

4TH SAFETY CONTROL SYSTEMS CONFERENCE

Featuring Keynote Speakers:

PAUL GRUHN

ISA Fellow; Global Process Safety Consultant, Rockwell Automation
Developed the first commercial safety system modelling program



SEAN CARRON

Vice President Engineering & Technology, Combustion Solutions Inc.
Over 20 years' experience in the design, construction, and commissioning of SIL-rated burner management systems



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**26th & 27th
November 2014**

**Executive
Royal Hotel
North Calgary,
CANADA**

PRE-CONFERENCE WORKSHOPS:

25th November 2014

1. Workshop with an industry safety system expert
Presented by Paul Gruhn
2. New developments in the 2015 version of the CSA B149.3 code for burner management systems
Presented by Sean Carron
See back page for details

FOR MORE INFORMATION

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WHAT YOU WILL GAIN FROM THIS EVENT:

- Familiarise yourself with updates made to the IEC functional safety standards and consider the implications to your industry
- Discover how IEC functional safety standards are being successfully applied to manage safety projects
- Assess and understand how to protect your industrial control systems from cyber security threats
- Learn about the lifecycle approach to safety-instrumented systems through case studies and critical discussion
- Update your knowledge on the latest trends and new developments in safety systems technology
- Find out what's new in technologies for process and machinery safety
- Get practical solutions to your safety problems
- Discover how optimal safety design can improve production and reduce costs
- Network with industry peers

WHO SHOULD ATTEND:

- Electrical Engineers
- Instrumentation Engineers
- Chemical Engineers
- Process Control Specialists
- Technologists and Technicians
- Process Safety Managers
- Loss Prevention Managers
- Plant Managers
- Process Supervisors
- Environmental Protection Officers
- Production Engineers
- Control System Integrators
- DCS Software Engineers
- OHS and Environmental Risk Assessment Specialists
- Government Safety Regulators/ Inspectors

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INTRODUCTION TO SAFETY CONTROL SYSTEMS

This conference will focus on the technology and application of safety-related control and instrumentation systems in the chemicals, energy, mining and manufacturing industries. It will give you the tools to help reduce the risk of cyber security threats on your industrial control systems, and examine the complex and challenging issues of using control systems technology to maintain and improve the safety of people and plant, while ensuring profitability.

The conference will provide practical applications by specialists experienced in safety life cycle activities such as hazard and risk assessment, and the determination of safety integrity levels (SILs).

Topics will be relevant to a wide range of industry sectors including machinery and automation plants, chemical processes, energy and power, pulp and paper and petrochemicals.

