

ANNUNCIATOR

March 1994



SARNIA



SECTION



Sarnia Section Executive 1993-94

POSITION	INCUMBENT	PHONE (ALL AREA CODE 519)	FAX
President	Bill Arundell, Romatec 461 Scott Road / Sarnia, Ontario / N7T 7H5	337-2329	336-0998
Vice-President	Larry Corbett, Rosemount Instruments 515 S. Vidal Street / Sarnia, Ontario / N7T 2V5	339-9701	339-9702
Treasurer	Brian Smith, Novacor Chemicals (Canada) Ltd. P.O. Box 3060 / Sarnia, Ontario / N7T 7M1	862-2911	862-2170
Assistant Treasurer	Chuck Douglas, Huron Valve & Fitting Ltd. P.O. Box 386 / Sarnia, Ontario / N7T 7J2	336-3453	336-1537
Executive Assistant	Jennifer Southcombe, Sunoco Inc. P.O. Box 307 / Sarnia, Ontario / N7T 7J3	337-2301	332-3309
Education Chairman	Dave Gooch, CB Engineering (Eastern) Ltd. P.O. Box 2523 / Sarnia, Ontario / N7T 7H9	337-3105	337-3105
Education Assistant	Roland Smith, Globaltech Process Ctls. P.O. Box 822 / Sarnia, Ontario / N7T 7K1	383-1513	383-1565
Honors and Awards Chairman	Mike Murray, Sunoco Inc. P.O. Box 307 / Sarnia, Ontario / N7T 7J3	337-2301	332-3309
Honors and Awards Assistant	James Lachance, Westech Industrial Ltd. 1149 Vanier Rd. / Sarnia, Ontario / L7S 3Y6	383-6320	383-6322
Student Section Faculty Advisor	Mike Grey, Lambton College 1457 London Road / Sarnia, Ontario / N7T 7K4	542-7751	542-6667
Student Section Liason	Mike Spearman, Brian Controls 880 Philip Street / Sarnia, Ontario / N7T 1Z6	337-7591	336-0997
Newsletter Chairman	Bob Devine, Lakeside Controls 383 Sovereign Road / London, Ontario / N6M 1A3	659-9300	659-0474
Newsletter Assistant	Frank Baugh, Polysar Rubber Corp. P.O. Box 3001 / Sarnia, Ontario / N7T 7M2	337-8251	339-7723
Newsletter Assistant	Dick Bouterse, Dupont Canada Inc. St. Clair River Works / Corunna, Ontario / N0N 1G0	481-3208	481-3366
Membership Chairman	Harvey Luke, Cantech Controls 251 Campbell Street / Sarnia, Ontario / N7T 2H2	332-6162	332-3944
Membership Assistant	Ian Shouldice, Neles-Jamesbury P.O. Box 2359 / Sarnia, Ontario / N7T 7J2	336-3025	336-0763
Program Chairman	Irvin Hawkes, 1171 Parkland Place / Sarnia, Ontario / N7S 5G3	542-3245	
Program Assistant	Norm Little, Kilborn Inc. 225 Eureka Street / P.O. Box 1111 / Petrolia, Ontario / N0N 1R0	336-0201	336-0209
Standards & Practices Chairman	Jeff Talbott, Fischer & Porter 554 Cardiff Drive / Sarnia, Ontario / N7S 4C3	337-0055	337-5542
Standards & Practices Assistant	David Guthrie, Tubetech 829 Philip Street / Sarnia, Ontario / N7T 7K3	344-5271	344-8334
Past President/Delegate	Bob Kelly, Novacor Chemicals (Canada) Ltd. P.O. Box 3060 / Sarnia, Ontario / N7T 7M1	869-2911	862-1932

