



Wilmington Section ISA
Box 9254
Newark, DE 19714-9254

Wilmington Section ISA

ISA—The Instrumentation, Systems, and Automation Society



Check out our web page at <http://www.isa.org/community/wilmi>

Wilmington ISA - Section Event

**Section Meeting
"Generic Flow Basics"**

**Presented by
Carl Annarummo
Rosemount Flow Technology**

5:30 pm Tuesday, November 18, 2003

Applied Control Engineering

**The Mill at White Clay Creek
700 Creek View Road
Newark, DE 19711**

Directions to ACE at www.ace-net.com

ISA SENSOR

Published By
WILMINGTON SECTION ISA
PO Box 9254
Newark, DE 19714

2003-2004 Officers

President: Nick Sands
E I DuPont (856) 540-2080
President-Elect: Ken Lawrence
ACE (302) 738-8800
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DuPont (302) 695-0524
Web Editor: Cullen Langford
Cullen G Langford Inc. (610) 255-4164
Program Chair: Joe Baker
Endress + Hauser (215) 712-9050 (x104)
joe.baker@us.endress.com
Program Chair: Mike Morkun
DuPont (302) 774-2563
michael.b.morkun@usa.dupont.com

The Sensor

November 2003

Meeting Event

Tuesday, November 18th:

Topic: THE FLOWMETER SELECTION PROCESS

"WHAT YOU DON'T KNOW CAN HURT YOU"

The process of choosing the correct flow element for a given application is anything but a "no brainer". With 20+ technologies to choose from it can be a perplexing experience. Making the wrong decision costs time and money. Putting the wrong flow element on the input side of an "Intelligent" control system produces less than intelligent results. What can be done to help insure that all of the proper questions are asked, and answered?

There are six areas that will be addressed:

- 1) Application Requirements
- 2) Fluid Properties (But not just the normal Data Sheet information)
- 3) Performance Requirements and Considerations
- 4) Installation Considerations
- 5) Economic Factors
- 6) Environmental and Safety Issues

We will look at the obvious and not so obvious considerations when applying flow measurement technologies. Little known "gotchya's", "war stories" and

FUTUREEVENTs

**November 18, 2003
Generic Flow Basics**

**December
No Section Meeting, enjoy
the Holiday**

**January 27, 2004
IEEE Joint Meeting**

Please update your email!

experiences will be discussed as well. The session is not packed with technical detail and jargon. Just a simple direct approach designed to keep your "fat out of the fire".

Presented by:

**CARL ANNARUMMO
FLOW MEASUREMENT
CONSULTANT - ROSEMOUNT
FLOW TECHNOLOGY**

1977 - 1985 B.I.F
VENTURITUBES, AXIAL TURBINE
STEAM METERS OPEN CHANNEL
METERS (FLUMES, WEIRS, ETC.),
BUTTERFLY VALVES

1985 - 1990 TAYLOR INSTRUMENT
WEDGE, INTEGRAL ORIFICE, MAG,
PRESSURE TRANSMITTERS
CONTROL VALVES, ASME
COMMITTEE (CORIOLIS)

1990 - 1996 FOXBORO
CORIOLIS, VORTEX, MAG,
INTEGRAL ORIFICE ASME
(CORIOLIS, DP DEVICES), SIZING
SOFTWARE, PAPERS PUBLISHED
IN CHEMICAL ENGINEERING, INTEC

1996 - 1999 KROHNE

CORIOLIS, MAG, ULTRASONIC,
VARIABLE AREA, LEVEL ASME
(CORIOLIS, DP, ULTRASONIC,
MAG, METRIFICATION)

1999 - PRESENT ROSEMOUNT
FLOW MEASUREMENT
CONSULTANT - SOUTHEAST AREA

**Please let Michael Morkun
know if you plan to come at
michael.b.morkun@usa.dupont.com**

**Hosted by:
Applied Control Engineering
Directions: www.ace-net.com**

October 21st Meeting Notes
Submitted by: Joe Baker

**Speaker: Jack Roushey,
Inside Sales Manager of
Endress + Hauser**

**Topic: Time of Flight
Level Technologies: Using
Ultrasonic and Radar for
Continuous Level
Measurement**

Jack has spent the last 28 years in the process measurement industry in a variety of roles supporting many different products. His level experience includes hydrostatic level at Fischer & Porter, CE Taylor and Brooks Instrument, and capacitive and TOF level measurement at Drexelbrook Instruments and Endress + Hauser. Jack started the presentation with a brief overview of the Endress + Hauser instrument product line.

October Meeting Notes:

Jack explained the three types of Time of Flight technologies – ultrasonic, radar and TDR (time domain reflectometry) and the fact that each of these technologies calculates the level the same exact way. The formula used for measuring level is: $D = C \times (T/2)$, where D = distance or level, C = speed of sound wave (ultrasonic) or speed of electromagnetic wave (radar), T = total time elapsed from transmission of the signal, reflection off the surface and return of the signal to the transmitter. Jack also explained the range of frequencies for both ultrasonic and radar technologies and how these signals can be negatively affected by various process conditions. Radar and TDR have a broader application range because of immunity to certain conditions that adversely affect ultrasonic transmitters.

Jack also went into detail regarding the criteria involved in the selection of which type of TOF technology to use in a given application, including which to use in liquid vs. solids applications. In addition, Jack also explained key issues of mounting/installation of the transmitters such as distance from the sidewall of the tank, height and diameter of a nozzle and sensor alignment. Setup of the transmitters using an envelope curve and troubleshooting ideas were also discussed. Lastly, Jack described the pros and cons of other level measurement technologies, such as displacers, capacitance and pressure/dP transmitters, and how they compare to TOF level technologies.

