



Water/Wastewater Industry Division

Setting the Standard for Automation™

Calendar of WWID Events

- | | |
|-------------------|---|
| Aug 5-8, 2019 | 2019 ISA Energy and Water Automation Conference
Orlando, Florida USA |
| Fri, Oct 25, 2019 | ISA112 SCADA Standards Meeting
Full Day Meeting at the Fall ISA Meeting
Paradise Point, San Diego, CA, USA |
| Oct 25-28, 2019 | ISA Annual Leadership Conference
Paradise Point, San Diego, CA, USA |

In this Issue

- 1 Director's Welcome
- 1 Newsletter Editor's Welcome

- 3 2019 ISA Energy and Water Automation Conference Update

- 4 Winners of 2019 WWID Student Scholarships Announced
- 5 WWID was at the 2019 ISA Strategic Leaders Meeting
- 6 ISA112 SCADA Standards Committee Meeting in May 2019

- 7 Technical Article: America's Water Infrastructure Act 2019 – by D. Dickinson

- 10 ISA Automation Certification Quiz
- 11 ISA's New Strategic Direction'– 2019 ISA Society President Paul Gruhn

- 13 Call for Articles
- 14 WWID contacts

Newsletter Spring/Summer 2019

Director's Welcome

Pavol Segedy, HDR Inc.



Welcome to our ISA water/wastewater industry division mid-year newsletter! In this issue you will find a great deal of information about our division and several wonderful articles published by our own division members.

During our previous newsletter, I mentioned that ISA made some significant changes in the number and types of conferences/symposia. The planning for our new EWAC conference in Orlando, Florida is in full swing. Our volunteers are working hard putting the technical program together and you will learn more about the EWAC conference in this issue.

A large part of the success of our water/wastewater division is due to our continued relationships and partnerships with other associations in our sector such as the Water Environment Federation (WEF) and the American Water Works Association (AWWA). Our division leaders are planning to provide joined webinars on various current automation topics.

We are also involved with the Water Research Foundation (WRF) and the WEF's second annual LIFT Intelligent Water Systems Challenge. This event demonstrates the value of intelligent water systems to utilities and thereby fosters the adoption of smart water technologies. The Challenge gives the opportunity to showcase talent and ... **(continued on page 2)**

Newsletter Editor's Welcome

Graham Nasby, City of Guelph Water Services



"No more pencils, no more books, no more teacher's dirty looks!" School's out and we are into another summer season. How do you plan on spending it? You're probably like me and it's just another day at the plant. Yes, you have to arrange something for the kids to do, but at the end of the day we need to keep the taps flowing and the toilets flushing.

Whether you are involved in the supply part of the business (read: drinking water) or the treatment end (read: wastewater), the job of the automation professional in the municipal water/wastewater sector never ends. The seasons change but we have to keep the water flowing no matter what.

In this issue, you will read about the upcoming 2019 ISA Energy and Water Automation Conference (EWAC 2019) that will be taking place August 5-8 in Orlando, Florida, USA. As Pavol mentioned, the ISA is trying something new for this year. The EWAC2019 conference combines the industry sectors of electricity production (power) and water treatment (municipal water) into a new event that will encourage cross-pollination between the two sectors. I encourage you to read about it in Manoj Yegnaraman's article and to visit the website at www.isa.org/ewac2019/

You will also find several articles ... **(continued on page 2)**

WWID Director's Message (continued from Page 1)

... innovation, with a focus on leveraging data using the best available tools to help utilities better understand the dynamics of complex systems and make better decisions.

Thank you for continuing to be a member of our ISA Water/Wastewater division, and I hope you will enjoy our latest newsletter. If you have any questions about our division, please don't hesitate to contact me directly.

Best Regards,

Pavol Segedy, PE

WWID Director 2018-2019

pavol.segedy@segedyfam.com





HUB ♦ MBE ♦ DBE ♦ SBE ♦ ESBE

WHY WORK WITH US?

- Water/Wastewater Focused
- Quality Deliverables
- Industry Leaders

ELECTRICAL ENGINEERING

- Low & Medium Voltage
- Power & Lighting Plans
- Power System Studies
- Arc Flash Analysis

INSTRUMENTATION & CONTROLS

- DCS, PLC, RTU Platform Designs
- Network Design
- Cyber Security
- CCTV and Access Control

CONTROL SYSTEM PROGRAMMING

- Application Engineering
- Situational Awareness HMI
- 24/7 Support
- Custom Video Training

Dallas 469-619-1241 ♦ San Antonio 210-807-7434 ♦ sig-auto.com

Newsletter Editor's Welcome (continued from Page 1)

...in this issue including our usual message from the ISA society president, an ISA Standards Committees update, and articles about what the ISA Water/Wastewater Division has been up to for the past several months.

Members of our division have been active on the ISA112 SCADA Systems Standards committee, so you will see an update article about the ISA112 committee's progress so far.

Our WWID leaders were also at the ISA's Strategic Leaders Meeting (formerly known as the Spring Leaders Meeting) in May 2019. This meeting brought together ISA leaders from around the world, who worked together to continue to formulate the ISA's new strategic direction. Stay tuned as this direction continues to develop at the ISA's Annual Leadership Conference this fall.

