WHO SHOULD ATTEND:

- Update your knowledge of safety technologies for process and machinery protection
- Learn about the life cycle approach to safety-instrumented systems through case studies and critical discussion
- Find practical solutions to your alarm problems
- See how IEC functional safety standards are being successfully applied to manage safety projects
- Learn about software tools to assist your safety projects
- Network with experienced safety experts and your peers
- See how optimal safety design can improve production and reduce costs

VENUE:
The Executive Royal Inn, Calgary

CALGARY, CANADA

CONFERENCE:
12th & 13th May 2010

PRE-CONFERENCE WORKSHOPS:
11th May 2010

1. Everything You Ever Wanted to Know About Safety Systems, and then some
   Presented by Paul Gruhn
2. Risk-Based Fire and Gas Detection and Suppression System Assessment
   Presented by Edward Marszal

FOR MORE INFORMATION
Ph 1800 324 4244
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INTRODUCTION TO SAFETY CONTROL SYSTEMS

Many industrial processes have the potential to harm people or the environment if something goes badly wrong. Every year, industry experiences catastrophic fires, explosions or toxic releases, but is always striving to avoid such incidents by providing extensive safety measures, often involving the application of automatic safety alarms and high integrity safety control systems.

A ‘functional safety system’ protects life and business assets through the actions it takes when a hazardous condition is present on a machine or in a process. This may be a safety trip switch on a conveyor or a critical safety alarm on a furnace or it may be a fully automatic shutdown system on a chemical or gas processing plant. However big or small, the safety system must be properly specified and designed for the task that it is required to do.

Safety system practitioners must therefore be aware of the best codes of practice, the best equipment to use and what pitfalls to avoid. Functional safety depends on getting everything right at all stages of the job, from defining the problem, finding the right solution to ensuring it is always maintained and tested.

This two-day forum with its experienced speakers will highlight and examine the critical issues involved in the application and management of functional safety systems. It will provide opportunities for participants to discuss their experiences and applications, and will cover cost effective and secure solutions to safety problems.

This conference presents an industry-wide forum to examine and discuss the latest international practices and standards in safety control systems. Case studies and practical applications will be presented by specialists experienced in safety life cycle activities such as a 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.

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Mail: IDC Technologies, Suite 402, 614 Richards Street, Vancouver, BC V6B 3A7  
E-mail: idc@idc-online.com
As safety instrumented system design, in accordance with the IEC/ISA 61511 standard, matures, best practices are evolving based on end user preferences, economy of presentation, ease of use for subsequent tasks, and lessons learned from unsuccessful early attempts. Items like P&ID representation of safety functionality are still inconsistent across industry, and in some cases the results of poor documentation are excessive effort required in subsequent engineering and maintenance phases along with incomplete or improper designs. This paper collects industry experience and presents best practices for documentation and presents the rationale for the choices made. Items such as P&ID representations, grouping of the functionality of multiple loops, and formatting for logic descriptions and test plans will be discussed and examples provided.

The release of IEC 62061 in 2005 and the revised ISO 13849-1 in 2006 have presented the safety control system designer with new sets of tools that can be used to reduce the risk of worker exposure to machine hazards. This paper will demonstrate the application of risk assessment to a typical industrial machine guarding scenario. IEC 62061 will be used to determine the required Safety Integrity Level (SIL) necessary to achieve suitable levels of risk reduction. In parallel, ISO 13849-1 will be used to determine the required Performance Level (PL) for the same machine guarding scenario, and to identify the permitted combinations of Category Level, Diagnostic Coverage and Mean Time to Dangerous Failure needed to achieve compliance. The two methods will be compared and contrasted, even as both standards are shown to work toward the same goal of minimizing the potential for conflict exists for the Functional Safety Engineer in applying protection layers and Combustion Control Problems. The paper compares North American codes with IEC 61508 and 61511 functional safety standards. This presentation will review the requirements per quantitative methods including LOPA to restrict the design of the SIS to only include justifiable functionality. Delegates will be given examples where the Functional Safety Engineer may face challenges in applying inherent safety concepts and proper SIL determination methods to large-scale projects. A few examples are given to illustrate this. Upholding the principles of inherently safe design in the face of project pressure to reduce capital costs; SIS design that contains only functions with justifiable SIL requirements in the face of established and “rule of thumb” practices that include too much functionality in the SIS.

