ISA
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Wilmington Section ISA
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Wilmington Section ISA

ISA–The Instrumentation, Systems, and Automation Society **ISA** TM

Check out our web page at http://www.isa.org/community/wilmi

Wilmington ISA-Section Meeting

Wireless Technology
"Cutting the Cord"

Presented by
David Gunn
Honeywell Internatioinal

5:30 pm Tuesday, February 24, 2004
Applied Control Engineering
Directions
www.ace-net.com

ISA SENSOR
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The Sensor

Meeting Event
Tuesday, February 24th:
Applied Control Engineering

Topic: Wireless Technology

"Cutting the Cord"

The theme is to save cost, capture more data, be flexible and enhance asset effectiveness.

Honeywell has recently introduced a new line of self-powered industrial wireless transmitters that are generating considerable interest for monitoring applications where installation considerations and expenses have prevented the use of traditional wired solutions.

Presented by:
David Gunn
Field Instrument Product Sales Specialist
Honeywell International

David Gunn is a Field Instrument Product Sales Specialist for the Industrial Measurement & Control unit of Honeywell International. He has been associated with Honeywell for 15 years and with the instrumentation field for over 30 years. David resides in Doylestown Pennsylvania and is responsible for Field Measurement product line sales in the Eastern half of the United States.

Please contact:
Michael Morkun at
michael.b.morkun@usa.dupont.com
or Joe Baker at
joe.baker@us.endress.com if you plan on attending.

FUTURE EVENTs

March 23rd Section Meeting

Annual Shrimp Boil!
Mark your calendars for April 27th at ACE

The Shrimp Are Running Scared! Can it be? Is it time once again to gather around the cooking pot and cook up pounds of shrimp?

Food will be served at 6:00 PM

Location Feb Meeting:
Applied Control Engineering
Directions at:
www.ace-net.com

President's Corner
By Nick Sands

Standards, standards, standards. In the last month, standards have been the focus of much of my attention. Perhaps the same is true for you. At work we have been preparing for the release of the new S84.01 standard (S is for standard) on safety instrumented systems (led by WISA members with more WISA members participating). Outside of work I have just finished reading a book on the IEC 61131-3 standard on programming control systems.

Standards, standards, standards. At work we have been reviewing the S88 standard on batch automation. It provides the terminology and reference models for batch processes.

Outside of work I have been working on the alarm management effort just started by SP18 (SP is for Standards and Practices committee).

Standards, standards, standards. At work we have been anticipating the guidance by SP99 on process control system security (with WISA members participating). Outside of work I have been communicating about the new certification program being developed by ISA, the certification for automation professionals, which is related to work by SP98.

Standards, standards, standards. WISA has a long history of leading and participating in the development of ISA standards. The same standards have provided guidance and requirements to me at work. I can see why some people join ISA just to get discounted access to the standards and some join just because they are working on a standard. Perhaps you are on a standards team or perhaps you would like to join one. Standards are just one way that you can share your experience for the benefit of others.

Shrimp Boil Sponsers Needed!
We have two levels:

Friends of the Shrimp: $125.00
This provides recognition in two issues of the SENSOR as well as at the Boil itself. It also entitles the sponsor to set up a table top at the Boil to display your company's products.

Book Review: Nick Sands The - BBBB (Buy) Programming industrial control systems using IEC 1131-3 by R. W. Lewis

There is no way to read R. W. Lewis's book on IEC 61131-3 in an airport bar and not look like an engineer. But this book is worth reading. It is an excellent overview of the five programming languages and the principles on which the standard is based. Lewis has done an excellent job of making a readable book out of the programming standard. There is no information provided on R.W. Lewis himself, but it appears that he was a member of the IEC 61131-3 committee, originally IEC 1131-1 before a renumbering that added the 6.

Lewis starts with an overview of where 61131-3 fits in the bigger picture of 61131 and other IEC standards. Then he explains the concepts behind 61131-3; strong data typing, reusable program organizational units (POUs), such as functions and function blocks, hierarchical design, either top-down or bottom-up, flexibility for a range of equipment scales and architectures, and the possibility of transporting applications in whole or in part between systems.

Chapter 3 is on the common elements of programming, and it is the core of the book. This section describes the data various types; generic, standard, and derived, the variables types; input, output, and external, and the POUs; functions, function blocks, and programs that are the backbone of control system programming.

