



April 2010 Newsletter

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We want to hear from you! This is **YOUR** newsletter for **YOUR** section. Call us or email us any time with comments, suggestions, ideas, complaints (of course we know there won't be any complaints), concerns, whatever. Let us know what you're thinking!

Upcoming Section Events

EXPO!

What: Fox River Valley ISA Automation Expo 2010
When: Thursday, April 15, 2010
Time: 11:00 AM – 6:00 PM
Where: Rock Garden Grand Ballroom / Comfort Suites
 1951 Bond St.
 Green Bay, WI
How: US Hwy 41 Exit 169 for WI 29 WI 32 Shawano Ave.
 Go East on Shawano Ave.
 Go North (left) on Taylor St.
 Go West (left) on Bond St. to Comfort Suites

- SEE THE LATEST INSTRUMENTATION / AUTOMATION TECHNOLOGIES IN ONE CONVENIENT LOCATION
- FREE ADMISSION
- TWO LUCKY WINNERS WILL GET AN IPOD TOUCH
- EVERYONE ELSE WILL GET A FREE BUFFET LUNCH
- FREE TECHNICAL SEMINARS (See Details Below)

ETHERNET IP FOR INSTRUMENTATION SYSTEMS 11:30 AM – 12:30 PM

This presentation discusses the instrumentation networks commonly available today and the up and coming technology of instrumentation on EtherNet IP. People in attendance will hear about trends in the industry and the Pro's/Con's of the various technologies.
 Presented by Mike Kohlmann, Endress + Hauser Flow Product Manager & Kevin DeWitt, Global Process Technical Consultant, Rockwell Automation

IMPROVING THE RELIABILITY OF ELECTRIC MOTORS 12:30 – 1:30 PM

This presentation discusses the benefits of utilizing a Shaft Grounding Ring to improve the reliability of electric motors,

prevent unplanned and disruptive system failure; provides the path of least resistance for shaft currents; and channels harmful electrical energy to ground preventing destructive voltage discharges through electric motor bearings. Discussion and examples of the scientific cause of the bearing currents. Presented by Ken Wegrzyn, Regional Sales Manager, Electro Static Technology, Aegis, & Arlen Baumann, Sales Manager, L&S Electric

ENERGY MANAGEMENT WITH SMART DEVICES 1:30 – 2:30 PM

This session will review strategies to monitor, measure and optimize your process using smart devices resulting in energy savings, reductions in maintenance and unplanned outages. The presentation will focus on motors, drives, power monitoring and valving as key application areas with supporting application and reference examples. Presented by Rich Chmielewski, Process Automation Marketing Manager, Siemens Industry, Inc.

ENERGY SAVINGS PROGRAMS FOR MANUFACTURING 2:30 – 3:30 PM

This presentation will cover tips on energy savings for manufacturers and programs available from Focus On Energy specifically for manufacturers in our area of Wisconsin. Several companies have already been involved in the program and Jerry will be able to tell us how successful they have been. Presented by Jerry Eaton, Industrial Energy Advisor, Focus On Energy

HYBRID CONTROL SYSTEM CASE STUDY 3:30 – 4:30 PM

This presentation will cover the successful implementation of a hybrid control system in the power generation industry in Wisconsin. Presented by Jason Ford, Senior Process Engineer, HiTech Control Systems, Inc.

INTRODUCTION TO INTRINSIC SAFETY "IS" 4:30 – 5:30 PM

This presentation is on Intrinsic Safety and explosion preventive techniques, and other methods for protection in potentially explosive atmospheres. Presented by Jim Peterson, Process Automation Business Development Manager, Turck Company

April Feature: "The Human Side of Safety"

Guidelines on how to reduce process safety incidents caused by human error

FAST FORWARD

* Human error is considered to be equal to operator error, and the focus is placed on training and procedures. In this way, other opportunities for reducing human error are overlooked, such as designing the loop for the human.

* With modern safety systems and layers of protection analysis, incidents are mostly limited to situations when several failures occur simultaneously: A valve is in the wrong position; key information is spread across multiple operator displays; an alarm is missed; a trip is bypassed; and mechanical containment is found to be inadequate. Therefore, no single solution will be adequate.