This newsletter issue features a technical article written by long-time ISA volunteer Don Dickinson. Don was the general symposium chair for our 2018 ISA Water/Wastewater and Automatic Controls Systems. In his article, Don takes a look the America's Water Infrastructure Act of 2018 and provides a summary and along with guidance for the automation professional. ISA has a significant role to play with ensuring that guidance is available to assist municipal water/wastewater utilities with upgrading their automatic controls systems.

So as you enjoy the warmer weather, don't forget about where there water for that cool glass of water (or other beverage) comes from. It is from the hard work and dedication of the professionals that keep our water infrastructure working on a daily basis no matter the time of year!

I hope you enjoy our 2019 spring/summer newsletter!

Warmest Regards,

Graham Nasby, P.Eng.

Newsletter Editor

graham.nasby@guelph.ca



**Water/Wastewater
Industry Division**

ISA CONFERENCES

2019 ISA Energy & Water Automation Conference Taking Shape

From Manoj Yegnaraman, EWAC2019 conference chairman

We are excited to let you know that we will continue to have our annual water wastewater division ISA conference in 2019. This year, ISA decided to include the contents from two different industry divisions - our water wastewater industry division (WWID) and the power industry division (POWID). This resulted in a new name for our annual event – ISA Energy and Water Automation Conference. This will take place between August 5 and August 8, 2019 at the Championsgate Omni resort in Orlando, Florida. We invite you all to participate, and hope to see you in Orlando this Fall!

Similar to the previous years, our conference will start off with two days of training sessions (Aug 5 and Aug 6), followed by two days of technical sessions (Aug 7 and Aug 8) along with exhibitors' showcase of their automation products and services.

As you all know, the training sessions are a great venue for automation professionals to obtain specific training to enhance their skill set. They also allow operations and engineering staff working in our water/wastewater industry to obtain Professional Development Hours (PDHs) that would assist to meet their required continuing education credits for their respective licenses. The training details shown on this page provides details on the different training coursework, the contents included in each training course, the dates and other details.

The next two days of technical sessions will have keynote speakers, guest/invited speakers, exhibitors, multiple tracks of technical sessions, and networking opportunities during the breaks. Exhibitors will exhibit and demonstrate their offerings and services on both days. We are currently in the process of finalizing the details and updating the conference website with all the necessary information.

Automation challenges, novel approaches, innovation in technologies, and lessons learned related to automation are experienced in all industries. This year, we have the unique opportunity of learning such concepts from our energy industry, and vice versa. It would be interesting to understand what they face as challenges, and I'm sure there will be opportunities for us to learn from how they have approached those challenges and their innovative solutions to address those items.

I'm extremely excited to let you know that I will serve as the Chairman for our ISA Energy and Water conference this year. I am being supported by an army of people ranging from ISA staff, volunteers from our water waste water industries division, and our volunteers from the power industry division. Similar to the previous years, we expect a range of automation professionals ranging from end-users, consulting engineers,

integrators, vendors/manufacturers, OT and IT professionals, & young and energetic students. I'm sure you all have some winning strategies and some questions/challenges on your job. Please use this conference as a venue to share your experiences, network with individuals and get the answers to your questions. I look forward to seeing many of you at our 2019 conference in August in Orlando, Florida.

For more information about the event or to register, visit

www.isa.org/ewac2019/





**ISA Energy & Water
Automation Conference**

Conference: 7–8 August 2019 Training: 5–6 August 2019
Venue: OMNI Championsgate, Orlando, Florida

ISA Technical Training Schedule*

Take advantage of ISA one-day, technical training! This is a yet-another opportunity to expand your professional development and gain CEU or PDH credits by attending one or more valuable short courses being held in conjunction with EWAC 2019.

IC39C Introduction to SCADA Systems Integration

Date: Monday, 5 August
Time: 8:00 a.m. - 4:00 p.m.
CEUs/PDHs: 7

Member: \$650.00 USD
Community Member/List: \$815.00 USD

This course explains the parts and technologies that make up a Supervisory Control and Data Acquisition (SCADA) system and shows you how to evaluate potential benefits of applying the technology to your process application.

IC39C - Introduction to the Management of Alarm Systems

Date: Monday, 5 August
Time: 8:00 a.m. - 4:00 p.m.
CEUs/PDHs: 7

Member: \$650.00 USD
Community Member/List: \$815.00 USD

This course focuses on the key activities of the alarm management lifecycle provided in the ANSI/ISA-18.00.02 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.

MT05C - Project Management for Technical Professionals

Date: Tuesday, 6 August
Time: 8:00 a.m. - 4:00 p.m.
CEUs/PDHs: 7

Member: \$650.00 USD
Community Member/List: \$815.00 USD

This course overviews project management for technical professionals responsible for managing technical projects as well as for anyone interested in enhancing their project management knowledge and skills. The fundamentals of what you need to know to manage technical projects are presented. It broadly overviews the concepts and practices of the project management life cycle and presents the techniques, concept, and tools needed to define, plan, monitor, control, and close a technical project.