CONFERENCE DAY ONE – 26th November 2014

8.00am	Registration
8.15am	Opening Address
8.30am Session 1	<p>Process industry accidents – lessons learned the hard way and how to avoid them</p> <p>Paul Gruhn - ISA Fellow; Global Process Safety Consultant, Rockwell Automation</p>  <p>KEY NOTE</p> <p>Using a collection of videos, photographs and stories, this keynote presentation will highlight the lessons learned from a variety of process accidents. Topics will include: Everyone needs training; People must follow procedures; Even trained people make mistakes; Some people don't know what they don't know; We're not as immune or indestructible as we may think; We can't foresee every possible hazardous scenario; Reuse of software has not always been successful; Near misses are often not followed up; The past is often ignored (and history definitely repeats itself); The various personnel functional safety certification/certificate programs available (e.g. CFSE, TUV & ISA) and the differences between them.</p>
9.30am Session 2	<p>LOPA: beyond the basics</p> <p>Blair Robichaud - Functional Safety Lead, Meg Energy</p> <p>The use of LOPA has become commonplace in the process industry as a Safety Integrity Level (SIL) evaluation technique and as a more semi-quantitative review tool. However, the implementation and effectiveness of the results vary widely. Misuse can lead to excessive additional protection layers that result in reduced facility availability, and a waste of project resources for little benefit. This presentation expands on some of the concepts of LOPA to provide guidance in its effective and appropriate use. Some of the topics covered include: How to decide what scenarios to use LOPA; How to group scenarios; What numbers to use for usable results; Effects of the HazOp detail – too much or not enough? Residual risk from LOPA (SIL A) – to mitigate or not to mitigate; How to use modifiers.</p>
Morning Break - 10.15am	
10.45am Session 3	<p>Proposed methodology for tank farm SIL</p> <p>Luis Garcia - Process Safety Business Developer, Siemens</p> <p>CASE STUDY</p> <p>For protection of tanks holding volatile fluids, the industry best practice has traditionally been documented in various application specific prescriptive standards and guidelines, such as the API 2350 guide from USA. But recent events have caused the industry to rethink overall protection requirements and to also embrace a more performance oriented functional safety approach, alongside a review of existing prescriptive standards. This presentation will look at methodology that could be used to simplify the development of a tank protection system to guard against typical hazards (overflow, implosion etc.) and satisfy the requirements of prescriptive standards and guidelines, as well as the performance based functional safety standard IEC 61511.</p>
11.30am Session 4	<p>Proof test coverage factors – setting the record straight</p> <p>Shaun Williamson - Senior Safety Management Specialist, Dynamysk</p> <p>Proof test coverage factors is still largely done by estimation rather than detailed analysis. Some are claiming that 100% is a reasonable estimate for most applications but there are several factors to consider. 100% indicates perfection – each and every time over the life of the function. It implies that the device is the same as it was new. Many factors have to be considered such as human error and environmental conditions even if PTC factors are estimated.</p>
Lunch - 12.15pm	

1.15pm Session 5	<p>Practical burner management solutions for multiple burner furnaces</p> <p>Sean Carron - Vice President Engineering & Technology, Combustion Solutions Inc.</p> <p>The use of safety programmable logic controllers (PLCs) for burner management systems has increased significantly over the past ten years. This paper describes the use of innovative methods to meet the stringent Canadian codes for a 96 burner ethylene cracking furnace. Cracking furnaces have significant challenges in that they incorporate a large number of premixed radiant wall burners, which makes instrumentation expensive. Some of the difficult issues encountered are natural draft purging of the furnace, burner management controls during decoking operation, burner management during start up and full operation, flame detection, natural draft air/fuel ratio control, and economizer boiler safety functions.</p>
2.00pm Session 6	<p>Migrating legacy trip systems</p> <p>Mike Palamarek - Director, Cybertech Automation Inc.</p> <p>Evolving safety system standards, industry regulations and obsolescence issues are driving the need for new safety instrumented systems (SIS). Migrating from legacy trip systems based on hard wired relays, pneumatic devices, non-certified programmable logic controllers (PLCs) or obsolete SISs is a complicated activity. This presentation will outline strategies and methods used on successfully completed projects that migrated legacy systems while the plant was running and during turnaround situations. Along with upgrading legacy trip systems, projects usually require new instrumented protective functions (IPFs) and existing IPFs to be modified. The operational, maintenance and engineering issues associated with changing existing plant functionality will be also highlighted.</p>
Afternoon Break - 2.45pm	
3.15pm Session 7	<p>Performance standard based burner management system</p> <p>Dave Goerzen - Senior Technical Specialist, Autopro Automation Consultants Ltd</p> <p>CASE STUDY</p> <p>Performance based standards for safety instrumented systems (SIS) are gaining acceptance in the process industry worldwide. These standards are increasingly being applied to burner management systems (BMS). Prescriptive standards are useful in identifying specific interlocks which help increase safety, based on lessons learned from previous fatal incidents and near misses. This paper will discuss how to use quantitative methods to select the appropriate safety integrity levels (SILs) associated safety instrumented functions (SIFs) interlocks and application of safety lifecycle as defined by ANSI/ISA 84.00.01-2004 (IEC 61511 mod) to multiple burners furnace.</p>
4.00pm Session 8	<p>Expected and unintended effects of instrumented safety protections</p> <p>Edgar Ramirez - Safety Instrumented Systems Specialist, ABB Inc.</p> <p>As Industry seeks to reduce risks in processes through operation of safety instrumented systems (SISs), different levels of compliance with lifecycle requirements have been observed: Compliance with safety standards performance enables effective risk reduction; SIS equipment rated for safety integrity levels (SILs) but not engineered to meet the risk reduction requirements; Standard technology used to implement safety protections according to practices that have been in use for some time. Unfortunately incidents leading to harm for personnel and affecting companies still occur in spite of existing and new safety systems. Results and effects from SIS projects and operations will be discussed to point out the importance and benefits of systematic functional safety measures, assessments and management as per standards IEC 61508/IEC 61511.</p>
Closing - 4.45pm	