* There are seven practice areas the ASM Consortium has identified as a solution framework. When applied in full, the available best practices and research will significantly reduce the likelihood of human error in the design, operate, and maintain lifecycle

By Mischa Tolsma, Melvin Jones, Dal Vernon Reising, Peter T. Bullemer, Chris Stearns, and Peggy A. Hewitt

"Safety is our first priority." Most companies will not only agree with this statement, but will recognize it as a core value of their corporate culture. Indeed, a great deal of attention and effort has gone into process safety and occupational safety, but one can argue insufficient attention has been given to the human aspect of process safety, sometimes called the "human in the loop." Often, human error is considered to be equal to operator error—and the focus is placed on training and procedures. In this way, other opportunities for reducing human error are overlooked, such as designing the loop for the human.

Attention to the "human in the loop" has started to grow. For example, most companies will have implemented or heard

of alarm management with EEMUA 191 and ISA-18.02 explicitly addressing human limitations. Nevertheless, there seems to be limited awareness of the breadth of the problem and the depth of the research available. First, the limited awareness of the depth is probably because the research is spread over different disciplines, i.e., from human factors engineering—sometimes called cognitive ergonomics—to control engineering. Second, and more important, the lack of awareness of the breadth of the problem is because it covers the entire design, operate, and maintain lifecycle.

This pervasive industry failing with respect to the “human side” is and remains important and has been the focus of the Abnormal Situation Management (ASM) Consortium for the past 15 years. The mission of this consortium, a group of 13 leading universities and companies in the process control industry, is to empower operating teams to proactively manage their plants to maximize safety and minimize environmental impact while allowing the processes to be pushed to their optimal limits.

In addition to the ASM Consortium, there are several organizations and research groups that study the human in the loop in continuous process control systems, such as the U.S. Nuclear Regulatory Commission; the human factors group at the Brookhaven National Lab; the OECD Halden Reactor Project; and EEMUA, PRISM and NAMUR in Europe. Like many of these groups, this article is intended to increase the awareness of the breadth and depth of the challenge in dealing with the human in the loop and to promote cross-disciplinary and cross-company research and best practice sharing.

The challenge

With modern safety systems and layers of protection analysis, incidents are mostly limited to situations when several failures occur simultaneously: A valve is in the wrong position; key information is spread across multiple

operator displays; an alarm is missed; a trip is bypassed; and mechanical containment is found to be inadequate.

Therefore, no single solution will be adequate. Rather, manufacturers need to look at all failure pathways and their interaction: A confusing procedure that has not been followed; operator displays difficult to learn, do not support the procedures, and do not show all relevant information; a non-rationalized alarm system with many nuisance alarms; communication failure around the operational state of equipment, perhaps because of unstructured shift handover; and insufficient management support for safety related activities.

These are all human errors. However, it should be clear the errors do not fall solely on the operator and no single discipline can solve this problem. The solution requires the collaboration from a variety of academic fields—control engineering, chemical engineering, human factors engineering, and management science—to name just a few. Also, it requires a structured approach such as the solution framework the ASM Consortium developed to investigate the human factor in abnormal situations.

The solution framework

Training and procedures are common areas that companies invest in to address the challenge of human errors.

Arguably, training and procedures focus on operator action when the facility is running, and they may not correct for underlying errors made earlier in the lifecycle. Regardless, training and procedures, while important, are just two out of the seven practice areas the ASM Consortium has identified as a solution framework. The seven practice areas include:

- 1. Understanding abnormal situations** includes the broad scope of investigating the causes and impacts of abnormal situations. The goal is to prioritize future research and to efficiently and accurately inform continuous improvement programs that mitigate and reduce abnormal

situations. One of the research projects in this area focused on the common causes for abnormal situations and has made specific recommendations on, amongst others, Root Cause Analysis investigations, common language and systemic error elimination.

2. Organizational roles, responsibilities, and processes

focus on determining the management systems, work practices, organizational structures, and continuous improvement culture that support the prevention and mitigation of abnormal situations. An interesting example of potential research is on effective first line leadership during abnormal situations: What are the skills required? What support is required? What tools could provide assistance?

