



Water/Wastewater Industry Division

Setting the Standard for Automation™

Calendar of WWID Events

- Jun 9-12, 2012 **Spring Leaders Meeting**
San Diego, California, USA
- Aug 7-9, 2012 **2012 ISA WWAC Symposium**
Orlando, Florida, USA
- Sept 22-23, 2012 **Fall Leaders Meeting**
Orlando, Florida
- Sept 24-27, 2012 **ISA Automation Week**
Orlando, Florida

In this Issue

- 1.....Director's Welcome
- 1.....Newsletter Editor's Welcome
- 2.....Message from your Director-Elect
- 2.....Upcoming Events
- 3.....WWID Student Scholarships – Deadline Extended to Feb 15
- 4.....2012 WWAC Symposium Planning Update
- 4.....Symposium website launched
- 5.....Call for Abstracts released. Abstracts are due Mar 7, 2012
- 5.....Why Presenting at a Symposium is fun (and a worthwhile activity)
- 6.....Our symposium invited speaker: Bill Hollifield
- 6.....Symposium Program Schedule Preview
- 7.....Full-Day Training course on Automation & SCADA security
- 8.....Earning PDHs and CEUs at the Symposium
- 8.....Symposium Registration is now Open!
- 9.....Interview with Joe Provenzano – Symposium Program Chair
- 12.....Introducing our new WEF Liaison: Tom DeLaura
- 13.....Automation Spotlight: Lowell, MA Wastewater Plant Upgrades
- 15.....Can IT Strategies solve the Automation Cyber Security problem?
- 17.....Municipal Challenges and Advanced Automation Solutions
- 20.....New WWID Members
- 23.....WWID Contacts
- 24.....Example symposium presentation from WWAC2011
"United Water New Jersey SCADA Project – K. Kolkebeck

Winter 2012 Newsletter

Director's Welcome



As I write this welcome message, I'm proud to report that our 2012 year is now in full swing. For our annual symposium, the Call for Abstracts is now available, a preliminary program has been released, and online attendee registration is now up and running.

We are also nearing the February 15th application deadline for our WWID student scholarships – see attached form.

I encourage you to visit www.isawwsymposium.com to find out more about our symposium. Taking place Aug 7-9, 2012 in Orlando, Florida, the "2012 ISA Water/Wastewater and Automatic Controls Symposium", is a conference that caters specifically to the needs of professionals involved with automation, instrumentation and control systems in both the water and wastewater sectors. We have an exciting program lined up for this year and we encourage you to read more about it.

I also invite you to submit an Abstract to present a talk, paper or poster at our symposium. A copy of the **Call for Abstracts** can be found in the newsletter, and a full author information kit is available on the website. Abstracts are due Mar 7, 2012.

Jon DiPietro
WWID Division Director

Newsletter Editor's Welcome



Welcome to the winter 2012 edition of the ISA water/wastewater division newsletter!

We begin with an update on our 2012 WWAC Symposium, which includes an invitation to submit an Abstract to present, and information on why you should seriously consider attending this year's WWAC symposium. We follow this with a full-length feature interview of our symposium program chair Joe Provenzano. This edition also has two technical articles, one on automation network security and the other on advanced automation solutions.

In this issue you also see a photo-rich article about an upgrade at the Duck Island WTP and a copy of a power point presentation about an automation upgrade in New Jersey. For authors considering submitting an abstract to our symposium, the PowerPoint is an example of a typical WWAC symposium presentation. In addition to the Call for Abstracts, our symposium website also has a full author information kit

As you read through this newsletter, I encourage you to register to attend this year's 2012 WWAC Symposium!

Graham Nasby
WWID Newsletter Editor

2012 ISA Water/Wastewater and Automatic Controls Symposium



Holiday Inn Castle Resort.....Orlando, Florida, USA.....Aug 7-9, 2012

Sponsored by the ISA Water/Wastewater Industries Division – www.isawwsymposium.com

Call for Abstracts

Sponsored by the Water and Wastewater Division of ISA, the WWAC Symposium helps professionals in the water and wastewater industry understand how automatic control applications affect processing and distribution of water treatment and provide an outstanding opportunity to gain valuable technical information and training.

This 3-day symposium is focused on the challenges associated with automation and instrumentation in the water and wastewater sector. It features: 2 full days of presentations (two speaking tracks), a tour of a local water/wastewater facility, a general reception, networking events, a poster session, and a supplier showcase. The first day begins with symposium registration, a plant tour, and an optional full-day short course on SCADA/automation system security. The second day kicks off with a keynote speaker, followed by presentations on general topics such as instrumentation; system integration, automation, plant case studies, new technologies and process optimization/automation. The third day starts with an invited speaker on effective HMI design and alarm management, and is focused on leveraging automation technology with topics geared towards SCADA, HMI, Human Factors, and Alarm Management. The Tuesday-Thursday timeslot has been selected so that families can easily take their kids to Disney World, both during and before/after the symposium. Proceedings will be published and made available to water/wastewater division members, and papers will be considered for publication in the ISA's technical journal, *ISA Transactions* (www.isa.org/isatrans/).

Guidelines for Submission

- All authors/speakers must pay the speaker registration fee (\$100)
 - The speaker registration fee is a discounted conference rate (regular \$425)
- 250 word (max 300 words) abstract in English shall be submitted electronically
- Authors must indicate what format they wish to present in:
 - 35 minute presentation (no paper)
 - 6-12 page paper and 35-minute presentation
 - Large format 3 foot wide x 4 foot high poster
- Final presentations must be on the supplied symposium PowerPoint template
- Final papers must be submitted in MS Word (preferably using supplied template)
- Papers/presentations/posters accepted for publication and presentation will require completion of ISA Rights and Responsibilities form
- Student papers and posters are welcome
- The lead author is the main contact

Submissions

Submit your abstract via email in MS Word format to:

abstracts@isawwsymposium.com **AND** provenzano2@comcast.net

Deadlines

Abstracts Due Mar 7, 2012
Notification of Acceptance Mar 20, 2012
First Draft..... Apr 25, 2012
Final Draft (Papers)..... Jun 22, 2012
Final Draft (Posters)..... Jun 22, 2012
Final Draft (PowerPoint) Jun 29, 2012

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

For additional information, contact:

Graham Nasby
General Symposium Chair
+ 1 519-763-7774
graham.nasby@eramosa.com

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

Rodney Jones
ISA Staff
+1 919-990-9418
rjones@isa.org

Topics include but are not limited to:

Speaking Track 1 – General Topics

Instrumentation: New Technologies and Applications
SCADA Security, ISA99, and Mitigating Risks
Control System Redundancy and Robust Design
Wireless Technologies
System Integration
Automation Techniques for Existing Plants
New Control System Technologies
Project Management for Integration Projects
Plant Case Studies

- Plant Upgrades & New Facilities
- Control System Upgrades & Replacements
- Lessons Learned

Process Optimization
Automated Control Techniques
Project Management Lessons for Integration Projects
Specific Water and Wastewater Challenges

Speaking Track 2 – SCADA, HMI, Alarm Management

SCADA – Supervisory Control and Data Acquisition
SCADA Network Design and Redundancy Options
Capturing and Evaluating Stakeholder Needs
HMI Design for Operator Effectiveness
Effective Use of Multiple HMI Screens
Human Factors and Control Room Design
Intelligent & Expert Systems
Alarm Management
Implementation of ISA18.2 and EEMUA Standards
Alarm Identification and Rationalization
Techniques to Reduce Nuisance Alarms
Call-Out Alarm Rationalization and Techniques
Data Reporting & Presentation Techniques / Strategies
Data Management, Historians, and Data Retrieval
SCADA and the Current Regulatory Environment
Mobile HMIs, Tablets, Remote Access, and Dashboards



WWID 2012 SCHOLARSHIP APPLICATION

Student Name: _____
 Address _____
 Home Phone: _____
 Student E-mail: _____

Institute Name: _____
 Institute Address: _____
 Institute Phone: _____
 Dean of Admission's Name: _____

Parent Name: _____
 Parent Address: _____

 Parent Phone: _____
 Parent E-mail: _____

ISA Membership Number: _____
 (Parent or Student)

Parent information above may be omitted if the applicant is an ISA WWID Student member.

Forward application to:
 Michael Fedenyszen
 WWID Scholarship Chairman
 60 Whittier Street
 Haverhill, MA 01830 USA

APPLICATION DEADLINE IS EXTENDED TO FEBURARY 15, 2012

- Standards
- Certification
- Education & Training
- Publishing
- Conferences & Exhibits

Message from your Director-Elect



The WWID board, symposium committee, and I have been hard at work during the last few months putting together the groundwork for our 2012 WWAC symposium. We have an exciting program lined up this year and we are looking forward to sharing it with you.

Our first step was to launch a new 2012 WWAC symposium website. On the website at www.isawwsymposium.com you can find out everything you need about the symposium. It contains registration, program and accommodation information along with the all-important Call for Abstracts.

Our second step was to make sure that we formulated a program that is relevant with the current hot topics in our sector. For our full-day training course at the symposium, Bryan Singer will be teaching a course which provides an overview of Automation & SCADA security and introduces attendees to the ANSI/ISA99 automation security standards. We have also invited Bill Hollifield to be our invited speaker to give a talk about how to design and implement high performance HMIs, so we can all do a better job of putting technology to work helping operators. We will be announcing this year's symposium keynote speaker shortly.

Our third step was to reach out to two of the largest organizations in our sector: WEF and AWWA. Working with other associations in our sector is important to ensure we are effectively promoting our symposium and ensuring that it is meeting the industry's needs. I'm pleased to announce that Tom DeLaura, who is the chair of the WEF Automation and Information Management committee, has joined our symposium committee as our WEF Liaison. Tom is already hard at work forging ties between the ISA and WEF, and you can read more about Tom on page 11 of this newsletter. Personally, I have been in talks with a number of AWWA sections, and we will be making an AWWA Liaison announcement soon. On the AWWA front, I recently had the pleasure of attending a meeting of the North Carolina AWWA-WEA Automation Committee – they are an enthusiastic bunch and are looking forward to the symposium.

Attached to this newsletter, you will find a copy of the Call for Abstracts for this year's symposium. I encourage you to consider presenting a PowerPoint presentation, paper and/or poster at this year's event. First time authors and presenters are actively encouraged. Abstracts are due March 7, so it's time to put your thinking cap on.

In the following pages you will find an overview of our 2012 WWAC Symposium. Now is the time to start looking at your training budgets and making plans to attend. I hope to see you in Orlando this summer!

Graham Nasby, P.Eng., PMP
WWID Director-elect &
General Symposium Chair for the 2012 WWAC Symposium

Upcoming Events

Registration is now open for our 2012 WWAC Symposium!

The Call for Abstracts is now available. Authors can present a PowerPoint, paper or poster. Abstracts are due Mar 7, 2012

The WWAC symposium is taking place Aug 7-9, 2012 in Orlando, Florida, USA. Symposium registration is \$300 for ISA members (\$400 for non-members), and includes 2 full days of presentations/talks, catered breakfasts and lunches, an evening reception, supplier showcase, and a tour of a local water/wastewater facility. The conference hotel is the Holiday Inn Castle Hotel, and the conference room rate is \$79/night.

