Water/Wastewater Industry Division

Setting the Standard for Automation™

Calendar of WWID Events

Fri, May 4, 2018 **ISA112 SCADA Standards Meeting**
Full Day Meeting at ISA Spring Meeting
Marriott Raleigh Crabtree Valley

May 5-7, 2018 **ISA Spring Leaders Meeting**
Marriott Raleigh Crabtree Valley
Raleigh, North Carolina, USA

Aug 7-9, 2018 **2018 ISA Water/Wastewater and Automatic Controls Symposium**
Hyatt Regency Bethesda
Bethesda, Maryland, USA
(15 minutes from Washington DC)

In this Issue

Newsletter Fall/December 2017

Director's Welcome

Kevin Patel, Signature Automation

Welcome to our Fall 2017 newsletter! In this issue you will read about our recently-held 2017 symposium and plans for our upcoming 2018 symposium. For the past 2 years I have had the privilege of serving you as the division's director. My goal was to understand what the members wanted from the division and welcome everyone with open arms. On January 1, 2018 our new WWID Director will be Pavol Segedy. For the past four years, Pavol has been very active in our division and has held many positions, including being our general symposium chair for 2016-2017, as well as the membership chair. I wish Pavol all the best as he continues in my footsteps.

Many of you have heard the sad news that Michael Fedenyszen passed away several months back. As we enter 2018, we also get to look back at the first several years of offering our annual WWID student scholarship. It was in early 2009 that our longtime board member Michael Fedenyszen came up with the idea offering a student scholarship to promote young people to enter our field. With the help of ISA staff and several dedicated volunteers.

Michael launched the program in late-2009 with the first scholarship winner being selected in the Spring 2010. In honor of Michael for his long time passion of the water/wastewater industry, mentoring young engineers … **(continued on page 3)**

Newsletter Editor's Welcome

Graham Nasby, City of Guelph Water Services

Greetings! It's been a busy year for the ISA Water/Wastewater Division, so I hope you are looking forward to a well-deserved rest. Looking back, I would like to thank our volunteer committee for pulling off yet another successful symposium, hosting two high-quality webinars, presenting our annual technical session at WEFTEC, and continuing to grow the division's membership.

When I think back to where the division was five years ago, I'm pleased to say we now have a very healthy division. As the current sitting VP-elect of Industries and Sciences (soon to be the VP on January 1st), it gives me great pride to be able to tell people about one of the ISA's leading technical divisions: the ISA Water/Wastewater Industries Division.

So how did we get here? Some may say a lot of hard work – but it is more than that. By providing a framework in which professionals can give something back to the sector, and at the same time grow their careers, has been a winning formula. By being able to satisfy both the "what's in it for me" (for we all need to look after number one) and "what can we do for the profession" we have been able to create an environment where many things are possible. I would like to thank the dedicated team who makes our WWID function for continuing the dream a handful of us started in 2011… **(continued on page 3)**

Let us help you fill in the

- Industrial PCs
- Wireless
- Switches
- Remote I/O
- PLCs

Phoenix Contact complements your automation know-how with engineering insight.

Phoenix Contact's innovative nature is just what your projects call for. When it comes to operating and validating your applications, Phoenix Contact is your trusted partner; from HMIs, wireless, and safety, to PLCs, network components, IPCs, and reliable engineering services.

Download our free "HMIs and Industrial PCs" brochure:
www.phoenixcontact.com/ipc

PHOENIX CONTACT
INSPIRING INNOVATIONS

WWID Director Kevin Patel Signs off
(continued from Page 1)

…and involvement with ISA, I am happy to announce that the scholarship has been renamed to the WWID Michael Fedenyszen Memorial Scholarship. Additionally, I have volunteered to carry on what Michael started in 2009 in the capacity of the scholarship chair. Michael has been sorely missed, and I look forward to continuing on in his legacy of encouraging new/young volunteers to get involved with the ISA and other technical associations.

Additionally, the student scholarship application is now open and we are currently taking all applications. In an effort to make students aware of the water/wastewater automation profession, the student scholarship is a great benefit for our members and their relatives.

I began my career as a co-op student for a water/wastewater engineering firm and still look to that moment as the valuable knowledge I gained that helped me understand the industry and shape my career. The students are most impressionable during these years and helping them become aware of the work that has shaped all of our careers can only help our ever growing industry.

I would like to offer a few words of advice to those of you who are considering getting involved in volunteer associations such as the ISA: It's worth the time and effort. Through my involvement with the ISA I have met many, many very nice and knowledgeable people. I now have a network of contacts that spans both North America and the globe. Through my work with the ISA, I have been able to broaden my horizons, learn a great deal, and have a lot of fun in the process. Ultimately, because of my exposure to other professionals in my field, I have also become much better at what I do for a living. I look forward to continuing my involvement with ISA.

In closing, it's been a privilege serving as the director and as the general symposium chair. It has been quite an experience. I truly look forward to my new role next year but will still be around to help with the symposium planning. As always, I encourage you to get involved. The ISA water/wastewater division has been a great for my career, and I hope you will consider enriching your career by also getting involved with volunteer technical associations.

Respectfully,
Kevin Patel, PE, MBA
WWID Director 2016-2017
knpatel@sig-auto.com

Newsletter Editor's Welcome
(continued from Page 1)

…that flourished into what you see today. Keep up the good work, and continue living the dream. I'm still having fun – aren't you? For those of you who have not yet gotten involved, I encourage you to do so. Volunteer work brings out the best in people and is an excellent way to make new friends.

I invite you to read our fall newsletter. Find out what we've been up to, and we hope to see in you in Washington next summer.

Warmest Regards,
Graham Nasby, P.Eng.
Newsletter Editor
graham.nasby@guelph.ca

Message from your Director-Elect
Pavol Segedy, HDR Inc.

It has been my pleasure to serve you during this year as your division's director elect and the 2017 WWAC Symposium Chair. My goal was to get to know as many of you as possible and continue to grow our symposium by building on a great foundation that Joe Provenzano, Graham Nasby and Kevin Patel started. I look forward to taking over the reins of the Director position on January 1, 2018.

We had another great symposium this year that brought us all together again. We increased our attendance and met several goals. We can call the 2017 ISA WWAC symposium a success! I learned a lot of new things from our presenters and exhibitors that I am already applying at work. Thank you to all who participated and attended this year's symposium.

I am happy to say that we already started planning our next symposium in 2018. I am looking forward to work with Don Dickinson who is our upcoming 2018-2019 General Symposium Chair. We are looking to grow and expand this event by changing the venue location. We are going to be challenged with our new location. We are looking forward to bring the 2018 WWAC near Washington D.C.

If you are interested to help us out please don't hesitate to contact me with any of your suggestions, questions, or ideas for the symposium or WWID division.

Respectfully,
Pavol Segedy, PE
WWID Director-elect
psegedy@nc.rr.com

Don Dickinson to be 2018 Symposium Chair

By Graham Nasby

We are pleased to announce that Don Dickinson, of Phoenix Contact, has been named as general symposium chair for the upcoming 2018 ISA Water/Wastewater and Automatic Controls Symposium.

Taking place at the Hyatt Regency Bethesda in Bethesda Maryland on 7-9 August 2018 and only 15 minutes from the nation's capital, the symposium will feature two days of technical speakers, an exhibitor hall, a tour of a local water plant, and technical training courses on a variety of topics. The event, now it its fifteenth year, brings together automation professionals in the municipal water/wastewater sector from around the world.

"The ISA Water/Wastewater and Automatic Controls Symposium, also known as WWAC, is unique in its focus," says Graham Nasby, chair of the ISA-112 SCADA systems standards committee, "It is the only symposium in North America that is entirely devoted to the needs to automation professionals in the municipal water/wastewater sector. We are delighted to have Don Dickinson head up this important event for us in 2018."

Don and Phoenix Contact have been involved with the WWAC symposium for many years. In 2012, when the event was rebooted as a modern conference, Phoenix Contact was one of the key sponsors of the event, a role they have held ever since. Over the years Don has served a presenter, a member of the program committee, assistant symposium chair, and now in the role of General Symposium Chair.

"I look forward to continuing to lead what has been a very successful symposium for the ISA", says Don Dickinson in a recent interview, "Automation plays an integral role in addressing the significant challenges that we face in our industry such as modernizing aging infrastructure. The WWAC symposium is focused on ensuring that the automation workforce is equipped to deal with these challenges and continues to benefit from advances in technology. "

Each year the symposium boasts an attendance of 200-300 water professionals, which includes plant managers, operators, engineers, and system integration personnel. With its focus on SCADA, Instrumentation and Automation, it offers targeted training and knowledge-sharing that is not available at other conferences.

The symposium partners with local sections of the AWWA (American Water Works Association) and the WEF (Water Environment Federation), in order to offer MDE/state-approved Continuing Education Credits (CEU), which can be used state-licensed water operators for their annual license renewals. The event also offers PDH (professional developments hours) that can be used by both engineers and CAP (certified automation professionals) to meet their continuing education requirements.

