BATON ROUGE
SECTION

April
Newsletter 2008

SEMINAR

"Safety Relief Valve/Process Analytical Technology"

April 18, 2008
Time: 8:00 am-4:00 pm

Location:
Baton Rouge Area Foundation
Downtown Baton Rouge

ISA Baton Rouge Section

President's Message

Dear Members
Last month's presentation on "Technology Developments using Ultrasonic Meters for custody Transfer Measurements" went really well. We had received lots of good feedback on this presentation & want to continue this tradition for our future presentations.

Check out upcoming events!!!

April 15, 2008: ISA New Orleans/Baton Rouge Expo. Please visit http://www.isa.org/~newor/ISAExpo.html for more information regarding registrations.

April 18, 2008: Please join us for One Day Safety Relief Valves (PRV) Seminar held in Baton Rouge Area Foundation. This one day intensive seminar will give participants a comprehensive introduction to PRV and would be ideal for new or advanced process design and instrument or for mechanical engineers. The seminar program will provide an understanding & definition of PRV, ASME codes, main types of Safety Relief Valves available, rupture disk in conjunction with RPV, applications & finally Table Top Expo. All this would be divided two sections- Morning & Afternoon.

I hope that you feel ownership in our section. As your section leader I look forward to seeing our section fulfill the vision and mission of our National Organization. Please feel free to contact if you have any suggestions or feedback at aparna.subramanian@exxonmobil.com. If you are interested in programming through the section you may contact incoming Vice-President, Murtaza Gandhi at murtaza.gandhi@jacobs.com. It is one of our goals this year to send out a regular newsletter to improve our communication amongst the membership of the section. It takes time and effort to put everything together. Hence if you had any suggestions on further improvement, please email crystal Barzare at crystal.barzare@jacbos.com

Please let us know if you would be interested in becoming a board member or helping out the section as a chair. Several positions are needed such as Education Chair, Standard & Practices & etc.

Aparna Subramanian
President – ISA Baton Rouge Section
2007- 2008

Upcoming Presentations…

May 15th (Dinner Meeting)

"Ethics in Engineering" & Scholarship Banquet
Ralph and Kacoo's, Baton Rouge

Pricing with RSVP: $20 person
Tickets at Door: $25 person

RSVP: By Noon May 12, 2008 to
isareservations@hotmail.com

June 19th (Dinner Meeting)

Presentation To Be Announced
Ralph and Kacoo's, Baton Rouge

Attention
Members!

Please update your email address for future correspondence by either logging onto your profile in www.isa.org or email isareservations@hotmail.com

Network gateways

Mark T. Hoske, Control Engineering -- Control Engineering, 4/1/2008

Industrial communication network gateways translate messages from one protocol to another. The function can be embedded in a chip, in a device or board that may be embedded, or in a standalone device. Other devices, such as a PC, can provide gateway (or device server) functions. A gateway, notes Helge Hornis, manager, intelligent systems group, Pepperl+Fuchs, must fully understand the content of the messages and intelligently translate them into the other network protocol. In industrial automation, gateways involve protocol conversion, says Jim Toepper, product marketing manager, Moxa Inc. In commercial environments, gateways can also be called routers, he says, while in consumer markets (home use), a gateway can refer to the wired or wireless device that helps share an Internet connection.

Why gateways?

With more manufacturing interconnections to other areas of the enterprise, it's no wonder that gateways remain of interest. Practical advantages of using gateways include ability to get information from other locations in the facility or supply chain, feed other systems with real-time data from manufacturing (and make manufacturing information more relevant and efficient), and even program or troubleshoot systems from other areas of the plant, company, or world, with appropriate security clearances.

Gateways provide a means to extract or import data from one level or system of manufacturing and other areas of the enterprise and supply chain, such as warehousing, engineering design, customers, sales, service, and others. They can serve as the mechanism for interconnecting various layers. Gateways also connect older, serial-based communications or analog signals with newer digital networks.

In addition, because various industrial Ethernet protocols are available, information from multiple protocols may need to be translated from one to the other and back again. Some industrial gateways transfer information from wired protocols to wireless and back.

