

Water & Wastewater Industries



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Summer 2009

Director-Elect's Message

By Michael B. Fedenyszen



Greetings from Boston, Massachusetts:

In the northeast we've had much snow, and wish your winter season a mild one. If you're in a warm-weather belt, please don't write and tell me how nice it is. It seems I'm still digging out. Just kidding. Hearing from you would be an encouragement.

I look forward to participating in the WWID as your Division Director-Elect. I am no stranger to ISA, as my background spans a couple of decades of service—running the gambit from Boston Section President to District 1 Vice-President; and among other things, the ISA Executive Board Member, Vice-chair Council of DVPs, Director/Member of ISA Services, Inc., Director/Member Publications Department, Chairman of Motion Control Journal Editorial Advisory Board and member of the *InTech*, Editorial Advisory Board.

Why did I say "yes" to my nomination for WWID Director-Elect? What do I bring to the table? ISA has provided me skills and training accumulated from years of attending ISA events, and I feel it necessary to continue the tradition of expanding the knowledge of those in the water and wastewater industry. The greatest chunk of my work history has been systems integration for clean and wastewater processes, pump stations, remediation and the like for plants throughout New England during the Super Fund years. Today I am employed by Vanderweil Engineers in Boston as an I&C Engineer. Additionally, I have a long-time friendship and working relationship with others who have preceded me with excellence: WWID Director: Messrs. Hank Hegner, Steve Valdez, and Joe Provenzano. So it's a good fit.

As a Division, we are responsible for reaching out to our Members as a means to enhance their professional status. As WWID Director-Elect, I will not have an easy task of continuing the legacy and fine work the WWID has brought to its Members. To be honest, it is time consuming. However, with the right people involved, the task flows as if over a weir. We are well on our way.

We have in the works a 4th Annual Water & Wastewater and Automatic Controls Symposium scheduled in the magic city, Orlando, on 4-6 August 2009. The event is intended to aid professionals in the water and wastewater industry and to help in understanding how automatic control applications affect processing and the distribution of water treatment. We've scheduled expert speakers to discuss water and wastewater processing and other topics ranging from water collection to water treatment. The symposium will also highlight the latest in controls equipment and instrumentation technology for the industry. We are planning technology-focused, one-day training seminars and two days of technical sessions.

If you have an inclination to help, I welcome you. I'll note the following opportunities in our Division: Secretary, Papers and Articles Editor/Chair, WWID Photographer, Liaison to Sections, Symposium Co-Chair, even WWID Director-Elect-Elect, and many others. We can be creative to encompass whatever your niche.

Please consider the tradition of volunteer membership as we move ahead. It is an honor to continue my activity for both you and the Society and I look forward to hearing from you.

Most sincerely,

Michael B. Fedenyszen
WWID Director-Elect

mfedenyszen@vanderweil.com

2009–2010 Business Plan

- The **Leadership Officers** slate will be filled with active Members.
- The **Newsletter** will be produced two times this season and distributed to our membership electronically.
- **Meetings** will be held twice yearly in conjunction with the *ISA Spring Leadership Meeting* and *ISA Fall Leadership Meeting*. The officers will regularly communicate via e-mail, and teleconference accordingly in order to affirm events and that responsibility is being fulfilled to the society and WWID members.
- The Division will host a **Membership Luncheon** during the ISA October EXPO 2010.
- In **support of ISA EXPO 2010**, the Division will *solicit papers, develop a session, and provide moderators* as required.
- The **Website** is planned to be maintained during the year, refreshing its content quarterly: 5/31, 8/31, 11/30 and 2/28.
- A **Symposium and Exhibit** will be planned during 2009. The staff and our membership will be advised by the Fall Leaders

Meeting. A notification announcing Sections interested in receiving information on hosting the fall event will be entered on both the website and newsletter.

- **Membership** drives will be conducted throughout the year. A booth will be maintained at the WWAC/WWID Symposium, and the Division will make itself available to be present at District Leadership Conferences for said purpose.
- **Sponsorship** criteria will be developed where the Division can select a student or college/university to be selected for a cash award.
- The **Budget** will be submitted by the WWID in conformance with ISA guidelines and the associated timetable.

