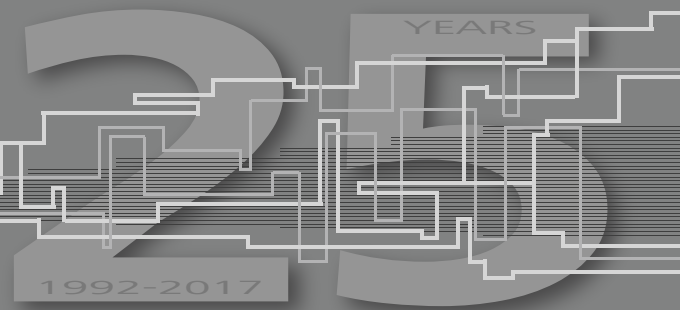


WORKSHOP

April 17-21, 2017



L&A 2017 Workshop + 25th Anniversary Celebration Guide

*Join us . . . and help celebrate **25 years** of excellence!*

Diana Lin, President and CEO, Lin and Associates, Inc.

I am extremely excited to be hosting another workshop and I would like to take a moment to reflect on the significance of this year's event: 2017 marks the 25th Anniversary of Lin and Associates. This is a monumental achievement and I am very honored to be sharing it with you. To celebrate the occasion, we have scheduled a mixture of topics and events to commemorate the diversity and complexity of the industry, as well as focusing on content that reflects current trends and research. We are hoping to make this event memorable and a reflection of our past 25 years, as well as an opportunity to forge ahead, into the future, and another 25 years, at least! So thank you for joining us and helping celebrate 25 years of excellence!

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MAC Approach on ICSS Projects

Giorgio J. Palermo, Senior Project Execution Manager; Lin and Associates, Inc.

When working on Large Capital Projects, and those including multiple Engineering, Procurements, and Construction (EPC) firms, how important is it to have a Main Automation Contract (MAC) approach with well-defined document scope and responsibilities?

These days, almost all Automation equipment vendors are offering MAC services, but do they really understand their scope of work boundaries and responsibilities to drive success on projects? This presentation focus on MAC scope definition examples, including Management interface responsibilities, to ensure proper data is available and on-time.



Giorgio J. Palermo is a Senior Project Execution Manager with Lin and Associates, Inc. He has 20+ years of experience in Instrumentation, Basic Process Control (BPCS) and Safety Instrumented Systems (SIS) engineering, implementation, construction, commissioning, start-up and performance testing in the Oil and Gas, Refining and Petrochemical industries. Giorgio holds a Control System Engineering Degree from UNEXPO University – Venezuela and he is a TUV Functional Safety Engineer.

Using Plant History in Alarm Rationalization and Event Prediction

Alan Mahoney, Ph.D., Technical and Operations Director; Robin Brooks, Ph.D., Managing Director; Process Plant Computing Limited

Process history is essential when reviewing operator alarm limits in the context of alarm stewardship and formal rationalization. Far too often, limits are implemented on a 'try-it-and-see' approach that leads to higher operator load weakening the operators' trust in the alarm system, potentially leading to delays in acting, and extra work later in re-review. Reasons for not making full use of the process history currently in review may include the complexity of the data and perceived overhead of including it in the review. This session will introduce techniques of data analysis based on the parallel coordinate plot that enables full consideration of process operating envelopes in all alarm reviews while still dramatically reducing time.

These operating envelopes that are implicit in the plant historical operating data can also be used for real-time process monitoring, producing models much more sensitive than single-variable limits used today. These models can be built cheaply and easily by process and process control engineers. We will look at applications in fault detection and event prediction, showing how geometric process control models can be used in condition monitoring and event prediction, leveraging data already collected in the plant historian.



Alan Mahoney received his B.S. in Chemical Engineering from the University of Illinois at Urbana-Champaign and his Ph.D. from Purdue University where his thesis covered advanced control of population balance systems. He has worked in lubricant blending, polymers, and particle systems before moving to the University of Sheffield (England) as a lecturer and then joining Process Plant Computing Limited as a Senior Consultant. While there he's worked with diverse companies and processes and contributed to product design. He is currently Technical and Operations Director.

Alarm Rationalization: A Practical Approach

Ray Wilson, Principal Control Engineer, Retired

Lessons and techniques learned from two large alarm rationalization projects will be presented, with a view toward identifying common pitfalls and challenges. Advanced alarm techniques will be discussed, but the two case study projects were initial rationalization efforts and advanced alarming was not part of the scope.

