain and almost impossible to modify or upgrade. As the price of computer processing power dropped, it began to make sense to distribute the control functionality closer to the actual points being controlled. Small islands of control started to form, centered around mechanical equipment. For example, one control device might control an Air Handling Unit (AHU) and three other devices might control three floors of a building that the AHU serves. These control devices needed to share information and, therefore, networked together over a Building Automation Bus.

These controllers, typically called Unitary controllers, offered electronic control of small room level mechanical equipment like Variable Air Volume (VAV) boxes, Fan Coils, and Heat Pumps. With control distributed to the room, a typical building could have hundreds of unitary controllers. Managing the data in these controllers lead Building Automation system designers to create a two-tier hierarchical network architecture. A Building Automation Bus, linking together Network controllers, formed the top tier of this network architecture. Unitary controllers were then linked to Network controllers over the second tier network, called a Field Bus. A typical system diagram for these types of systems is shown in **Figure 1**.

The major characteristic of a field bus is its ability to be cost effective for connecting distributed Input and Output (I/O) points. This has led to moderate performance characteristics; bus speeds of less than 100 kbs, fewer than 100 devices per bus segment, and cable distances of less than a mile. Lately, the focus of these buses has been on Open

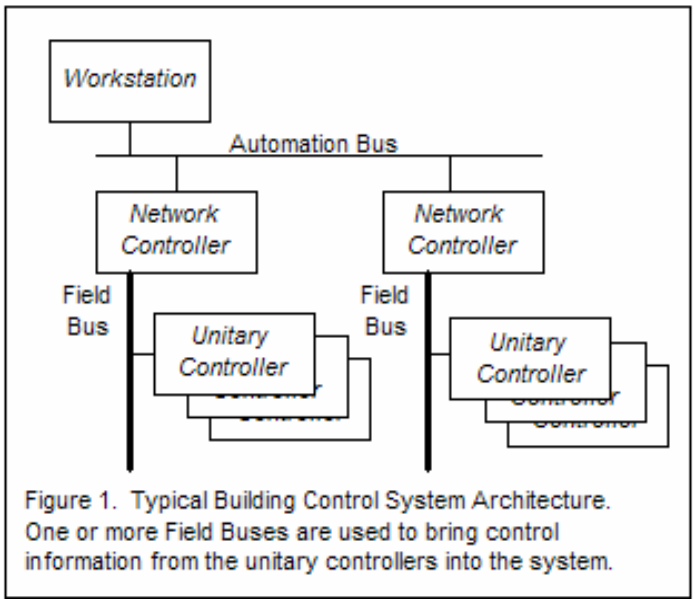


Figure 1. Typical Building Control System Architecture. One or more Field Buses are used to bring control information from the unitary controllers into the system.

***Figure 1***

Standards. Where at one time it was acceptable (even preferable) that each building controls manufacturer had its own field bus, the market direction has changed to where it is preferable to have a single field bus supported by multiple manufacturers. These requirements have led to a few dominant open field buses, the **Johnson Controls N2 bus** and the **Local Operating Network (LON).**

## Johnson N2 OPEN Bus

The Johnson Controls N2 bus is a field bus that links controllers and point interfaces to a Network Panel (NP). The N2 Bus uses a master/slave protocol, in which the master device, the NP, initiates all communication with the N2 Bus devices. The field bus allows up to 100 devices connected using 2 or 3 wires over a distance of up to 4572 m. With over 300 products from third-party manufacturers that are N2 compatible, the N2 protocol arguably has the greatest product depth of the current HVAC field buses. The fact that it was developed and is owned by Johnson Controls has limited its wide spread adoption by other HVAC controls companies.

## LON Bus

The Local Operating Network (LON) was developed to allow open interoperable communications between control devices. It has applications within home and industrial control but has been most widely adopted in building control systems. The communications protocol is designed and owned by Echelon Corporation and is an American National Standards Institute (ANSI) standard. The protocol provides peer-to-peer communications between devices. Although there are several types of transceivers available, the most popular transceiver

# Control Networks

*cont'd*

Source: Johnson Controls

is the Free Topology Transceiver (FTT- 10A). This transceiver allows LON devices to communicate at 78,000 bps, over twisted pair wiring, in either a bus, ring or star network topology. Each segment of the LON FTT field bus can support up to 64 devices over 500 meters. While more expensive to implement and operate than N2, the openness, speed, and peer-to-peer capability provided by LON is leading to growing market acceptance in building controls systems.