IC87C - CyberSensors: Advancements in Automation CyberPhysical Security

Date: Tuesday, 6 August
Time: 8:00 a.m. - 4:00 p.m.
CEUs/PDHs: 7

Member: \$650.00 USD
Community Member/List: \$815.00 USD

This course presents a substantial change to cyber- and cyberphysical security that is arising in the electric utility SCADA domain. Advances in technology as well as business operation changes are presented with specific impacts on legacy SP95/99 (Purdue Model and zones & conduits) architectures. Modern advances in sensor technology, IT/OT cognizant systems, the latest wireless and Internet of Things (IoT and Industrial IoT) are layered into the "cybersensors" discussions providing implications for seamless integration into IT security and OT operational systems. Numerous examples of real-world deployments are covered for facilities using supervisory control and acquisition (SCADA) systems.

* Note: Registration for training courses is separate from and in addition to your conference registration fee. For more information or to register, contact ISA at +1 919-549-8411 or info@isa.org.

WWID SCHOLARSHIPS

2019 Scholarship Winners Announced

The ISA Water & Wastewater Industries Division (WWID) is pleased to announce the winners of the 2019 WWID Student Scholarships. This year's recipients are Jared Hunter and Ivana Tieu. Each received a \$1000 USD scholarship prize to help with their school costs. Congratulations!

Jared Hunter

Weber State University
Ogden, Utah, USA



"I want to thank everyone who considered me to be a winning candidate for the scholarship. It means so much to me, as I am working on a Bachelor's Degree from Weber State University. I am majoring in Computer Science, so it's important for me to look forward to a career in that field with as much skills as possible. Scholarships like this are the reason I keep succeeding in college, even after getting the Associate's Degree from Salt Lake Community College."

Biography: Jared Hunter grew up in Salt Lake City, Utah, USA. In high school he took several advanced placement courses and was heavily involved with Boy Scouts. He received his Eagle Scout in 2015. Jared completed a diploma at Salt Lake Community College, and is currently working on his Associates Degree in Computer Science at Weber State University. He looks forward to contributing to the water sector.

Ivana Tieu

University of Alberta
Edmonton, Alberta, Canada



"I sincerely thank all the committee members for awarding me as one of the recipients of the ISA's 2019 WWID Michael Fedenyszen Memorial scholarship. I am truly honoured to be recognized for my hard work and continued efforts to make a difference. This generosity is greatly appreciated and contributes to my completion of my undergraduate degree. I hope to support the water and waste water industry in the future. Thank you again for this scholarship that will aid in my endeavors as a prospective civil environmental engineer."

Biography: Ivana Tieu is a second year Civil: Environmental Engineering Co-op student at the University of Alberta. She is passionate about water resources engineering and was a volunteer for the Faculty of Engineering's DiscoverE camp,

the Engineering Students' Society (ESS) art show, ESS Career Fair, ASSIST Community Services summer camp, and other non-profit organizations. On an undergraduate team, she has entered in the ISA Industry Challenge Competition to apply technical knowledge outside of the classroom. Through her interest in entrepreneurship, she was Vice-President Finance of 3 student led Junior Achievement companies, an Off-Site Advisor for two junior high in-school company programs and sat as an Advisory Council Board Member as Achiever of the Year from the 2017 program term. She has interned for Core Real Estate Group and is currently interning with Junior Achievement Northern Alberta & NWT. With an understanding of social responsibility, she acted as a member of City of Edmonton Youth Council Social Equity Sub-Committee for 2017-2018 and is a member of the Urban and Regional Planning Sub-Committee for the 2018-2019 term to vocalize youth issues and empower youth through initiatives and events.

How to apply for the next year's 2020 WWID Student Scholarship

Applications for the 2020 ISA WWID Student Scholarship will be due January 31, 2020.

The 2020 Scholarship Application form will be available in fall 2019 at www.isa.org/wwid/



For more information about the ISA

water/wastewater division visit www.isa.org/wwid/



WWID DIVISION NEWS

2019 ISA Strategic Leaders Meeting (SLM)

On the long weekend of May 18-20, 2019 the ISA held its annual Strategic Leader Meeting (formerly known as the Spring Leaders Meeting). This year's gathering was held in Charlotte, North Carolina, USA and brought together ISA leaders from around the world. In attendance were Graham Nasby and Jon DiPietro, both long-time ISA water/wastewater division volunteers. At the meeting the ISA discussed its four key society-wide strategic objectives, and the associated goals/tactics. One of these objectives is the continuing development and dissemination of high quality technical content. Our ISA water/wastewater division through its conferences, webinars and newsletter, continues to excel in this area. The WWID takes great pride in supporting its goals and the goals of the ISA as a whole.