Abstracts are currently being solicited for the 2018 symposium. Potential authors are welcome to submit a 250 word write-up about proposed presentations and papers for the 2018 conference. Submissions are due on January 31, 2018. The complete Call for Papers, author information kit, and a list of suggested areas of interest can be found at www.isawwsymposium.com. Announcements about invited and guest speakers will be made in the New Year. In the meantime please continue checking the website for updates.

More information about the 2018 ISA Water/Wastewater and Automatic controls Symposium can be found at www.isawwsymposium.com. Abstracts are currently being solicited for potential speakers for the 7-9 August 2018 event in Bethesda, Maryland, USA.

ISA WWAC Symposium2018

Call for Papers

The International Society of Automation invites you to present your work at the 2018 Water/Wastewater and Automatic Controls Symposium

6–7 August: Training • 7–9 August: Symposium
Hyatt Regency Bethesda • Bethesda, Maryland USA

Only a short 15 minute trip from Washington, D.C.!

Program Highlights:

Three-day symposium focused on the challenges associated with automation and instrumentation in the water and wastewater sector featuring two full days of presentations, a tour of a local water/wastewater facility, a general reception, networking events, a poster session, and supplier showcase.

Guidelines for Submission:

- 250 word (max 300 words) abstract in US English shall be submitted electronically
- Authors must indicate what format they wish to present in:
  - 30-minute presentation (no paper)
  - 6-12 page paper and 30-minute presentation
  - Large format 3-foot-wide x 4-foot-high poster
- Final presentations must be on the supplied symposium PowerPoint template
- Final papers must be submitted in MS Word using supplied symposium template
- Papers/presentations/posters accepted for presentation and/or publication will require completion of ISA Rights and Responsibilities Form
- Student papers and posters are welcome
- The lead author is the main contact
- All authors/speakers required to remit discounted speaker registration fee ($150)

Important Deadline Dates:

Abstracts Due..... **31 January 2018**
Notification of Acceptance..... **28 February 2018**
First Draft Due..... **15 April 2018**
Final Draft Due..... **30 May 2018**

Submit your abstract in MS Word format to:

abstracts2018@isawwsymposium.com or **provenzano2@comcast.net**

Brought to you by the ISA Water/Wastewater Industries Division

Symposium Committee

General Symposium Chair
Don Dickinson, Phoenix Contact
+1 919-633-0147
ddickinson@phoenixcon.com

Symposium Co-Chair
Manoj Yegnaraman, PE, CP*, CE*
Carollo Engineers, Inc.
+1 256-651-6436
MYegnaraman@carollo.com

Symposium Program Chair
Joe Provenzano, KPRO Engineering Services
+1 203-560-1816
provenzano2@comcast.net

Pavol Segedy, P.E.
Past Symposium Chair
WWID Director

Kevin Patel
Past WWID Director

Joel Don
Social Media Chair

Graham Nasby
WEF, AWWA, FWEA
Liaison

Norman Anderson, P.E., GICSP
Bryan Sinkler
Plant Tour Coordinators

Kimberly Belinsky
ISA Staff

Topics include but are not limited to:

General Topics

- Instrumentation: New Technologies and Applications
- SCADA Security, ISA/IEC 62443, CSET, Mitigating Risks
- Control System Redundancy and Robust Design
- Wireless Technologies, Alarm Management, HMI Design
- System Integration, Control System Strategies
- Automation Techniques for Existing Plants
- New Control System Technologies
- Plant Case Studies
- Process Optimization
- Automated Control Techniques
- Project Management Lessons for Integration Projects
- Specific Water and Wastewater Challenges

Future of Automation

- Modelling Non-Revenue Water & Collection Networks
- Energy Use Modelling and Optimization with SCADA
- Capturing and Evaluating Stakeholder Needs
- HMI Design for Operator Effectiveness
- Effective Use of Multiple HMI Screens
- Human Factors and Control Room Design
- Intelligent & Expert Systems
- Alarm Management & Rationalization
- Implementing of ISA, EEMUA, WEF & AWWA Standards
- Call-Out Alarm Rationalization and Techniques
- Data Reporting & Presentation Techniques/Strategies
- Data Management, Historians, and Data Retrieval
- SCADA and the Current Regulatory Environment
- Mobile HMIs, Tablets, Remote Access, and Dashboards

Hot Topics & Emerging Technologies—NEW!

- Industrial Internet of Things
- Industry 4.0
- Smart Cities
- Intelligent Water Technologies
- Operational Optimization
- Effective Utility Management

A full author information package, along with sample abstracts, templates and a list of topic ideas can be found at **www.isawwsymposium.com**

Setting the Standard for Automation™

EP55-7949-0717

Symposium moves to Washington for 2018!

A message from your symposium committee

So we know our attendees like the Orlando Florida area – it's got great people, the Nightlife, Universal Studios, Disney World, Sea World, and tons of other stuff to do….. But, boy oh boy, it's been six years! Looking back we have had our symposium in the Orlando area for all of these years: 2012, 2013, 2014, 2015, 2016 and 2017. We really like Orlando, but was time to make a change!

So we did it! Our 2018 symposium is going to be in Washington, DC. But we realized that hotel rooms in Washington are crazy expensive, so we found a much more reasonable, but still very- nice, hotel that is only a 15 minute drive away from the capital.

Our 2018 ISA Water/Wastewater and Automatic Controls Symposium will be held at the Hyatt Regency Bethesda hotel in Bethesda Maryland…which is only a 15 minute ride down the Washington Metro "red line" from the Capital. We thought you'd appreciate the change in scenery!

(Don't worry: We return to Orlando in 2019)

2018 Symposium Hotel: Hyatt Regency Bethesda

Exhibit Booth Information for WWAC2018

It's not too soon to start thinking about next summer!

Exhibitor tables are now available for WWAC2018, which will be taking place August 7-9, 2018 in Bethesda Maryland USA at the Hyatt Regency Bethesda Hotel.

Exhibitor tables at the 2018 ISA Water/Wastewater and Automatic Controls Symposium are priced at $950 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 (a $900 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. 8th evening reception
- exhibit setup: on Tues August 7, 2018 from 12pm-9pm. exhibit teardown is Thursday, August 9 from 3pm-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/exhibit-sponsor/** . Now is a good time to start thinking about our upcoming 2018 symposium. Reserve your spot today!

Visit our Symposium website
www.isawwsymposium.com

2017 Symposium Report

By Pavol Segedy, 2017 Symposium Chair

We are pleased to report that our 2017 ISA Water/Wastewater and Automatic Controls Symposium was a success! The symposium drew 207 attendees, over 35 expert speakers, instructors and 25 exhibitors/sponsors to Orlando, Florida, USA in early August, 2017.

The three-day, highly targeted event — focusing entirely on the needs of automation professionals and water/wastewater operations — included an extensive program of technical presentations; instrumentation workshops; a tour of a local wastewater treatment plant; a vendor exposition; networking events; and two training courses—one on alarm management and the other on cybersecurity operations and management. The symposium was held 8-10 August at the Wyndham Lake Buena Vista Resort.

In all, the symposium's technical speakers spoke to a packed audience of SCADA designers, programmers, plant operators and maintenance, engineers, managers and students. The theme for our 2017 symposium was "Embracing the Change in Automation for Operations and Maintenance." Attendees gained insight into the evolving industry along with common problems that continue to be seen in our market place.

The symposium kicked off with a keynote address from Steve Davis on "The Journey of Digital and Its Ties to Automation. In his remarks, Davis talked about the digital revolution and the growing adoption of new technologies in both the industrial and municipal sectors.

Guest Speakers, Corey Williams and Barry Liner delivered talk on the Smart Utilities, or Intelligent Water Systems (IWS), that seek to leverage demand for knowledge in as close to real time, in order to provide valuable services to their customers and more efficiently and effectively manage their infrastructure.

On the second day of the symposium, Saadi Kermani highlighted importance of adapting to new challenges associated with higher demands for water with higher quality and availability. To meet these challenges, water utilities are being compelled to act and respond with existing investments along with a parallel plan on how to strategically evolve into the future. The first step to any improvement initiative is start enabling the connection and collection of related measurements from instrumented devices to baseline operations for future improvement.

Invited Speaker, Thomas Burke provided information on Industrial Internet of Things for water and wastewater industries. He highlighted that there is a need and higher expectation for utilization of IIoT for water and wastewater management solutions.

During both days, we introduced the Instrumentation Workshop that was led by Charles Aycock, Melody White, Tracy Doane-Weideman, Bob Dabkowski and Steve Smith. These instructors provided vendor-neutral fundamentals of analyzers along with how they can be integrated into different strategies for process control in water and wastewater processes. Hands-on exercises were used to demonstrate analyzer technology limitations, misapplications, and trouble-shooting.

