# Water/Wastewater
## Industry Division

*Setting the Standard for Automation™*

## Newsletter
## Spring 2020

## Director's Welcome
*Don Dickinson, Phoenix Contact USA*

Greetings to my fellow WWID members! I hope this message finds you well, despite the unprecedented circumstances confronting us. As a global community, we may not face a greater, collective challenge in our lifetimes. The COVID-19 crisis has dramatically impacted our world and every aspect of our lives, from work, to worship, to how we entertainment ourselves. In the US, more than 26 million people are now jobless because of the virus. Sadly, many have been tragically impacted by the loss of life. We all face an uncertain future that likely will be different than before when we return to something called "normal." Truly challenging times.

However, I'm reminded of a quote, "Being challenged in life is inevitable. Being defeated is optional." We will get through this, and whatever follows, because of the many unnamed heroes who are working diligently, perhaps at their own peril, to ensure that critical services and infrastructure are maintained. Those unnamed heroes include the water and wastewater professionals who operate and maintain drinking water and wastewater/drainage infrastructure.

In a March letter to Governors in all 50 states, territories and Washington, D.C., US EPA Administrator Andrew Wheeler stressed the importance of drinking water and wastewater services during this public health crisis. Mr. Wheeler requested "water and wastewater... **(continued on page 2)**

## Newsletter Editor's Welcome
*Graham Nasby, City of Guelph Water Services*

It was the freight train that no one saw coming. COVID-19 has quickly become a global force that has impacted almost every aspect of our lives, and will likely be remembered for generations to come. Not since the 1918 Spanish Flu pandemic has an illness had such a profound impact on our society, economy, culture, and day to day lives. The measures invoked by governments to control the pandemic's spread have been significant. We now live in an age that now includes: working from home, schools closures, events cancellations, concerts cancellations, parks closures, physical distancing regulations, etc., the list goes on. Light is at the end of the tunnel, but the experts are saying there will still be additional upcoming challenges to come.

So what part does the municipal water/wastewater sector have to do with all of this? One word: Stability. We keep the water flowing and the toilets flushing. Without the critical infrastructure of the municipal drinking water supply and wastewater treatment, modern society simply cannot function. Our sector has continued to perform admirably in face the COVID-19 pandemic, and for this I am thankful. We are a critical sector and our efforts have not gone unnoticed. Thank you to everyone for all of your ongoing efforts.

In our Spring 2020 newsletter, you will find a series of updates about what our …. **(continued on page 2)**

www.isa.org/wwid/
www.isawaterwastewater.com

## WWID Director's Message
(continued from Page 1)

…workers, as well as the manufacturers and suppliers who provide vital services and materials to the water sector, be considered essential workers and businesses by state authorities."

Further, the Cybersecurity and Infrastructure Security Agency (CISA) under the US Department of Homeland Security, released guidance for identifying critical infrastructure sectors and essential workers. The Water and Wastewater Systems Sector has always been considered essential to modern life and economy. The sector may be even more vital to public health and safety during this crisis.

So, who are these essential workers… these unnamed heroes?

Per the CISA, they are:
- Operational staff at water authorities.
- Operational staff at community water systems.
- Operational staff at wastewater treatment facilities.
- Workers repairing water and wastewater conveyances and performing required sampling or monitoring, including field staff.
- Operational staff for water distribution and testing.
- Operational staff at wastewater collection facilities.
- Operational staff and technical support for SCADA Control systems.
- Chemical equipment and personal protection suppliers to water and wastewater system.
- Workers who maintain digital systems infrastructure supporting water and wastewater operations.

If you are one of these essential workers, thank you! I know that none of you would consider yourself a hero. No one feels like a hero just for doing their job. But do not underestimate the importance of your efforts in ensuring that defeat is not the choice we make. Rather, know that your diligence and perseverance, even when facing uncertain odds, will guarantee the best possible outcome both now, and in the future.

Even if you are not one of the "essential" workers, but are a member of the WWID, you too are vital to our industry. Thanks to you as well for whatever role you have in supporting the many professionals who ensure the availability and reliability of critical water and wastewater systems.

I wish the best for us all in the coming weeks and months as we move towards recover and ultimately, back to productive and rewarding lives. Thanks again to all who are helping make that possible.

Warmest Regards,
**Don Dickinson**
WWID Director (2020-2021)
ddickinson@phoenixcontact.com

## Newsletter Editor's Welcome
(continued from Page 1)

…WWID has been up to, along with a number of technical articles. In the current uncertain environment of COVID-19 response, I encourage you to seek out the best science-based information that you can, so that you can do your part towards keeping your family, your community, and greater society safe during these unprecedented times. Reliable sources of information include the World Health Organization (WHO), national public health agencies, and local government health units in your immediate area. The Water Environment Federation (WEF) and American Water Works Association (AWWA) also have excellence resources available on their websites to aid utilities and water/wastewater professionals during these times.

I would like to end my column with a quote that I think it fitting to our current situation. It's from the 20th century American civil rights leader Martin Luther King Jr. "*The ultimate measure of a man is not where he stands in moments of comfort and convenience but where he stands in times of challenge and controversy.*" Though the language is a bit dated, I think you get the message. Let's all do our part as we work through COVID-19 situation. Stay healthy and safe.

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

## Director Elect's Welcome

*Manoj Yegnaraman, Carollo Engineers Inc.*

Greetings to our worldwide ISA Water Wastewater Industries Division (WWID) members! This is my first message to you as the Director-Elect for our WWID. I am excited to serve in this role, and will be working alongside Don Dickinson and other volunteers/leaders on several activities as it relates to our Division. I joined ISA in 2001, and have been working specifically for the Water/Wastewater (WW) industry since 2006. I have learned so much, and made new friends by being involved in several ISA activities so far, and I look forward for more in the coming years.

Automation and our W/WW industry are constantly changing with technological/automation advancements and challenges. As a consulting engineer, I have had to keep up with these so that I could provide the highest quality of service for our clients. And my goal here is to make an honest effort to learn more, and also share these automation technologies, lessons learned and best practices with you via ISA - newsletters, webinars, annual conferences, involvement in ISA Standards and our ISA WWID LinkedIn group.

Finally, on behalf of the ISA WWID committee, I want to take this opportunity to thank each and every one of you for being involved in Automation for the W/WW industry. The success of our Division is a direct implication of the contributions of many of you, and our past and current volunteers/leaders. Your services and products have a direct positive impact on the communities we live in. Thank you for all of your efforts in making this world a better place. Take care and stay safe.



OUR WORLD IS CHANGING,
**OUR PASSION REMAINS THE SAME.**

**WATER**
OUR FOCUS
OUR BUSINESS
OUR PASSION

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*Engineers...Working Wonders With Water®*

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## Introducing our 2020-2021 WWID Director: Mr. Don Dickinson



We are pleased to welcome our 2020-2021 WWID Director: Don Dickinson. Don began his two year term on January 1, 2020. Don was the general symposium chair of our 2018 ISA Water/Wastewater and Automatic Controls Symposium, and has been in the WWID Director-elect role for the past two years.