We have selected the August timeslot for several reasons. First of all this is "low season" for the area which translates into better airline and hotel rates – we know that many of our attendees come from public utilities where every training dollar counts. We also selected the August timeslot so that participants can bring their families – in August school is out and Walt Disney World is just around the corner.

Registration Now Open!

2012 ISA Water & Wastewater and Automatic Controls Symposium

August 7-9, 2012

Tuesday - Thursday

**Holiday Castle Inn Resort Hotel
Orlando, Florida, USA**

(with Disney World just around the corner)

www.isawwsymposium.com

2 full days of speakers/presentations

Track 1 – Instrumentation, System Integration, Automation, Plant
Case Studies, New Technologies, Optimization
Track 2 – SCADA, HMI, Human Factors, Alarm Management

1 full day ISA Training Course

Plant Tour of a local Water/Wastewater Facility

Trade Show, Reception & Networking Event

Affordable Professional Development for

Plant Operations/Maintenance Staff, Plant Managers,
Plant Designers, Engineers, System Integrators

CEUs – Continuing Education Units
PDHs – Professional Development Hours

Scholarship Application Deadline Extended WWID Student Scholarship Program

By Michael Fedenyszen, WWID Scholarship Chair

A reminder the 2012 scholarship application deadline is fast approaching. We have extended the deadline from January 31, 2012 to February 15, 2012 in order to give Winter Semester students more time to get their applications in.

Deadline Extended to Feb 15, 2012

The ISA's WWID is committed to encouraging youth into higher education by offering two one thousand dollar (\$1000.00 USD) scholarships to qualifying candidates. The winners will be selected by a lottery of chance in February of 2012. All eligible candidates and their application forms will be reviewed by the Scholarship Chairman before the drawing and must meet the following requirements.

1. Applicant must be a WWID member, have a parent who is an ISA WWID active member, or be an ISA WWID Student member. The member must be in good standing with the ISA WWID (i.e., dues paid to date). Students can join the ISA WWID as student members for only \$10 at www.isa.org
2. The candidate must be enrolled as a full-time student at two or four year institute of higher learning and he/she must have completed the previous semester as a full-time student.
3. To be considered for the ISA WWID Scholarship Award, the application form must be filled out completely and mailed to:

Michael B. Fedenyszen
2012 ISA WWID Scholarship Chair
60 Whittier Street
Haverhill, MA 01830
USA

4. Application forms must be received by the WWID Scholarship Chairman **no later than February 15, 2012.**

For more information applicants are referred to the "WWID 2012 Scholarship Program Details and Applicant Rules" and "WWID 2012 SCHOLARSHIP APPLICATION" which are available at www.isa.org/wwid/

Visit us at www.isa.org/wwid for additional information regarding the Water and Wastewater Industries Division and its scholarship program.



**Water/Wastewater
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2012 WWAC Symposium Update Symposium website launched & Call for Abstracts

By Graham Nasby, 2012 WWAC Symposium Chair

The symposium committee and I are pleased to announce that this year's 2012 WWAC Symposium will be held at the **Holiday Inn Castle Resort Hotel** in Orlando, Florida, USA. This boutique hotel offers luxury accommodations and is only steps from International Drive's world-famous shopping, dining and entertainment. It also situated close to both Walt Disney World and the Universal Studio's theme parks. Consider bringing the family and spend a few days at Disney after the symposium!

We have also released the new symposium website at www.isawwsymposium.com. On the web site you will find extensive information about the symposium, including venue information, program details, the Call for Abstracts, and registration details.

The symposium's Call for Abstracts is now available and we encourage both seasoned and first-time authors to consider presenting at this year's symposium. New this year we have three ways that authors can present their work. There is the traditional 35 minute PowerPoint presentation, a 35-minute PowerPoint Presentation accompanied by a 6-12 page paper, and (new this year) a large format poster. Refer to the attached Call for Abstracts for more information. Abstracts are due March 7, 2012.

For this year's symposium we have worked hard to focus the event so it is especially accessible and relevant to automation professionals who work in both public and private water utilities. We have set our registration fee for the 2.5 day symposium at \$400 (\$300 for ISA members) and the conference hotel room rate is \$79/night. We are aware of the tight training budgets that many have to contend with so we have striven to provide good value for your training dollars.

Starting this year, attendees will also receive PDHs (professional development hours) for attending the symposium. Attendees can earn up to 20 PDHs for participating. For individuals taking the full day training course on Automation & SCADA Security at the symposium they will also get 0.7 CEUs (credit equivalent units).

This year we are also working hard to team up with the other water-related organizations in our sector. Discussions are currently under way with the WEF, the AWWA, and the NRWA. We are pleased to announce that Tom DeLaura, chair of the WEF Automation and Information Technology committee, has joined our symposium team as our WEF Liaison. Expect further announcements as we reach out to others in our sector.

We laid out an exciting program for this year's symposium. I encourage you to read about it in this newsletter and visit our symposium website. I look forward to seeing all of you in Orlando next August!

Yours very truly,
Graham Nasby
2012 WWAC Symposium – General Symposium Chair
Phone: (519) 763-7774 ~ Eastern Time Zone
Email: graham.nasby@eramosa.com

Visit the 2012 WWAC Symposium website

Visit our new WWAC symposium website at:

www.isawwsymposium.com



On the website you will find:

- Overview the symposium
- Welcome Messages
- Call for Abstracts
- Author Information Kit/Guidelines
- Attendee Information
- Online Registration for the Symposium and Hotel
- Online Registration for the full-day training course
- Preliminary Symposium Program
- Local Plant Tour Information
- Exhibitor Information
- Sponsorship Opportunities
- Exhibitor Prospectus & Sponsorship Program Details
- Program Committee Member Bios
- Press Kit / Media Information
- Hotel Information
- Directions/Transportation Links to Hotel
- Key Symposium Contacts & Contact Information



*This year's symposium is being held at the
Holiday Inn Castle Resort in Orlando, Florida, USA*

2012 WWAC Symposium Abstracts are due March 7, 2012

By Joe Provenzano, 2012 WWAC Symposium Program Chair

I am pleased to extend an open invitation for the submission of abstracts for presentations, papers and posters at this year's symposium. Abstracts are to be 250 words long and must be submitted electronically via email to the program committee.

Call for Abstracts – attached to this newsletter
or at www.isasymposium.com

This open invitation includes anyone who is involved with the automation, instrumentation, system integration, operation, maintenance, management and/or construction of facilities the water/wastewater sector.

There are three ways you can present your work:

- 35 minute PowerPoint presentation (no paper)
- 6-12 page paper and a 35 minute PowerPoint presentation
- Large format 3'x4' poster

This year's symposium also has two speaking tracks:

- Track 1 – Instrumentation, System Integration, Automation, Plant Case Studies, New Technologies
- Track 2 – SCADA, HMI, Human Factors, Alarm Management, Plant Optimization

In both speaking tracks, we welcome both technical and "case-study" submissions. Case studies can showcase new plants, plant upgrades, plant optimizations and/or the implementation of new technologies in the field. Lessons-learned presentations are also actively welcomed.

Looking for some ideas on what to present? Visit the symposium website at www.isawwsymposium.com for a list of over 200 topic ideas under the "Call for Abstracts" link.

We also have a full collection of author resources on our website to help you prepare your abstract submission:

- [Call for Abstracts](#)
- [List of some Presentation, Paper, and Poster Ideas](#)
- [General Paper, Presentation and Poster Guidelines](#)
- [How to write an Abstract](#)
- [Abstract Template \(MS Word\)](#)
- Sample Abstracts:
 - [sample1](#), [sample2](#), [sample3](#)
- [Technical Paper Formatting Guide](#)
- [A Technical Paper Template \(MS Word\)](#)
- Sample Technical Papers:
 - [sample1](#), [sample2](#), [sample3](#)
- [PowerPoint Presentation Template \(MS PowerPoint\)](#)
- Sample PowerPoint Presentations:
 - [sample1](#), [sample2](#), [sample3](#)
- [Large Format Poster Guidelines](#)
- Sample Large Format Posters:
 - [sample1](#), [sample2](#), [sample3](#)

Why Presenting at a Conference is Fun (and why your boss will think it's a good idea)

By Graham Nasby, 2012 WWAC Symposium Chair

The first and foremost reason to present at a conference is for your own professional development. You get to meet new like-minded people such as yourself, you get a chance to "talk shop" with people who do what you do and understand the challenges of automation in the water/wastewater sector, and you get a chance to share your experience/knowledge with others.

Some other reasons that presenting at a conference is a worthwhile endeavour include:

- Meet and network with like-minded individuals
- Introduce yourself to the water/wastewater automation community as someone who has something to offer
- Establish professional credibility by demonstrating knowledge, skills and experience
- Opportunity to learn from others and "talk shop" with people who understand the challenges of your sector
- Establish contacts in the sector for future collaborations, business opportunities and/or knowledge sharing
- Opportunity to showcase your accomplishments (and those of your company/organization)
- Chance to personally stand out from the crowd
- Chance to practice your presentation skills in a non-threatening environment
- Be actively involved in your professional development
- Get the opportunity to share your knowledge/expertise
- Learn something
- Have fun

First-time Presenters are Welcome!

We actively encourage people who have never presented at a conference to submit abstracts. Presenting at a conference is a great way to practice your presentation skills, establish credibility in the community, and introduce yourself to others in the sector. It is also a great way to meet new people and establish contacts for future knowledge-sharing and collaborations. Don't be scared – you will get a lot out of it and have fun at the same time.

Thinking about presenting but not sure how to get started? Feel free to contact our Program Chair Joe Provenzano (provenzano2@comcast.net) or our General Symposium Chair Graham Nasby (graham.nasby@eramosa.com) if you have any questions.

2012 WWAC Symposium Invited Speaker: Bill Hollifield

The symposium committee is pleased to announce that **Bill Hollifield** from PAS will be our **invited speaker** for the 2012 WWAC symposium. He will be presenting a talk on a very timely topic: how to create effective HMI (human machine interface) computer screens that promote operator effectiveness rather than hindering them in their jobs. It's an area that we can all improve on.

Bill is a member of the ISA-18 Alarm Management committee, the ISA-101 HMI committee, the API-1167 Alarm Management committee, and is a co-author of the Electric Power Research Institute's Alarm Management Guidelines. Bill is also co-author of The High Performance HMI Handbook.



The High Performance HMI – Better Graphics for Operations Effectiveness Speaker: Bill Hollifield

Almost all industrial processes are controlled by operators using dozens of graphic screens. The graphic designs are typically little more than P&IDs covered in hundreds of numbers. This traditional, “low performance” Human Machine Interface (HMI) paradigm is typical in all processes controlled by DCS and SCADA systems, including the water and wastewater sector. It has been shown to be lacking in both providing operator situation awareness and in facilitating proper response to upsets. In many industries, poor HMIs have contributed to major accidents, including fatalities.

HMI improvement has become a hot topic. The knowledge and control capabilities now exist for creating High Performance HMIs. These provide for much improved situation awareness, improved surveillance and control, easier training, and verifiable cost savings.

