5TH SAFETY CONTROL SYSTEMS CONFERENCE

Featuring Keynote Speakers:

LUIS GARCIA
Process Safety Business Developer, Siemens

Certified functional safety expert with over 20 years' experience

PAUL GRUHN
ISA Fellow; Global Process Safety Consultant, Rockwell Automation

Developed the first commercial safety system modelling program

DISCOUNTS

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SAVE UP TO $1795
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25th & 26th March 2015
Mercure Hotel Perth, AUSTRALIA

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
- Update your knowledge on safety technologies for process and machinery safety
- Find 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

PRE-CONFERENCE WORKSHOPS:

24th March 2015

1. Safety instrumented system basic principles
Presented by Luis Garcia

2. Workshop with an industry safety system expert
Presented by Paul Gruhn

See back page for details

FOR MORE INFORMATION

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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.

A functional safety system protects life and business assets. It must be accurately specified and designed for the task. Likewise, safety system practitioners must be aware of the best codes of practice, the best equipment to use, and what pitfalls to avoid.

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 – 25th March 2015

8.00am **Registration**

8.15am **Opening Address**

8.30am **Session 1** **KEY NOTE**

Process industry accidents – lessons learned the hard way and how to avoid them

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

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.

9.30am **Session 2**

Machinery and automation safety – safety categories vs. performance levels vs. safety integrity levels: which is best?

Ken Robertson - Senior Consultant, Machine Safety Consulting Pty Ltd

Following recent changes in the Australian machine safety standards, there is now a state of flux within the Australian machine safety sector, and some confusion over which is the best option to use for machine safety. Safety categories, performance levels and safety integrity levels each provide different techniques for the machine safety process, however, each option also has limitations which should be appreciated. The objective of this paper is to clarify this situation and provide a better understanding of how these methodologies can be best used to achieve effective machine safety solutions for Australian industry.

Morning Tea - 10.15am

10.45am **Session 3**

Management of functional safety – gaps in the operations phase

Andy Yam - Functional Expert – Safety Systems, Yokogawa Australia Pty Ltd

According to the IEC 61511 standard, the objective of having a functional safety management system during the safety lifecycle is to identify the management activities that are necessary to ensure that the functional safety objectives of the safety instrumented systems (SIS) are met. As per the safety lifecycle model in this standard, management of functional safety is a requirement throughout the lifecycle of the plant. In the ensuing years after the release of the functional safety standards, a lot of emphasis has been placed on meeting the requirements during the conceptual and implementation phases. However, we know it is equally important that the SIS is operated and maintained in compliance to the standards. This paper looks at some common gaps in operation, and the strategies and activities required for compliance.

11.30am **Session 4**

Applying functional safety to machine interlock guards

Craig Imrie - Technology Specialist – Safety, NHP Electrical Engineering

With the recent Australian adoption of functional safety standards IEC 62061 Ed 1 and ISO 13849-1:2006, a greater emphasis has been placed on systematic failures and common cause failures for machine safety control systems. This has been a major issue when designing interlock guards and trying to achieve PL or SIL requirements. With the new revision of the AS 4024.1 series, ISO 14119:2103 has been adopted as AS 4024.1602. Due to this new standard, information is now at hand to provide guidance on designing interlock guards to achieve the requirements of PL and SIL. This paper explains the new design considerations of this standard.

Lunch - 12.15pm

1.15pm **Session 5**

High integrity pressure protection systems (HIPPS): design, analysis, justification and implementation

Luis Garcia - Process Safety Business Developer, Siemens

In cases where overpressure in a system causes a huge liquid or vapour relief load being sent to a flare system, the right HIPPS can help reduce excessive load on an existing flare system, and eliminate the high costs associated with purchasing new relief devices, resizing existing flare headers, re-rating flare knock out drums, or redesigning the flare stack. Currently, the approach is to design HIPPS for flare load reduction as a Safety Integrity Level (SIL) 3 Safety Instrumented Function (SIF) or a SIL 2 SIF (depending on the code or company standard being followed). This work discusses how instead of taking the customary "one size performance fits all approaches", the design could be based on an IEC 61511 Safety Lifecycle view point to determine the required risk reduction and thereby choosing the actual required SIL. This presentation will discuss current practices, review benefits and drawbacks of SIL selection in these scenarios, and describe the impact on total cost of ownership.

2.00pm **Session 6**

ALARP or SFAIRP, or reasonably practicable – what does it mean and how do you meet the requirements?

Shane Daniel - Manager, Critical Risks: Dangerous Goods and Petroleum Safety, Resources Safety, Department of Mines & Petroleum

There is a great deal of confusion in Australia with regards to 'What is ALARP?', with no legislators or government bodies putting their hands on their hearts to define what it actually is, and what it means. So let's look at it from the global perspective, for what it actually is in the real world, to what it means for operators, and what is necessary to actually demonstrate that you have reached the magic point of ALARP. Then we will discuss how you actually include that information in your Safety Case / SMS / PSM system to make it part of the way business is done and display it for regulatory approval.

