



Water/Wastewater Industry Division

Setting the Standard for Automation™ Calendar of WWID Events

Aug 2-4, 2016 **2016 ISA Water/Wastewater and Automatic Controls Symposium**
Wyndham Lake Buena Vista Resort
Orlando, Florida, USA

Sept 24-27, 2016 **ISA Fall Leaders Meeting & 54th ISA Honors & Awards Gala**
Newport Beach, California, USA

Sept 26-28, 2016 **ISA WWID Cybersecurity Session:**
Session 208 – Mon Sept 26: 1pm-5pm
WEFTEC 2016 – New Orleans, LA

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Newsletter Spring-Summer 2016

Newsletter Editor's Welcome

Graham Nasby, City of Guelph Water Services



Welcome to the Spring/Summer 2016 issue of our water/wastewater division newsletter. I am pleased to announce that our symposium committee has been hard at work getting ready for our upcoming 2016 ISA Water/Wastewater and Automatic Controls Symposium. In these pages you will see a planning update from our general symposium chair Pavol Segedy, as well as announcements about our recent collaborations with WEF, AWWA, and the Instrumentation Testing Association. If you have not yet registered, I encourage you to sign-up online at www.isawwsymposium.com to attend our 2016 symposium.

In our newsletter you will also read about several individuals who have won service awards in our WWID divisions, and the awards that will be given out this year at our symposium for "best paper" and "best presentation."

Lastly I encourage you to take a look at this issue's technical article on DNP3 protocol for water/wastewater SCADA networks. This protocol, which has built-in store and forward data-logging and local timestamping for process data/alarms/events, is something that I can see being of great use for many of us in the sector. Thanks for reading!

Graham Nasby, P.Eng.
graham.nasby@guelph.ca

Director's Welcome

Kevin Patel, Signature Automation



Welcome to the ISA water/wastewater industry division mid-year newsletter. Our division is off to a great start as I was just informed that the Water and Wastewater Industries Division is one of three finalists nominated to receive ISA's Society-level Celebrating Excellence Award for Division Excellence. This is a testament to our great volunteers who help make the division one of the best at providing our members with great content and benefits.

I will be on hand as the winning Division will be revealed, and award presentations made at the 54th Honors and Awards Gala, on 24 September 2016 at the Newport Beach Marriott Hotel & Spa, Newport Beach, California, USA. If you haven't had a chance to go to an ISA leader's meeting in the past, I highly recommend attending this one.

In this issue you will find a great deal of information about our upcoming 2016 water / wastewater symposium. Our symposium chair Pavol Segedy and program chair Joe Provenzano, along with the rest of the symposium committee, have been hard at work putting together this year's technical program. Included in these pages you will find the list of technical speakers for the symposium, a listing of exhibitors, and information about this year's workshop session on asset management.

...continued on page 3



We're here to give you a hand.
Actually, many hands.

**We've got the technology, experience
and expertise. You'll find it all at our
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Nearly 150 water industry specialists make up the backbone of the Schneider Electric **Water Wastewater Competency Center (WWCC)**. It is a highly dedicated team that delivers everything from world-class integrated system design to continuous service – all designed to help you manage your energy for critical water treatment systems.

Every working day, the WWCC helps customers meet and exceed requirements for sustainability and energy efficiency, site and data security, process control and optimization, lighting, demand response and renewable energy. And that's just the start. We are also committed to providing you with local, face-to-face training on a wide variety of water industry topics to help you reach operational goals. Plus, with our trusted brands, you are guaranteed top-of-the-line products and solutions.

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Message from your Director-Elect

Pavol Segedy, HDR Inc.



It is my pleasure to provide this message to our WWID members in our newsletter as we have so many exciting things happening. The ISA 2016 Water/Wastewater and Automatic Controls symposium is rapidly approaching. We have wonderful speakers lined up with great ISA training courses in the Cybersecurity and Wireless application's area.

I am fortunate to lead this year's symposium along with the program committee. We are happy to say that we are nearing the preparation completion. We have some exciting new ideas and presentations that our program committee has helped put together.

Please keep reading this newsletter regarding our upcoming 2016 WWAC Symposium that is scheduled for August 2-4, 2016 in Orlando, Florida. The symposium is a great place to meet new professionals and network with people who work in our industry. You will gain great knowledge that will help you become better in your automation profession.

The title of our keynote presentation, "**It's Not Just a Job – It's Your Passion!**" provides an accurate summary... what we do at work, is really what we love to do daily. Please join us for this year's symposium to learn how you can improve your skills and learn from others. I hope to see you there!

Pavol Segedy, PE
psegedy@nc.rr.com

Director's Message (continued from page 1)

A large part of the success of our water/wastewater division and our symposium is due to our relationships with other associations in our sector, such as the Water Environment Federation (WEF) and the American Water Works Association (AWWA). I would like to particularly thank our friends in the local Florida chapters of these associations, the FWEA and FSAWWA, for their help with promoting our symposium.

In this issue you will also read about the winners of our 2016 ISA water/wastewater division student scholarship. The WWID offers up to \$2000 of scholarship money each year; please join me in congratulating this year's winners.

As you read this newsletter, I encourage you to check out our symposium website at www.isawwsymposium.com. On the website you will find more information about our event that is being held on August 2-4, 2016 and details about how to register for it and the associated training courses.

Kevin Patel, PE
knpatel@sig-auto.com

Upcoming Events

Here are some upcoming events for the Water/Wastewater Automation Professional:

ISA WWAC Symposium 2016

August 2-4, 2016

Orlando, Florida, USA

Venue/Hotel: Wyndham Lake Buena Vista Resort

WEFTEC 2016 – Water Environment Federation (WEF)

Sept 26-28, 2016

New Orleans, Louisiana, USA

Venue: New Orleans Morial Convention Center

ISA WWAC Symposium 2017

August 8-10, 2017

Orlando, Florida, USA

Venue/Hotel: to be announced

ISA WWAC Symposium 2018

August 7-9, 2018

Location to be announced

Venue/Hotel: to be announced

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2016 Symposium Keynote Announced: Steven D. Drew from City of Greensboro

We are pleased to announce that [Steven D. Drew](#), the **Water Resources Director for the City of Greensboro, North Carolina** and a national delegate of the American Water Works Association (AWWA), will deliver the keynote address at ISA's [2016 Water/Wastewater and Automatic Controls \(WWAC\) Symposium](#), to be held 2-4 August 2016 at the Wyndham Lake Buena Resort in Orlando, Florida USA.

Drew's keynote speech—which will be delivered on Wednesday, 3 August at 8:15 a.m.—is titled “Leveraging Your Career in Industrial Controls and Automation.” It will emphasize the critical importance of attracting, retaining and developing competent professionals with proven skills in operational technology. Without a highly trained and capable workforce, Drew asserts that utilities will be unable to maintain operational reliability, defend against cyber threats, increase efficiency or promote innovation.



Drew has served as Water Resources Director for the City of Greensboro, NC since 2012. Prior to that, he served in many other positions within the city's Water Supply Division, including: Operations Division Manager; Water Supply Division Manager; Plant Superintendent of Maintenance and Operations; and Plant Mechanic and Electronics Technician.

Drew has served as Chair of the NC AWWA-NEA Operations & Maintenance Committee and on the NC AWWA-NEA Board of Trustees. Earlier in the year, he represented North Carolina at the AWWA's national conference in Washington, D.C.

The must-attend event for water and wastewater industries professionals

ISA's WWAC Symposium focuses entirely on the challenges associated with automation and instrumentation in the water and wastewater sectors. The symposium includes an extensive, two-day program of technical presentations; a tour of a local wastewater treatment plant; numerous networking events; a poster session; and a supplier showcase. [Register today!](#)

Presented by the ISA Water and Wastewater Industries Division, in collaboration with the [Florida AWWA Section](#), the [WEF Automation and Info Tech Committee](#), the [Florida Water Environment Association](#), and the [Instrumentation Testing Association](#), the WWAC Symposium helps professionals in the water and wastewater industries understand how instrumentation, SCADA (supervisory control and data acquisition), and automatic control applications are vital to the treatment and distribution of water; the collection and treatment of wastewater; and the management of stormwater.

Take a minute to review the [conference brochure](#). [Exhibition and sponsorship opportunities](#) are also available.

Gain valuable ISA training

Attendees will also have the opportunity to take one of two high-value ISA courses during the event: [Application of Industrial Wireless Systems - SP25C](#) (a one-day course to be held 1 August), and [Using the ISA/IEC 62443 Standards to Secure Your Control System – IC32](#) (a two-day course to be held 1-2 August). Given that space for the two courses is limited, individuals are encouraged to [register soon](#).

Register for this remarkable event today

To register, and gain more information on the 2016 ISA Water/Wastewater and Automatic Controls Symposium, please visit www.isawwsymposium.com.

In addition to registering online, individuals also have the option to complete a printed version of the [registration form](#) and fax it to +1 919-549-8288 or the completed form can be scanned and emailed to info@isa.org. For assistance, please call ISA customer service directly at +1 919-549-8411.

To gain answers to any questions related to this event, contact Pavol Segedy, 2016 General Symposium Chair, at psegedy@nc.rr.com or Joe Provenzano, the 2016 Symposium Program Chair, at provenzano2@comcast.net.

Take advantage of discounted hotel room rates

The symposium is being held at the Wyndham Lake Buena Vista Resort in Orlando, Florida (www.wyndhamlakebuenavista.com). ISA has arranged a discounted hotel rate of \$89/night (available until 15 July 2016 or until all available rooms are reserved) for symposium attendees for Monday, Tuesday, Wednesday and Thursday nights. Please mention “ISA Water/Wastewater Symposium” when booking, and use the group code “ISA”. To obtain the discounted rate, click [here](#).