3. Knowledge and skill development looks at the development and maintenance of a competent workforce through training and the creation of a continuous learning environment so personnel can effectively respond and cope with abnormal situations. Research in this area has, amongst others, looked at the benefit of high-fidelity over low-fidelity simulation, and identified the need for training on effective usage strategies, e.g., how to use the alarm summary more effectively when faced with an alarm flood.

4. Communications investigates ways to ensure successful communication to enable situation awareness under normal, abnormal, and emergency situations. Specifically, the practice area investigates how information media can be used effectively to ensure work continuity between operational and functional team members. Currently, research is undertaken to determine the benefits of electronic shift handover over paper based systems.

5. Procedures investigate the different aspects that enable effective procedure use such as procedure development, deployment, accessibility, accuracy, analysis, automation, and lifecycle management. Also, it looks at ways of dealing

with abnormal situations during a procedure and deviations from procedural intent. An example for this practice area is the development of improved operator display elements for procedural automation.

6. Environment focuses on work place design factors that enhance the situation awareness of personnel, such as controlled lighting, reduced noise, and improved operator console layout. For example, a dark control room can significantly reduce the alertness of an operator over a 12-hour shift; an ineffective operator console layout will cause unnecessary foot traffic, which increases the potential for distraction during abnormal situations.

7. Process control and monitoring looks at the effective design, deployment, and maintenance of a comprehensive and user-centered set of applications and tools that enable a single point of access to the information required by the operations team for situation awareness and abnormal situation response. For example, the consortium has recently designed a novel alarm summary display that has been shown to improve the ability of operators to deal with alarm floods; the consortium has a guideline on Effective Operator Display Design, which has been shown to increase situational awareness and reduce variability between operators.

The aim is not only to increase understanding, but also to identify best practices and develop solutions in the form of guidelines and tools to assist the operations team and the operator in particular. The research in these seven practice areas goes beyond appropriate operator training and well designed procedures. When applied in full, the available best practices and research will significantly reduce the likelihood of human error in the design, operate, and maintain lifecycle.

A collaborative approach

So, how can manufacturers reduce the occurrence of process incidents caused by human error to zero?

Of course, there is no silver bullet to take away the risk of human error—there are too many areas where error can take place. However, significant improvements can be achieved with the proper application of guidelines already available. Also, many research questions are known that, when solved, will further reduce the incident rate.

In summary, improvements will come from a collaborative approach that looks at the comprehensive framework and involves not just operations, but also design, budgeting, project management, maintenance, and, of course, leadership.

ABOUT THE AUTHORS

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ISA Highlights

National ISA Headlines:

Headlines can be accessed online at:

www.isa.org/Template.cfm?Section=Press_Releases5&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=4&ContentID=48927

Current March 2010 Headlines Include:

- ISA Announces 56th International Instrumentation Symposium Planned for May in Rochester, NY
- ISA Announces 10th Annual ISA Fugitive Emissions-LDAR Symposium Planned for May in San Antonio, Texas
- ISA100 Wireless Compliance Institute Launches Web Site www.isa100wci.org
- ISA Baltimore/Washington D.C. Section Volunteers for the Automation Federation Boy Scout Jamboree Technology Quest Exhibit
- ISA/O3neida Partnership Publishes Domain Ontologies Book for Reasoning Machines in Factory Automation
- ISA Publishes New Edition of Industrial Network Security
- ISA Publishes Essentials of Modern Measurements and Final Elements in the Process Industry

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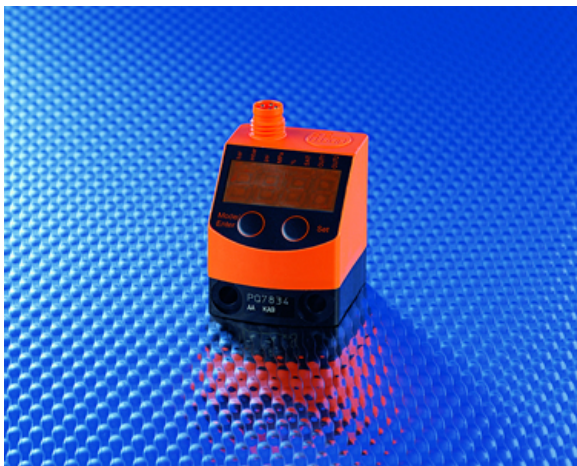
As a Member of the International Society of Automation, you have unparalleled access to professional development resources designed to help build your leadership skills. ISA's Leadership Development Certificate Program offers you a unique opportunity for professional growth through on-line courses. This is a \$195 value, free to you as a Member!

