Director’s Message

Greetings ISA Chemical and Petroleum Industries Division Members:

We have closed another productive year. The first order of business in this communication is to celebrate and congratulate the Chemical and Petroleum Division Board and Membership for being recognized with a mention as the Most Improved Division at the 2016 ISA Fall Leaders Meeting. This is an acknowledgement that the contributions of ChemPID (—that’s you!) are being noticed and are valued. Your technical contributions to symposia, standards committees, webinars, and division newsletters are fundamental to fulfilling the mission of ISA. Thank you for letting your voice be heard.

In addition to the exposure to in-depth technical knowledge that ISA membership provides, ISA is committed to developing leaders that will keep the society and the automation industry strong. In 2016, the ISA Executive Board assembled experienced ISA leaders on special task forces focused on leader development. These task forces have refined the process for identification of the next generation of industry leaders, and identified processes for providing training and mentorship. Several components of the processes are currently being rolled-out, including a portal for receiving potential leaders at facetowatch@isa.org. Nominate some of the great professionals in your personal network by submitting their names to this portal.

I also want to note the exceptional work ChemPID Symposium Chairs Nick Sands and Fares Karadsheh completed in developing the ChemPID track for the Process Control and Safety Symposium and Exhibition in Houston, Texas, 7–10 November 2016. The event attracted over 300 attendees.

In 2017, the ChemPID Board has planned another year of programmed opportunities for us to grow together, including our 2017 E-Week Challenge, a division membership drive, technical scholarships, mentorship, and social events. Be sure to enjoy the full benefits of your membership, by getting engaged in division activities.

- Submit an article or paper to be published in the newsletter to ISA.ChemPID@gmail.com
- Join the discussion on the LinkedIn ISA Chemical & Petroleum Division group
- Present your work at ISA events and conferences
- Recommend a student for a ChemPID ISA Technical Division Scholarship
- Serve as a volunteer/sponsor for E-Week activities

You will find the details of these events, and many other events in this publication, as well as on our Chemical and Petroleum Division webpage, www.isa.org/chempid.

Best Regards,

Rhonda Pelton
ISA ChemPID Division Director
**ChemPID Announcements**

**Upcoming ChemPID Webinar**

Implementation of Procedural Control in the Chemical Industry  
Tuesday, March 7th, 2017 at 10am CST  
Free Webinar  
Presented by: Yahya Nazer, Chair of the ISA106 Committee  
Visit: [www.isa.org/ChemPID](http://www.isa.org/ChemPID) for details or to register.

**ISA launches SCADA Systems Standard Committee**

Research Triangle Park, North Carolina, USA (01 August 2016) — ISA’s Standards & Practices (S&P) Board has approved a new committee to be designated ISA112, SCADA Systems. This approval follows widespread support for the idea from a survey conducted via ISA’s *InTech* magazine and online media.

ISA112 will develop standards and technical reports intended to improve the overall reliability of supervisory control and data acquisition (SCADA) system design, installation, integration and operation of the infrastructure for pipelines, water and wastewater, power, oil and gas, and other industries. The standards and technical reports will provide guidance for implementing effective and reliable SCADA systems by documenting best practices in a range of industries.

S&P Board member, Greg Lehmann, will serve as ISA112 managing director and oversee the startup of the new committee by drawing on his experience as founding co-chair of ISA101, Human-Machine Interface. Lehmann is Process Automation Technical Manager, Engineering and O&M, Oil & Gas, at AECOM.


**ChemPID-ISA Community Involvement**

**ChemPID Division Award at Fall Leaders Meeting, 2016**

Rhonda Pelton reviews ChemPID upcoming events at the FLM Industries and Sciences Awards Luncheon.  
Prabhu Soundarrajan presents the award for Outstanding Division—Honorable Mention to ChemPID.
Recommended Reading Material

Automation Network Selection: A Reference Manual by Dick Caro
Are you trying to make sense of all the different industrial automation networks on the market today? Whether you’re a novice industrial network user or someone who simply needs to brush up on the technology, Automation Network Selection will help you better understand and select the “right” network for a given application.