About the ISA Water/Wastewater Industries Division

The ISA Water and Wastewater Industries Division (WWID) is concerned with all aspects of instrumentation and automated-control related to commercial and public systems associated with water and wastewater management. Membership in the WWID provides the latest news and information relating to instrumentation and control systems in water and wastewater management, including water processing and distribution, as well as wastewater collection and treatment. More information can be found at www.isa.org/wwid/.

ISA renews Partnerships with WEF, Florida AWWA and Instrumentation Testing Assoc.

The ISA Water/Wastewater and Automatic Controls Symposium is pleased to announce that the partnerships between ISA and three leading municipal water sector organizations have been renewed for another year.

We will again be partnering with the Water Environment Federation and the WEF Automation & Info Tech committee to present a joint ISA-WEF workshop at our symposium. WEF members will also again enjoy discounted registration fees for the 2016 symposium. As with past years, the ISA and WEF will also be jointly promoting each other's events, including a Highlights of the ISA Symposium technical session at WEF's annual WEFTEC tradeshow.

We are also pleased to again partner with the Florida Section of the AWWA (American Water Works Association), so that hours spent at our symposium and the related symposium training courses will provide attendees with FSAWWA-certified CEUs and PDHs that they can use towards the continuing education requirements for their water & wastewater operator licenses. This partnership has now been in place for five years, and we are pleased to be able to provide these all-important CEUs to our operator attendees. FSAWWA members will also get a discounted registration fees for our symposium. The FSAWWA and ISA Symposium also continue to help promote each other's events in the Florida area.

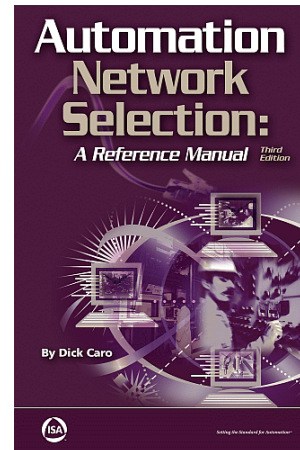
Lastly, we are also teaming up with the ITA (Instrumentation Testing Association) to provide greater exposure of the ITA's independent third party reports on how well instrumentation performs at municipal wastewater plants across North America. ITA members also enjoy discounted registration fees for the 2016 symposium.

The ISA Water/Wastewater and Automatic Controls Symposium wishes to thank all of our partners for the important role they play with our annual event and to supporting the role of automation in our sector.



New Book Released on Selection of Automation Networks

Our friends from ISA publishing edition release of [Automation Network Selection: A Reference Manual](#) by Richard H. (Dick) Caro, a highly acclaimed automation expert and ISA Life Fellow.



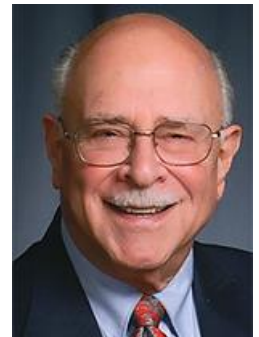
Caro, who serves as principal of an industrial network consulting and professional services company, says an updated edition of his popular book was needed to help bring clarity to a marketplace marked by a rapidly increasing number of automation networks.

"The number of automation networks continues to grow each year as suppliers discover new network applications," Caro explains. "It tends to be in the supplier's competitive

benefit to create a new network protocol for their products, but the lack of network protocol commonality is a long-term disadvantage to customers."

He says that suppliers submit documentation for their new networks to international standards committees to make their network a new standard, even if the new networks don't interoperate with devices built for other standards.

"With so many standards available and each supplier building to their own proprietary networks now being promoted as "standards, users are left confused," he asserts. "That's why this third edition was needed—to create some clarity and help users make better decisions about the selection of equipment and communications networks."



To purchase a copy of the third edition of *Automation Network Selection: A Reference Manual*, click [here](#).

Read about our 2016 Symposium

August 2-4, 2016

www.isawwsymposium.com

2016 Symposium Planning Update

By Pavol Segedy, 2016 Symposium Chair



Planning activities for 2016 ISA Water/Wastewater and Automatic Controls (WWAC) Symposium are in full swing and our committee made a huge progress in technical program, presentations and papers review.

The WWAC Symposium will take place at the Wyndham Lake Buena Vista Resort located on the Walt Disney World property near the Disney Springs. This is a three-day event that focuses on several challenges associated with automation in the water and wastewater industry segment.

This year symposium will feature well known speakers and more than 30 technical presentations. We will have tour at the local facility, general reception, supplier showcase and more. This symposium is unique as it focuses entirely on the automation needs of our professionals in the municipal water and wastewater markets. We are so proud of continually increasing popularity of this event

Great Technical Program

The keynote speaker for the 2016 ISA WWAC Symposium will be **Steven D. Drew**. He will deliver a presentation to our attendees on how to "**Leverage Your Career in Industrial Controls and Automation**". Communicating to leadership the value of operational technology for both hard and soft services is essential. Identifying and correcting vulnerabilities in industrial automation is critical, but without attracting, retaining and developing competent professionals, maintaining operational reliability is impossible or risky business at best. Maintaining a utility's most valuable asset, *its human resources*, is a priority for most utility executives.

Automation professionals and maintenance technologists are on the front line, they are the fire-wall to threats and they are agents of change and innovation, carrying the utility to the next level of efficiency. For these water and wastewater critical service professionals, it's not just their job, it's their passion!

Mr. Drew began a career with the City's Water Supply Division in 1979 as a Plant Mechanic and has held various technical and leadership positions including, Electronics Technician, Plant Superintendent, Water Supply Division Manager and Operations Division Manager. He attended Guilford Technical Community College and graduated from the University of North Carolina at Greensboro with a B.A. in Public Administration and also completed graduate work at UNC-G and the UNC-School of Government's Public Executive Leadership Academy.

Steve is a certified Electronics Technician, certified Maintenance Technologist, Maintenance & Reliability

Professional and a licensed Water Treatment Facility Operator. Steve served as Chair of the NC AWWA-WEA Operations & Maintenance Committee and was a founding member of the NC Maintenance Technologist Certification School. He has served on the NC AWWA-WEA Board of Trustees and recently as the Schools Council Chair. Steve is a member of the "Select Society of Sanitary Sludge Shovelers", and is an AWWA Fuller Award recipient.

Other notable speakers in the 2016 WWAC symposium technical program include:

- **Greg Lehmann, Process Automation Technical Manager of AECOM**, will deliver a talk about the importance of standardization for Human Machine Interfaces (HMI) in process automation industries. This presentation will describe the call for the new ISA HMI Standard, provides a detailed chronicle of its journey from charter to ANSI approval, and its ongoing activities.
- **Dean Ford, Executive Vice President at Westin Engineering, Inc.** will provide information on the model's development and current work going on to apply the model in industry. ISA, the Automation Federation, and several other professional and industry organizations have been developing a skills model to fully develop the Automation Profession. Applying this model can be very beneficial to workforce development challenges within organizations. Methods of implementing it at your organization will also be discussed with practical steps you can take to being your own implementation personally, professionally and organizationally.
- **Bryan Singer, principal investigator for Kenexis** will deliver a talk about recent developments in ICS focused malware and documented attacked against ICS such as the Ukranian Power Grid incident show that successful attacks against ICS are growing in sophistication, and are often using complex multi-faceted techniques to manipulate physical processes.
- **Kevin Morley, Security and Preparedness Program Manager for the American Water Works Association (AWWA)** will provide an overview of the American Water Works Association's development of a sector-specific approach to support voluntary use of the NIST Cybersecurity Framework. The AWWA guidance and use-case tool were developed to aid non-technical utility managers gain an understanding of key risk management actions that can support a robust cybersecurity program.
- **Tom DeLaura, Executive Director of the Instrument Testing Association**, will lead Asset Management Workshop and will provide current news and trends in the water and wastewater sector.

"I continue to receive positive feedback that this event is truly one of the best of its kind due to the fact that the attendees and exhibitors can connect and focus on real-world challenges," Patel reports. "Adding to its value are the training

opportunities, and the networking, professional development and continuing education credits (CEUs and PDHs).”

For the full program schedule, including full presentation abstracts, speaker bios and the program order, visit www.isawwsymposium.com/program-schedule/

Registration is still open

Registration is still open at www.isawwsymposium.com. Attendees can register online or register by contacting ISA customer service at 1-919-549-8411. Registration for the three-day symposium is \$450, and includes catered breakfasts and lunches, as well as symposium proceedings. Discounts are available for ISA, AWWA, FWEA, ITA and WEF members.

Attendees will also receive approved continuing education credits (PDHs and CEUs) from ISA and the Florida Section of the American Water Works Association. These credits can be used toward continuing education requirements for various state-issued water operator, wastewater operator and engineering licenses. See the symposium website for more information.