The Symposium was also well-attended by both sponsors and exhibitors. Platinum sponsors for this year's event included Schneider Electric, Phoenix Contact, Bedrock, Stratus and Delta. Silver sponsors were VT SCADA and Indegy. In total there were 25 different exhibitors who were at the symposium to show and tell attendees about their various products and services.

"Another great year for ISA WWAC. A Strong technical program with themes of cybersecurity, instrumentation, optimization, IIoT and intelligent controls" remarked Tony Morelli who is a regular attendee.

The event provided the ideal opportunity to gain the latest news and trends in automation and control systems, SCADA (supervisory control and data acquisition), instrumentation, systems integration, optimization, cybersecurity, alarm management, and emerging technologies across the water/wastewater industry.

The exhibit showcase featured the latest product and service information and daily networking luncheons while an evening reception set the stage for mingling, meeting new people and reconnecting with old friends.

"The 2017 symposium was a success," said Pavol Segedy, the 2016 and 2017 general symposium chair. "I look forward working with our incoming chair Don Dickinson as he moves into the role of our 2018 and 2019 general symposium chair."

Watch for details about the 2018 ISA WWAC Symposium, which will be held 7-9 August, 2018 in Bethesda, Maryland near Washington D.C. Stay updated by regularly visiting the conference website at www.isawwsymposium.com.

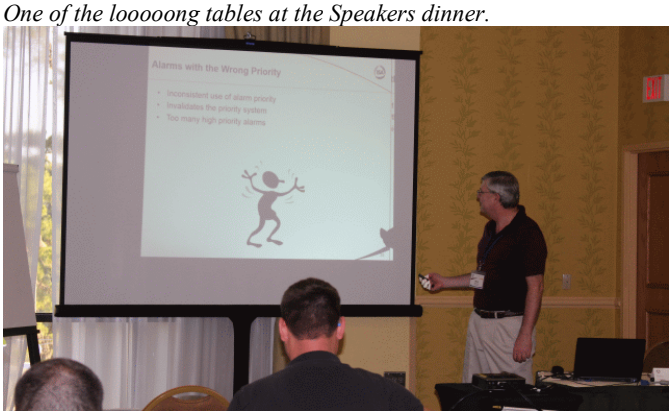
About the WWAC Symposium

Presented by the ISA Water and Wastewater Industries Division, in collaboration with the WEF Automation and Info Tech Committee,, local AWWA sections and local WEF associations, 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 storm water.

VISIT THE SYMPOSIUM WEBSITE
www.isawwsymposium.com

2017 Symposium Photos

One of the looooong tables at the Speakers dinner.



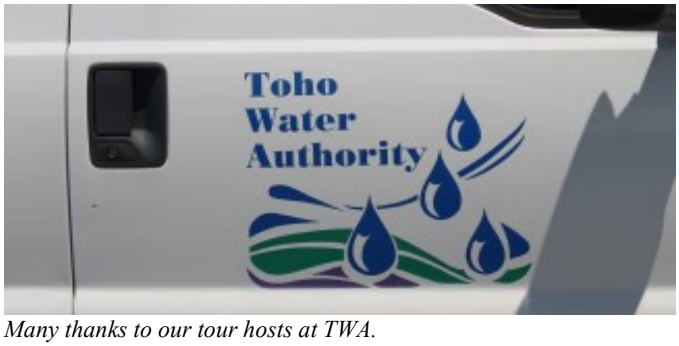
The eponymous Mr. Nick Sands teaching the alarm mgmt. course.

The infamous Bryan Singer of ISA99 teaching cybersecurity course.

Tour sign in the lobby – all aboard!

Waiting in the hotel lobby to leave for the plant tour.

Arriving at the Toho Water Authority's Bermuda wastewater treatment plant. Bus was generously provided by McKim&Creed



Many thanks to our tour hosts at TWA.

So many speakers! So many decisions! Even Norm is confused.

Lots of great networking at lunch time.

Mr. "program chair" Joe Provenzano is all business (& having fun)

WWID Director Kevin Patel welcoming our exhibitors.

The hotel put on a great spread.

Thanks to our ISA staff Matt and Kim.

The exhibit hall is busy.

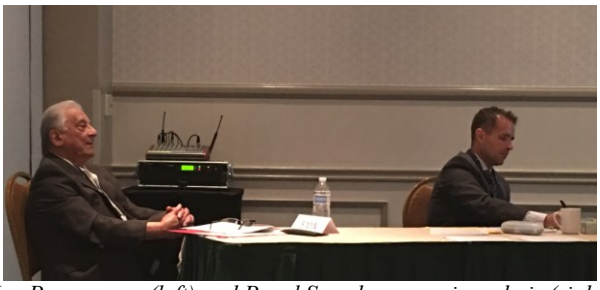
Chesley from ISA manned the registration desk.

Incoming 2018 symposium chair Don Dickinson.

Lots of great talks about cybersecurity.

Jason Hamlin and Carter Farley talking about their plant.

Yes he's talking about your water plant.



Joe Provenzano (left) and Pavol Segedy symposium chair (right).

Settings the Standard – a WWID tradition since 2002!

The ISA Water/Wastewater and Automatic Controls Symposium – it's what we do. We hope to see you next year!

2017 Symposium Plant Tour Report

By Pavol Segedy, 2017 Symposium Chair

At this year's plant tour on August 8, 2017 attendees had the opportunity to visit the South Bermuda Wastewater Treatment Facility located south of the City of Kissimmee on the northwest side of Lake Tohopekaliga.

The plant is a Class I reliability plant with a permitted capacity of 13.0 MGD and a buildout capacity of 21.0 MGD. The treatment methods at this facility include preliminary treatment, primary clarification and grit removal, secondary biological treatment anoxic/oxic/anoxic/oxic, secondary clarification, filtration with disk filters, and disinfection with chlorine. Construction of this facility was completed in early 1988. Since then several expansions have taken place to increase capacity. Other additional improvements include multiple upgrades to the collection system and a bio-solids treatment expansion consisting of mixed holding tanks, belt filter press dewatering, and sludge cake disposal. Effluent from the plant is disposed of either as reused irrigation or at a Rapid Infiltration Basins (RIBs) site in western Osceola County. The plant SCADA system is comprised of Allen-Bradley PLCs and an iFIX HMI system and the South Bermuda facility also includes Toho Water Authority's central control room.

Tour attendees had the opportunity to learn about the plant's treatment process and its automated control system. Major pieces of process were explained, and insight was offered as to how the plant's automated control system works. The tour comprised of a walking tour where attendees had the chance to "walk through the process" and get a chance to get whiff of the earthly aroma :).

Special thanks to Toho Water Authority and especially our tour guides. This year we had 60 attendees and hope to have a great turn out again at next year's plant tour.

Many thanks to Bryan Sinkler and Norman Anderson, our WWAC2017 Tour Coordinators. Bus transportation to/from the tour was kindly provided by McKim & Creed.

Awards Presented at our 2017 Symposium

Part of the 2017 Symposium included giving out both service wards and best paper/presentation awards from last year's symposium. Here are some photos of our award winners!

Mike Stroup receives his award from Joe Provenzano

Alan Hudson receiving his award for Best Presentation

Don Dickinson receiving an award for cyberseucirty talk.

Robert Shull receives his presentation award.

List of our 2016 Symposium Award Winners

These are the award winners for Best Paper and Best Presentation from last year's 2016 ISA Water/Wastewater and Automatic Controls Symposium.

2016 Symposium: Prizes for Best Paper

1st Place: Mike Stoup –
"**System-Wide SCADA Documentation to Prepare for Disaster Recovery**"

2nd Place: Alan Hudson –
"Alarm Management and Reliable Architecture Needed for Utility-wide SCADA Systems"

2016 Symposium: Prizes for Best Presentation

1st Place: Alan Hudson –
"**Alarm Management and Reliable Architecture Needed for Utility-wide SCADA Systems**"

2nd Place: Don Dickinson –
"**Cybersecurity, Going Beyond Protection**"

3rd Place: Robert Shull –
"**Wireless Flexible Peer-To-Peer SCADA**"

Honorable Mention – Paul McGuire –
"**Meeting the Requirements of NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities**"

Thanks to our Symposium Partners
Continuing Education Credits at the Symposium

The 2017 Symposium Committee would like to thank our symposium technical co-sponsors. Through our partnerships with the Florida Section of the AWWA (FSAWWA), the Water Environment Federation (WEF), Florida Water Environment Association (FWEA), the Instrumentation Testing Association (ITA) we are able to reach a larger audience of attendees for our symposium and offer great discounts to attendees from these member organizations.

Through our partnership with the Florida Section of the AWWA also enables us to the FDEP-approved CEUs (continuing education units) that can be used towards state water operator license renewals.

Many thanks to our 2017 symposium technical co-sponsors!

American Water Works Association Florida Section

Water Environment Federation the water quality people™

Florida Water Environment Association wef Member Association

Instrumentation Testing Association
Promoting Reliability & Performance of Environmental Instrumentation and Automation Technologies

ISA Tampa Bay Section

Thanks to our 2017 Sponsors & Exhibitors

Exhibitors

Schneider Electric

PHOENIX CONTACT

DELTA Smarter. Greener. Together.