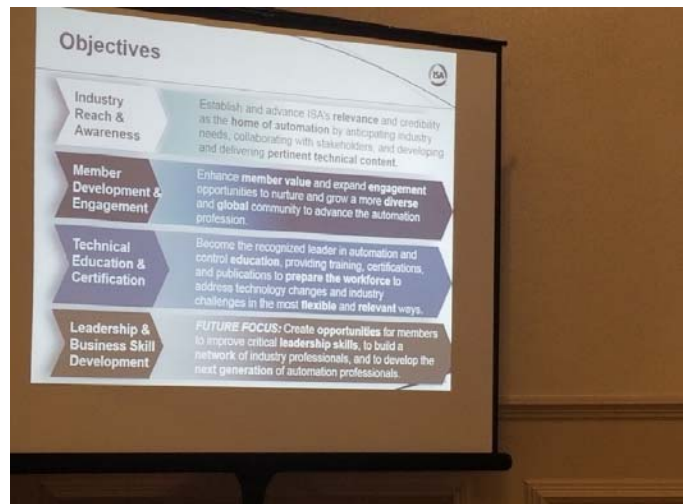
ISA Executive Director Mary Ramsay welcoming ISA leaders from across the world at 2019 ISA Strategic Leaders Meeting



2019 Society President Paul Gruhn addressing the group



Throughout the weekend, ISA leaders and staff worked together on a wide variety of society initiatives.



A slide from one of the many working groups that covers the four strategic objectives that ISA will be focusing on for the next 3-5 years. The SLM was a very productive meeting.

STANDARDS NEWS

ISA112 SCADA Systems standards committee holds meeting on May 17, 2019

By Graham Nasby, ISA112 committee co-chair

As part of the 2019 ISA Strategic Leader Meeting, the ISA112 SCADA Systems Standards Committee held a full day face-to-face meeting on Friday, May 17, 2019. Held in Hilton University Place hotel in Charlotte, NC, USA the meeting brought together SCADA experts from a wide variety of industries with the goal of developing a standardized framework for SCADA systems. Like all ISA standards, the ISA112 standard is focused around using standardized terminology, models and workflows that are independent from any one vendor. The goal of the standard is so that it can be used equally by end-users, designers, consultants, contractors, vendors, system integrators, and solution providers.

The ISA Water/Wastewater division is proud to have several members actively participating in the ISA112 SCADA Systems standards committee. WWID volunteers who are involved in the ISA112 committee include Kevin Patel, Pavol Segedy, Manoj Yegnaraman, and ISA112 co-chair Graham Nasby. SCADA (supervisory control and data acquisition) systems play a vital role in modern municipal water/wastewater utilities. We are pleased to be involved in the development of the new ISA112 document. ISA112 has the goal of developing standardized terminology for SCADA systems, standardized reference architectures for SCADA systems, and a comprehensive SCADA lifecycle work processes for managing/designing/commissioning/operating SCADA systems.

At the meeting, committee members reviewed first draft text that had been submitted by some 60 co-authors of the draft standard. In all, the committee has approximately 150 members, who are involved in commenting to ensure the ISA112 standard will effectively meet the needs of the many

industries it is being developed to serve. In addition to in-person attendees, several committee members from around the world also called in to provide their insight and ideas. Based on discussions held in Charlotte, further refinements were identified for the in-progress ISA112 lifecycle diagram which will be reflected in upcoming committee drafts. Many thanks to everyone who made the trip to this important face-to-face meeting.

The ISA112 SCADA standards committee has monthly conference calls, and meets face-to-face twice per year. More information about the committee can be found at www.isa.org/isa112/



Group shot of ISA112 SCADA Systems Standards Committee Members who met on May 17, 2019 for a full day workshop to iron out table of contents details and key terminology for the standard's main document.

TECHNICAL ARTICLE

America's Water Infrastructure Act of 2018

What does it mean for Water Utilities?

How can Automation Professionals Help?

By Don Dickinson, Phoenix Contact

In the United States, the *America's Water Infrastructure Act of 2018* was signed into law on October 23, 2018. Among the many provisions of the law are requirements for drinking water utilities to conduct risk and resilience assessments, and prepare emergency response plans beginning in 2020. This article provides an overview of the act relating to water utility risk and resilience assessments and emergency response plans, and highlights key resources that may be useful in meeting the statutory requirements of the act – especially in the area cybersecurity.

AWIA18

America's Water Infrastructure Act of 2018 (AWIA) is a federal law enacted "*to provide for improvements to the rivers and harbors of the United States, to provide for the conservation and development of water and related resources, to provide for water pollution control activities, and for other purposes.*" The AWIA addresses a wide range of subject matter within the water sector; however, there are specific requirements for community (drinking) water utilities as outlined in section 2013: Community Water System Risk and Resilience. §2013 amends the Safe Drinking Water Act and directs a community water system (CWS) serving a population greater than 3,300, to conduct and certify a Risk and Resilience Assessment, and then to prepare and certify an Emergency Response Plan that incorporates findings of the assessment. The deadlines for submitting a utility's certification that the assessment and response plan have been completed is based on the size of the CWS. The deadlines for submittals are listed below in Table 1. There are no requirements under §2013 for community water systems serving less than 3,300 people.

