Setting the Standard for Automation

Process Measurement & Control Division

2020
Fall Newsletter

In this Issue

Upcoming Events

Oct 6	Webinar II
Nov 3	Webinar III
Nov 12	Webinar IV
Nov 17	ISA 2020 Virtual Process Industry Conference

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Director's Message

Greetings ISA Process Measurement and Control Division (PMCD) Members!

As Director, I am leading in an exciting time at ISA. 2020 is the 75th Anniversary of ISA, and we are marking the anniversary of the 75th through several activities this year, culminating with the PIC 2020 Conference in Houston.

ISA Connect Goes Live This Month! Once you are officially in ISA Connect, please reach out to any of the PMCD officers to join PMCD feed. PMCD will continue to post content, papers, webinars, minutes and other Division activities. You can sign up for one Division, or all Divisions. Also, Keep an eye on our LinkedIn Group account which will always have the latest and greatest news for you! I encourage all members to sign up.

I need feedback from our members at PMCD Division:
Why are you a member of PMCD Division?
What do you expect from PMCD Division?
What should be the role of Divisions at ISA?
Please provide your feedback to us at ardisbartle@apexmeasurement.com

Sincerely,
Ardis Bartle
Director, Process Measurement and Control Division ISA

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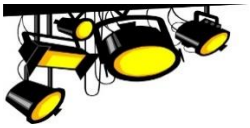

ISA 2020 Virtual Process Industry Conference!
Tuesday, 17 November 2020

Three Reasons You Should Register NOW for the ISA 2020 Virtual Process Industry Conference (PIC)

Reason One: Virtual PIC 2020 Conference Registration **will be free** for a short period after going LIVE. After the discount period, there will be a minimal charge for all ISA members/nonmembers. Be sure to watch ... www.isa.org/virtualevents for registration details when they become available. Keep an eye on your PMCD Linkedin page!

If you are not a member of the PMCD LinkedIn page, join here!

Reason Two: **Keynote Speaker(s)**

Disruptive Times: Making Your Own Path (Keynote Presentation)

Kelly Hall, Vermilion Power Technologies

The process sector has been one marked by significant, often unfavorable change, from the oil crisis of the 1970's, severe economic downturns, price wars, to reduced demand for its products and services as a result of the covid-19 pandemic. These events and the disruptions they cause also seem to arise in sequence, a cascade of bad news that tax even the most resilient ones among us. How does one cope? Kelly Hall, our speaker, has spent her 30-year career at the forefront of change. From developing control system software to managing automation and infrastructure projects, from pharmaceuticals to oil sands, building new organizations, and rolling out new products, Kelly has studied the change process, its impacts, and how to harness it. Every new initiative has started with 2 things:
1. We will be the team that everyone else wants to join, and
2. Success is beyond what you thought it was.

Her new passion is to teach others how to turn the change process and impacts to their advantage. It's about changing the box.

Reason Three: Speakers and Agendas

This conference focuses on the foundational technologies and topics essential to industrial operations. Topics include safety, quality, compliance, instrumentation and measurement, data analysis, human-machine interfaces, asset management, machine maintenance.

Agenda

9:00 AM ET	**Exhibit Hall Opens**
9:30 AM ET	**Exhibitor Lounge Discussion 1**
10:00 AM ET	**Disruptive Times: Making Your Own Path** Kelly Hall, CEO, Vermillion Power Technologies, Inc.
10:30 AM ET	Break
11:00 AM ET	**Reality-Based Training for Instant and Long-Term Results** Magnus Gyllenstrand, Training Manager, Emerson Process Solutions Did the latest training you attended not meet your expectations? Did you forget most of the content after a few weeks or months after the training? Let's have a look at how training can be enjoyable, memorable and well worth the effort! Process industries today face a tremendous challenge; when highly experienced personnel is retiring it is essential to rapidly bring new employees up to speed. In this presentation we will show how the latest interactive training methods really engages the participants and give instant and long-term results! Learning-by-doing by using our Interactive Plant Environment in combination with solving real world issues via discussions in the classroom has proven to be very efficient. The purpose of the training is to provide the engineer with tools required to handle most of the troubleshooting that he/she will come across in the field.
11:30 AM ET	Break
12:00 PM ET	**The State of Open Process Automation** Don Bartusiak, ExxonMobil Open Process Automation Forum
12:30 PM ET	Lunch Break
1:30 PM ET	**Developing Sustainable Optimized HVAC Systems Using Machine Learning Algorithms** Shamik Chodhury, Consultant Data Scientist, AFR