NETWORKING SESSION: Cocktail Hour - 4.45pm to 5.45pm
For all attendees to meet and socialise with experts and industry peers at the Safety Control Systems Conference Cocktail Hour.



CONFERENCE DAY TWO – 27th November 2014

8.30am
Session 9

Implementing full burner management and combustion control to meet Canadian codes

Sean Carron - Vice President Engineering & Technology, Combustion Solutions Inc.



KEY NOTE

One of the most prevalent applications of programmable logic controller (PLC) based burner management systems is power boilers. Traditionally boilers are designed to meet NFPA 85; however, Canadian codes require CSA B149.3 to be followed. This paper describes the implementation of a PLC based CSA B149.3 compliant BMS for a tangentially fired quad burner power boiler. Numerous challenges were encountered in meeting the code requirements while ensuring a highly reliable system. Included in the discussed are valve proving systems, multi-burner flame discrimination, fuel air ratio tracking, accurate fuel and airflow measurement, drum level measurement, reliable pilot operation.

9.30am
Session 10

How to know if your operators are «in control»

Marc Tardif - Optimization & Advanced Control Expert, BBA Inc.

Using a systematic approach, it is possible to improve alarm management in your operation. This will reduce the number of alarms, improve the quality of those alarms and, provide better information to operators.

This will in turn reduce the operator workload and number of incidents. When implemented properly, your plant will respect ISA 18.2 standard.

A real case will be presented, addressing the following questions:

- Where to begin?
- What is the investment?
- Which tools are needed?
- Is your plant different?

Morning Break - 10.15am

10.45am
Session 11

Safety by design

Peter Scantlebury - Manager, Technical Safety, AMEC Americas - Oil & Gas Canada

Safety by design is AMEC's systematic approach to managing plant risk during engineering design. Delegates will gain insight into the safety by design process, and how Safety Instrumented Systems (SISs) fit within this process. The role of SISs within the safety by design process leads to a different approach to Safety Instrumented Function (SIF) identification and Safety Integrity Levels (SIL) assignment.

11.30am
Session 12

Looking beyond certification

Sam Kozma - Senior Functional Safety Specialist, SIL4 Solutions Inc.

The functional safety certificates that are earned through various programs are just the starting point towards proving competency within our industry. Understanding why competency is critical and continual improvement in our own personal knowledge and understanding are vital to the success of today's projects with tight schedules and budgets. It is not enough to simply take a course or pass an exam, we have to use that to continuously improve and develop our industry. A course is a good start and an exam proves a minimum level of competency but functional safety is so much more.

Lunch - 12.15pm



Sponsorship Opportunities

Representing your business at the Safety Control Systems Conference will provide you the opportunity to reach key decision makers from a multitude of industries.

For more information on sponsorship and exhibition opportunities please contact IDC Technologies via email conferences@idc-online.com.

1.15pm
Session 13

The impact of bypassing and imperfect testing on safety instrumented system performance

Paul Gruhn - ISA Fellow; Global Process Safety Consultant, Rockwell Automation

One of the recurring causes of chemical plant accidents has been documented as "inadequate indications of process condition", of which at least one case consisted of operations continuing when a safety instrument was in bypass (1). The latest version of IEC 61511 about to be released (2) acknowledges dangerous failures not detected by automatic diagnostics or manual testing. These two factors have historically been ignored in system modelling, yet the impact of both is quite easy to model, and the negative performance impact is greater than many people realize.

