



Wilmington Section

International Society of Automation (ISA)

Industrial Automation

Show & Technical Conference

Wednesday, November 18, 2015

Crowne Plaza – Wilmington North

Claymont, DE

Conference Program

Welcome from Wilmington ISA

As president of the Wilmington Section of the International Society of Automation (ISA), I am proud to welcome you to the **2015 Wilmington ISA Industrial Automation Show & Technical Conference**. We are proud to present this event as a service to the industrial automation community in the Mid-Atlantic region. Technical presentation sessions on safety, reliability, and efficiency/economics are now FREE and OPEN TO THE PUBLIC (with talks by aeSolutions, Air Liquide, Applied Control Engineering, DuPont, Eastman, Exida, and Honeywell). This unique event for the Mid-Atlantic region allows us to fund our programs (and the Ralph L. Moore Scholarship). **Thank you for your support through your attendance** to ensure that this event remains worthwhile for the exhibitors who make it possible.

Speaking of our Ralph L. Moore scholarship for graduating high school seniors (with strong preference toward those pursuing technical degrees), information about the scholarship is available on our section website at <http://wilmingtonisa.org>. **Applications are due February 25th**. Please do not delay in promoting the scholarship with your friends, colleagues, and customers. (More information is available at the Wilmington ISA booth.)

For those of you who are not yet ISA members, I encourage you to join. For your \$110 membership, you receive many benefits, including (but not limited to) the following: online access to technical papers, presentations, recorded webinars, and our scientific journal, *ISA Transactions*; a subscription to our magazine, *InTech*; online reading access to ISA standards documents; a \$110 credit toward the purchase and download of an ISA standards document; discounts on ISA publications and symposia. (Please talk with an experienced ISA leader at our Wilmington ISA registration booth for more information.)

I encourage you to involve yourself in the various activities of the Wilmington ISA. There are many ways to be an active member: participating in section meetings; encouraging others to join ISA and participate in our activities; mentoring others in the automation profession; and participating in section committees. Please contact me at jeffrey.arbogast@airliquide.com if you are interested in becoming more involved or if you have any questions, suggestions, concerns, or comments about the Wilmington ISA and its activities. **(Interested? – please contact me or any of our leadership.)**

Please join me in thanking the Wilmington ISA Executive Committee for its work to maintain the strong annual program that you have come to expect. In particular, thank you to **Shawn Coughlan** for organizing the 2015 show and making it possible. (If you are looking for a GREAT leadership opportunity, please contact me.)

Best regards,

Jeff Arbogast
Section President, Wilmington ISA

Schedule

Exhibition Floor open from 10 AM to 4 PM

Technical Presentation Sessions

09:30 AM – 10:30 AM Presentation Session #1 – Operator Effectiveness

“Applying ISA101 HMI Concepts to Existing HMI Applications”
– **Mike Hawrylo (Applied Control Engineering)**

“ISA101: From Philosophy to Operation”
– **Nick Sands (DuPont)**

11:00 AM – 12:00 PM Presentation Session #2 – Safety

“Comparing Failure Rates for Safety Input Devices: FMEDA Prediction v. OREDA Estimation”
– **Iwan van Beurden (exida)**

“Implementing Safety Instrumented Burner Management Sys.: Challenges & Opportunities”
– **Mike Scott (aeSolutions)**

01:30 PM – 3:00 PM Presentation Session #3 – Cybersecurity (extended!)

“Risk Analysis for Industrial Systems”
– **Dirk Sweigart (Applied Control Engineering)**

“Creating Strong Passwords”
– **Harshal Haridas (Honeywell)**

“Managing your process control firewall over time – real world life cycle challenges”
– **Tom Good (DuPont)**

03:30 PM – 04:30 PM Presentation Session #4 – Optimization

“Improving Efficiency of Process Control Optimization for Batch Chemical Systems”
– **Danaca Jordan (Eastman)**

“Enterprise Wide Optimization built upon Instrumentation & Automation”
– **Jeff Arbogast (Air Liquide)**

Operator Excellence (9:30 – 10:30 AM)

“Applying ISA101 HMI Concepts to Existing HMI Applications”

Presented by Mike Hawrylo (Applied Control Engineering)

This presentation focuses on upgrading existing HMI applications to utilize the concepts discussed in ISA101, and shall offer an implementation strategy for controls engineers with existing system(s). Development of the upgraded HMI graphics may be taken in stages to allow for initial improvements to the system. Attendees will discuss how to present and champion HMI design standards, including Human Factors Engineering (HFE) principles, to system users, system owners, and plant managers.

“ISA101: From Philosophy to Operation”

Presented by Nick Sands (DuPont)

This presentation reviews the HMI (Human Machine Interface) lifecycle presented in the new ISA-101.1 standard on HMI Design for Process Automation Systems. The lifecycle was used on a recent project, and the practical steps taken are discussed.