Bill Hollifield's talk will cover:

- HMIs Past and Present
- Common but Poor HMI Practices
- Justification for HMI Improvement – What Can You Gain?
- High Performance HMI Principles and Examples
- Depicting Information Rather Than Raw Data
- The Power of Analog
- Proper and Improper Use of Color
- Depicting Alarm Conditions
- Trend Deficiencies and Improvements
- Display Hierarchy and the Big Picture
- The High Performance HMI Development Work Process
- Obstacles and Resistance to Improvement
- Cost-effective Ways to Make a Major Difference

2012 WWAC Symposium Program Schedule Preview

Sponsored by the Water and Wastewater Division of ISA, the WWAC Symposium helps professionals in the water and wastewater industry understand how automatic control applications affect processing and distribution of water treatment and provide an outstanding opportunity to gain valuable technical information and training.

The preliminary program schedule is as follows:

Tuesday, August 7, 2012

- Optional full-day training course on [Automation & SCADA Security](#)
Attendees receive 0.7 CEU training credits
- Symposium Registration
- [Local Water/Wastewater Plant Tour](#) (late afternoon)

Wednesday, August 8, 2012

- [Keynote Speaker](#)
- [Presentations and Papers](#)
- Light Breakfast, Coffee Breaks and Buffet Lunch Provided
- Supplier Showcase & Vendor Presentations
- Evening Reception

Thursday, August 9, 2012

- [Invited Speaker](#)
- [Presentations and Papers](#)
- Light Breakfast, Coffee Breaks and Buffet Lunch Provided
- Poster Session
- Supplier Showcase

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



Provider
#1001262

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

Symposium Full-Day Short Course – Aug 7 Automation & SCADA Security

Security for Automation, SCADA and DCS systems is a hot topic in our sector. Seeing this as an important issue we have selected a course on control systems security as the optional full-day short course for this year's symposium:

Full Course Title: Introduction to Industrial Automation Security and the ANSI/ISA99 Standards (IC32C)

Date:..... Tues, August 7, 2012

Instructor:..... Bryan Singer

Length:..... 1 day

Course Hours: .. 8:00 a.m. – 3:30p.m.

CEU Credits: 0.7

Register at:..... [Introduction to Industrial Automation Security and the ANSI/ISA99 Standards \(IC32C\) – FL](#)

Cost: \$630 (\$495 for ISA members)

The course covers

- **Understanding the Current Automation, DCS and SCADA Security Environment:** What is Electronic Security for Industrial Automation and Control Systems? | Trends in Security Incidents
- **How IT and the Plant Floor are Different and How They are the Same**
- **Current Security Standards and Practices**
- **Creating A Security Program:** Critical Factors for Success | Understanding ISA99 Part 2: Establishing an Industrial Automation and Control Systems Security Program
- **Using ISA99.00.02—Risk Analysis:** Business Rationale | Risk Identification, Classification, and Assessment
- **Using ISA99.00.02—Addressing Risk with Security Policy, Organization, and Awareness:** CSMS Scope | Organizational Security | Staff Training and Security Awareness | Business Continuity Plan | Security Policies and Procedures
- **Using ISA99.00.02—Addressing Risk with Selected Security Counter Measures:** Personnel Security | Physical and Environmental Security | Network Segmentation | Access Control: Account Administration, Authentication, and Authorization
- **Using ISA99.00.02—Addressing Risk with Implementation Measures:** Risk Management and Implementation | System Development and Maintenance | Information and Document Management | Incident Planning and Response
- **Using ISA99.00.02—Monitoring and Improving the CSMS:** Compliance and Review | Improve and Maintain the CSMS



Provider
#1001262

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Symposium Full-Day Short Course – Aug 7 About the Instructor



Bryan Singer is the instructor the short-course on Automation & SCADA Security at this year's 2012 WWAC Symposium. He is a recognized global authority on automation security and is co-chair of the ISA99 automation and control system security standards committee.

Bryan Singer, CISM, CISSP was named Vice-President of Professional Services of Wurldtech in 2007 and is charged with leading the security team focused on improving the overall reliability, efficiency, and security of the systems and networks that operate industrial automation and critical infrastructure worldwide.

Mr. Singer joined Wurldtech™ from FluidIQ's where he led the development and implementation of specialized security services for more than 3,000 industrial facilities worldwide, across numerous vertical industries. Prior to joining FluidIQ's, Mr. Singer was the Manager of Network and Security Services at Rockwell Automation.

He began his professional career with the US Military focusing on issues such as physical, systems, network security and force protection. Since that time, he has worked in software development in over 25 professional coding languages, worked in UNIX and mainframe systems, supported large scale ERP, MES, LIMS, and SPC implementations, and has spent significant time in cyber security projects focusing on risk analysis, vulnerability testing, penetration testing, risk mitigation strategies, and enterprise architecture and design including technical and policy based countermeasures and remediation strategies.

Mr. Singer is the founding chairman and now co-chairman of ISA99, Industrial Automation and Control Systems Security Standards Committee, a standards body focusing on the security issues of the control systems environment. He is also a US Technical Expert to multiple IEC standards bodies, a representative to the Idaho National Labs Recommended Practices Commission, a previous board member to the US Department of Homeland Defense's Process Control Systems Forum (PCSF), and is active globally as an industry advocate in industrial security and critical infrastructure protection.

Mr. Singer has over 16 years of experience working in industrial automation and critical infrastructure sectors – such as Power & Energy, Oil & Gas, Transportation and Water. Mr. Singer has a Bachelors' Degree in Computer Information Systems from Phoenix University, and holds the CISSP and CISM certifications. He is chairman of the ISA99, Manufacturing and Control Systems Security Standards Committee. He works as a consultant at Entegreat in Birmingham, Alabama.



Continuing Education & the Symposium Guide to earning CEUs and PDUs

At the 2012 WWAC Symposium, attendees can earn Continuing Education Units (CEUs) and Professional Development Hours (PDHs) for attending the sessions and ISA training courses. Engaging in continuing education and professional development is an ongoing requirement for many professional designations, certifications and licenses. By attending the WWAC Symposium, you can help satisfy your personal professional development and continuing education requirements.

For water/wastewater utilities, the symposium offers a cost-effective way to meet the continuing education requirements for plant engineering, operations and maintenance staff.

Symposium participants will receive a certificate for up to 20 hours of professional development units (PDHs).

Symposium participants who also take the full-day ISA training course on Automation & SCADA Security on Aug 7, 2012 will receive an additional certificate for 0.7 continuing education credits (CEUs).

Top Ten Reasons to Attend the 2012 WWAC Symposium

1. Opportunity to learn from others and “talk shop” with people who understand the challenges of your sector
2. Get to compare experiences and lessons learned
3. Learn about new technologies, products and services
4. Earn PDH (professional development hours)
5. Earn CEUs (continuing education units)
6. Be actively involved in your professional development
7. Establish contacts in the industry
8. Share Ideas/Experiences with others in the sector
9. Learn Something
10. Have Fun

2012 WWAC Symposium Online Registration is now Open!

Attendee registration is now available online!

Visit www.isawwsymposium.com
and click on “Register”

Registration for the symposium (Aug 7-9, 2012) includes:

- 2 full days of papers and presentations
- poster session
- networking events
- tour of a local water/wastewater facility on Aug 7
- admission to supplier showcase
- light breakfasts on Aug 8 and Aug 9
- full buffet lunches on Aug 8 and Aug 9
- evening reception on Aug 8, with cash bar and 2 free drink tickets
- name badge
- list of symposium attendees with contact information
- printed onsite program booklet
- printed copy of symposium proceedings

Registration Fees

- Regular Rate: \$425, early-bird \$400 (before Jun 15, 2012)
- ISA Member: \$325, early-bird \$300 (before Jun 15, 2012)
- Student Registration: \$110
- Author/Speaker Registration: \$100

The regular rate includes a complementary 1-year full ISA membership. Not yet an ISA member? Join at www.isa.org

When registering, you will also have the option of signing up for the optional full-day short-course on Automation & SCADA Security on Aug 7 for \$630 (\$495 for ISA members).

Hotel Accommodation

The symposium is being held at the Holiday Inn Castle Resort in Orlando, Florida. We have arranged a special discounted hotel rate of \$79/night for symposium attendees for the Mon, Tues, Wed, and Thurs nights. Please mention “ISA WWAC Symposium” when booking.

Holiday Inn Castle Resort

8629 International Dr. Orlando Florida 32819
www.thecastleorlando.com
info@thecastleorlando.com
1.877.317.5753 (toll free)
407.248.8181 (fax)

The symposium website has an online hotel reservation link.

Q&A Spotlight Interview with Joe Provenzano



Joe Provenzano has been a member of the ISA and the ISA water/wastewater industry division (WWID) for over 30 years. Joe was director of the WWID in 2000 and was the organizer of the 1st ISA Water/Wastewater Symposium back in 2003. Since then Joe has been a shaping force in our annual symposium. This year Joe has kindly agreed to act as Program Chair for WWAC 2012.

WWID: Can you tell us a little about yourself?

Provenzano: I've been involved with instrumentation, automation and computers all my life. My career has taken some interesting twists and turns over the years, but it has been a fun journey.

I started my career in 1957, though it doesn't seem that long ago. At the time had just graduated from Brooklyn Community College in New York City with an Associate's Degree in Electrical Technology. My first job out of school was with Sperry Gyroscope where I started as an electronics test technician. I was good at the job and I quickly moved up the ranks, and was soon managing one of their electronics groups. While at Sperry I completed courses at Adelphi University and in 1965 graduated with a degree in Applied Physics with a minor in math. It was also that same year that I got married. However, in the same year I also got restless and saw the need for some new challenges.

Towards the end of 1965, I left Sperry to join ITT WorldComm in their downtown New York City office for 7-month project designing ship-to-shore electronics. After the project was complete, I took a permanent position with Data Master Inc., a division of the ACCO Bristol Company, in their Glen Cove NY facility. This was also the year I bought my first house in Commack New York.

WWID: How did you find the move to the Long Island area?

Provenzano: The move to Long Island to work for Bristol was a smart one for me. It was the beginning what became a 29 year career with the company that would eventually be known as Bristol-Babcock. While I was at Bristol I worked on a wide range of projects, and in 1983 I became their VP of Systems Engineering. One of my responsibilities was to supervise many of the larger, more challenging and complex projects that the systems engineering group undertook. While I was at Bristol I also completed a Masters in Computer Science from the Pratt Institute in 1970 and have been learning ever since.

In 1994, I thought I wanted to retire so I left Bristol. That didn't work. I got restless and soon joined Aaron Associates, a Connecticut-based System Integration firm, as their General Manager. As part of AA, I helped build the company from a small firm to one with over \$4million/year in revenue. I was

with AA for 15 years. In 2009, I attempted to retire again. Like before, "retirement" didn't last long.

In 2009, I joined PEMCO (Process and Energy Measurement Corp.) as an Environmental Specialist working at the plant level (water and wastewater plants) in the Connecticut area. It was nice to get back to the hands-on plant operations part of the business.