**VISIT OUR SYMPOSIUM
WEBSITE**
www.isawwsymposium.com

2016 WWAC Symposium Program Schedule at a Glance

Presented by the Water and Wastewater Division of ISA, our symposium helps in the water and wastewater industry understand how instrumentation, SCADA (supervisory control and data acquisition), and automatic control applications are vital to the treatment and distribution of water; the collection and treatment of wastewater; and the management of storm water. The preliminary program schedule is as follows:

Monday – Tuesday, August 1-2, 2016

- Optional 2-day course: **Using the ISA/IEC 62443 Standards to Secure Your Control System (IC32)**
- Optional 1-day course: **Application of Industrial Wireless Systems (SP25C)** (Monday)
- Symposium Registration
- SeaWorld Park Tour (Tuesday afternoon)

Wednesday, August 3, 2016

- Keynote speaker
- Invited Speaker
- Presentations and Papers
- Light Breakfast, Coffee Breaks and Buffet Lunch Provided
- Supplier Showcase & Vendor Presentations
- Evening Reception

Thursday, August 4, 2016

- Invited & Guest Speakers
- Forum Session
- Presentations and Papers
- Light Breakfast, Coffee Breaks and Buffet Lunch Provided
- Poster Session
- Supplier Showcase

Attendees at the symposium can earn up to 20 PDHs (professional development hours).



Provider
#1001262

ISA has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; (703) 506-3275. In obtaining this approval, ISA has demonstrated that it complies with the ANSI/IACET 1-2007 Standard which is widely recognized as a standard of good practice internationally. As a result of their Authorized Provider membership status, ISA is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET 1-2007 Standard.

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Psst, been in the business ten years? Or, have a degree and six years of work experience? Sounds like you may qualify for ISA Senior Member grade. Why apply? ISA Senior Member grade is a statement of your knowledge and experience. It's also a requirement for becoming a candidate for ISA Fellow grade or to hold a Society-level office.

Find all the details and an application form at
www.isa.org/seniormember or call (919) 549-8411.



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for ISA Senior Member grade.**

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2016 Symposium Hotel

The 2016 ISA Water/Wastewater Symposium will be held at the Wyndham Lake Buena Vista Resort Hotel Orlando, Florida, USA. This modern hotel offers luxury accommodations and located right on the Walt Disney Resort property. It is also situated close to both Sea World and Universal Studio's theme parks. We have negotiated a special \$89/night hotel rate for attendees. This rate is good from August 1 to 5, and is available for symposium attendees, speakers, exhibitors, and training course participants.

Wyndham Lake Buena Vista Resort

1850 Hotel Plaza Boulevard, Lake Buena Vista, FL, 32830
(located at Walt Disney World!)

<http://www.wyndhamlakebuenavista.com>

info@wyndhamlakebuenavista.com

Reservations: 1 877-999-3223 (toll free)

Local: 1 407-828-4444

Symposium Hotel Rate: \$89 per night

The hotel is approximately 18 miles from [Orlando International Airport](#) (airport code: MCO). Click here for [directions](#) (courtesy of Google Maps).

There are several ways to get to the hotel. If you are driving to the symposium, the hotel is not far from Interstate 4, the Florida 528 Highway, and the Florida Turnpike. For those traveling by air, the airport has a large number of [rental car agencies](#).

Shuttle bus and taxi service from the airport is available via Mears Transportation by visiting online at www.mearstransportation.com or by calling 1-800-223-3868. A one-way taxi trip from the airport to the hotel typically costs around \$40 USD.



2016 WWAC Symposium Hotel – Wyndham Lake Buena Vista Resort

Earning CEUs and PDHs

Continuing Education Credits at the Symposium

At the 2016 WWAC Symposium, attendees can earn Continuing Education Units (CEUs) and Professional Development Hours (PDHs) for attending the sessions and ISA training courses. Engaging in continuing education and professional development is an ongoing requirement for many professional designations, certifications and licenses. By attending the WWAC Symposium, you can help satisfy your personal professional development and continuing education requirements.

The numbers of PDHs and CEUs for this year are:

- Symposium attendees will receive 20 PDHs / 2.0 CEUs
- Using the ISA/IEC 62443 Standards to Secure Your Control System Course attendees 1.4 CEUs
- Application of Industrial Wireless Systems Course attendees: 0.7 CEUs

As an IACET authorized education provider, the ISA can issue PDHs/CEUs for symposium and training course participation.

Additionally, the ISA has also partnered with the Florida Section of the AWWA and the Water Environment Federation (WEF) to certify training credits for use for state-licensed water and wastewater operators, and for state-registered professional engineers.

As part of the 2016 symposium, all attendees will have the benefit of receiving approved CEUs/PDHs for the hours spent in the training course and symposium towards their water/wastewater operator and PE license continuing education requirements. We will be doing the same this year.



**Water/Wastewater
Industry Division**



American Water Works Association

FloridaSection



**Water Environment
Federation**
the water quality people™

Detailed Symposium Program Schedule

The Symposium program committee is pleased to announce the full technical program for the 2015 WWAC Symposium

Monday, August 1, 2016

8:00am-4:00pm	Using the ISA/IEC 62443 Standards to Secure Your Control System (day 1 of 2)**
8:00am-4:00pm	Application of Industrial Wireless Systems (1 day)**
8:00am-4:00pm	WEF - Workshop (day 1 of 2)***

Tuesday, August 2, 2016

8:00am-4:00pm	Using the ISA/IEC 62443 Standards to Secure Your Control System (day 2 of 2)**
12:00pm-12:30pm	Early Symposium Registration & Badge Pick-Up
8:00am-12:00pm	WEF - Workshop (day 2 of 2)
2:30pm-5:00pm	Tour of Sea World Orlando's water treatment facilities (transportation provided)***

** [Short courses](#) are optional. Separate course registration required.

*** Additional registration required for WEF workshop. Consult the symposium website www.isawwsymposium.com

**** Limited capacity on tour. Tour bus leaves from hotel lobby. Invitations will be sent out 2 weeks prior to tour to registered symposium attendees. RSVP required.

Wednesday, August 3, 2016

7:00am	Registration, Badge Pick-up, & Breakfast	
8:00am	Opening Remarks	
8:15am	<u>Keynote Speaker</u> It's Not Just a Job – It's Your Passion! Steven D. Drew, Director of Water Resources Department, City of Greensboro, North Carolina - view abstract	
9:00am	<u>Invited Speaker</u> ISA 101: Human Machine Interfaces for Process Greg Lehmann, Process Automation Technical Manager, AECOM - view abstract	
9:45am	Coffee Break & Exhibits	
	Track 1	Track 2
10:30am	Operational Blindspots: Why Securing Critical Infrastructure Starts with Improved Visibility Barak Perelman, Indegy - view abstract	Energy Savings while Eliminating Fugitive Emissions Thomas Hoven, CH2M Hill - view abstract
11:00am	Designing ISA 62443 Cybersecurity compliant Virtual Machine (VM) architectures Kenneth Frische, AE Solutions - view abstract	What Are We Going to Do with All This Data? James H. Black, Ph.D, Brincube NA - view abstract
11:30am	The Defensive Challenges of Cyber-Physical Attacks and an Innovative Solution Anis Bishara, ICS2 - view abstract	SCADA is DEAD Dean Ford, P.E., CAP, Westin Engineering, Inc. - view abstract
12:00pm	Lunch & Exhibits	

Wednesday, August 3, 2016 (continued)

1:00pm	Data Diode Cybersecurity Implementation Protects SCADA Network and Facilitates Transfer of Operations Information to Business Users Ron Mraz, Owl Computing Technologies - view abstract	Embracing Change: Using High Performance Graphics to Improve Operations – A Case Study Jonathan Mitchell, P.E, CDM Smith - view abstract
1:30pm	Cyber Security – What do I Need to Do? Richard Witucki, Schneider Electric - view abstract	Leveraging Ethernet and process control technology advancements to extend critical asset life Stephen Liebrecht, Rockwell Automation - view abstract
2:00pm	Cybersecurity – Going Beyond Protection Don Dickinson, Phoenix Contact - view abstract	CASE Study for the Replacement of a Distribution SCADA System Dean Foote, P.E., Terry Draper, P.E., PMP, EMA, Inc., and John J. Mogavero, Erie County Water Authority - view abstract
2:30pm	Coffee Break & Exhibits	
3:45pm	Cybersecurity: How much is enough Michael H. Firstenberg, Waterfall Security Solutions - view abstract	The Lego Principle - Modular Approach to Water Processing Control & Automation Craig Correia, Festo Corporation - view abstract
4:15pm	Centralized Control System Architecture Hassan Ajami, Process Control & Instrumentation (PCI), and Anil Gosine, Detroit Water & Sewerage Department - view abstract	Measuring Gravity Sewer Flow Accurately Albert J. Royster, - view abstract
4:45pm	Practical SCADA Cyber Security Lifecycle Steps Jim McGlone, GICSP, Kenexis - view abstract	Meeting the Requirements of NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities Paul J. McGuire, P.E. The Northeast Ohio Regional Sewer District (NEORS) - view abstract
5:15pm	General Reception and Cash Bar	

Thursday, August 4, 2016

7:00am	Breakfast
8:00am	Opening Remarks
8:10am	Preview of next year's 2017 ISA Water/Wastewater and Automatic Controls Symposium
8:15am	Invited Speaker Applying the Automation Competency Model Dean Ford, P.E., CAP, Executive Vice President, Westin Engineering, Inc., - view abstract
8:45am	Guest Speaker Demystifying Cyber Attacks on ICS: How They Work and How to Use Engineered and Cyber Layer of Protections Bryan L. Singer, CISSP, CAP, Principal Investigator, Kenexis - view abstract
9:15am	Guest Speaker Water Sector Approach to Cybersecurity Kevin M. Morley, PhD., Security & Preparedness Program Manager, American Water Works Association (AWWA) - view abstract
9:30am	2015 Water Wastewater Automatic Control Symposium / Water Wastewater Industry Division Awards
9:45am	Coffee Break & Exhibits

Thursday, August 4, 2016 (continued)