Don Dickinson has more than 35 years of sales, marketing and product application experience in Industrial Automation and Controls, involving a wide range of products and technologies in various industry segments. In his current role Don is the Senior Business Development Manager for the Water Sector, Phoenix Contact USA. A graduate of NC State University (BSEE), he is an active member in various industry groups including: ISA, AWWA, and WEF. Don is a right-brained engineer, a Distinguished Toastmaster, a has-been wannabe rock star, hack photographer & would-be surfer.

## Introducing the 2020-2021 WWID Director Elect: Mr. Manoj Yegnaraman
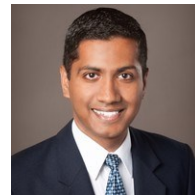


We are pleased to welcome 2020-2021 Director-elect: Mr. Manoj Yegnaraman. Manoj has been an active volunteer in the WWID since 2016, and recently served as the conference chair for the 2019 ISA Energy & Water Automation Conference..

Manoj Yegnaraman, an Associate VP at Carollo Engineers, Inc., has over 15 years of experience, most of which is for the Water and Wastewater Industry.

He received his Bachelor of Engineering in Instrumentation and Control Engineering from the University of Madras in India (2004). Later, he moved to the USA to receive his MS in Electrical Engineering with specialization in Control Systems from the University of Alabama in Huntsville (2005).

In 2006, he started working for Carollo Engineers, Inc., in Denver, Colorado. In 2014, he moved to Carollo's Dallas office, and currently leads the Electrical Programming and I&C group in Texas. His special expertise is performing Utility-wide SCADA Master Plans.

He is a registered Professional Engineer (PE)/Control Systems Engineer (CSE). He is also a Certified PROFIBUS DP Engineer (CE) and Certified PROFIBUS PA Engineer (CP).

Manoj joined ISA in 2001, and has been a Senior Member of ISA since 2011. He is the Education Chairman for ISA's North Texas Section. He is actively involved in ISA's new SCADA Standard – ISA112.
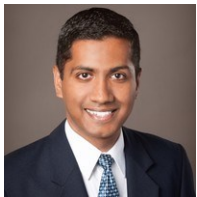
2020 CONFERENCE NEWS
## Introducing our 2020 WWID Conferences Team
*From the WWID Committee*

The ISA Water/Wastewater division is delighted to announce our 2020 conference leadership team. Manoj Yegnaraman returns as our 2020 Energy & Water Automation Conference chair, after successfully holding the role in 2019. Hassan Ajami is also returning in the Assistant conference chair role.

We are also pleased to have Joe Provenzano back again, returning as our eponymous program committee chair. We look forward to the year ahead as this group helps plan – the now virtual – conference offerings that ISA will be providing for the municipal water/wastewater sector.

**Manoj Yegnaraman**
**2020 Conference Chair**

Associate VP
Carollo Engineers, Inc.
Dallas, Texas, USA

**Hassan Ajami**
**2020 Assistant Conference Chair**

VP / Lead Technical Officer
PCI Vertix
Detroit, Michigan, USA

**Joe Provenzano**
**2020 Program Chair**

Technical Consultant
KPRO Engineering Services
Naugatuck, Connecticut, USA

Photo from our 2019 Energy & Water Automation Conference.

2020 CONFERENCE NEWS
## Update on 2020 EWAC Conference
*By Manoj Yegnaraman, Carollo Engineers Inc.*

Greetings to all! I have been serving as the General Chair for the 2019-2020 ISA Energy & Water Automation Conference committee, and this article is to provide you an important update on our annual ISA EWAC conference.

Because of the current global COVID-19 pandemic, ISA has – as of April 24, 2020 – canceled the 2020 ISA Energy & Water Automation Conference which was scheduled to take place in San Antonio, Texas, USA in August 2020. Refer to https://isaautomation.isa.org/isa-covid-19-updates/ for up-to-date information from ISA on events and training.

Meanwhile, the ISA EWAC committee has come up with two goals towards the continuation of providing technical content.

As an immediate goal, the EWAC committee would be conducting webinars associated with the WWID and POWID industries. These webinars are part of ISA's new initiative of the webinar series. The first webinar related to EWAC is expected to be in July 2020. The topics hosted by EWAC would range from keynotes, SCADA/HMI/PLCs, process instrumentation, cyber security, and other automation topics as it relates to the WWID and POWID industries.

As a near future goal, the EWAC committee would be conducting an online virtual EWAC conference, which would basically take the place of the 2020 ISA EWAC conference. In this virtual event, the goal is to include all sessions that were a part of the 2019 ISA EWAC – training, keynotes, invited speakers, technical tracks and exhibitors. ISA is coming up with a platform that would allow attendees to interact and network with exhibitors, speakers and other attendees. I hope our technical content helps you on your products and services for the Water/Wastewater Industry

In closing, I would like to thank you for being a WWID member, and for your contributions. Please reach out to me or to any of our WWID contacts at the end of this newsletter if you have any questions, and/or if you would like to be involved in our committee.

Take care and stay safe.

Regards,

Manoj Yegnaraman, PE
General Chair, 2019-2020 ISA EWAC
Associate VP, Carollo Engineers, Inc.
myegnaraman@carollo.com

**Water/Wastewater**
**Industry Division**

*From www.isa.org news release on April 24, 2020 regarding the global COVID-19 pandemic:*

# IMPORTANT ANNOUNCEMENT: ISA's 2020 In-Person Events

**All of ISA's face-to-face conferences in 2020 will be cancelled or moved into virtual platforms.**

**The following face-to-face events have been CANCELLED for 2020:**

- ISA Analysis Division Symposium  (Apr 26-30, 2020 – Long Beach California, USA)

- ISA Energy & Water Automation Conference (Aug 5-6, 2020 – San Antonio, Texas, USA)

- ISA Cybersecurity Standards Implementation Conference (~~May 13-14~~, Aug 26-27 – Galveston, Texas)

- ISA Digital Transformation in Deepwater Production Conference (Sept 16-17, 2020 – Galveston, Texas)

-  ISA IIoT & Smart Manufacturing Conference (~~Apr 15-16~~, Oct 20-21, 2020 – Galveston, Texas, USA)

- ISA Annual Leadership Conference (Oct 25-28, 2020 – San Juan, Puerto Rico, USA)

- ISA Process Industry Conference (Nov 18-19, 2020 – Houston, Texas, USA)

Refunds will be automatically processed for these events. Visit www.isa.org for details.

**Looking for ways to get engaged, despite the COVID-19 pandemic?**

ISA offers a collection of digital and virtual resources to help you track and anticipate trends. You can view free, on-demand web seminars on the ISA Automation Education Network, and we will be creating brand new series on the these hot topics:

- Cybersecurity
- IIoT & Smart Manufacturing
- Digital Transformation
- Process Control & Instrumentation

Plus, ISA will be launching all-new virtual events with interactive networking and learning sessions on topics like cybersecurity and digital transformation. Stay tuned for more details!

P.S. Interested in contributing your knowledge and expertise to ISA's content? We're currently sourcing volunteer content contributors in several key topic areas. Visit www.isa.org/volunteercontent to learn more!