For more information/details, visit: www.isa.org/networkselect

ISA Calendar of Events

62nd ISA Analysis Division (AD) Symposium
Sunday, 23 April – Thursday, 27 April 2017
Pasadena Convention Center, Pasadena, CA

ISA Spring Leaders Meeting
Saturday, 6 May – Monday, 8 May, 2017
Marriott Raleigh Crabtree Valley, Raleigh, NC

17th ISA LDAR Fugitive Emissions Symposium
Tuesday, 20 June – Wednesday, 21 June 2017
The Tremont House/Wyndham Grand Hotel, Galveston, TX

ChemPID-Members Contribution

Recently Neelesh Shah’s article on “Maintaining Stable Gas Pressure for Hydrochloric Acid Production and Preventing Safety/Environmental Incidents,” was selected as a poster presentation in OACETT (Ontario Association of Certified Engineering Technician and Technologist) 2016 AGM and Conference, in Hamilton Canada. During the conference, Mr. Shah interacted with Hon. Kevin Flynn, Minister of Labor, On, Canada along with other OACETT and industry leaders. He explained “how one can mitigate industry process safety risks by applying sound automation/instrumentation engineering design.”

Developing a Model-Based Culture: Optimizing Chemical Production

By Terumi Okano, Product Engineering, AspenTech
Published on Automation.com, 9 May 2016

Chemicals are the cornerstone of everyday life. In a world witnessing increasing industrialization and urbanization, the demand for products is creating an increasingly competitive landscape. Against a backdrop of market volatility and stringent governmental regulations, chemical companies must adapt to both regional and global competition through the downstream value chain. This requires operational efficiencies, streamlined processes and appropriate skills to get the most value from the operation and to meet customer demand.

To remain profitable, many bulk chemical companies are focused on implementing operational efficiency measures, such as reducing energy and driving maximum throughput of plant assets. Those businesses which adopt a model-based approach to manufacturing, utilizing cutting-edge technology, have the flexibility to address operational issues and achieve the most immediate benefits. With powerful tools, companies can minimize costly downtime, increase throughput and optimize product yields.

Getting the most out of bulk chemical plants

The bulk chemicals industry is energy-intensive, producing products, such as ammonia, sulphuric acid, sodium hydroxide, chlorine and ethane, in high volumes and at low margins. Approximately 60 percent of energy use in the bulk chemicals industry is for feedstocks or raw materials used in the manufacturing process of chemicals. Most bulk chemicals are intermediate products used to produce final products, such as plastic containers or fertilizer. In general, bulk chemicals fall into four groups: organic chemicals; resins, synthetic rubber and fibers, inorganic chemicals and agricultural chemicals.

According to the Energy Information Administration (EIA), the value of bulk chemicals shipments is expected to grow to $429 billion by 2025. As such, the global chemicals industry has witnessed rapid growth over the past decade, particularly in emerging countries like China. Many industry experts predict that at least half of the top ten chemical companies in the next ten years will come from China and the Middle East. Taking advantage of the shale gas boom resulting in cheaper feedstocks in the US, the chemical industry there is also strong. On the other hand, Europe will continue to experience slow growth with the on-going threat of chemical plant closures due to strong competition.

Reducing production costs is important for basic chemical producers and there is a strong recognition among industry leaders that technology can help significantly in driving the overall operational effectiveness of plants. For example, PwC recently completed its “Breakthrough Innovation and Growth” survey of nearly 1,800 C-suite executive-level respondents, including some 50 chemicals industry participants from 12 countries. Ninety-five percent of chemicals industry respondents said they foresaw digital technology innovation at their company over the next three years and 50 percent expected breakthrough or radical advances.

continued on next page
Supporting operations with rigorous models
Investments in optimization software can increase reliability, reduce costs and create greater operational efficiencies in production and supply chain management. Embracing advanced integrated software solutions empower staff to optimize operations and take advantage of market opportunities.

The advanced engineering software available today addresses operational challenges by providing integrated solutions that tackle inefficiencies end-to-end throughout engineering, planning and scheduling and plant operations processes. Companies deploying the innovative software are able to generate millions of dollars of benefits per year per plant with payback in months instead of years. These advanced solutions bring broad benefits with respect to yield, quality, energy use, operational costs and process flexibility. This includes controlling the process with advanced process control, collection and analyzing data from the process with manufacturing executions systems, modelling the process with integrated simulators, improving the supply chain, inside and outside the plant and improving the process.

