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Wilmington Section ISA

ISA–The Instrumentation, Systems, and Automation Society

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

Wilmington ISA

Internalization of Process Sector Functional Safety "Its Impact On Us"

Presented By
Victor Maggioli, ISA Fellow
Feltronics Corporation

5:30 PM, Tuesday October 26, 2004
Applied Control Engineering
Directions at www.ace-net.com
RSVP to: Mike Morkun or Matt Murphy

ISA SENSOR
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The Sensor

October 2004

October 26th Meeting
5:30 PM at ACE

Internalization of Process Sector Functional Safety

"Its Impact On Us"
by Vic Maggioli, ISA Fellow
President, Feltronics Corp.

In the last decade, process sector functional safety has transitioned from a heavy dependency on qualitative analysis in many areas including hazards and risk related activities, architecture development, safety interlock requirements, and testing frequency. Today those activities are taking on a quantitative flavor more than ever. In addition, the basic standard approved by ANSI this month is an international standard receiving full global acceptance. This transition brings with it many opportunities for those who understand what is happening, how others are benefiting, what problems others are having, and where this is all headed. This talk will attempt to address these issues.

Speaker Bio:

Victor Maggioli, President, Feltronics Corporation.

Graduate of the University of Rhode Island, class of 1953, with a BS in Electrical Engineering. Worked for Dupont's Engineering Department for 38 years as a Principal Consultant. He has been self-employed since 1992.

FUTURE EVENTS

Oct 26th - Internalization of Process Functional Safety Presented by Vic Maggioli, ISA Fellow

Nov 11th - ISA Wilmington Show

Note: We are not having a November Section Meeting, Please come out and support the Wilmington ISA Show at the Holiday Inn Select

At Dupont, his tasks included development, design, start-up, and standards preparation for high voltage distribution, lighting, grounding, lightning protection, variable speed drives, Electrical/ Electronic/Programmable Electronic (E/E/PE) process control, programmable controllers, fiber optics, E/E/PE installation practices, E/E/PE safety practices, etc.

Vic is past Chairman of ISA Standards Panel 84 during development of S84.01-1996, TR84.02, TR84.03, S91.02-1195, all significant process sector functional safety standards.

US technical representative to IEC 61508, global generic functional safety standard. Presently he is addressing the 5 year maintenance cycle of this standard. Vic is also the US technical representative and chairman of IEC 61511, global process sector functional safety standard accepted by all countries including US (ANSI), this is identified in the US as ISA S84.00.01-2004 (IEC 61511).

Co-author of American Institute of Chemical Engineers (AIChE), Council for Chemical Process Safety (CCPS) book titled guidelines for Safe Automation of Chemical Processes), member of ISA SP12 writing a fiber optic safety standard, member of International Electrotechnical Commission (IEC) 61508 writing standard on all areas of instrumented safety, member of European Workshop for Industrial Computer Safety (EWICS) writing safety guidelines, and chairman of IEC 61511 writing a process sector international standard.

Feltronics Information:

Feltronics Corporation is a single person "S" Corporation with Victor Maggioli as President. Feltronics uses contractors to handle various application specific projects. Today, Feltronics has one-office expert handling personal computer issues, two software programmers doing YEAR 2000 programming, one CAD programmer preparing construction drawing, one engineer doing programmable controller application design, and two contractors handling bookkeeping/payroll/tax issues. Each contractor has industrial experience in the petro-chemical area within their field of expertise. When Feltronics capabilities match the project needs, Vic used the contacts developed during forty-plus years of working in the industrial electrical/ electronic design field to match talent with the application needs.

2004 Industrial Measurement and Control Exhibit and

Technical Seminars

Thursday, November 11, 2004
Holiday Inn Select-*Wilmington off I-95 and Naamans Road, Claymont, Delaware just below the Pennsylvania State line*
10:00 AM – 5:00PM

This Show Offers One-Stop Shopping, Providing . . .

· Access to new and innovative instrumentation products and technology
· One-on-one interaction with vendors to discuss the most appropriate products and equipment to meet their facility's needs
· Free Admission
· Easy to get to Location (off I-95 and Naamans Road in Claymont, DE)
· Free on-site parking

ISA Training Seminar (Registration required)
Safety Instrumented Systems: The Must Know for Implementation (EC505)
Course: 8:00 am – 4:00 pm Sign-in: 7:30am $395 for Members, $445 for non-Members

FREE Technical Seminars (Pre-registration not required)

1) Level Measurement

2) Batch Control (S88)

3) Fieldbus Instruments

4) Network Security

5) Enterprise Connections (S95)

6) RFID Wireless

For more information contact Ms. Janet Cunningham janetbarr@AOL.com Phone 301-668-6001 / Fax 301-668-4312 / www.isa.org/~wilmdel

President's Message By Ken Lawrence

The ISA Wilmington show is fast approaching and we need to get the word out to manufacturers, vendors and associates to make this year a success. We are offering a Safety Training Course, which I'm highlighting below, so please get the word out.