BEDROCK SECURE INDUSTRIAL AUTOMATION

Stratus

Indegy

VTScada Software for Monitoring & Control

GRAY MATTER SYSTEMS, LLC

Endress+Hauser People for Process Automation

ASHCROFT

Bay MEASUREMENTS

HMS

Rockwell Automation

MTE POWER QUALITY. SOLVED.

HACH

STARCONTROLS Your Global SCADA & Telecommunications Partner

STARCONTROLS Your Global SCADA & Telecommunications Partner

Ultra ELECTRONICS

3eTI

STAHL

Badger Meter, Inc.

BELDEN SENDING ALL THE RIGHT SIGNALS

ERIF

Feel Good inc. TENS Stimulators

Pollutions Equipment news — Water • Wastewater • Air • Hazardous Waste

ISA Tampa Bay Section

Water Environment Federation the water quality people™

American Water Works Association FloridaSection

ISA Water/Wastewater Division

Platinum Sponsors

Schneider Electric

PHOENIX CONTACT

BEDROCK SECURE INDUSTRIAL AUTOMATION

Stratus

DELTA Smarter. Greener. Together.

Symposium Tour sponsor

McKIM&CREED

Silver Sponsors

Indegy

VTScada Software for Monitoring & Control

Symposium Technical Co-Sponsors

Water Environment Federation the water quality people™

American Water Works Association FloridaSection

Florida Water Environment Association wef Member Association

Instrumentation Testing Association — Promoting Reliability & Performance of Environmental Instrumentation and Automation Technologies

Symposium Media Partners

FLORIDA WATER RESOURCES JOURNAL

Pollutions Equipment news — Water • Wastewater • Air • Hazardous Waste

Read-out Instrumentation Signpost

InTech

WaterWorld

AutomationWorld

Industrial WaterWorld

WE&T water environment and technology

ISA Transactions

WEF HIGHLIGHTS

Global Water Intelligence

DesalData

The Water Network powered by TallyFox

WATER DESALINATION REPORT

Automation.com

We've got the technology, experience and expertise. You'll find it all at our Water Wastewater Competency Center.

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.

If you're looking to optimize energy usage in your facility, look no further than Schneider Electric.

Schneider Electric™

Visit www.schneider-electric.com/us Call 877-DIAL-1SE Email wwcc@schneider-electric.com

WWID OUTREACH

WWID was at WEFTEC 2017 in Chicago

The ISA Water/Wastewater Division was at this year's Water Environment Federation's **2017 WEFTEC Show** in Chicago, Illinois, USA on Oct 2-4, 2017. This year marks the fifth year anniversary of the ISA WWID hosting a special automation focused Technical Session at WEFTEC.

WEFTEC 2017 – McCormick Place – Chicago, Illinois, USA
WEFTEC FEATURE SESSION 424

SCADA Systems: Protecting your Investment
Tues, Oct 3, 2017 – Room S502a – 3:30 to5:00pm

This special session focused on providing guidance on how to protect investments in SCADA, and ensure SCADA assets are best utilized for their full potential.

Here is the write-up from the WEFTEC program:

Today's SCADA systems are highly advanced investments that are necessary for the massive amounts of data needed to operate our facilities. With this added data and technology, there comes a need to ensure the data is presented to operations in an efficient manner, that the facility and data is secure from outside intruders, and that the system is well documented and backed up in the event disaster recovery is needed. This session will touch on the current hot topics that were presented at the ISA Water/Wastewater Symposium held in Orlando, FL last year and provide valuable insight into the current standards that should be expected from their current SCADA system.

Session Speakers

1. **Alarm Management and Reliable Architecture Needed for Utility-Wide SCADA Systems: Achieving Effectiveness, High Availability, Subsystem Autonomy, and Centralized Administration**
   - Alan Hudson, VTScada by Trihedral Engineering
2. **Cybersecurity: Going Beyond Protection**
   - Don Dickinson, Phoenix Contact
3. **System-Wide SCADA Documentation To Prepare for Disaster Recovery**
   - Mike Stoup, McKim & Creed

Moderators:

1. Kevin Patel (Signature Automation), Director, ISA Water/Wastewater Division, International Society of Automation
2. Deborah Houdeshell (Hazen and Sawyer), WEF Automation and Information Technology (AIT) Committee, Water Environment Federation

SOCIETY NEWS

2017 ISA Society-Level Election Results

Results from the 2017 Elections for our incoming 2018 ISA Society-Level Officers and VPs were officially announced on October 1, 2017. All will take office in January 2018 unless noted below.

Society President-elect Secretary:
Paul Gruhn

Executive Board Member: Geographic
Nilangshu Dey
Matthew Maynard
Kalpen Vachharajani (term is Oct 1, 2017 to Dec 31, 2018)

Executive Board Member: Operational (1 seat)
Dawn T. Schweitzer
Marty Bince (term is Oct 1, 2017 to Dec 31, 2019)

Executive Board Member: Technical
Prabhu Soundarrajan

Industries & Sciences Dept. Vice President-elect:
Brad Stephen Carlberg

Professional Development Dept. Vice President-elect:
Danaca Jordan

Many ISA society-level elected positions are for 2 or 3 year terms. Hence, not all positions were up for elections this year.

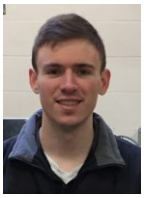
WWID SCHOLARSHIPS

2017 Scholarship Winners Announced

The ISA Water & Wastewater Industries Division (WWID) is pleased to announce the winners of the 2017 WWID Student Scholarships. This year's recipients are Kevin Stewart and Benjamin Plucinski. Each received a $1000 USD scholarship prize to help with their school costs. Congratulations!

Kevin Stewart

University of Guelph
Guelph, Ontario, Canada



"I am deeply honored and gratified to have received the ISA's 2017 WWID scholarship. I extend my sincerest thanks to the members of the committee for choosing me as the recipient of this award. Looking ahead, it is good to know that help exists for those working hard towards post-graduation goals. I thank you again for this honor and the accompanying assistance to help me complete my undergraduate degree."

Biography: Kevin Stewart is a third-year Engineering Systems and Computing (ES&C) student at the University of Guelph, Ontario, Canada as well as an ISA student member. As part of the program, he is currently on a co-op work term working for the City of Guelph's Water Services Department designing new High Performance HMI screens to be used with the City's SCADA (Supervisory Control and Data Acquisition) system. After graduating, he hopes to carry on with a career in the automation field. In his spare time, he enjoys playing music with a range of groups, from garage bands to concert bands. He also likes to take advantage of Ontario's provincial parks, going on camping trips in the parks' interior regions. During the school year, he serves as member of the Guelph Engineering Society, helping to voice students' opinions at meetings and plan events.

Benjamin Plucinski

Worcester Polytechnic Institute (WPI)
Worcester, Massachusetts, USA

"Thank you ISA WWID for your generous gift! This scholarship will help me pursue my passion for engineering and start my career. I am truly grateful for this award and would once again like to thank you for this amazing opportunity"

Biography: Benjamin Plucinski is from Hudson, Massachusetts which is about 30 miles outside of Boston. He has always had a passion for taking things apart and tinkering. This is what led him to the engineering courses at his high school, where he has studied topics ranging from robotics, to electronic circuits, to 3D-printing. Ben also has worked at his local hardware store for two years where he services small engines. His greatest accomplishment is designing a 3D-printed prosthetic hand that allowed a girl in his local community to play softball.

WWID SCHOLARSHIPS

2018 Scholarship Forms Available

By Kevin Patel 2017 Scholarship Chair

The ISA water/wastewater industry division (WWID) is pleased to announce the 2018 ISA WWID Michael Fedenyszen Memorial Student Scholarships. The annual scholarship has been named to honor the contributions of long-time volunteer Michael Fedenyszen who passed away in 2017.

Eligible students can win up to $2000 USD in scholarship money to help them pursue higher education.

Students can apply by filling out the application form, accompanied by:

- 200-word essay on why they should win
- a copy of their academic transcript
- confirmation of enrollment form/letter

The application deadline is January 31, 2018.

The division is pleased to continue to providing up to $2000 of scholarship money to encourage WWID members and their sons/daughters to pursue higher education. In addition, winners will receive a complementary 2-year student ISA membership.

Applications are due by email by January 31, 2018. Winners will be notified by February 28, 2018 via telephone and email, and will be required to provide a photo and short biography that can be used for publicity reasons. Scholarship money will be distributed by check and mailed after the winner is contacted and has supplied the required photo/bio.

Scholarships will be awarded at the sole discretion of the WWID scholarship committee, with preference being given to students enrolled in technical programs that lead to careers in the water/wastewater sector.

Download and view the student scholarship application form at www.isa.org/wwid .