10:30am	Guest Speaker AWWA Current News and Trends Michael Sweeney, Ph.D., Deputy Executive Director, Toho Water Authority	
11:00am	Workshop Session Asset Management Moderator and Speaker: Tom DeLaura, P.E., Chair, WEF Automation and Information Technology Committee Panelists: To be announced at the symposium!	
12:00pm	Lunch & Exhibits	
	Track 1	Track 2
1:00pm	What I learned in a decade deploying firewalls on control systems Joe Page, and Michael H. Firstenberg, Waterfall Security Solutions - view abstract	Lowering Lifecycle Costs with Intelligent Motor Control Centers Jeff M. Miller, P.E., Schneider Electric - view abstract
1:30pm	Water Industry Cyber Security Trends and Tools Stephen Liebrecht, Rockwell Automation - view abstract	Using Data Analytics to Monitor and Reduce Energy Consumption Stephen Wortendyke, Black & Veatch - view abstract
2:00pm	Alarms Management in Utility-wide SCADA Systems Alan Hudson, Trihedral - view abstract	Wireless Flexible Peer-To-Peer SCADA Robert J Shull, P.E., CAP, Custom Controls Unlimited, Inc. - view abstract
2:30pm	Coffee Break & Exhibits	
3:45pm	System-Wide SCADA Documentation to Prepare for Disaster Recovery G. Mike Stoup, P.E., McKim & Creed, Inc.- view abstract	Utility Success Story – Integrated System Architecture Biren Saparia, Great Lakes Water Authority (GLWA), and Hassan Ajami, Process Control & Instrumentation (PCI) - view abstract
4:15pm	Fieldbus Implementation at a Wastewater Treatment Plant Robert J. Dusza, Jr., Manchester Water & Sewer - view abstract	Calibration Evolution and Revolution-A Case History Chris Caglioti, City of Cape Coral Florida, North RO Plant - view abstract
4:45pm	Designing a Control Strategy to Automate a Solids Handling Process in a Municipal Wastewater Treatment Plant (WWTP) Brent Mitchell, P.Eng., Dave Shook and Associates Ltd., and Sreekanth Lalgudi, M.Sc. P.Eng. PMP, CAP, EPCOR Water Services Inc. - view abstract	Can Lessons Learned in Manufacturing be Applied in the Water/Wastewater Industry? Stephen T. Blank, CAP, Trimax Systems, Inc. - view abstract
5:15pm -5:30pm	Closing Remarks	

Optional Symposium Training Course
**Application of Industrial Wireless Systems
(ISA Course SP25C)**
Course Description
Length: 1 day

Date: Mon, August 1, 2016

CEU Credits: 0.7

Course Hours: 8:00 a.m. – 4:00 p.m., includes lunch

Price: \$600 for ISA Members, \$755 List

Description:

This course concentrates on industrial wireless applications. Using the broad range of wireless applications—such as video monitoring and security systems, asset tracking (which may rely on a multitude of wireless technologies), mobile operator needs (PDAs, tablet PCs), remote tank farm monitoring, wireless SCADA systems, Voice over wireless LAN—the multitude of operational considerations associated with industrial wireless field transmitter for monitoring, and even control systems are examined. The logical intersections with the plant's IT department are addressed. Limitations in system performance due to the ambient (RF and physical) environment where the system is deployed are addressed. Current and near-term future technologies will be compared in terms of their applicability for the industrial environment. Integration of traditional wire-based systems and wireless systems will be discussed, along with various networking strategies.

Course Contents:

Section 1: A Quick Review of Communication Fundamentals
 Section 2: Networking Fundamentals
 Section 3: Wireless Sensor Network Designs
 Section 4: Network Designs for Specific Applications
 Section 5: Mixed Networking Topologies Supporting Multiple
 Co-Resident wireless applications
 Course Summary

About the Instructor


Peter Fuhr has been working in the areas of wireless communications, sensors and photonics for longer than he cares to admit. Dr. Fuhr has published and presented over 500 technical articles and holds numerous patents. He serves on numerous industrial, governmental, and corporate advisory boards for companies in the wireless, photonics and nanotechnological areas. He is a Senior Member of the IEEE, has served as an ISA Course Developer and Instructor for many years. Dr. Fuhr has received many awards throughout his career including the Presidential Award for Excellence in Research. Mr. Fuhr is active in the ISA100 Wireless Committee.

Optional Symposium Training Course
**Using the ISA/IEC 62443 Standards to
Secure Your Control System (Course IC32)**
Course Description
Length: 2 days

Date: Mon-Tue, August 1-2, 2016

CEU Credits: 1.4

Course Hours: 8:00 a.m. – 4:00 p.m., includes lunches

Price: \$1,330 for ISA Members, \$1,665 List

Description:

The move to using open standards such as Ethernet, TCP/IP, and web technologies in supervisory control and data acquisition (SCADA) and process control networks has begun to expose these systems to the same cyberattacks that have wreaked so much havoc on corporate information systems. This course provides a detailed look at how the ANSI/ISA99 standards can be used to protect your critical control systems. It also explores the procedural and technical differences between the security for traditional IT environments and those solutions appropriate for SCADA or plant floor environments.

Course Contents:
DAY 1

Introduction to Control Systems Security and the ISA/IEC 62443 Standards
 Terminology, Concepts, Models and Metrics
 Networking Basics – Part 1
 Exercise #1
 Networking Basics – Part 2
 Exercise #2
 Network Security Basics
 Exercise #3

DAY 2

Industrial Protocols
 Creating an ICS Security Management Program – Part 1
 Creating an ICS Security Management Program – Part 2
 Exercise #4
 Implementing and Maintaining Secure Systems
 Designing / Validating Secure Systems
 Developing Secure Products and Systems
 Course Summary

About the Instructor


Kenneth Frische has over 28 years' experience in providing IT & OT solutions to Oil & Gas, Pharma, Food & Beverage, Packaging, Chemical, Water/Wastewater, Military, Discrete Manufacturing, and Correctional Facilities. From hands-on coding to management and consulting, Kenneth Frische has worn many hats to include: IT Director, Solutions Architect, Enterprise Architect, Cyber Security Architect, Project Manager, Req/Tech Spec Writer, and Programmer Lead

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- Data Flow Systems Inc.
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- Belden
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Symposium Tour for Attendees

Attendees of the 2016 symposium will have the option of attending a behind-the-scenes tour of the water treatment plant at SeaWorld Orlando. Attendees will receive an email invitation 2 weeks prior to the symposium. RSVP is required.

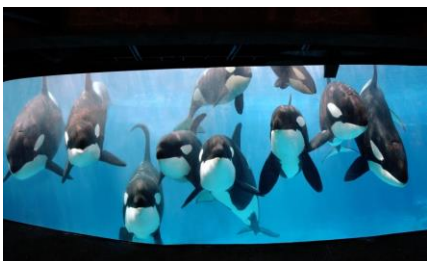
SeaWorld Parks & Entertainment™ is a leading theme park and entertainment company, which for the last 50 years has been delivering personal, interactive and educational experiences that blend imagination with nature and enable our guests to celebrate, connect with and care for the natural world we share.

SeaWorld prides itself on being one of the world's foremost zoological organizations and a global leader in animal welfare, training, husbandry and veterinary care. They care for what we believe is one of the largest zoological collections in the world and have helped lead advances in the care of animals. They also rescue and rehabilitate marine and terrestrial animals that are ill, injured, orphaned or abandoned, with the goal of returning these animals to the wild. The SeaWorld® rescue team has helped more than 27,000 animals in need over the last 50 years.

In its 3 Orlando parks, Sea World is responsible for maintaining healthy saltwater and freshwater environments in 45 exhibits, pools and interactive features, treating over 25 million gallons of water or the equivalent of 400 M GPD.

On your tour at SeaWorld you will have the opportunity to:

- Learn about our Building Automation Systems as they relate to temperature control of our facilities and water systems, energy savings initiatives
- Learn about the automation of our Life Support Systems – primary filtration and recovery systems, ozone generators and injection
- Visit North Support Animal Rehabilitation area
- Visit Antarctica “Empire of the Penguins” and have a more in-depth look behind the scenes of our Life Support System (air and water)
- Visit the Life Support System at Shamu
- And meet a couple of our furry and feathery friends



WEF Knowledge Development Forum being held in conjunction with 2016 Symposium

As part of our partnerships with the Water Environment Federation (WEF), we the ISA water/wastewater division will be holding a joint Knowledge Development Forum (KDF) on the Mon-Tues prior to the start of the symposium's technical program. Held on Aug 1-2, the KDF will focus on the topic of Smart water.



Title: Smart Water Knowledge Development Forum

Dates: August 1-2, 2016

Location: Lake Buena Vista Resort, Orlando FL

Water & Wastewater utilities are rapidly evolving, and the areas of concern that need addressing are increasing in number and complexity. Smart Water is potentially the solution to these issues providing a platform for more efficient technology use and more informed decision making. The Smart Water Knowledge Development Forum will provide an opportunity for industry leaders to collaborate and discuss the vision of Smart Water, improvements to technology and practices, and steps to set the future of Smart Water in motion.

WEF Knowledge Development Forum Registration:

<http://www.wef.org/IntelligentWater/>

The Water Environment Federation (WEF) and the Water Environment Research Foundation (WERF) are collaborating hosting two Knowledge Development Forums (KDF's) in 2016. A KDF is a participatory forum whose purpose is to advance the state of knowledge on a particular topic, going beyond the traditional educational objectives of a technical session or workshop.