## WWID was at ISA's 2020 Spring Leaders Meeting in Austin, Texas, USA
*By WWID Committee*

In March 2020, the ISA held its annual Spring Leaders Meeting in San Antonio, Texas, USA. Along with some one hundred leaders from around the world, our very own Don Dickinson, 2020-2021 WWID Division Director, was in attendance to ensure our voice was heard as part of the ISA's strategic planning activities. The weekend meeting, from Friday March 6 to Sunday March 8, 2020 welcomed volunteers and professional staff from the ISA's many operating areas. Included were representatives for Sections, Divisions, Districts, Standards, Education, Conferences, and other technical committees. It was also a chance for the ISA's executive board to hold a face-to-face meeting.

At the event, attendees were treated to a keynote address by Maggie Walker on leadership, and a series of workshops where the next steps for ISA's multi-year strategic plan were further developed. It was also a chance to discuss the various challenges and opportunities that come with operating a non-profit technical association in the 2020's.

Attendees were also treated to social activities in the evenings where everyone got a chance to reconnect with old friends and meet the ISA's new and upcoming leaders.

A big thank you to Don Dickinson for attending to ensure that the needs of the Municipal Water/Wastewater sector continue to be included in ISA's strategic plans, and for his efforts to help the ISA continue to shape its strategic path forward.



The packed agenda from the 2020 ISA Spring Leaders Meeting that was held March 6-8, 2020 in Austin Texas USA

## 2020 Scholarship Winners Announced
## Michael Fedenyszen Memorial Scholarship

The ISA Water & Wastewater Industries Division (WWID) is pleased to announce the winners of the 2020 WWID Student Scholarships. This year's recipients are **Roaa Elgamal** and **Chance Becker**. Each received a $1000 USD scholarship prize to help with their school costs. Congratulations!

**Roaa Elgamal**
University of Texas – San Antonio (UTSA)
San Antonio, Texas, USA

*"I would like to thank you and thank the ISA Water/Wastewater Industries Division for awarding me the 2020 ISA WWID Michael Fedenyszen Memorial Student Scholarship to pursue my undergraduate studies. This scholarship will advance my education and encourage me to further my efforts towards Water/Wastewater Industries."*

**Biography:** Roaa Elgamal is a transfer Computer Engineering student studying at the University of Texas San Antonio (UTSA). She expects to graduate June 2022. Before transferring to UTSA, Roaa was a student at the University of Ottawa, Canada, where she studied Computer Engineering for two years. Her skills include programming with C, Python, and Java. In her spare time, Roaa enjoys swimming and drawing.

**Chance Becker**
Perry Technical Institute
Yakima, Washington, USA

*"Thank you for taking the time to read my scholarship application. I startled my wife with my excitement when I read the email. Thank you for awarding this scholarship to assist me further in my college experience so that I can learn more about the things I love and find so interesting. This is the very first scholarship I've ever been granted, and it is such an honor to be receiving such a wonderful gift. Thank you again."*

**Biography:** Chance Becker is a first-year student at Perry Technical Institute in the Instrumentation/Industrial Automation program. He has worked in a wide range of professions from whitewater rafting guide on the rivers in Washington state to oil tank cleaner in Alaska and even a carpenter building homes in northern Idaho. He lives in Yakima, Washington with his wife, Tivoli, where they enjoy the outdoors, family and friends when they are not too busy studying..

Application forms for the 2021 WWID Student Scholarships will be available in Fall 2020.

## ISA WWID supporting the 2020 LIFT Intelligent Water Systems Challenge

For the third year in a row, the International Society of Automation (ISA) – through its Water and Wastewater Industries Division (WWID) – is supporting an initiative designed to demonstrate the value of intelligent water systems, smart water technologies, and leveraging data for improved decision-making.

The 2020 LIFT Intelligent Water Systems Challenge is a competition that encourages students, professionals, and technology enthusiasts to develop innovative solutions, particularly those using advanced sensing and/or data technology, which can be applied to water and wastewater collection, treatment, and distribution.

The Challenge is a joint effort of The Water Research Foundation (WRF) and the Water Environment Federation (WEF). Serving as supporting organizations are: ISA, the American Water Works Association (AWWA), the Cleveland Water Alliance, the Water Council, the WaterTap Technology Acceleration Project, and the Smart Water Networks Forum (SWAN).

"*We're pleased to again welcome ISA, a technical association that works to advance the use of automation and technology in the water and wastewater treatment industry, as a supporting organization of the LIFT Intelligent Water Systems Challenge,*" states Lisa McFadden, Director of Integrated Technical Programs and the Associate Director of the Water Science & Engineering Center at WEF. "*Last year's Challenge prompted a lot of interest and ideas around intelligent water systems and we're expecting great things this year as well.*"

The Challenge kicked off in January 2020 and will run until September 2020. Teams will have until March 20, 2020 to register their teams, and will then work towards submitting Challenge Solution by August 10. Judges will award a top prize of $10,000. Recognition will also be given to innovative approaches and to outstanding contributions from students or young professionals. More information about the challenge, its sponsors, and how entries will be evaluated can be found on the competition website at: www.waterrf.org/news/2020-intelligent-water-systems-challenge

"*ISA's Water and Wastewater Industries Division is pleased to be a regular supporter of the 2020 LIFT Intelligent Water Systems Challenge, as it is a flagship program that brings out the best of what people and automation technology can do in the municipal water/wastewater sector,*" emphasizes Graham Nasby, a long-time leader within ISA's WWID and a widely recognized expert within the water/wastewater community. "*ISA is committed to helping professionals in the water and wastewater industries improve safety, efficiency, and operational performance through automated controls, instrumentation, and other advanced technologies.*"

Nasby says that for well over a decade ISA's WWID has collaborated with WEF and other professional associations to conduct an annual symposium to showcase the value of automatic control applications, sensors and instrumentation, supervisory control and data acquisition (SCADA), and engineering best practices to the treatment and distribution of water, and the collection and treatment of wastewater.

In 2020, ISA as part of its goals to serve the needs of municipal water/wastewater community, will be again involved in the ISA's 2020 Energy and Water Automation Conference, which is on track to be delivered via an online format later in 2020. The conference combines ISA's popular power and municipal water programs into a single, two-day gathering with additional content on industrial water applications. Topics of emphasis include data analytics, IIOT, Smart Cities Initiative, and cybersecurity.

"*ISA has a strong history of supporting the needs of automation professionals in a wide variety of industries, including the municipal water/wastewater sector,*" Nasby says. "*With its ISA Energy and Water Automation Conference, ISA stays true to its vision of creating a better world through automation, by encouraging the sharing of information and ideas between the electric power and water/wastewater sectors. I encourage you to find out more about this event as details are released in the coming months.*"

For more information on this compelling new event, visit the conference website. More details as well as online registration will be available soon.

**For More Information, please visit:**
www.waterrf.org/news/2020-intelligent-water-systems-challenge

### About WRF

The Water Research Foundation is a US-based 501(c)3 non-profit organization that was officially formed in January 2018 after the merger of the Water Environment & Reuse Foundation and Water Research Foundation. The merged Foundation is the leading water research organization, funding research, pilot projects, and technology demonstrations that maximize the value of all water, including wastewater, stormwater, drinking water, and recycled water. Learn more at www.werf.org or www.waterrf.org.