Risk and Resilience Assessment

Per §2013, each CWS serving a population of greater than 3,300 persons shall conduct an assessment of the risks to, and resilience of, its system. Such an assessment shall include an assessment of:

- i. the risk to the system from malevolent acts and natural hazards;
- ii. the resilience of the pipes and constructed conveyances, physical barriers, source water, water collection and intake, pre-treatment, treatment, storage and distribution facilities, electronic, computer, or other automated systems (including the security of such systems) which are utilized by the system;
- iii. the monitoring practices of the system;
- iv. the financial infrastructure of the system;
- v. the use, storage, or handling of various chemicals by the system; and

- vi. the operation and maintenance of the system;

The assessment may include an evaluation of capital and operational needs for risk and resilience management for the system.

As noted previously, the Risk and Resilience Assessment (RRA) certification must be submitted to the U.S. Environmental Protection Agency (USEPA) by the date listed below in Table 1. Further, the CWS must review the assessment every five years after the applicable deadline, revise as necessary, and submit the assessment certification. In the interest of privacy and security, the certification must only include, 1) information that identifies the community water system submitting the certification; 2) the date of the certification; and 3) a statement that the community water system has conducted, reviewed, or revised the assessment as applicable.

Emergency Response Plan

Per §2013, each CWS shall prepare or revise an emergency response plan (ERP) that incorporates findings of the assessment, and submit a certification to USEPA no later than six months after the CWS's assessment deadline. As with the assessment, the ERP must be reviewed, revised if necessary, and certified every five years.

The emergency response plan shall include –

1. strategies and resources to improve the resilience of the system, including the physical security and cybersecurity of the system;
2. plans and procedures that can be implemented, and identification of equipment that can be utilized, in the event of a malevolent act or natural hazard that threatens the ability of the community water system to deliver safe drinking water;
3. Actions, procedures, and equipment which can obviate or significantly lessen the impact of a malevolent act or natural hazard on the public health and the safety and supply of drinking water provided to communities and individuals, including the development of alternative source water options, relocation of water intakes, and construction of flood protection barriers; and
4. Strategies that can be used to aid in the detection of malevolent acts or natural hazards that threaten the security or resilience of the system.

In addition to the requirements outlined above for CWSs, there are numerous requirements for the USEPA which include:

- Establishment of the Drinking Water Infrastructure Risk and Resilience Program under which grants may be awarded to increase CWS resilience;
- Authority to recognize technical standards that are developed or adopted by third-party organizations or voluntary consensus standards bodies;

- Provide guidance and technical assistance to CWSs serving less than 3,300 on how to conduct resilience assessments and prepare ERPs if desired;
- Various other actions to enable implementation of AWIA.

For the complete text of AWIA, visit this information website at: <https://www.congress.gov/bill/115th-congress/senate-bill/3021/text>.

Guidance for Implementing AWIA

AWIA §2013 specifies the components - but not the exact requirements that RRAs and ERPs must address. The USEPA does not require the use of any designated standards, methods or tools to conduct RRAs or prepare ERPs. As such, each CWS must determine which standards and guidance are the most relevant for meeting the requirements of the AWIA. Regardless of the guidance used, the CWS is responsible for ensuring its assessment and response plan fully address all requirements of the AWIA.

The American Water Works Association (AWWA) has published consensus documents for the water sector for more than one hundred years. Currently there are more than 180 AWWA standards that cover all aspects of water delivery and supply. Of these standards, there are three that have specific relevance to AWIA for those responsible for conducting RRAs and ERPs.

The standards are:

- ANSI/AWWA J100-10 Risk and Resilience Management
- ANSI/AWWA G430-14 Security Practices for Operations and Management
- ANSI/AWWA G440-17 Emergency Preparedness Practices

ANSI/AWWA J100-10 (R13) Risk and Resilience Management of Water and Wastewater Systems

The J100 standard sets requirements for all-hazards risk and resilience analysis and management for the water sector, and

prescribes methods that can be used for addressing these requirements. As required by AWIA, the Risk and Resilience Assessment (RRA) must assess the risk to the system from malevolent acts and natural hazards or - *all hazards*. The J100 standard is the only risk-assessment methodology developed for the water sector that covers all hazards, including cyber threats. As such, the J100 standard is a logical choice for CWSs to consider when selecting a risk assessment methodology for conducting RRAs.

ANSI/AWWA G430-14 Security Practices for Operations and Management

The G430 standard describes the critical requirements for establishing and operating a protective security program for a water, wastewater, or reuse utility. The security plan outlined by the standard addresses multiple facets of security including physical security and cybersecurity. Because the Emergency Response Plan (ERP) specifically includes *strategies and resources to improve the resilience of the system, including the physical security and cybersecurity of the system*, the G430 standard is a useful aid in developing the framework of an ERP. It is important to note that while the G430 standard does address cybersecurity requirements for a utility's security plan, it does so at the highest level. It is assumed a more prescriptive standard will be needed to develop a comprehensive ERP.

ANSI/AWWA G440-17 Emergency Preparedness Practices

The AWIA defines resilience as, *the ability of a community water system or an asset of a community water system to adapt to or withstand the effects of a malevolent act or natural hazard (i.e. all hazards) without interruption to the asset's or system's function, or if the function is interrupted, to rapidly return to a normal operating condition*. As with the G430 standard, the G440 standard provides guidance when preparing an ERP, and can be referenced to evaluate, develop, implement, and maintain emergency preparedness practices that boosts the utility's resilience.

