Water/Wastewater Industry Division

Setting the Standard for Automation™

Calendar of WWID Events

Aug 8-10, 2017 **2017 ISA Water/Wastewater and Automatic Controls Symposium**
Wyndham Lake Buena Vista Resort
Orlando, Florida, USA

Oct 28-30, 2017 **ISA Fall Leaders Meeting & 55th ISA Honors & Awards Gala**
Grant Hyatt Tampa Bay
Tampa Bay, Florida, USA

In this Issue

Newsletter Spring/Summer 2017

Director's Welcome

Kevin Patel, Signature Automation

Welcome to the Spring/Summer 2107 issue of our Water/Wastewater Industry Division newsletter. Planning for our 2017 Symposium is now complete, and I invite you to view the details about this year's event in this newsletter issue. We have a strong keynote this year, a full technical program, and a wide variety of exhibitors. As always, our symposium is the only event in North America devoted to the use of SCADA technology in the water/wastewater sector.

I would like to take this opportunity to thank one of our long time volunteers for his many, many years of service. Michael Fedenyszen has been a dedicated member of our WWID board for many years by spearheading our student scholarship and other activities. Unfortunately Michael passed away suddenly in May 2017. Michael was a dedicated volunteer and he will be missed. Our thoughts and prayers go out to his family.

As you read through these pages, I encourage you to take a look at our 2017 symposium's technical program, training courses, and exhibitors. It's not too late to register!

Thanks,

Kevin Patel, PE
knpatel@sig-auto.com

Newsletter Editor's Welcome

Graham Nasby, City of Guelph Water Services

Greetings! In our Spring/Summer 2017 issue you will read about our upcoming symposium, what our WWID has been up to recently, and how the ISA Water/Wastewater Division has been taking a leadership position with respect to the newly formed ISA112 SCADA System Standards Committee.

It continues to be a pleasure to serve as the WWID newsletter editor. One of the influential people who got me involved with the ISA water/wastewater division was Michael Fedenyszen. Many of you have heard the sad news that Michael passed away recently. Michael will be 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. I encourage all of you to also make the time so that you can encourage and mentor our next generation of automation professionals and volunteers.

In addition to our symposium articles, I encourage you to look to this issue's technical article on how to provision spare I/O in field bus systems. It is not as easy as it seems!

Warmest Regards,

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

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INSPIRING INNOVATIONS

Message from your Director-Elect

Pavol Segedy, HDR Inc.

You, our WWID members, have probably heard new terms such as IoT (Internet of Things) and IIoT (Industrial Internet of Things) within the last year. The technology advancements and push for interconnecting field devices to our plant control systems are growing. So, what are the potential benefits of using IIoT for your maintenance operations? Advocates for this, cite many times that labor and material saving advantages include:

- Interfacing with the computerized maintenance management system (CMMS) to provide work orders based on current conditions
- Links to maintenance inventory to call out parts needed for condition-based maintenance requirements
- Real-time readouts via handheld devices improve effectiveness of time spent on inspection rounds
- More detailed feedback to operators
- Providing follow-up on maintenance and activity to verify it was completed correctly and on schedule

Plant managers need to collaborate with operation, engineering, and maintenance to assess hardware and connectivity requirements as well as implantation costs and data security measures. You will need to address integration and communication with existing equipment.

That being said, I am fortunate to lead this year's symposium along with the program committee. During our symposium, you will hear a few speakers addressing IoT and IIoT in more detail.

Please keep reading this newsletter regarding our upcoming 2017 WWAC Symposium that is scheduled for August 8-10, 2017 in Orlando, Florida. The symposium is a great place to meet new professionals and network with people within our industry. You will gain great knowledge that will help you become better in your automation profession.

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!

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

Upcoming Events

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

AWWA ACE 2017
June 11-14, 2017
Philadelphia, Pennsylvania, USA

ISA WWAC Symposium 2017
August 8-10, 2017
Orlando, Florida, USA
Venue/Hotel: Wyndham Lake Buena Vista Resort

ISA112 SCADA Standards Committee Meeting
Monday, Oct 30, 2017 – Grand Hyatt Tampa Bay
ISA Fall Leaders Meeting
Tampa Bay, Florida, USA

WEFTEC 2017
Sept 30 – Oct 4, 2017
Chicago, Illinois, USA

ISA WWAC Symposium 2018
August 7-9, 2018
Bethesda, Maryland (15 mins from Washington DC)
Venue/Hotel: Hyatt Regency Bethesda

2017 ISA Water/Wastewater and Automatic Controls Symposium
AUGUST 8 - 10, 2017

Wyndham Lake Buena Vista Resort • Orlando, FL

COME SEE WHAT'S TRENDING!

This symposium provides an excellent opportunity to gain valuable technical information, networking, professional development, and training. Offering affordable professional development and the opportunity to help meet continuing education requirements in an invigorating environment for only $450 for the three day symposium.

Discounts available for FSAWWA, FWEA, AWWA, WEF, ITA and ISA members.
Includes breakfast, lunch and evening reception

- Two Full Days of Presentations
- Water/Wastewater Facility Tour
- General Reception
- Networking Events
- Optional Training Courses
- Supplier Showcase

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PHOENIX CONTACT
INSPIRING INNOVATIONS

DELTA
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Invited Speaker:
Saadi Kermani
Global Business Development Manager - Industrial Information Management, Schneider Electric
Your Machines Are Talking, Are You Listening?

Invited Speaker:
Thomas Burke
President, OPC Foundation
Start Building Practical Field-to-Enterprise IIoT Connectivity with OPC UA

Instrumentation Workshop:
Water and Wastewater Process Instrumentation Fundamentals

WEF Guest Speaker:
Tom DeLaura, PE
Past Chair, WEF Automation and Info Tech Committee
President/CEO, DeLaura Consulting

AWWA Guest Speaker:
Mike Sweeney, PhD, PE
Deputy Executive Director, Toho Water Authority

Symposium Chair:
Pavol Segedy, PE
Lead Automation Engineer, HDR

Program Chair:
Joe Provenzano
General Manager, KPRO Engineering

Florida Water Environment Association

Water Environment Federation
the water quality people

American Water Works Association
Florida Section

www.isawwsymposium.com

2017 Symposium Planning Update

By Pavol Segedy, 2017 Symposium Chair

Planning activities for 2017 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 and hands-on instrumentation workshop. 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 2017 ISA WWAC Symposium will be **Steve Davis**. He will deliver a presentation to our attendees about "**The Journey of Digital and Its Ties to Automation**". With the growing adoption of new technologies in both the industrial and municipal sectors come several early success stories. GE Water & Process Technologies uses advanced sensors to feed up-to-the minute tank data into Asset Performance Management (APM) software. This enables the business to actively monitor water treatment chemical consumption and inventory levels, and automate inventory reorder/replenishment through integration with critical business systems, including ERP software.

Mr. Davis provides strategic direction and program management for the business' digital water initiative, and the innovation and growth for its Software as a Service (SaaS) platform. His main role is to expand Water & Process Technologies' leadership in the digital industrial space.

Our keynote speaker joined Water & Process Technologies in 2005 as part of the Commercial Leadership Program and has held numerous roles with increasing responsibility for product management, commercial operations, technical sales and engineering. He has spent the last 5 years defining and growing Water & Process technologies' Industrial Internet strategy.

Mr. Davis is as a member of the Water Environment Federation (WEF), the Smart Water Network (SWAN), and the American Water Works Association, and works with other various associations and utilities to propel digital water innovation.

Mr. Davis earned a Bachelor of Science degree in business management from Kutztown University in 2005 and has over 10 years of experience in water applications, asset performance management and software as a service business model development.

Other notable speakers in the 2017 WWAC symposium technical program include:

Saadi Kermani, Global Business Development Manager, Schneider Electric, will deliver a talk about the 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.

Thomas Burke, President and Executive Director, OPC Foundation, will provide information on IIoT in several water and wastewater industries. Many complex challenges are facing the world today. There is high demand and even higher expectations for the utilization of IIoT to address the growing need for water and waste water management solutions. Confronted with aging infrastructure, declining revenues, increasing service-level expectations and complex regulations it is becoming ever more apparent that leveraging the world of IOT to combat these problems head on is the only way to even think about infrastructure modernization/expansion and any sort of technology upgrades.

Corey Williams, President and CEO of Optimatics, and **Barry Liner**, Director of WEF's Water Science & Engineering Center will deliver a talk about the next generation of utility employees and customers. In the coming years, the growing population and workforce will shift from Baby Boomers to the emergence of Millennials. With this change in atmosphere, society is demanding an instantaneous and on-demand life style. Smart Utilities, or Intelligent Water Systems (IWS), seek to leverage this 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.

Charles Aycock, Melody White, **Tracy Doane-Weideman**, **Bob Dabkowski** and **Steve Smith** will lead Hands-On Instrumentation Workshop. They will provide 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 will be used to demonstrate analyzer technology limitations, misapplications, and trouble-shooting. Proper instrument placement for different process configurations will also be presented.

Michael Sweeney, Deputy Executive Director of Toho Water Authority, will provide an update on the AWWA current news and trends.

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

Registration is 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.

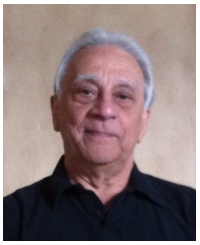
About the Symposium

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 storm water.

