



# Wilmington Delaware Section

# The Sensor

## May

2006

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### Upcoming Events

- May 23 Section meeting at ACE  
 June 27 Picnic at Our Lady of Grace  
 Nov 16 WISA Show at Holiday Inn Select

May 23, 2006  
**Section meeting**  
**Safety Lifecycle Practices**  
**Chris O'Brien of exida**  
**At the ACE office in Newark**  
**5:30 PM**

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## Safety Lifecycle Practices – Results from an End User Survey

Speaker Chris O'Brien of exida

As more and more companies become aware of and look at actively implementing the new functional safety standards important questions are being raised. These questions relate to grandfathering of existing systems, timing of implementation and availability of resources. Realistic answers to these questions are critical to the development and implementation of an achievable plan. exida has worked with end users over the last 6 months to try and answer these and other questions. The presentation will review the results of these surveys.

### Welcome to New WISA Members!

Mr. Daran Kansal  
 of  
 Jacobs Engineering

### Wilmington ISA Show

November 16, 2006  
 Holiday Inn Select on Naaman's Road  
 Exhibits, Training, Seminars and Friends

# President's Message

By Steve Prettyman

Believe it or not the 2005 – 2006 Wilmington ISA presidential term is coming to a close. This is significant, because there are no new volunteers to fill the posts being left by the current incumbents. The section depends upon new ideas and new leaders to keep growth and innovation alive. I have been unable to recruit a successor to replace me as Wilmington Section President for the 2006 – 2007 term. This may result in me repeating as section President and while this may be of great personal benefit to me, it does not further the purpose of the ISA or the section. If you have any interest in becoming a new leader in the section, please contact one of the Executive Committee members and volunteer. You will be glad that you did.

April was a busy month for the Wilmington Section. We held an executive committee meeting and the annual Shrimp Boil. The Shrimp Boil was well attended by Friends of the Shrimp, Boil Buddies, and Wilmington Section members. Once again, a drawing was held to determine topics of future section meetings and door prizes were awarded. The weather was outstanding, the food was delicious, and the company was entertaining. Thanks go out to our great Shrimp Boil chefs Joe and Mike, without whom we would all be hungry and thirsty. These guys really do a great job. Thanks also go out to our program chairs Debbie and Jennifer who arranged the support for the event. Additional thanks go out to all of the vendors that participated and supported the event. And, of course, big thanks go out to our host Tim Cole. The accommodations and hospitality are greatly appreciated.

This month's section meeting on Safety Interlocks will be held at ACE headquarters in Newark on Tuesday, May 30 at 5:30. Pizza is served and the presentation is certain to enlighten and educate.

In June the Wilmington ISA celebrates the end of the 2005 – 2006 term with a picnic at the Our Lady of Grace fairgrounds in Newark. There will be hamburgers, hotdogs, and all of the fixings for a great cook out. The weather cooperated last year and we anticipate another beautiful evening. Come out and eat, socialize, and play ball with the members. I look forward to seeing you there.

# Wireless Instrumentation

By Steve Prettyman

Wireless technology is primarily focused upon asset utilization. This is evidenced by the double digit increases demonstrated in the number of wireless applications installed throughout the world. These installations are becoming more prevalent because of the economic benefits provided by wireless technology.

Wireless technology in the industrial environment operates upon a license free bandwidth allocation at 900 MHz. The application must be reviewed to determine if low frequency or high frequency is required. The range and power of the wireless devices is limited by FCC to 1 watt. This limitation is a significant consideration when determining path loss due to the environment. Sensitivity of the devices is also a concern due to the rate of data transmission. The length and design, omnidirectional versus Yagi, of the antenna plays a significant role in determining the path loss and allowable distances between wireless devices.

To establish a reliable link, a formula is required to calculate the margin the devices can operate within. There is exponential loss related to the receive gain; therefore, it is important to understand the calculated range versus the tested range of the wireless device. Materials can absorb or reflect the wireless transmission and will affect the calculated range of the wireless device. It is important to consider signal strength and data link rate, however, a spectrum analyzer should be used to model the wireless connection. Other considerations include multi-path fading, interference, spread spectrum devices, and authorization.

There are several reliable wireless sensor networks including 802.11, Bluetooth, Zigbee, and Industrial Wireless. The industrial variety can support RS485 output to up to 50 field units per channel. These devices are proven to be reliable in harsh environments with nearly 10,000 units installed and the number triples every year. These devices are commonly used for data monitoring rather than for process control primarily due to security concerns. The benefits of the wireless devices include installation at 1/10 of the cost of conduit and wire per field instrument point and there is portable diagnostic equipment available for setup and testing.

## Automation Federation

Representatives of OMAC, WBF, and ISA met to sign incorporation documents, discuss initial strategic initiatives, and outline next steps. The purposes of the Federation are:

To coordinate and unify the work of member organizations engaged in advancement of the science and engineering of automation technologies and applications, encompassing the design, development, production, and application of devices and systems that sense, measure, manage, and control industrial processes and manufacturing operations;

To promote the value and image of the automation profession;

To facilitate the development and dissemination of educational and informational resources intended to develop new generations of professionals and enhance the effectiveness of existing professionals;

To facilitate the promulgation of industry standards, guidelines, and services that will enhance the efficiency, cost-effectiveness, and safety of automation technology and application.

