



Wilmington Delaware Section

The Sensor February 2006

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Upcoming Events

- Feb 28 Plant Tour at**
Joint meeting with South Jersey
- Mar 28 Section meeting at ACE**
Wireless Sensors
Wallace Lueders of Accutech
- Apr 25 Shrimp Boil at ACE**

February 28, 2006
**Uniqema Atlas Point
 Plant Tour with Fieldbus
 Joint tour with South Jersey
 Section
 5:30 PM**

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Uniqema Plant Tour Atlas Point Facility A Fieldbus Installation

Come to see a state of the art automation installation implemented with several Fieldbus Technologies. The process area has been modernized with a DeltaV Automation System connected to Foundation Fieldbus, and Actuator Sensor Interface (AS-i). The Fieldbus segments show true interoperability as there are devices from Fisher Controls, Metso Automation, Rosemount, Stonel and others connected across multiple segments.

5:30pm Check-in and distribution of safety equipment. Review of Safety procedures while in plant.

6:00pm Pizza Dinner combined with Chalkboard review of the installation 1 hour

7:15pm Plant tour

8:00pm Adjourn

New Benefits announced for ISA Members!

Free Standards: Access to over 150 ISA standards and technical reports.

Free Webinars: Access to over 40 pre-recorded web seminars on a variety of topics.

Free Technical Papers: Access to over 2,500 technical papers from ISA conferences.

President's Message

By Steve Prettyman

As we move into the second month of 2006, the future is looking bright. The ISA/IEEE joint section meeting in January was well attended and well supported by vendors. The group in attendance at Delaware Technical and Community College was informed and educated about Intelligent Motor Control by Dave Sterlace who came courtesy of ABB. This year, it was the ISA Wilmington section's turn to host the annual event and program chairs Debbie Lien and Jennifer Slivka did a wonderful job lining up three tabletop vendors, Siemens, Fairmont Automation, and Marsh Bellofram, the speaker, the room, and the meal.

February brings with it a plant tour of Uniquema at Atlas Point and a chance to see a working fieldbus installation. In March, there is Engineers Week which is celebrated with many events throughout the area. March also brings with it the ISA District II Leadership Conference in Williamsburg and the ISA Training Week in Philadelphia. April arrives and brings with it the annual ISA Shrimp Boil produced by Joe Gunn and hosted by ACE. In June we celebrate the close of the 2005-2006 year by honoring our colleagues and welcoming a new cabinet of section officers at the WISA Picnic. In August the ISA Wilmington Section hosts the annual night with the Blue Rocks which is always a great occasion to socialize and relax. In November, the section once again hosts the ever popular ISA Show.

As you can see, there are many fun and interesting events scheduled throughout the year and each one is an opportunity to volunteer, network, socialize, and become a contributing member of the section. There are currently only a few members of the section handling all of the many tasks and hard work required to support these activities year after year. If you are planning to attend any of these events, consider volunteering to help with a future event. This contribution will be beneficial to the section, but, more importantly, it will be a rewarding and enriching experience for you as well. There is something of interest for everyone from leadership roles to supporting section meetings, so speak with a section leader to identify your particular area of interest. The key is to find the right interest for you and then go for it. The section will be grateful that you did.

The Wilmington ISA is a valuable part of the engineering community and it requires the support of the members to remain a viable section. Consider for a moment what the Wilmington area would be like without the section. Training opportunities, professional relationships, and growth opportunities are all at risk if the section goes unsupported. Are you helping to keep the section alive or are you allowing it to slowly fade away? Help keep the Wilmington section alive by becoming a volunteer. You will be glad that you did.

The World Famous WISA Shrimp Boil Sponsors needed

Friends of the Shrimp: \$150 donation. Table top at the Boil and Sponsorship listed in the Sensor.

Boil Buddies: \$50 donation. Sponsorship listed in the Sensor.