Respectfully submitted,
WWID
Michael B. Fedenyszen
Division Director-Elect

Hats Off to WWID!

ISA is pleased to announce that the Water & Wastewater Division has earned the 2008 Honorable Mention Division Award for Considerable Achievements in 2007-2008. This award was bestowed by the Industries & Sciences Department on 7 October 2008 at the Joint A&T and I&S Luncheon. WWID earned the award for its efforts in helping to program the WWAC Symposium, membership recruitment, and developing newsletters for the Division membership. Congratulations, WWID!



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WWID Officer Positions Open

WWID has some officer positions open for any Member, new or old, who might want to get active with Division leadership. If you could offer your services as either Honors & Awards Chairman, Historian, or by chairing the Papers Committee, we would welcome you. Each position requires a sincere desire to enhance the qualities of the Division. Your time would be minimal. Your office would begin in January. Please e-mail or call Michael Fedenyszen at mfedenyszen@vanderweil.com or (617) 956-4573.

The WWID Group Is LinkedIn

In an effort to provide the latest news and information relating to instrumentation and control systems in water and wastewater management, the Water and Wastewater Industries Division has created a LinkedIn group. We invite anyone affiliated with or interested in the water and/or wastewater industries to join the group and participate in the dialog. You may use the following link to join the group: <http://www.linkedin.com/groupRegistration?gid=2031271>

About LinkedIn

For those who may not be familiar, LinkedIn is a free social networking web site for professionals:

LinkedIn is an interconnected network of over 42 million experienced professionals from around the world, representing 170 industries and 200 countries. You can find, be introduced to, and collaborate with qualified professionals that you need to work with to accomplish your goals.

When you join, you create a profile that summarizes your professional accomplishments. Your profile helps you find and be found by former

colleagues, clients, and partners. You can add more connections by inviting trusted contacts to join LinkedIn and connect to you.

Your network consists of your connections, your connections' connections, and the people they know, linking you to thousands of qualified professionals.



There are already many ISA members and automation professionals on LinkedIn, as well as several other ISA-related groups. If you'd like to learn more about LinkedIn, the article "100+ Ways to Use LinkedIn" provides many different perspectives on how the site can be leveraged. We hope you'll join us there and network with other ISA, water, and wastewater professionals.

Regards,
Jon DiPietro
WWID Webmaster

ISA Gives You the Leadership Training You Need—for FREE!



Would you like to become a more effective leader? Or begin developing your leadership skills?

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

Plus, you'll get opportunities for hands-on, active leadership roles to sharpen your skills as you learn—such as involvement in WWID and your local Section.

Visit www.isa.org/leadershipadvantage for more information and to enroll.

Recruit new ISA members and get rewarded!

YOU are ISA's best source for recruiting new members. Your colleagues will appreciate your contribution to their career development when they learn the benefits of ISA membership.

The ISA Rewards for Recruiting Program

- Recruit one new Member and you'll receive a roomy, canvas tote bag with the ISA logo on it.
- Recruit five new Members over the course of the year and receive a \$100 gift certificate good towards any ISA products and training course registration.

For details go to: www.isa.org. Click on Membership, My Benefits, Rewards for Recruiting.



Setting the Standard for Automation™



Please Welcome Our New Members:

Ms. Saranya

Mr. Jonathan Baker
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Allied Control Ltd.

Mr. Frank Balazs, Jr.
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Mr. Timothy W. Barefoot
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Instrument Technician

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Economy Pumping

Asset Management for Energy Savings

Distributed with permission of author by ISA 2008
Presented at ISA W & WW Symposium, Orlando, FL;
<http://www.isa.org>

Author: Valentine Sonnier

Key Words: Economy pumping, flow trend monitoring, pump performance, asset management, advanced pump controller

As a result of wholesale competition providers of energy must compete for power in markets where there is fluctuation in energy prices from hour to hour and day to day. Customers are becoming aware of how energy prices fluctuate and what they can do about it. As awareness increases customers welcome the opportunity for peak load management as a way to cut energy expenses, protect our environment, and reduce overall life cycle costs. Rising energy costs are driving consumer requirements for peak load management.