ISA (Sarnia Section) P.O. BOX 206 • SARNIA, ONTARIO • N7T 7H9

List of Advertisers

Company	Page No.	Company	Page No.
ABB-Kent Taylor	17	Langtree Controls Ltd.	17
Alpha Controls	18	Lisle- Metrix	16
Armatek Controls	15	Mac-Weld	60
Associated Valve Corp.	45	Milltronics	16
Atlas Alloys	41	Moore Products Co. (Canada) Inc.	23
Baker Instruments	4	Neles - Jamesbury	40
Bestobel Canada	62	Novatech	10
Brian Controls	6	Ovantum	16
Cambridge Controls	13	Paton Controls	27
Campbell Scientific	20	PMP Instrumentation	66
Cancoppas Ltd	48	Procan Process Analytics	35
Cantech Controls	35	Professional Valve	49
Cantols	55	Provincial Controls	59
CB Engineering	24	Regional Process Equipment	15
Century Valve & Machine	52	Robroy Industries	27
Conval Equipment	52	Roevin	25
Davis Controls	58	Romatec	18
Detech Industries	22	Rosemount	54
Dresser Canada	33	Sarnia Piping Specialties	4, 32, 61
elenex	37	Sharp Valve	7
Elsag Bailey Inc.	13	Spirax Sarco	15
Endress & Hauser	48	SRP control	64
Farris Industries	56	SSCAN-Grodyne	50
Fischer & Porter	20	Syber Systems	66
Fisher Service	62	Technel Engineering	25
Floval Equipment	39	TeeJay	4
Furon Unitherm	30	Transcat	19
GL Stebbins	26	Tubetech Ltd.	12
Graphic Controls	8	United Electric	19
Honeywell Ltd	63	Utility Industrial	11
Huron Valve	22	Varian	42
Industrial Projects	61	Vermeer Engineering	25
ISA Distribution Centre	60	Veronics Instrument	8
J & M Industrial Supply	52	Westburne Lytle	12
Keystone Valve	35	Westech Industries	51
Kilborn Ltd.	7	Wika Instruments	22
Leeds & Northrup	9	Willer Engineering	58
Lakeside Controls	80	Zesta Engineering	34



TEE-JAY INSTRUMENTATION SERVICES LTD.

1014 GLADWISH DRIVE, SARNIA, ONTARIO

"Sarnia's Most Experienced Full-Service
Instrument/Electrical Contractor"

- CALIBRATION
- INSTALLATION
- COMMISSIONING
- POWER & CONTROL
- LIGHTING & GROUNDING

PHONE:

Office 332-8120

Fax: 332-0879

Res: 542-8969

BAKER INSTRUMENTS LIMITED

40 NORTH RIVERMEDE ROAD, UNIT 5, CONCORD, ONTARIO L4K 2H3

1-800-561-8187

Fax: (905) 738-4785

ALNOR



VELOMETERS - DEWPOINTERS - THERMOMETERS - PYROMETERS

DEAD WEIGHT TESTERS - TEMPERATURE CONTROLS

LOW PRESSURE DIFFERENTIAL PRESSURE SWITCHES, GAUGES, MANOMETERS

DIFFERENTIAL PRESSURE TRANSDUCERS - MAGNEHELIC GAUGES - ANALOG & DIGITAL TACHOMETERS

TEMPERATURE, PRESSURE & FLOW RECORDERS

ROTOMETERS, ORIFICE PLATES & FLANGES, OPEN FLOW MEASUREMENT

OVER SIXTY YEARS serving industry in Canada

SOUTH-WEST METERS LIMITED

P.O. BOX 1083
765 EVETT STREET
SARNIA, ONTARIO N7S 5N3
BUS: (519) 336-8628
FAX: (519) 336-9082

"WE MEASURE UP TO YOUR STANDARDS"

Shop and Field Services Provided:

- Certified Meter Proving & Repair
- Instrument Repair
- Liquid Transfer Systems
- Weight & Measures Calibration
- Preventative Maintenance Programs
- Tank Level Equipment

Contents

ISA Student Section	14
FUZZY LOGIC MADE CLEAR	21, 28, 31
ISA Member Benefits	26
ISA Member Record Change	29
The Six Laws of Work	31
Dinner Meeting Highlights	32
DID YOU KNOW?	36
DINNER MEETING NOTICE	38
ISA Perspectives	43, 44
Sarnia Section Donates	46
Ten Success Rules	46
Meeting Dates	49
News Release	53
WHY SALESPeOPLE FAIL	57
ISA Membership Application	65
Users Directory	67
Past President's Honour Roll	79

Editor's Notes:

REMINDER: The Sarnia Regional Process Show is being held at the Canterbury Inn, Sarnia, on April 7, 1994.