Symposium Registration

Registration for the symposium is now open! Attendees can register online or using the provided PDF registration form.

www.isawwsymposium.com/register

Symposium Registration (Aug 2-4, 2016) includes:

- 2 full days of papers and presentations
- poster session
- networking events
- tour of a local water/wastewater facility late-afternoon of Tues, Aug 2
- admission to supplier showcase
- light breakfasts on Aug 3 and Aug 4
- full buffet lunches on Aug 3 and Aug 4
- evening reception on Wednesday, Aug 3 with cash bar and 2 free drink tickets
- name badge
- list of attendees with contact information
- printed onsite program booklet
- printed copy of symposium proceedings
- There are also two optional training courses (additional course fees applies)

Full Symposium registration

List Price.....	\$425
ISA Members:	\$325
AWWA / FSAWWA members.....	\$375
WEF / FWEA / ITA members:	\$375
Students:	\$125
Authors/Speakers:	\$125

Optional Training Courses (Aug 1-2):

Using the ISA/IEC 62443 Standards to Secure Your Control System (2 day)	\$1665
Application of Industrial Wireless Systems to the Water/Wastewater Sector (Aug 1)	\$755



Presentation room at WWAC 2015 in Orlando, Florida

Exhibit Booth Information for WWAC2016

Some exhibitor tables are still available for WWAC2016, which will be taking place August 2-4, 2016 in Orlando, Florida at the Wyndham Lake Buena Vista Resort.

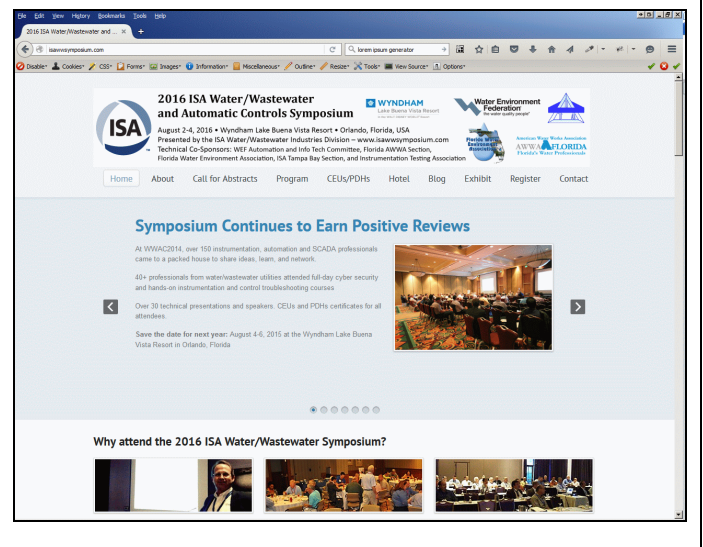
Exhibitor tables at the 2016 ISA Water/Wastewater and Automatic Controls Symposium are priced at \$875 each which include:

- one six foot table with skirting, 2 chairs, duplex electrical outlet
- two full conference passes, which include ID badges and full conference access (an \$850 value)
- additional vendor passes can be purchased for \$200/each
- breakfasts, coffee breaks, and lunches on Day 1 and Day 2
- admission to the general reception with cash bar on the evening of Day 1
- exhibits room hours: Day 1 & 2 (8:00am-5:00pm), and during Aug. 3th evening reception
- exhibit setup: on Tues August 2, 2016 from 12pm-9pm. exhibit teardown is Thursday, August 4 from 5pm-8pm

How to Sign up as an Exhibitor

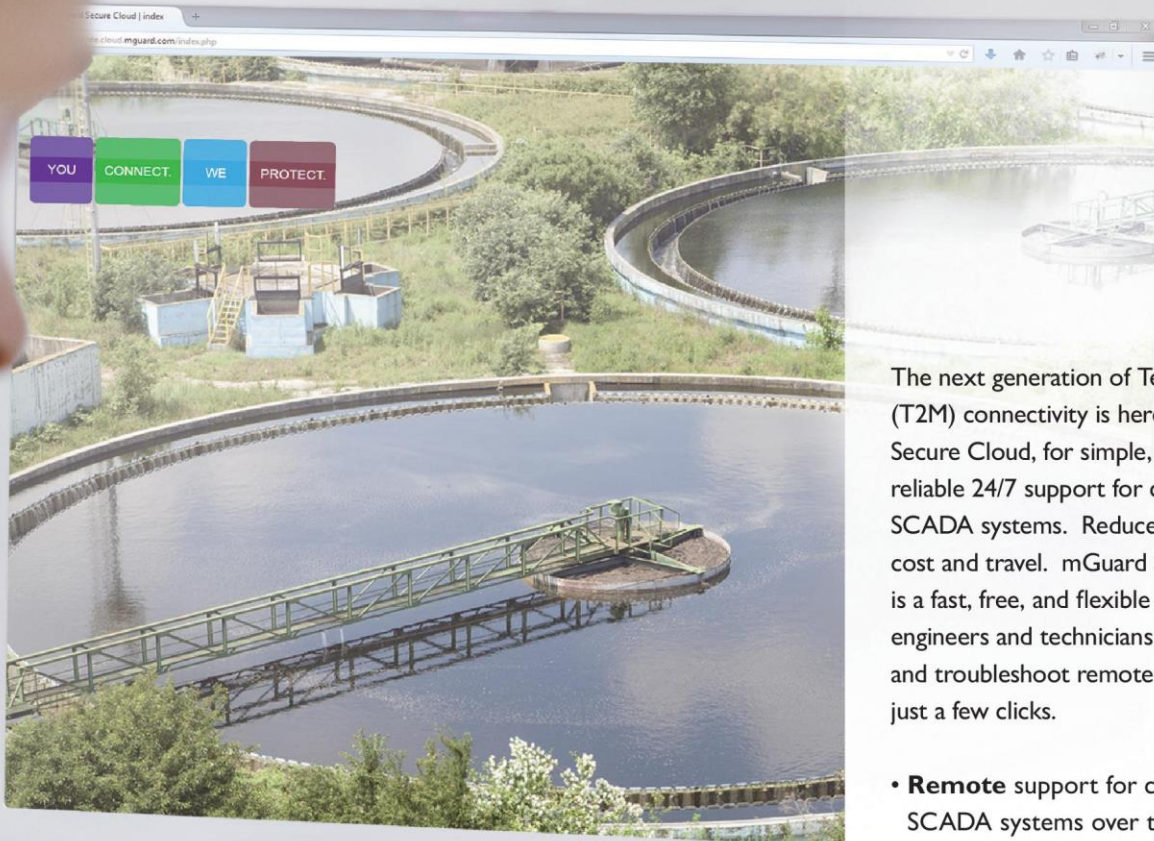
For more information on how to exhibit at the symposium please refer to our 4-page full-color sponsorship and exhibitor opportunities brochure: www.isawwsymposium.com/exhibitor-sponsor/. Also, don't forget to think about exhibiting at next year's 2017 symposium as well.

Visit our Symposium website
www.isawwsymposium.com



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WWID SCHOLARSHIPS

2016 ISA Water/Wastewater Division Scholarship Winners Announced

By Kevin Patel, WWID Director

The ISA Water & Wastewater Industries Division (WWID) is pleased to announce the winners of the 2016 WWID Student Scholarships. Open to college and university students and awarded in April, the WWID student scholarships are given out to promote higher learning and to encourage students to pursue technical careers in the municipal water/wastewater sector.

This year's recipients are Jessica Shane and Eric Rydquist. Each will receive a \$1000 USD scholarship prize to help with their school costs. Please join us in congratulating this year's winners.



Jessica Shane

Valencia Community College
Saint Cloud, Florida, USA

"I am very honored that you chose me for this scholarship award! Thank you so much for this opportunity!"



Eric Rydquist

Montana State University-Bozeman
Bozeman, Montana, USA

"ISA WWID, I want to sincerely thank you for your generous gift to me. This award will go a very long way towards finishing my education, building my career, and starting my post collegiate life. I am truly grateful for your help."

Each of our winners has received a check for \$1000 that they can use to offset the cost of their education. Jessica Shane is a senior at Saint Cloud High School and a Dual Enrolled student at Valencia College. Eric Rydquist is a senior majoring in chemical and biological engineering at Montana State University-Bozeman and will graduate with three degrees (Chemical Engineering, Biological Engineering, and Honors) as well as a math minor. In addition to being accomplished students, each also expressed an interest in working the environment and municipal water/wastewater sector in the 200-word essay they submitted with their scholarship applications.

More information: Read the full news release at:

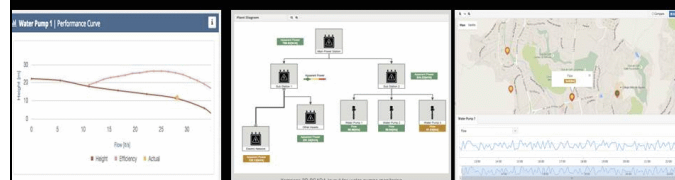
<http://isawwsymposium.com/2016-isa-waterwastewater-division-student-scholarship-winners-announced/>

I would like to thank long-time WWID member Michael Fedenyszen who chaired our 2016 student scholarship committee. Michael has kindly agreed to also chair our 2017 scholarship committee as well. I would also like to thank the

members of this year's scholarship committee for volunteering their time to review the many applications that we received. The 2016 WWID scholarship committee members were: Sean McMillan, Steve Valdez, Wally Ingham, Tom McAviney, and Kevin Patel, plus chairman Michael Fedenyszen.


Applications for the 2017 WWID Student Scholarship will be available in September 2016. For 2017, \$2000 of scholarship funds are available. Applications due January 31, 2017.