VISIT OUR SYMPOSIUM WEBSITE
www.isawwsymposium.com

Greetings from Symposium Program Chair

By Joe Provenzano



On behalf of the entire program committee, I would like to formally welcome you to this year's 2017 WWAC Symposium. Our focus is to help professionals in the water and wastewater industries gain a greater understanding of how automatic control applications, utilizing the latest in instrumentation and intelligent controls technology, can be applied to improve both process measurement water and wastewater processing, collection, treatment, and distribution.

Our symposium is a three day event where attendees will experience a breath of learning and continuing education opportunities. Our symposium starts with two optional training courses. This is followed by early-bird symposium badge-pick up and a plant tour. Then we have two full days dedicated to technical presentations. In addition to our 30+ technical speakers, we have an informative keynote opening, invited speakers, and guest speakers are part of our program.

I also encourage you to visit our exhibit hall, talk with our sponsors, and network with your fellow attendees. From these interactions you will find out about new techniques, products and approaches to your daily automation challenges.

We are pleased to welcome the full range of automation professionals in our sector to our symposium. This includes both plant people, including operations, maintenance, engineering and management, as well as plant designers, instrumentation specialists, and system integration firms. Please take advantage of the professional development opportunities afforded to you by our symposium.

If you have a water or wastewater operator license, make sure to fill out the paperwork to get your FDEP-approved CEUs/PDHs from the Florida AWWA. Out of state operators can get their CEUs recognized thanks to reciprocity agreements between the various sections of the AWWA and members associations of WEF. If you have your ISA CCST or CAP certification, don't forget to request your ISA training certificate.

Come join us!

Joe Provenzano
Program Committee Chair
2017 ISA Water/Wastewater and Automatic Controls Symposium

2017 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 7-8, 2017

- Optional 2-day course: **IACS Cybersecurity Operations & Maintenance: Secure Your Control System (IC37)**
- Optional 1-day course (Monday): **Introduction to the Management of Alarm Systems (IC39C)**
- Symposium Registration
- Pepsico-Gatorade Plant Tour (Tuesday afternoon)

Wednesday, August 9, 2017

- Keynote speaker
- Guest Speaker
- Presentations and Papers
- Hands-On Instrumentation Workshop
- Light Breakfast, Coffee Breaks and Buffet Lunch Provided
- Supplier Showcase & Vendor Presentations
- Evening Reception

Thursday, August 10, 2017

- Invited & Guest Speakers
- Presentations and Papers
- Hands-On Instrumentation Workshop
- Light Breakfast, Coffee Breaks and Buffet Lunch Provided
- 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.

Symposium Keynote Speaker
Steve Davis from GE Water & Process Technologies

The symposium committee is pleased to announce that **Steve Davis**, will be our **keynote speaker** for the 2017 ISA water/wastewater symposium. He will be presenting his keynote address on **Wednesday, August 9, 2017 at 8:15am**.

KEYNOTE TOPIC:

The Journey of Digital and Its Ties to Automation

The digital revolution of water is here, but the industry didn't get there overnight. The history of digital began with automation, using simple sensors and other tools that helped operators collect and monitor data at a basic level. Now, more advanced wireless technologies and sensors are enabling advancements in real-time monitoring, predictive and preventative maintenance, system integration, and asset & operational optimization, among others.

With the growing adoption of these technologies in both the industrial and municipal water sectors come several early success stories. GE Water & Process Technologies uses advanced sensors to feed up-to-the minute tank data into Asset Performance Management (APM) software. This enables the business to actively monitor water treatment chemical consumption and inventory levels, and automate inventory reorder/replenishment through integration with critical business systems, including ERP software.

About the Speaker

Steve Davis is the Business Development Leader at GE water & Process Technologies. He provides strategic direction and program management for the business' digital water initiative, and the innovation and growth for its Software as a Service (SaaS) platform. His main role is to expand Water & Process Technologies' leadership in the digital industrial space.

Steve joined Water & Process Technologies in 2005 as part of the Commercial Leadership Program and has held numerous roles with increasing responsibility for product management, commercial operations, technical sales and engineering. He has spent the last 5 years defining and growing Water & Process technologies' Industrial Internet strategy.

Steve is as a member of the Water Environment Federation (WEF), the Smart Water Network (SWAN), and the American Water Works Association. Steve earned a Bachelor of Science degree in business management from Kutztown University in 2005 and has over 10 years of experience in water applications, asset performance management and software as a service business model development.

Earning CEUs and PDHs
Continuing Education Credits at the Symposium

At the 2017 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**
- **IACS Cybersecurity Operations & Maintenance: Secure Your Control System (IC37) - 1.4 CEUs**
- **Introduction to the Management of Alarm Systems (IC39C) - 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 2017 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.

ISA Water/Wastewater Industry Division

American Water Works Association Florida Section

Water Environment Federation the water quality people

Optional Symposium Training Course

Monday, August 7, 2017 (1 day course)
Introduction to the Management of Alarm Systems (IC39C)
Instructor: Nick Sands, PE, ISA Fellow – bio
Credits: 0.7 CEUs / 7 PDHs
Course Fee: $650 ISA Members, $815 List Price
Full details: http://isawwsymposium.com/training-courses/

Register at www.isawwsymposium.com/register/

About the Course

This course focuses on the key activities of the alarm management lifecycle provided in the ANSI/ISA18.00.02 standard, Management of Alarm Systems for the Process Industries. The activities include the alarm philosophy development, alarm rationalization, basic alarm design, advanced alarm techniques, Human Machine Interface (HMI) design for alarms, monitoring, assessment, management of change, and audit.

About the Instructor

Nick Sands is currently a process control engineer working for DuPont's Kevlar® and Nomex® businesses. In his 19 years with DuPont he has been a business process control leader, site process control leader, process control consultant, and plant control engineer in several different businesses.

Over the last 18 years, Nick has worked on several alarm management projects, both for new plants and existing plants. He led two company alarm management teams from the early 1990s to the early 2000s. He is the author of DuPont's best practices on alarm management.

Nick is co-chair of Standards & Practices committee 18 working on alarm management, and was the lead editor for the new standard, ANSI/ISA-18.02-2009, Management of Alarm Systems for the Process Industries. He followed Vernon Trevathan as editor for ISA's The Guide to the Automation Body of Knowledge as well as authoring the chapter on alarm management.

Nick's path to instrumentation and control started when he earned his BS in Chemical Engineering from Virginia Tech. When not working, or reading, Nick and his wife Ruth run a recreational sled dog team.

Optional Symposium Training Course

Mon-Tues, August 7-8, 2017 (2 day course)
IACS Cybersecurity Operations & Maintenance: Secure Your Control System (IC37)
Instructor: Bryan Singer, CISM, CISSP – bio
Credits: 1.4 CEUs /14 PDHs
Course Fee: $2,000 ISA Members, $2,500 List Price –
Full details: http://isawwsymposium.com/training-courses/

Register at www.isawwsymposium.com/register/

About the Course

The third phase in the IACS Cybersecurity Lifecycle (defined in ISA 62443-1-1) focuses on the activities associated with the ongoing operations and maintenance of IACS cybersecurity. This involves network diagnostics and troubleshooting, security monitoring and incident response, and maintenance of cybersecurity countermeasures implemented in the Design & Implementation phase. This phase also includes security management of change, backup, and recovery procedures and periodic cybersecurity audits. This course will provide students with the information and skills to detect and troubleshoot potential cybersecurity events as well as the skills to maintain the security level of an operating system throughout its lifecycle despite the challenges of an ever-changing threat environment.

About the Instructor

Bryan Singer has over 15 years' experience in information technology security including 7 years specializing in industrial automation and control systems security, critical infrastructure protection, and counter-terrorism. Mr. Singer's background focuses on software development, network design, information security, and industrial security. Industry experience includes healthcare, telecommunications, water/wastewater, automotive, food and beverage, pharmaceuticals, fossil and hydro power generation, and oil and gas industries.

Mr. Singer has specialized in process intelligence and manufacturing disciplines such as historians, industrial networking, Power and Energy Management (PEMS), Manufacturing Enterprise Systems (MES), Laboratory Information Management Systems (LIMS), Enterprise Resource Planning (ERP), and Condition Based Monitoring (CBM). He began his professional career with the US Army as an Intelligence Analyst. Mr. Singer has worked for various companies such as EnteGreat, Rockwell Automation, FluidIQs, and Wurldtech before joining Kenexis Consulting and co-founding Kenexis Security in 2008. He is also the co-chairman of ISA-99 Security Standard, a former board member of the Department of Homeland Security's Process Control Systems.