### About WEF

The Water Environment Federation (WEF) is a not-for-profit technical and educational organization of 35,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. Since 1928, WEF and its members have protected public health and the environment. As a global water sector leader, our mission is to connect water professionals; enrich the expertise of water professionals; increase the awareness of the impact and value of water; and provide a platform for water sector innovation. To learn more, visit www.wef.org.

## ISA celebrates 75 years of support for automation people and technology
*From ISA News release*

The International Society of Automation (www.isa.org) celebrates 75 years of industrial automation evolution and professional development in 2020. The anniversary is an occasion to not just look to the past but to provide a view into the future.

ISA was founded in 1945 as the Instrument Society of America, and much has changed over 75 years, including the association's name. Now the International Society of Automation, ISA still "sets the standard for those who apply engineering and technology to improve the management, safety, and cybersecurity of modern automation and control systems used across industry and critical infrastructure," says ISA executive director Mary Ramsey.

ISA develops widely used global standards, certifies industry professionals, provides education and training, publishes books and technical articles, hosts conferences and exhibits, and provides networking and career development programs for 40,000 members and 400,000 customers around the world. Throughout the year, both online and in print through its InTech brand publications, ISA will review the technological milestones of the automation evolution, said *InTech* chief editor Renee Bassett. "We will shine a spotlight especially on the technologies of the most recent 25 years, as the third industrial revolution has given way to Industry 4.0," she said.

Automation.com's Bill Lydon will share his insights on technological developments that have enabled manufacturing and process applications to increase quality, productivity, and profits over the years. An example is the ISA-95 (ANSI/ISA-95) Enterprise-Control System Integration standard.

"The latest development of [ISA-95], B2MML [business to manufacturing markup language], creates compatibility with enterprise computing, cloud computing, Internet of Things, and Industry 4.0," says Lydon. "B2MML adds value to ISA-95 by providing consistent terminology and object models and bridging information technology and operational technology systems. B2MML expresses ISA-95 (IEC/ISO 62264) data models in a standard set of XML schemas written using the World Wide Web Consortium's XML Schema language (XSD). It is an open-source XML implementation of the ISA-95 and IEC 62264 standards. There is a joint initiative to bring B2MML into the OPC UA framework, which provides a secure and reliable architecture for manufacturing industries."

The September/October 2020 issue of InTech will include the 75th anniversary commemorative supplement. In it, ISA members, customers, and supporters will celebrate, reminisce, and attempt to predict the future, said Bassett. "We will call on the people who have been working to improve and transform industrial automation within or adjacent to ISA over the years. We want to know how the standards and trainings have influenced them and their companies, and what new skills are becoming important as automation evolves." The anniversary celebration will culminate for ISA members at the association's Annual Leadership Conference in October.

**About ISA**

The International Society of Automation (isa.org) is a non-profit professional association founded in 1945 to create a better world through automation. ISA advances technical competence by connecting the automation community to achieve operational excellence. The organization develops widely-used global standards; certifies industry professionals; provides education and training; publishes books and technical articles; hosts conferences and exhibits; and provides networking and career development programs for its 40,000 members and 400,000 customers around the world.

ISA created the ISA Global Cybersecurity Alliance (isa.org/ISAGCA) to advance cybersecurity readiness and awareness in manufacturing and critical infrastructure facilities and processes. The Alliance brings end-user companies, automation and control systems providers, IT infrastructure providers, services providers, system integrators, and other cybersecurity stakeholder organizations together to proactively address growing threats.

ISA owns Automation.com, a leading online publisher of automation-related content, and is the founding sponsor of The Automation Federation (automationfederation.org), an association of non-profit organizations serving as "The Voice of Automation." Through a wholly owned subsidiary, ISA bridges the gap between standards and their implementation with the ISA Security Compliance Institute (isasecure.org) and the ISA Wireless Compliance Institute (isa100wci.org).

## Add your Voice to the Celebration

The September/October 2020 issue of ISA *InTech* will include the 75th Anniversary Commemorative Supplement.

In addition to technology timelines, Automation Innovator Profiles, and predictions for the future, the supplement provides ways for supporters to buy ads, share stories of ISA history, or position their companies as part of the Industrial Automation Innovators Showcase.

Show your support for the organization that supports your people, products, and customers. Email stories, congratulations, and questions to 75in2020@isa.org.

TECHNICAL ARTICLE

# The Future of Automation is… OPEN!
## Introducing the OPAS 2.0 Standard
*By Don Dickinson, Phoenix Contact USA*

The future of automation can be summed up in one word, "Open." At the 2019 ISA Annual Leadership Conference held in San Diego last October, attendees learned why. The keynote speaker, Don Bartusiak, Chief Engineer at ExxonMobil Research & Engineering, recounted his many years of repeating the cycle of migrating from one technology platform to another.

Don's presentation was titled, "Challenges to the Automation Profession in Response to Technology Trends." As Don noted, the convergence of Information Technology (IT) and Operational Technology (OT) is leading to a convergence of engineering skills. What were once separate, managed environments for IT, Control Systems, Instrumentation, Electrical, and Analyzers, now are all connected via digital networks, with cybersecurity as an overarching concern. Per Don, the automation architecture needs to move from a static, locked configuration, to elastic configuration and orchestration.

The challenge of managing this dramatic, and dynamic evolution was the impetus for an automation architecture that is much more open and modular. The need for an "open" process architecture ultimately led to the development of an open process automation standard known as the O-PAS™ Standard.

What is Open Process Automation? It is a standards-based, open, secure, interoperable, process automation architecture.

Don Bartusiak has led the charge in developing a prototype at ExxonMobil based on the O-PAS Standard produced by the Open Process Automation Forum (OPAF). The O-PAS Standard defines a "vendor-neutral reference architecture for construction of scalable, reliable, interoperable, and secure process automation systems." Want to learn more about open process automation? Look for a full-length article in the summer edition of the WWID newsletter.

**About the OPAS 2.0 Standard**

The Open Process Automation Standard (OPAS) is published by the Open Process Automation Forum (OPAF) which is a cross-industry organization within the Open Group. OPAS is a standards-based, open, secure, and interoperable process control architecture which:

- Enables access to a leading-edge capability
- Allows integration of best-in-class components
- Preserves asset owners' application software; Significantly lowers cost of future replacement
- Promotes innovation and value creation
- Applies across multiple process industries
- Encourages innovation and value creation
- Is commercially available
- Is an inclusive collaboration between users and suppliers to provide the framework for an open systems architecture innovation and value creation

