January 2000

ANNUNCIATOR

SARNIA SECTION

Contents

Coming Events

- Dinner Meeting
  MONDAY, January 31, 2000
  Sarnia Golf & Curling Club

Sign Up Now!

ANNOUNCEMENT

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

Contact Program Committee Jim Dinkel or Andy Tucker. Cost $50 per table.

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

President's Address

The year so far, is progressing well, the attendance at the last Dinner Meeting was up and the speaker, Steve Hodgkinson, Director of Business Development for the Trans Alta Energy Corporation, gave an excellent presentation.

I want to thank the Directory Committee for their efforts and I look forward to seeing you at the next meeting. Kalpen has two new courses set up for the new year and the Executive will be seeking your help for Engineering Week.

Remember we are always looking for ideas for Speakers and Table Top Sponsors, as well as any other way that you may see to improve how our section is run.

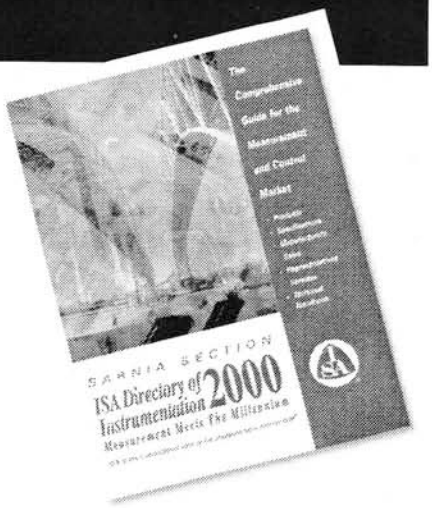
Thank you,

Mike Murray

Now Available!

The 2000 Sarnia ISA Directory is now available.

Call (519) 332-2300 for details.



Upcoming Meetings

Executive Meetings...

- February 28, 2000
- April 24, 2000
- June 26, 2000
- August 28, 2000

Dinner Meetings...

- November 29, 1999
- January 31, 2000
- March 27, 2000
- May 29, 2000

Plan to Attend!

DINNER MEETING NOTICE

MONDAY
January 31, 2000

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...

UMESH J. PATEL, P.Eng. from HONEYWELL HI-SPEC SOLUTIONS

Table Top Displays from HONEYWELL & FISHER-ROSEMOUNT

M ▸ E ▸ N ▸ U

Cream of Broccoli Soup
Chicken Ricotta, Yellow & Green Beans, Roasted Potato
Tiramisu

** 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, January 27th, 2000 to Sandi Cooke - Tidball Phone: (519) 481-3211 • E-Mail: cookets@novachem.com

MEMBERS $10 ▸ GUESTS $15

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

ISA STUDENT SECTION

On Thursday, November 11, 1999 Lambton College held its Academic Awards Luncheon. Aldo Desantis representing the Sarnia Section presented Entrance Awards to the following first year students: Jeff Metzler, Sherry Vrooman, Derek Breschetti, Fred Labbate

The Sarnia Section also awarded the following students for their performance at Lambton College: Dick Borg (Year 2), Michael Brouwers (Year 2), Krista Knudsen (Year 3), Lisa Charlebois (Graduate)

Lambton College would like to thank the Sarnia ISA Section for its financial support of our ICET (Instrumentation and Control Engineering Technology) students.

Other News

Lambton College would like to announce its appreciation to Glen Fournier and Nova Tech for their generous donation of a Servomex Oxygen Analyzer. ICET and CPET students in Lambton College's Process Analyzer Laboratory will utilize the analyzer.

Aldo Desantis (far left) presents awards to recipients (from left to right) Krista Knudsen, Dick Borg, Jeff Metzler & Derek Breschetti.

Control Valve Positioner Performance

How well are your control valve positioners performing? Could they be the cause of poor control loop performance? Are there any standards for control valve response?