2017 Detailed Symposium Program Schedule

The Symposium program committee is pleased to announce the full technical program for the 2017 WWAC Symposium

Monday, August 7, 2017

8:00am-4:00pm	IACS Cybersecurity Operations & Maintenance: Secure Your Control System (day 1 of 2)*
8:00am-4:00pm	Introduction to the Management of Alarm Systems (1 day)*

Tuesday, August 8, 2017

8:00am-4:00pm	IACS Cybersecurity Operations & Maintenance: Secure Your Control System (day 2 of 2)*
12:00pm-12:30pm	**Early Symposium Registration & Badge Pick-Up**
2:00pm-6:00pm	Tour of Treatment Plant (transportation provided)**

** Short courses are optional. Separate course registration required.*
*** Limited capacity on tour. Tour bus leaves from hotel lobby. Invitations will be sent out 3 weeks prior to tour to registered symposium attendees. RSVP required.*

Wednesday, August 9, 2017

7:00am	**Registration, Badge Pick-up, & Breakfast**	
8:00am	**Opening Remarks**	
8:15am	Keynote Speaker **The Journey of Digital and Its Ties to Automation** Steve Davis, Business Development Leader, GE Water & Process Technologies – view abstract	
9:00am	Guest Speakers **Critical Considerations for Successfully Transitioning to a "Smart Utility": Implementing Intelligent Water Systems** Corey Williams, President and CEO, Optimatics Barry Liner, Ph.D., P.E., BCEE, Director of WEF's Water Science & Engineering Center – view abstract	
9:30am	Guest Speaker **AWWA Current News and Trends** Michael Sweeney, Ph.D., Deputy Executive Director, Toho Water Authority – view abstract	
9:45am	**Coffee Break & Exhibits**	
	Track 1	**Track 2**
10:30am	**Big Data and Business Intelligence 101** Travis Detherage, WaterOne – view abstract	**How to Decide Whether to Upgrade or Replace Your SCADA System** G. Mike Stoup, P.E., McKim & Creed, Inc. Eric Brown, McKim & Creed, Inc. – view abstract
11:00am	**Mission Critical Systems Data Security and Regulatory Compliance in the Cloud** Goran Novkovic, MSc, ITIL, CQA, CSQE, PEng, APM, PMP, Toronto Water – view abstract	**Intelligent Process Control Improvement Strategy to Shave and Save Energy** Daniel J. Sheldon, P.E., Xylem- view abstract
11:30am	**Lessons from the Field, a Pen Tester's Adventures in Water Sectors and ICS** Bryan Singer, CISSP, CAP, IOActive – view abstract	**Case Study: WTP2 PLC Upgrade Project: As-builting, Design, Fabrication, Installation, Testing & Commissioning** Benjamin Egger, P.E., Alameda County Water District – view abstract
12:00pm	**Lunch & Exhibits**	

Wednesday, August 9, 2017 (continued)

1:00pm	**Enterprise Asset Management Using SCADA, Workflows, Work Order Management Systems and GIS** Kerry Lee Schrank, Gray Matter Systems – view abstract	**Measuring Pressure in Challenging Environments** David Dlugos, Ashcroft, Inc. – view abstract
1:30pm	**Implementation of Automation Projects Using a SCADA Master Plan** Manoj Yegnaraman, P.E., Carollo Engineers, Inc. Norman Anderson, P.E., Westin Engineering, Inc. Jeff Martin, Carollo Engineers, Inc. – view abstract	**Implementation of Real Time Pump Efficiency and Optimization System** Adam Plumstead, Eramosa Engineering Michael O'Meara, Regional Municipality of York Matt Spitzig, Regional Municipality of York – view abstract
2:00pm	**Transformation in plant operator process perception through implementation of HMI standards based on ISA 101** Dean Ford, P.E., CAP, Westin Engineering, Inc. John Dulebohn, Public Utilities Department, City of Anaheim – view abstract	**Advanced Management of Remote Lift Stations** William Moulton, Schneider Electric – view abstract
2:30pm	**Defending Against Cyber Attacks** Richard Witucki, Schneider Electric Daniel DesRuisseaux, Schneider Electric – view abstract	**Process Control Loops at a Water Resource Recovery Facility: Goals, Tuning, Benefits, and Interactions** Oliver Schraa, inCNTRL Solutions, Inc. Matthew Gray, AECOM – view abstract
3:00pm	**Coffee Break & Exhibits**	
3:45pm	**I-o-T Spells Change for Our World – And Work** Don Dickinson, Phoenix Contact – view abstract	**Instrumentation Workshop – pH, ORP, DO, Turbidity, TSS Fundamentals** Instrumentation Workshop Speakers – view abstract
4:15pm	**Industrial and Automation Communication Protocols in the Age of IIoT** Alan Hudson, Trihedral – view abstract	**Instrumentation Workshop – pH, ORP, DO, Turbidity, TSS Fundamentals** Instrumentation Workshop Speakers – view abstract
4:45pm	**Turning Data into Information** Hassan Ajami, Process Control & Instrumentation Biren Saparia, Great Lakes Water Authority – view abstract	**Instrumentation Workshop – pH, ORP, DO, Turbidity, TSS Fundamentals** Instrumentation Workshop Speakers – view abstract
5:15pm	**General Reception and Cash Bar**	

Thursday, August 10, 2017

7:00am	**Breakfast**
8:00am	**Opening Remarks**
8:10am	Preview of next year's 2018 ISA Water/Wastewater and Automatic Controls Symposium
8:15am	Invited Speaker **Your machines are talking, are you listening?** Saadi Kermani, Global Business Development Manager, Schneider Electric – view abstract
8:45am	Invited Speaker **Optimizing Water/Wastewater Operation via Industry Standards embracing IIoT** Thomas Burke, President & Executive Director, OPC Foundation – view abstract
9:15am	Guest Speaker **How ISA Supports Automation Professionals in the Water and Wastewater Sector** Thomas W. Devine, CEM, CAP, LEED AP, GHD Consulting Engineering Services Inc. – view abstract
9:30am	2016 Water Wastewater Automatic Control Symposium / Water Wastewater Industry Division Awards
9:45am	**Coffee Break & Exhibits**

Thursday, August 10, 2017 (continued)

	Track 1	Track 2
10:30am	**Industrial Internet of Things and Hybrid Control Systems** Jose Pina, Schneider Electric Francois Bravo, Schneider Electric – view abstract	**Instrumentation Workshop – Ammonia, Nitrate, Phosphorous, Chlorine Fundamentals** Instrumentation Workshop Speakers – view abstract
11:00am	**Beyond High Performance HMI** Lucas Jordan, MR Systems Robert Touchton, MR Systems – view abstract	**Instrumentation Workshop – Ammonia, Nitrate, Phosphorous, Chlorine Fundamentals** Instrumentation Workshop Speakers – view abstract
11:30am	**Object Oriented SCADA** Nate Powell, P.E., Custom Controls Unlimited, Inc. Robert J Shull, P.E., CAP, Custom Controls Unlimited, Inc. – view abstract	**Instrumentation Workshop – Ammonia, Nitrate, Phosphorous, Chlorine Fundamentals** Instrumentation Workshop Speakers – view abstract
12:00pm	**Lunch & Exhibits**	
1:00pm	**SCADA Zero to SCADA Hero** Jason Hamlin, City of Lynchburg, VA Carter Farley, P.E., InstruLogic, LLC – view abstract	**Instrumentation Workshop – Chlorine Fundamentals** Instrumentation Workshop Speakers – view abstract
1:30pm	**Comparison of IoT Connectivity Protocols** Tom McKinney, HMS Industrial Networks – view abstract	**Instrumentation Workshop – Problem Solving Using Instrumentation Fundamentals** Instrumentation Workshop Speakers – view abstract
2:00pm	**Unveiling Security Gaps in Industrial Control Systems and Critical Infrastructure** Mille Gandelsman, Indegy Chris Grove, Indegy – view abstract	**Instrumentation Workshop – Problem Solving Using Instrumentation Fundamentals** Instrumentation Workshop Speakers – view abstract
2:30pm	**Lessons From The Ukraine Cyberattacks, Protecting critical infrastructure against the new cyber-attacks** Michael H. Firstenberg, Waterfall Security Solutions – view abstract	**Instrumentation Workshop – Cost of Ownership** Instrumentation Workshop Speakers – view abstract
3:10pm -3:30pm	**Closing Remarks / Symposium Wrap-Up**	

2017 Symposium of Exhibitors & Sponsors

Exhibitors (Preview List)

- Ashcroft
- Bay Measurements
- Bedrock: Secure Industrial Automation
- Belden
- Delta Products Corporation
- Endress+Hauser
- Gray Matter Systems
- Hach
- HMS
- MS Industrial networks
- MTE Corporation
- Phoenix Contact
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WATER DESALINATION REPORT

About the Symposium Hotel

The 2017 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 $109/night hotel rate for attendees. This rate is good from August 6 to 14, and is available for symposium attendees, speakers, exhibitors, and training course participants.

Wyndam 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: $109 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.