Please email completed application form, along with 200 word essay, confirmation of enrollment and copy of academic transcript to:

scholarship@isawwsymposium.com
AND
knpatel@sig-auto.com

All applications must be submitted by email (PDF scans of documents). We do not accept submissions by postal mail.

ISA Water/Wastewater Industry Division

Setting the Standard for Automation™

Water & Wastewater Division

2018 WWID Michael Fedenyszen Memorial Scholarship

APPLICATION FORM

The ISA Water & Wastewater Division (WWID) is pleased to award up to $2000 of scholarship money to encourage WWID members and their sons/daughters to pursue higher education. Students recommended by a WWID member may also apply. Winners will also receive a complementary 2-year student ISA membership, which includes a print subscription to ISA *InTech* magazine. Applications will be accepted via email through January 31, 2018. Winners will be notified by February 28, 2018 via telephone and email, and will be required to provide a digital photo, a 3-4 sentence biography, and a 1-2 sentence "thank you note" that can be quoted for publicity purposes. Scholarships will be dispersed by check and mailed after the winners are selected and the required documentation is received. Scholarships will be awarded at the sole discretion of the WWID scholarship committee with preference being given to students enrolled in technical programs that lead to careers in the water/wastewater industry.

Eligibility (check one)

- ☐ WWID member, ISA Member # _____
- ☐ WWID student member, ISA Member # _____
- ☐ Parent/Guardian is a WWID member, Parent Name: _____ & ISA Member # _____
- ☐ WWID member recommendation (letter attached), Member Name: _____ & ISA Member # _____

Other criteria (check off each one)

- ☐ Currently attending 2-4 year university/college curriculum
- ☐ Confirmation of enrollment letter (or scan of student card) attached
- ☐ 200 word essay about "Why I should win the scholarship" attached
- ☐ Copy of previous year's academic transcript attached

Applicant's Name: _____
Program of Study: _____
Institute Name: _____
Institute Address: _____
Dean of Admissions Name: _____
Institute Phone: _____

Address While At School

Street: _____Apt. _____
City: _____
State: _____
Zip Code: _____ Country:_____
Phone: _____
eMail: _____

Home Address

Street: _____Apt. _____
City: _____
State: _____
Zip Code: _____ Country:_____
Phone: _____
eMail: _____

Applications must be submitted as scanned PDFs and emailed to the scholarship committee at:
scholarship@isawwsymposium.com AND knpatel@sig-auto.com

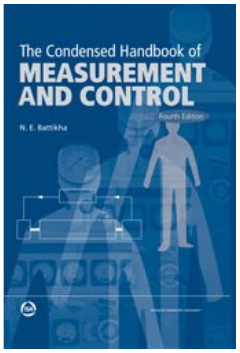
APPLICATIONS MUST BE RECEIVED BY JANUARY 31, 2018

www.isa.org/wwid

ISA PUBLISHING

Fourth edition of The Condensed Handbook of Measurement and Control

The folks at ISA headquarters are pleased announces the fourth edition release of *The Condensed Handbook of Measurement and Control* by Nabil (Bill) E. Battikha, PE. Battikha, a highly recognized professional engineer and award-winning author in the field of process instrumentation and control, says an updated edition of his popular book was needed in light of recent advances in process instrumentation and control implementation.



"The Condensed Handbook of Measurement and Control, 4th Edition"

Copyright: 2018
ISBN: 978-1-945541-38-45
Length: 561 Pages
Format: Hardback
Publisher: ISA

Member Price: $104.00 USD
List Price: $128.00 USD

"The many changes in technology over the last 10 years or so-particularly relating to control equipment symbology, sensors and safety instrumented systems as well as some other areas-necessitated development of an updated handbook," explains Battikha. "The new edition features a significant amount of new and enhanced content, including a new chapter, a new appendix and noteworthy updates to 20 current chapters and nine appendices."

The revised edition is designed to make it easier to select and implement measurement and control devices for process automation applications. Readers will gain practical, knowledge-based answers to questions pertaining to ISA symbology, instrument and control valve selection criteria, conversion guidelines, maintenance, calibration, decision-making, and consulting.

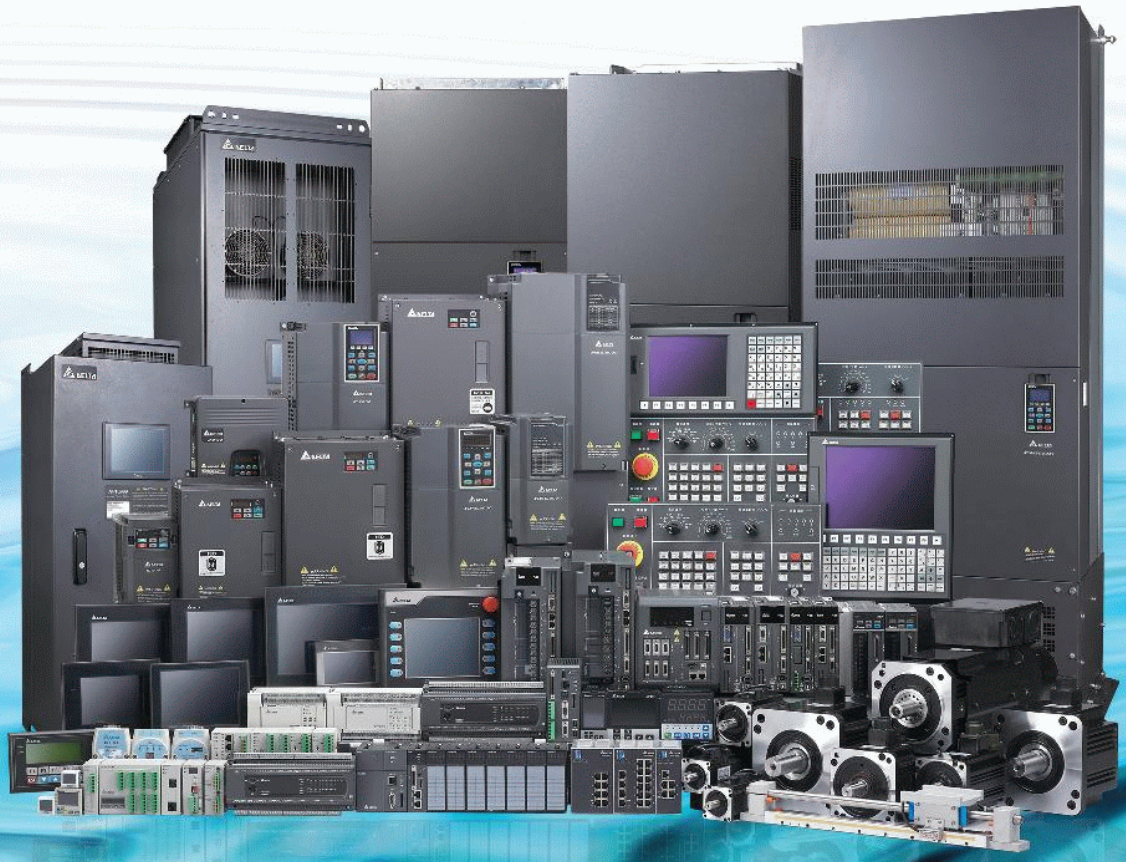
The Condensed Handbook of Measurement and Control has long been one of ISA's most successful publications. Battikha has twice received ISA's Raymond D. Molloy Award-once for the initial edition of the book and once for the third edition. The award is presented annually to the author

To purchase a copy of the fifth edition of **The Condensed Handbook of Measurement and Control, 4th Edition**, visit www.isa.org/books/

Water/Wastewater Industry Division

DELTA Smarter. Greener. Together.

Automation for a Changing World



Come see us at the
ISA Water/Wastewater &
Automatic Controls Symposium
August 7th-9th | Hyatt Regency Bethesda

www.delta-americas.com/ia

Tricks of the Trade: SCADA Development Shortcuts

Always be on the lookout for Time-Saving techniques

By Shawn Hustins and Graham Nasby

The craft of SCADA software development is one that requires a multitude of skills. The average SCADA system includes a wide variety of components and modules that all have to work together to make the system work. The effort and time to write code for SCADA systems can also vary greatly depending on what component or module is being developed.

There are many instances where we find ourselves bogged down some of the aspects of programming SCADA systems. No matter the size and complexity of a project, there will always be tedious elements involved. As they mount up, these simpler tasks can put quite a burden on progress towards project completion when they're not planned for and dealt with accordingly.

But what methods are available to combat these issues? The traditional approach is to divide up the work, so that individuals with particular skills in certain areas can work on the area as per their specialty. But what about those mundane tasks like setting up hundreds of data tags, or populating data arrays, or setting up a large number of similar workstations? To be honest, no one wants to do those!