The first language is structured text (ST), a generic text language similar to PASCAL. Lewis provides a tour of the key aspects of ST beginning with the basics like assignments, expressions, and calls. The more complicated structures of conditional statements (IF...THEN, IF... ELSE, IF...ELSIF...THEN, CASE) and iteration statements (FOR...DO, WHILE...DO, REPEAT...UNTIL) are also discussed, providing good advice on programming style. The advantages of ST are the strong data typing, the capability of complex equations, and iterative calculations. ST is a very flexible language, but flexibility can be also be a disadvantage when the documentation is poor.

Programming in the graphical Function Block Diagram (FBD) language is familiar to many DCS users, but may be new to PLC users. Function blocks process data via algorithms just like functions, but function blocks can retain internal values. A function will always return the same output given the same input (think COSine), but a function block may return a different value given the same input, depending on the internal values (think PID). This graphical language provides excellent documentation of an automation program, as well as consistency and efficiency. Lewis promotes function blocks as a key product of the standard. He explains the general rules for programming in FBD. Later in the book he illustrates how to create function blocks, which can be written in any of the five languages, and the small set of function blocks defined in the 61131-3 standard.

The most traditional of PLC programming languages is the graphical depiction of relay ladder logic called ladder diagram (LD). This section is an excellent overview of generic LD functionality. The section starts with a good explanation of each of the symbols used in the generic version of the LD language. Advantages of LD are the intuitive interpretation of LD by people familiar with electrical circuit diagrams and the excellent documentation. Calculations are often difficult in LD.

Instruction list (IL) is the most basic of the five control languages. This language is a generic form of the pneumonic assembly programming that some systems allow. Programming in IL requires the understanding of the accumulator or results register. Most of the IL commands move data into the accumulator or process the data in the register. IL is a good choice for optimizing code used for straightforward critical operations.

Sequential function charts (SFC) is the highest level programming languages in the standard. The IEC standard for SFC functionality is based on the French standard for Grafcet. Lewis explains the basic rules for programming SFCs. The basics are transitions, input conditions that must be met to proceed to the next action, and actions, output events caused when a transition is satisfied. The rules of SFCs allow for diverging and converging sequences and sequences that run in parallel. The graphical depiction of sequential operations makes SFC the preferred language for batch automation. The actions may be written in any of the five languages.

The final chapters include an example problem using the languages, a discussion on the features expected in the programming tool and a brief explanation of the communication between systems that is covered in IEC 61131-5. The appendixes have all of the amendments made since the IEC 61131-3 standard was first published in 1993.

This book is a Rosetta stone for automation professionals, defining and connecting the languages of control systems. The concepts of IEC 61131-3 and the tour through each of the five programming languages arm the reader with enough knowledge to decide which languages are best suited for certain problems, and how to translate between languages where possible. At $77 (from Amazon as the Institution of Electrical Engineers wanted pounds) I rate this book a solid buy.

Ralph L. Moore
$1000 ISA Scholarship Application Form

Presented by the Wilmington Section of the
International Society of Measurement & Control

Application Requirements:

◆Applicants must be sponsored by a Wilmington Section ISA member.

◆Students must be a high school senior.

◆Students must be a attending a 4 year college/university or technical training school.

◆Applicants pursuing a technical or science degree will receive preferential treatment.

Supporting Information Required:

Short written essay including:
- ◆Sponsor
- ◆Achievements (both scholastic & personal)
- ◆Extra curricular activities & community service
- ◆Leadership roles

Recommendations:
- ◆Teachers (2)
- ◆Personal (1)

High school transcript including GPA, SAT and class rank.

This information will be reviewed by the Wilmington Section Scholarship Committee. Deadline for receipt of information by the committee is May 15th. Submit information to:

Dan Roarty
Scholarship Chairman
319 Palomino Drive
Newark, DE 19711
Home Telephone # 302-292-8866 e-mail: droarty@tycoint.com

Award & Presentation:
A check will be presented at the ISA Annual Picnic held in June.
The recipient will be presented with a check for $1000.00 from the ISA Wilmington Section. This presentation will, if possible, be made at the June ISA Family Picnic. All applicants will be notified of the results. In case of tie the award will be evenly divided.