2017 WWAC Symposium Hotel – Wyndham Lake Buena Vista Resort

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 8-10, 2017) includes:

- 2 full days of papers and presentations
- Hands-On Instrumentation Workshop
- networking events
- tour of a local water/wastewater afternoon of Tues, Aug 8
- admission to supplier showcase
- light breakfasts on Aug 9 and Aug 10
- full buffet lunches on Aug 9 and Aug 10
- evening reception on Wednesday, Aug 9 with cash bar and 2 free drink tickets
- name badge
- list of attendees with contact information
- copy of symposium proceedings
- There are also two optional training courses (additional course fees applies)

Full Symposium registration
List Price..... $450
ISA Members: $350
AWWA / FSAWWA members $400
WEF / FWEA / ITA members: $400
Students: $150
Authors/Speakers:..... $150
Note: Add $25 to above fees after July 1, 2017

Optional Training Courses (Aug 7-8):

IACS Cybersecurity Operations & Maintenance: Secure Your Control System (IC37) – Mon-Tues August 7-8 (2 days)
List Price: $2500, ISA Member Price: $2000

Introduction to the Management of Alarm Systems (IC39C) – Monday, August 7 (1 day)
List Price: $815, ISA Member Price: $650

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WWID NEWS

2017 ISA Spring Leaders Meeting

By David Wilcoxson, WWID Secretary-Treasurer

Every year the ISA holds a Spring (and Fall) Leaders Meeting. The 2017 Spring Leaders Meeting was held on May 6th -8th at the Raleigh Marriott Crabtree Valley in Raleigh, North Carolina. Officially, the Spring Leaders Meeting is a gathering of elected and appointed department and division directors, Assembly members, and Executive Board members to conduct Society business and promote face-to-face interaction among leaders. It is also a chance to catch up with friends and colleagues from other parts of ISA and an opportunity to meet informally with the leaders of the ISA organization. This year's meeting was also the venue for our own WWID Board Meeting. The location of the meeting also enabled various ISA Headquarters staff to attend and connect with all of the volunteers from out of town.

The meeting's kickoff session began with welcoming remarks to all of the attendees from ISA's new President, Steve Pflantz, who was introduced to us all in our winter newsletter. We heard from Pat Gouhin, ISA's Executive Director and CEO, Tom Devine, Society Treasurer, who spoke on the state of the society, the society's finances and operations. Jim Keaveney, Automation Federation (AF) Chair as well as Mike Marlowe, AF Director and our own Jon DiPietro, Automation.com Board Member and Rick Zabel, the Director of Automation.com spoke on the state of AF and Automation.com respectively.

2017 ISA Spring Leaders Meeting Kick-off Session

The meeting continued over the next two days with various interactive sessions, including a group professional development session for all staff and volunteers about mentoring, led by guest speaker Dr. Wendy Hamilton Hoelscher, who spent most of her career with GE's Aerospace Division. Specific sessions continued for the Professional Development, Strategic Planning, Image and Membership as well as the Automation and Technology (A & T) and Industry and Sciences (I & S) (which WWID is part of) Departments. Also, the Technical Search Committee and Geographic, Operational and Technical Assemblies all had their own sessions. All of the sessions were open to observers outside of the members of each, which gave a great opportunity to all attendees to view the inner workings of the society.

Additionally, several of the ISA technical committees, including ISA 18, 96, 101 and 104 and the newest 112 - SCADA Systems, chaired by our own Graham Nasby held their meetings.

Every SLM day was packed

Not all of the proceedings were of a technical nature. On Saturday night, all meeting attendees were invited to be present at a dinner, the highlight of which was a game show that featured as one of the two contestant's one of our own, Kevin Patel. Kevin, against all odds, ended up winning the show. Congratulations again Kevin!

All in all, it was a great meeting, especially if you have ever wanted to know how to get involved with your society. If you are considering looking at how you can volunteer to help the society progress its goals of moving the automation community forward and grow your own career, consider attending the upcoming Fall Leaders meeting on October 28th to the 30th at the Grand Hyatt Tampa Bay, Tampa Bay, Florida.

I look forward to seeing everyone at the 2017 ISA WWAC Symposium in Orlando, Florida.

About the Author

David Wilcoxson, PE has over 35 years of experience in various instrumentation and control environments in the water and wastewater, pharmaceutical, chemical, and biotech industries. David's experience includes the planning, designing, specifying, installing, troubleshooting, programming and performing start-up testing and commissioning of SCADA, PLC and DCS-based control systems. David is a licensed Professional Control Systems Engineer in seven U.S. states and is a Senior Member of ISA. David grew up in England and graduated from Lincoln College of Technology with a degree in Industrial Measurement and Control emigrating to the U.S where he is married and lives in Danville, California. Contact: david.wilcoxson@stantec.com

WWID LEADERSHIP

ISA112 SCADA Standards Committee

By Ryan Costello, NLS Engineering & ISA112 member

At the 2017 ISA Spring Leaders Meeting the ISA112 "SCADA Systems" standards committee held a full day meeting on Friday, May 5, 2017. The 2017 SLM took place in Raleigh, North Carolina, USA. The ISA112 committee was started in September 2016 and now has over members. Ryan is one of one of the core members of the ISA112 committee.

For the past ten years, I have been developing SCADA systems in southwestern Ontario for municipal water and wastewater as well as some small renewable sites. I have recently been working with a new client who has been heavily involved in ISA for many years. After getting to know each other (and swapping a few horror stories), I was invited to join the ISA112 committee to help shape a brand-new standard which will improve the way SCADA systems are designed, installed, tested and maintained.

Having never been involved with ISA I had no idea what to expect when I travelled to Raleigh, North Carolina to attend a meeting in person. My fear was that I was going to be sitting in days' long meetings with engineers stubbornly imposing their sacred doctrine with a fervent intensity. I was pleasantly surprised to find myself sitting around a table with an outgoing group of experienced consultants, vendors and end users from around the world enthusiastically discussing their industries' 'best practice' guidelines. It was a great experience and I look forward to continuing working with the group creating the new ISA112 standard.

Since the meeting schedule aligned with the Spring Leaders Convention, I decided to stay for the whole weekend to attend some of the governance and division meetings and get a better idea of what ISA is all about. What I learned was that ISA is, essentially, run by a huge team of volunteers who are very passionate about their work. It was refreshing to see this level of commitment.

Over the weekend, I met people from all over the USA, Canada, England, Ireland, Brazil and Chile. I sat with them and listened as they spoke openly about where they were in their careers, their industries and, in one case, a Corvette collection. It was a great experience and easy to see that automation professionals across all industries struggle with the same problems. Lack of standards, poor (or non-existent) initial designs, and lack of informed oversight from development right on through commissioning. When any of these problems are present for a project of any size, it becomes a burden on all of us who just want to make it work.

I had a great time in Raleigh, and I am looking forward working with people in the ISA112 committee and sharing the new ideas from ISA112 back with my company. I am looking forward to the next great experience!

All in all, it was a great meeting, especially if you have ever wanted to know how to get involved with your society. If you are considering looking at how you can volunteer to help the society progress its goals of moving the automation community forward and grow your own career, consider attending the upcoming Fall Leaders meeting on October 28th to the 30th at the Grand Hyatt Tampa Bay, Tampa Bay, Florida.

I look forward to seeing everyone at the 2017 ISA WWAC Symposium in Orlando, Florida.

ISA112 SCADA systems standards committee meeting on May 5, 2017 in Raleigh, North Carolina. (left to right: Tom Fiske, Charley Robinson, Graham Nasby, Joe Carlin, Marty Bince, Kevin Patel, Alan Bryant, Ryan Costello, Manoj Yegnaraman, David Board, Greg Lehmann, Yesid Yermanas)

About the Author

Ryan Costello is a Senior Systems Integrator and Team Leader for NLS Engineering in Hamilton Ontario. He has been working primarily in the Water and Wastewater industry in for the past 10 years, as well as leading projects in the manufacturing, food and beverage and renewables sectors. He is expecting his first child in July. Contact: rcostello@nlsengineering.com

WWID OUTREACH

Webinar Series: Control Room Design

The ISA Water/Wastewater Division held a special technical webinar series on Thursday, June 8, 2017 and Tuesday, June 20, 2017 about effective Control Room and HMI Design.

Webinar – Thursday, June 8, 2017 @ 1pm Eastern

"Control Room Design for Human Performance Improvement"

Abstract:
Operators are a key component to achieving operational excellence. They have a direct effect on quality, equipment, production, safety and can prevent major incidents. They are a safety layer. Their work environment is critical to their success. The control room design must be based on the user requirements, operator tasks, and objectives. We must address human factors, focus on situation awareness, and bridge the gap between technology and human performance. Your control room designer must understand the operators' job, human limitations, and the process. The control room design is a reflection of the company, the safety culture, and the future of the business, it is where the brain of the operation is monitored, controlled, and managed.

Presenter Bio:
Ian Nimmo is the president of User Centered Design Services, a human-factors engineering company. He is a published author, respected speaker, and operations expert that was instrumental in the development of several RAGAGEPs (Recognized and Generally Accepted Good Engineering Practices)... He has been involved with automation and control room operations for 50 years. Ian originally created and directed the Abnormal Situation Management Consortium (ASM) while with Honeywell. The ASM was Ian's mission to discover the best practices for reducing the risks associated with abnormal process situations. A focus on improving an operator's ability to detect, diagnose and respond. This included extensive research into the control building environment and operator interfaces. The ASM Consortium research team quickly realized alarms were only a symptom of a much larger problem, the lack of situation awareness and human factors in the control room. Ian set out to change the culture by raising 20 million dollars to continue the research. Ian has spent the last 20 years expanding on the ASM research, helping engineers and operation managers implement solutions to reduce downtime and prevent major incidents. Ian has interviewed over 1000 operators; he knows what they need to be successful. Over the years, Ian has helped hundreds of plant managers meet their goals in production, quality, and safety. Ian has published over 100 papers and has written three books: The high-performance HMI, Operator Effectiveness, and The Control Room Design Guide. Email: inimmo@mycontrolroom.com

Webinar – Tuesday, June 20, 2017 @ 1pm Eastern

"Alarms and Operator Intervention (A flawed safety layer)"

Duration: 45 minutes

Abstract:
Safety layers like interlocks, safety Instrumented systems, and alarms are critical to ensure safe operations. Alarms alert operators of abnormal situations that require action to prevent environmental, regulatory, safety, and financial consequences. Alarm management has been a major topic of interest for the past 20 years. Most if not all companies have focused on improving the alarms but very few have seen return on investment. A best in class alarm system is important but what else do you do to make sure operators detect, manage, and prevent abnormal situations and the negative consequences of an incident? Alarm management alone does not mean operators will prevent an incident. Operators are the safety layer, the alarms are only one of the tools they use, what else do we do to make sure the operator safety layer does not contain weaknesses?