A test of 31 control valves in a pulp and paper mill revealed that the positioners were causing most of the control valve problems. EnTech Controls http://www.entechcontrol.com , a Toronto company, recognized that control valve dynamics depend on many factors including positioner performance. Control valves stick and have difficulty responding to small input changes. Control valve gain is not always linear over the entire range of travel. EnTech has released a Control Valve Dynamic Specification that is available on their website. ISA recognized the significance of the spec and convened the SP75.25 Control Valve Dynamic Testing committee to write a standard that promotes uniform specifying, testing and reporting of control valve dynamic performance. The committee is being careful to define how testing is to be performed and reported without establishing performance criteria. Users will be able to see a consistent set of installed performance characteristics.

The ISA SP75.25 committee is currently working on two documents. ISA-dS75.25.01 is called **Test Procedure for Control Valve Response Measurement from Step Inputs**. The purpose of this standard is to define how to test, measure, and report control valve response characteristics. This information can be used for process control applications in order to determine how well and how fast the control valve responds to the control valve input signal. It does not define acceptable process control, or restrict the selection of control valves to any application, since process requirements and user objectives vary widely.

This standard defines methods and criteria for performing response tests and evaluating test results for three alternative environments—"bench testing", "laboratory testing", and "in-process testing". "Bench testing" is testing without flow such as in a plant instrument shop, laboratory, or control valve manufacturing site. "Laboratory testing" is testing with flow in a laboratory. "In-process" testing is performed in a plant during normal plant operation with process flow.

The technical report ISA-TR75.25.01 describes the response characteristics of a control valve system, the factors that can affect its response; the impact of its response on process control and to provide guidance in specifying required response characteristics. This document identifies response characteristics from step inputs and reviews tests to determine these characteristics. A control valve system is the complete control valve body, with actuator, and any accessories required for normal operation assembled ready for use.

The EnTech Control Valve Dynamic Specification was revised in November 1998 to version 3.0. The specification has three parts 1) Nonlinear, 2) Dynamic Response, and 3) Valve Sizing. Parts 1) and 2) –nonlinear and dynamic response, deal with issues such as *dead band* and speed of response, and are intended for the control valve manufacturer. A given control valve can be expected to meet one of the categories called out in the first two parts of the 20 page specification. The third part – valve sizing, is intended for the process/instrumentation-engineering designer who is selecting and sizing a control valve for a particular process application. A given valve selection and process design can be expected to meet one of the categories called out in the third part of the specification.

The Specification considers the control valve as a dynamic system, from input signal through to the *flow coefficient* that determines the fluid flow in the pipe. The *control valve system* includes the actuator, drive train, positioner and valve, under normal process operating conditions. The key to determining performance is that there is a measured change in a *process variable* in response to small input step-changes.

Most control valves are used as final control elements in feedback control loops with PID control algorithms. The dynamic response of the *control valve system* is inherently nonlinear in a complex way and has the potential to create the following problems for the control loop:

1. *For very small input signal changes, valve non-linearities and variable* dead time *cause* **limit cycles**. ***Once a* limit cycle *occurs, effective control is lost and unwanted process variability is created.***
2. *The* **speed of response *of the* control valve system** *must be sufficiently fast to allow the desired control loop* speed of response *to be achieved.*
3. *The* control valve system *response often introduces* dead time *into the loop, which can vary with the magnitude of the valve input signal.* **Dead time *is extremely destabilizing*** *for a control loop. Variable* dead time *even more so.*
4. *For larger input changes valve non-linearities cause the valve* ***dynamic response*** *to be* ***inconsistent****, making it difficult or impossible to tune the controller for consistent performance.* ***For effective control the* control valve system *must deliver a consistent dynamic response over a specified range of step sizes.***

At time of purchase the expected performance of a *control valve system* should be documented in a specification sheet, for *control valve systems* or "valve packages" assembled by a valve manufacturer or supplier. When a user assembles a *control valve system* from components (control valves, actuators, positioners), the user should attempt to document the performance based on in-process tests, after the valve system has been placed in service. The actual performance of a *control valve system*, as installed, should be documented in a specification sheet. The parameters called out in this specification should be reported.