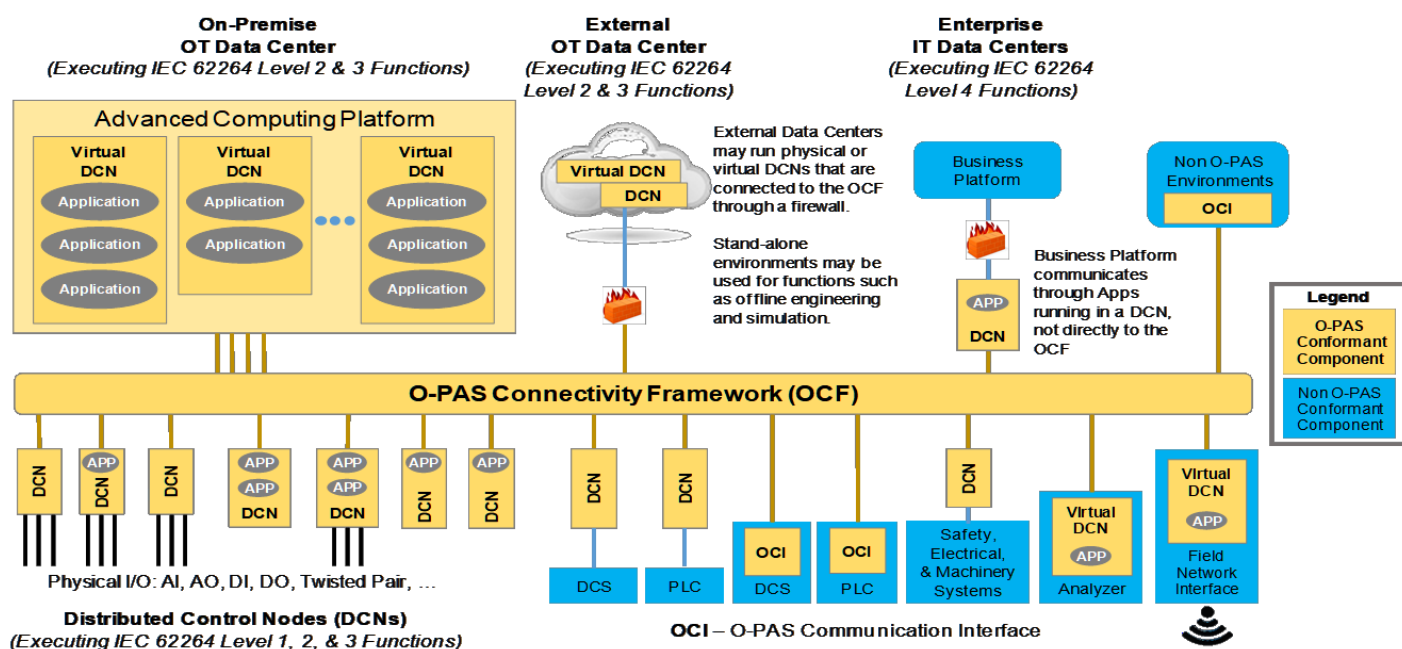The ISA one of the industry partners that is involved with the Open Process Automation Standard (OPAS) initiative.



*Figure 1 - OPAS control system architecture (source: Open Group)*

# System Availability for SCADA Systems

*By Jason Little, Regional Municipality of Peel*
*and Graham Nasby, City of Guelph Water Services*

Industrial Control Automation Systems are responsible for the safe and reliable operations of a wide range of public and private infrastructure and business. These systems are both responsible for safe operations and economic output of the business. Within numerous industries, including the municipal water/wastewater sector, the term SCADA (supervisory control and data acquisition) is commonly used to describe these systems.

In the scope of critical infrastructure, SCADA systems are responsible for providing water and or electricity to the public. In these types of systems, failure of the control system needs to be avoided at all costs.

When designing and operating a control system the following guidelines should be reviewed and implemented based on your specific use case. As engineers, all designs need to ensure safety. This is the top priority. To ensure this safety, the Industrial Control System Engineer needs to ensure that three key aspects to the design are met at all times, namely:

1.) **Availability**
Design the system to ensure that the system and their components are available to complete their intended job continuously and when required.

2.) **Integrity**
Have checks and balances that ensure that the information that is being acted upon is correct and unalterable.

3.) **Confidentiality**
Access to the control system as well as data in and out of the control system is secured and provided/accessed by those people or devices with the authentication privileges to do so.
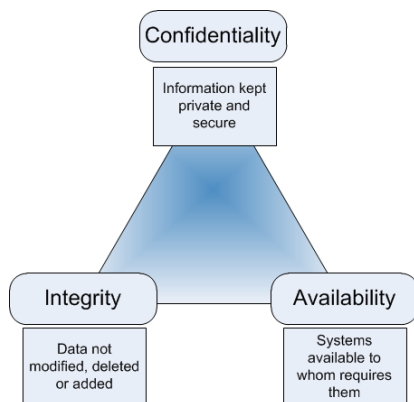
This is illustrated in the below figure:



*Figure 1 - Three major aspects of automatic control systems design*

The ISA 62443 series of standards provides a solid framework for managing the cyber security aspects of the industrial automation control systems, including areas such as overall design goals, policies, procedures, systems and components.

An overview of the ISA-62443 series of cybersecurity standards can be seen in the following figure:
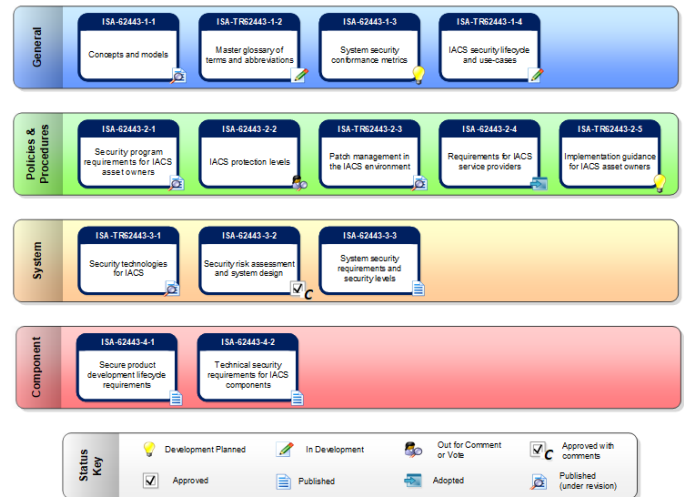


*Figure 2 - ISA 62443 series of standards (source: www.isa.org)*

**How to Measure System Availability: MTBF**

A commonly used term for system availability is the MTBF, which stands for Mean Time Before Failure. The word "mean" in this context is the statistical average. The MTBF is the amount of time that a system is expected to operate before a component fails that causes it to no longer function. This a good measure of a system's robustness.

The second metric is the MTTR, which is the Mean Time To Repair, which a measure of how well an organization can support a system when it fails. If good work procedures, staff capabilities, spares and support contracts are in place a quicker MTTR is possible – without proper planning and resourcing, the MTTR can be excessively long.

The MTBF is a key metric that needs to be evaluated for each component in the system. Placing components in series or placing components in parallel will change the system MTBF. Series placing will decrease reliability or increase the probability of failure, while parallel placement will increase reliability and decrease the probability of failure.
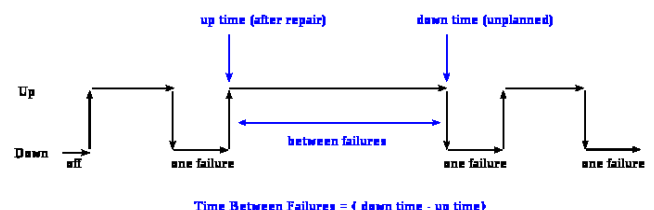


*Figure 3 – MTBF: Mean Time Between Failures*

### ISA112 SCADA Systems Architecture Model

When looking at system availability, a systems approach is a helpful way to look at how the different components of a SCADA system interact with each other  For this article, we will use the ISA112 SCADA System Architecture model as the framework to look at – See Figure 4.