When 2011 came around, I decided I wanted to try something new. I'm now working with KRPO Engineering Services LLC as their General Manager. KRPO is a woman-owned firm that will be providing Instrumentation and Engineering Services to contractors serving the water/wastewater industry.

WWID: That's quite a career over the past 54 years! Are there any projects that you worked on of which you are particularly proud?

Provenzano: Several come to mind, but here is one that your readers may find interesting:

When I was at Bristol in the 1980s, I had the opportunity to lead one of the teams involved with the development of the Bristol Network 3000 Distributed Control System. In particular, I was directly involved with the development of the Bristol-Babcock RTU-3350 and RTU-3380 units. It was this product line that led to the Bristol RTU-3330 that many of you are familiar with. I'm particularly proud of the work I did at Bristol on this project, as the Bristol RTU line ended up playing an important role in the development of automation in the water/wastewater sector, as well as growing Bristol as a company.

WWID: When did you join the ISA and what effect has ISA membership had on your career?

Provenzano: I joined the ISA back in the late 1970's when I was with Bristol. It was actually a work colleague who recommended that I join. At the time I was seeking to make more contacts in the industry, especially since my new VP of Systems Engineering role in Bristol included business development responsibilities. I also thought back then it was the right time for me to join an association and start giving something back to the profession.

The interesting thing for me was that ISA's focus was right down the path of my career focus. ISA was, and continues to be, a large community of automation professionals that span the entire breath of the discipline – all the way from end users and facility owners to engineering firms, vendors and system integration outfits, as well as academia and researchers.

ISA has a strong applied focus in measurement monitoring and process control, which is what, makes it relevant in my mind. The ISA enjoys this relevance in both a general automation sense and in industry specific applicability thanks to its technical divisions. Through the ISA, I gained access to

a whole new group of people in my sector, and it has benefited and enriched my career ever since.

WWID: Can you tell us about your involvement with the ISA Water/Wastewater division (WWID)?

Provenzano: Soon after joined the ISA, I got a call from ISA headquarters suggesting that get involved with their Water/Wastewater division. The WWID was a young division that was looking for a director. Seeing this as an opportunity, I joined the division as its director and started recruiting an executive board.

In 2003 myself and a small group of division members, with help of ISA staff, put on what was the first ISA Water/Wastewater symposium. It was meant as a one-time event but we received such out-pouring of positive feedback from the industry about it that we knew we had to do it again. After some more urging from colleagues in the water/wastewater sector, we re-launched the symposium in 2004 as an annual event. Our 2012 WWAC Symposium is the 7th offering of what is now our annual symposium.

WWID: I see you are the Program Chair for this year's 2012 WWAC Symposium. What does the symposium have to offer to attendees?

I would say first and foremost work place usefulness, professional development and industry networking. The symposium offers attendees a chance to learn about developments in our sector from the people who are making automation happen. Meaning, the symposium offers a forum for attendees to share their experiences with new technologies, plant upgrades and lessons learned. We traditionally have a good mix of papers, presentations and posters on a wide range of automation, instrumentation, and plant-oriented topics.

As program chair, I like to focus on selecting speakers who are involved with the day to day challenges of instrumentation, automation, maintenance, operations, and SCADA-systems in water/wastewater. This is something that you can't get at the larger non-automation focused conferences. Also this year we have a special focus on Automation and SCADA security, High Performance HMI Design, and alarm management. I'm looking forward to this year's symposium.

WWID: Is this year's symposium relevant for plant operations, maintenance and engineering staff, or it is only meant for system integrators and engineering firms?

Provenzano: The WWAC symposium is geared specifically for "plant people" as I like to call them. It's at the plant level that automation and instrumentation either works or doesn't work – and this includes the ongoing operations that occur long after commissioning/start-up is complete. We gear the symposium so plant people, whether they be in operations, maintenance or onsite engineering, can come to symposium to

learn about new developments in technology and how they can apply them to their plants.

The result is a good mix of end users, integrators, consultants, and suppliers which offers a vibrant professional networking and knowledge sharing experience.

WWID: If I was a manager who was considering sending myself, or one of my employees, to this year's symposium, what are the major benefits of attending from an employer perspective?

Provenzano: To put it simply: Professional Development and Continuing Education. Attendees can receive up to 20 professional development hours (PDHs) from the symposium. Folks that take the optional full-day course on Automation & SCADA Security can earn a further 0.7 CEUs (continuing education units).

At an attendee price of just \$400 for the 2.5 day symposium (\$300 for ISA members), this represents very good value for your training dollar. Coupled with a symposium hotel rate of only \$79/night, it is a cost effective way to offer high quality professional development and continuing education to your staff.

The symposium is also an excellent opportunity for staff to learn about new technologies and lessons learned and develop future industry contacts for knowledge sharing.

WWID: Which aspects are you most looking forward to at this year's 2012 WWAC Symposium?

Provenzano: There are many to choose from, but let me highlight a few.

First of all I am looking forward to the presentations, papers and posters for this year's symposium – the symposium has a strong tradition of technical excellence which I am looking forward to continuing. I am also looking forward to meeting water/wastewater professionals from across the country – a chance to catch up with old friends and an opportunity to meet new faces in our sector.

We have top-notch invited speaker Bill Hollifield who will give a talk on how to design high performance HMIs to maximize operator effectiveness, a soon to be announced keynote speaker, and several other industry leaders who have submitted abstracts to us already.

I am also looking forward to seeing the abstracts that are still to come in – Abstracts are due March 7, 2012. If you haven't already thought about submitting an abstract, you should! See my column in this newsletter for more information about how to submit an abstract to present a PowerPoint, paper and/or poster at this year's symposium.

We also have a full-day short course this year on Automation & SCADA Security – a very hot topic these days!

But most of all I'm looking forward to continuing the symposium's legacy giving the people who design, build and use automation and instrumentation in the water/wastewater sector a forum to share ideas, learn new techniques, network with each other, and have fun doing it. I'm looking forward to seeing all of you in Orlando this coming August.

WWID: Thank you very much for taking the time to speak with us for this interview.

Provenzano: My pleasure!

(Note: This interview has been edited for length and clarity.)



New ISA Book “Control Systems Engineer – Technical Reference Handbook”

Our friends in the ISA publications department are pleased to announce the publication of the *Control Systems Engineer Technical Reference Handbook* by Chuck Cornell, PE, CAP, PMP.

The *Control Systems Engineer Technical Reference Handbook* is a technical reference guide for the control systems professional, as well as a study aid for the Control Systems Engineering (CSE) Professional Engineer (PE) Exam. It provides a detailed, insightful view into the fields of:

- measurement
- final control elements
- signals, transmission and networking
- automation and control systems
- relief devices
- codes, and standards such as NEC (National Electrical Code), NFPA (National Fire Protection Agency 70E)
- hazardous areas
- safety instrumented systems
- basic electrical (motors and uninterruptible power supply [UPS] topologies)

It also includes sample problems and solutions for use in preparation for the CSE PE Exam.

Sample problems presented in this book are not meant to influence the reader on specific problems that may be on the exam, but rather to reinforce the technical material that has been presented to the reader.

Chuck Cornell is a senior process control systems engineering manager with more than 30 years of engineering experience in automation, instrumentation and electrical. He is a licensed professional engineer in the state of North Carolina in both control systems and electrical power. He is also an ISA Certified Automation Professional® (CAP®), as well as a Project Management Institute® (PMI) certified Project Management Professional® (PMP).

The *Control Systems Engineer Technical Reference Handbook* can be purchased from the ISA's online bookstore at www.isa.org/books

Introducing our new WEF Liaison



Tom DeLaura, PE
Symposium WEF Liaison
Email: tom.delaura@eramosa.com
Phone: +1 (313) 610-3559

Vice President
Eramosa Engineering International
Detroit, Michigan, USA

We are pleased to announce that [Tom DeLaura, P.E.](#) has joined our symposium organizing committee as our WEF Liaison. The [Water Environment Federation](#) (WEF) is one of the largest associations focused upon preserving and enhancing the global water environment, especially for wastewater collection and treatment.

Tom is an active member both [AWWA](#) and [WEF](#), currently Chair of the WEF Automation & Information Technology Committee, serves on several other national and section level AWWA/WEF committees, and is a trustee for the [Michigan Section of the AWWA](#). He has extensive experience with water utilities, and has worked in all facets of automation associated with water/wastewater systems, from out in the plant all the way up to the boardroom. He has written and presented on numerous topics of interest to the water and wastewater industry, been involved in research projects for [WRF](#) and [WERF](#), and has received several awards from the industry for his dedication and service.


Tom brings to our team more than 37 years of experience with innovative management practices focused on how technical issues must combine with business practices for success. His experience is related to the management, engineering, implementation, operation, and maintenance of utility businesses as integrated enterprises. His background includes creating strategic technology plans, conducting research, and developing wide-ranging programs of interrelated technical projects. In addition to his consulting engineering experience, he served as an end user and manager of information and process control computer systems with a major municipality.

Please join us in welcoming Tom to the 2012 WWAC Symposium team!

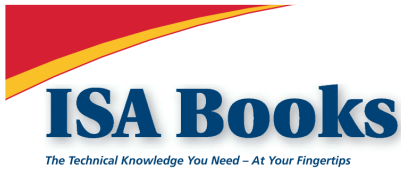
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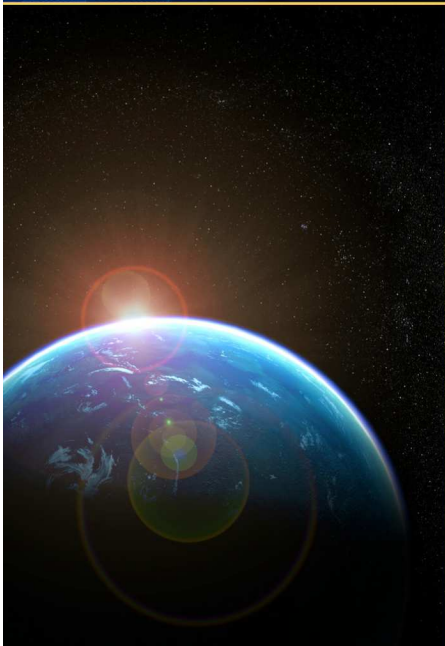



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PLANT AUTOMATION SPOTLIGHT

Lowell, MA – Wastewater Plant Upgrades

By Jon Grant, PE

Woodard & Curran, with design partner CDM Smith, designed a series of plant improvements at the Lowell Regional Wastewater Utility’s (LRWWU) Duck Island Wastewater Treatment Facility (WWTF). Much of the critical equipment at the Duck Island WWTF had been largely untouched since its construction in the late 1970s.

The improvement projects, valued at over \$25,000,000 USD, encompassed many of the plant processes and included a comprehensive electrical system upgrade. The primary switchgear and emergency generator for the WWTF were upgraded; six new intelligent motor-control centers (MCCs) were installed; controls for the four existing screw pumps were replaced; four existing rotary lobe blowers were replaced with new turbo blowers and controls; the existing aeration tanks were outfitted with new instrumentation and control valves; new septage receiving units were installed to improve the existing hauled waste process; new rotary drum thickeners and three new sets of sludge pumps were installed to provide better sludge blending for the existing sludge de-watering process; and the existing sludge cake loading system controls were replaced.