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Learn more about securing your system. Download the white paper "Understanding Deep Packet Inspection"
<http://info.belden.com/dpi-tk-lp>



WWID AWARDS PROGRAMS
Symposium & Service Awards

After each symposium, the program committee gets together to select the year's best papers and presentations. In addition to symposium awards, each year the division committee awards one or two volunteer awards. The winners are then presented an award plaque, provided a reduced attendance rate for the following year, and announced during the following symposium. On behalf of the ISA Water/Wastewater Industry Division and the Water/Wastewater and Automatic Controls Symposium committees, I am extremely pleased to announce our volunteer awards and our winners from the 2015 Symposium.

2016 Water/Wastewater Industry Division Service Award


David Hobart, P.Eng. CAP

David: Thank you for your many years of service as a paper reviewer, committee member, and moderator for our annual ISA Water/Wastewater and Automatic Controls Symposium. Your support and encouragement were a major reason that we relaunched our new symposium format in 2012, which has since become one of ISA's most successful symposiums

2016 Water/Wastewater Industry Division Member of the Year Award


Dan Machado, CCST III

Dan: Thank you for your many contributions to our division and the water/wastewater automation community at large. This includes your many years of contributions to our annual symposium, including leading our 2014-2015 symposium awards committees. We thank you for your many efforts, and look forward your continued involvement with the division.

2015 Symposium: Prizes for Best Paper

1st Prize: "All Aboard the SCADA Mothership"

2nd Prize: "First – Make a Business Case for Cybersecurity"



Patrick Cooke



Don Dickinson

3rd Prize: "Challenges and Lessons Learned for the Design and Implementation of Large PROFIBUS Network"



Francisco Alcalá, PE and James Powell, P.Eng.

2015 Symposium: Prizes for Best Presentation

1st Prize: "Getting the Most from Your SCADA Data"

3rd Prize: "Why HMI/SCADA is Key in Preventing Unplanned Downtime"



Emile Richard, CCST



Matthew Wells

2nd Prize "Achieving Operator Buy-In of High Performance Graphics: Lessons Learned In Lynchburg, VA"



Jason Hamlin and Carter Farley, PE

TECHNICAL ARTICLE

DNP3 Communications for Water and Wastewater Applications

By Philip Aubin, Schneider Electric

The DNP3 communications protocol provides many advantages over conventional protocols in a wide range of water and wastewater applications. This technical article highlights the key reasons to consider when applying DNP3 for communications with remote devices.

Introduction: What is DNP3?

DNP3, or “Distributed Network Protocol”, is a protocol that was developed to allow for flexible, secure communications between devices. DNP3 excels in telemetry applications, where requirements call for reliable communication with remote devices. These devices might include:

- RTUs - Remote Terminal Units
- SCADA: Supervisory Control And Data Acquisition Systems
- IEDs – Intelligent Electronic Devices
- HMIs – Human-Machine Interfaces

The versatility of DNP3 has resulted in wide spread use in a variety of industries that require efficient remote connection, including:

- Water & Wastewater Management
- Upstream Oil & Gas operations
- Transportation
- Electric Power

MAJOR BENEFITS OF USING DNP3

A Layered Protocol

DNP3 is a layered protocol. Starting with the low-level physical communications, each layer adds functionality. The layered model allows DNP3 to be flexible, reliable, and standardized. Standard specifications at each layer ensure that equipment vendors can implement DNP3 protocols that ensure communication with each other. It is the unique functions and features of the DNP3 layers that lead directly to the benefits explained in this article; benefits that apply directly to water and wastewater applications.

Earlier Protocols

Over time there have been many open and proprietary protocols used in the architecture of water and wastewater SCADA systems. In most cases these protocols are relatively simple in nature and lacking in the flexibility to provide secure, efficient and reliable data transfer.

MODBUS is an example of such protocols and was first created by Modicon as a proprietary effort in the 1970’s. It was originally used over serial links, and later adapted to

Ethernet. It allows serial communications, using a master/slave polling approach. Only the simplest of data types are allowed, such as Booleans and 16-bit counters. Because of these limitations, other vendors created non-standard, non-compatible extensions for their own use. Unfortunately, these efforts rarely allowed interoperability with other equipment vendors.

There are many such protocol examples within the industry today, many still operating in systems that were deployed long ago, limiting operational efficiencies and room for expansion.

Origins of DNP3

DNP3 was developed in the 1990’s, originally to support electrical distribution equipment. The needs of that business drove many features and functions of DNP3, such as:

1. Support for object-oriented data, including meta-data
2. Support for communication over long distances, including satellite systems
3. High levels of security
4. Interoperability with a variety of devices

DNP3 was quickly adopted as a standard, and a user group was formed in 1993. The protocol proved useful across a host of industries, and is increasingly being adopted within the water and wastewater industry, oil and gas industry, mining, irrigation, and transportation. As an extensible protocol it continues to grow, allowing for new features to be created without impacting the underlying security and reliable communications capabilities.

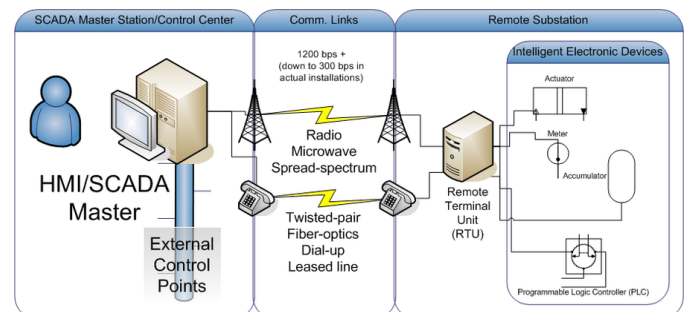


Figure 1- DNP3 is a SCADA communications protocol

DNP3 can run a wide range of physical networks including Ethernet, Serial, Fibreoptic and radio networks. In Ethernet-based, networks DNP3 packets look as follows using the layered OSI model for networks.

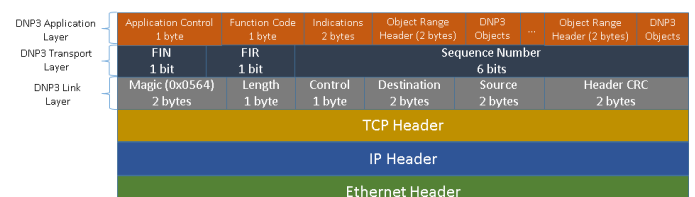


Figure 2 – DNP3 Protocol when running on Ethernet

TOP 6 REASONS TO USE DNP3

There are six main reasons to use DNP3 protocol for water/wastewater applications. These reasons are:

1. Standardization & Interoperability
2. Flexible Communications
3. Security, Encryption & Authentication
4. Strong Support Organization
5. Room to Grow
6. DNP3 Helps to Save Time And Money

Let's look at each of these aspects one at a time

#1 - STANDARDIZATION & INTEROPERABILITY

DNP3 is an open, standards-based protocol. Various types of equipment, from a variety of vendors, can communicate with each other via DNP3.

All DNP3 devices handle and present data in the same way. They use the same data types, and a very organized data structure. Furthermore, DNP3 is incorporated into industry-wide standards.

Today, you can find DNP3-compatible devices ranging from the simplest of field devices to powerful controllers and SCADA systems. This standardization means that you can work with existing installations, and plan for future expansions, without needing to worry about possible compatibility issues. This vendor independence gives you great flexibility in designing current and future architectures.

#2 – FLEXIBLE COMMUNICATIONS

DNP3 allows devices to communicate in many different ways. Far beyond the basic polling or token-passing methods, DNP3 allows the designer to choose the communications method that best suits the need of the application. Examples of these communications methods include:

Event-Based Reporting

DNP3 supports event-based reporting to optimize the use of available communications throughput limits, keeping irrelevant or redundant data from being transported. Full flexibility is available for the operator to define the thresholds and rules for data transfers that help to ensure critical data and alarms are sent immediately. There is no need for waiting through a polling cycle.

Minimizing the communications load is particularly important in situations where slower communications links are in place. In installations that use long distance radio networks with repeaters this challenge is particularly evident. The efficiencies associated with the use of event-based reporting also allow features to be added to communication architectures resulting in the life extension of older networks.

Figure 3 illustrates how an event, such as a pressure spike, can trigger automatic reports for possible issue-solving. By capturing these bursts of high-speed data on demand, possible issue-solving capabilities are greatly increased, without major impacts to the communications infrastructure.

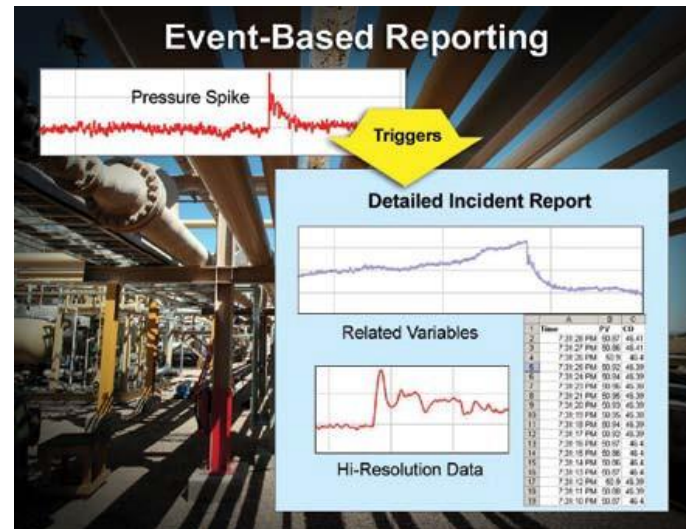


Figure 3 – Event-Based Reporting

Time-Stamping & Meta-Data

Using DNP3, data can be time-stamped allowing the user to determine the sequence of events and actual start/stop times. System wide real-time clocks can be synchronized using DNP3, or externally using GPS time for even greater accuracy. Time-stamped events using DNP3 ensure that all relevant process changes are captured and that there is no lost data if device communications may fail. During such possible communication failures data is stored in the RTU and then subsequently sent to the host for automatic backfilling when the communication link is restored. This can be extremely useful in troubleshooting abnormal events such as possible loss of power on a remote device or loss of supply pressure.