When it comes to safety, while the questions of ‘why’, ‘what’, ‘how’ and ‘when’ are fairly well addressed by standards or at least by best engineering practices, the question of ‘how much’ organizations need or are willing to spend to compliantly implement and maintain safety is answered with more or less accuracy only during the initial phases/gates of a project through the budgeting exercise. More often than not, and especially in the case of very large projects developed across many years, crucial safety life-cycle activities and up finding themselves strapped for resources. This paper looks at the typical gaps as seen by the authors practical experience and the possible ways to avoid budget items falling through the cracks.

Best Practices in SIS Documentation from P&ID through SRS
Session Edward Marszal - Principal Engineer, Kenexis
9
9.30am
Comparison of Safety Categories, Performance Levels and SILs for Machine Safety Control Systems
Session Raj Sohal - Industrial Safety Controls Specialist, Stantec Consulting Ltd. Paul Brazurowski - Team Lead - Industrial Safety Engineering, Stantec Consulting Ltd.
10
9.30am
Application of SIL Principles Where the Potential for Conflict Exists for the Functional Safety Engineer
Session Blair Robichaud - Automation Project Lead, SNC-Lavalin Inc.
11
10.45am
A Carrot-or-Stick Approach to the Economics of Safety
Session Stejarel Achimescu-Gulian - Senior Automation Engineer, Worley Parsons Canada
12
11.30am
Lunch
12.15pm
Things to Consider when Selecting a Safety Instrumented System
Session Paul Gruhn - Training Manager, ICS Triplex
13
1.15pm
I EC 61511 for the Design of Burner Management and Combustion Control Systems
Session Sean Carron - Engineering Manager, Combustion Solutions Inc.
14
2.00pm
Functional Safety Management Systems for Compliant and Efficient Implementation of Safety Instrumented Systems
Session Edgar C. Ramirez - Safety Systems Business Driver, ABB Inc.
15
3.15pm
Better Good Than Lucky: Choosing a Personnel Functional Safety Certification Program
Session Sam Kozma - Managing Director, Exida Canada Ltd
16
4.00pm
Closing
**REGISTRATION FORM: Safety Control Systems Conference 2010**

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

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- **ATTENDEES:**

### EARLY BIRD OFFER: 20% off the conference fee for registrations received before April 9th 2010

3 FOR 2 OFFER: Register 3 delegates and only pay for 2 – Save $1500

### 2. REGISTRATION & PAYMENT DETAILS

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

- 11TH MAY 2010 - Pre-Conference Workshops (NO discounts for pre-conference workshops)
- 12TH & 13TH MAY 2010 - SAFETY CONTROL SYSTEMS CONFERENCE

**Prices are exclusive of GST & HST**

- **Morning Workshop:** Paul Gruhn - Everything you Ever Wanted to Know about Safety Systems - $300 x _____ delegates = $
- **Afternoon Workshop:** Edward Marszal - Risk-Based Fire and Gas Detection - $300 x _____ delegates = $

**OPTION 1:** NO Early Bird Discount - Book after April 9th
- **$1500 x _____ delegates = $**

**OPTION 2:** Early Bird Discount 20% - Book before April 9th (SAVE $300)
- **$1200 x _____ delegates = $**

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**PRE-CONFERENCE WORKSHOPS - 11th May 2010**