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Dave Sterlace's on Intelligent Motor Control Centers

By George Bentinck

The joint ISA-IEEE meeting January 31st was hosted by Wilmington Section at Delaware Tech. Over 40 ISA and IEEE members and supplier representatives were in attendance. Dave Sterlace, Business Development, ABB, Inc. spoke about "Intelligent Motor Control Centers". Dave outlined the following key objectives related to the design of Intelligent Motor Control Centers (IMCC):

- Speed installation and assembly via modular design and scalability
- Reduce wiring time and complexity
- Enable energy savings via improved data/data-management
- Increased uptime via real-time monitoring
- Increased safety by segregation of power and control circuits, "Finger-safe" design and starter safety interlocks
- Reduced installation cost and physical footprint

The typical IMCC has three side by side compartments which are physically and electrically isolated:

- Control - Containing smart motor controllers, communications interface and typically 24VDC or 120 VAC control circuit wiring
- Starter - Containing traditional motor starters or enhanced variants, variable speed drives
- Power - Motor supply conductors, often 480 VAC in the US.

The segmented design and software security features allows managed access by control or electrical maintenance personnel as appropriate. In some cases a shutdown to modify or access control wiring may no longer be required vs traditional designs, thus increasing uptime. Typically a fire in the power section does not impact control wiring as common in traditional designs.

The typical motor controller has 7 digital inputs/ 7 digital outputs and can be made redundant. Analog input capability is typically available as well for temperature, current, and power measurement. The controllers can be configured as desired for protection and diagnostic functions typically not found in traditional designs. There is typically a master controller which handles communications and retains the configuration database for the individual controllers. It too can be made redundant. The master controller can automatically download configuration when an individual motor controller is replaced.

The latest IMCCs provide several means to communicate such as Profibus, Modbus, Ethernet, RS232, and RS 485 facilitating integration with process control systems. The master controller includes a web-server which can be utilized independently of the control system link. The individual controllers and starters provide self IP addressing. A local web-based interface is provided with the IMCC for use by maintenance personnel. The use of OPC has significantly enhanced the ease of getting data to control and asset management systems and has increased the speed and amount of data which can be provided. Thanks to Dave for providing a good overview of the progress in IMCC technology over the past 4 years.

2006 Ralph L Moore Scholarship

By P. C. Gopalratnam & George C. Bentinck

The Wilmington Section of the ISA, is proud to extend Ralph L. Moore scholarship to a qualified student who is planning to attend a college level program starting in the fall of 2006. The applicant must be a high school senior and will be selected based on a specific set of criteria. Please look for the next issue of SENSOR for additional details.

Scholarship Committee

Standards & Practices: SP50 Signal Compatibility of Electrical Instruments (Part 1)

By Nick Sands

The committees and subcommittees of SP 50 develop standards for signals used in process measurement and control, to transmit information between subsystems or separated elements of systems. Such signals may be analog or digital. However, data highway and other time-shared transmission paths, such as those within the scope of ISA-SP72, are excluded. This committee is famous for developing the fieldbus standards. It continues to serve as the U.S. Technical Advisory Group for IEC-SC65A/WG4: Interface Characteristics. Dick Caro has been the chairman of the committee since 1993, and WISA's own Cullen Lanford was chairman from 1987 to 1993. There appear to be no active subcommittees of SP50, but there are several standards.

ANSI/ISA-50.1-1982 (R1992), Compatibility of Analog Signals for Electronic Industrial Process Instruments is one of the most widely used standards in industrial automation, specifying 4-20 mA as the signaling range for analog data transmission of instrumentation and control signals.

The S50.02 standard, which took more than ten years to complete, were the peace treaty of the fieldbus wars. The technical reports have more information for users.

- ANSI/ISA-50.02, Fieldbus Standard for Use in Industrial Control Systems Part 2: Physical Layer Specification and Service Definition
- ANSI/ISA-50.02, Fieldbus Standard for Use in Industrial Control Systems Part 3: Data Link Service Definition
- ANSI/ISA-50.02, Fieldbus Standard for Use in Industrial Control Systems Part 4: Data Link Protocol Specification
- ANSI/ISA-50.02, Fieldbus Standard for Use in Industrial Control Systems Part 5: Application Layer Service Definition
- ANSI/ISA-50.02, Fieldbus Standard for Use in Industrial Control Systems Part 6: Application Layer Protocol Specification
- ISA-TR50.02, Fieldbus Standard for Use in Industrial Control Systems, Parts 3 & 4: Technical Report for Fieldbus Data Link Layer — Tutorial
- ISA-TR50.02, Fieldbus Standard for Use in Industrial Control Systems Part 9: User Layer Technical Report

The fieldbus standards are now maintained by IEC 61158 international Fieldbus committee.

