



Wilmington Delaware Section

The Sensor

March

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In this Issue

1. ISA S95 Standard Reference Models
2. President's Message
3. Standards: SP77 Part 2
4. Book Review: Automation and Control Systems Economics

Upcoming Events

- April 24—WISA Shrimp Boil
- May 22—WISA Section Meeting
- June 26—WISA Family Picnic

March 27, 2006
ISA S95 Standard Reference Models
 by Ray Walker of DuPont
 At the ACE office in Newark
 5:30 PM

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ISA S95 Standard Reference Models

Speaker Ray Walker of DuPont

ANSI/ISA-95.00.01-2000, Enterprise-Control System Integration, Part 1: Models and Terminology, provides standard terminology and a consistent set of concepts and models for integrating control systems with enterprise systems that will improve communications between all parties involved. The models and terminology emphasize good integration practices of control systems with enterprise systems during the entire life cycle of the systems.

Shrimp Boil

Join us for the Famous
 WISA Shrimp Boil
 April 24, 2007

Become A Friend of the Shrimp
 Or A Boil Buddy.

President's Message

By Steve Prettyman

This month I write to you from the waiting room of the Subaru Dealership in Newark. I arrived this morning at 0700 and at 1300 I asked when I could expect my car to be ready. I was told that there was some mix up and my car had not been serviced. So, they jumped right in and processed my request. Fortunately, I had a wireless connection and was able to conduct business via laptop and mobile phone.

This experience has led me to reflect upon the omnipresence of technology and its impact on my daily life. I can sit just about anywhere in the civilized world and conduct business via wireless technology. This is a double edged sword, however, because I can never get away from work. The excuse of not being able to be contacted is no longer valid. I am available twenty four hours a day, seven days a week, fifty two weeks a year.

This is wonderful for a technology addict like me because I can travel and work from just about anywhere. I spent the last two years earning my Masters degree online. This meant that I took the laptop everywhere, vacations, weekend trips, and the car dealership. It also meant that I could never leave the laptop at home.

Technology has provided us with the illusion of freedom, while it has really become a leash connecting us to the world. I find myself anxious when I leave my phone at home or when I don't have internet access. The advances in technology have liberated us and shackled us at the same time. We can get further from the office, but we are still connected.

Wireless technology has been the number one topic for section meetings for a few years running, yet we always focus on the advances in instruments rather than business tools. Perhaps this is because we expect the same level of confidence in our instruments that we have come to expect from our business tools.

As I prepare to leave the car dealership, I am thankful for the technology that allows me to work from anywhere while I curse the analog world for not having the same reliability that the wireless technology provides. A cell phone rings in the distance, another reminder of our dependence upon technology and its grip on our daily lives.

The ISA helps to shape the technology we have come to depend upon in our daily lives and as much as we depend upon the technology, the technology depends upon people to develop it, support it, and improve it. The ISA needs volunteers like you to continue this good work. If you depend upon technology like I do, why don't you volunteer for the ISA? It will change the way you view the world and the world will change its view of you for volunteering.

The Dollars and Cents of Automation



Automation and Control Systems Economics

by Paul Friedmann

BBB (Borrow)

Reviewed by Nick Sands

Control improvement justification is a constant challenge to automation professionals. Paul Friedmann has updated *Automation and Control System Economics* as a guide to developing the economics of automation projects. Friedmann has over 40 years of experience developing and designing control systems for suppliers and users, including Leeds & Northrup, CRB systems, Mobil and Allied Signal. He has a BS in Chemical Engineering from Michigan, a MS from Penn, and is a Life Member of ISA.

The introductory chapters state the purpose of the book and introduce the important concepts of performance, cash flow, risk and probability. The next part of the book covers identification and estimation of benefits, cost estimation, and project evaluation. Friedmann lines up the usual suspects for benefits; increased capacity, lower utility costs, improved yield, reduced waste and pollution, improved quality, and safer operation. Estimation requires more information, such as the current performance, the estimated improvement, and system constraints. Except for quality, reduced variability itself is rarely a benefit. The benefit comes from shifting the mean, and making a process improvement as a result of reduced variability from a control improvement. The process improvement also needs to translate into business improvement.