This presentation covers some of the requested topics within the Conference Program (i.e., partial test coverage, revisions to standards). The presentation aims to educate attendees on the performance impact of things they might not have thought of or considered before.

2.00pm
Session 14

Considerations for competency management in safety control systems

Sander Vries - Senior Consultant – Human Factors, Lloyd's Register Consulting

Safety control systems are critical to the operation of process facilities. One of the key components to the integrity of safety control systems is the competence of personnel in designing, operating and maintaining safety systems. Ensuring a skilled and knowledgeable work force includes non-technical as well as technical skills, and relies heavily on the individual's underlying motivation, aptitudes and capabilities. Proper consideration of a functional competency management system (CMS) can often be overlooked, but is a vital component of any high-performing safety management system (SMS).

This paper will discuss a program to develop, validate and sustain a comprehensive approach to competency management for personnel in safety critical roles. Topics such as the limitations of a CMS focussing on a narrow band of technical skills, the assessment of critical non-technical skills, and the evaluation of key aptitudes using psychometric assessment techniques will be discussed. Furthermore, it will show how tasks and job responsibilities can be broken down into critical functions and then assessed in a practical setting.

Afternoon Break - 2.45pm

3.15pm
Session 15

HBSE and risk assessment: adventure on a tight rope

Richard Nute - Product Safety Consultant

Existing risk assessment starting points are rather nebulous and abstract. While not expressly stated, existing risk assessment processes start with the situation where no safeguards are in place -- which is an impossible situation. Models for injury and safety taken from Hazard Based Safety Engineering can be a good starting point for risk assessment. This paper presents alternative definitions of hazard, risk, and safety that are less abstract than those presented in ISO Guide 51. The HBSE models provide a means for establishing probability of injury. The HBSE process is a coherent process for performing risk assessment as well as the next step, establishing safety for each hazard.

4.00pm
Session 16

Discussion Panel

This session will provide delegates with the opportunity to ask our speakers questions and discuss safety control systems issues in their workplace, covering typical problems and possible solutions.

Closing - 4.45pm

All conference papers are reviewed and selected for their high quality and technical value by our panel of specialists experienced in the theory and practice of safety control systems.

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WORKSHOP 1 8.30am - 12.00pm (Including morning break)

Workshop with an Industry Safety System Expert

This workshop will be an open question and answer format and will cover the topics that really matter! Paul will have materials on hand (slides, videos, photos, standards, modelling program, cartoons and more) to cover whatever topics you request, such as but not limited to: What are the differences between the various personnel certification/certificate programs?; How do I determine Safety Integrity Levels (SILs)?; What does the 'grandfather clause' really mean and what do I have to do to meet it?; Control and safety: interfaced, integrated or combined?; How can single, dual and triplicated systems all be certified for SIL 3, and what are the differences between them?; What is the benefit of transmitters over switches?; What is the benefit of partial stroking of valves?; What do I need to do with field devices to reach SIL 2 & 3?; What is safe failure fraction, hardware fault tolerance and other terms used in the standards?; How do I choose between certified or proven-in-use field devices?; How do I verify that systems meet the SIL targets?

Your presenter: PAUL GRUHN

ISA Fellow; Global Process Safety Consultant, Rockwell Automation

Paul is an ISA Fellow, a member of the ISA 84 standard committee (on safety instrumented systems), the developer and instructor of ISA courses on safety systems, and the primary author of the ISA textbook on the subject. Paul developed the first commercial safety system modelling program over 20 years ago. He has a B.S. degree in Mechanical Engineering from Illinois Institute of Technology, is a licensed Professional Engineer (P.E.) in Texas and an ISA 84 expert.