1001 Industrial Incidents What Went Wrong? and Still Going Wrong!



What Went Wrong? and Still Going Wrong! by Trevor Kletz
BBBB (Buy)

Reviewed by Nick Sands

Many books on functional safety cite various works by Trevor Kletz. Two of his eleven books are a collection of industrial accidents with the names of the companies changed to protect the guilty and highlighting the lessons learned. Or the lessons that should have been learned. What Went Wrong? was first published in 1985 and the 4th edition, now 400 pages, came out in 1999. Still Going Wrong! is a shorter book with the same message but fewer examples, published in 2003. Kletz has 38 years of experience with Imperial Chemical Industries (ICI) as an engineer, production manager and safety advisor. He has a Doctorate of Science from Loughborough University where he is a visiting research fellow and he is an officer of the Order of the British Empire.

What Went Wrong? is roughly organized by the cause of the accident, not as written in the incident reports but as classified by Kletz. Along the way he also provided critiques on the investigation reports. The categories are things like preparation for maintenance, modifications, human error, labeling, stacks, and leaks. There are also chapters on liquefied flammable gases, tank trucks and cars, vessel entry, pipe and vessel failures, static electricity, and materials of construction. Of most interest to the automation professional may be the chapters on trip testing and computer control.

Each accident is briefly summarized, sometimes in a sentence or two. For the larger incidents such as Flixborough, Bhopal, Mexico City, Seveso and Feyzin there is more detail. It is astonishing how many times a welder has triggered a fire or explosion, sometimes on vessels that only contained water. Many times human error played a role, but often the design made the error inevitable, such as the missteps in many batch operations.

Still Going Wrong! is Kletz's final book. The incidents are mostly new and grouped much the same as before. Kletz takes a higher level view, with more critiques on the quality of the investigation reports. While the incidents are sanitized to some degree, the references provide some clues. It is also easy to identify some incidents such as the Motiva refinery explosion.

These books are not for the weak of heart. The many ways to suck in a tank, blow up a vessel, and burn down a plant are enough to give even seasoned plant engineers nightmares. But as Kletz points out, a high price has already been paid for these lessons. If you work in or design for a manufacturing facility, one of these books should be on your shelf. They are a good Buy (BBBB) at Amazon for \$57 and \$51 respectively.

ISA Spring Training Philadelphia, March 27-31

The ISA training team will take the field again during our second annual ISA Spring Training event in Philadelphia, PA, on 27-31 March.

Safety & Security Courses

Safety Instrumented Burner Management Systems: A How To Primer

Cyber Security Vulnerability and Risk Assessment

Grounding and Noise Considerations for Control Equipment and Computers

Securing Industrial Networks: Cyber Protection for Automation, Control, and SCADA Systems

Principles of DCS Alarm Management

Introduction to Boiler Control Systems

Safety Instrumented Systems: Design, Analysis, and Justification

Understanding and Applying Instrumentation in Hazardous Locations

Boiler Burner Management Systems: Meeting NFPA Standard

Networking Courses

Ethernet and TCP/IP on the Plant Floor

Picking the Right Bus - A Comparison of Field and Device Networks

Implementing Wireless Technologies

Process Control & Automation Courses

Introduction to Industrial Automation and Control

Installing, Calibrating and Maintaining Electronic Instruments

Understanding and Tuning Control Loops

Troubleshooting Instrumentation and Control Systems

Understanding Electrical Systems

Planning, Justifying and Executing Automation + Control Projects

Industrial Electronics

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Certification & License Exam Review Courses

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Control Systems Engineering (CSE) PE Exam Review Course

Certified Control Systems Technician (CCST) Review Course

For complete course descriptions or to register online:

Visit www.isa.org/springtraining or call (919) 549-8411 for more event information.