Presenter Bio:
Mr. Maddox is a published author and has extensive background in Alarm Management. Steve started his career 19 years ago working with the very first alarm management software company that was well known for replacing the loud paper eating tree destroying alarm printers that used to take up space in the control rooms. The alarm software tool evolved along with Steve's career as more and more engineers needed help managing nuisance alarms and alarm floods. Over the years, Steve has helped thousands of customers develop solutions to improve situation awareness through alarm management, HMI design, and control room design. Over the last decade, Steve has participated in solutions development for 50 pipeline companies due to the pipeline industry PHMSA regulations for Control Room Management. Today Steve focus's his time helping engineers and plant managers achieve high performance in operations by focusing on the needs of the operators. Email: smaddox@mycontrolroom.com

Ian Nimmo giving a technical talk on HMIs

WWID NEWS

Michael Fedenyszen Passes Away

By Eoin O Rianian, Instrumentation Sign Post

ISA members throughout the world were stunned to learn of the sudden unexpected death of Michael Fedenyszen on Monday, May 29, 2017. Michael was a longtime member of the ISA WWID executive committee, and for the past 8 years he has led our WWID student scholarship committee.

At an ISA society level, Michael had been a perennial at the ISA leaders' meeting for many years and had only recently been elected as VP Elect of the Publications Department. He was excited about his new role and indeed the committee was looking forward to his tenure in that challenging position.

Michael was always actively engaged as an InTech Editorial Advisory Board member, providing article reviews to the editor and publisher on each issue and indeed he wrote The Final Say column in the March April issue this year (www.isa.org/intech/201704final/)

Michael Fedenyszen (1949 – 2017)

Michael B. Fedenyszen, II was a senior instrumentation and controls engineer at R.G. Vanderweil Engineers, LLP. He was an active life member of ISA, serving in many leadership roles and receiving numerous awards. He had a 30 years' experience in integrating and optimizing instrumentation and controls requirements for combined heat and power plants and central utility plants.

The shocked reaction and generous tributes paid by his peers and colleagues pay tribute to his contribution to the world of automation.

"He was a kind and truly gracious friend. He will be sorely missed."

"Truly shocking. Several of us had the pleasure of enjoying a nice Pubs dinner at the last SLM that Michael arranged. For those who attended, it was a blast. (That was on Sunday 8 May 2017, just over 3 weeks ago in Raleigh, NC, USA)"

"Truly a sad day - losing someone who has contributed to all levels of our Society and society itself as well. I had the pleasure of 'working' with Michael for almost 20 years, when he started attending meetings on behalf of Boston Section and then DVP [ISA District Vice President]."

"That is truly sad news. Michael was so into Publications and I know that he was so looking forward to his VP-elect role going forward. We have lost another very dedicated ISA leader. I am sure that he will rest in peace."

"Wow! This is truly heart-breaking news. Michael was in great spirits at the SLM and he was truly joyous about his family, especially his grandkids. He was an advisor to so many of us. He will be greatly missed."

Michael was a real treasure and will be missed. He was knowledgeable and had a great sense of humor."

"Sad indeed. RIP, Michael. Condolences to his family and all who ever worked with him, at ISA and elsewhere."

"I'm so shocked and saddened by this news... Mike was one of a kind, a true gentleman, and a wonderful friend. He will be missed so much!"

"What a great guy, friend, and ISA member. He was a special person and we had a wonderful relationship. Michael was always so nice ... and a pleasure to work with"

ISA colleague Shari Worthington posted a short tribute on Facebook which probably encapsulates what all those who knew him feel: *"It's a sad day. We lost a friend and colleague, Michael B. Fedenyszen II. Thank you for everything. We will miss you. Godspeed. Your friends at International Society of Automation."*

The many tributes paid to him on his facebook page (https://www.facebook.com/michael.fedenyszen.3) are a worthy tribute to a good and cheerful friend, colleague and mentor.

May he rest in peace and may his family be comforted and consoled.

Official Obituary: Michael Fedenyszen (1949-2017)

Michael B. Fedenyszen Jr., 68, passed away Monday, May 29, at Holy Family Hospital-Haverhill. He was the devoted husband of Linda (Twombly) Fedenyszen.

Fedenyszen was born Feb. 10, 1949, in Methuen, son of the late Michael B. and Sonia (Los) Fedenyszen. He was a lifelong resident of Haverhill, having attended Haverhill schools and graduating from Haverhill High School in 1967. He worked as an electrical engineering consultant for several years and was employed with Vanderweil of Boston, as an instrumentation engineer. He was a member and vice president of publications for the Instrumentation Society of America. Fedenyszen enjoyed traveling and time in Bermuda with his wife and family. He had an incredible work ethic, helped many people in need and was a friend of Bill W's, offering guidance to friends and strangers on the road to recovery.

Fedenyszen is survived by his wife of 49 years, Linda; two sons, Michael B. Fedenyszen III and wife Deborah of Somerville and Justin E. Fedenyszen and wife Kimberly of Merrimac; grandson, Owen; brother, Joseph; and several nieces, nephews and many close friends.

Donations in Fedenyszen's memory be made to MSPCA 350 South Huntington Ave. Boston, MA 02130, USA.

ISA PUBLISHING

Basic and Advanced Regulatory Control: System Design and Application – 3rd Edition

The folks at ISA headquarters are pleased announce the third edition release of *Basic and Advanced Regulatory Control: System Design and Application* by Harold L. Wade, Ph.D., PE.

Dr. Wade-who has more than 50 years of experience designing, applying and installing process control systems-says the updated edition builds upon the real-world experiences and process knowledge of engineers and technicians to demonstrate the application of successful regulatory control strategies and techniques.

"Basic and Advanced Regulatory Control: System Design and Application – 3rd Edition"

Copyright: 2017
ISBN: 978-0-87664-013-5
Length: 567 Pages
Format: Paperback
Publisher: ISA

Member Price: $89 USD
List Price: $109.00 USD

"In contrast with many academic textbooks on process control, this book presents the concepts of process automation and control with a minimal amount of mathematical systems theory and a large amount of practical application knowledge," he emphasizes. "The book can be used by both instrumentation technicians and process control engineers, but is primarily aimed at those whose responsibility is to design the control system for a new process or to suggest modifications to an existing control system."

The book integrates many valuable new areas of content, including: expanded coverage of set-point weighting controllers, an amplified discussion of valve problems, expanded coverage of cross-limiting control systems, a new heuristic procedure for improving "as-found" tuning, and an expanded discussion of tuning liquid level control loops. End-of-chapter exercises also have been added.

.To purchase a copy of the fifth edition of *Basic and Advanced Regulatory Control: System Design and Application* , visit www.isa.org/books/

Water/Wastewater Industry Division

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TECHNICAL ARTICLE

Planning Spare I/O for Fieldbus Networks

Active spare in Fieldbus Network what does it mean?

By Francisco Alcala, CDM Smith

Best practice when designing PLC and DCS system panels is to always leave 20% spare I/O. Traditionally, with hardwired I/O, this has taken the form of 20% spare channels of each I/O type, 20% spare cards of each type, or a combination thereof. However, when using Fieldbus networks for I/O – for example Profibus, ASI-bus, DeviceNet, or Foundation Fieldbus – the old rules of thumb become a bit more difficult to apply. What does 20% look like in the world of bus couplers, I/O blocks and trunk cables? This article discusses some of the considerations when planning for spare channels in the world of Fieldbus networks.

When specifying a fieldbus network, one of the common requirements that I&C designers have to contend with is the concept of Active Spare I/O. The concept of Active Spare I/O is include extra I/O channels in control panels, so additional I/O signals can be added later without having to add more hardware. Traditionally Active Spares will encompass including all the various I/O modules, terminals, surge suppressors, power supply capacity, etc. so that additional I/O signals can be added at a later time (or during commissioning!) The Active Spare is typically required to be the 20% total I/O.

For hardwired I/O systems, having 20% Active Spare I/O is usually not difficult to achieve although sometime hard to enforce in some automation platforms. Adding active spare to a fieldbus network I/O system is, however, a bit more difficult but is achievable with careful planning.

So why do we bother with Active Spares in automation systems? Active Spare is an important feature because it allows for late-stage tweaks/additions to be made without requiring large last-minute I/O hardware investments. It also allows during the commissioning of a system when process changes – which require additional instrumentation or control signals – need to be quickly deployed at minimal cost. The below figure show how costs during an automation project can rapidly escalate during the latter stages, so techniques like Active Spares to keep costs down are a major plus.