In addition to time stamps, DNP3 also offers the capability to use meta-data, sometimes called “data attributes”, which carry additional and meaningful information about the data. For example, DNP3 can be used to report not only a value, but also the quality of the data including such attributes as data format description, and a variety of alarm conditions.

Unsolicited Reporting

With DNP3, when a crucial event in the field requires immediate action, an unsolicited report can be triggered immediately from the remote device. Regardless of other pre-scheduled or standard data transfer streams, the crucial data is transferred over the network immediately allowing for fast response from upstream or downstream operations. This capability can be used to isolate upset conditions, increase security and enhance safety within overall operations.

Choice of Media

DNP3 supports many types of communications media including data radio, leased line, dial-up, Ethernet, fiber optics and satellite. More than one type of media can also be used in end to end communications. For an operator this means a mix of legacy and new communications system can be used together without the wholesale replacement of communications equipment when upgrades are undertaken. This is a substantial cost and time- saving advantage.

Historic Recording

Centralized data historians have become a de-facto standard. Historians can provide great insight into the process being monitored or controlled. With systems using DNP3, each device can feed its data to the data historian quickly and efficiently without custom programming or scripting. This simple configuration with DNP3 greatly reduces the setup and configuration time needed to establish effective data historians.

#3 – SECURITY, ENCRYPTION & AUTHENTICATION

Security is an increasingly crucial aspect of water and wastewater systems and has experienced steep growth in attention during the past few years. With DNP3 it is possible to greatly improve security using both encryption and authentication.

Security via Authentication

Public utilities are increasingly becoming a potential target for hostile groups wanting to disrupt operations. For this reason, it is important to consider the use of authentication in the design of the communications system. With more simple protocols, security can be easily bypassed simply by connecting a new master to the network. DNP3 helps to keep your data and, more importantly, your process safe from unauthorized access by helping to ensure only authorized people and devices are able to use the network. Essentially, authentication helps prevent unauthorized users from making changes to the system. Using this technique, crucial messages may be challenged by an RTU or a master. The Request- Challenge-Response sequence is required to be successfully completed, or the message will not be accepted.

Security via Encryption

DNP3 data transmission can be protected by applying encryption using standard DNP3 over TLS for TCP/IP networks. The encrypted (obscured) messages can only be read by the intended devices in the system. This form of security is typically used in applications across higher bandwidth links where sensitive or critical data, such as metering results, is being transported.

#4 - STRONG SUPPORT ORGANIZATION

The DNP3 Users Group is an active community of vendors and users of the DNP3 protocol. The group maintains an active website at <http://www.dnp3.org>.

There are hundreds of members from both the vendor and user community. This healthy mix of users and vendors increases the level of communication, and allows for more rapid development and acceptance of new extensions to the DNP3 protocol. It also helps ensure that developers are working toward enhancements that are meaningful to end-users.

The DNP3 users group hosts an annual meeting in the first quarter of each year. This is an open volunteer group, welcoming participation by all. The major objectives of the User Group are:

1. To maintain control of the protocol and determine the direction in which the protocol will migrate
2. To review and add new features, functions and enhancements to the protocol
3. To encourage vendors and utilities to adopt the DNP3 protocol as a “standard”
4. To define recommended protocol subsets
5. To develop test procedures and verification programs
6. To support implementer interaction and information exchange

With such a broad base of non-proprietary supporters, DNP3 is more assured of maintenance and continued growth.

#5 - ROOM TO GROW

Flexibility to Add New Functions

The DNP3 protocol is flexible and extensible. Because of its structured support for complex data DNP3 can be adapted to sophisticated applications such as those found in the water and wastewater industries.

With DNP3, you can communicate transfer files, reports, program changes and high integrity controls, allowing a great deal of flexibility within a more secure and reliable framework.

Industry-Specific Layers

DNP3 is not static and unchanging but rather allows for extensions to be developed by end users and integrated within the protocol. Users can define object oriented data structures to transfer industry- specific information using DNP3.

A notable example of the industry-specific layers is the creation of the U.K. **Water Industry Telemetry Standards**,

or WITS. This extension of DNP3 standardizes water industry data for:

- Asset Management
- Incremental Configuration
- Device Status
- Logging
- Alarming

For more information on this effort, visit the WITS initiative web site at www.witsprotocol.org

#6 - DNP3 HELPS TO SAVE TIME AND MONEY

One of the most important reasons to upgrade to DNP3 is that it helps to save time and money. With DNP3 you can not only perform data communications, you can realize system diagnosis, potential fault finding, and configuration changes, translating into fewer costly and time-consuming trips to the field.

Re-Use Existing Physical Media

As mentioned above, DNP3 supports many types of physical media. In many cases, you can upgrade to DNP3 without replacing the physical media. And since the routing of physical wiring in a remote communications project is one of the highest costs, the ability to re-use existing media can keep project costs down.

Remote Configuration Changes

DNP3 supports remote configuration changes resulting in a dramatic decrease in the cost of servicing remote equipment. Instead of climbing in the truck for a day of service visits to all the RTUs, a DNP3 technician or engineer can sit at a desk in a central office and upgrade configurations across the entire network.

Case Study: DNP3 Integrates Large Water System

In a large West-coast city, DNP3 improved communications between wells and water distribution. Over 500 controllers, RTUs and devices now coordinate their activities directly. The utility engineer on the job says "The DNP3 standard gives us assurance that the process data is accurate, and we can now bill our customers with certainty."

SUMMARY

The DNP3 protocol offers major advantages over other protocols. These include:

1. Standardization and Interoperability
2. Flexible Communications with Many Options
3. Security
4. Strong Support Organization
5. Room to Grow
6. Time and Money Savings

Overview of the DNP3 Protocol

(from www.dnp3.org)

The development of DNP3 was a comprehensive effort to achieve open, standards-based Interoperability between substation computers, RTUs, IEDs (Intelligent Electronic Devices) and master stations (except inter-master station communications) for the electric utility industry. Also important was the time frame; the need for a solution to meet today's requirements. As ambitious an undertaking as this was, we reached this objective. And since the inception of DNP, the protocol has also become widely utilized in adjacent industries such as water / waste water, transportation and the oil and gas industry.

DNP3 is based on the standards of the International Electrotechnical Commission (IEC) Technical Committee 57, Working Group 03 who have been working on an OSI 3 layer "Enhanced Performance Architecture" (EPA) protocol standard for telecontrol applications. DNP3 has been designed to be as close to compliant as possible to the standards as they existed at time of development with the addition of functionality not identified in Europe but needed for current and future North American applications (e.g. limited transport layer functions to support 2K block transfers for IEDs, RF and fiber support). DNP3 has been selected as a Recommended Practice by the IEEE C.2 Task Force; RTU to IED Communications Protocol.

DNP3 was developed by Harris, Distributed Automation Products. In November 1993, responsibility for defining further DNP3 specifications and ownership of the DNP3 specifications was turned over to the DNP3 Users Group, a group composed of utilities and vendors who are utilizing the protocol.

DNP3 is an open and public protocol. In order to ensure interoperability, longevity and upgradeability of the protocol, the DNP3 Users Group has taken ownership of the protocol and assumes responsibility for its evolution. The DNP3 Users Group Technical Committee evaluates suggested modifications or additions to the protocol and then amends the protocol description as directed by the Users Group members.

Complete, comprehensive documentation of the protocol is available to the public. The Document Library contains the protocol specifications, as well as details of what is required at the different sublevels, how to implement secure authentication, how to create XML device profiles, and conformance test procedures.

Resources:

- DNP3 Users Group - www.dnp3.org
- IEEE Standards – find a standard tool: www.ieee.org/publications_standards/index.html
- Water Industry Telemetry Standard (WITS) www.witsprotocol.org
- DNP3 Overview and Technical Protocol Primer <http://www.dnp3.org/pages/aboutdefault.aspx>

About the Author



Philip Aubin is the Telemetry Systems Program Director at Schneider Electric. He has held numerous positions with Schneider Electric, Control Microsystems, Serck Controls, and Hunter Water during his 30+ year technical career in the water telemetry sector. Philip currently lives in Kanata, Ontario, Canada.
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SOCIETY NEWS

What's in it for me?

By Jim Keaveney, 2016 ISA President



Now that we have discussed our [five strategic goals](#) (Content, Data, Cool Delivery, Cybersecurity, and Advocacy) and our additional focus areas for 2016 ([Alignment](#), [Leadership](#), [Globalization](#) and [Voice of the Customer](#)), our front line volunteer leaders and collective members are all thinking the same thing: What's in it for me (WIFM)?

Depending on the answer, you might just keep listening, start dancing, or change the channel.

I will admit that there is no magic bullet or slogan that will do the trick. There is no perfect or universal answer. I can only share my own story and hopefully it will resonate with you so that you stay highly engaged with ISA. There are three things that prompted me to join, become actively involved, and, yes, to do a dance every now and then: training, networking, and mentoring. Let's take a closer look at these.