The other half of the benefit to cost ratio is cost estimation. The estimate accuracy may start at an order of magnitude and evolve to a detailed estimate as a project moves from concept to detailed design. The typical cost categories include hardware, software, training, installation, operating and support costs. With both benefits and costs estimated, the project can be evaluated against other projects. Evaluation methods include payback period, return on investment, net present value and internal rate of return. Friedmann demonstrates benefit and cost estimation with an example project.

A more realistic approach to benefits and cost estimation includes risks like novelty, complexity, and resources. These factors may affect project benefits or costs directly or indirectly by impacting the schedule. Risk scenarios can be assigned probabilities and tied to cash flows for evaluations. With the risks and their potential impact identified, decisions can be made about options to mitigate the risks such as testing, simulation, and redundancy. Friedmann also demonstrates these methods with an example project.

Standards & Practices: SP77 Fossil Power Plant Standards

(Part II)

By Nick Sands

This committee is one of ISA's most active standards committees. The scope is to develop instrumentation standards for use in fossil power plants, documenting through standards publications: criteria, standards, practices, and procedures related to instrumentation controls in fossil power generating stations. The chairman is David Roney. Here is part of the description of SP77 committees and standards.

ISA-SP77.43, Unit/Plant Demand Development addresses the unit/plan demand development subsystem for boilers with steaming capacities of 200,000 lbs/hr (25 kg/s) or greater. This subsystem includes firing rate demand development, throttle/header pressure control, and unit megawatt/steam flow control, as applicable.

ISA-RP77.60.02-2000 Fossil Fuel Power Plant Human-Machine Interface: Alarms provides advice and guidance on the development and design of plant alarm systems. The primary application for this recommended practice is fossil power plants; however, these guidelines are generic in nature, and suitable for use in other process industries.

ISA-TR77.60.04-1996 (R2004) Fossil Fuel Power Plant Human-Machine Interface-CRT Displays provides advice and guidance in the development of electronic screen displays for use in conjunction with real-time Distributed Control Systems (DCS) used in utility fossil-fired power plants with boilers of 200,000 lb/hr or greater capacity.

ISA-RP77.60.05-2001 (R2007), Fossil Fuel Power Plant Human-Machine Interface: Task Analysis provides guidance and suggests an approach for conducting a task analysis as part of the design and development of new control rooms/systems for power plants and for supporting major control room upgrade programs. The basic premise is that task analysis data, when collected early, is beneficial throughout the design process and serves to identify instrumentation needs, assist in evaluating design options, and in validating completed designs for human-machine interface concerns.

Sensor Trivia Question

Where did Steve write his column?

Send your answer to
Nicholas.P.Sands@usa.Dupont.com

Win an ISA shirt.

Ray Walker of DuPont

Ray is a Principal Consultant for the DuPont Engineering Project Center. He has 34 years experience automating Manufacturing and Engineering business processes. Ray is currently developing DuPont Engineering's IT Architecture Vision & Strategy. He also leads Engineering's Interoperability and Facility Life Cycle Management Initiatives.

WISA Shrimp Boil

5:30 pm Tuesday, April 24, 2007
Applied Control Engineering

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The Dollars and Cents of Automation cont..

**WISA Shrimp Boil
April 24, 2007**

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The final chapters, specific to batch and discrete processes, are new in the second addition. The benefits for batch processes are similar to continuous processes, but capacity is usually related to batch cycle time and control often means tracking trajectories instead of fixed setpoints. In discrete processes, reducing rework, scrap parts, in-process inventory, and labor per part are typical benefits. The automation strategies may be very different from continuous or batch processes.

Friedmann outlines the process to assemble the economics and document the financial risks of a project proposal. There is no magic bullet that provides justification for automation projects. Automation professionals should understand the concepts in this book and perhaps a little more as Friedmann only provides an introduction to the subject in Automation and Control System Economics. It is worth borrowing (BBB) and is available for \$69 (member price) at ISA.Org.

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