As show in Figure 1, the cost expenditure increases dramatically when project changes are done during the implementation and start-up phase. The goal of the Active Spare is to minimize the impact of cost expenditure during and beyond the implementation phase. The cost expenditure is exponentially affected for changes after the design phase.

A small survey conducted for this article showed that 61% of integrator "always" required the used of Active Spare I/O required during the startup, commissioning or found useful during the system lifecycle. Furthermore, for construction projects most Shop Drawing reviewers paid special attention to the count of Active Spares I/O.

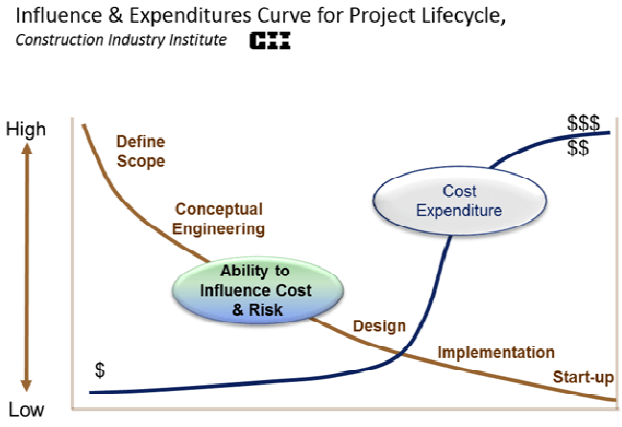

Figure 1 – Cost vs. Timeline for a typical project (source: http://www.emersonprocessxperts.com/2015/09/early-planning-process-for-plant-automation-projects/)

Challenges with FieldBus I/O Systems

It is not straight forward task to compare apples with apples when analyzing a fieldbus vs a hardwire system. Common questions are:

1) It is comparable to allocate Active Spare for fieldbus system under the same criteria that hardwired I/O system?

2) What does20% of Active Spares I/O mean on a fieldbus network?

3) How the fieldbus Active Spare will be accounted and verified?

In a hardwired system the 20% of Active Spare is achieved by allocated unused I/O that are completely wired to the field terminals and in some cases additional I/O modules are necessary to be furnished. For large projects, it is not unusual to require at least one extra complete I/O module of each type per control panel. For hardwired system the verification of the Active Spare can be as simple as a counting the number of I/O channels marked as spare on the control panel drawings. For a fieldbus network the verification of how much "spare I/O" has been allocated as Active Spares is more difficult.

As many advantages the fieldbus system has, there are also constrains that need to be observed. The design complexly increases with the network architecture, the Process/Device field layout, and number of devices. The number of devices per segment depends on many factors

that are convenient to have well defined as part of the project's "design criteria."

Factors when designing Fieldbus networks usually include:

a) Manufacturer recommendations,
b) Number of bytes used by each device in cycle communication,
c) Network topology,
d) Length of any "spurs" used, and
e) Electrical current limitations, especially for intrinsically safe networks.

These criteria, plus any other design aspects that are specific to the type of Fieldbus being used are what usually determines how best to implement the Active Spares.

Number of Devices per Segment

In this order of ideas, the first decision to take is to define as "design criteria" is the maximum number of devices to be allowed for segment. The designer could them estimate the Active Spare that can be left as reserve per segment subtracting the required % of spare. This value would be considered a bottom line Active Spare per segment.

For example, PROFIBUS DP (RS-485) support up to 32 devices that can be expanded by using repeaters. The distance limitation vs speed constraints of a PROFIBUS DP network can also limit the number of devices in a plant wide distribute instruments application. The use of "spurs", rather than just daisy-chaining devices together, on PROFIBUS DP networks reduces the amount of devices per segment. On PROFIBUS PA networks (another variation of Profibus) this number of allowed devices can drop down to 24 devices (rather than the specified 32) if spurs of 1 meter in length are used. The reason for the reduced number of devices is to account for the additional signal reflections that result when spur cables are used.

Data Points on Fieldbus Networks

Fieldbus is multi-variable by design. An understanding of the maximum data transfer rates is important when specifying for Active Spares. For example, the maximum number of data bandwidth from a device that will work in some PROFIBUS slave configurations is 244 input/output bytes. If segment already has a number of devices that use a lot of bytes already, there may be less bytes available for future Active Spare devices, depending of the type instruments and the variables to be reading in a cycle communication. For example, in a PROFIBUS PA network with passive repeaters, a digital instrument will use 2 bytes of data compared to an analogs instrument that may use consumes 5 bytes per variable added to the cycle communication.

To further compound the complexity, many devices will use many more bytes than a simple digital or analog device. A mass flow could easily use at least 20 bytes in the network in order to communicate its flow rate, total flow, temperature, and density readings.

I can also recall a project where we had to provide a specialized data segment for two truck scales that used up to 104 bytes of data each! In this situation there was no extra communication bandwidth available to add any Active Spares to that segment at all, despite the segment only have a Profibus Master (the PLC) and the two truck scales on it.

Thus with keeping the data communication on a Fieldbus segment in mind, a designer could stablish a design criteria of maximum devices per segment leaving the 20 % as active spare taking in account not to exceed the IN/OUT bytes constrains. In this case the documentation of the data frame (and how the data requirements for each of the various devices fit into it) for each fieldbus segments will be key factor.

Best Practices for I/C Design

Rules of design: Foundation Fieldbus organization recommend the following general set of rules for active spare design that can be extrapolated to other fieldbus networks.

1. The Segment shall be designed for 25% spare capacity
2. PS supply current: 25% spare current capacity
3. Spare spur terminal capacity: 25%
4. Spare capacity in segment bandwidth: 20%
5. Spare pair in trunk cable: 25% or minimum 1 pair as spare.
6. Installed hardware spares in Host System: 20% or minimum of 1 Host per RIO

Active Spare distribution: The most common approach to solve the Active Spare requirement is to provide a combination of hardwired and fieldbus devices. In other cases, the Engineer may have the chance without overbuilding the design to call for extra device couplers per panel to meet the Active Spare prerequisite.

In many cases the instrument layout requires the granulation of the segments by Process/Area/Cell/Unit. In this case, extending the network through spur distributor or repeater, taking in account the design criteria and leaving extra connection for future expansion may be a

worthy option. In a hardwired system even if the field signals collection is distributed across remote I/O or PLC by Process/ Area/ Cell/ Unit, the spare component will be mostly centralized on the PLC or RIO Panels but in many cases long run of conduit and wiring may need to be furnished.

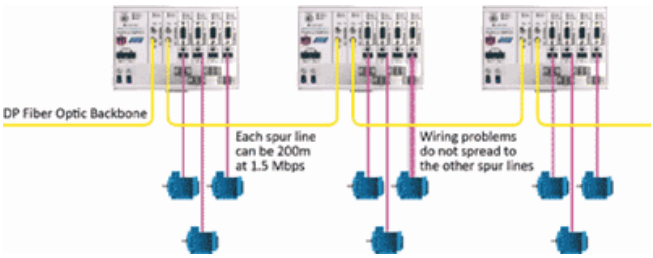

Figure 2 - Location of Spur lines through multichannel repeaters to allocate active spare for PROFIBUS connections.
(Source: https://procentec.com/about/news/2016/how-to-extend-the-life-of-your-profibus-installation-with-a-few-easy-tips/)

PROFIBUS provide the advantages to extend the Active Spare capabilities along with the network segment through spur couplers and repeaters near to the field area, where the possible new device may be materialized, reducing new wiring and conduit to the device spur segment. If the designer intention is to provide Active Spare connections at field level a well-documented design is imperative. The documentation should include the maximum number of devices per segment, as well the maximum spurt length and amount data frame used on cycle communication.

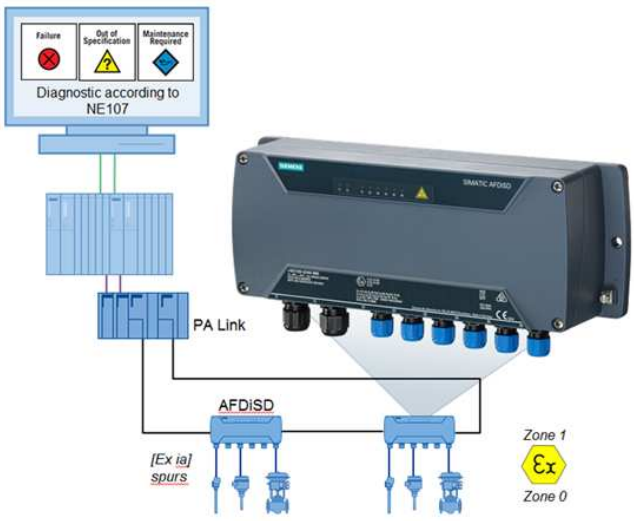

Figure 3 – Active spare provides through Active Field Distributor, *Source: https://support.industry.siemens.com/cs/document/109477080/active-field-distributor-simatic-afdisd-with-extended-fieldbus-diagnostics-for-profibus-pa-available-for-delivery?dti=0&lc=en-GB*

Final Thoughts

Contrary to doing I/C Design for hardwired I/O systems, the process of allocating Active Spares for a fieldbus-based I/O system is more complex. When working with fieldbus systems, time needs to be spent up front to fully understand and account for and verify the network used and its capabilities.