Safety Instrumented Systems: The Must Know for Implementation (EC50C)

Length: 1 day
CEU Credits: 0.7
Course hours: 8:00 am - 4:00 pm
Price: $395 Members, $445 Nonmembers

Description:

There are many different ways of designing safety instrumented systems. Questions such as:

- **Which technology should be used (electric, electronic, or programmable)?**
- **What level of redundancy is appropriate (single, dual, or triple)?**
- **How often should systems be tested (monthly, quarterly, yearly, or once per shutdown)?**

These question are being asked by users and engineering firms alike. Debate continues as to how one even makes these choices (past experience, qualitative judgment, quantitative analysis, etc.). This seminar will cover the basics of what needs to be done in the design and selection of safety systems.

You will be able to:

- **Learn valuable lessons from previous accidents**
- **Understand the difference between control and safety systems**
- **Follow a design life cycle**
- **Account for independent protection layers**
- **Determine safety integrity levels (SILs)**
- **Understand the failure modes of safety systems**
- **Understand the pros and cons of different technologies**
- **Develop maintenance and testing requirements**
- **Develop the required system documentation**

You will cover

- **Lessons from Previous Accidents:** The Danger of Overconfidence and Complacency | Resulting Legislation | Contributing Factors of Failures in Control and Safety Systems
- **Industry Standards, Guidelines, and Recommended Practices:** ISA, IEC, AIChE, API, IEEE, and OSHA | The Need for Separation of Control and Safety Systems
- **Independent Protection Layers:** Prevention Layers | Mitigation Layers
- **Selecting Safety Integrity Levels (SILs):** Qualitative and Quantitative Methods of Analyzing Process Risk | Determining the Required SIL of the Safety Functions
- **Failure Modes of Safety Systems:** Safe Failures and Their Impact | Dangerous Failures and Their Impact
- **The Real Impact of Redundancy:** Single (1oo1, 1oo1D) | Dual (1oo2, 2oo2, 1oo2D) | Triple (2oo3)
- **Different Technologies:** Relay Systems | Software Systems (e.g., PLC, TMR) | Field Device Requirements
- **Testing and Maintenance Requirements:** Bypass Requirements | Reset Requirements
- **General Hardware Issues:** Power | Grounding | Interface | Environment

Programmable Controllers (3rd & 4th editions) by T. A, Hughes Reviewed by Nick Sands

Meet the PLC - BBB (Borrow)

If you wouldn't know a PLC if was sitting on your desk, this book is just the introduction you need. Thomas Hughes, a long time member of ISA with over 30 years of experience including Dow Chemical, Rockwell international, and the International Atomic Energy Agency, has again updated his reference book Programmable Controllers, with a 4th edition. The first edition was published 25 years ago. Dividing the book into sections, for summary purposes, Hughes covers some basic information, then programming, and then systems level information and practices.

The basic chapters start with a history of, and introduction to, programmable controllers. It doesn't take long to see how the PLC program differs from a typical computer program. The next chapter covers the native numbering systems for computers, binary, octal, and hexadecimal, as well as BCD and ASCII. Also covered are Boolean logic functions and their schematic and logic representations. Chapter 3 has a nice introduction to the concepts of electrical circuits and symbology. The next chapters build on this and show typical I/O and the representation of I/O values in memory. Hughes covers the basics well.
After establishing the background, the next section is on programming. Being a book on PLCs, the focus is on ladder logic, or ladder diagram. The basic and advanced function of ladder diagram programming are shown for a typical PLC. The explanation of functions is good, but there are few examples where more complex logic is built with basic functions, although the exercise problems provide some opportunities for the industrious reader. After ladder comes a review of the other standard languages. The 4th edition uses the newer terminology for the languages. Sequential function charts and structured text are together covered in 5 pages, but Instruction list, or statement list, is discussed in detail. To understand instruction list programming is to understand how a microprocessor works. It is good knowledge for any control engineer or technician. The function block language is thoroughly reviewed in the last chapter of this section.

The last section addresses the system level. Chapter 10 is an interesting overview of data communications, touching on protocols and networks that have become so much more important. The 4th edition adds only a little on networks over the 3rd. Hughes does explain serial communications and error checking in detail. Chapter 11 brings together the components from the earlier chapters to complete a slightly more comprehensive example. The final chapter addresses some of the issues of physical design as well as maintenance of an installed system. While maintenance is covered in only a few pages, at least some good practices are covered since few books even mention maintenance of PLCs.

Hughes book is a guide to the classic programmable controller, perhaps a
bit dated compared to latest PLCs, but there are many classic models still in service. The 4th edition is definitely an improvement over the 3rd, with terminology consistent with IEC61131-3 and many corrections to the examples. It is a introductory book with simple problems and limited examples on style. Its a must have for a larger control library, but of limited value over time, making a it good book for many people to borrow (BBB) (and return in a timely manner please). The 4th edition should be available in December from ISA for $89 (member price).

Leadership Need for WISA

For the 2004-2005 ISA year, June to June, there are still positions available: One key postion is Education Chair. There are other opportunities as well, planning and assisting for the November WISA Show, speaking at Section meetings, or assisting with the Website.

ISA Fellow - Victor Maggioli, Sr

Congratulations to Victor Maggioli, Sr. who was recognized as an ISA Fellow at the ISA President's Meeting in Houston, Texas earlier this month. This is a well deserved honor to a Senior ISA Member that has contributed many years to this society.

Mark your calendars!
November 11th
ISA Wilmington Show

Please set aside time to attend and take advantage of the free seminars offered and Safety Instrumented Systems: The Must Know for Implementation (EC50C) training.