When looking at the issue from a developer's point of view, there are potentially much more powerful solutions available with the aid of the computer. The more mindless a task is, the easier it is to tell a computer how to do it. (Humans, on the other hand, are much better suited for the more creative aspects of software development.) So although it is highly unlikely one could automate their entire job, it's often possible to come up with ways to automated some of the more repetitive or dull aspects. Automating tasks does not have to be difficult; often just a few lines of scripting can be used to free up time for more interesting (and productive) work. Automation also has the benefit of reducing mistakes and improving consistency.

Here are a few examples of time saving solutions that I have been using lately. Keep in mind that every SCADA project, and its associated programming environment, is unique. As such, the intention of the following is not to provide the best/only way of doing it, but rather to serve as examples. Hopefully these case studies can give you some ideas about how to automate parts of your own software development.

Note that these examples come from a SCADA programming environment which consists of Allen-Bradley PLCs and GE Proficy iFix software. Other environments will likely have their own opportunities for time saving techniques as well.

Automatically Generating PLC Code

In this example, an Excel spreadsheet was used to auto-generate ladder logic code segments that can be pasted into a larger PLC program.

For this project, we had an operator interface terminal (GE QuickPanel+) which we wanted use to read real-time data from an Allen-Bradley CompactLogix PLC via the serial port. We were using the GE QuickPanel product because it has a store and forward collector feature that tightly integrates in with our process historian to provide us with redundant data-logging to our normal PLC-to-historian data-logging.

For reasons of communications redundancy, we chose to have the QuickPanel+ read data via its serial port rather than via the PLC's Ethernet connection. The challenge was that the serial connection from the QuickPanel needed to use the older Allen-Bradley DF1 protocol, which does not support the CompactLogix's tag based memory registers. Thus, to get this to work we would have to create a special outbox array in the CompactLogix and then map it to a numbered memory file number that could be read by the DF1 communications. Part of this work also involved writing a ladder logic routine in the CompactLogix that would copy and scale all the various data tags into the outbox array. Writing this ladder program would normally be a tedious task, but instead we used Excel and scripting to automate the code generation.

Upon analysis, the programming task manifested itself as follows: given the list of tags to be accessed on the Logix controller by an external device, create a ladder logic routine to copy the tags into an array and assign each tag on the external device to its new address.

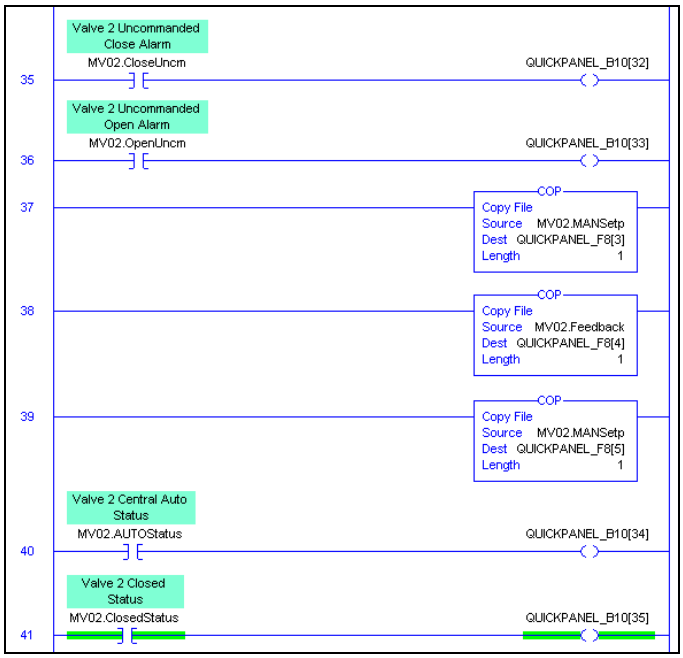


Figure 1 – PLC Ladder logic rungs in the RS Logix 5000 programming environment that copy data from the PLCs tag-based memory registers into the outbox array

One of the key points to note in this task is the repetition; each rung has to contain instructions to move data from the memory tag into the outbox array. This simple pattern provoked the idea of creating a few simple spreadsheet formulas that would generate all the ladder logic code and the addresses that would be imported to the tag database of the external device. To feed the spreadsheet formulas, we exported a list of tags from using a tool within the RSLogix 5000 PLC Programing software.

A	B	C	D	E	F	G	H	I	J	K
START RUNG	RUNG LOGIC				END RUNG		TAG TYPE	IS BOOL	IS REAL	I/O Addr. to Read
SOR	XIC	MV01.ModeReq	OTE	QP_B10[5]	EOR		BOOL	1	0	B10:0/5
SOR	XIC	MV01.MANCloseReq	OTE	QP_B10[6]	EOR		BOOL	1	0	B10:0/6
SOR	XIC	MV01.MANOpenReq	OTE	QP_B10[7]	EOR		BOOL	1	0	B10:0/7
SOR	XIC	MV01.PosFBErrorEnable	OTE	QP_B10[8]	EOR		BOOL	1	0	B10:0/8
SOR	XIC	MV01_IN.Failed	OTE	QP_B10[9]	EOR		BOOL	1	0	B10:0/9
SOR	XIC	MV01.PosDevAlarm	OTE	QP_B10[10]	EOR		BOOL	1	0	B10:0/10
SOR	XIC	MV01.CloseFail	OTE	QP_B10[11]	EOR		BOOL	1	0	B10:0/11
SOR	XIC	MV01.OpenFail	OTE	QP_B10[12]	EOR		BOOL	1	0	B10:0/12
SOR	XIC	MV01.GenAlarm	OTE	QP_B10[13]	EOR		BOOL	1	0	B10:0/13
SOR	XIC	MV01.PosFBErrorAlarm	OTE	QP_B10[14]	EOR		BOOL	1	0	B10:0/14
SOR	XIC	MV01.CloseUncm	OTE	QP_B10[15]	EOR		BOOL	1	0	B10:0/15
SOR	XIC	MV01.OpenUnCM	OTE	QP_B10[16]	EOR		BOOL	1	0	B10:1/0
SOR	COP	MV01.MANSetp	QP_F8[0]	1	EOR		LREAL	0	1	F8:0
SOR	COP	MV01.Feedback	QP_F8[1]	1	EOR		LREAL	0	1	F8:1
SOR	COP	MV01.MANSetp	QP_F8[2]	1	EOR		LREAL	0	1	F8:2
SOR	XIC	MV01.AUTOStatus	OTE	QP_B10[17]	EOR		BOOL	1	0	B10:1/1

	B	C	D	E	G	I	J	K
1	RUNG LOGIC					IS BOOL	IS REAL	I/O Addr. to Read
2	=IF(H2="BOOL","XIC","COP")		=IF(H2="BOOL","OTE","QP_F8["&(SUM(J$2:J2) - 1)&"]")	=IF(H2="BOOL","QP_B10["&(SUM(I$2:I2) - 1)&"]",1)		=IF(H2="BOOL",1,0)	=IF(H2="LREAL",1,0)	=IF(H2="BOOL","B10:"&QUOTIENT(SUM(I$2:I2) - 1,16)&"/"&MOD(SUM(I$2:I2) - 1,16),"F8:"&(SUM(J$2:J2) - 1))
3	=IF(H3="BOOL","XIC","COP")		=IF(H3="BOOL","OTE","QP_F8["&(SUM(J$2:J3) - 1)&"]")	=IF(H3="BOOL","QP_B10["&(SUM(I$2:I3) - 1)&"]",1)		=IF(H3="BOOL",1,0)	=IF(H3="LREAL",1,0)	=IF(H3="BOOL","B10:"&QUOTIENT(SUM(I$2:I3) - 1,16)&"/"&MOD(SUM(I$2:I3) - 1,16),"F8:"&(SUM(J$2:J3) - 1))
4	=IF(H4="BOOL","XIC","COP")		=IF(H4="BOOL","OTE","QP_F8["&(SUM(J$2:J4) - 1)&"]")	=IF(H4="BOOL","QP_B10["&(SUM(I$2:I4) - 1)&"]",1)		=IF(H4="BOOL",1,0)	=IF(H4="LREAL",1,0)	=IF(H4="BOOL","B10:"&QUOTIENT(SUM(I$2:I4) - 1,16)&"/"&MOD(SUM(I$2:I4) - 1,16),"F8:"&(SUM(J$2:J4) - 1))
5	=IF(H5="BOOL","XIC","COP")		=IF(H5="BOOL","OTE","QP_F8["&(SUM(J$2:J5) - 1)&"]")	=IF(H5="BOOL","QP_B10["&(SUM(I$2:I5) - 1)&"]",1)		=IF(H5="BOOL",1,0)	=IF(H5="LREAL",1,0)	=IF(H5="BOOL","B10:"&QUOTIENT(SUM(I$2:I5) - 1,16)&"/"&MOD(SUM(I$2:I5) - 1,16),"F8:"&(SUM(J$2:J5) - 1))

Figure 2 – (top) Excel spreadsheet that was used to auto-generate the code, inputs are highlighted in blue, (bottom) close up of the formulas used to assemble the Instruction mnemonics for each Ladder Rung

Each rung is written as follows: (a) Start of rung, (b) if the tag is a Boolean value, move it into the array using relay logic, (c) if it is a real value and can be moved using the MOV instruction and associated parameters, (d) end of rung. Since all the values needed to be placed in two distinct arrays – one for Booleans and one for Floats, it was very simple to keep count of indices on each. Each array has its elements numbered as [0], [1], [2], etc. Additionally, a column was added to record the array address, which was then imported back to the QuickPanel's tag database.