In field bus I/O systems, Active Spare need to be provisioned just like in hardwired I/O systems. Careful planning with respect to network topology, number of devices permitted per segment, and checking data communications bandwidth will pay off when designing these systems. The strategy of including well-placed extra communication modules and couplers will result in a robust design that will fare well in accommodating future needs.

A commonly used approach is to develop a working set of "design rules" to use for all I/C design on a project, including the fieldbus networks. These rules can include device counts per segment, network wiring lengths, and ensuring that data communication needs for current and anticipated instrumentation is researched and documented. These design rules can also be applied when doing checking and verification of the design itself as well as shop drawings, prior to the start of construction in the field.

About the Author:

Francisco Alcala, PE is a member of ISA and an Automation Engineer for CDM Smith. He has a BSEE from Universidad de Oriente Venezuela and an Operation Management MBA from IESA Venezuela. Francisco has 25 years of experience in Instrumentation and Control design, integration, and maintenance in the water/wastewater, petrochemical, and beverage industries. Contact: alcalaf@cdmsmith.com

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 mid-2016, LinkedIn has over 460 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**

LinkedIn

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SOCIETY NEWS

ISA Needs to Change, But How?

By Steve Pflantz, 2017 ISA Society President

ISA's long-term value and success depends on our ability to embrace change and become: more flexible, more adaptable, faster to market, and less reactive.

So how do we move ahead and work to achieve these change goals? First of all, driving organizational changes begins at the top. ISA leaders need to lead and teach by example in what we do. That's how to initiate culture change.

As leaders, we need to make decisions based on our future not what we've done in the past. We can't constrain ourselves according to our past behavior and practices. Attracting new and younger leaders to the Society is important because they can't fall back on old ways; they bring fresh perspectives and ideas and are motivated to act on them.

Change requires a mindset shift. We need to view change not as a temporary phenomenon but as an ongoing reality. We need to be receptive to change as an evolutionary fact. Things change and we need to change along with them.

Consider all the changes in our professions and industries over the years. Look at the change from pneumatic controls to smart, digital transmitters and the control systems they connect with. Now take a step back and take a look at ISA. Has our Society, as an organization, changed that much over the years? Are we stuck in the past, held back by our old ways?

And today's marketplace won't wait for ISA to catch up. As I emphasized last month, succeeding in the marketplace requires keeping pace with the speed of change, demand, and our competition. Faster to market means getting things done when they need to be done, not when we can get them done. While, yes, we're not going to meet every deadline, we have to operate with a greater sense of urgency.

It's my hope that by recruiting new leaders and volunteers, we'll be able to ease some of the workload burden, streamline processes, and improve product and service delivery—as well as expose ourselves to new perspectives and ideas.

To be less reactive, we have to be more determined to take the lead. We need to be the one setting the standards and establishing the trends, not waiting for others to act so we can follow along with the rest of the crowd. In many ways, this goes back to our culture. We tend to be conservative in our thinking and actions. We all need to understand that ISA leaders, volunteers and members are smart, highly capable professionals and experts in the world of automation. It's only logical that ISA should assert itself as the industry pacesetter and achieve and maintain positions of leadership.

To all those members considering a Society leadership position, consider no longer. Please join us.

To all those members currently in leadership roles, I applaud you for your commitment, and I ask for your support and help in embracing the change imperatives. Your engagement—asking hard questions, questioning assertions, offering insights and experiences to learn from, and lending your expertise—is critical if ISA is to act swiftly to meet the challenges of the future

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:
In a bubbler (dip tube) level measuring system, for a bubble to be emitted at the open end of the purge pipe, the air pressure at that point is _____ the pressure exerted by the liquid at that point.

A. twice
B. equal to
C. less than
D. three times

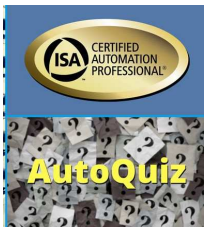
The Answer:

The correct answer is ***B***, "equal to." In order for air to be discharged from the end of a bubbler purge tube, the air pressure in the tube must be equal to (or higher than) the pressure exerted by the liquid head in the tank.

As the tank level is decreased, the liquid head pressure at the tip of the purge tube decreases, and more bubbles per unit of time can escape. The corresponding reduction in pressure in the purge tube is proportional to the level in the tank.

Therefore, the point at which the liquid head pressure and the purge tube pressure are equal is the highest level (URV = 100%) that the device will measure.

This automation industry quiz question came from the ISA Certified Automation Professional certification program.



ISA CAP certification provides 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.

This article was originally appeared in the May/June 2017 issue of ISA InTech magazine. Reprinted with permission.

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.

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Steve Valdez, General Electric, svaldez1210@gmail.com
Kevin Patel, Signature Automation, knpatel@sig-auto.com
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Fax: (919) 549-8288
kbelinsky@isa.org

2017 Symposium Details
Date: Tues-Thurs, August 8-10, 2017
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
2018: August 7-9, 2018 – Bethesda, Maryland (near Washington DC)
2019: August 6-8, 2019 – we return to Orlando, Florida, USA
2020: August 4-6, 2020 – California (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/**

Water/Wastewater and Automatic Controls

Symposium2017

8–10 August
Wyndham Lake Buena Vista Resort
Orlando, Florida USA

Conference Preview

www.isawwsymposium.com

Presented by:

ISA Water & Wastewater Industries Division

Technical Co-sponsors:

Water Environment Federation® the water quality people®

American Water Works Association Florida Section

Florida Water Environment Association

ISA Tampa Bay Section

Standards
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Education & Training
Publishing
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Setting the Standard for Automation™

About the Symposium

Presented by the ISA Water and Wastewater Industries Division, in collaboration with WEF Automation and Info Tech Committee, the Florida AWWA Section, Florida Water Environment Association, and Instrumentation Testing Association, the WWAC symposium helps professionals in the water and wastewater sectors 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. The symposium also provides an excellent opportunity to gain valuable technical information, networking, professional development, and continuing education credits (CEUs and PDHs).

The 2017 ISA Water/Wastewater Symposium will be held at Wyndham Lake Buena Vista *Disney Springs*® Resort Area, near Orlando, Florida. This modern hotel offers luxury accommodations and is located right on the Walt Disney® Resort property. This 3-day symposium is focused on the challenges associated with automation and instrumentation in the water and wastewater sectors. It features 2 full days of presentations (two speaking tracks), a tour of a local water/wastewater facility, a general reception, networking events, a poster session, and a supplier showcase.

- **2 Full Days of Speakers/Presentations**
- **Track 1 – Instrumentation, Automation, System Integration, Plant Case Studies, New Technologies, Process Optimization**
- **Track 2 – SCADA Workplace Integration, HMI, Human Factors, Alarm Management, Workshop**
- **Two Optional ISA Training Courses**
- **Plant Tour of a local Water/Wastewater Facility**
- **Trade Show, Reception & Networking Event**
- **Affordable Professional Development for Plant Operations/Maintenance Staff, Plant Managers, Plant Designers, Engineers, System Integrators**
- **CEUs – Continuing Education Units**
- **PDHs – Professional Development Hours**

Attendee Profile

The symposium is targeted at anyone involved with automation, instrumentation, and/or control systems in the water/wastewater sectors. Attendees typically range from plant operators, maintenance, and technical personnel to engineers, programmers and system integrators.

Meet and network with professionals who are responsible for the automation, instrumentation and operating aspects of water and wastewater facilities across North America. According to a recent US EPA study there are over 16,000 publicly-owned water plants across the USA, and another 21,000+ wastewater treatment plants throughout the United States.

This symposium focuses on bringing together individuals who are looking for technical solutions to their water and wastewater challenges. They are looking for products, services, and partners they can trust to make their jobs easier.

Schedule of Events

Monday - Tuesday, August 7-8, 2017

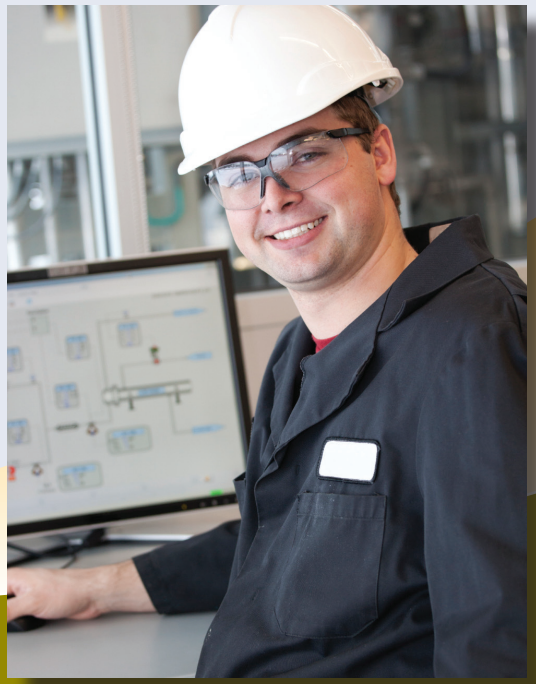
- Optional Full-Day Training Courses
- Symposium Registration
- Local Water/Wastewater Plant Tour (late afternoon Tuesday)

Wednesday, August 9, 2017

- Keynote and Invited Speakers
- Presentations, Papers, and Workshops
- Light Breakfast, Coffee Breaks, and Lunch Provided
- Supplier Showcase
- Evening Reception

Thursday, August 10, 2017

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



Technical Program

This year's symposium has a special focus on how automation will be involved and integrated into many of our day-to-day activities. The two day technical program will include a keynote address, a special welcome from the director of the ISA water/wastewater division, and two invited speakers. Guest speakers from the AWWA and WEF will also speak about the current advances in using instrumentation and SCADA in their sectors along with a panel session on the latest trends in the industry. Symposium attendees will receive 2.0 CEU credits.