A Case Study

West Water in the United Kingdom holds the water and sewerage appointments serving 1.5 million people in southwest England, where energy costs have differential rates according to the time of day and season.

As part of a cost cutting initiative South West Water installed advanced ultrasonic controllers in seven pumping stations. Using economy pumping strategies the plant avoided high peak electrical cost periods and cut energy costs by almost 10% at certain sites.

Economy Pumping

Economy pumping is a strategy used when energy rates vary by time of day. The cost of power during peak periods can be two to three times greater than off peak periods. In an economy pumping routine, pumping stations begin pump down routines to bring the system to its lowest operating levels before the peak cost period begins. Pumping stations are called on sequentially to balance the influent to the reclamation facility and ensure all pumping is complete before the peak energy rates apply.

If the systems' capacity can accommodate the influent volume for the duration of the peak cost period, no pumping may be required. If pumping is required during the peak cost period the advanced controller will only "skim" the collection to keep pump run time minimal.

It is important to note that during economy pumping routines the controller must be able to detect exceptions such as an increased flow from storm surge. During exceptions the controller must automatically switch from economy pumping to normal pumping routines to avoid flooding potentials.

During normal operating conditions economy pumping will continue until the end of the peak cost period when, once again, the advanced controllers will begin the sequential pumping of the stations and bring the system back to normal operation. Normal pumping routines will continue until just prior to the next peak rate period when the advanced controllers will bring the system down to the lowest operating levels.

Asset Management

Flow trend monitoring performs two valuable functions. Increased flow during storm periods in specific geographical areas may indicate infiltration from degraded pipes, resulting in increased pump run times, wasted energy consumption, and storm water flooding of the reclamation facility. Logging and monitoring flow trends will assist to alert operators and pinpoint trouble areas within the collection system.

Flow trend monitoring will also assist when expanding a collection or treatment system. Historical data will help project and manage future needs and challenges. With the ability to store and trend flows throughout the network, increases in demand become apparent and can be identified for future planning and engineering.

Monitoring pump performance is a vital component to asset management. The advanced controller can determine when pump run times increase because efficiency has deteriorated and maintenance is required. While monitoring the pumps performance the advanced controller will also monitor power to the pumps and accept inputs such as motor windings temperature, pump seal leakage, and vibration analysis. If any problems are detected the controller will remove the ineffective pump from operation, start an efficient pump in its place, and send an exception report or alarm to the operator providing optimal asset management. Reliability is improved, availability is optimized, and life cycle costs are reduced.

The information provided by the advanced controller moves the operator from preventive maintenance and into predictive maintenance. Preventive maintenance is based on "average mean time between failures". When a pump breaks down before average emergency maintenance will still be required. For the pump that lasts beyond average, maintenance will be performed before it is needed.

Predictive maintenance techniques help to determine the condition of in-service equipment in order to predict when maintenance should be performed. Pending problems are identified and can be corrected before they disrupt operations. This approach offers cost savings over time-based preventive maintenance because tasks are performed only when warranted and services are rapidly restored.

Reducing Equipment Cost

There are multiple options available to the consumer that will provide all or some of these features. The PLC has been in service for several years and cost/maintenance issues have become apparent. The obvious issue is the initial price of the equipment and cost of commissioning. The not-so-obvious costs of the PLC are changes to the ladder logic programming, testing, and maintenance.

During installation each integrator will write ladder logic in their specific style. Over the years as different integrators are used to make changes to the pumping station there may be multiple layers of logic written on top of each other in individual styles. This layered approach may render the overall logic difficult to understand and/or troubleshoot.

Testing the changes may prove to be another difficulty. While it may appear the results of a change are as expected it is never really known until all pumping routines and conditions have been experienced. Changes in one area may have an adverse effect in another that may not be revealed for extended periods of time, masking the source of the error.

Continued on p. 6

Economy Pumping *(continued from p. 6)*

Multiply these scenarios by many pumping stations throughout a collection system and the consumer has only two options; pay an integrator for assistance or hire an expert.