New Influent Screw pumps installed at the plant headworks.



New Hauled Waste System Operator Terminals in the septage receiving area. Notice the large Emergency Stop buttons for the loading pumps.



New Electrical Room and MCC equipment

To accommodate the substantial upgrades of numerous plant processes, the existing SCADA system was substantially expanded. Based on the Allen Bradley Small-Logic-Controller (SLC) platform of processors, four new control panels were installed, and several others modified to handle additional instrumentation and control requirements. Nine new vendor PLC panels (Allen Bradley based), were installed. Two CompactLogix processors were installed to communicate with the new intelligent MCCs and act as data concentrators for the rest of the network traffic. Woodard & Curran, as the lead control engineer and SCADA provider, worked closely with the Owner/Operator, the vendors and the contractors to integrate all the disparate processes into a cohesive system.



New DO instrumentation and valves for the aeration basins.

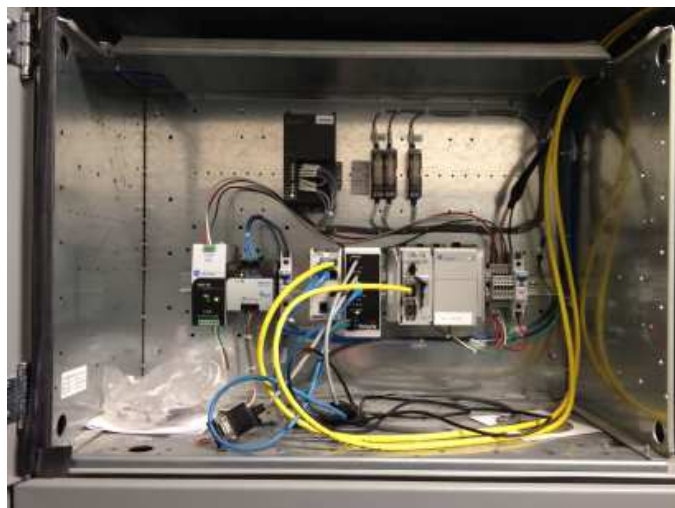
One important lesson learned from this project was the use of the CompactLogix processor as both a data concentrator and as a communications gateway between the older existing SLC 5/05 PLCs and the Intellicenter MCCs. The Intellicenters were provided with standard Ethernet/IP protocol converters.

However, we found that some of the existing SLC processors at the plant, which were an older hardware version, did not support the newer standardized Ethernet/IP protocol version that the Intellicenters used.

A field directive to install the CompactLogix processors served two purposes: (a) to provide a gateway between the SLC processors and the Intellicenters; and (b) to provide a higher speed data concentrator that processes the complex algorithms and data mapping required by the facility's new SCADA standards.



Battery room for the new plant-wide centralized UPS System.



Auxiliary compartment in 480V/3phase MCC/switchboard with a CompactLogix data concentrator

A second lesson learned on this project came in the form of the overall conformance of the vendor controls with the facility standards. Currently, the facility's Owner/Operator has specific preferences when it comes to HMI screen structure, alarm handling and tagging, etc. which to date have not been formally documented.

The major equipment components with vendor control systems were procured with specifications that did not include these preferences. When the control systems arrived on site and were integrated into the existing system, they often didn't meet the same tagging, alarm handling or screen standards required by the Owner/Operator. This created some change orders, and additional work for vendors and Woodard & Curran, to ensure that all systems were well integrated.

Lesson learned: a more complete SCADA standard would have helped avoid many of the control system start-up issues.

Overall the project was a success. The plant now has upgraded switchgear and standby power generation, updated equipment, additional capacity for future growth, and a new full-featured SCADA control system. The plant is now well positioned to meet the growing needs of Lowell, MA.

ABOUT THE AUTHOR

Jonathon Grant, P.E. (CSE) is a licensed professional engineer who worked with instrumentation, control and SCADA systems for nearly 14 years. As Woodard & Curran's Instrumentation & Controls design team lead, he manages the and mentors a team of engineers designing control panels, instrumentation and SCADA systems associated with treating water and wastewater for municipal and industrial clients.



Can IT strategies solve the Automation Cyber Security problem?

By Grant Van Hemert PE, Schneider Electric

Based on news reports, you might think that cyber security is limited to software/firmware (S/F), and that patches will solve the problem.

Some of this perception comes from the IT world. In a traditional IT network, users must have access to email, internet, databases, files from USB sticks, and other sources of information. Accordingly, IT administrators usually cannot block access to sources of vulnerability, therefore an IT person must rely on S/F to detect and prevent intrusions.

Now as industrial control suppliers continue to move towards Ethernet, security experts are starting to apply IT security assumptions to control system devices, but this not a completely valid approach. A control system is not analogous to an IT network. In a control system, you can restrict where, and to whom that data goes to. This means you have tools that an IT administrator does not have.

This does not mean that S/F vulnerability can be overlooked, however a control system's cyber security should be a layered combination of physical and S/F strategies. If a S/F weakness is identified, the other aspects of the security system could negate, delay, or minimize the urgency to upgrade the S/F.

Let's look at three areas to help manage security – vulnerability, physical security, and traffic management.

VULNERABILITY ASSESSMENT

IT networks and control systems face various threats. From the news we all know about terrorist activities, and internet hackers with non-malicious intent. But did you know that most incidents come from people that do not have malicious intent? For example, while at a former employer, there was an instance where a painter plugged a grinding tool into a control panel outlet. The result was that a PLC communication card became inoperable. In this case, the painter did not mean to harm the network, but he did so anyway.

When assessing a facility's cyber security, the first thing to do is a realistic vulnerability threat. This assessment should cover both those risks with a malicious intent, as well as those risks that are not malicious in nature. This assessment will become the road map for what security features need to be implemented, and what is the priority.

One of the first goals is to prioritize real risks from ones that may not be a huge concern. For instance, if you were an international terrorist, would you want to impact a major city for maximum media impact, or a small town in the middle of the country that few people have heard of? If you are the large city, you might decide that a biometric identification system, instead of passwords, would have value.

Of course any assessment must consider the uniqueness of a control system. Some water and wastewater facilities have their control systems on the internet for remote troubleshooting purposes – others may not. If you have not put the control system on the internet, then the risk assessment should not address VPN as an option.

Once the real threat is identified, some steps can be taken to protect the system. For the most part, the suggestions that the risk assessment comes up with can be divided down into two categories: physical security and managing traffic. You could write articles about both of these topics; however, to save space we will briefly cover each.

PHYSICAL SECURITY

Physical security is about denying access to the system. This goes beyond locks and keys, and includes software tools such as passwords.

Let's look at the Stuxnet worm that made headlines. It was propagated over USB data sticks. If you block USB ports, then the threat is managed. We can also look at blocking other means of access such as CD and DVD drives, RS-232 ports, infrared ports and so on.

Another technique that many facilities do not do is putting padlocks on control panels. Not only will this prevent access to the network, but it can help minimize arc flash and shock risks.

Additionally, authorized access needs to be tracked and controlled. Perhaps the most common means is to use passwords and usernames. While this is good, passwords can be shared. Changing them frequently can minimize this, however once a password is changed a few times, people will have a hard time remembering current from past passwords. This leads to a system approach that the user can use to figure out their password. Often this system leads to weak passwords that can be guessed if you know the system. A better means is to use biometrics, but this can be expensive. Finally, be aware of backdoor passwords, they can subvert any effort you make to secure your system. Check with your manufactures to make sure that there are no backdoor passwords for support purposes.

MANAGING TRAFFIC

Traffic in a control system network typically falls within five broad categories. These are, between various automation devices, between automation devices and SCADA, between automation devices and remote locations, between SCADA and offsite locations, and between SCADA and non-automation systems.

Let's talk about these categories in regards to something called managed switches. Managed switches are Ethernet switches that allow you to manage which Internet Assigned Numbering

Authority (IANA) ports are active, and also to manage how traffic is routed.

For instance, some automation devices have embedded web pages to assist with troubleshooting, therefore it might be beneficial to have IANA port 80 open on the control system Ethernet. If you do not want management systems, or offsite systems, to have access to this, you would disable IANA port 80 messaging for each physical port on an Ethernet switch that would be connected to management or offsite systems. That way an unauthorized request could not get through.

There is a logical extension to this technique, which is to turn off every unused Ethernet port on a switch. This protects the port from accidental connections. But of course, what if you needed to use one of the switch's ports, but infrequently? Some Ethernet switches have the ability to look for a specific IP address, or MAC address connected to the port. If a match is detected, then the switch's port turns on, otherwise it is off.

Let's say that our control system has several hundred devices including, PLCs, VFDs, servers, computers, and security cameras. In a typical Ethernet network, all of these devices would be fighting for bandwidth. This traffic could slow down the control messages to the point where control is ineffective.

You could build multiple networks, but this is costly. Another alternative is to use virtual networks. In a virtual network, all the devices reside on one network, but the traffic is managed to prevent collisions. On one part of the network video information could be transmitted, while simultaneously on another part of the network, control signals might be passed (see Figure 1).

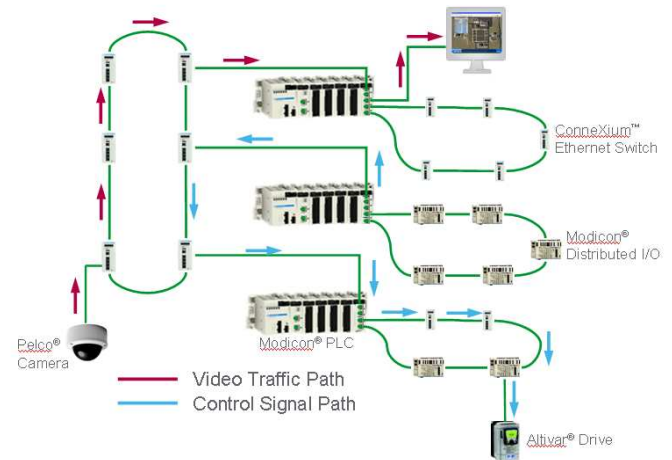


Figure 1: Managed Traffic Routing Allows For Simultaneous Signals without Collision Risk

Control System security is one the most important tasks a utility can undertake to make itself more reliable. Security must take a three pronged approach in which real vulnerability must be assessed and realistic steps taken. Once these steps are taken, a layered approach will exist that can protect a facility even if a software/firmware vulnerability is found later.

ABOUT THE AUTHOR

Grant Van Hemert, P.E., is a water wastewater applications specialist for the Schneider Electric Water and Wastewater Competency Center. He has 17 years of experience in water and wastewater automation, and another five years in automation and control engineering. He is a registered P.E. in the state of North Carolina and is the past chairperson for the AWWA Instrumentation and Control Committee. Mr. Van Hemert can be reached at (919) 217-6367 or via email at grant.vanhemert@us.schneider-electric.com



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Municipal Challenges and the Importance of Advanced Automation Solutions

By Doug Johnson, Emerson Process Management

Municipal leaders are facing a time of unprecedented challenges. It doesn't seem that long ago that water industry professionals could crystalize the focus of their planning, worries and daily efforts into one key word – Compliance. Meeting regulatory requirements was, of course, not the only concern, but certainly topped the list of spending drivers.