Utility Size	Estimated # of Community Water Systems*	Risk & Resilience Assessment	Emergency Response Plan
>100k	435	March 31, 2020	September 30, 2020
50k - 100k	594	December 31, 2020	June 30, 2021
3,300 - 50k	8,295	June 30, 2021	December 30, 2021

TABLE 1: Certification Deadlines

* Provided by Kevin Morley, AWWA Manager of Federal Relations

ISA Resources

Since 1945 the International Society for Automation (ISA) has developed industry standards, and provided education and training for automation professionals serving a wide range of industry segments. Given the AWIA requirements for improved resiliency for automated systems – especially relating to cybersecurity, automation professionals who work for or support a CWS will likely benefit from the many resources available from ISA. When preparing an ERP, the most relevant ISA resource may be the ISA-62443 series of standards and technical reports.

ISA 62443: Industrial Automation and Control System Cybersecurity

ISA/IEC 62443 covers key aspects of cybersecurity for industrial automation and control systems (IACS) including: general information (definitions, reference models, etc.), policies and procedures, and system/component security requirements. The 62443 series provides a comprehensive scope of IACS cybersecurity for the critical infrastructure sectors, including water and wastewater systems. As such, the series is a useful resource for automation professionals involved with conducting risk assessments and preparing response plans. Additionally, ISA offers training and certifications for the 62443 series to aid in its application.

In summary, there is a wide variety of guidance available to aid utility personnel in meeting the requirements of the AWIA. It is important to note that the various standards and guidance materials are not mutually exclusive. It is best to consult as many sources as possible to determine which are most applicable for a given need. However, when conducting risk and resilience assessments and preparing emergency response plans, the best starting point may be the AWWA guidance, tailored specifically for drinking water utilities, along with subject-specific guidance and training from ISA.

ABOUT THE AUTHOR:



Don Dickinson has 30 years of sales, marketing and product application experience in Industrial Controls and Automation, involving a wide range of products and technologies in various industry segments. Don is the Senior Business Development Manager – Water Sector, Phoenix Contact USA. He is the past chair of the NC AWWA-WEA Automation Committee and the current chair of the Automation Security subcommittee. Contact: ddickinson@phoenixcon.com



Thought-provoking and authoritative coverage of automation technologies

Read **InTech** Now!

ISA members enjoy premium access to technical knowledge, career development opportunities, and exclusive networking events.

Join **ISA** Now

Explore Benefits

Knowledge at your fingertips!

Click here for our complete [Training Schedule](#).



Setting the Standard for Automation™

Show your success

With ISA Senior membership

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

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



Brag a little. Apply today for ISA Senior Member grade.

612854

AUTO-QUIZ: BACK TO BASICS

PLC Analog Input Card Scaling Review

This automation industry quiz question comes from the ISA Certified Control Systems Technician (CCST) program. CCSTs calibrate, document, troubleshoot, and repair/replace instrumentation for systems that measure and control level, temperature, pressure, flow, and other process variables

In troubleshooting a system failure, a suspected bad component is replaced with a known good component. This does not correct the problem. What is the next best course of action?

- a) build software traps involving additional logic and code to detect the problem
- b) further analyze the problem and collect additional data as necessary
- c) set additional alarms to pinpoint the problem
- d) retain a consultant who specializes in this type of repair
- e) none of the above

Answer:

Troubleshooting is often an iterative process. If the proposed solution is not the correct one, further analysis and data collection are warranted.

Answers A and C are not the best answers because not all component failures involve the process control system or its associated program code and alarms. Sensors, actuators, and other field devices all have replaceable components that can fail. Code and alarms cannot pinpoint a transmitter failure to

the analog output circuit, for example.

Answer D is not the best answer because this approach would be very expensive, as there are dozens of specific failure types that may occur. Also, basic troubleshooting does not require a specialized consultant; it can be done effectively by the control technician using the ISA logical and analytical approach to troubleshooting.

The correct answer is B, “further analyze the problem and collect additional data as necessary

Reference: Goettsche, L.D. (Editor), [Maintenance of Instruments and Systems, 2nd Edition](#)

ISA CAP and CCST certification programs provide a non-biased, third-party, objective assessment and confirmation of an automation professional’s skills.

The CAP exam is focused on direction, definition, design, development/application, deployment, documentation, and support of systems, software, and equipment used in control systems, manufacturing information systems, systems integration, and operational consulting.

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.

Question originally appeared in the AutoQuiz column of <http://automation.isa.org>. Reprinted with permission.



Modicon: Future Ready PLCs & PACs

Modicon is the first name in programmable logic controllers (PLCs).

The inventor of the PLC, Modicon introduced the first PLC — the Modicon 048 — in 1968. Today, the Modicon Family continues to push boundaries and define the technology that enables and connects modern machines and processes. The Modicon Family of PLCs and programmable automation controllers (PACs) still stands for innovation, offering a full range of solutions to meet your automation needs.