HVAC systems consume around 50% of the energy usage in buildings. Pre-existing HVAC controls systems (using Programming Logic Controllers) manage the optimum temperature in a room based on static set points (desired temperatures) fed in by building managers/operators. However, finding a set point that will also optimize the energy consumption has been a challenge. Besides, the quality of control is also impacted by the fact that energy consumption and room temperatures are dynamically affected by varying room occupancy and ambient weather conditions. The growing necessity and focus on sustainable solutions also makes for a case to leverage ambient forecasts and provide a greener control system.

This paper proposes the application of various machine learning algorithms including simulation and reinforcement learning approaches, to fine tune existing HVAC control systems by applying dynamic set points - thereby maximizing the energy efficiency in a building while optimizing thermal comfort. Besides room weather conditions (temperature, CO_2) and heating and cooling supply information, the proposed machine learning approach takes advantage of the ambient temperature and radiation forecasts to deliver a sustainable solution. The optimization solution functions on the principle of a robotic system – it is modeled as a Markov decision process and learns through a reward feedback mechanism. Reinforcement learning requires a high volume of data/interactions with an environment; hence it is proposed to use a simulator for training the model, and fine tune the model in the field. The paper provides an overview of the approach and summary results from a real-life application. Knowing the distribution of people in a room can also be a step towards further enhanced comfort and control.

2:15 PM ET **Technology Demo (TBD)**

2:45 PM ET Break

3:15 PM ET **Wireless Technology Enabling IIoT for Mature Offshore Oil and Gas Production Facilities**

Sharul Rashid and Jimmy Chan Kai Lung, Petronas

Wireless technology has been applied to mature oil and gas production facilities at offshore Sarawak, Malaysia. Wireless technology has enabled the IIoT including applications of data analytics. The benefits include improved production surveillance, asset integrity, equipment uptime, and operation efficiency. Offshore oil and gas production facilities at offshore Sarawak, Malaysia, have been operating since the 1970s. Some of the facilities are still

using pneumatic control system which has limitations in terms of remote surveillance and production optimization.
In 1999, a feasibility study was carried out to evaluate the application of computer assisted operation for these matured field. The scope covers retrofitting of pneumatic instrument to electronic and infrastructure including data storage/telemetry. First site deployment was completed in 2001. In 2010, the first deployment if wireless devices was completed using pressure transmitters to monitor pipeline pressure. It was later extended to temperature and valve diagnostics as well as pipeline thickness monitoring, Data from the devices enable descriptive analytics via informative dashboard.

3:45 PM ET	**Happy Hour Chat**
4:45 PM ET	**Adjourn**

ISA Live Webinars in October, and November!

The process industry conference begins its 2020 virtual program with webinars on open process automation, cybersecurity, and virtual reality simulation. These free 1-hour webinars will explore the transformative nature of industrial automation in society. To register, please visit https://isaautomation.isa.org/virtual-events-program-process-control-and-instrumentation/.

Effectively Influencing the State of Cybersecurity in Your Supply Chain

Jason Armstrong and James Cooper, National Oilwell Varco, **October 6, 1 – 2 pm ET**

As our business and OT systems increase in complexity, more customized solutions are being integrated to provide us the visibility we need to make fast and effective decisions. The risks posed by these solutions however often go unassessed, uncategorized and unaddressed making the supply chain infiltration often the easiest way inside of a targeted organization. Pushing your security standards on the hundreds of different vendors is futile at best. However, with the right information, communication style and people, you can influence and guide your key vendors to enhance their stance and trade on those developments. This talk will provide you with insights and strategies to identify key individuals, their business pressures and recommendations on how to influence their decisions to enhance your supply chain cybersecurity.