Safety (11:00 AM – Noon)

“Comparing Failure Rates for Safety Input Devices: FMEDA Prediction vs. OREDA Estimation”

Presented by Iwan van Beurden (exida)

Failure rates predicted by Failure Modes Effects and Diagnostic Analysis (FMEDA) are compared to failure rates estimated from the Offshore Reliability Data (OREDA) project for several control and safety input devices. Because the two methods of data analysis are fundamentally different in nature, it may be surprising that, when appropriately compared, the results from the two methods are generally quite similar. The nature of the published data for FMEDA and OREDA is explored. The relative merits of each method are discussed.

“Implementing Safety Instrumented Burner Management Systems: Challenges & Opportunities”

Presented by Mike Scott (aeSolutions)

Implementing a Safety Instrumented Burner Management (SI-BMS) can be challenging, costly, and time consuming. Simply identifying design shortfalls/gaps can be costly, and this does not include costs associated with the capital project to target the gap closure effort itself. Additionally, when one multiplies the costs by the total number of heaters at different sites, these total costs can escalate quickly. However, a “template” approach to implementing SI-BMS in a brownfield environment can offer a very cost effective solution for end users. Creating standard “templates” for all deliverables associated with a SI-BMS will allow each subsequent SI-BMS to be implemented at a fraction of the cost of the first. This is because a template approach minimizes rework associated with creating a new SI-BMS package. The ultimate goal is to standardize implementation of SI-BMS in order to reduce engineering effort, create standard products, and ultimately reduce cost of ownership.

Cybersecurity (1:30 – 3:00 PM)

“Risk Analysis for Industrial Systems”

Presented by Dirk Sweigart (Applied Control Engineering)

Businesses are often concerned by the potential for disruptions caused by information security events. Industrial control systems are set apart by the potential impact of the disruption of an ICS process. This session covers how to run a basic quantitative information security risk analysis process in the context of a manufacturing environment.

“Creating Strong Passwords”

Presented by Harshal Haridas (Honeywell)

The Cybersecurity threat landscape when open systems were first adopted in early to mid-1990s was geared towards breaking weak encryption algorithms and weak passwords through a variety of known methods. Subsequently, the systems have undergone a number of improvements through the years. However, weak passwords or miscues in password management continue to stay as key vulnerabilities in our systems today. Password cracking not only through brute force but also through mechanisms like social engineering continue to be of concern for unauthorized accesses into critical infrastructures.

In this presentation, we go over a design framework and checklist that is extensively researched and adopted in multiple industries. As part of the framework, we look at areas of password selection (password lengths, password content, use of captcha, user feedback), password timing (frequency of change), password storage (methodology) and password generating tools to help improve robustness against these Cyber threats.

Humans continue to be the weakest link and hence, an enforcement of these guidelines as policies will be crucial for legacy systems. Furthermore, the advent of Industrial Internet of Things takes device communication and access to the next level. We expect more and more devices to support non-traditional accesses (wireless, remote or local access). As result, identity and access management gains significant importance with passwords becoming a crucial link to the non-traditional accesses to these devices.

“Managing your process control firewall over time – real world life cycle challenges”

Presented by Tom Good (DuPont)

Industry Best Practice has been to follow strict network segmentation following the ISA S95 model. When you installed your process control firewall you probably attempted to follow this Best Practice. Over time process control applications have changed, OSs sunset, regulatory control network technology has evolved, business pressures have changed, cost pressures increased, acquisitions and divestitures occurred, and the IoT is knocking on the door. How do we continue to manage process control firewalls to achieve security objectives?

The speaker will talk about his experience with managing/overseeing 120+ process control firewalls over a 12 year period using a centralized security service provider. Just as there are hardware and software life cycles of the process control devices, there are lifecycles with firewall hardware and software, security certificates, firewall monitoring tools, and trained skilled resources. Join the presentation to hear about these challenges.

Optimization (3:30 – 4:30 PM)

“Improving Efficiency of Process Control Optimization for Batch Chemical Systems”

Presented by Danaca Jordan (Eastman)

Control projects take time to do right. In recent days, many companies are cutting back on the number of staff while increasing the automation and engineer involvement in operations. Long-term control optimization projects can be difficult to prioritize when compared to daily manufacturing troubleshooting and high profile capital work. A recent mentorship with Gregory K. McMillan, a distinguished ISA controls expert, helped boost the priority of control work at this plant, but it was still difficult to fit in controls projects with so many other immediate demands. The purpose of this report is to support engineers in the identification and completion of controls projects when they are unable to focus solely on controls. Based on the capabilities of a relatively new chemical engineer in a small batch manufacturing plant, this paper will follow the troubleshooting experience for improving the temperature control of a batch stripping column, with an emphasis on ways to delegate and automate time-intensive tasks. The report will briefly cover the definition, initial findings, cost justification and selection of new instruments, strategies implemented and final results of the control project. Recommendations from Mr. McMillan are included and noted, along with personal interpretations and implementation.

“Enterprise Wide Optimization built upon Instrumentation & Automation”

Presented by Jeff Arbogast (Air Liquide)

As focus shifts toward Enterprise Wide Optimization (EWO), a solid foundation in instrumentation and automation only becomes more crucial and valuable. This is illustrated through examples from the implementation of EWO in the industrial gas business, including Model Predictive Control (MPC) and Real Time Optimization (RTO) along with Inventory Routing Problem (IRP) optimization in a Vendor Managed Inventory (VMI) context.