Recently, more building controls systems being installed are using the existing corporate network infrastructure of the building for the Automation Bus. This has been driven by the cost savings of not installing and maintaining separate communications systems for the HVAC system and the corporate network and the use in the building controls industry of corporate network standard communications protocols.

The Building Automation Bus is being supplanted by the Information Technology (IT) Network (the corporate intranet). As the costs of networking decreases the Field Bus may also be assimilated into the IT infrastructure. To be fully supportable within an IT infrastructure, the future of BAS networks will support the communications standards used on the internet (WEB SERVICES). The future is closer than one might think, a recent study indicated that 94% of all intelligent networked nodes installed in the world over the last few years were connected on Ethernet.

Where is BACNET in all this? Watch for the next newsletter where we'll cover BACNET and WEB SERVICES.

## *Yorkland Business Conference and Trade Show - A Success!*

Over 100 participants attended our Business Conference held in June, 2004. Sponsored by Johnson Controls and Enbridge Gas Utilities, the conference focused on identifying End User needs, the controls market and product opportunities. Energy saving incentives were also discussed.

John Vinken, Director, Facilities of the Grand River Hospital in Kitchener opened the session by discussing the challenges faced by typical end users, in general and his organization, in particular.

Gerry Cellucci of Yorkland provided a brief overview of several controls market studies showing control trends and market growth in the low to mid range control market. A key topic was the convergence of customer information technology (IT) systems with those of Building Automations Systems (BAS).

Various Speakers from Johnson Controls introduced several new products including:

- Ø TEC2100 N2 Open Network thermostats for low to mid range control markets
- Ø VG1000 Ball valves
- Ø New Variable Speed Drives (VSD) which are physically smaller, lower priced with options to integrate to equipment controllers. Energy saving comparison software was also previewed. ( visit www.yorkland.net to download a copy)
- Ø Modular Room Fan Coil Thermostats (MRC) for the hospitality industry.
- Ø Johnson LON based product and software

NAE

Great interest resulted when Michael Young, Channel Product Manager introduced the new Network Automation Engines (NAE), the corner stone of the new Metasys architecture. These engines use network standard WEB Services allowing control systems to share information with other customer network applications, including Energy Monitoring, Maintenance and Service dispatch software. Built on these standards, Michael pointed out the difference of Web ENABLED product (proprietary system with a WEB interface) versus Web SERVICES using IT standards.

Marc St-Jean of Enbridge presented the various rebate incentives being offered to contractors and owners who retrofit systems with energy system products and applications.

**Missed the Conference?**

Download presenter presentations and information from our members area at www.yorkland.net.

**The complete Metasys line is available from Yorkland**

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# Introducing the VG1000 Series Ball Valves

JOHNSON CONTROLS

## *Simply a better Value .....*

## *..... Simply a better Valve*




# Here are twelve great reasons why.

**1** **VG1000's is a complete line**
> 80 valve bodies to choose from.
> 2,000 valve actuator assemblies.

**2** **VG1000's have our highest pressure Rating**
> Working pressure 580 psig
> Close off pressure 200 psi

**3** **VG1000's have a rangeability greater than 500 to 1**
> The VG1000 provides excellent modulating control under all load conditions.

**4** **AMODEL® Flow Characterization Disks**
> Provides equal percentage flow characteristics in the same wide range of Cv's as the VG7000.

**5** **Brass and Stainless Steel Trim**
> Plated Brass Trim - Hot or chilled water (23 to 203F); 50% glycol solutions.
> Stainless Steel Trim - Hot or chilled water (23 to 203F); 50% Glycol solutions, 15 psig saturated steam.

**6** **Simplified Actuator Selection**
> Only a few actuators and linkages required for all applications.

**7** **Engineering Grade Materials**
> High strength & withstands hot and cold tempering.
> Resistant to cheicals.

**8** **15% Graphite Filled PTFE Ball Seats, Dual EPDM stem Seals**
> 15 to 20 year life.
> 200,000+ cycles in iron-oxide contaminated water.

**9** **Compact Size**
> Fits all applications from fan coils to air handlers.

**10** **Lower cost - VG1000 provide 30% to 50% savings**
> Lower cost compared to globe valves.

**11** **Six Sigma Quality - Industry Leading Testing Programs**
> Only five returns out of hundreds of thousands shipped since 1998.

**12** **Backed by Johnson Controls**
> Three year warranty.
> An industry leader since 1885.

**Convinced yet? We are ... that's why we stock the valves!**

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