Anyone wishing to get in contact with our District 13 president may do so by contacting Jim Lomax at 519-869-2493 (phone) or 519-869-8138 (fax).

MEMBERS: Please take the time to fill out the Member Benefits Survey and then send or fax it to ISA Sarnia Section.

Note: To have your News Release or Career Opportunities published in the Annunciator, please forward the information to:

ISA Sarnia Section
Box 206
Sarnia, Ontario / N7T 7H9
Att: Newsletter



BRIAN CONTROLS

A DIVISION OF AXEL JOHNSON (CANADA) INC.

Your Canadian source for:

SOLUTIONS IN MEASUREMENT & CONTROL

NEW

FLOW — LEVEL — Ph — ORP
TEMPERATURE — PRESSURE — FORCE
CONDUCTIVITY — RESISTIVITY
SPEED — VACUUM — ANALYTICAL

GAS DETECTION — LEAK DETECTION
AIR SAMPLING — NOISE — HEAT STRESS
AMBIENT AIR — ENVIRONMENTAL MONITORING
GAS CALIBRATION — METEOROLOGICAL SYSTEMS

INSTRUMENTATION — TEST EQUIPMENT — INDUSTRIAL HYGIENE — ENVIRONMENTAL

PRINCIPALS

Honeywell



CONTROL
MICROSYSTEMS

SIGNET SCIENTIFIC



Mid-West
Instrument



JOFRA inc.

SPARLING



penberthy
canada

PRODUCTS

Alarms
Analyzers
Calibrators
Controllers
Counters
Detectors
Diaphragm Seals
Digital Meters
Dosimeters
Elements
Gauges
Indicators
Instruments
Jet Pumps
Load Cells
Manifold Valves
Meters
Monitors
Needle Valves
Probes
Programmers
Pyrometers
RTD's
Recorders
Rupture disks
Remote Terminals (R.T.U.'s)
Samplers
Sensors
Stroscopes
Switches
Syphons
Systems
Testers
Thermocouples
Thermometers
Thermowells
Totalizers
Transducers
Transmitters

PRINCIPALS

AMETEK



BACHARACH

Environics



FLOWLINE™

MST
measurement systems inc.

Digitec



SALES & SERVICE

880 Philip street, Sarnia Ontario, N7T 1Z6

TEL. : (519) 337-7591

FAX. : (519) 336-0997

SALES, SERVICE & DISTRIBUTION ACROSS CANADA

VANCOUVER - EDMONTON - CALGARY - SASKATOON - WINNIPEG - SUDBURY
SARNIA - TORONTO - OTTAWA - MONTREAL - QUEBEC CITY - MONCTON - HALIFAX

SHARP

VALVE & INSTRUMENTATION INC.

SARNIA — BURLINGTON — SUDBURY

Exclusive Representatives for:

CONSOLIDATED, MASONEILAN & NILCOR VALVES
ROCHESTER INSTRUMENT SYSTEMS
SARASOTA AUTOMATION, WIKA GAUGES
CHINO, PICK HEATERS, DESCOTE,

PHONE: 519 - 336-8484

FAX: 519 - 336-0928

1190 MICHENER ROAD

SARNIA, ONTARIO

COMPLETE PRESSURE RELIEF, BALL, GATE AND
GLOBE VALVE REPAIR
FULL CALIBRATION SERVICE

INSTRUMENTATION AND CONTROL SYSTEM ... SPECIALISTS ...



HUSKY BI-PROVINCIAL UPGRADE DCS SYSTEM DESIGNED BY KILBORN

KILBORN

"A Tradition of Quality with Integrity"

KILBORN INC., 201 NORTH FRONT STREET, SARNIA, N7T 7T9
TEL: (519) 336-0201 FAX: (519) 336-0209

INSTRUMENTS VERONICS Inc.