The ISA112 SCADA System Architecture model provides a method to break SCADA systems into a series of layers. Availability has to be looked at on a layer by layer approach.

### Factors affecting SCADA Systems Availability

#### Electric Power

Since most of the devices that form the SCADA system are power dependent, careful design considerations need to be applied to ensure the availability of power.  Controls System Engineers need to engage with other engineering disciplines to ensure that the overall design meets the needs of the system. Where emergency backup power is available, all control equipment should be powered from circuits that are automatically restored by the backup power by means of automatic transfers switches and or depending on size automated switchgear.  Control equipment should also be feed from uninterruptable power supplies with automatic bypasses, along with manual bypasses that can be used for maintenance purposes.  Finally, key control equipment should have two independent parallel power supplies with independent fuses/breakers.

### Layer A - Fields Devices

These devices should be chosen in such a manner that their process application and installation location are supported by the device.  The failure of a unit device should be easily detectable by both operations and maintenance.  Critical control devices used for loop control should be hardwired to the controller. Upon loss of power, these devices should fail to safe state.  Field devices of the same parallel function should be connected to different Input/Output cards.  Field devices of the same process should be connected to the same processor, so their operation is not impacted by failures of processor-to-process communications. Under most circumstances, field devices should not start in a faulted state after a power outage. Automation systems that connect to field devices should also be intelligent enough to realize that field devices often need time start-up/boot after a power outage, and be programmed to avoid triggering nuisance alarms and/or false interlocks during initial power up.
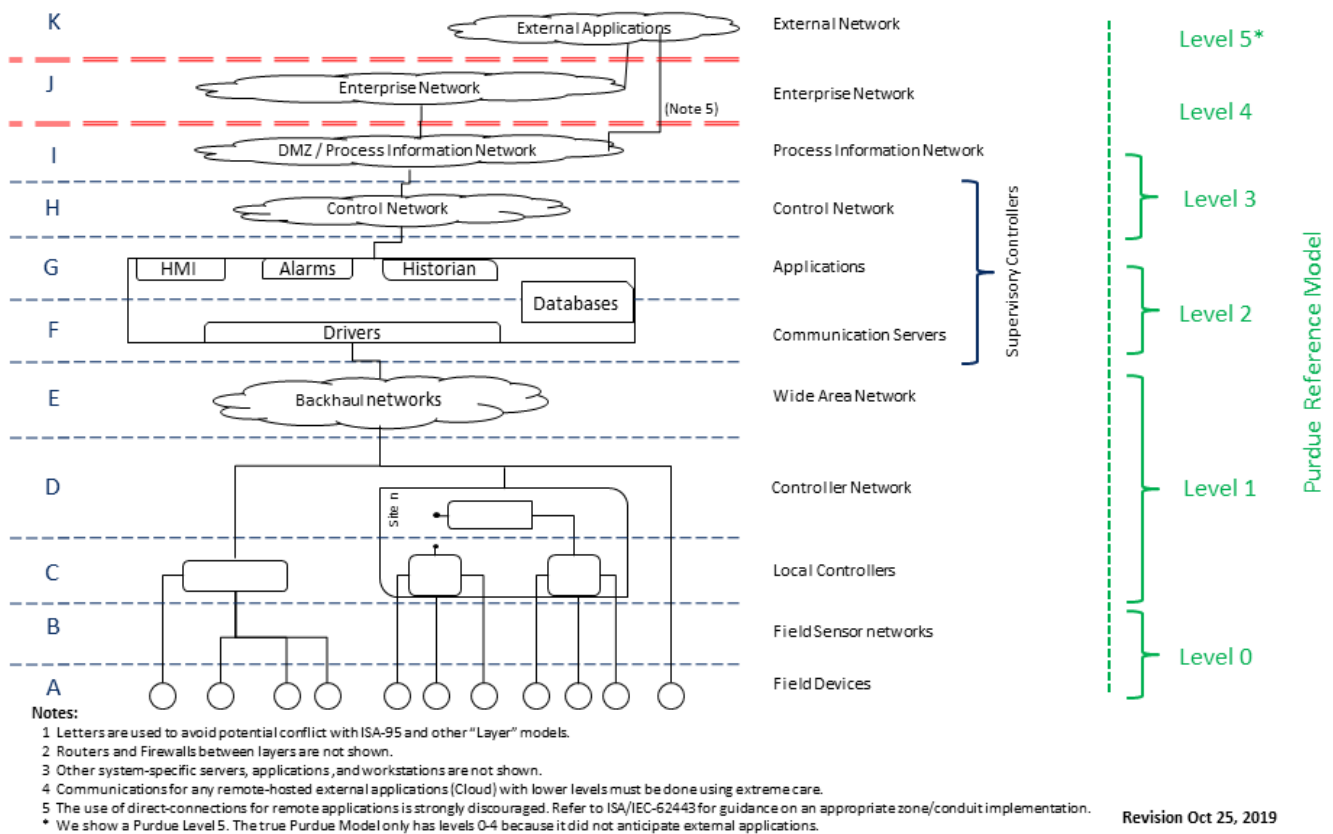


*Figure 4 – ISA112 SCADA Systems Architecture Mode (source; ISA112 committee)*

### Layer B - Field Sensor Networks

These networks should be independent of other automation networks. The failure of an end device should not impact the network as a whole. In critical applications, these networks should be used for monitoring and additional troubling shooting information and or back up integrity checks.

### Layer C - Local Controllers

Programming should deal with normal operations, however just as much time should be allocated for the development of fault response to upper and lower level devices as well as to other local controllers. Controllers should be developed for process areas. More local controllers doesn't always equate to better reliability. Most times, more local controllers lead to high complexity and edge case fault response that can lead to significant downtime. Thus there often a sweet spot for the number of controllers to use, as a balance between distributed vs. centralized controllers.

Depending on process requirements, critical controllers can be specified with redundancy in processing, and communications. I/O to the control should be segmented based on device type in the field. I/O should be limited to the specific process area. All controller failures should be easily detected, programming be place for the system to automatically respond appropriately, and operations personnel be notified immediately. The ISA technical report TR91 provides helpful guidance in how to determine field device and controller criticality.

### Layer D - Controller Network

The controller network should be localized so it is used only for controller-to-controller and communications servers only. Using this network for other purposes or users is not recommended, as having multiple conflicting uses increases rick of outage and would mean outages impact larger parts of the system. Broadcast traffic should be limited or eliminated all-together. It goes without out saying that field sensor communications should be on their own network, and not part of the controller network.

For large facilities, an approach of using zone network panels with redundant switches forming ring topologies can a high degree of robustness with minimal cost, while still allowing for straight-forward troubleshooting.

Unless there is a very specific use care for it, proprietary networking protocols from switch manufacturers should be avoided and instead fault tolerant open protocols should be employed such as Rapid Spanning Tree for layer two networks.

For smaller facilities, redundant media star topologies could be employed, where the top level of the network is located in the server room or control room.

All controller network failures should be easily detectable by automatic means, and operations notified immediately.