The 10 minutes of time required to put this together allowed much more time worth of manually written code to be generated in just seconds. Estimated time savings: 6 hours.

Populating Memory Register Data into PLC Code Files

In this example, we used text files (and a text editor) to side load a large number of memory register values into a PLC.

In most PLC programming environments there is usually an interface provided for hand-entering in data register values, both for offline and online editing. These PLC programming tools work well for entering a few values at a time or for viewing/editing values for troubleshooting. However, for entering large numbers of values, using these provided data file editing tools can quickly become tedious (and error prone). Thus when we needed to enter several 100 element lookup tables into a PLC to calculate water volumes in ellipsoid water towers, we needed to find a better way.

Since the PLCs we were using for this project were Allen-Bradley SLC500s, the programming environment was a package called RSLogix 500. The RSLogix 500 software provides several options for saving PLC code files. The first is the native .RSS file, which is a binary format. The second is a .SLC file, which although it is less space efficient, it has the feature of being in plant text. It is through the .SLC files that we were able to automate the task of entering in several 100 element lookup tables that will be used to calculate the volume of several ellipsoid water towers based on level readings.

So the next logical step would be to open up the SLC file in a text editor (for example, Notepad++) and start edit the memory register values in place, and then load it back into the PLC program. However, we decided to go one step further.

Our tool of choice was to use Microsoft Excel in conjunction with a text editor. Using the text editor, copied the memory register portions of the SLC file (were tab delimited across columns, and rows separated by Carriage Returns) into the clipboard. We then pasted these into Excel, and Excel automatically neatly organized the data values into columns/rows. The Excel interface was much easier/faster for editing the data value ranges. After the edits were complete, we then copied/pasted the data from Excel back into the SLC file. After a few minor formatting adjustments, we could then import this back into the SLC Program. Estimated time savings: 12 hours.

Food for thought: The nice thing about text files (and their cousin XML files) is that they are readily adaptable for a wide variety of editing techniques. Most modern PLC programming environments now have text-based or XML-based file import/export options. The real beauty of being able to use text files is that it provides the opportunity for any developer to make their own tools that are not offered within the usual PLC programming environment. Also, depending on the capabilities of the text export/import file format, there may be other aspects of the PLC program that could be manually edited using a text-based tool, such as ladder instructions, data file setup, program files, or other configuration aspects.

Data File F8 -- FLOAT -- Analog Input Scaled Values

Offset	0	1	2	3	4
F8:0	2209.045	10.20678	0.9186632	0.6409279	84.67496
F8:5	0	4.807195	507.2083	719.8068	17.45002
F8:10	0	0.5417366	3.245957	3.329141	1.373417
F8:15	0	-23.8806	1.192202	0.9785594	32.64917
F8:20	16.84725	12.61254	719.6816	2.524645	19.65918
F8:25	0	0	0	0	0
F8:30	0	0	919.8077	0	0
F8:35	0	480.141	0	0	0
F8:40	84.50328	1.373417	0	0	0
F8:45	104.5514	0.5951473	103.9562	716.6048	0
F8:50	0	0.01	6	16	0
F8:55	0	0	0	0	0
F8:60	430	11.58019	17.45918	1.373417	0
F8:65	-30.2	37.04	3200	13738	-28
F8:70	30	3000	11000	-30.2	37.04

Figure 3 – Snapshot of SLC file showing data register values organized in rows/columns – ideal for importing into a spreadsheet program like Excel for large scale edits

Deployment of Multiple SCADA View Terminals

In this example, virtual machines were used to rapidly deploy six new SCADA view terminals. Using virtual machines (VMs) that run on top of a hypervisor significantly reduces amount of time to deploy multiple similar computers.

Traditionally setting up a new SCADA view terminal would involve getting a new desktop computer, installing the operator system on it, tweaking the operating system settings, installing the SCADA view software, installing several helper application and hot fixes, and then configuring the SCADA software. The focus being consistency to ensure that the terminals are identical so the user experience would be consistent and correct. The entire process would typically take about 2-3 days to complete from start to finish, and have to be repeated for each SCADA view terminal.

Not wanting to spend 12-15 days setting up view terminals, we instead adopted a much more time efficient approach. We went to an existing SCADA view terminal and took an image from it in the form of a virtual machine (VM). We used a hypervisor utility to do this, and most hypervisors come with a VM creating tool such as this.

We then installed a copy of Windows 7 onto a new desktop machine, and installed the hypervisor software, which in our case was VMware Workstation. The next step was to copy over the VM over to the computer, configuring it to use a new static IP address, and installing the required licensing keys. Lastly, we added a script to automatically start up the VM and the SCADA software within it whenever the computer was powered on. For the rest of the terminals we just repeated the same process (including using a tool called Norton Ghost to copy the operating system images), which reduced our deployment time down to about 2 hours per view terminal.

Our last step was to prepare a document that outlined the entire process, which we saved into a project folder so we would have the tools and procedure readily available for next time. As part of this project we also made backup copies of the VM, so we can quickly/easily rebuilt a corrupted view terminal if the need arises. Estimated time savings: 60 hours

Why Time Savings are Important

When looking at most SCADA software development, the 80-20 Pareto rule usually applies. About 20% of the programming will be complex and require careful thought on how to design and program. The remaining 80% will often be mundane, and be tedious and time consuming to implement.

Ironically when it comes to debugging, the reverse is usually true: it's usually that 20% of the code (the complex part) that requires 80% of the effort during the testing/adjusting phase. Thus it's important to try to reduce the amount of time that has to be spent on programming mundane parts of SCADA programs; this will allow you to spend more time working on the more complex (and more interesting) portion of your code.

Guidelines for Identifying Time Saving Opportunities

Here are some guidelines how to identify opportunities for automating parts of your SCADA programming workflow:

Always get familiar with the software tools used on the job. Many offer import and export tools or additional file formatting options. This may provide alternate methods of data manipulation or data transfer between software. Text-based files and comma separated value files can sometimes be quicker to interact with than the default software tools provided by the vendor.

Keep an eye out for any discernable patterns that arise in work being done. Identifying task that have to be repeated over and over is usually a good indicator. One method is to take a few moments, before beginning any programming task, to think about how a computer might complete the job automatically. What inputs would it require? What output is desired? What processing or logic would be needed? Etc.

The most important factor to consider is the return on investment in terms of time. The time taken to develop an automated tool must be weighed against the time that would be saved with its use. If the investment doesn't appear to be worthwhile, are there other use cases that can be tied in? Can the task be broken down further to an automatic portion and manual portion? Some tasks may not be worth automating.

Make sure to document it! Regardless of whether your automated solution is a quick-and-dirty hack or a carefully-thought-out utility, always take the time to write up a short README file on how it works and how to use it. Also gather all the required files into a project folder, plus some examples. This will allow you to use to the tool again in the future, when no-one including yourself can remember how it was used the first time. This sort of documentation also comes in handy for future troubleshooting of automatically generated code.

Looking Ahead

No matter the project, there are usually opportunities to use automation to reduce the time and effort required to complete certain tasks on the job. Investing a little extra brainpower into the development process can yield big results. Just remember to actively evaluate each task as it manifests itself and always think about where development time can be saved.

About the Authors

Shawn Hustins is a third year engineering student at the University of Guelph. He recently completed a SCADA developer co-op placement at Guelph Water. Shawn, originally from Mississauga Ontario, is majoring in the B.Sc.(Eng.) Engineering Systems and Computing program. Contact: hustinss@uoguelph.ca

Graham Nasby, P.Eng, PMP, CAP holds the position of Water SCADA & Security Specialist at City of Guelph Water Services, a publicly-owned water utility located in Guelph, Ontario, Canada. Graham is the co-chair of the IS112 SCADA Systems standards committee. Contact: graham.nasby@guelph.ca

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 this year, LinkedIn has over 500 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**

Stratus

A PLATFORM FOR OPERATIONAL EXCELLENCE

Operationally simple, long lasting and continuously available data and application infrastructure

Stratus is the foundation for water and wastewater operations

Easy & Predictive
Maintenance

8+ Years
Average Life Cycle

99.999% Availability
& System Monitoring

To learn more, join us at the ISA Water and Wastewater Symposium or go to: www.stratus.com

SOCIETY NEWS

Leadership transition is a process - not a transaction

By Steve Pflantz, 2017 ISA Society President

The conclusion of ISA's annual Fall Leader's Meeting tends to signal that the end of the year is approaching and it's time to begin preparing for a new one.