One to one, or many

Gateways can translate specifically from one protocol to another, or from many to many. Sometimes multiple network functionality is embedded in one device. A module, chip, or firmware may vary as needed. And, with protocols beyond Ethernet, different ports accommodate differences in physical layer network requirements. Rockwell Automation says a gateway device also can connect two or more networks that use the same protocols.

Designs vary. Generally, gateways include one or more processors with embedded software, sometimes called firmware. The software looks at a message written in one networking language then converts it to appropriate sizes and speeds for the receiving network on the other end. Because networks run at varying speeds, a gateway must include some memory to help store or buffer data as it's getting translated from one to another. Serial data can stream from an asynchronous serial port on one side to a 10/100 Ethernet port on the other, says Darryl Miller, Lantronix vice president of engineering. Flash memory and random access memory (RAM) accepts the data stream and “packetizes” data into frames appropriate to the Ethernet protocol. Unpacking, happens in the other direction. Miller says small embedded gateway devices are more economical and easier to use than other gateway options, such as desktop PCs, akin to using a “sledgehammer to pound in a tack.”

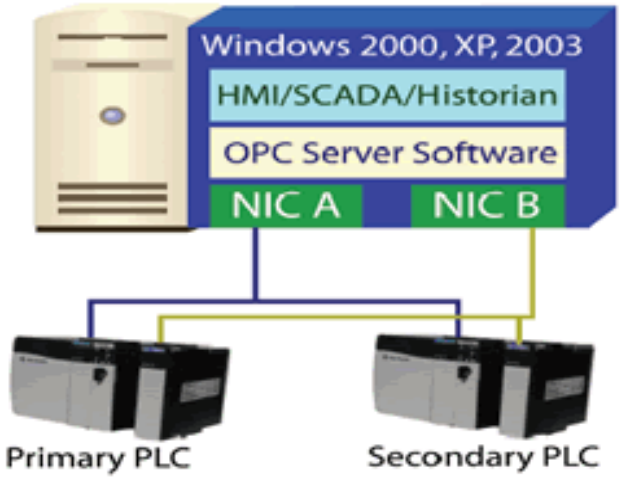
Chris Collis, senior product marketing manager for Digi International, concurs: “Versus a PC, the gateway has no moving parts, is more cost-effective, is smaller, and more easily deployable in the field.”

OPC SERVER REDUNDANCY FOR DEVICE COMMS APPLICATIONS

Lost communications can cause lost productivity, scrap product, reduced quality, and possible risk to life and limb. For regulated industries required to keep records of all data, the penalties for missing data in records can be steep. Good communications redundancy practice can keep HMI/SCADA, Historian and other OPC client systems on line following a link failure.

Business that cannot afford the costs of failed communications need to remove points of failure where they can, and mitigate the impact of failure for the rest. Implementing redundant systems at multiple levels provides the solution but also raises considerations about the role played by software in communications system redundancy. There must be user awareness of the relevant variables prior to implementation so that they may be better understood and managed for best results.

Redundancy can be implemented at many places in the communications infrastructure. These include network cards in host PCs, network cables from host systems to controllers, communications software drivers, network cards in monitored devices (PLCs, RTUs, etc). The control systems from which data is being gathered are also often redundant. The communications software infrastructure must be able to manage communications through all redundant portions of the infrastructure chosen for implementation. It is important to implement redundancy management at the right comms infrastructure software locations: this avoids creating new points of failure, performance problems or instability.



System layout with redundant PLCs fitted with redundant network cards, redundant network media, and redundant network cards in the host PC. The user-configured OPC server software switches between the redundant data paths based on user defined criteria. To the HMI/SCADA/Historian system, this management is transparent but not invisible: it can report the comms path in use if required

Management of redundancy of the OPC server software must be handled outside of the OPC server itself and from a different PC to minimise points of failure. There are several approaches available depending on the particular HMI/SCADA or Historian system used and the user's requirements. Some systems have the ability to handle redundant OPC servers built into the OPC client application, or are available as an optional feature. For these systems, unless the vendor's supplied redundancy solution doesn't meet the user's requirements for technical or cost reasons, additional software isn't needed. If the OPC client software system doesn't offer the ability to manage redundant OPC servers, another solution is needed.
For More info: http://ethernet.industrial-networking.com/articles/articledisplay.asp?id=1014

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7 critical things to know about Ethernet

Jeremy Bryant, Siemens Energy & Automation, Inc. -- Control Engineering, 4/1/2008

Before Ethernet gets to the plant floor, there are seven critical things to know. Here, the Profinet protocol provides the example.