Local Plant Tour

Attendees will have the option of attending a tour of a local treatment facility on the late afternoon of Tuesday August 8, 2017. The tour is free to all registered symposium attendees. Complimentary bus transportation from the hotel to/from the tour site is included. Invitations to RSVP for the bus tour will be sent to all registered attendees approximately 3 weeks prior to the symposium.

Optional Short Courses

IACS Cybersecurity Operations & Maintenance: Secure Your Control System (IC37)

Date: Mon. - Tues., August 7 - 8, 2017
Length: 2 days
CEU Credits: 1.4
Cost: $2500 ($2000 for ISA members)
Instructor: Bryan Singer, CISM, CISSP
This two day intensive course focuses on the activities associated with the ongoing operations and maintenance of IACS cybersecurity. This course will provide students with the information and skills to detect and troubleshoot potential cybersecurity events as well as the skills to maintain the security level of an operating system throughout the lifecycle despite the challenges of an ever changing threat environment.

Introduction to the Management of Alarm Systems (IC39C)

Date: Mon., August 7, 2017
Length: 1 day
CEU Credits: 0.7
Cost: $815 ($650 for ISA members)
Instructor: Nick Sands, PE, ISA Fellow
This course focuses on the key activities of the alarm management lifecycle provided in the ANSI / ISA 18.2 standard, Management of Alarm Systems for the Process Industries. The course discusses how alarm management techniques can be used to signifcantly reduce the number of nuisance alarms that operators have to address. Nick is the co-chair of the ISA 18 committee.

Exhibitor Opportunities

Exhibitor tables are priced at $925 each which includes:

- one six foot table with skirting, 2 chairs, duplex electrical outlet
- two vendor passes, which include ID badges and full conference access
- additional vendor passes can be purchased for $200/each
- breakfasts, coffee breaks, and lunches on Aug. 9 & 10
- admission to the general reception with cash bar on the evening of Aug. 9th
- exhibit room hours: Aug. 9 & 10 (8:00am-5:00pm), and during Aug. 9th evening reception
- exhibit setup: Aug. 8 (1:00pm-9:00pm); exhibit take down Aug. 10 (5:00pm-8:00pm)

Why You Should Attend

- Opportunity to learn from others and "talk shop" with people who understand your challenges
- Cost effective professional development and continuing education
- Keep your skills current
- Get to compare experiences / lessons learned
- Learn about new technologies, products and services
- Be actively involved in your professional development
- Establish contacts in the industry
- Share ideas and experiences with others in the sector
- Learn something while having fun

Benefits for Water Utilities

- Inexpensive professional development
- Earn CEUs / PDHs for license renewals
- 2.5 days of training for $450
- Group discounts available
- Opportunity for staff to learn about new ideas and industry innovations

Benefits for Engineering Firms

- Exposure to new ideas
- Learn from plant case studies
- Talk to operations and maintenance professionals in an informal environment
- Learn about new products and techniques

Registration and Fees

Full Symposium

List Price	$450
ISA Members	$350
AWWA and FSAWWA Members	$400
WEF, ITA, and FWEA Members	$400
Students	$150
Authors and Speakers	$150

Optional Cybersecurity O&M Course

List Price	$2500
ISA Members	$2000

Optional Alarm Management Course

List Price	$815
ISA Members	$650

2017 ISA Water / Wastewater and Automatic Controls Symposium

Founded in 1945, the International Society of Automation is a leading, global, nonprofit organization that is setting the standard for automation by helping over 30,000 worldwide members and other professionals solve difficult technical problems, while enhancing their leadership and personal career capabilities. Based in Research Triangle Park, North Carolina, ISA develops standards; certifies industry professionals; provides education and training; publishes books and technical articles; and hosts conferences and exhibitions for automation professionals.

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Telephone: (919) 549-8411
Fax: (919) 549-8288
www.isa.org

For more information visit:
www.isawwsymposium.com

ISA WWAC Symposium2017

Registration Form

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EMAIL info@isa.org
www.isa.org

2017 ISA Water / Wastewater and Automatic Controls (WWAC) Symposium

8-10 August 2017 • Wyndham Lake Buena Vista Resort • 1850 Hotel Plaza Blvd, Lake Buena Vista, FL, USA

Mail Form and Payment to: ISA—WWAC Symposium
PO Box 12277
Research Triangle Park, NC 27709

Call ISA Customer Service at: +1 919-549-8411

Email: info@isa.org

Fax Form to ISA Customer Service at: +1 919-549-8288

Register Online: Instead of filling out this form, please consider registering online at www.isawwsymposium.com

1. Customer Information

Name (first): _____ (initial): _____ (last): _____

Company: _____ Title: _____

Street Address: _____

City: _____ State: _____ Country: _____

Phone: _____ Fax: _____ Postal Code: _____

ISA Member # (if applicable): _____ Email: _____

2. All PARTICIPANTS ARE REQUIRED TO PAY REGISTRATION FEES

Early-Bird Registration
- ❑ Regular Attendee $450
- ❑ ISA Member $350
- ❑ AWWA Member $400
- ❑ WEF Member $400

- ❑ Student Registration $150
- ❑ Author/Speaker Registration $150

Regular Price (after 15 June 2017)
- ❑ Regular Attendee $475
- ❑ ISA Member $375
- ❑ AWWA Member $425
- ❑ WEF Member $425

Symposium Attendees will receive 2.0 CEUs (or 20 PDHs) - ISA, FSAWWA, FDEP-approved

Optional 2-day Training Course (IC37)
IACS Cyber Security Operations & Maintenance
7-8 August, 8:00am - 4:00pm - Attendees receive 1.4 CEUs
- ❑ Regular Price $2500
- ❑ ISA Member Price $2000

Optional 1-day Training Course (IC39C):
Applications of Wireless SCADA Systems & Sensor
7 Aug, 8:00am-4:00pm, Attendees get 0.7 CEUs
- ❑ Regular Price $815
- ❑ ISA Member Price $650

Your Full Symposium registration includes:

* 2 full days of papers and presentations
* instrumentation workshop
* networking event
* local water treatment facility tour on Aug 8
* admission to supplier showcase
* light breakfasts on Aug9 and Aug 10
* full buffet lunches on Aug 9 and Aug 10
* evening reception on Aug 9 with cash bar
* name badge
* list of attendees with contact info
* on-site program booklet
* copy of symposium proceedings

Registration and Training Course Total: $_____ US Dollars

3. Payment Summary

Charge: ❑ Visa ❑ Mastercard ❑ Amex ❑ Discover

Charge Account Number: _____

Exp. Date: _____

Name on Card: _____

Signature: _____

Make Checks Payable to:
ISA WWAC

Note: Company purchase orders or military vouchers not accepted.

Hotel Registration:
Wyndham lake Buena Vista Resort Hotel
1850 Hotel Plaza Boulevard
Lake Buena Vista, Florida, 32830, USA
Reservations: 1 877-999-3223 (toll free)
Local: 1 407-828-4444
www.wyndhamlakebuenavista.com

Attendees are responsible for booking their own hotel rooms.
A hotel rate of $109/night is available if booked before **15 July 2017**

www.isawwsymposium.com

WWAC2017-REGFORM-2017-06-07

2017 ISA Water/Wastewater and Automatic Controls Symposium
AUGUST 8 - 10, 2017

Wyndham Lake Buena Vista Resort • Orlando, FL

COME SEE WHAT'S TRENDING!

This symposium provides an excellent opportunity to gain valuable technical information, networking, professional development, and training. Offering affordable professional development and the opportunity to help meet continuing education requirements in an invigorating environment for only $450 for the three day symposium.

Discounts available for FSAWWA, FWEA, AWWA, WEF, ITA and ISA members.
Includes breakfast, lunch and evening reception

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Invited Speaker:
Saadi Kermani
Global Business Development Manager - Industrial Information Management, Schneider Electric
Your Machines Are Talking, Are You Listening?

Invited Speaker:
Thomas Burke
President, OPC Foundation
Start Building Practical Field-to-Enterprise IIoT Connectivity with OPC UA

Instrumentation Workshop:
Water and Wastewater Process Instrumentation Fundamentals

WEF Guest Speaker:
Tom DeLaura, PE
Past Chair, WEF Automation and Info Tech Committee
President/CEO, DeLaura Consulting

AWWA Guest Speaker:
Mike Sweeney, PhD, PE
Deputy Executive Director, Toho Water Authority

Symposium Chair:
Pavol Segedy, PE
Lead Automation Engineer, HDR

Program Chair:
Joe Provenzano
General Manager, KPRO Engineering

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