



Wilmington Delaware Section

The Sensor

October

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Upcoming Events

- Sept 25 MPC Applications at ACE
- Oct 2-4 ISA Expo in Houston
- Oct 23 Section Meeting at ACE
- Nov 27 Section Meeting at ACE

October 23, 2007
The Power of Data Collection
Lisa M. Rose of Automation & Control Inc and Factory Intelligence
 5:30 PM at ACE in Newark

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Unleash the Power of Data Collection

Lisa M. Rose of Automation & Control Inc and Factory Intelligence Network LLC

Use process data to monitor critical equipment, detect control loop degradation, and schedule maintenance when needed not because of planned shutdowns.

New Member

WISA Welcomes
 Mr. Norman Dukes
 Of
 Indian River Power

New Member

President's Message

Following the Lines

By Bill Balascio

What's in a name? Really, is a name important? How about the name of our society – does that matter to you? When I joined ISA, those three letters stood for Instrument Society of America. A few years ago, that was changed to its current name “ISA – The Instrument, Systems, and Automation Society”.

At the Counsel of Society Delegates meeting in Houston, the delegates voted on a motion by the ISA Executive Board to change the legal name yet again to “International Society of Automation”. This was a controversial motion that was put forth in an effort to make our society appear more international. Make no mistake, this change was not being suggested just for the sake of appearances -- we are an international society with representatives at the delegates meeting from Canada, Asia, Europe, and Latin America.

The motion was debated with some of the comments for the change stressing that our standards will be widely accepted. Arguments against included a general feeling that the name change would be abandoning instrumentation, and that many members did not “do automation” only instrumentation. It was also suggested that the definition that the ISA Executive Board offered for the term automation was poorly written, and that the Society had not done enough work to sell the reason for the change.

Since the legal name change constituted a change to the bylaws, a two-thirds majority was needed. Each delegate voted for all the members in their respective sections, so very large sections such as Houston carried more “weight”. In the end the voting was close, but the measure was defeated, since only 63% were in favor.

How do you feel about the name change? I'll be happy to listen to your thoughts and pass them along to the Executive Committee so that we'll be able to reflect your desires at the next Counsel of Society Delegates Meeting in 2008.

Do you want to know how your section voted this time? I'll be happy to tell you in person – at our next section meeting. If you think that I am shameless about doing anything to get you to come to a section meeting, you are right. We want you there, you'll learn something, and you get free dinner – what more could you ask?

WISA Bylaws

The WISA executive committee has made revisions to the section bylaws. The bylaws are posted on the WISA website. The bylaws are open for review and comment by any member of the section. A vote on bylaws will take place at the October section meeting.



Design Patterns for Flexible Manufacturing

by Dennis Brandl

BBBBB (Bonus)

Reviewed by Nick Sands

It has been over 10 years since ISA published the S88.01 standard Batch Control Part 1: Models and Terminology. Many companies, users and vendors, have implemented systems based on the S88 model, or as Dennis Brandl calls it, the S88 design pattern. In *Design Patterns for Flexible Manufacturing*, Brandl illustrates the power of the S88 pattern and extends it beyond batch to continuous or non-stop manufacturing. Brandl, the founder of BR&L Consulting, is the current chairman of the SP88 committee, now working on the maintenance update of S88.01, a very active member of SP95, and the chairman of the IEC/ISO joint working group on Enterprise and Control System Integration. Brandl has a MS in Computer Science from California State University, a MS in Measurement and Control from Carnegie Mellon and over 30 years of varied application experience such as working on the last Soyuz mission, the space shuttle program, Siemens, Texas Instruments, Shell Research, and consulting for many other companies. He also has a regular column in *Control Engineering*.

The first chapters introduce the terminology of batch, discrete, and continuous processes and the symbology used in class diagrams, state diagrams, and sequence diagrams. Here Brandl gives some of the typical benefits achieved by application of the S88 standard and design pattern. The fundamental rule of this pattern is to separate the recipe from the equipment. This is done by layering control, with basic control interacting with the equipment and executing the commands of procedural control which is organized by coordination control.

The chapters on master and control recipes and the S88 pattern are the core of the book. Brandl breaks down the recipe structure and how the types of control connect to each other and to the equipment. Included are the states and modes of recipes, phases, and control modules. The rules for Procedural Function Charts (PFCs) and Sequential Function Charts (SFCs) are given, along with how to use these tools to write recipes and phases respectively. Brandl also addresses the tricky question of how much information to put in the recipe vs how much to build into the phases. The section of the book really addresses batch control or the S88 pattern and sets the stage for the final chapters

Standards & Practices: SP92, Part I

Performance Requirements for Industrial Air Measurement Instrumentation Related to Health and Safety

By Nick Sands

The SP92 committee was chartered to formulate standards, recommended practices, and technical reports for workplace ambient air measurement instrumentation that is used to enhance worker health and safety including installation, operation, and maintenance. The committee also supports efforts to develop international standards for these instruments.