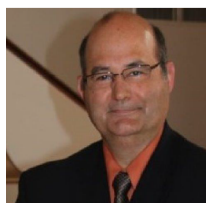


Ray Wilson has 28 years of process control, DCS, and instrumentation experience. He spent 6 years in the US Navy as a nuclear reactor operator/technician and 5 years afterwards as an electronics field service/bench technician. He then got his B.S. in Chemical Engineering from Cleveland State University, graduating summa cum laude. Ray worked at BP's Toledo, OH, and Cherry Point, WA, refineries from 1987 until 2013, retiring as a senior process control engineer. At both sites, he was responsible for countless online controls cutovers, process control configuration, and commissioning for numerous capital projects (FCC revamp, blender, SRU, TGU, and refinery repositioning projects at Toledo; Isom, multiple boilers, diesel blender, DHT, and hydrogen plant at Cherry Point.) He also served as process control group lead at Toledo Refinery for several years primarily responsible for daily maintenance, support, and upgrades on the Toledo DCS system.

Experion Migration from R310 to R430

Lanny E. Gibson, Process Control Group Leader; TOTAL Petrochemicals, USA

Managing three generations of Honeywell DCS's is a continuing challenge. This presentation illustrates how the TOTAL Port Arthur Refinery took advantage of Lin and Associates' Experion expertise to leverage our project team and more quickly and efficiently migrate our complex, multi-generational process control environment.



Lanny Gibson has 30+ years of IT and process control experience in chemical and refining plants. His past several years, as a TOTAL employee, have been dedicated to migrating legacy TDC2000 systems to Experion, maintaining our TDC3000 installation, and building a secure, industrial strength PCN/FTE network. Currently, he is the Process Control Group Leader at TOTAL Petrochemicals, USA, Port Arthur Texas refinery.

Prior to coming to the Port Arthur refinery, he worked as the Process Control Supervisor and Control Systems Engineer for a major chemical company. He holds a Bachelor of Science degree in Mathematics with a concentration in Computer Science from McNeese State University.

Model-less Process Control Technology

Allan Kern, Control Engineering Consultant

This presentation will consist of an analysis of the performance of model-based multivariable control in industry over the past two decades, followed by technical and practical rationale for a new model-less approach.



Allan Kern has 35 years of process control experience. He has authored numerous papers on topics ranging from field instrumentation, safety systems and loop tuning, to multivariable control, inferential control and expert systems, with special emphasis on practical solutions in a plant operation context. Mr. Kern is retired and continues to work as an independent consultant. He is the inventor of XMC™, a model-less multivariable control and optimization technology, and has partnered with Lin & Associates to develop this product. Mr. Kern has professional engineering licenses in control systems and chemical engineering, is a senior member of ISA, and is a graduate of the University of Wyoming.

Migration of TPS/TDC System Inclusive of Legacy Logic Manager to Experion C300

Gaurav Mahabir, Electrical, Instrumentation, and Controls Engineer III; Atlantic LNG Co., Trinidad and Tobago

Atlantic is the operator of a four-train liquefaction facility located at Point Fortin on the southwest coast of Trinidad, and is the sixth largest LNG exporter in the world.

Trains 1, 2, and 3 controlled by a Honeywell DCS (Distributed Control System) and Train 4 controlled by an Emerson Delta V DCS.

Train 1 was commissioned in 1999, and part of the commissioned DCS was a system called the Logic Manager (LM,) which is a PLC type system (Programmable Logic Controller.) In 2005, Honeywell announced plans to withdraw the Logic Manager Product line in 2010, with only a repair/exchange support plan till 2012.

The upgrade had the potential to affect the facility since Train 1 DCS controls the Inlet, Train 1, and Storage and Loading (inclusive of Jetty1 and Jetty2.)

The Logic Manager was upgraded to a C300 controller platform, existing HPM controllers converted to C300 controllers maintaining PMIO, EPLCGs converted to Scada points, and AM programs migrated to the C300 controller platform with the UCN and LCN being migrated to an FTE network.

The presentation will cover the execution strategy for the upgrade reviewing what technical options were evaluated, how risk was mitigated, and impact to Operations was minimized.

- Reasons for upgrade
- Factors considered for upgrade options
- Execution strategy

- SAT and FAT review
- Pre works planning
- Benefits of a phased implementation plan
- Lessons learned from each phase of execution of project
- Areas for improvement
- What went well



Electrical, Instrumentation, and Controls Engineer III with 13+ years experience: 11+ years as an Engineer with Atlantic. Employment at Atlantic included a secondment opportunity at BGTT (working in the Atlantic Commercial Asset responsible for the oversight of BGTT's interest in the operation of Atlantic.)