Making it easier to quickly get to the root cause of operational issues is vital to plant engineers. For example, through a familiar Excel interface, engineers and operators have the benefits of using a rigorous process simulator. This helps engineers tackle process instability by determining variable sensitivity and creating what-if scenarios of different process operations without needing to disrupt the plant. Using these intuitive tools, it is also easy to determine an optimal maintenance schedule by monitoring equipment performance (i.e. heat exchangers, reactors, columns).

Building the model
Being able to visualize plant data and predict values of process variables is essential when it comes to developing a model-based culture. Viewing contextual data alongside process data to show what is happening in production delivers greater insights into the source of problems. The process model drives value in plant operations, and by being detailed enough can robustly predict real plant behavior over an expected range of conditions linked to process data. The data itself is conditioned to smooth out measurement errors with an execution environment to run the model whether on-demand, scheduled or event-driven.

Using advanced integrated tools, the process engineer can build a model of the unit and validate it against plant data from the production engineer and the plant data historian. The model is then used to identify alternate operating conditions. By building an interface in Excel on top of the rigorous plant model and linking it with plant data tags, the chemical production engineer can use the model to identify alternate operating conditions. To take model-based operations to the next level, engineers can reconcile the model as the model runs online. Data is then saved in the data historian, so the production engineer can see immediately how the model changes over time. After using Real-Time Optimization (RTO) to deploy the model 24/7, the model calibrates itself daily and provides optimized set points to the process control system. The plant is then able to reach and maintain capacities higher than ever previously seen and frees up significant time for the unit engineer. Using a custom modeler makes it quick and easy to create unique process and equipment simulations that can be customized with accuracy and ease. The software helps to build custom forms and plots for customized models, so it is easy to lay out data in a way that makes sense to the engineer.

Integrated software for chemicals supports cross-functional collaboration through the use of consistent models and data. By driving process improvements and innovative designs through rigorous plant models, companies can:

- Increase capacity and decrease energy
- Improve yield and margins
- Reduce capital and operating costs
- Increase engineering efficiency
- Bring new products and designs to market faster at a higher return on investment

Model for success
Chemical companies continue to experience volatility in commodity prices and increased competition with much of the market shifting eastwards. Many global chemicals companies are striving to tap into this booming business, even though they face strong rivalry from local companies in supply and demand.

Addressing asset optimization needs to be done in a holistic way to tackle debottlenecking issues and overcome operational complexities to produce higher product quality and yields at reduced costs. Better operating strategies can reduce overall costs, which include better energy usage, utility cost optimization, improving operating work process efficiency and lowering maintenance costs to help manufacturers be more profitable. Those bulk chemical firms that implement a model-based culture using cutting-edge technologies will improve end-to-end production performance and remain competitive in an uncertain marketplace.

Results from 2016 Salary Survey
By Rick Zabel, Managing Director, Publisher, and Occasional Editor of Automation.com
Copyright © 2016 September/October InTech.

Industry segment dictates pay
Not surprisingly, the biggest payer was the oil and gas industry segment at $128,868. The largest number of responses came from the engineering consulting or systems integration segment (20.9%), where the average salary was $118,613. The table to the right shows salaries by all industry segments.

<table>
<thead>
<tr>
<th>Average salary by industry segment</th>
<th>Industry</th>
<th>Average salary</th>
<th>Percent respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals</td>
<td>$115,589</td>
<td>8.8%</td>
<td></td>
</tr>
<tr>
<td>Engineering consulting or systems integration</td>
<td>$118,613</td>
<td>21.4%</td>
<td></td>
</tr>
<tr>
<td>Food and beverage</td>
<td>$97,600</td>
<td>4.7%</td>
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</tr>
<tr>
<td>Industrial machinery and equipment</td>
<td>$101,996</td>
<td>10.4%</td>
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<tr>
<td>Oil and gas</td>
<td>$128,868</td>
<td>12.7%</td>
<td></td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>$115,153</td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td>Utilities – electrical, natural gas, nuclear</td>
<td>$114,647</td>
<td>9.4%</td>
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<tr>
<td>Utilities – water/wastewater</td>
<td>$82,967</td>
<td>8.8%</td>
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</tr>
<tr>
<td>Other</td>
<td>$102,960</td>
<td>20.6%</td>
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</tbody>
</table>
Claim your scholarship money today!