Afternoon Tea - 2.45pm

3.15pm **Session 7**

Functional safety and ageing assets

Lyn Fernie - Business Manager – Consulting, HIMA Australia Pty Ltd

When designing a new facility, functional safety standards can be adopted at relatively low cost in order to reduce risks as low as reasonably practicable (ALARP), provided that standards are correctly specified and adopted from the earliest stages of a project. Practical ways to implement the standards for ageing assets are not immediately evident. The question often arises whether an existing plant or installation should be expected to comply with the same base standards as new assets. The functional safety standards provide a mechanism to determine an integrity requirement for a safety-related system based on the risk posed by hazardous scenarios. To enable a decision as to whether a retrofit is reasonably practicable, it is necessary to consider all the available options, assess the reduction in risk (benefit) provided by any new or modified safety functions/systems, and weigh that up against the cost of such improvements.

4.00pm **Session 8**

Hazards of combustible dusts in industrial environments

Paul Spresser - Manager – EPEE Consulting

There are other concerns for industrially generated dusts, apart from the well-known respiratory hazards, for which precautions exist. However, dusts can also be combustible. If ignited, the resulting explosion can result in devastating destruction of property, personal injury and even death. Combustible dusts are a lesser known hazard than say, flammable gases and vapours, yet well-defined precautions exist. This paper summarises the types of hazards commonly encountered, provides examples of incidents where these hazards have caused major catastrophes, and the current means of mitigating the hazards in an analogous way, to the mitigation of flammable gas and vapour hazards.

Networking Session – 4.45pm to 5.45pm

An hour dedicated for all attendees to meet and socialise with experts and industry peers at the Safety Control Systems Conference Networking Session

FOR FURTHER INFORMATION: **Phone:** 1300 138 522

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.

CONFERENCE DAY TWO – 26th March 2015

8.30am Session 9 KEY NOTE

How could it be considered "good engineering practice" to bypass your SIS during the most critical time of your process?

Luis Garcia - Process Safety Business Developer, Siemens

Although most facilities embrace ANSI/ISA 84.00.01-2004 (IEC 61511) and the Safety Life Cycle (SLC) as the way to comply with regulatory requirements (Like OSHA 1910.119), there are specific instances when most operations deviate from the standard. Processes with adequately designed Safety Instrumented Functions (SIF) that are validated to well-developed Safety Requirement Specifications (SRS) are commonly (although momentarily) idled, and instead are practically replaced by a team of operators, managers and specialized personnel. This presentation questions the need for this practice and confronts the practical limitations that lead to it. It examines the assumptions used to justify the suspension of certain SIFs and explains the reason for the changes proposed to table F3 (F4 in the latest review) in the new IEC 61511. Finally, the presentation proposes how a cause and effect tool could be used to simplify the development and implementation of automated permissive sequences including verification and validation.

9.30am Session 10

The problem with hardware fault tolerance – why does nobody comply with the standard?

Mirek Generowicz - I & E Systems

The functional safety standards ISA S84/IEC 61511 and IEC 61508 both set out requirements for 'hardware fault tolerance' or 'architectural constraints'. The method specified in ISA S84 and IEC 61511 for assessing hardware fault tolerance has often proven to be impracticable for SIL 3 in the process sector. Many users in the process sector have not been able to comply fully with the requirements. Further confusion has been created because there are many SIL certificates in circulation that are undeniably incorrect and misleading. This paper describes common problems and misunderstandings in assessing hardware fault tolerance. The 2010 edition of IEC 61508 brought in a new and much simpler and more practicable method for assessing hardware fault tolerance. The method is called Route 2H. This paper explains how Route 2H overcomes the problems with the earlier methods. The proposed new edition of IEC 61511 will apply Route 2H.

Morning Tea - 10.15am

10.45am Session 11 CASE STUDY

Optimizing component arrangement in complex SIS – a case study

Hamid Jahanian - Siemens

The arrangement of components plays a key role in the performance of complex SIS, in which a SIS logic solver is interlocked with other logic solvers, to share a final element, for instance. The position of the components and the way they are utilized affects the reliability characteristics, such as the PFD, STR, architectural sensitivity and model uncertainty. This case study uses quantitative and qualitative approaches to elaborate on component arrangement in complex SIS. Simplified models are analysed; classification is introduced for SIS components based on their response to demand; a set of guidelines are developed for SIS architecture design; and the use of these guidelines is demonstrated in a real-life example, where an existing turbine SIS is modified to incorporate a new over-speed protection system.