MOISTURE ANALYSIS

- Microprocessor Based
- 1 ppb to 10% free water
- Dew Points from -110 to 200°C
- Portable System 280
- On-line Analysis
- Liquid Hydrocarbon Service

GAS ANALYSIS

- Flue Gas
- Oxygen (ppm to 100%)
- Carbon Monoxide
- Portable and Continuous
- Toxic Gases
- Custom Systems

FLOWMETERS

- Ultrasonic Technique
- Portable and On-line
- Liquid and Gas Phase
- Energy Management (EM68)
- CEM Flowmeters
- Flare Gas Meters

WASTEWATER ANALYZERS

- Total Carbon
- Organic Carbon
- Oxygen Demand
- Ammonia
- Nitrate
- Trace Metals

250 WYECROFT RD., UNIT 15
OAKVILLE, ONTARIO L6K 3T7
TEL (905) 842-5664 • FAX: (905) 842-0540

500 - 7575 ROUTE TRANSCANADIENNE
ST-LAURENT, PQ H4T 1V6
TEL (514) 335-9482 • FAX: (514) 337-3989

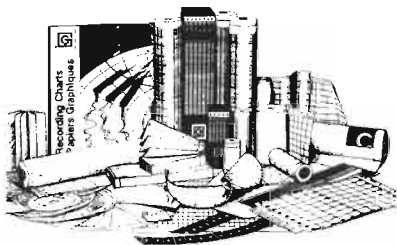
Recording Charts

ROLLS · FANFOLD · CIRCULAR · RECTANGLES · GRAPHS

For All Makes and Models

Media Types

Ink Writing
Electrosensitive
Thermal
Heat sensitive
Pressure Sensitive



Marking Systems

Disposable Pens
Ink Cartridges
Print Wheels
Ink Ribbons
Bulk Ink

GRAPHIC CONTROLS
Satisfaction Guaranteed!

Canadian Sales Offices:

Calgary	Toronto	Montreal	Halifax
1-800-661-1056	1-800-267-9498	1-800-363-7430	902-434-9377



Leeds + Northrup, Canada

A Division of General Signal Limited

Creating Value through Process Solutions!

MAX1000

Distributed Control Systems

- Windows and UNIX-Based 80486 Workstations
- 32-bit, 24 MFLOPS Remote Processing Units
- Fibre Optic Data Highway
- Smart I/O Modules

MICROMAX 2

PC-Based

Unit Process Control

- PLC
- Multi-loop Control
- Data Acquisition

Services

- Installation
- Start-up
- Maintenance / Repair
- Training

Liquid Analytical Instrumentation and Controls

- pH/ORP
- Conductivity / Resistivity
 - Dissolved Oxygen
 - Specific Ions
- Cells and Electrodes
- AUTOCLEAN, AUTOCAL and automatic buffer recognition features
- ACCUGARD Cleaning and Calibration Modules

SPEEDOMAX

Data Acquisition

- Chart Recorders
- Hybrid Recorders / Data Loggers
- DATAVUE PC-based Data Acquisition Software

Leeds + Northrup, Canada

1344 Fewster Drive, Mississauga, ON L4W 1A4

(905) 238-6850 (905) 238-6869

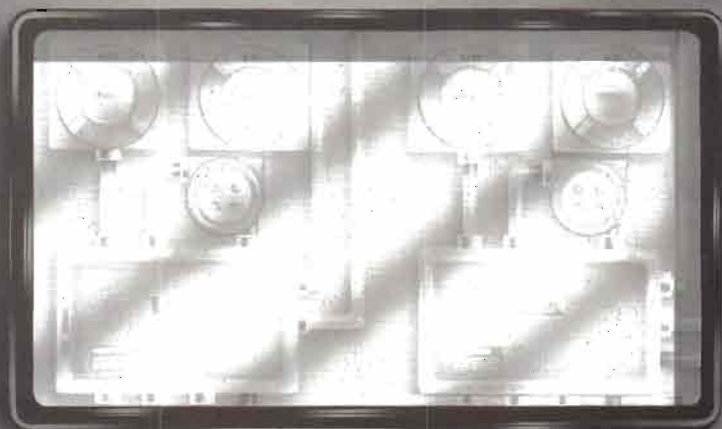
1-800-267-7722

Montreal

Toronto

Calgary

1957 - 1992 • 35 Years of Quality Service to Canadian Industry



Novatech Systems Engineering Group

MEASURING PRINCIPALS

- Photometers
- UV, VIS, IR
- Chemiluminescence
- Ion-Mobility Spectrometry
- GC, FID, PID
- Titration
- Electro-Chemistry
- Zirconia
- Paramagnetic