**WORKSHOP 1 8.30am - 12.30pm**

**Everything You Ever Wanted to Know About Safety Systems, and Then Some**

**Philosophy of Design for Safety:** The safety life cycle; safety control vs. process control and the “separation” issue: independent protection layers; assessing process risk (frequency & severity) and determining Safety Integrity Levels (qualitative and quantitative techniques, including exercises)

**System Implementation Issues:** Failure rates and modes; safe failure fraction and minimum hardware fault tolerance requirements; the real impact of redundancy (single, dual, triple); safety requirements specification; relay systems (including modeling exercises); software based systems (PLC, TMR, 1oo2D, including modeling exercises); impact of field devices on system performance (including modeling exercises) and installation, maintenance, testing & management of change.

**Your presenter:** PAUL GRUHN - ICS Triplex

- Training Manager at ICS Triplex, a Rockwell Company
- ISA Fellow & ISA 84 Expert
- Member of the ISA 84 standard committee (on safety instrumented systems)
- Certified Functional Safety Expert (CFSE)
- Developer and instructor of ISA courses on safety systems
- Author of two ISA textbooks, two chapters in other books, and over two dozen published articles
- Developer of the first commercial safety system software modeling program
- B.S. degree in Mechanical Engineering from Illinois Institute of Technology
- Licensed Professional Engineer (Ohio, Illinois)
- ISA 84 Expert Certification & ISA Fellow
- B.S. Chemical Engineering, The Ohio State University

**WORKSHOP 2 1.30pm - 5.30pm**

**Risk-Based Fire and Gas Detection and Suppression System**

As a result of the recently released ISA technical report TR 84.00.07 - Guidance on the Evaluation of Fire, Combustible Gas, and Toxic Gas System Effectiveness, there has been a move toward the use of risk-based methods instead of prescriptive, rule-based methods for the purposes of design and implementation of equipment related to chemical process safety.

This tutorial presents an overview of the analysis techniques that are recommended to perform risk-based fire and gas detection. Detector characterization, which is the technique for quantifying a detector’s ability to detect a fire based on the amount of thermal radiation that it is exposed to, will be presented, as well as the concept and procedures for determining geographic coverage, or the fraction of physical area in which a detector array can sense an event, and scenario coverage or the fraction of hazardous event frequency that can be detected by a given detector array.

The goal is to improve upon the state of the art methods for risk-based fire and gas system design.

**Your presenter:** EDWARD MARSZAL - Kenexis Consulting

- President, Kenexis Consulting Corporation
- Award-winning author of the “Safety Integrity Level Selection” textbook from ISA
- Prolific Author on SIS Topics including Technical Papers and Book Sections
- Licensed Professional Engineer (Ohio, Illinois)
- ISA 84 Expert Certification & ISA Fellow
- B.S. Chemical Engineering, The Ohio State University

**GENDER INFORMATION**

**Confirmation Details**

A confirmation & information letter will be sent to all delegates approximately 10 days prior to the conference. Please ensure that you provide both your mailing address and email address on the booking form.

**Cancellation Policy**

Full reimbursement will be accepted if written notification of cancellation is received by IDC Technologies on or before April 23 2010. A fee of 20% will apply to any cancellations received between April 24 & 4 May 2010. No cancellation requests can be accepted after 5 May 2010, however from this date substitute delegates are welcome.

**Venue**

Executive Royal Inn Hotel & Conference Centre
2625 - 23rd Street N.E.
Calgary, Alberta T2E 6T4
Phone: (403) 291-2003

**Accommodation**

The conference venue has accommodation available. Contact the Royal Inn on (403) 291-2003 to make a booking. Quote the group number # 6471 to receive the special room rate of $119 + taxes or mention IDC Technologies.

**Food and Beverages**

All lunches, morning and afternoon refreshments are included.

**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**

1800 324 4244

**REGISTRATIONS**

We encourage you to register early, as spaces are limited. Your payment must accompany the registration form in order for it to be processed and confirmed.

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