The committee is active and seeking new members, especially users, to assist in revising the committees documents. Jon Miller of Detronics is the committee chairman.

The committee has several documents on hydrogen sulfide (H₂S), carbon monoxide (CO), ammonia (NH₃), oxygen (O₂), and chlorine (Cl₂) detection. These documents are also available as a set.

ISA-92.0.01, Part I-1998 - Performance Requirements for Toxic Gas-Detection Instruments: Hydrogen Sulfide provides minimum performance requirements of electrical instruments for the determination of toxic gas content in air in order to enhance the safety of personnel.

ISA-RP92.0.02-1998 - Installation, Operation, and Maintenance of Toxic Gas-Detection Instruments: Hydrogen Sulfide establishes user criteria for the installation, operation, and maintenance of toxic gas-detection instruments.

ANSI/ISA-92.02.01, Part I-1998 - Performance Requirements for Carbon Monoxide Detection Instruments (50-1000 ppm Full Scale) provides minimum performance requirements of electrical instruments for the detection of carbon monoxide gas (CO), in order to enhance the safety of personnel.

ISA-RP92.02.02, Part II-1998 - Installation, Operation, and Maintenance of Carbon Monoxide Detection Instruments (50-1000 ppm Full Scale) establishes user criteria for the installation, operation, and maintenance of carbon monoxide gas detection instruments.

ISA-92.03.01-1998 - Performance Requirements for Ammonia Detection Instruments (25-500 ppm) provides minimum performance requirements of electrical instruments for the detection of ammonia gas (NH₃), in order to enhance the safety of personnel. It also establishes user criteria for the installation, operation, and maintenance of ammonia gas detection instruments.

Lisa M. Rose of Automation & Control Inc and Factory Intelligence Network LLC

After receiving a Bachelor of Science degree in Mechanical Engineering from Lehigh University, and a Masters Degree in Business Administration from the University of Delaware, Lisa spent over seventeen years working for an electrical distributor as a Sales Engineer providing technical support, application assistance, sales and marketing support for automation sales. She has spent the last four years as a Product Manager for Factory Intelligence Network's "FIN" data collection software. Lisa is responsible for sales, marketing, product development, and customer support. In addition to her duties, she provides application support, and assists in system architecture design. Lisa's experience has given her an extensive knowledge of control systems, networking, and data collection implementation.

Model Predictive Control

By Rusty Shackelford

Phillip (Dave) Schnelle, a Principle Consultant in the DuPont Engineering Technology Process Dynamics and Control group, presented the learnings from a recent model predictive control (MPC) project. A state-space MPC system was applied to a commercial process that included dilution, pasteurization, and drying operations and improved capacity and quality control.

The small scale application of MPC included only a few manipulated, controlled and disturbance variables. The state-space control method converted measured variables into independent state variables for control and optimization.

Schnelle showed how easy each step of the controller identification, design, and commissioning was to complete, even though the basic control system was an older PLC. Many people were convinced that they could now implement a model predictive control project.

WISA Trivia Question?

What was the proposed name change for ISA?

Email your answer to
WISA newsletter editor Nick Sands
At nicholas.p.sands@usa.dupont.com

Win an ISA shirt.

Following the Lines Continued...

Safety Division

The safety division of ISA exists to help our members grow both professionally and personally through a transfer of information and knowledge. We will program safety related sessions at society conferences, maintain a website, list serve, and publish newsletters.

We are covering the following topics;

- Alarm Management
- Burner Management Systems
- Control Systems Security
- Fire & gas protection / detection
- Medical Safety
- Nuclear Safety
- Offshore Safety
- Safety Field Equipment
- Safety Instrumented Systems
- Safety Management

And the following industries:

- Process
- Discrete parts
- Nuclear
- Medical

Surely you are covered with one of these topics!

The final chapters extend the S88 design pattern to non-traditional applications. The first case is manual operation of a batch process. The same principles should be used as for an automated batch process, though the systems are manual. This means the procedures should be written in a similar format to recipes with steps and actions. The extension to non-stop and continuous processes requires again separating the recipe from the equipment and also modifying the S88 rule that a unit contains only one batch at a time. The transition of products, start-up and shutdown operations are included in the NS88 pattern. The final chapter covers the common cases of splitting or blending batches of material.

Brandl's patterns provide the clearest explanation of the S88 models and how to apply them. Experts have already discovered these patterns, which Brandl shares with the rest of us. Design Patterns for Flexible Manufacturing is a bonus (BBBBB) and a must read for anyone that designs or configures control application, batch or continuous. It is the current evolution of automation design. Find it at ISA.ORG for \$89 (member price).

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