11.30am Session 12

Embedding functional safety in project lifecycle to avoid functional safety related hurdles

David Nassehi - Plexal Group

The PMI PMBOK GUIDE (ANSI/PMI99-001-2008/IEEE1490-2011) presents a set of standard guidelines for project management and identifies project management body of knowledge that is generally recognized as a good practice. It is process-based, and the approach is consistent with ISO 9000. It describes the project management life cycle and the project life cycle. The Paper compares IEC/AS-61511 lifecycle and FSM requirements with the PMBOK guidelines, identifies approaches which are in line with both, and suggests strategies to embed in the project lifecycle which improves Functional Safety objectives throughout the Safety lifecycle to achieve integrated functional safety and project management.

Lunch - 12.15pm

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 realise. 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

Introduction to functional safety standards in gas detection

Preeju Anirudhan - Marketing Manager – Plant Safety & Operations, Draeger Safety Pacific Pty Ltd

Introduction to functional safety standards that apply to gas detection covers the basics of IEC 60079-29-3 standard and some of its interpretations, namely relevance of gas detectors in risk reduction; performance approval requirements for gas detectors and controllers; limitation of programmable controllers; and various standards that apply to parts of the projects. This discussion covers requirements for hardware and software requirements and considerations that must be given while designing gas detection safety systems, and where they fit within the functional safety life cycle. The paper will pose the question: Is the fire and gas detection system a standard F&G detection system, or a safety instrumented system?

Afternoon Tea- 2.45pm

3.15pm Session 15

Improving allocation of client and contractor responsibilities for AS 61508 safety lifecycle activities

Mike Dean - Director and Principal Engineer, EUC Engineering

Correct allocation of activities and deliverables related to the three functional safety lifecycles of AS 61508 between a client (end-user) and contractor is crucial to achieving success for a project targeting AS 61508 compliance. Too often end-users establish specifications and scopes of work with the contractor carrying out all of the activities and providing all of the deliverables of overall safety lifecycle phases 1 to 13. End-users need to understand their own legal obligations and the intent of AS 61508 for establishing overall safety requirements. The paper proposes an allocation of responsibilities which achieves legal and AS 61508 compliance.

4.00pm Session 16

Discussion Panel

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

Closing - 4.30pm

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.

PRE-CONFERENCE WORKSHOPS - TUESDAY 24TH MARCH 2015

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

Safety instrumented system basic principles

This workshop serves as quick reference for engineers, technicians and operators to gain an understanding of the basic principles governing the use of Safety Instrumented Systems (SISs). Attendees will learn basic definitions and the concepts applied in selecting and installing various systems. The different types of standards and the role of personnel in the Safety Life Cycle of such systems are also covered. The workshop will serve as an introductory course to prepare engineers for deeper courses on Design Analysis and Justification of Safety Instrumented Systems. The workshop will cover: • What a Safety Instrumented System (SIS) is and what it does • The principles behind ANSI/ISA 84.00.01 (IEC 61511 Mod) • The three basic characteristics of a SIS, and their implications in the standards • What risk is, and how it can be managed • The difference between various standards applicable to industry.

Your presenter: LUIS GARCIA Process Safety Business Developer, Siemens

Luis graduated with a BEng from Liverpool University, UK and Mech. Eng. from San Joseph College, Argentina. Mr Garcia is a safety systems specialist with over two decades of experience. He has provided training seminars to clients around the world to help them better understand SIS systems. Mr Garcia has several white papers, essays and various publications for Process Safety in the Americas and in Europe. He is a member of the CFSE advisory board and active member of ISA where he chairs the Tank Farm Committee in the Safety and Security Division.

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

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.of Technology, is a licensed Professional Engineer (P.E.) in Texas and an ISA 84 expert.

REGISTRATION FORM:

5TH SAFETY CONTROL SYSTEMS CONFERENCE

24th, 25th & 26th March 2015 - Mercure Hotel, Perth, Australia

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

EARLY BIRD OFFER:
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3 FOR 2 OFFER:
Register 3 delegates and only pay for 2
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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 inclusive of GST

Pre-Conference Workshops - 24TH MARCH 2015 *(NO discounts available for pre-conference workshops)*

☐ *Workshop 1:* **Safety instrumented system basic principles** **$395** x _____ delegates = $ _____

☐ *Workshop 2:* **Workshop with an industry safety system expert** **$395** x _____ delegates = $ _____

5TH SAFETY CONTROL SYSTEMS CONFERENCE - 25TH & 26TH MARCH 2015

☐ OPTION 1: **Early Bird 10% OFF** - Book **on or before** 25th Feb (**SAVE $179.50**) **$1615.50** x _____ delegates = $ _____

☐ OPTION 2: **STANDARD RATE (NO Early Bird)** - Book **after** 25th Feb **$1795.00** x _____ delegates = $ _____

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TOTAL DUE = $ _____

Corporate Packages available upon request

PLEASE NOTE: Full payment is required prior to the commencement of the conference.

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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
Mercure Hotel Perth
10 Irwin Street
Perth WA 6000
Phone: 08 9326 7000

Accommodation
The conference venue has accommodation available. Contact the venue directly on 08 9326 7000 and mention the conference when booking to receive the best room rate available.

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.

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