Application specific pump controllers offer the advantages of the PLC with ease of programming and a standardized equipment platform for all pumping stations. The bonus for the end user is confidence in the system that only multiple applications and through testing can provide. However equipment costs for the application specific pump controller will be similar to the PLC and be substantial when compared to other solutions. After the purchase of the PLC or the pump controller the user must purchase the level monitoring system and telemetry systems to complete the package.

A simpler approach is also the cost effective solution. Combining the features of the PLC with the standardization of the application specific pump controller, and adding level monitoring with built in telemetry will reduce equipment costs and operational overhead while offering sophisticated pump control routines for the end user.

Solution

Electrical power is second only to salary as the largest recurring cost in a typical pumping station. Most electrical power providers charge different rates for power used at different times of the day and different times of the year. The pump controller must possess the ability to avoid peak cost periods.

Additional functionality is required for optimal asset management and to reduce life cycle costs. Depending upon feature sets the PLC, the application specific pump controller, and the advanced ultrasonic controller may have the ability to provide these services.

Along with pump control, level input, data logging, and telemetry devices are also required to complete the pump controller system. The advanced ultrasonic pump controller is the only cost effective, all-in-one, device that provides the functionality of the PLC, the ease and standardization of the application specific pump controller, but also includes the level sensing and telemetry devices in one package, at one price.

Ultrasonics has proven performance in the Water & Waste Water industries and because of the non-contacting nature it is generally accepted as the preferred level technology. However the advanced ultrasonic controller also has the ability to accept any analog or discrete input as a primary and/or secondary level indication, providing all the functionality of the PLC and the application specific pump controller. This ability means the operator can have a standardized equipment platform that is based on the advanced ultrasonic pump controller but have the diversity to accept other technologies when ultrasonics may not be preferred.

Make a difference in someone's life—become an ISA mentor

Do you have a desire to help?

Are you an ISA Member who is interested in helping others in the automation profession? Sharing your expertise and wisdom is a great way to make a difference in another person's life and in your profession.

We need mentors!

Join ISA's Mentor Program and help a young professional Member or a Student Member in his or her career. In this online advisory role, you can help a young automation professional find the resources and connections for continued successful career development. You can help a student determine if a career in automation and control is the right path. Just think—you could make a difference in our nation's workforce development efforts!

Becoming a mentor

Since the Mentor Program is an online program, it doesn't require travel or meetings, and it's available worldwide. ISA Members are encouraged to register and participate. You can learn more about becoming a mentor, and register, on the ISA web site at www.isa.org/mentor.

Mentoring is one of the valuable ISA benefits that are made possible by the volunteer efforts of Members like you, and gives you another great opportunity to say, "I'm proud to be an ISA Member."





WWAC

Symposium2009

4-6 August 2009
Doubletree Castle Hotel
Orlando, FL



Using Today's Technology and Innovative Control Applications to Improve the Water and Wastewater Treatment Process

4th Annual Water & Wastewater and Automatic Controls Symposium

Sponsored by the Water & Wastewater and Automatic Controls Divisions of ISA

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Setting the Standard for Automation™

Message from the Symposium Chair

Thank you for showing an interest in the 4th *Annual Water & Wastewater Automatic Controls*, (WWAC) Symposium, sponsored by the Water & Wastewater and Automatic Controls Divisions of ISA.

This year's symposium will help professionals in the water and wastewater industry understand how automatic control applications affect processing and distribution of water treatment, and provide an outstanding opportunity to gain valuable technical information and training.

Expert speakers will discuss water and wastewater processing. Other topics will focus on water collection and water treatment. Attendees will review the latest controls equipment as well as instrumentation to fit today's industry needs. A technology focused one-day training seminar and two days of technical sessions will provide the latest in applications, networking, communications, and instrumentation technology associated with this water treatment industry. Attendees will also enjoy working luncheons, vendor exhibits showcasing the latest technologies, and an evening reception.

Hope to see you in Orlando!