Seamless Data Through Smart Cities Platforms

Larry O'Brien, VP of Research, ARC Advisory Group, **November 3, 1 – 2 pm ET**

Smart city platforms allow end users to gain seamless access to data across the multiple siloes of functionality that exist in today's cities. These include applications like transportation management, health and public safety, environmental (including water and wastewater), energy, governance, the built environment, and more. This is particularly relevant today as cities and towns struggle to deal with the economic and social challenges posed by the COVID-

19 pandemic with an eye toward long-term resiliency. This presentation will provide an introduction to smart city platform architecture, functionality, and use cases, and will explore some of the ways that those in the industrial sector can bring their experience to bear in optimizing the performance of today's cities.

Virtual Reality Based Training Simulator Development Using Open Source Technologies

Sunil Shah, ModeliCon InfoTech, **November 12, 1 – 2 pm ET**

Operator training is essential to run an industrial plant safely and efficiently. This training can be imparted by computer-aided operator training simulator. The latest trend in operator training is immersive training using Virtual Reality integrated with a training simulator. This allows the user a near real-world, hands-on experience of operating plants under normal and abnormal conditions in real-time. Such tools are proven to be very effective in the manufacturing and service industry but owing to the usage of proprietary tools for development are inherently expensive. Our team used open-source tools for developing a solution that reduces the cost of implementation significantly without compromising on quality. In this paper, the authors demonstrate the development and application of a totally immersive training environment to enable engineering students to carry out laboratory experience in a VR world. This work integrates Virtual Environment developed using Unity 3D with simulation modules developed in OpenModelica. OpenModelica is a versatile simulation tool with 2D/3D visualization and real-time execution capabilities and Unity 3D is free for non-commercial use, gaming and VR/AR application development tool. A robust integrated environment has been developed to enable real-time information exchange between the VR world and OpenModelica simulation. This environment is demonstrated through an example for a control laboratory-experiment- level control of connected and interacting tanks. Dynamic models of the tanks, control valves, and controller are developed in the simulation tool and their visualization and interacting framework are developed using Unity 3D. A client-server UDP connection is developed to communicate between the simulation PC and VR headset in real-time. This product is called Virtual Automation Lab and is intended to be used by engineering students for carrying out experiments in the process control lab.

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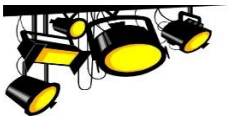

PMCD Membership
Get the Most out of Your Membership

- **Annual Events** - Participate in the conference
- **Industry News** - Receive PMCD director and director-elect messages posted on the division website
- **Leadership Opportunity** - Sharpen your leadership skills by helping plan and conduct various annual PMCD events
- **Technical Writing** - Submit industry papers, review papers, and participate in developing sessions
- **Networking** - Take advantage of the opportunity to network with other PMCD industry leaders
- **Valuable Information Resource** - PMCD provides its members with comprehensive technical information to aid them in their profession, and their membership supplies:

- Comprehensive industry newsletters featuring articles and papers from PMCD members and symposium participants
- Access to the PMCD website that provides industry technical papers, web seminars, and a list serve of industry peers

- PMCD focuses on primary sensors, control hardware and software, and final control elements. Our active technical committees reflect these areas of interest:

- Automation and Control Systems
- Flow Technology
- Pressure Technology
- Temperature Technology
- Level Technology
- Field Calibration Technology
- Final Control Elements

PMCD promotes a highly professional, responsible image of the process measurement and control industry through its various programs and helps its members to develop that image and to succeed in a highly competitive market. As a PMCD member, you gain access to a wealth of professional knowledge, you now could share your experiences and learn from your peers.