1. Network layout. Do not to take office topologies to the plant floor, but implement plant/machine topologies with Ethernet. Office Ethernet infrastructures are typically based on commercial-grade products meant to be located in a temperature controlled environment, and switches designed around a large star topology. Industrial Ethernet architectures, on the other hand, take into account different conditions and additional feature requirements, such as high-speed redundancy. An industrial network utilizes different topologies (star, ring, tree, line), as well as shielded cables, metal connectors and devices with higher temperature and vibration specifications. Furthermore, the switches are designed to be configured and maintained by the same individuals supporting the automation system.

2. Protocols. The critical thing to know about Ethernet is that it's just the wire. You need an industrial protocol to run automation applications. IEEE 802.3 Ethernet Standard defines the wiring, the media access rules, and the structure of an Ethernet frame. Although different devices utilizing communications based on this standard can coexist on the same network, the devices must use the same protocol or "communication language." Profinet is a communication protocol designed for industrial applications, providing the functionality required for distributed I/O, machine to machine connectivity, machine safety and motion control.

3. Throughput. It's not how fast the network is, but how quickly and predictably the data gets to where it's needed. Throughput is really the crucial factor. Throughput is defined by the amount of data that can be transferred through a network in a given time period. It is only possible to improve performance of a network by shortening turnaround times in the communication stack. The turnaround times in the Profinet stack are more than 10 times less than a standard Ethernet TCP/UDP implementation. Profinet accomplishes this by taking advantage of an Ethernet real-time channel for time critical applications, while using the standard TCP/IP channel for configuration, diagnostics, network routing and communication of "bulk data transfer."

4. Network configuration. It's not just how easy it is to setup, but how little programming you have to do to make it run. When establishing the communication relationships between devices, Profinet focuses on configuration instead of programming. With an object-oriented approach that configures interconnections between devices (rather than a programming / debugging approach), system-integrators and end users confirm a reduction of 25% in engineering and commissioning time.

5. Planning ahead. It's not only important to support today's applications. You need the same Ethernet to support all your applications in the future. Profinet allows customers to implement a totally integrated automation solution, at their own pace, on one single Ethernet network that supports different control disciplines, such as peer to-peer communications, distributed I/O, machine safety, motion control, and data acquisition. Profinet is also prepared to handle the future requirements of connectivity.

6. Legacy systems. The critical thing about Industrial Ethernet is not just if it talks Ethernet, but how it integrates with already implemented networks and machines from different vendors. Since Profinet works with standard Ethernet switches and utilizes the TCP/IP protocol suite, a system based on Profinet may be connected to the overall automation network without the requirement of high-end switches or special features such as IGMP snooping and VLAN. Profinet also allows communication between the multiple vendor solutions. Its component-based automation concept uses XML to represent the entire machine as a component, independent of the control system inside.

7. Cost. The critical thing about the cost of an Industrial Ethernet network is not the cost of the components, but the cost of engineering, installation and maintenance. Profinet and Industrial Ethernet components take advantage of IT technologies like OPC and SNMP to monitor and display the status of the network. Furthermore, diagnostic capabilities provide the ability to incorporate the status of the network directly into the automation system, which could include the PLC and SCADA system. This simplifies configuration and troubleshooting by allowing everything to be done from one central location.

Professional Development Hours: Continuing Education Requirements for Registered Professional Engineers

As of January 1, 1999, the State of Louisiana began requiring Licensed Professional Engineers to participate in a continuing education process as a condition for registration renewal. During each biennial registration renewal period, every engineer registrant, including those registered in two or more disciplines, is required to obtain 30 Professional Development Hours (PDH's) in engineering related activities. The local section can help. *Many of our section meetings qualify towards this requirements.*

READ-OUT

The newsletter of ISA Baton Rouge Section and is published 9 times a year. Business card ads by sponsors are $200 per year, this would also include website and banner advertisement during monthly presentation. If you are interested in an ad, have an announcement, comment, question or suggestion; please contact us. **Deadline for ads, articles, etc. is noon on the last Friday of the month! Please provide the information to the editor by email to crystal.barzare@jacobs.com**