Joe Provenzano, 2009 WWAC Program Chair,
Industries and Sciences Department Vice President

Keynote Speaker



William J. Hurley, PE, manager at the Orange County Utilities Water Reclamation Division in Orlando, Florida, will present the keynote address, "Today's Technology Challenges," at the 4th Annual ISA Water and Wastewater and Automatic Controls Symposium on 6 August 2009, at the Doubletree Castle Hotel in Orlando, FL.

Prior to his current position, Hurley was Section Manager for the South Water Reclamation Facility, which has a capacity of 43 million gallons per day (MGD) and is the largest treatment facility in Orange County, FL. His 34-year career includes several positions with various municipal governments, including positions such as Utilities Director for the City of Mayville, WI; Engineer Manager for the Rib Mountain Metropolitan Sewerage District in Wausau, WI; and Engineer Manager for the Heart of the Valley Metropolitan Sewerage District in Kaukauna, WI.

Hurley was chosen as keynote speaker for his first hand operational experience in construction, start-up, and manning of various facilities; the largest being a 78 MGD wastewater treatment facility in Green Bay, WI.

Earn
CEUs

ISA Training Seminars Tuesday, 4 August • 8:00 a.m.–4:00 p.m.

Overview of Measurement and Control Fundamentals (FG05C)



Instructor: Tim Shaw, PhD, CISSP

Overviews industrial measurement and control using a generally non-mathematical approach. You'll leave with a basis for communicating with other control system professionals.

You will be able to:

- Improve your communication with measurement and control specialists
- Understand the role of measurement and control in industrial processes
- Compare continuous and batch control
- Survey the methods and devices used in flow, level, pressure, temperature, and analytical measurement
- Understand the operation and components of a feedback control loop
- Understand what tuning a loop means
- Be familiar with relevant ISA Standards
- Overview trends in measurement and control

Training Registration

Each seminar: ISA Member: \$445; List: \$545
CEUs: 0.7



Pre-register online for training at
www.isa.org/wwac

Overview of Industrial Flow Measurement (EI10C)



Instructor: Wiley Montana

Focus is on productivity improvement; cost efficiencies of measurement and control; and whether, when, and how to use the technologies. The course is rich with practical examples of flowmeter selection and problem solutions, with emphasis on basic principles or alternative technologies based on class preference.

You will be able to:

- Describe principles of operation on specific flowmeter technologies
- Apply flowmeters in process applications
- Understand the effect of changing process conditions
- Understand installation requirements and recommended practices
- Evaluate flow instrument performance
- Specify and select the appropriate flowmeter for your applications
- Solve typical flowmeter problems
- Understand calibration methods and the effect of errors on meter performance
- Size flow elements for specific applications

Two-day
Symposium Registration:
ISA Member: \$395 • List: \$495
Group rates available. Call (919) 549-8411 for info.

Pre-register online at
www.isa.org/join/wwac

Earn
Professional
Development
Hours
(PDHs)!

4th Annual WWAC Symposium Agenda (tentative)

Wednesday–Thursday, 5–6 August 2009

Wednesday, 5 August, 2009

- 7:30 a.m. – 8:00 a.m.....Registration
- 7:55 a.m. – 8:10 a.m.....**Welcome**
Joe Provenzano, *Conference Chair*
- 8:10 a.m. – 8:30 a.m.....**Keynote Speaker**
William Hurley, *Orange County Utility*
Today's Technology Challenges
- 8:30 a.m. – 9:15 a.m.....**Dissolved Oxygen—The New & the Old: an Application Guide to DO Measurement**
Phil Kiser, *Hach Company*
- 9:15 a.m. – 9:45 a.m.....**Level Measurement, When to Use Radar, When to Use Ultrasonic Measurement Technology**
T. Sonnier, *Siemens Energy & Automation*
- 9:45 a.m. – 10:00 a.m.....**Q&A Session**
- 10:00 a.m. – 10:45 a.m.....**Coffee Break**
- 11:00 a.m. – 11:30 a.m.....**A Practical Approach to Securing Your WTP/WWTP**
Kevin Finnan, *CSE-Semaphore*
- 11:30 a.m. – 12:15 p.m.....**Passaic Valley Sewerage Commissioners Improves PLC Programming Using Dynamic Real-Time Computer Simulation**
Paul Cavanagh, PE, CEM, *Passaic Valley Sewerage Commissioners*
- 12:15 p.m. – 1:30 p.m.....**Lunch**
- 1:30 p.m. – 2:00 p.m.....**Using Instrumentation and Automation to Optimize WWTPs and WTPs Use of Energy**
Tom Devine, *Stearns & Wheeler, LLC*
- 2:00 p.m. – 2:30 p.m.....**SCADA Cyber Security Defense—In-depth Approach**
Jim Redifer, *Rockwell Automation*
- 2:30 p.m. – 2:45 p.m.....**Q&A Session**
- 2:45 p.m. – 3:30 p.m.....**Afternoon Break**
- 3:30 p.m. – 4:15 p.m.**Taking Your SCADA System into the Future**
Tutorial, Eric Jordan, *Alpha Valve & Controls, Inc*
- 4:15 p.m.**Attendee Reception Begins**

