



# Wilmington Delaware Section

# The Sensor March 2011

## In this Issue

1. Next Meeting: ROI from PAT
2. President's Message
3. Book Review
4. Jan 2011 Meeting Summary
5. 2011 Ralph L. Moore Scholarship

## Upcoming Events

Mar 22	Meeting: ROI from PAT
Apr 26	Shrimp Boil
May 24	Meeting: Future Trends
Jun 28	Annual WISA Picnic

## WISA Section Meeting Return on Investment from PAT

**Tuesday, Mar 22, 2011  
5:30 PM**

**Applied Control Engineering, Newark, DE  
(700 Creek View Road, Newark, DE 19711-8544)**

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Join us at this month's  
WISA Meeting for:

## Return on Investment (ROI) from Process Analytical Technology (PAT)

**Presented by Joe Smith  
of ABB Process Automation**

In 2004, the US Food and Drug Administration issued a non-binding guidance referred to as the "Process Analytical Technology (PAT) Initiative" in response to an overwhelming number of quality and regulatory problems in pharmaceutical manufacturing. The name of the initiative led to a huge number of interpretations, obscuring some of the fundamental justifications and benefits of the guidance.

This presentation will be an interactive discussion on the core idea of PAT and will review some of the potential financial benefits for all types of manufacturing processes.

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<http://www.isa.org/community/wilmi>

# President's Message

By Leata Mullen

This month's WISA meeting covers Return on Investment from Process Analytical Technologies (PAT). Joe Smith from ABB is the featured speaker. PAT is gaining popularity as a very useful tool for improving manufacturing.

PAT is a system for designing, analyzing, and controlling manufacturing through timely measurements (i.e., during processing) of critical quality and performance attributes of raw and in-process materials and processes with the goal of ensuring final product quality. The idea is to understand the processes by defining their critical process parameters (CPP's) and monitor them in-line, making testing more efficient and at the same time improving the process and the product. PAT often requires a switch from more static testing to in-line, online instrumentation and analysis; as such, PAT tends to increase automation requirements. The PAT initiative from FDA is a part of their broader risk based-approach initiative. Good sources for further reading on PAT include Wikipedia and [processanalyticaltechnology.com](http://processanalyticaltechnology.com).

Next month is WISA's annual spring event – the April Shrimp Boil, where we enjoy good company, good food, and good beer on the sunny back patio at Applied Control Engineering. Shrimp are high in calcium, iodine, and protein, but low in calories. Shrimp are considered healthy eating, because of the lack of saturated fat in shrimp means that the high cholesterol content in shrimp actually improves the ratio of LDL to HDL cholesterol and lowers triglycerides (per wikipedia). So come on out and lower your triglycerides with us! Good sources for further reading on shrimp include menus everywhere.

Our May event is a presentation on future trends in automation from Jeff Arbogast of Air Liquide. We'll cap off up the season with the annual WISA picnic in June. Come join us!

# Book Review



**Clear as a Bell - BBBB (Buy)**  
*ASM Consortium Guidelines:  
Effective Alarm Management Practices*

By ASM Joint R&D Consortium  
Reviewed by Nick Sands

The Abnormal Situation Management Consortium (ASM), formed between 1992 and 1994 as a task group of Honeywell users concerned about alarm system performance, is today an organization that includes user companies, technology companies, and universities that addresses many issues of user-control system interaction. ASM members developed the guidelines on Effective Alarm Management Practices, but until recently the document was available only to member companies. There are 43 guidelines, grouped into 3 categories, and prioritized for relative importance, with 21 guidelines of the minimum essential priority. There are several appendices as well. (Disclosure: the foreword was written by this reviewer.)

The first guidance category is on management practices, and the first guideline is a critical one for a sustainable alarm management program, "Establish company management support for alarm management". Without support for time, tools, and changes, there is little chance of success. Other guidelines in this category stress the development and adherence to an alarm philosophy, the implementation of an alarm monitoring and worst actor identification program, the use of a management of change process for alarm changes, the establishment of an alarm system owner, and more.

The focus of the second category is alarm design and implementation, which addresses issues in the alarms and the alarm system. There are guidelines for system level design considerations, like, effective alarm annunciation, an alarm historian, alarm shelving, and integrations of multiple systems. There are also guidelines on alarm design considerations to minimize chattering alarms, use of common alarms, design rules for alarms, and integration of alarms into displays. Over half of the guidelines are in this category.

