November 2003

ANNUNCIATOR

SARNIA ISA SECTION

The Instrumentation, Systems, and Automation Society

DINNER MEETING NOTICE

MONDAY

November 24th, 2003

SARNIA GOLF & CURLING CLUB

500 Errol Road West, Sarnia

Phone: (519) 336-2201

Cocktails 6:00 p.m. – Dinner 7:00 p.m.

All Guests are Welcome!

GUEST SPEAKER...

MO VADEKAR

Topic...

"Oxygen Contamination of Hydrocarbon Feedstock"

M ▸ E ▸ N ▸ U

Mixed Greens
Chicken Parmesan
Roasted Potatoes and Vegetable Medley
Cherry Cheesecake

* For special dietary needs contact Hilda White

at the Sarnia Golf and Curling Club 48 hours prior to meeting date.

NOTE: KINDLY BOOK BEFORE DEADLINE INDICATION.

Please phone in or E-Mail your reservation by...
Thursday, November 20, 2003 to... MAUREEN LYNAS
Phone: (519) 336-3006 • Fax: 344-0607
E-Mail: maureen.lynas@willereng.com

MEMBERS $15 ▸ GUESTS $20

NOTE: *ALL Members and guest are requested to reserve in advance. Please oblige... we need your support to plan your evening!*

Contents

ANNOUNCEMENT

Vendors are invited to display their products at the Dinner Meetings. 2 tables are available.

Contact Program Committee Paul Strong or Brian Patterson. Cost $50 + GST per table.

2003 Directory

NOW AVAILABLE!

The 2003 Sarnia ISA Directory is now available.
Call... Kevin
(519) 332-2300
for details.

The Sarnia Section has a domain on the internet.
Next time you're on the net give us a look at:
www.isasarnia.com

Upcoming Events

- **Jan 26, 2004**

Dinner Meeting - Steve Grundy of Rockwell Automation, Integrated condition monitoring regarding Vibration Analysis. Presentation to include; Overview of Maintenance Today, New Paradigm in Machine Health Monitoring and Protection Integrating Condition Monitoring with Plant Controls Data Visualization Strategies

- **Feb 23, 2004**

Dinner Meeting - TBA

- **June 2004**

ISA Golf Tournament

Guest Speaker Abstract

Mo Vadekar

"Oxygen contamination of hydrocarbon feedstocks"

An examination of the detrimental effects caused by dissolved O2 and practical solutions to control fouling, corrosion and expensive unplanned shutdowns when processing feedstocks vulnerable to air or oxygen ingress.

Mo Vadekar of Chem Tech Consulting at Sarnia has been engaged with USAID and its Canadian equivalent, CIDA, on technical aid projects in Estonia, Poland, Kazakhstan, Uzbekistan and China. He holds a PhD in physical chemistry from the University of Alberta in Edmonton.

Sarnia Section ISA Dinner Meeting

Our thanks to September's Guest Speaker... Elio (Al) Comello.

September Dinner Meeting Attendees

ISA Membership Application

- ❑ **JOIN ONLINE TODAY AT www.isa.org OR,**
- ❑ **MAIL** this form to: ISA, PO Box 3561, Durham, NC 27702-3561, USA **OR,**
- ❑ **FAX** to (919) 549-8288 (credit card required) **OR,**
- ❑ **CALL** ISA Member & Customer Services at (919) 549-8411

ISA is the international society for measurement and control®

Sponsor Name:

Sponsor Member No.:

President's Message

Cold weather is rearing up its ugly head again, the summer just a fond memory, as we have once again hit the road at full stride. I am truly amazed at how well the executive can pull together to prepare the plans that need to be put in place every year. We saw this at our last executive meeting once again as we worked to put the budget together. A big job, with all hands turned to, I think you will be pleased with what we have done to stay well within our means. The next executive meeting will see us, among other things, put the finishing touches on our section plan. This plan is the cornerstone of what we accomplish to be an award winning section. Mike Murray accepted the most recent award on behalf of the section at the President's Fall Meeting in Houston.

This is the off year for the show, so that will not be an issue this time around, but the reference manual is going great guns and should be out shortly. I will mention once again that Paul Strong has worked hard to find informative and interesting speakers for the dinner meetings. Paul appreciated getting feedback about the meetings whether positive or negative to help in planning future meetings. Please do so.

It will soon be time to be looking over the prospects for next year's executive, please consider putting your name forward to help out. There is no need to feel you might not be up to the task or not have sufficient time. We as the executive will work with you to help find a niche for your particular talents and time availability. It is noteworthy that many who opt to sit on the executive find it sufficiently rewarding that they keep coming back. However, time takes it's toll on all of us and we do need to bring more people in.