Thursday, 6 August 2009

- 7:30 a.m. – 8:00 a.m.....Registration
- 7:55 a.m. – 8:10 a.m.....**Opening Remarks**
Dr. Jerry Cockrell, *2009 ISA President*
Where is ISA Today?
- 8:10 a.m. – 8:45 a.m.....**Can Cellular Telemetry Compete with Private Radio?**
Curt Wendt, *Camp Dresser & McKee, Inc*
- 8:45 a.m. – 9:30 a.m.....**Proper Selection of Gas Monitoring Equipment for Your Plant**
Jim Scelfo, *Industrial Scientific Corp.*
- 9:30 a.m. – 9:45 a.m.....**Q&A Session-Morning Speakers**
- 9:45 a.m. – 10:15 a.m.....**Coffee Break**
- 10:15 a.m. – 10:45 a.m.....**Unique Flow Measurement Challengers for Large UV Systems**
John Trofatter, *Accusonics*
- 10:45 a.m. – 11:15 a.m.....**The Revival of Ion Selective Electrode Applications to Cleanup Dirty Water in Wastewater Treatment Plants**
Robert Lagrange, *Endress & Hauser*
- 11:15 a.m. – 11:30 a.m.....**Achieving Significant Energy Reduction on a Full Scale SBR Using Advanced Control Techniques**
Andrew Fairey, *City of Charleston CPW*
- 11:30 a.m. – 12:00 p.m.....**Lunch**
- 1:00 p.m. – 1:30 p.m.....**Intelligently Measuring Flow in Water & Wastewater Plants and Doing What Needs to Be Done to Keep the Equipment Working**
Jeff Smith, *Primary Flow Signal*
- 1:30 p.m. – 2:30 p.m.....**Work Place Excellence: You can Measure the Results**
Nick Negoies, *Consultant*
- 2:30 p.m. – 3:00 p.m.....**Afternoon Break/Exhibits**
- 3:00 p.m. – 3:30 p.m.....**Lesson Learned: The Town of Manchester, CT, Upgrades its Main PLC Software to Comply with IEC 61131-3 Standard**
Robert Duzsa, *Town of Manchester, CT, Water & Sewer Division*
- 3:30 p.m. – 4:00 p.m.....**Pressure and Temperature at the Plant**
Eric Jordan, *Alpha Valve & Controls, Inc.*
- 4:00 p.m. – 4:30 p.m.....**Wrap-up and Closing Remarks**

Get a fresh perspective on water & wastewater in 2009!

Attend the 4th Annual WWAC Symposium.

Visit www.isa.org/wwac to find out more about this must-attend symposium and to register, or call ISA Customer Service at **(919) 549-8411**.

Exhibit opportunities and sponsorships are still available.
Contact Rodney Jones at **(919) 990-9418** or rjones@isa.org.

Hotel information

Doubletree Castle Hotel
8629 International Dr.
Orlando, FL 32819
(407) 345-1511

Website: www.doubletreecastle.com

Pre-registration
for this invaluable
symposium is available
until 20 July 2009.
Register today at
www.isa.org/wwac.