A Time of Change

In the past, automation demands in the water industry were relatively simple. Basic regulation of flows, pressures and temperatures, along with regulatory reports and a little water chemistry, were about the most that was expected from an instrumentation and control system. Unfortunately, these low expectations led some suppliers to cobble together only rudimentary control systems for many of their clients, often installed in piecemeal fashion as older equipment became obsolete. In the absence of pressures to improve operations, only the more forward thinking authorities sought the benefits that advanced automation solutions could bring.

Today's municipal water and wastewater authorities, and the municipal executives to whom they are responsible, are facing unprecedented pressures on a variety of fronts:

- Aging infrastructure and associated capital needs
- Funding reductions
- Sustainability needs
- Energy costs and carbon responsibility
- Security threats, both cyber and physical
- Equipment failures, leaks and pipe bursts
- Retirement of experienced workers
- Media and public scrutiny
- New regulations
- Safety
- Lawsuits and consent orders
- Source water protection

Given the gravity of these concerns, municipal executives are in desperate need of solutions. Let's face it, even the most dutiful of elected officials and their appointees live in highly charged political environments, and problems with the water and wastewater authorities under their control represent a threat to their reputation and tenure. To help manage the rapid-fire world of municipal water and wastewater in today's environment, several needs rise to the top of the list:

Operations and maintenance savings can help offset funding reductions and provide capital for critical infrastructure needs.

Energy solutions that reduce electricity expenses, one of the largest for many authorities, and improve carbon

footprints can both reduce costs and demonstrate environmental responsibility.

Workforce solutions can help when experienced workers retire, helping less experienced replacements get up to speed faster while reducing the risk of costly mistakes.

Security capabilities are an essential element of operations in the post-9/11 era to safeguard the public and protect critical assets.

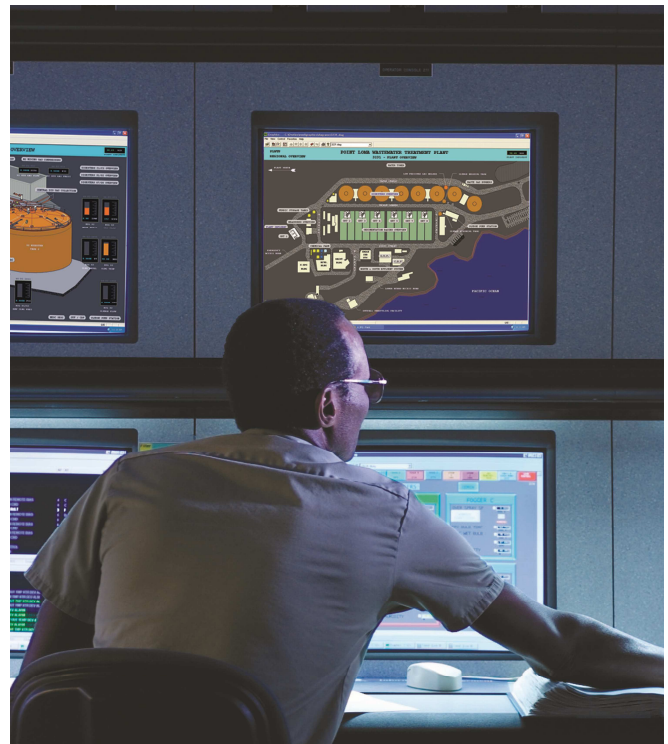
Critical infrastructure protection is necessary to protect what's working, and reduce unplanned major expenses.

While few would argue the importance of these needs in our changing world, many have a tough time understanding how automation can help. Given their experiences with the basic control systems installed at many authorities today, that's no surprise.

The "Right Stuff" - Advanced Automation to the Rescue

Advancements in automation technologies can help municipalities with some of their toughest challenges. A checklist of some of the important features that you should consider for an automation system includes:

Unified Plant Controls and Remote SCADA – Integrated plant and remote systems provide the control and communications foundation needed to expand operational visibility, and set the stage for deploying the advanced solutions needed to improve operations.



Advancements in automation technologies can help municipalities with some of their toughest challenges

Smart Process Optimization – Process economic optimization solutions can help manage water and wastewater treatment and transport processes to minimize costs, reduce equipment wear and tear, and balance trade-offs such as low/high flow and pump usage. In both water and wastewater treatment applications, these advanced solutions can be applied to many key areas of operation, including energy management and chemical usage using customized plant models.

Process optimization can reduce energy by minimizing the amount of electricity consumed. Additionally, the energy consumption of aeration blowers can be enhanced by automating the operations that balance the oxygenation of the aeration tanks.

Smart applications can also be deployed to better manage utilization of acid and base chemicals. As an example, an optimizer can adjust the pH and optimize chemical use, while maintaining process excursions within acceptable levels.

Economic optimization solutions can be deployed where pump network models are used in a strategy to not only recommend the most efficient arrangement of the pumping resources, but to also indicate individual pump flow loadings based on actual efficiency, cost of power, and corrected pump head.

Cyber Security Capabilities – Since 9/11, the world has changed for all of us. Whether you realize it or not, the need to protect the public and our critical infrastructure puts water industry professionals, literally, on the front line. Beyond the direct devastation of a successful attack, loss-of-service to critical functions such as hospitals, fire-fighting and businesses could likely exacerbate health, safety and economic losses.

Capabilities available with today's advanced automation solutions can strengthen the security of municipal water and wastewater operations. In the absence of definitive cyber regulations in the water industry for most jurisdictions, many water districts are looking to other industries such as the power industry as a model for cyber security. In the US for example, one model of particular interest is the NERC-CIP (National America Electricity Reliability Corporation – Critical Infrastructure Protection) requirements to help safeguard the public and protect their assets. Other non-regulatory standards such as ISA99 are also gaining interest as well.

Simulation, Operator Guidance and Alarm Management – A recent industry survey noted that nearly a quarter of experienced workers are expected to retire from municipal water and wastewater authorities within the next five years. That loss of experience can have a big impact on operations as replacement workers, short on experience, learn the ropes. This can translate to an increased risk of mistakes which could impact safety and security, regulatory compliance, and costs.

The best of today's advanced automation solutions include capabilities to help municipal authorities through these tough times. By including simulation capabilities in an automation system, new workers can improve their skills and confidence with little risk. This is especially true for operators, who can become familiar with operations in a benign environment. It also provides a way for operators and engineers to test new control configurations before they are deployed, removing one of the key concerns with trying new approaches to process control problems. Users can choose from a variety of simulator types – from simple tie-back simulation for operator familiarity training to more complex model-based simulation that allows trainers to trigger simulated catastrophes.

New operators are often in need of step-by-step guidance. Automation solutions can provide built-in guidance, with features that keep operators on track and shorten their learning curve. Advanced alarm management techniques help ensure that operators focus on the right information when upset conditions threaten an information overload.

Wireless – Process visibility is the cornerstone of operational excellence, and can lead directly to improved safety and control. Nearly every authority has a wish-list of points that they'd like to instrument, but can't due to installation cost, location safety, or access problems. And although we'd hate to admit it, many authorities have installations that are plagued with problems due to substandard installation, wires that run where they shouldn't, or faulty conduit and cable trays. Wireless can be a quick, easy and inexpensive way to correct problems like these. Based on industry-standard technology, wireless has been proven in a variety of process industries, while reducing installation costs up to 90% in many cases. Today's best wireless mesh networks have come a long way in terms of being self-organizing and easy to use, with an added bonus of increased reliability as more and more devices are added to the network.

Advanced Machinery Health and Asset Management Solutions – Major rotating machinery such as pumps, motors, compressors and centrifuges are the lifeblood of most water and wastewater authorities. In many ways, ignoring these critical assets is ignoring the integrity of your operations. Advanced automation solutions can provide early detection of mechanical asset degradation. The inclusion of these capabilities can help you make the most informed decisions possible based on the exact condition of your equipment. Technologies such as vibration analysis, infrared thermography (especially helpful with bearings), lube oil analysis, sonic and ultrasonic analysis, motor analysis and laser alignment and balancing can help you protect your capital investment while reducing maintenance expenses.

Connectivity Solutions and Enterprise Data – Your responsibilities don't end when you leave your office or plant. In many ways, ensuring the integrity of your operations is even more important after hours. For that, you need quick, secure access to information from your automation system at

any time, regardless of your location. Your automation solution should include these capabilities.

Unlocking the potential of district-wide management and control strategies can only occur with fully integrated automation. Consider your ability to integrate information from across your enterprise as a foundation for future operational improvements.

Getting There – Automation Master Planning

It can be relative easy to achieve many of the benefits that advanced automation can bring, even in light of today’s financial pressures. Many features, such as energy reduction, can generate good financial returns. Even small projects can result in significant operational savings with short pay back periods on capital expenditures. The key to making the transition to an advanced automation system across the enterprise is careful planning. Many municipalities have undertaken the development of formal Automation Master Plans as a way to develop automation excellence. Some are developing these internally, while others are employing the services of consulting engineers to help.

A well-developed plan will lay out the architecture, technology, implementation and financial return timelines needed to provide the most effective automation system available at a cost-effective price. Master Planning can help municipal authorities, big and small, to strengthen their operations by realizing the benefits that advanced automation solutions can provide.

ABOUT THE AUTHOR

Doug Johnson is the Director of Business Development for Emerson Process Management’s Power and Water Solutions Business Unit. He holds a BS in Electrical Engineering from West Virginia University, and an MBA from the University of Pittsburgh. His career has been focused on service to critical infrastructures including nuclear and fossil power, defense, and the water industry. Doug’s interests in water and our environment extend to his personal life, where he enjoys fly fishing and sailing.

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New WWID Members

Recently joined October to December 2011

The Water/Wastewater Industry Division would like to extend a warm welcome to our recently joined members.