Please come out to the dinner meeting, meet your fellow practitioners in the field of instrumentation, enjoy another fine dinner and learn from our technical presentation.

Don Murch, President
murchfam@sympatico.ca

Executive 2003-2004

Position	Incumbent	Phone	Fax	E-Mail
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Safety Rated Field Instruments

Have you seen recent announcements about Safety Rated field Instruments? They are offered for use in Safety Instrumented Systems (SIS) applications per international standard IEC 61508. Some have been approved by TUV (www.tuv.com) or Factory Mutual (FM/TUV) (www.fmglobal.com). Others have had Failure-Mode-and-Effects-Analysis (FMEA) done to calculate the Probability of Failure on Demand (PFD) and the Safe-Failure-Fraction (SFF) values for the instrument. Each of the instruments should have a report documenting the testing and/or calculation results. You should obtain a copy of the reports for the instruments that you are interested in. Beware of advertised Safety Integrity Level (SIL) ratings for individual instruments. These individual ratings do not ensure that your complete safety system meets your required SIL. You must do a complete validation, which includes test frequency, to determine your specific system rated SIL.

What does this all mean, why is it important and what do I do with this information?

How do you know that the designed SIS really meets the Safety Integrity Level (SIL) for that specific safety function or interlock? Well, you need to validate the design. ISA S84.01 does not include a process for doing validation but ISA-TR84.00.02-2002, IEC 61508 and dIEC61511 do. IEC 61508 is an approved international standard which covers the complete safety lifecycle. The standard is not mandatory but it represents good practice for manufacturers and users. There is a specific process industry companion standard, draft IEC 61511 which is included in draft ISA 84.00.01-2003. In North America ISA S84 is considered to be good practice.

IEC 61508

When TUV certifies a product to IEC 61508 Functional Safety, it documents the results in a report that verifies testing requirements have been met. The report includes the Probability of Failure on Demand (PFD) and the Safe Failure Fraction (SFF) values. Both these values are important when applying the device in a Safety Instrumented System. PFD is the probability that a safety system will not be able to respond to a safety process demand. The SFF is the percentage of failures that can lead to a safe state of the process. The number of safe failures and the number of dangerous failures determine the SFF.

The IEC standards include a process called validation. Validation is required to confirm that the safety system will meet the required Safety Integrity Level (SIL). This process is performed when the detailed design is being completed. It could also be performed for existing installed safety systems. Validation is described in IEC 61508 part 1 section 7.8 and part 2 paragraph 7.7. Diagnostic coverage and Safe Failure Fraction (SFF) are described in IEC 61508 part 2 annex C.

Validation includes a number of calculations which require parameters that are specific to the actual hardware used. A typical field transmitter used in a safety system is a smart electronic pressure transmitter. The parameters used in the validation calculations should reflect an actual installation. Parameters from the manufacturers TUV or FMEA reports may be for laboratory conditions so what should we use for actual process plant installations? The best numbers to represent failure rates are those recorded by the users. Unfortunately most users do not record all the information necessary to be considered good failure rate data. There is a textbook called "Offshore Reliability Data" which includes actual failure rate data. Exida.com has a web based program called SILVER (SIL Verification) which includes an online failure rate database.

Interested in safety instrumentation? Join ISA Safety Division which includes access to many published papers in electronic format. Join the ISA Safety listserve to communicate by email about safety topics.

References:

1) IEC 61508, Functional Safety of electrical/electronic/programmable electronic safety-related systems. Parts 1-7.

2) ANSI/ISA-S84.01-1996, Application of Safety Instrumented Systems for the Process Industries.

3) ISA-TR84.00.02-2002 Parts 1 to 3, Safety Instrumented Functions (SIF) – Safety Integrity Level (SIL) Evaluation Techniques.

4) Offshore Reliability Data, 3rd edition, 1997, ISBN 82-14-00438-1, www.dnv.com/reliability/oreda/index.html to order.

Web links:

International Electrotechnical Commission (IEC)

http://www.iec.ch/

Honeywell Safety rated transmitters:
http://www.iac.honeywell.com/ichome/Rooms/DisplayPages/InlineHtmlDocument?Document=com.webridge.entity.Entity[OID[FE157712D04E264EB2989ECBAB95FBB3]]

Metso Automation Neles Valveguard:
http://www.metso.com/Automation/FSprod.nsf/WebWID/WTB-010912-2256A-801C8

Moore XTC Safety Critical rated transmitter:
http://www.sea.siemens.com/ia/product/in345xtc.html

Rosemount transmitters for use in safety instrumented systems:
http://www.rosemount.com/solution/iec61508.html

Moore Industries, safety-related instrumentation.
http://www.miinet.com/products/safety_related.html

www.exida.com EXcellence In Dedendable Automation.