At ISA, an important part of preparing for a new year is preparing for leadership transition. Each year, numerous Society leaders fulfill their leadership obligations and a new group of leaders are welcomed in to serve in these roles.

Leadership transition need not be problematic-either for the individuals or for the association at large. If thoughtfully planned and implemented, it can preserve the best of what is in place and open a path to new ways of thinking and improved results. It can help organizations grow and adapt and meet new challenges with imagination and enthusiasm.

With all that being said, though, it takes some effort and consideration to do it right. We've all experienced situations within ISA where leadership role transitions weren't handled as well as they could have been or should have been. I'll be the first to admit that I've fallen short in this area before.

Too often, the change in leadership is too abrupt. It occurs too frequently as a "handoff"-when it should be implemented in a deliberate, thoughtful manner-a true transition. This way, information, insights and experiences are shared. Questions are answered. Expectations are met.

So treat the leadership changeover as a process and not a transaction. Take the time to orient the new leader through a series of conversations or meetings. Furnish some written suggestions or reminders. Sure, there will be something you'll invariably miss, but it's a great start. You'll be doing what you can to help your fellow ISA succeed and, in the process, build on the positive momentum you've created.

After all, the demands of change-both in the marketplace and within the boundaries of ISA-are difficult enough. By effectively transitioning your ISA leadership role, you can make a real, direct and tangible difference in helping ISA move forward and more quickly address the challenges before it.

I encourage us all to work together to maintain some continuity and keep the Society focused on achieving its critical objectives. If we work as a team and engage our successors early, we're sure to keep the positive energy going.

Given that many positions are in transition, I want to again thank those who have given so much of their time and talents during 2017. I also want to sincerely thank those who are coming in to fill new roles. ISA is sure to benefit from your dedication and skills in the New Year.

Without the contributions of our members, we would not be able to function. You are our most important asset. Keep up the great work.

Steve Pflantz
2017 ISA President

About the Author

Steven W. Pflantz, PE, is an Associate in the St. Louis, Missouri office of CRB Consulting Engineers, Inc., a global consulting, design and construction services firm. He serves as a technical leader on many of CRB's electrical and automation design projects, applying his extensive electrical engineering experience—particularly in the areas of instrumentation and controls. A long-time ISA member and leader, Pflantz brings to his role as Society President a deep understanding of the automation profession, the needs and expectations of ISA members, and the value and significance of automation careers. In 2012 and 2013, he served as Vice President of ISA's Professional Development Department. He's also served on ISA's Executive Board (2008 and 2012) and as an ISA district vice president (2007 and 2008). In 2012, Pflantz was inducted into the Academy of Electrical and Computer Engineering at the Missouri University of Science and Technology. He's also a member of the International Society of Pharmaceutical Engineering (ISPE). Pflantz received a bachelor's of science degree in electrical engineering from the Missouri University of Science and Technology.

AUTO-QUIZ: BACK TO BASICS

Review of Bubbler-Based Level Sensors

The Question:

To measure current in a circuit, without a clamp on probe, you must measure in _____, and the circuit must be _____.

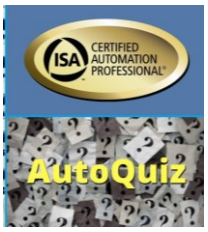
A. parallel, de-energized
B. series, de-energized
C. parallel, energized
D. series, energized

The Answer:
The correct answer is ***D***, series and energized. To measure current, you must connect the two leads of the ammeter in the circuit so that the current flows through the ammeter. In other words, the ammeter must become a part of the circuit itself. The only way to measure the current flowing through a simple circuit is to insert your ammeter into the circuit (in series) with the circuit energized.

Reference: Goettsche, L.D. (Editor), *Maintenance of Instruments and Systems, Second Edition*, ISA, 2005.

This sample question was originally appeared in the Sept/Oct 2017 issue of ISA InTech. Reprinted with permission.

This automation industry quiz question came from the ISA Certified Control Systems Technician Program.



ISA CAP and CCST certification programs provide a non-biased, third-party, objective assessment and confirmation of an automation professional's skills. The CAP exam is focused on direction, definition, design, development/application, deployment, documentation, and support of systems, software, and equipment used in control systems, manufacturing information systems, systems integration, and operational consulting. Click this link for information about the CAP program. The following question comes from the CAP study guide, Performance Domain VI, Operations and Maintenance. Long-term support of the system.

Certified Control System Technicians (CCSTs) calibrate, document, troubleshoot, and repair/replace instrumentation for systems that measure and control level, temperature, pressure, flow, and other process variables.

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" or 8.5"x11"): $600
- Half page, full color (7"x4.5" or 3.5"x9"): $300
- Quarter page, full color (3.5" W x 4.5" H): $150

Per year (4 issues):
- Full page, full color, 4 issues (25% discount): $1800
- Half page, full color, 4 issues (25% discount): $900
- Quarter page, full color, 4 issues (25% discount): $450

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.

WWID Board Member Contacts

Director
& Asst. Newsletter Editor
Kevin Patel, PE, MBA
Signature Automation
Tel (469) 619-1241
knpatel@sig-auto.com

Director-Elect
& 2016 and 2017 Symposium Chair
Pavol Segedy, PE
HDR Inc.
Tel: (919) 427-5313
psegedy@nc.rr.com

2018-2019 General Symposium Chair
Don Dickinson
Phoenix Contact
Tel: (919) 633-0147
ddickonson@phoenixcon.com

2018-2019 Assistant Symposium Chair
Manoj Yegnaraman, PE, CP/CE(Profibus)
Carollo Engineers Inc.
Tel: (972) 239-9949 ext. 44424
myegnaraman@carollo.com

Secretary Treasurer
David Wilcoxson, PE
Stantec Consulting Inc
Tel: (925) 627-4561
david.wilcoxson@stantec.com

Membership Chair
Juliana Wafer
Signature Automation
Tel (469) 619-1241
jowafer@sig-auto.com

Program Chair
Joe Provenzano
KPRO Engineering Services
Tel: (203) 560-1816
provenzano2@comcast.net

Newsletter Editor
& Co-chair of ISA112 SCADA System Standards Committee
Graham Nasby, P.Eng, PMP, CAP
City of Guelph Water Services
Tel: (519) 822-1260 ext. 2192
graham.nasby@grahamnasby.com

Committee Member
David Hobart, P.Eng, CAP
Hobart Automation Engineering
Tel (802) 253-4634
dgh@sterlingvalley.com

Committee Member
Ryan Costello
NLS Engineering
Tel: (905) 741-2796
rcostello@nlsengineering.com

Symposium Program Committee Members
Joe Provenzano, KPRO Engineering Services (chair)
Paul McGuire, Northeast Ohio Regional Sewer District (NEORSD)
Jon Grant, Woodard & Curran Inc.
Tony Morelli, Publix Supermarkets Inc.
Bob Dusza, Manchester Water and Sewer Dept. (Connecticut, USA)
Joshua Gelman, CDM Smith
Dave Hobart, Hobart Automation Engineering
Carter Farley, InstruLogic LLC
Paul Lanzillotta, Consultant
Jason Hamlin, Lynchburg Regional Wastewater Treatment Plant
Vickie Olson, Honeywell Process Control
Graham Nasby, City of Guelph Water Services
Kevin Patel, Signature Automation
Matt Phillips, City of Guelph Water Services
Emile Richard, Portland Water District (Maine, USA)
Pavol Segedy, HDR
Don Dickinson, Phoenix Contact USA
Maxym Lachance, TetraTech
Lucas Jordan, MR Systems
David Wilcoxson, Stantec

Student Scholarship Committee Members
Kevin Patel, Signature Automation (chair), knpatel@sig-auto.com
Sean McMillan, Jones & Carter, sean.mcmillan@jonescarter.com
Steve Valdez, General Electric, svaldez1210@gmail.com
Kevin Patel, Signature Automation, knpatel@sig-auto.com
Thomas C. McAvinew, I&C Engineering, incengrg@centrylink.net

ISA Staff Contact
Kimberly Belinsky
ISA Headquarters, Research Triangle Park, North Carolina
Tel: (919) 990-9404
Fax: (919) 549-8288
kbelinsky@isa.org

2018 Symposium Details
Date: Tues-Thurs, August 7-9, 2018
Location: Bethesda, Maryland, USA (near Washington DC)
Venue: Hyatt Regency Bethesda
General Symposium Chair: Don Dickinson
Assistant Symposium Chair: Manoj Yegnaraman
Website: www.isawwsymposium.com

Future Symposium Dates – Save the Date
2019: August 6-8, 2019 – we return to Orlando, Florida, USA
2020: August 4-6, 2020 – California, USA (City TBD)
2021: August 3-5, 2021 – we return to Orlando, Florida, USA

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. The division also publishes a quarterly newsletter, and has a scholarship program to encourage young people to pursue careers in the water/wastewater automation, instrumentation and SCADA field. For more information see **www.isa.org/wwid/**