October 2011

David Dale Bowen - Ramona, CA, USA
Dr. Dale Francis Brost - Fresno, CA, USA
Dennis Carlson - Grand Junction, CO, USA
Mr. Kevin Cutrer, CCST - Austin, TX, USA
Mr. Victor Ferguson - Tustin, CA, USA
Mr. Ivan Gonzales Lorenzana
- Tlanepantla Edo De Mexico, MEX, Mexico
Mr. Claudio Groppetti - Victoria, MN, USA
Ms. Carmen Guinea Valle - Pozuelo de Alarcon, MADRID, Spain
Mr. Daniel T. Harmon, Jr. - Bergen, NY, USA
Joel John - Pasadena, TX, USA
Mr. Steve Kamins - Camarillo, CA, USA
Joseph D. King - Chino, CA, USA
Mr. Steven A. Lacey - Chino, CA, USA
Mark E. Langenkamp - Plant City, FL, USA
Ms. Ludmila Rodrigues Lopes - Bage, RS, Brazil
Mr. Pat S. McCurdy - Mechanicsburg, PA, USA
Mallory McGuire - Longmont, CO, USA
Mr. Bhaskar S. Mittal, P.Eng. - Emerald Park, SK, Canada
Carlos Javier Munoz Arcas - Mairena Del Aljarafe, SEVILLA, Spain
Claudio Hideki Okada - Sao Paulo, SP, Brazil
Jose Miguel Olza Martin Loeches - Madrid, MADRID, Spain
Mr. Lloyd Perkins - La Porte, TX, USA
Mr. Raymond G. Reyes - Upland, CA, USA
Mr. David Samuel - Rowlett, TX, USA
Christoph Schiller - Stanford, CA, USA
Raymond Mark Schlehr - Santa Rosa, CA, USA
Aldo Cezar P. Silva - Ananindeua, PA, Brazil
Mr. Daljit Singh - Santa Fe Springs, CA, USA
Mr. Garry K. Stanhope - Moose Jaw, SK, Canada
Mr. Fahd G. Zaki, P.E, PMP, CEM
- Jubail Industrial City, , Saudi Arabia

November 2011

Mr. Mohammed A. Al-Ammari
- Jubail Industrial City, EasternProvince, Saudi Arabia
Mr. Mike David Bohn - Santa Clara, CA, USA
Mr. Terry L. Coodey, Jr. - Allentown, PA, USA
Mr. Michael John Demkowski - Omaha, NE, USA
Andrew Elliott - Kensington, NH, USA
Mr. Robert I. Goldstein - Canoga Park, CA, USA
Mr. Will Gray, Jr. - Cantonment, FL, USA
Mr. Richard Guliuzza - Oxnard, CA, USA
Kenneth S. Hartman - Woodhaven, MI, USA
Mr. MOHAN KHISTY - Spring, TX, USA
Michelle King - Fort Collins, CO, USA
Mr. Christopher Anderson Knehr - Tomball, TX, USA
Mr. Jonathan D. Lew - Benicia, CA, USA
Mr. Gregory Livelli - Warminster, PA, USA
Mr. Ramin Madani - Burnaby, BC, Canada
Yukihiro Makinae - Suita, Osaka, Japan
Mr. Ton Oosterhoff - Leusden, , Netherlands
Mr. Thota Ravindra Narayana - Pune, MAHARASH, India
Mr. Joseph A. Russell - Los Angeles, CA, USA
Mr. Steven L. Savoie - de Pere, WI, USA
Kugan Sinnadurai - Singapore, Singapore
Mr. Kevin L. Sykes - Lynnwood, WA, USA
Mr. Victor K L Wong - North Vancouver, BC, Canada

December 2011

Mr. Imran Abulhassan - Aurangabad, MAHARASH, India
Mr. Ziad AbdulFattah Ahmed - Khobar, Saudi Arabia
Mr. Hussainudeen Ansar - Al Khobar, Saudi Arabia
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Mr. Gediminas Labutis - Kaunas, Lithuania
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WWID is on LinkedIn

LinkedIn is a social media site that is geared towards professionals and business people. Located at www.Linkedin.com, the site features online profiles, discussion groups and tools for identifying and keeping track of contacts. LinkedIn currently has over 120 million members and is still growing.

In an effort to provide the latest news and information relating to instrumentation and control systems in water and wastewater management, the Water and Wastewater Industry Division has created a LinkedIn group. We invite anyone affiliated with or interested in the water and/or wastewater industries to join the group and participate in the dialog.

You may use the following link to join the group <http://www.linkedin.com/groupRegistration?gid=2031271>



About LinkedIn

LinkedIn is an interconnected network of over 120 million experienced professionals from around the world, representing 170 industries and 200 countries. You can find, be introduced to, and collaborate with qualified professionals that you need to work with to accomplish your goals.

When you join, you create a profile that summarizes your background and professional accomplishments. Your profile helps you find and be found by former colleagues, clients, and partners. You can add more connections by inviting trusted contacts to join LinkedIn and connect to you.

Your network consists of your connections, your connections' connections, and the people they know, linking you to thousands of qualified professionals.

There are already many ISA members and automation professionals on LinkedIn, as well as several other ISA-related groups. If you'd like to learn more about LinkedIn, the article "100+ Ways to Use LinkedIn" provides many different perspectives on how the site can be leveraged. We hope you'll join us there and network with other ISA, water, and wastewater professionals.



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Call for Newsletter Articles

The WWID newsletter is published four times a year (spring, summer, fall, winter) and reaches the WWID's over 1,700 members. Each issue is approximately 20-30 pages long. The newsletter is distributed electronically in color PDF format.

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

Article submissions should be 500-1500 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 is to be avoided. While not specifically required, we encourage authors to submit several photos and/or figures to go along with their article submission.

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 is acceptable, but the focus of the article should be technical content and not just sales literature. We ask that authors keep this in mind when submitting articles/content. If you are unsure of whether your article idea would be acceptable, please contact our newsletter editor for more information – we are here to help. With this said, we have had many excellent vendor-written articles in the past, and we look forward to many more.

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

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

Article submissions can be sent to the WWID newsletter editor Graham Nasby at graham.nasby@eramosa.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 circulation of over 1,700 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:

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

Advertising in the newsletter is offered in quarter page and eighth page formats. The eighth page size is approximately the size of a North American business card. 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 advertisements are accepted.

The current advertising rates are as follows:

Per Issue:

- Quarter page ad (3.5" W x 4.5" H): \$100
- Eighth page, business card ad (3.5" W x 2.0" H): \$50

Per year (4 issues):

- Quarter page ad (3.5" W x 4.5" H): \$325
- Eighth page, business card ad (3.5" W x 2.0" H): \$175

Other sizes of advertisements are available, but are priced on an individual basis. Please contact our newsletter editor 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, TIF, PNG, JPG or GIF formats. EPS and PNG formats are preferred. Images should be submitted with 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@eramosa.com.



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Wally Ingham, P.Eng. – Stantec
Tom McAviney – Instrumentation and Control Engineering LLC
Steve Valdez – General Electric

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General Symposium Chair

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Symposium Details

Date: August 7-9, 2012
Location: Orlando, Florida, USA
Venue: Holiday Inn Castle Resort
Website: www.isawwsymposium.com

About the ISA Water/Wastewater Division

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

About the ISA

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




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- Previously worked at Facility Diagnostics as Controls Engineer and IBM as a Management Consultant
- BA, Computer Engineering – Drexel University



2

UWNJ System Overview in Spring 2008



- Haworth Surface Water Treatment Plant
 - Provides potable water for 800k+ people in Northeastern, NJ
 - 200MGD peaking capacity
 - Direct Filtration Plant with Ozone
 - Controlled by:
 - 80% Legacy RTU Controllers
 - 20% by PLC's
 - 1980's control strategies
 - Two distinct process control systems
- Remote Sites
 - Total of 120+ remote sites monitored/controls
 - 93% of sites utilize an Legacy RTU
 - A small number have a Legacy RTU with a PLC
 - 7% used a mix of PLC Brands
 - Two distinct remote control systems exist

3

SCADA System Upgrade Drivers



- Legacy RTU Risks
 - financial viability
 - Legacy technology
 - Single Source
 - Lack of local support
 - Significant operational, reporting, and data quality issues
 - Not Open Architecture
- Major Plant Upgrade of Treatment Process (DAF, Ozone, & Residuals Handling)
 - PLC process controls
 - Modern HMI
 - Unable to integrate with Legacy RTU Equipment

4

SCADA System Upgrade Drivers



- Remote Sites
 - Need for complex control at new remote sites
 - Mixed Communication

- SCADA Reporting
 - Difficult and tedious task to generate simple reports
 - Two separate data sources
 - In ability to update reports
 - Only accessible to a few people

- Control Room Consolidation
 - Separate SCADA and Plant Controls combined into a single

5

Plant SCADA Upgrade Project



- Phased Project Approach
 - Phase 1 – Infrastructure Improvements
 - Phase 2 – UWNJ SCADA Reporting Project
 - Phase 3 – Haworth Treatment Plant SCADA Upgrade
 - Treatment Plant Upgrade Project
 - Phase 4 – Control Room Upgrade and Consolidation
 - Phase 5 – Remote Site Upgrade

6

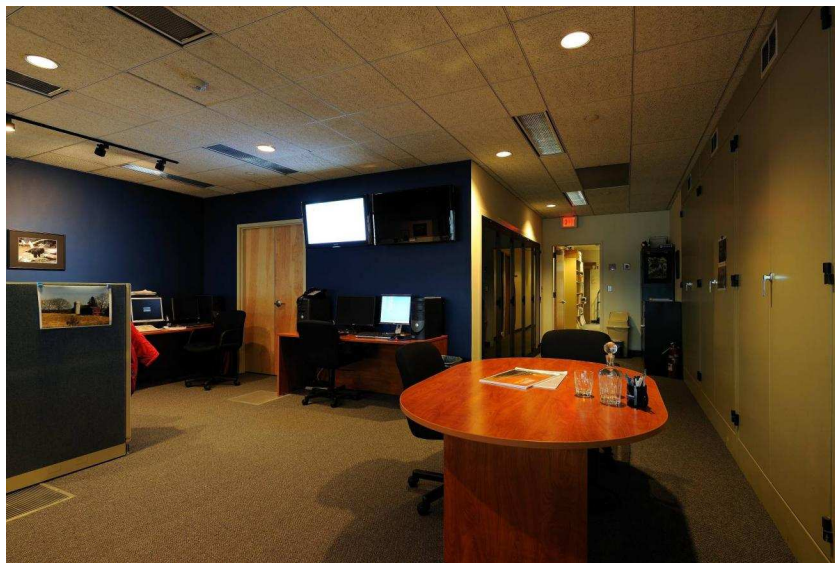
Phase 1 - Infrastructure Improvements



- Goals
 - SCADA Upgrade Preparation
 - Construct a dedicated SCADA Datacenter
 - Upgrade SCADA server, network, UPS, and backup infrastructure
 - Implement Redundant SCADA servers in a central location
- Status
 - Room Update and datacenter construction complete in Nov 07'
 - Server Infrastructure installed in Dec 07'
 - SCADA backup configured in Jan 08'
 - Migration of Historian Server completed in Feb 08'

7

SCADA Room



8

Phase 2 – SCADA Reporting Project



- Business Drivers
 - Two distinct sources for reporting
 - In accurate reports
 - Lack of effective data management tools
 - Reports difficult to modify
 - Data distributed using MS Excel

- Objective
 - Implement effective data management tools
 - Eliminate redundant work processes
 - Automate repetitive processes
 - Establish standards
 - Leverage web based reporting tools
 - Future proof with a scalable system

9

Cont.