### Layer E - Wide Area Network (WAN)

Redundant media or physical redundant path should be in areas where high availability is required. Open, fault tolerant, automatic-healing protocols such as OSPF and BGP should be utilized. Focus should be given as to not saturate the bandwidth of the WAN network and QoS (Quality of Service) should be utilized, if guaranteed controller-to-controller communications is required. If multiple types of data are being passed over a WAN, an approach of using multiple VLANS (virtual local area networks) couple with QoS can provide a robust implementation. As with other networks, any wide area network failures should be easily detected – ideally by automatic means, have automatic routing to re-route the traffic, and a mechanism provided to notify both operations and SCADA staff immediately.

### Layer F - Communication Servers/Hosts

The amount of availability needed for a SCADA system will guide the selection of appropriate server hardware to use. For most SCADA systems, the system designer should be using server grade hardware with dual processors, dual network cards, dual power supplies and redundant storage controllers. Disc mirroring or RAID level 5 (which can accommodate one disc failure in an array) should be utilized at minimum. Depending on the application, RAID 6 (which can sustain two disc failures in an array) may be an appropriate choice. . RAID 0, which stripes disks with the sole goal of increasing performance, should be avoided.

When virtualizing hardware, which is recommend to improve availability, a strategy should be implemented for clustering of servers and storage to increase availability. When possible, use redundant communications hosts that act as a middle layer between the local controllers and the application hosts. An automated backup strategy should be developed for offsite backups on a scheduled basis. All virtual servers should be monitored for load on the key physical aspects of the server, including CPU, Disk, Memory and Network loads. In a well-designed system, there will be multiple layers of redundancy built in along with automatic fail-over as needed.

### Layer G - Application Servers/Hosts

The same hardware considerations that apply to Communication Servers/Hosts, also apply when looking at the Application Server level. Care needs to be taken to adequately resource the amount of CPU, memory, disk and other resources for the specific applications that are being run. Some SCADA applications may have very specific hardware or network requirements in order to be run reliably.

### Layer H - Control Network

In larger systems, the control network is physically separate from the site specific controller networks. For smaller systems, sometimes these two networks are combined. It is on the Control network that SCADA view terminals, operator

terminals and other user-facing devices usually reside. Good network design for reliability is tied to the availability needs for these aspects of the system. Depending on requirements, part of this network may be built using redundant components. The Control Network is also the way that higher levels of the SCADA system reach down, by way of firewalls, routers and proxies, to pull data put into higher up applications.

### Layers I, J, K and beyond

Reliability for the Process Information Network, Enterprise Network, and networks to external applications is a function of the system uptime needed for these systems. At these higher levels, reliability is less about process control and instead more about data availability, connectivity, and supporting business/maintenance management systems. Availability in these systems is usually a combination of power availability, network connectivity, hardware redundancy, and application design. Often an IT-based approach, rather than using OT-based design, is used to build in reliability for these systems. Guidance for keeping these systems secure can be found in both the ISA-62443 series of standards and also in the IT-focused ISO 27000 series of system reliability standards.
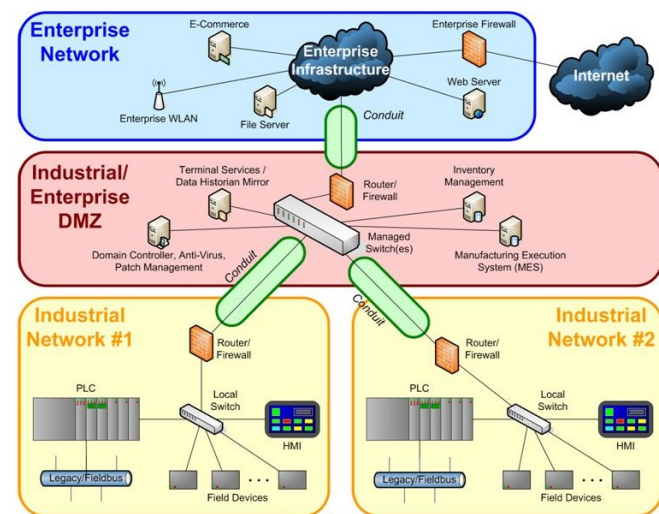


*Figure 5 - The ISA-62443 zones/conduits model provides cybersecurity robustness as well as compartmentalizing risks within the various levels of a SCADA system (Source: ISA99 committee)*

### Summary

There are many aspects and layers that contribute to the overall system availably metric. This is a key performance indicator for an industrial automation control system. This availability or uptime should be used as a guide for decision making during the design and implementation of a control system. The higher the availability an owner or engineer wants to achieve the greater the capital investment. Tracking MTTR can be used as an effective measure to see if capital investments in SCADA systems are meeting expectations. Designing for system availability is one of the great design and operational challengesof the modern SCADA system.

**About the Authors:**
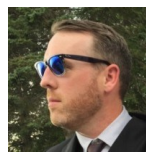
**Jason Little** is an Automation Professional with over 15 years of experience in the Water/Wastewater industry. He studied electrical engineering at McMaster University and currently works for the Regional Municipality of Peel as an advisor in the SCADA division of the Public Works Department. Jason is an active member of the automation community, most recently holding the chair position in the OWWA Automation Committee. Jason is a contributing member to ISA with his most recent contributions to ISA 112. Jason also develops open source SCADA applications through his company Triple Point Solutions Inc. Contact: jason@triplepoint.solutions

**Graham Nasby, P.Eng, PMP, CAP** holds the position of Water SCADA & Security Specialist at City of Guelph Water Services, a publicly-owned/operated water utility located in Guelph, Ontario, Canada. Prior to joining Guelph Water, he spent 10 years in the engineering consulting community after completing his B.Sc.(Eng.) at the University of Guelph. He is senior member of the International Society of Automation (ISA) and co-chair of the ISA112 SCADA System Standards Committee. Contact: graham.nasby@guelph.ca

## ISA publishes second edition of "Motors & Drives: A Practical Technology Guide"

Keeping pace with significant advances in motor speed control technologies, the International Society of Automation (ISA) has published a second edition of *Motors & Drives: A Practical Technology Guide*.

This new release has been updated to reflect innovative new motor and drive technologies that are safer, smarter, and easier to program and implement; provide superior diagnostic capabilities; and deliver seamless integration.

"The second edition will continue to serve as a straight-forward guide for those seeking to understand the key engineering principles of motors and drives," says author Dave Polka, a widely recognized expert in developing training and technical support materials for major drive manufacturers. "However, while basic theory of AC and DC drives has not changed, technology certainly has. The book takes a fresh look at how market demands have advanced motor and drive technology and are pushing the industry in new directions."
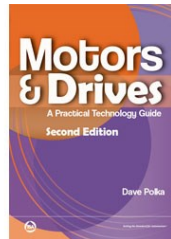
As a result, Polka says he has incorporated a substantial amount of new and updated content to highlight recent technological developments, explain complex technical concepts and define buzz words-such as "harmonics" and "power quality"-in practical, easy-to-understand terms.

While demystifying drive and motor technology used in today's modern manufacturing processes, the book is rooted in the practical side of drive and motor use, with the "design engineering" side of technology presented in commonly used terms. Included are clearly stated summaries, and highly relevant review questions, glossaries, and reference tables for formulas and conversions.