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Vendor / Product Spotlight



Compact PQ Series Pressure Sensor

Supplier: ifm efector www.ifm.com/us

The compact PQ Series pressure sensors are designed for pneumatic applications typically found in robotics and material handling applications. The sensors precisely measure the full range of pressure and vacuum typical in these applications. The cube-shaped pneumatic pressure sensor easily retrofits traditional pressure switches at a fraction of the price. Measuring only 32mm x 30mm x 42mm, the compact sensor can be installed in areas with limited mounting space. Application parameters are established using two pushbuttons. The four-digit display indicates system pressure and can be clearly seen from long distances. The sensor features two programmable switching outputs or one switching and one diagnostic output. In addition, the values can be programmed to change color depending on the switching output status (e.g., red if output 1 is switched; green if output 1 is not switched). The technology is based on a piezo-resistive measuring element. The silicon measuring cell is insensitive to liquids (e.g. condensed water) and deposits that might occur in the system. The cell changes resistance when pressure is applied. The stress induced in the cell is transformed into an electric signal that is proportional to the pressure. The silicon measuring cell guarantees a high overload resistance as well as an accuracy of $\pm 0.5\%$.

We need submissions! Want to see your product / company featured here?

All right fellow peddlers, here's your chance to plug your best stuff! Just send me a brief description of your latest or greatest, and then sit back and count the orders flowing in. Here are the rules:

- 1) Ten sentences or less (including the title line and contact information). Content may be edited (with your approval).
- 2) You can send a picture, but I can't promise I'll be able to fit it in. If I can't figure out how to shrink it without distorting it, I apologize (hey, what do you expect from a technical salesman?).
- 3) Two products (chosen from all submissions) will be featured in each newsletter: **first come / first served, so get them in soon!**

Editor's Bench

ATTENTION WATER / WASTEWATER PERSONNEL!

Welcome to the 5th Annual ISA Water & Wastewater and Automatic Controls (WWAC) Divisions Symposium!

The 5th Annual ISA® Waste Water and Automatic Controls Symposium will be held August 3-5, 2010 at the Doubletree Castle Hotel at 8629 International Drive in Orlando, FL 38219.

The WWAC symposium is sponsored by two ISA Divisions: the Water and Wastewater Industries Division and the Automatic Control Systems Division. It is designed to help professionals in the water and wastewater industries gain a greater understanding of how automatic control applications affect water and wastewater processing, collection, treatment, and distribution.

Expert Speakers will discuss water & wastewater processing and control including:

- Water and Wastewater Treatment Process Solutions
- Automatic Controls Affecting the Process
- Water Collection and Treatment
- Wastewater Instrumentation
- Instrumentation and Aeration
- Vermicomposting
- Supervisory Control and Data Acquisition
- Fiber Optic Network
- Distributed Control Systems
- PC Based Control Systems
- Programmable I/O
- Generator Control Systems
- Primary Treatment Technology
- In-plant Distributed Technology

The symposium will feature a technology-focused, one-day training seminar and two days of technical sessions on the latest applications, networking, communications, and instrumentation technology used in the water and wastewater

treatment industry. The event also includes working luncheons, vendor exhibits, and an evening reception.

If you would like to have the Vendor Registration and/or Participant Registration emailed to you, please contact one of the following people:

Joe Provenzano at joe_provenzano@hotmail.com

Chuck Saunders at (904) 270-1608 or csaunders@jaxbchfl.net

(Submitted by Rodney Jones, Senior Administrator, ISA® Technical Divisions & Symposia, (919) 990-9418, ISA-Jacksonville)

Miscellany...



Our very own Pete Schuh has retired to pursue his lifelong dream of representing Wisconsin on the Mr. Olympia circuit. Go Pete!