WORKSHOP 2 1.00pm - 4.30pm (including afternoon break)

New developments in the 2015 version of the CSA B149.3 code for burner management systems

The CSA B149.3 committee recently completed the 2015 version of the CSA B149.3 code. There were some important changes made, including how Safety PLCs are used for based burner management systems in Canada. This paper describes the three options for PLC based BMS, and the use IEC 61511/61508 to meet the requirements of the code. It also discusses some other changes in the code which affect the overall design of the BMS. These include main burner flame detection, multi burner pressure safety devices and integration of fuel/air ratio control with BMS.

Your presenter: SEAN CARRON

Vice President Engineering & Technology, Combustion Solutions Inc.

Sean is a registered professional engineer (P.Eng) and certified functional safety expert (CFSE) with 20 years of experience in the design, construction and commissioning of SIL-rated burner management systems. He is Vice Chairman of the CSA B149.3 committee and has represented Canada on combustion related ISO technical committees. He is a licensed 'A' level Gas Fitter and has considerable practical hands on experience with fired equipment. Sean founded Combustion Solutions Inc in 2004 and has focused on burner management and combustion control for oil & gas, refinery, chemical and petrochemical applications.

REGISTRATION FORM:

SAFETY CONTROL SYSTEMS CONFERENCE

25th, 26th & 27th November 2014 - Executive Royal Hotel, North Calgary, Canada

Simply complete this registration form online or return by fax or email

1. DELEGATE DETAILS

Contact: _____ Company Name: _____

Company Address: _____

Suburb: _____ Province: _____ Postal Code: _____

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ATTENDEES:	1	Mr/Ms: _____ Job Title: _____
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2. HOW DID YOU HEAR ABOUT THIS EVENT?

Received an email from IDC Received a brochure in the mail Searched online (Google, Yahoo etc)

Recommended by a friend/colleague Magazine advertisement/insert (please specify which magazine below)

Other (please specify) _____

3. REGISTRATION & PAYMENT DETAILS

Prices shown are exclusive of GST & HST

Pre-Conference Workshops - 25TH NOVEMBER 2014 (NO discounts available for pre-conference workshops)

Workshop 1: Workshop with a Industry Safety System Expert \$300 x _____ delegates = \$ _____

Workshop 2: New developments in the 2015 version of the CSA B149.3 code for burner management systems \$300 x _____ delegates = \$ _____

SAFETY CONTROL SYSTEMS CONFERENCE - 26TH & 27TH NOVEMBER 2014

OPTION 1: Early Bird 10% OFF - Book on or before 29th Oct (SAVE \$150) \$1350 x _____ delegates = \$ _____

OPTION 2: STANDARD RATE (NO Early Bird) - Book after 29th Oct \$1500 x _____ delegates = \$ _____

OPTION 3: 3 for 2 Offer AND Early Bird 10% OFF
- Book on or before 29th Oct (SAVE \$1350) 3 delegates: 2 x \$1350 = \$2700 = \$ _____

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Corporate Packages available upon request

PLEASE NOTE: Full payment is required prior to the commencement of the conference. **TOTAL DUE = \$ _____**

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10% off the conference fee for registrations received by 29th October 2014 - **SAVE \$150**

AND /OR

3 FOR 2 OFFER:

Register 3 delegates and only pay for 2 - **SAVE UP TO \$1500**

GENERAL INFORMATION

Confirmation Details

A confirmation email and invoice will be sent to delegates within 3 days of receiving the registration.

Cancellation Policy

A fee of 20% cancellation will apply for cancellations received 7 - 14 days prior to the start date of the conference. Cancellations received less than 7 days prior to the start date of the conference are not refundable, however substitutes are welcome.

Venue

Executive Royal Hotel, North Calgary
2828 23 St NE Calgary, AB T2E 8T4
Canada
Phone: +1 403 291 2003

Accommodation

The conference venue has accommodation available. Please contact them directly on +1 403 291 2003 and mention IDC Technologies to receive the best available room rate.

Food and Beverages

All lunches, morning and afternoon refreshments are included in the registration fee.

Unable to Attend

If you are unable to attend the full conference program, contact us for details to attend individual sessions, or to purchase the Conference Resource Kit.

Enquiries

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REGISTRATIONS

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