Internet Resources:

Control Engineering Online
Select and Size Control Valves Properly to Save Money
http://www.manufacturing.net/magazine/ce/archives/1999/ctl1001.99/991001.htm

ISA's SP75.25 Control Valve Dynamic Testing Subcommittee Update
http://www.manufacturing.net/magazine/ce/archives/1999/ctl1001.99/991001w1.htm

Positioner Guidelines
http://www.manufacturing.net/magazine/ce/archives/1999/ctl1001.99/991001w2.htm

Control Valves: Sizing, Design, Characteristics
http://www.manufacturing.net/magazine/ce/archives/1997/ctl0301.97/03fbas.htm

Brian Smith

Executive 1999-2000

Position	Incumbent	Phone	Fax	E-Mail
President	Mike Murray	383-1709	339-0481	mmurray@suncor.com
Vice-President	Randy Dennie	337-8252 ext. 5871	339-7723 (W) 542-0179 (H)	rjdenn@xcelco.on.ca
Past President / Section Delegate	Andy Tucker	383-3704	383-8285	andy.tucker@ontario.honeywell.com
Treasurer	Jeff Talbot	339-9330	1-888-259-1666	jtalbot@cbeast.com
Assistant Treasurer	Brian Patterson	337-7591	336-0997	bpatterson@peacock.ca
Executive Assistant	Mike Spearman	344-1339	344-3824	m.spearman@wika.ca
Newsletter Chairman	Bob Devine	332-2300	332-6640	bob.devine@frco.com
Directory Editor	Rob Thrift	339-2272	339-5729	rthrift@xcelco.on.ca
Web Master	Brian Smith	332-1212 ext.7920	339-7301	smithb@novachem.com
Program Chairman	Jim Dinkel	1-800-268-1151	1-800-563-3051	jamedin@frmail.frco.com
Program Assistant	Andy Tucker	383-3704	383-8285	andy.tucker@ontario.honeywell.com
Honours & Awards Chairman	Aldo DeSantis	344-4300	344-0042	aldo@controvalve.com
Membership Chairman	Glen Williamson	481-3202	481-3336	williaga@novachem.com
Membership Assistant	James Callery	337-2301	383-1736	jcallery@suncor.com
Student Section Liaison	Mike Grey	542-7751 ext.3308	542-6667	mike.grey@lambton.on.ca
Standards and Practices Chairman	Don Murch	431-1916	431-1127	murch@ebtech.net
Standards and Practices Assistant	Robert Thibault	464-6400		thibault@mooreproduct.com
Education Chairman	Kalpen Vachharajani	332-1717 ext.237	332-8715	vachhara@paton.org
ISA Show Committee Chairman	Wayne Wilkins	331-1063	337-8054	summa@idirect.com
Golf Tournament Chairman	Gary Coles	337-0777	337-4445	mvfsar@xcelco.on.ca

MEMBERSHIP FORM

INSTRUMENT SOCIETY OF AMERICA

This form may be used by any interested person wanting to join ISA or ISA International, including students. For assistance contact ISA Member & Customer Service at (919) 549-8411.

Please type or use block letters. Sign and date below, in Section 3.

1

Name _____ ☐Male ☐Female Birthdate _____

Company Name _____ Division/Works _____

Position/Title _____

☐Check here if you are a full-time student and complete the following: School _____ Year of Graduation _____

Mailing Address: ☐Home ☐Work NOTE: Student member applicant, please list permanent home address.

Street Address / P.O. Box _____ Mail Stop _____

City _____

State / Province _____ Postal Code _____ Country _____

Telephone (include area code or country/city code) _____ Fax _____ Telex _____

Have you ever been a member of ISA? ☐Yes ☐No Previous years of membership _____

Assign me to the _____ section or the section closest to my home address.