Training

Like most of you, my formal education did not include much in the way of automation or process controls. I also come from the supplier side of our profession so my automation education has come about through factory training, start-up experiences, field support, and by working with clients.

My local ISA section provided additional training through some great technical topic instruction and classes. Classes primarily covered the basic measurements (pressure, flow, temperature, level), communications, and unit operations (chemical plant operations, distillation). Along the way, I invested in my own ISA library of about 50 books on various topics. These publications have helped me to better understand process controls and become a better, more informed resource to both my clients and my employer.

As a section, district and now Society officer, ISA also has provided me with some excellent leadership training, both formal as well as "on the job." Holding leadership positions in a volunteer organization has taught me much about indirect influence, team dynamics, meeting facilitation, and motivation. The experiences, insights, and skills I have gained have made me a better peer and supervisor—both within ISA as well as in my career. Along the way, I have tried to make sure my company understands the value of my Society involvement and leadership training so that it would continue to support and encourage my ISA engagement. Without question, ISA training has made a very positive impact on my career.

Networking

All the classes, meetings, and conferences I've attended have provided me with the opportunity to cultivate a strong and

extensive personal and professional network. When faced with a particularly challenging technical or business issue, I've been able to draw upon my network of ISA Subject Matter Experts (SMEs) and friends who share their wisdom and provide valuable guidance. ISA also has provided me with the opportunity to meet some of the authors of the important books I've read. Some of these interactions have occurred online as well as face to face.

I'm not sure you can put a price on having a strong network of friends and colleagues. For me, these connections have been invaluable. Networking through my ISA membership is another arrow in my professional quiver that has, I believe, made me a better automation professional and manager. My ability to tap into my ISA network is something my management has also recognized.

Mentoring

Networking has also helped to provide an entry point to mentorship. I have been blessed that several senior ISA leaders graciously serve as personal mentors. The dictionary defines a mentor as "someone who teaches or gives help and advice to a less experienced and often younger person." Through feedback and self-assessment, we all can point to areas that need improvement—which is important whether we seek career advancement or just want to become better at what we do. There is rarely a week that goes by that I do not have some contact with one of my mentors and I have ISA to thank for this gift.

There is no doubt that the more you put into a volunteer organization, the more you'll benefit. It will, however, require that you be both persistent and proactive. For me, ISA training, networking, and mentoring have more than answered my own WIFM question. I'm not going to change that channel.

Next month, I plan to drill down into how the Society's strategic planning process and goals can help our section leaders and members. Meanwhile, I'd be curious why you tuned in and what got you hooked on ISA and what we can do to make your membership experience more rewarding. Please contact me at President@isa.org. I'm eager to hear from you.

Jim Keaveney

2016 ISA President June 2016

Note: This article previously appeared in issue of ISA Insights. Reprinted with permission.



WWID is on LinkedIn

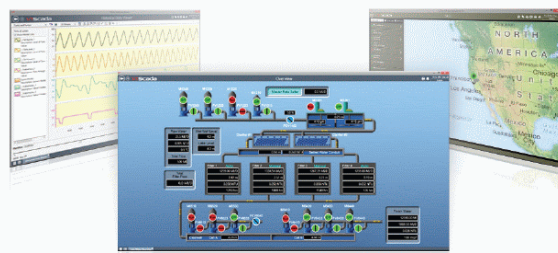
LinkedIn is a social media site that is geared towards professionals and business people. Located at www.Linkedin.com, the site features online profiles, discussion groups and tools for identifying and keeping track of contacts. As of January 2014, LinkedIn has over 300 million members in more than 200 countries and territories.

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 Industry 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>



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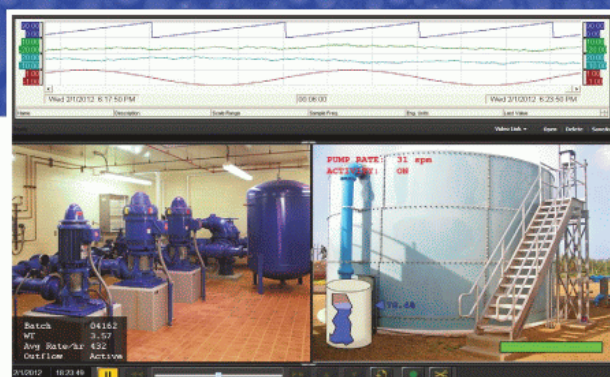
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Call for Newsletter Articles

The WWID newsletter is published four times a year (winter, spring, summer, and fall) and reaches the WWID's over 1,600 members. Each issue is approximately 32-44 pages long, and is electronically printed in color PDF format. A notification email goes out to all WWID members and it is available for public download at www.isa.org/wwid/.

We are always on the lookout for good articles, and we welcome both solicited and unsolicited submissions.

Article submissions should be 500-2000 words in length and be written for a general audience. While it is understood that the articles are technical in nature, the use of technical jargon and/or unexplained acronyms should be avoided. We actively encourage authors to include several photos and/or figures to go along with their article.

We actively welcome articles from all of our members. However, we do ask that articles be non-commercial in nature wherever possible. One or two mentions of company and/or product names for the purposes of identification are acceptable, but the focus of the article should be technical content and not just sales literature. If you are unsure of whether your article idea is workable, please contact our newsletter editor for more information – we are here to help.

Some examples of the types of articles we are looking for include:

- Explanatory/teaching articles that are meant to introduce or explain a technical aspect of automation and/or instrumentation in the water/wastewater sector.
- Biographical stories about personalities and/or leaders in the water/wastewater sector.
- Case Studies about plant upgrades and/or the application of new technologies and techniques. This type of article must include at least two photos along with the article text.
- Pictorial Case Studies about a plant upgrade consisting of 4-6 photos plus a brief 200-500 word description of the project undertaken. The article should ideally include one to two paragraphs about lessons learned and/or advice for other automation professionals.
- Historical reflections on changes in technology pertaining to specific aspects of instrumentation or automation, and how these changes point to the future.
- Discussions about changes in the water/wastewater sector and how these affect the automation professionals.

Once we receive a submission, we will work with you to edit it so it is suitable for publication in the newsletter.

Article submissions can be sent to the WWID newsletter editor Graham Nasby at graham.nasby@grahamnasby.com.

WWID Newsletter Advertising

The WWID newsletter is an excellent way to announce new products and services to the water/wastewater automation community. With a distribution of 2,000+ professionals in the automation, instrumentation and SCADA fields, the WWID newsletter is an effective targeted advertising tool.

The WWID newsletter is published quarterly, on the following approximate publication schedule:

- Winter Issue – published in January/February
- Spring Issue – published in May/June
- Summer Issue – published in August/September
- Fall Issue – published in October/November

Advertising in the newsletter is offered in full page and quarter page formats. Advertisements can be purchased on a per issue basis or for four issues at a time. The newsletter itself is distributed as a full-color PDF, so both color and black/white artwork is acceptable.

The current advertising rates are as follows:

Per Issue:

- Full page, full color (7" x 9"): \$400
- Half page, full color (7"x4.5" or 3.5"x9"): \$200
- Quarter page, full color (3.5" W x 4.5" H): \$100

Per year (4 issues):

- Full page, full color, 4 issues (40% discount): \$1200
- Half page, full color, 4 issues (25% discount): \$600
- Quarter page, full color, 4 issues (25% discount): \$300

Other sizes of advertisements are available, but are priced on an individual basis. Contact us for more information.

Please book advertising space as early as possible before the intended publication date. Artwork for advertisements should be submitted a minimum of two weeks prior to the publication date; earlier is always better than later. Artwork for advertisements can be submitted in EPS, PDF, PNG, JPG or GIF formats. EPS, PDF and PNG formats are preferred. Images should be at least 300dpi resolution if possible.

The ISA Water/Wastewater Industry Division is run on a non-profit basis for the benefit of its members. Monies raised from the sale of advertising in the newsletter are used to help offset the cost of division programming and events. Like its parent organization, the ISA, the WWID is a non-profit member-driven organization.

For more information, or to discuss other advertisement sizes not outlined above, please contact the WWID newsletter editor Graham Nasby at graham.nasby@grahamnasby.com.



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2016 Symposium Details

Date: August 2-4, 2016
Location: Orlando, Florida, USA
Venue: Wyndham Lake Buena Vista Resort
General Symposium Chair: Pavol Segedy, PE
Website: www.isawwsymposium.com

Future Symposium Dates – Save the Date

WWAC2017:
August 8-10, 2017 in Orlando, Florida, USA
WWAC 2018:
August 7-9, 2018 in Location to be announced

About the ISA Water/Wastewater Division

The ISA Water / Wastewater Industry Division (WWID) is concerned with all aspects of instrumentation and automated-control related to commercial and public systems associated with water and wastewater management. Membership in the WWID provides the latest news and information relating to instrumentation and control systems in water and wastewater management, including water processing and distribution, as well as wastewater collection and treatment. The division holds the annual ISA Water/Wastewater and Automatic Controls Symposium each summer, which features presentations by industry practitioners and published proceedings. For more information see www.isa.org/wwid/

About the ISA

The International Society of Automation (www.isa.org) is a nonprofit professional association that sets the standard for those who apply engineering and technology to improve the management, safety, and cybersecurity of modern automation and control systems used across industry and critical infrastructure. Founded in 1945, ISA develops widely used global standards; certifies industry professionals; provides education and training; publishes books and technical articles; hosts conferences and exhibits; and provides networking and career development programs for its 40,000 members and 400,000 customers around the world. For more information see www.isa.org