(continued on page 3)

## Book Review (cont.)

## Jan 2011 IEEE/WISA Joint Meeting Advanced Inverter Design

(continued from page 2)

Training is the third category. Good management practices and alarm system design are necessary but not sufficient for an effective alarm management. This set of guidelines addresses the need for operator training, especially when changes are made to the system. Additional guidelines recommend enhanced operator training that may even include dynamic simulation. The appendices are a bonus supplement to the guidelines, providing structured checklists, a cross reference between the guidelines and common alarm problems, and background on information on abnormal situations.

The ASM consortium has been a leader in addressing alarm management as a critical safety and performance issue across the process industries. Many companies will benefit from the public release of the ASM Consortium Guidelines Effective Alarm Management Practices. While the introduction claims the guidelines are more “what to do” than “how to do it”, they are based on user experience and provide some examples of implementation. The guidelines are excellent, though the format is organized more for checklists than for structured implementation. It is a well worth buying (BBB) for any automation professional interested in controls system implementation. It is available from Amazon.com for ~\$115US.

By Matt Murphy

A joint meeting hosted by Wilmington ISA and IEEE was held on January 25, 2011 at the Delaware Technical and Community college. The meeting included a presentation by Matthew Perkins from GE Power. The topic of the presentation was Advanced Inverter Design.

Grid-tied solar power plants bring significant challenges to grid systems due to variability and dynamic fluctuations in irradiation resulting in unstable power output. With a recent compound annual growth rate (GAGR) approaching 40% in the installation of such plants, the Federal Energy Regulation Commission (FERC) under the auspices of the Regional Transmission Organizations (RTO)/Independent System Operators (ISO) has brought this issue to the forefront of utility and discussions regarding the proper interconnection and integration of this power source. Further, financing challenges and long-term power-purchase agreements have driven a greater focus on technical innovations to address industry concerns regarding reliability and maintainability.

Advanced Inverter designs yield several key solutions for these issues, namely: voltage regulation, voltage and frequency ride-through, and generator power management for grid system challenges; and next generation cooling designs and component selection criteria for reliability challenges. One of the issues identified is that during a typical day, variations in cloud cover could cause power output from a large solar plant to vary between 100% of capacity to <15% of capacity and back to 100% of capacity in a matter of seconds. If the solar plant is a significant contributor to the grid, the variations will drive automated tap changers to operate at frequencies well in excess of their design.

### Encourage colleagues to join ISA!

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- Membership in Local Section
- Membership in 2 Divisions
- Free access to ISA Standards
- Free access to ISA Technical papers
- Free access to ISA Webinars

Join us for the Famous

### WISA Shrimp Boil

Tuesday, April 26, 2011  
@ Applied Control Engineering (ACE)  
Newark, DE

Join us for the Famous  
**WISA Shrimp Boil**

Tuesday, April 26, 2011  
@ Applied Control Engineering (ACE)  
Newark, DE

We invite sponsors to participate as a  
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**Jan 2011 IEEE/WISA Joint Meeting  
Advanced Inverter Design (cont.)**

(continued from page 3)

With the Advanced Inverter technology now available, the adjustments needed to regulate voltage can now be done using the inverter and ensure a more stable output from the solar power plant to the grid minimizing the need to make adjustments downstream.

The key benefit is that the Advanced Inverters will provide output stability not only for the solar plants, but for wind power plants and other renewables as well. A side benefit is that even if the power plant is not producing (such as the solar plant at night), the advanced inverter is still available for maintaining grid stability and reliability.

In addition to the detailing the Advanced Inverter technology, the presenter discussed the photovoltaic market and where the key growth trends in the industry are headed. He also explained how government subsidies and incentives both in the US and internationally have driven growth in the market and how the market is improving competitiveness in order to continue to grow after the subsidies are reduced or eliminated.

ISA - Wilmington Section  
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**Apply Now for the  
2011 Ralph L. Moore  
Scholarship**

By George C. Bentinck

Each year the Wilmington Section ISA extends a \$1,000 scholarship to a high school senior who is planning to attend a 4-year college, university or technical training school. An ISA member of our section must sponsor the candidate and applicants pursuing a technical or science degree will be given higher preference.

The scholarship committee will select the successful candidate. **The application deadline is May 9, 2011.** The check written to the college of the candidate's choosing will be presented at the Wilmington ISA annual picnic in June. The application may be found on the Wilmington Section ISA website ([www.isa.org/community/wilmi](http://www.isa.org/community/wilmi)).

Mark your calendar for  
**ISA Automation Week 2011**

October 17-20, 2011, Mobile, AL

Abstracts and Bios due March 28, 2011

Visit: [www.isaautomationweek.org](http://www.isaautomationweek.org)