Experience spans across DCS and SIS systems and Fiscal Measurement systems. Gaurav has lead multiple CAPEX projects inclusive of DCS upgrade projects: migration of legacy Logic Manger, SIL&LOPA action implementation, Alarm Management, Process Control Network improvement, Cyber Security projects, and delivery of an Operator Training Simulator.

THE Enemy Within!

Ian Nimmo, President and Founder; User Centered Design Services, Inc.

Lurking within our control rooms is a demon, who strikes at the worst possible time in the life of a control room. During the early hours of the morning driven by poor lighting, unhealthy environmental controls, fatigue takes its toll - with no fatigue countermeasures in place the operator faces the perfect storm.

Displays with poor design making it difficult to distinguish change because the salience is too high, alarms overwhelm operators, and due to poor configuration make it difficult to use them. The alarms had been rationalized but not documented, not prioritized correctly, and alarm set points incorrectly set.

The net result an Organizational Accident with large loss of life and catastrophic environmental effects, the perfect storm.

These major accidents keep happening, and we do not seem to be able to learn the lessons from them and implement practices that will mitigate them?

The major issue: many companies use multiple vendors to implement their alarm Systems, different ones to design and implement their HMI's, and others to design and build their control rooms with no common philosophy or goals. So each does what they think is best and overall nothing works towards a common goal. What is that common goal? It is Situation Awareness, and more specifically, the control room operator's ability to Detect, Diagnose, and Respond to an Abnormal Event.

The solution is a High Performance Control Room that integrates Alarm Management, HMI, and control desk ergonomics into a solution founded on Human Factors in design. Integrated with new technology in the form of SMART keyboards by Weytec providing seamless mouse movement across multiple workstation displays, Prysm Laser Phosphor Display (LPD) tiles, and LCDs have almost imperceptible touch latency and render high-resolution, realistic images that are sharp and bright — even in ambient light. And finally, speakers that keep the sound within the radius of a console.



Ian is a published author, respected speaker, and operations expert that was instrumental in the development of several RAGAGEP's (Recognized and Generally Accepted Good Engineering Practices.) Ian is an expert in human factors engineering, process operations, human factors, process engineering, and human performance. He has been involved with automation and control room operations for 50 years.

Ian originally created and directed the Abnormal Situation Management Consortium (ASM) while with Honeywell. The Abnormal Situation Management® (ASM) Consortium was founded in 1994 with a mission to conduct structured research to discover the Best Practices for reducing the risks associated with abnormal process situations. A focus on improving an operator's ability to detect, diagnose, and respond to abnormal process conditions was critical. This included extensive research into the control building environment. The ASM Consortium grew into a large team from the world's largest industrial companies. They were interested in the research and set out to create a standard to improve alarms and operator intervention. This snow-balled as they realized that alarms were only a symptom of a much larger problem, the lack of situation awareness from many failed management systems. Ian raised 20 million dollars to fund the research to identify new practices that would improve operator performance and reduce human error.

Ian has spent the last 20 years expanding on the ASM research, helping engineers and operation managers implement solutions to reduce downtime and prevent major incidents. Ian has interviewed over 1000 operators; he knows what they need to be successful. Over the years, Ian has helped hundreds of plant managers meet their goals in production, quality, and safety. Ian has published over 100 papers and wrote three books: *The High-Performance HMI*, *Operator Effectiveness*, and *The Control Room Design Guide*.

Introduction to Virtualization Technology

Rick Stopf, Product Marketing Manager; Honeywell

Businesses are challenged to reduce costs, shorten project schedules, and increase uptime and reliability. Virtualization of computer platforms allows control system engineers to improve availability, reliability, and disaster recovery while making the system easier to deploy, maintain, and support.



Rick Stopf is a product manager with Honeywell Process Solutions. He has been with Honeywell for 10 years, supporting a wide range of industries and products in Honeywell's DCS, SCADA, and QCS systems. He specializes in virtualization and the unique benefits it can assume to solve problems for the process control industry.

System Integration (Level 1)

Gaurav Mahabir, Electrical, Instrumentation, and Controls Engineer III; Atlantic LNG Co., Trinidad and Tobago

abstract forthcoming

Fire and Gas Detection Systems Design

Simon Pate, Key Accounts Manager, Ethics and Compliance Officer; Det-Tronics

Presentation on the codes and standards applicable to fire and gas systems, and fire and gas detectors. A review of the detection technologies to aid in the selection of the correct technology for specific applications, and criteria for evaluation and verification of the fire and gas system performance.