The book is suited to a broad range of professionals, particularly engineers who are unfamiliar with motor and drive technology and technicians who are technically literate but not accustomed to complex theory and mathematics. In addition, design engineers, automation and control specialists, maintenance technicians, and students will find it useful for tutorials and as a desk reference.

**Motors & Drives: A Practical Technology Guide,** 2<sup>nd</sup> Ed.
By Dave Polka
Copyright: 2020
Length: 370 Pages
ISBN: 978-1-64331-052-7
Available Formats: Paperback, ePub, Kindle
Publisher: International Society of Automation (ISA)
Available at www.isa.org/books/

## News from ISA Standards

*From ISA Standards and Practices Board*

**ISA-88 Batch Control Standards to be Reviewed, Revised**

The ISA-88 series of standards provides a widely used approach for describing the equipment and procedures involved in batch process control. The first ISA-88 standard was published in 1995 and adopted by the International Electrotechnical Commission (IEC) in 1997. Since then, the series has been expanded and revised to include four ISA/IEC standards and three ISA technical reports.

At its meeting at the ISA Annual Leadership Conference in San Diego, California, the ISA Standards & Practices Board initiated a new round of reviewing and revising the ISA-88 series. Leading the effort will be 2017-18 ISA S&P Vice President Dr. Maurice J. Wilkins of Yokogawa. Dr. Wilkins plans for the ISA88 committee to work in concert with the corresponding IEC group, which is IEC SC65A / MT 61512 – Batch Control Systems.

Those interested in actively contributing to this effort are asked to contact Charley Robinson, ISA Standards, crobinson@isa.org

**Glenn Merrell Receives S&P Department Award for ISA99 Leadership**

Each year at ISA's Annual Leadership Conference, the Standards & Practices Department recognizes individuals whose leadership and expertise have been especially noteworthy over the past year in advancing the development and application of ISA standards.

At the 2019 conference in San Diego, California, Glenn A. Merrell received a 2019 S&P Department Award in recognition of his "outstanding leadership and technical contributions in advancing the use and understanding of the ISA/IEC 62443 standards, Security for Industrial Automation and Control Systems, across global industry." A long-time leader within ISA99, Merrell has been instrumental in promoting the growing use of the standards worldwide.

Of particular note were his efforts on behalf of ISA99 that helped lead to a decision by the United Nations Economic Commission for Europe (UNECE) in late 2018 to integrate the ISA/IEC 62443 standards into its Common Regulatory Framework on Cybersecurity, which serves as an official UN policy position statement for Europe. At the same time, the UNECE formally recognized the ISA99 committee for its primary role in conceiving and developing the widely used standards.

Merrell is an ISA Certified Automation Professional and the owner of Industrial Control Systems Security/Freelance Consulting.

For more information on ISA Standards, contact Charley Robinson, ISA Standards, crobinson@isa.org .

## 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

**Question:**

What is a thermowell?

a) protective tube
b) type of manometer
c) expandable bulb
d) reservoir
e) none of the above

**Answer:**

**The correct answer is A.**

A thermowell is a closed-end tube that surrounds the measuring junction of a thermocouple and protects it from physical damage, corrosion, or thermo-chemical interaction with the medium whose temperature is the subject of measurement.

**Reference**: The Automation, Systems and Instrumentation Dictionary, 4th Edition. Copyright ISA 2003. 582 pages.

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.*

## ISA at 75: Welcome to a New and Exciting Year!
*By Eric Cosman 2020 ISA Society President*

I am honored and humbled to serve as our Society President in 2020, and I look forward to meeting many of our members during my term. I have been a member of ISA for over 25 years, not joining until after moving from Canada to the U.S. Believe me, at that time, I had no dreams or aspirations beyond involvement in the areas where I thought I might be able to make some small contribution. Fortunately, I benefited from the advice and guidance from several great mentors who helped me appreciate much broader possibilities. This is why I am so committed to providing similar mentoring and counsel to others and giving back to our profession.

Unlike many of you, my path did not take me through a section. My original motivation was to learn more about and contribute to industry standards. Over the years I was gradually drawn into several other roles, learning more about the society with each one. Throughout my career I have been passionate about defining and executing effective strategies for growth and improvement. Sometimes this in response to technological changes and in other cases the drivers are more related to societal change or the needs of people in their professional pursuits. I have lived through, survived, led and facilitated many changes and have learned some difficult lessons in the process. I believe that I can put this experience to use in my role this year.

Your Executive Board and other leaders have put a great deal of thought and effort into developing a strategic plan for ISA that addresses both internal needs and drivers, as well as the necessity of raising our profile in industry and with the broader community. By providing the best services to our members and offering valued products and services to our industries we can ensure that ISA is well positioned for long term success. Some of our more internal challenges are related to how we are organized and the associated governance models and processes. While I may not have shared all aspects of the section or regional experience I understand and appreciate the value that diverse perspectives bring to an organization such as ours. The word "International" in our name presents us with the challenge of serving the needs and expectations of a wide range of communities, countries, and cultures. Each of these have their own interests and priorities. My task and that of our Executive Board is to understand these as best we can and define strategy and set priorities accordingly. This is how we can give credence to catch phrases such as "The Home of Automation" and continue to improve ISA as an organization that we are all proud of.

As someone who spent much of my career in or around the practice of industrial automation I believe strongly in promotion and advocacy for our profession. This is one of the reasons that I am thrilled to be lucky enough to serve in this role in this, our 75th anniversary year. I would like to be able to say that this was the result of some grand plan but as my mother used to say, "It was more good luck than good management." Although the 75th anniversary of the formative meeting of our Society is on April 28th, we are planning a year-long observation. We will celebrate the milestones and contributions to industry while looking forward to the new and exciting developments in our profession. While doing so we will take every opportunity to make others aware of our contributions and the importance of the automation profession to society.

It is this external focus that is the subject of another of our major objectives. We have named this Industry Teach and Awareness, and the focus is on making sure that we have the right channels both into and out of our Society and with partners and stakeholders to ensure that we are making contributions that have the most value and impact while providing the products and services required by our customers. This requires that we manage our portfolio of intellectual property (e.g., standards, practices, training, publications, etc.) in a way that allows us to identify new opportunities early and carefully reduce investments in areas that may no longer be of value or required.

As you can see, our strategy must address and include many "moving parts" for us to be successful. We have to review it regularly, measure our progress against objectives and goals, celebrate where and when appropriate and adjust our course as required. To do all of this we need the help and ideas of all leaders and members. It is our membership that represents the collective needs of our profession.

Please contact me at President@isa.org with your thoughts and insights. I look forward to continuing this dialogue throughout 2020.

Happy Anniversary!

Eric Cosman
2020 ISA President

**About Eric Cosman**

Eric Costman is an industrial security expert Eric Cosman has more than 35 years of experience in the development, delivery, management, and support of operations information technology solutions in the process industries. During his career his assignments and responsibilities have included process automation systems development, communications network design, functional and technical architecture design, and technology lifecycle management. He recently retired as an operations IT consulting engineer with the Dow Chemical Company. Eric is also our 2020 ISA Society President.

## 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.

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### About the ISA Water/Wastewater Industries 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/**