From small lift stations to treatment plant processes to advanced supervisory process automation, our robust offer of trusted automation solutions enhances machines and processes across industries.

www.modicon.com



Modicon M580 ePAC:
The world's first ePAC for high performance industrial process control

Life Is On

Schneider
Electric

SOCIETY NEWS

ISA Leaders Meet to Advance the Organization's Strategic Direction*By Paul Gruhn, 2019 ISA Society President*

In May 2019, ISA leaders convened in North Carolina for the first of two in-person meetings. This was our Strategic Leader Meeting (SLM) and is intended for a relatively small group (around 50) of volunteer leaders who meet to discuss strategic issues and operational details.

Our second in-person meeting, the [Annual Leadership Conference](#), will be in October. This event has a larger and broader audience (around 150 volunteer leaders) and includes the Council of Society Delegates business meeting, professional development training, and the Society's annual Honors and Awards Gala. Many of our standards committees also meet prior to or after the Annual Conference.

I believe that all members have a voice in our future, and I am excited to share some of the work that happened during the Strategic Leader Meeting. I hope that you will get some sense of the excitement and optimism that I feel for where we are going based on the compelling conversations had by your leaders during this event.

The meeting was held in Charlotte, NC, USA, and was a bit of a departure from past formats. We spent most of the weekend as one large group engaging in dialogue about our strategic direction.

Before I give more details, let's remember the journey we've been on as an organization. During the past year, we have revised our vision and mission statements.

Our vision is **To create a better world through automation.**

Our mission is **To advance technical competence by connecting the automation community to achieve operational excellence.**

We have also developed five core values:

- excellence;
- integrity;
- diversity and inclusion;
- collaboration; and
- professionalism.

This work can be reviewed in [previous columns](#).

Leveraging these concepts, the Executive Board worked to develop strategic objectives that will move our mission forward over the next three to five years:

- Establish and advance ISA's relevance and credibility as the home of automation by anticipating industry needs, collaborating with stakeholders, and developing and delivering pertinent technical content.

- Enhance member value and expand engagement opportunities to nurture and grow a more diverse and global community to advance the automation profession.
- Become the recognized leader in automation and control education, providing training, certifications, and publications to prepare the workforce to address technology changes and industry challenges in the most flexible and relevant ways.
- Create opportunities for members to improve critical leadership skills, to build a network of industry professionals, and to develop the next generation of automation professionals.

With the long-term focus of the objectives established, your Board also discussed possible goals (9-18 months), tactics (up to 6 months), and key performance indicators.

The Board also knew it was important to tap into the collective wisdom of the Society, and that became the purpose of the Strategic Leader Meeting. After a brief dialogue about each objective, the leaders worked in small groups and brainstormed ideas. They summarized their suggestions for the group, which were captured in an online mind-mapping tool. With all the ideas captured, each leader identified their top two priorities under each objective. There were so many great ideas - you could feel the energy in the room, and we came out of the sessions with great input.

At the conclusion of the event, the Board convened informally to review and discuss the results of the weekend. The Board will continue to meet in small work groups to refine the recommended priorities and work with various society groups on implementation plans.

We are thrilled to report that 100% of attendee survey responses confirmed "the strategic discussions were valuable to me." Some comments on the overall meeting included:

*"I really enjoyed the format, content and people.
Definitely a valuable experience."*

*"I found the people at the meeting intelligent,
passionate and willing to do what it takes to
improve the society."*

*"I better appreciate the vision
and challenges of ISA."*

*"ISA is in a much better place, financially and
strategically."*

I have personally been attending ISA leader meetings for close to 30 years. The positive vibe at this SLM was apparent to everyone. Many used the words 'positive,' 'exciting,' and 'optimistic' in their feedback. There was more levity and laughter than any other leader meeting I can recall. One leader stated it was the most positive meeting he's been to in 15 years.

At the close of the meeting, leaders and staff were asked to pledge what they would do differently moving forward. Some of the responses were:

"Think collectively. Let others share ideas and listen carefully."

"Keep an open mind to new opportunities and ideas."

"Pitch in to help solve a problem that I have been waiting for others to solve." (There were several variations of 'stop complaining.')

"I will encourage others to join and participate in leadership at my local section."

If you care about the future direction, success, and health of **your** society, I strongly encourage you to **get involved**.

If you have ideas on what we can be doing better, we want to hear from you!

You'll be seeing tools and resources soon that will make getting involved much easier. *Exciting* times are ahead! Thank you for being part of the ISA community.

Paul Gruhn
2019 ISA President

About Paul Gruhn



Paul Gruhn PE, CFSE, and ISA Life Fellow, is a Global Functional Safety Consultant with aeSolutions, a process safety, cybersecurity and automation consulting firm. As a globally recognized expert in process safety and safety instrumented systems, Gruhn has played a pivotal role in developing ISA safety

standards, training courses and publications. He serves as a Co-Chair and long-time member of the ISA 84 standard committee (on safety instrumented systems), and continues to develop and teach ISA courses on safety systems. He also developed the first commercial safety system modeling program. Gruhn has written two ISA textbooks, numerous chapters in other books and dozens of published articles. He earned a bachelor of science degree in mechanical engineering from Illinois Institute of Technology, is a licensed Professional Engineer (PE) in Texas, and both a Certified Functional Safety Expert (CFSE) and an ISA 84 Safety Instrumented Systems Expert.