Simon Pate possesses over twenty-five years of experience in process automation, safety and fire, and gas systems working for EPC's (Brown and Root,) end users (ARCO,) and systems manufacturers (Fisher Rosemount,) in the design and application of process and safety systems primarily for offshore facilities.

He is also a contributing author to *The Instrument Engineer's Handbook*, and has several articles published in the ISA Safety Division newsletter, International Fire Protection, and other journals.

Simon Pate joined Detector Electronics in 2000, as the Director of Projects and System, and is currently a Key Account Manager.

Migration of Compressor Surge Controls within DCS

Tyson Johncock, Director of Project Engineering; Tri-Sen Turbomachinery Controls

Compressor surge control presents challenges separate from normal regulatory control strategies. The understanding of compressor surge algorithms requires the control engineer to understand compressor design and operation. Effective surge control requires controller execution times measured in milliseconds. In the past, purpose built controllers or PLC's were utilized to achieve the required scan time for reliable surge detection and control.

Recently, DCS controller technology has emerged with scan times in the 20-millisecond range. This allows the end user to utilize the DCS controller for compressor surge control. The DCS surge control approach streamlines the operation and life cycle management of the compressor control system.

In summary, our presentation will cover the following items:

- Introduction to surge control algorithms
- DCS control platform requirements for effective surge control
- End-user benefits of DCS surge control
- Review of a recent DCS surge control project
- DCS platform improvements for effective surge control



Tyson Johncock has over 20 years of experience developing and implementing Turbomachinery Controls (TMC.) He began his career in 1995, after graduating from Texas A&M University with a Bachelor's Degree in Electrical Engineering. His career started at Stewart and Stevenson in Houston, TX, working for the project development group.

Tyson developed an interest and passion for TMC and took a position in Field Service for a Houston based company called Invensys. Tyson spent a few years working in field service where he honed and expanded his TMC knowledge. Within 4 years, Tyson progressed to the engineering group focusing his efforts on turbomachinery control application

engineering. His continual growth and expertise garnered a promotion to Turbomachinery Control Consultant within the Invensys TMC organization. Tyson further developed his consultant proficiency by working in the Asia Pacific Region.

In early 2012, Tyson left Invensys and came to Tri-Sen as the Director of Project Engineering. Under his technical guidance and leadership, Tri-Sen has implemented and delivered over 100 TMC solutions to our client base. Tyson continues to expand his knowledge by implementing Tri-Sen TMC algorithms on emerging control platforms such as modern day DCS platforms.

Applying API556 to Gas Fire Heater Control and SIS Design

Giorgio J. Palermo, Senior Project Execution Manager; Lin and Associates, Inc.

Ray Wilson, Principal Control Engineer, Retired

On April 2011, the API recommended Practice 556 was updated. This time, vendors and End-Users agreed to include important references to a prescriptive practice. These references related to the Safety Instrumented System.

This presentation focuses on the main updates of the API 556 guidelines that specifically apply to Controls and Protective System installations for Gas Fire Heaters in petroleum production, refineries, petrochemical, and chemical plants.

Industry Tips and Tricks

Dan Spears, Project Execution Manager; Lin and Associates, Inc.

In these two segments, we will share some of our “tricks of the trade” gleaned from the myriad of Distributed Control Systems we have encountered. We will show some practical demonstration techniques with regards to database configuration challenges and solutions, HMI techniques, best practices, and DCS system design guidelines.



Dan Spears graduated with a BS in Chemical Engineering from Arizona State University. In 2005, Dan joined the Lin and Associates, Inc., team as a Control System Engineer. He was subsequently promoted to Senior Control Engineer and is currently a Project Execution Manager.

The following training courses are optional and scheduled for Friday, April 21, 2017. Please see each course description for times and locations.