2017 Scholarships are now available

$2,000 each

Application deadline: 28 February 2017

Awards announced: April 2017

For Application and details go to: https://www.isa.org/chemical-and-petroleum-division/

Don’t wait! Apply today!

Program is made possible by corporate and private contributions to the ISA Educational Foundation.
2017 ChemPID Student Scholarship Application Form

The ISA Chemical and Petroleum Industries Division (ChemPID) is pleased to award up to $2000 of scholarship money to encourage students to pursue higher education and careers in the Chemical and Petroleum Industries. Winners will also receive a complimentary 2-year ISA student membership, which includes a print subscription to ISA InTech magazine. Applications will be accepted via email through 28 February 2017. Winners will be notified by mid-March, 2017 via email, and will be required to provide a digital photo, a 3-4 sentence biography, and a 1-2 sentence “thank-you note” that can be quoted for publicity purposes. Scholarship monies will be dispersed by check and mailed after the winners are selected and the required documentation is received. Scholarships will be awarded at the sole discretion of the ChemPID scholarship committee with preference being given to students enrolled in technical programs that lead to careers in the Chemical and Petroleum Industries.

Special Criteria:

☐ Candidate is an ISA Student Member. ISA Member #: ____________________________

☐ ChemPID member recommendation letter (Attach)

Member Name: ____________________________ ISA Member #: ____________________________

Eligibility Requirements Checklist (Must Comply with All)

☐ Currently attending 2-4 year university/college curriculum

☐ Confirmation of enrollment letter (Attach or provide scan of student card)

☐ 200-word essay about “Why I should win the scholarship” (Attach)

☐ Copy of previous year's academic transcript (Attach)

Applicant Name: __________________________________________ Program of Study: ____________________________

Institution Name: __________________________________________

Institution Address: __________________________________________

Dean of Admissions Name: __________________________________________ Institution Phone: ____________________________

<table>
<thead>
<tr>
<th>Address While At School</th>
<th>Home Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street: ___________________ Apt: ___________________</td>
<td>Street: ___________________ Apt: ___________________</td>
</tr>
<tr>
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<td>Phone: ___________________</td>
<td>Phone: ___________________</td>
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<tr>
<td>Email: ___________________</td>
<td>Email: ___________________</td>
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</tbody>
</table>

Applications must be submitted as scanned PDFs and emailed to the scholarship committee at: ISA.ChemPID@gmail.com

APPLICATIONS MUST BE RECEIVED BY 28 February 2017 (Extended Deadline)

www.isa.org/chempid
2017 ISA Division Symposia

ISA’s unbiased technical conference programming provides access to worldwide experts and content on the latest technologies, trends, real-world challenges, and industry updates needed to remain competitive in today’s marketplace.

Mark your calendars and make plans to attend an ISA technical conference program in 2017!

62nd Analysis Division Symposium (AD)
23–27 April 2017
Pasadena Convention Center
Pasadena, CA

2017 Food and Pharmaceutical Industries Symposium (FPID)
16–17 May 2017
Sheraton Framingham Hotel and Conference Center
Framingham, MA

17th Leak Detection and Repair—Fugitive Emissions Symposium (LDAR)
20–21 June 2017
The Tremont House/Wyndham Grand Hotel
Galveston, TX

60th Power Industry Division Symposium (POWID)
27–29 June 2017
Case Western Reserve University
Cleveland, OH

2017 Water/Wastewater and Automatic Controls Symposium (WWAC)
8–10 August 2017
Wyndham Lake Buena Vista
Orlando, FL

2017 Process Control & Safety Symposium and Exhibition (PCS)
7–9 November 2017
Houston Marriott Westchase
Houston, TX

63rd International Instrumentation Symposium (IIS)
Co-located with the 2017 PCS Symposium
8–9 November 2017
Houston Marriott Westchase
Houston, TX

Great locations!
Awesome content!

Find developing program details at:
www.isa.org/events
Welcome New ChemPID Members!

Abaas Ali Almari
Abbad Cheik Mostafa
Abdoullah Alhajri
Abdulmohsen Mohammed Bineisa
Abe Glazer
Abhishek Chauhan
Abin Jose
Adam Hassan
Adam Henderson
Adam Sitar
Adolfo R Martinez V
Adrian Van Niekerk
Aedh Mohammed Alharthi
Ahmadur Quabili
Abbad Cheik Mostafa
Abbaas Ali Almari
Welcome New ChemPID Members!