ISA STANDARDS

ISA Standards Update – June 2019

The ISA Standards Department has been hard at work creating, updating, and maintaining ISA's portfolio of over 180 standards documents, recommended practices and technical reports. Here are some recent developments:

New ISA Standards and Technical Reports

ISA-TR84.00.07, *Guidance on the Evaluation of Fire, Combustible Gas, and Toxic Gas System Effectiveness*, is intended to help address detection and mitigation of fire, combustible gas, and toxic gas hazards in process areas. Fire and gas systems per this technical report are a subset of industrial automation and control systems that are used in the process industries to detect loss of containment of hazardous materials from a process and initiate a response to mitigate the release impact. Loss of containment can be a small leak or a catastrophic release. It can be detected by measuring the presence of the released materials or inferred from the effects of the release.

ANSI/ISA-95.00.05, *Enterprise-Control System Integration – Part 5: Business-to-Manufacturing Transactions*, defines transactions in terms of information exchanges between applications performing business and manufacturing activities associated with Levels 3 and 4 of the Purdue Enterprise Reference Model. The exchanges are intended to enable information collection, retrieval, transfer and storage in support of enterprise-control system integration. This part of the ISA-95 series is consistent with the ISA-95.00.02 and ISA-95.00.04 object model attributes. Also defined are transactions that specify how to exchange the objects defined in ISA-95.00.02, ISA-95.00.04 and this standard.

Upcoming Standards Committee Meetings

ISA112 SCADA Systems Standards

- Friday, Oct 25, 2019 – Paradise Point
San Diego, California, USA

ISA18 Alarm Management

- To be held in conjunction with Annual Leadership Conference (Oct 25-28, 2019)
San Diego, California, USA

ISA101 Human Machine Interfaces (HMI)

- To be held in conjunction with Annual Leadership Conference (Oct 25-28, 2019)
San Diego, California, USA

ISA99 Cyber Security

- To be held in conjunction with Annual Leadership Conference (Oct 25-28, 2019)
San Diego, California, USA

For information on viewing or obtaining this or any ISA standard or technical report, visit www.isa.org/findstandards.

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 16-32 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 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"): \$500
- Full page, full color, (8.5x11") , with bleed \$600
- Half page horizontal, full color (7"x4.5"): \$350
- Half page vertical, full color (3.5"x9"): \$350
- Quarter page, full color (3.5" W x 4.5" H): \$250

Per Year: Apply 20% discount if purchasing 4 ads at a time

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

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

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

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



WWID Board Member Contacts

Director

Pavol Segedy, PE
HDR Inc.
Tel: (919) 427-5313
pavol.segedy@segedyfam.com

Director-elect

Don Dickinson
Phoenix Contact
Tel: (919) 633-0147
ddickonson@phoenixcon.com

2019 Symposium Contact

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

2019 Assistant Symposium Contact

Hassan Ajami
PCI Detroit
Tel: 313-874-5877
hajami@pci-detroit.com

Secretary Treasurer

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

Membership Chair

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

Program Chair

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

Newsletter Editor

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

Scholarship Committee Chair

& Asst. Newsletter Editor

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

Committee Member

David Hobart, P.Eng, CAP
Hobart Automation Engineering
Tel (802) 253-4634
dghobart@gmail.com

Student Scholarship Committee Members

Kevin Patel, Signature Automation (chair), knpatel@sig-auto.com
Sean McMillan, Jones & Carter, sean.mcmillan@jonescarter.com
Steve Valdez, General Electric, svaldez1210@gmail.com
Kevin Patel, Signature Automation, knpatel@sig-auto.com
Thomas C. McAviney, I&C Engineering, tcmcav@gmail.com

ISA Staff Contacts – Division Services

Andrea Holovach, Rachael McGuffin,
Karen Modrow, MaChelle Beason
ISA Headquarters, 67 T.W. Alexander Drive, PO Box 12277,
Research Triangle Park, North Carolina, 27709, USA
Tel: 1 (919) 990-9404
Fax: (919) 549-8288
divisions@isa.org

ISA Water/Wastewater Division Links:

Website: www.isa.org/wwid/
LinkedIn: <https://www.linkedin.com/groups/2031271/>
Facebook: <https://www.facebook.com/ISAWaterWastewater/>
WWID Blog: www.isawwsymposium.com/blog/

ISA Customer Service

ISA Headquarters - Raleigh, North Carolina, USA
Tel: 1 (919) 990-9404
Fax: (919) 549-8288
Email: info@isa.org

2019 ISA Conferences

2019 ISA Analysis Division Symposium
May 6-8, 2019 – Galveston, Texas, USA

2019 ISA Energy and Water Automation Conference
Aug 7-8, 2019 – Orlando, Florida, USA

2019 ISA Process Industry Conference (PIC)
Nov 4-6, 2019 – Houston, Texas, USA

2019 ISA Cybersecurity, Safety & IIOT Conference
Fall 2019, 2019 – Location TBD

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 actively supports ISA conferences and events that provide presentations and published proceedings of interest to the municipal water/wastewater sector. 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
Industry Division**