Model-less Process Control Technology Deployment Workshop [RPC and XMC™]

Allan Kern, Control Engineering Consultant

*This 4-hour workshop is scheduled Friday morning at 8AM - 12PM at the **L&A** Office and will cover the following topics:*

- Attendees will receive tools and skills necessary to deploy RPC® and XMC® applications on development DCS platforms or actual applications.
- RPC™ Rate-Predictive Control (single-loop)
- XMC™ Model-less Multivariable Control

ALTIUS Configuration

Lin and Associates Staff

*This 4-hour course is scheduled Friday afternoon at 1PM - 5PM at the **L&A** Office and will cover the following topics:*

- How to configure ALTIUS's:
 - Station, Safeview, COM
 - App Center
 - Console/App Sync
 - Operating Limits
 - Widgets
 - Show/Hide Buttons
 - Stylesheets
 - Right-Click Menu
 - Overview
 - Operator Guide
 - Object-Based
 - Alarm Informant
 - Alarm Groups

Beginner HMI Scripting

Lin and Associates Staff

*This 4-hour course is scheduled for Friday morning and afternoon at 8AM - 12PM and 1PM - 5PM at the **L&A** Office and will cover the following topics:*

- Introductions to:
 - DHTML and HMIWeb Object Model
 - Referencing objects
 - Scripting vs ScriptHolders
 - Events and Event Bubbling
 - Stylesheet Usage
 - What to Avoid
 - Pop-ups and Passing Arguments
 - Context Menus
 - HMIWeb's Useful Tools and Functionalities
 - Safeview

Intro to C300 Applications

Lin and Associates Staff

This 4-hour course is scheduled for Friday morning and afternoon at 8AM - 12PM and 1PM - 5PM at the L&A Office and will cover the following topics:

- Experion® and C300 Overview
- Controller and Control Execution Environment (CEE)
- I\O Links, I\O Modules, and I\O Channel Blocks
- Control Module Concepts
- Utility and Logic Function Blocks Basics
- Control Block Basics

Registration for the Lin and Associates 2017 Workshop + 25th Anniversary Celebration can be completed at WWW.LINANDASSOCIATES.COM/2017-WORKSHOP-REGISTRATION/. If you need help processing your registration, or are purchasing from outside of the US, please contact us at payments@linandassociates.com.

Price List

Workshop + 25th Anniversary Celebration Ticket	\$495 Includes access to all 3 days of the workshop (April 18-20,) the Meet and Greet (April 17,) L&A Open House (April 18,) and the 25th Anniversary Celebration Dinner (April 19.)
XMC™ Deployment Workshop	\$200 Reserves one seat for the 4-hour training course (morning session) on Friday, April 21.
ALTIUS Configuration	\$200 Reserves one seat for the 4-hour training course (afternoon session) on Friday, April 21.
Beginner HMI Scripting	\$200 Reserves one seat for the 4-hour training course (morning or afternoon session) on Friday, April 21.
Intro to C300 Applications	\$200 Reserves one seat for the 4-hour training course (morning or afternoon session) on Friday, April 21.
Hotel Reservations	\$159/night* *Special group rate with the Embassy Suites Phoenix-Scottsdale valid through March 20, full price approximately \$269/night.

Ticket and Training Refund Policy

Full refunds will be processed up to 30 days prior to the workshop start date. Contact us at payments@linandassociates.com to request a refund.

The Lin and Associates 2017 Workshop + 25th Anniversary Celebration will be held primarily at the Embassy Suites Phoenix - Scottsdale:

4415 E. Paradise Village Pkwy South
Phoenix, AZ 85032, USA
TEL: +1-602-765-5800

Please take advantage of our special group rate and book your room by following the convenient button provided at WWW.LINANDASSOCIATES.COM/WORKSHOP. Hotel amenities include: free cooked-to-order breakfast, complimentary appetizers and beverages at the nightly Evening Reception, a two-room suite, and a host of other conveniences.

*****BE SURE TO BOOK YOUR ROOM BY MARCH 20, 2017, TO RECEIVE THE SPECIAL RATE*****

Hotel Cancellation Policy

Cancellation policies may vary depending on the rate or dates of your reservation. Please refer to your hotel reservation confirmation to verify your cancellation policy. If you need further assistance, call the hotel directly or contact customer service at 1-800-560-7782. Alternatively, you can cancel your reservation online at https://secure3.hilton.com/en_US/es/reservation/find/index.htm.

Hotel Check-In/Out Times

Check-in is at 3PM, check-out is at 12PM.

Hotel Parking

Free, self-parking available in the hotel parking lot.

From the Airport to the Hotel

Take I-10 West for 1 mile. Take the interchange north for SR-51 Piestewa Fwy, travel 9 miles. Take Exit 10 off of SR-51 at Cactus Rd and head east (turn right.) Drive 1.25 miles to Paradise Village Parkway West. Turn right on Paradise Village Pkwy West. Entrance to the Embassy Suites is 0.25 miles on the right.

Taxi fare from PHX Sky Harbor Intl. Airport to the Embassy Suites Phoenix - Scottsdale is approximately \$50 - \$60.