## Chris O'Brien of exida

Chris O'Brien has 19 years experience in the design, manufacturing and marketing of process automation, reserve power systems and safety related equipment. He is currently the Director of Business Development with exida. In this role he focuses on supporting new and existing customers with their implementation of the IEC 61508 and S84 / IEC 61511 functional safety standards.

He was formerly Vice President of the Power Systems Business Unit of C&D Technologies, a business the specialized in the design and implementation of high reliability back up power systems. Prior to that he was with Moore Products / Siemens Energy and Automation where he held several positions including General Manager of the Instrumentation Division. Chris has been awarded 4 patents, including a patent for the industries first safety rated pressure transmitter. He has a Bachelors of Mechanical Engineering from Villanova University.

## Standards & Practices: SP71 Environmental Conditions for Process Measurement and Control

By Nick Sands

The purpose of the ISA-SP71 Committee is to promote or develop standards or guidelines on environmental conditions for industrial process measurement and control systems, and to provide technical support for U. S. activities in IEC/TC65. The Committee is currently reassessing committee needs and membership. The committee chairman is not identified.

ISA-71.01-1985 Environmental Conditions for Process Measurement and Control Systems: Temperature and Humidity: Establishes uniform classifications of temperature and humidity conditions for industrial process measurement and control systems. The standard is compatible with IEC Publication 654-1, 1979.

ISA-71.02-1991 Environmental Conditions for Process Measurement and Control Systems: Power: Establishes uniform classifications of power supplied to process measurement and control equipment, providing users and manufacturers with a means of specifying the electrical or pneumatic parameters of a power system to which a specified measurement or control system may be connected.

ANSI/ISA-71.03-1995 Environmental Conditions for Process Measurement and Control Systems: Mechanical Influences: Classifies mechanical influences, specifically shock and vibration, that may affect process measurement and control instruments.

ISA-71.04-1985 Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants: Classifies airborne contaminants that may affect process measurement and control instruments. This classification system provides a means of specifying the type and the concentration of airborne contaminants to which a specified instrument may be exposed.

## A Good Seat on the Bus



### Foundation Fieldbus

by Ian Verhappen and Augusto Pereira

**BBB (Borrow)**

Reviewed by Nick Sands

In the second edition, *Foundation Fieldbus* has grown from a pocket guide to a short 104 page book on design and implementation tips specific to Foundation Fieldbus. Ian Verhappen and Augusto Pereira make an extraordinary team of authors. Ian Verhappen is an ISA fellow, a current and past VP of ISA, the chair of the Foundation Fieldbus End User Advisory Council (EUAC), and a director of ICE-Pros consulting company with tremendous Fieldbus experience. Augusto Pereira is also a VP of ISA and deeply involved in developing technical resources for South America. Thanks to Augusto this book is available in Spanish and Portuguese.

The first three chapters cover the equipment in a Fieldbus network. The Fieldbus physical layer, per the OSI/ISO model, covers the communication method and speed, the number of instruments on each segment, network topologies and the maximum length of the segment. The communication layer includes the network addressing and the device types; basic, link master, and bridge. Cable types, lengths, and terminators are covered for both the Fieldbus H1 segments and Fieldbus High Speed Ethernet (HSE) segments. The power supplies for Fieldbus vary for segments depending on the service; general purpose, Fieldbus Non-Incendive Concept (FNISCO), and Fieldbus Intrinsically Safe Concept (FISCO).

The next chapters provide tips on the documentation of segment design and integration. Segment loading can be complex to calculate depending on the number of devices, the number of function blocks, their execution cycle time, and the communications paths required, also called Virtual Communication Relationships (VCRs). There are different types of VCRs, client-server, report distribution, and publisher-subscriber. For example, the execution timing is dependent on whether control is performed in the final control elements or the controller.

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## Friends of the Shrimp

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215-513-1000 410-404-8588 Direct  
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## Boil Buddies

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## A Good Seat on the Bus (cont.)

Finally, after all the design, comes the joy of commissioning, the challenge of troubleshooting, and the long haul of operations and maintenance. Tools like network analyzers and Fieldbus handhelds can help in commissioning. There are also tips on configuring the resource, transducer, and function blocks. Much of the information needed for operation and maintenance is covered in earlier chapters. Future improvements include safety bus and enhancements to the electronic device description language (EDDL).

This book is specific to Foundation Fieldbus, unlike other books on automation networks. There is no doubt that Verhappen and Pereira have knowledge and experience to share. This book however is not a how-to guide. You must have a Fieldbus and speak the language to follow the practical tips. Experience is assumed. This makes the book more of a borrow (BBB) at [www.ISA.org](http://www.ISA.org) for \$43 (member price).

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