Brian Robert Rhodes
Brett Llewellyn
Brecht Van Gastel
Brandon Guffey
Bradly Brackenbury
Bogdan Dudu Palaghie
Bob Kimmel
Blaine Russ
Biplav Bijoy Goswami
Billy Stuckey
Bill Bagshaw
Bibhu Prasad Kisan
Bill Bagshaw
Billy Stuckey
Biplav Bijoy Goswami
Blaine Russ
Blaise Gregory
Bob Kimmel
Bogdan Dudu Palaghie
Bonifacio Gutierrez
Brad McKay
Bradley Churchman
Bradley Haley
Bradley Laffour
Bradly Brackenbury
Brandon Guffey
Brandon Powell
Brecht Van Gastel
Brett Llewellyn
Brian Robert Rhodes
Bryan Crozier
Bryan Brandt
Caitlin Melesky
Carleton Cody Anderson
Carlos Calvo Valdés
Carlos Casado Casado
Carlos Chica Perez
Carlos Mañuico
Carlos Rosas
Carlos Videla
Carolina Silvestre
Carrie Boutilier
Carson Curry
Cathryn Coberley
Chad Haynie
Chad Wukasch
Charles Van Hagt
Chaz Romero
Chidananda Mohapatra
Chintadri Anil
Chisom Onuegbu
Chris Buctha
Chris Krozoska
Christopher Ezell
Christopher Hicks
Christopher Lopez
Christopher T Long
Clayton T Reeves
Cloviz Cruz
Cody May
Cody Sandlin
Cody Scheaffer
Cogan Stewart
Colby Thomas
Colin Kelley
Colin Moore
Collin Oliver
Conner L Chogte
Conner Vike
Connie Mae Nollner
Connor Fry
Cory Olson
Cory Thomas Klassen
Cristiano Belarmino Da Silva
Dan Hong Wang
Dane Kissoudath
Daniel Araujo
Daniel Borja
Daniel De La Pana Gallego
Daniel Herreras
Daniel Lee
Daniel White
Daniel Word
Danyelle Austin
Danny Gros
Dante Cuellar
Darcy Dorais
Darien Watkins
Darrell Stelly
DARUSMAN Abu Hassan
David Andrade
David Antonio Onofre Gonzalez
David Dykes
David Hawn
David Madarain Serghie
David Navarro Perez
David Rowe
David Skinner
David Tunick
David Walker
Debashish Ghosh
Deepak Balaraman
Deon Mahaffie
Derek Howe
Derek P Thissen
Devendra Patil
Dharamraj Gande Raja
Dharmesh Patel
Dhruv Khanna
Dian Ayuning Widowati
Dianela Pena
Diego Anotonio De Moura Fonseca
Diego Asserey Lobao
Diego Bertazzzo
Diego Contreras
Diego Vaca Talonia
Dieu Ngo
Dilip Kumar
Diseye Isowo
Divya Natarajan
Divyaraj Singh Rathod
Divyesh S Patel
Don Loggins
Don Skaff
Don Ziesman
Donald Gibson
Douglas Johnson
Dragos Valentiu Dinu
Duali Munsin
Duffy Chisholm
Duncan Stewart
DURAI RAGAVENDRAN
Dustin McKinnies
EAMONN MULVEE
Earl Dailey
EDGAR L BERNAL
Edin Rakovic
Eduardo Guabdia Gonzalez
Eduardo Lopez Munoz
Edwin Red Estofanelo Larico
Elisson Jose Andre Do Carmo
Elizabeth Han
Emmanuel Onu
Enrique Cartajena
Eric Teguia
Eric Weber
Eric Flores
ERRICK MARTINEZ
Erwin Brocato
Erwin Nazareno
E-WEEK CHALLENGE 2K17

WHEN
Starting: February 19th, 2017
Ending: February 25th, 2017

WHERE
All around the world

WHAT
Fluid Flow Control * It’s Not Loop Powered?

WHO
Students. Professionals. All ages.

FOR MORE INFORMATION:
WWW.ISA.ORG/CHEMPID

PRIZES:
- Free Registration to PCS Symposium 2017
- $25 ISA Credit for books or training
- ChemPID E-Week Certificate
- Honorable Mention in next ChemPID

FLUID FLOW CONTROL

IT’S NOT LOOP POWERED?