Highest Education Degree Earned ☐High School ☐Associate ☐Bachelor ☐Master ☐Doctorate

Are you a registered professional engineer? ☐Yes ☐No State / Country Registered _____

☐From time to time we may make our mailing list available to companies whose products or services may interest you, please check this box. We will respect your wishes.

2

NOTE: Sections 2, 3 and 5 must be completed for processing.

Check your primary job function:

☐☐☐A: General or Corporate Management
☐☐☐B: Control Systems Engineering
☐☐☐C: Design Engineering
☐☐☐D: Production Engineering
☐☐☐E: Plant Engineering or Maintenance
☐☐☐F: Software Engineering
☐☐☐G: Plant Information Systems
☐☐☐H: Systems Integration
☐☐☐I: Measurement, Testing, Quality or Standards
☐☐☐J: Research and Development
☐☐☐K: Technical or Engineering Support
☐☐☐L: Operations
☐☐☐M: Purchasing or Procurement
☐☐☐N: Education or Training
☐☐☐O: Marketing or Sales
☐☐☐P: Other: Describe: _____

What is the primary end product manufactured or service performed at you company location?

_____

☐ Check here if no manufacturing is done at this location.

3

Signature _____

Date _____

5

Dues Payment Information

Please select the level of membership for which applying:

☐ Regular Member $65 US (Tax Deductible) $ _____
☐ Student Member $9 US (Limited Benefits) $ _____
☐ Division Membership $5 US each $ _____
☐ Industrial Computing Society Membership (reg. $55) $30 - must be an ISA Member $ _____

TOTAL AMOUNT DUE $ _____

Annual ISA dues include a subscription to **INTECH**, for which a non-deductible allocation of $8.00 is made for regular members and $3.50 for student members.

NOTE: The following are acceptable for remitting dues payment. Please indicate the method used. Make cheques payable to Instrument Society of America in **US Currency only.** If paying with international funds, see special note below.

☐Check ☐Money Order
☐American Express ☐Eurocard ☐MasterCard ☐Visa

Account# _____ Expiry Date _____

Special Note Regarding Transfer of International Funds

Credit Card Payment is preferred; checks with proper MICR bank encoding must be drawn on your bank's correspondent NY or other US bank. Amount payable to ISA must include any bank or other processing charges.

☐Wire Transfer – Add $5.00 US for processing. Send to ISA Account #1126294, Central Carolina Bank, ABA053100465. Transfer must show applicant's name and address.

☐UNESCO Coupons ☐Money Order – Add $5.00 US for processing.
Mail completed form and payment to:

Instrument Society of America
Member & Customer Services
P.O. Box 3561
Durham, North Carolina 27702
USA

If paying by credit card, fax to: (919) 549-8288

DIVISION ENROLMENT - Also enroll me at $5.00 each in the Divisions checked below. To join Divisions you must also enroll as a regular or student member.

4

Automation & Technology Divisions

☐(A) Analysis*
☐(C) Robotics & Expert Systems
☐(D) Computer Technology*
☐(E) Open Systems Interconnection
☐(H) Process Measurement & Control*
☐(J) Test Measurement*
☐(M) Automatic Control Systems*
☐(N) Telemetry & Communications
☐(P) Electro-optics
☐(W) Management*

Industries & Sciences Divisions

☐(B) Aerospace Industries*
☐(F) Mining & Metals
☐(G) Chemical and Petroleum Industries*
☐(K) Construction & Design*
☐(L) Pulp & Paper Industry*
☐(O) Power Industry*
☐(R) Food & Pharmaceutical Industries*
☐(T) Textile Industry
☐(U) Automotive & Vehicular
☐(X) Water & Wastewater Industries
☐(Y) Glass & Ceramics Industries
☐(Z) Marketing & Sales*

*Students are entitled to one free membership each in the Automation & Technology and Industries & Sciences Divisions. Please choose and mail from the asterisked selections.