President's corner Nick Sands

Wow! What an Expo. It has not been long since my return from the ISA Expo 2003 in Houston and I am still processing the trip. As I described last month, there was the President's Meeting, the Council of the Society of Delegates meeting, the technical conference and the exhibition. Squeezed in on Sunday night was a very good District II meeting.

During the Expo, I attended the Standards & Practices board meeting, the SP99 meeting on control system security, the SP98 meeting on personal certification, the SP84 meeting on safety instrumented systems, and the SP18 meeting on alarm management. Surprisingly enough, I find that I am now on the SP18 committee working on alarm management.

The District II meeting was one of the best. Our District II VP, Terry Ives of Ives Controls, who will visit one of our section meeting later in the year, led the meeting where almost every section representative was a past District VP, or in the case of Terry's father, a past ISA president. Bob Ives, Terry's uncle and current ISA president, stopped by to speak with the section leaders. We also discussed how sections were doing and recent speakers.

The technical conference was pretty good. There were a wide variety of talks to choose from, and often it was a tough choice. Along the way I met three of the four authors of Advanced Control Unleashed, this month's book review.

With so many good technical talks to choose from, I had very little time to spend in the exhibition, but I was able to squeeze in 3 hours on the last day. 3 hours was only time enough to browse the hall and target a few of the over 500 vendors that had solutions for a problem I need to solve. The time in the hall was well spent and very educational. (I even chatted with WISA's own Dan Roarty, the Shrimp Boil Chef).

This year's Expo was by all accounts a success. The attendance was about 14,500, up significantly over the last two years. The conference and training classes were well attended. And the standards teams continued their important work that benefits us all. I am already planning on ISA Expo 2004, located once again in Houston.

Job posting for Members:

Noramco, Inc., a member of the Johnson & Johnson family of companies, has a regular, full-time opportunity for an **Instrument Technician I** in the Maintenance Department reporting to Bill Mullen. This is a day shift position that requires the flexibility for call-ins during off-shift hours and weekends. Key responsibilities include but are not limited to the following:

- Testing and calibrating equipment
- Troubleshooting and repairing, electrical, mechanical, electromechanical, and electronic measuring, recording, and indicating equipment in conformance with established standards.

- Maintaining required documentation for equipment maintenance, testing, and calibration.
- Maintaining the spare parts inventory for instrumentation.
- Assisting in formulating calibration and design of new instruments and/or control systems.
- Develop, write, and revise standard operating procedures, change notices and project forms.

REQUIREMENTS: Associates degree in Instrument/Electronic Technology or equivalent from a two-year college or technical school; or three to five years related experience in a GMP environment and/or a combination of education and experience. Ability to frequently lift and/or move up to 25 pounds and occasionally lifts and/or moves up to 100 pounds. Specific vision abilities required by this job include close vision, distance vision, color vision, depth perception, and the ability to adjust focus.

Previous experience in a manufacturing plant maintaining a clean and safe environment, use of computerized systems, experience writing procedures, processes or instructions and working in a team environment desired. Must be detail oriented, and have good oral and written communications skills.

Any interested applicants meeting the minimum requirements must forward their resume to the Human Resources Department no later than November 28, 2003. E-mail resumes to: hr@norus.jnj.com

500 SWEDES LANDING ROAD,
WILMINGTON, DELAWARE 19801-4417

Book Review: By Nick Sands

Harnessing the Power of the Modern Control System - BBBB Advanced Control Unleashed by Terrence Blevins, Gregory McMillian, Willy Wojsznis, and Michael Brown

The four authors; Terrence Blevins, Gregory McMillian, Willy Wojsznis, and Michael Brown have a combination of tremendous knowledge and extensive experience. This book succeeds in its goal of providing a quick tour of the most in vogue advanced control techniques; performance monitoring, abnormal situation management, automated tuning, fuzzy logic control, property estimation, model predictive control, and the virtual plant. That is quite a bit of ground to cover, and it doesn't even include the longest chapter on setting the foundation, in which the authors share enough tips on basic control problems to fill another book. The chapters are broken down into sections on practice, application, and theory. Sometimes the sections seem redundant or even out of sequence, as in the MPC chapter.

System performance provides a method to monitor equipment and controller performance using direct connection to process data provided in the "modern control system", (Delta V is left unnamed). Performance monitoring is one of the hottest trends in process control. Abnormal situation management is another hot topic. The authors follow the recommendation of the ASM consortium and suggest the answer is an expert system.

Automated tuning is a very interesting chapter. Auto tuning in the modern control system is a tool for the knowledgeable control engineer. Mass tuning on startup is easy, and periodic retuning can improve performance. The auto tuner even works on the fuzzy logic controller, the next topic. In the modern control system a fuzzy logic controller is just a function block. Using it still takes an understanding of the theory, which is provided. But even after reading the chapter, it may be a challenge to find a good fuzzy application.

The final chapters are all about models. Property estimators, often called virtual sensors, are covered with some very good tips for development. The top dog of advanced process control, model predictive control is also a function block. The theory section has to be one of the best explanations of MPC. The technology and its current implementation are fully discussed. Many development steps have been automated in the modern control system for both property estimators and MPC. Finally the benefits of dynamic simulation to generate the virtual plant are discussed.

This is quite a book. While it is written for the state of the art modern control system, the theory sections are good topic reviews by real experts. The back to basics section is crammed full of tips. The auto tuning section is good enough to make even the reluctant control engineer try the new tools. This book is not cheap at \$79 (member price) from ISA press, and not short at 429 pages, but it is a good resource on advanced control. I rate it an expensive buy. (4Bs)