- Solution
 - A water specific operations reporting tool
 - SQL server based with a Web Interface
 - Assessable from Corporate Intranet

- Challenges
 - Existing data was not defined consistently or correctly
 - Defining an end point to the project

- Success Factors
 - Team work
 - Strong Business Reporting Definition

10

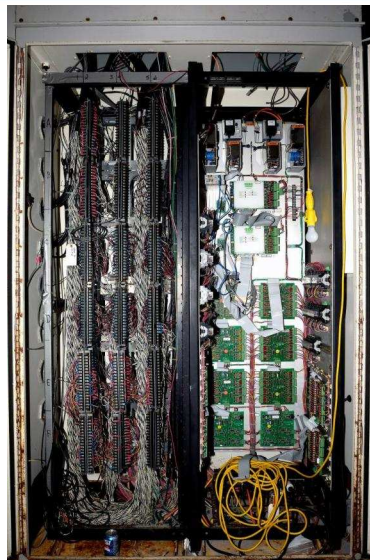
Phase 3 – HWTP SCADA Upgrade



- Drivers
 - Integrate with new Plant processes
 - Replace aging legacy control system
 - Provide a common and scalable system
 - System documentation
 - Incorporate processes not on SCADA

- Approach
 - Design/Build
 - Design/Build firm partners
 - Legacy equipment vendor
 - Systems integrator

- Timeline
 - Kick-off August 2008
 - Substantial Completion April 24, 2009



11

Phase 3 – HWTP SCADA Upgrade



- Challenges
 - Parallel to a Major Plant Upgrade
 - Maintain Plant Operations with **NO** interruptions
 - Schedule – 5 months from project kick-off to first conversion
 - Over 2,500 physical points
 - Limited existing system documentation
 - Coordination with other project work

- Technology
 - Redundant PLC's with Remote Ethernet I/O
 - Redundant Network Infrastructure with fiber optic's to each control cabinet
 - Redundant HMI servers
 - Plant Wide Ethernet Radio

12

Cont.



- Success Factors
 - The Team
 - Working relationship with Vendor
 - Factory Testing
 - Planning
 - Documentation
 - System Testing
- Lessons Learned
 - Communication, communication, communication
 - Make Smart and Quick Decisions
 - Murphy is always present

13

Major Plant Process Upgrade



- Plant Upgrade Project
 - Separate from SCADA Upgrade Program
 - Design-Build-Construct contract
 - Only include Plant Upgrade SCADA Components
 - Ozone
 - Dissolved Air Flootation (DAF)
 - Residuals, Chemical, Chlorination, and Misc.
- SCADA Responsibilities
 - UW Engineering Systems
 - Provide SCADA Requirements
 - Design/Installation oversight
 - FAT Witness
 - Commissioning
 - Acceptance Testing
 - Constructors
 - Process Design
 - Deliver of Instrumentation and Controls

14

Cont.



- Technology
 - Same as the SCADA upgrade
- Challenges
 - Fast tracked process control development (~10 Months)
 - Multiple Integrators that were managed by Constructor
 - Integrators not following templates and standards provided
 - Startup/Commissioning in parallel to SCADA Project work
- Lessons Learned
 - Defined Roles and Responsibilities
 - Enforce Standards
 - Expect the Unexpected
 - Insist on progress meetings

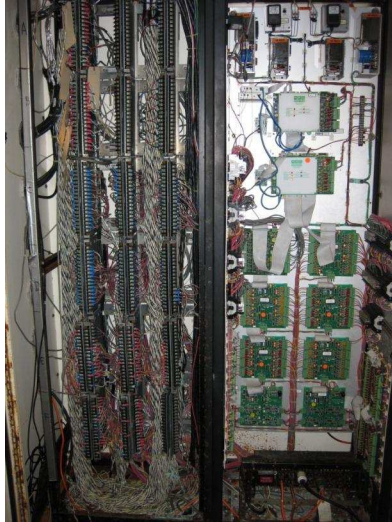
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Electrical Documentation



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Cont.



17

Factory Acceptance Testing



18

First IO Point Transfer



19

Control Panel Relocation



20

Before



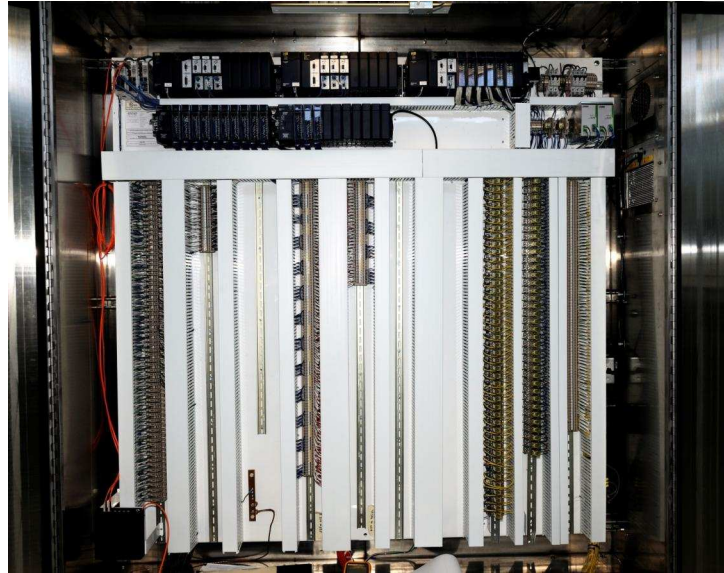
21

After



22

Finished Cabinet



23

Testing



24

Panel Relocation



25

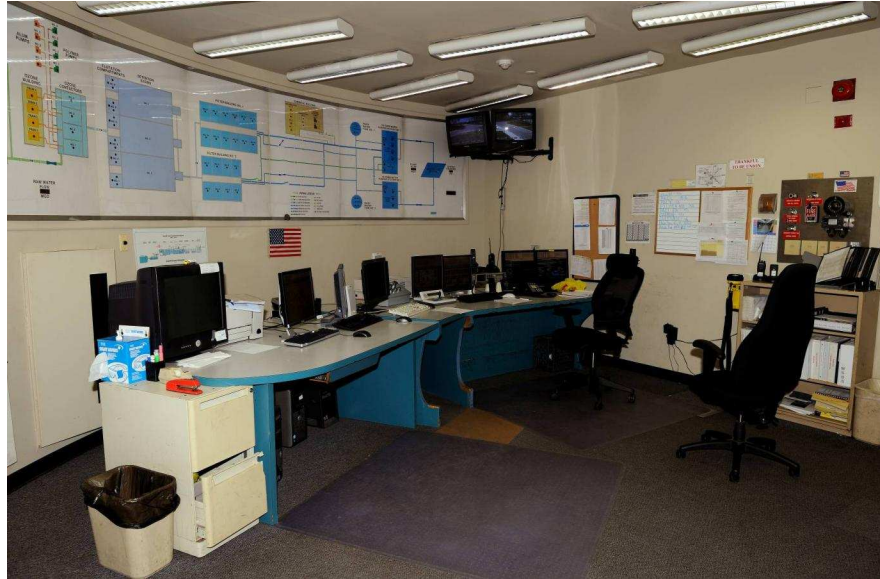
Phase 4 – Control Room Upgrade/Consolidation



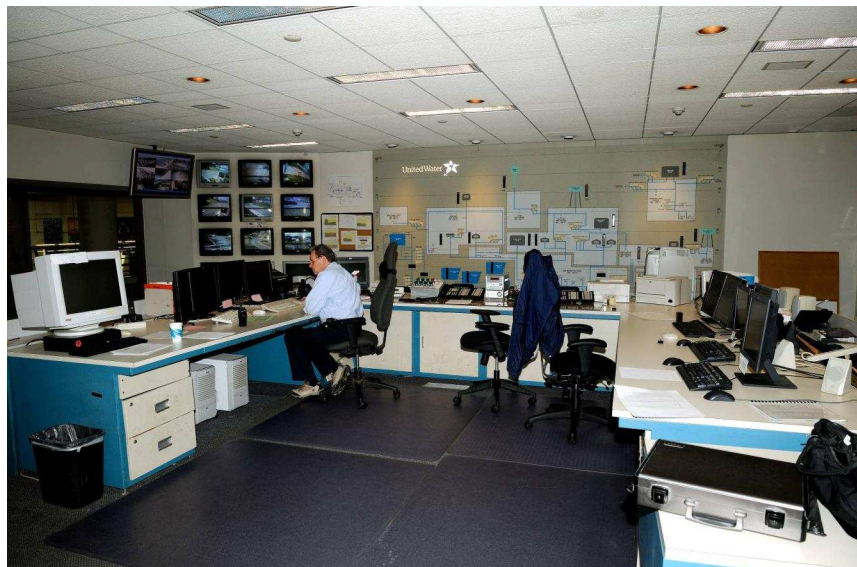
- Drivers
 - Consolidate into 1 control room
 - Old and not functional
- Timeline
 - Design/Procure September – November 2008
 - Construction December 2008 – April 2009
- Challenges
 - Yet another project to manage
 - Working with multiple contractors
 - Relocating Infrastructure (Fiber and Process Control Equipment)
- Lessons Learned
 - Gain Operator Input
 - Surprises around every turn.

26

Plant Control Room (Downstairs)



T & D Control Room (Upstairs)

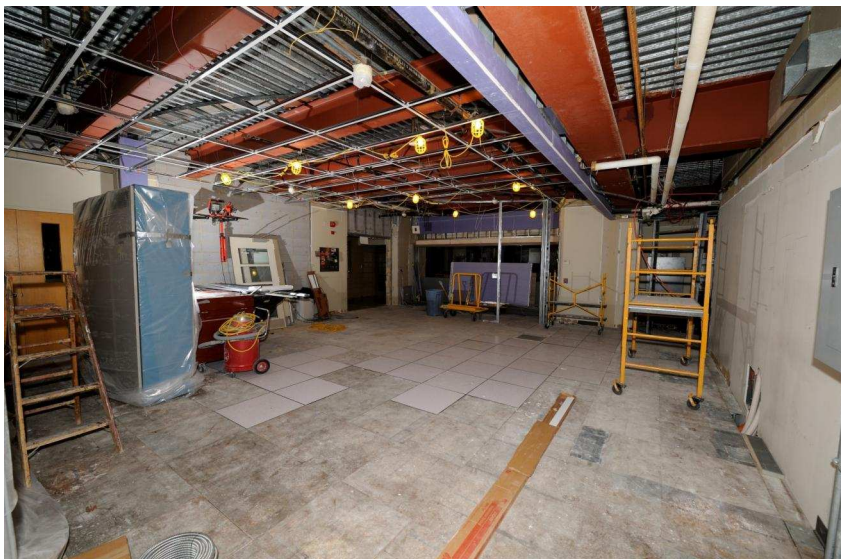


Demolition



29

Clean Slate



30

Fit out



31

Almost Done



32

Finished Product



33

Phase 5 – Remote Site SCADA Upgrade



- Business Drivers
 - Aging Legacy RTU
 - Difficult to upgrade
 - New systems are complex
 - 75% utilize high latency data
- Approach
 - Design-Bid-Build
 - Construct common templates for boosters, wells, tanks, etc...
 - Communication Plan
 - Document
- Goals
 - Limited Number of control panels
 - Template the code
 - Documentation
 - Training



34

Cont.



- Technology
 - Modern RTU Solution
 - DNP Communication
 - New HMI
 - Radio Network
 - Cellular Network
- Challenges
 - Project Capital
 - Implement new projects with current system
 - No system documentation
 - Large service area
 - Reduce operational costs



35

Questions/Discussion



36