ANALYSERS FOR

- O₂, CO, CO₂
- NO_x, SO_x
- HF, H₂S, NH₃
- Cl₂, ClO₂, HCL
- TC, TOC, VOC
- Combustibles
- Opacity
- Oil-in-water

Montreal Office

5600 Cypihot
Ville St-Laurent (Quebec)
H4S 1V7
Tel.: (514) 339-5374
Fax.: (514) 339-1550

Toronto Office

160 Wilkinson Road, Unit 38
Brampton (Ontario)
L6T 4Z4
Tel.: (905) 453-7224
Fax.: (905) 453-2464

Technical Support: 1-800-465-5374

U&I SUPPLY

UTILITY & INDUSTRIAL SUPPLY LTD.

645 KeddcO St., P.O. Box 999

Sarnia, Ontario N7T 7K6

(519) 344-3614

Fax. No: (519) 344-3181

Chemtrol
A DIVISION OF NIBCO INC.

Kaynar, PVC, CPVC, Ball, Check,
Butterfly, Valves, & Actuators



IMPERIAL EASTMAN

Tube Fittings, Including Hi-Seal,
Braze-Seal, Hi Duty, and Poly-Flo,
Tubing & Hose

KEDDCO MFG LTD.

Orifice Plates, Spectacle Blinds, &
Strainers



LMI

LIQUID METRONICS DIVISION
MILTON ROY

Liquid Metering Pumps



H. O. TRERICE CO.
MFR. OF TEMPERATURE/PRESSURE
INSTRUMENTS & CONTROLS
SINCE 1923

Pressure Gauges, Diaphragm Seals,
Bimetal Thermometers, Thermowells,
Industrial Thermometers, Filled System
Dial Thermometers, Recorders,
Controllers, Self-Operating Regulators,
and Control Valves

**ROBBINS
MYERS**

Fluid Detection Control and Metering
Pumps

Wood's

A. C. Invertors, D. C. Controllers, Soft
Starts



**Worcester
Controls**

Advanced Ball Control Valves, Electrical
& Pneumatic Actuators, Controllers,
Positioners, & Fugitive Emission Valves

TubeTech^{LTD.}

Instrumentation
and Fluid Control

829 Philip Street
P.O. Box 988, Sarnia,
Ontario N7T 7K3
Tel: (519) 344-5271

 **ACTION INSTRUMENTS**
The Industrial I/O Company

Autoclave
Engineers 

**ALLTEMP
SENSORS**

INTERTEC

ARJAY

ASCO

Parker
FluidConnectors

TLV

Where

Customer Service is our best product!



**WESTBURN
LYTLE**



INDUSTRIAL PRODUCTS DIVISION SARNIA

ASCO — Solenoid Valves, Pressure and Temperature Switches

CASH-ACME — Reducing and Regulating Valves

CLIF MOCK — Liquid and Gas sampling systems, Liquid P.D. meters

DOPAK — Process Samplers

EL-O-MATIC — Actuators, Positioners, Switches, etc. for Quarter Turn Valves.

GGOSCO — Needle Valves

PENBERTHY — Level Gauges

SHAND & JURS — Tank Gauging, Flame Arrestors, Pressure & Vacuum Vents

VELAN — Ball Valves - Cryogenic, Metal Seated

VANESSA — Metal Seated, Zero Leakage, Inherently Firesafe, Quarter Turn Valves, and Butterfly Control Valves

1231 Confederation Street, Sarnia, N7S 4M7
Telephone 336-0014 Fax 336-7396

Bailey Elsag Bailey Inc.

Bailey Canada

860 Harrington Court - Burlington, ON - L7N 3N4

Telephone (905) 639-8840 - Fax (905) 333-7503



BAILEY **TRANSMITTERS, RECORDERS, CONTROLLERS**
For temperature, flow, level & combustion

TBI-BAILEY **SENSORS, INDICATOR/ANALYZERS & CONTROLLERS**
For pH, ORP and Conductivity

KROHNE **MAGNETIC FLOWMETERS, MASS FLOWMETERS,**
ROTAMETERS, LEVEL INDICATORS

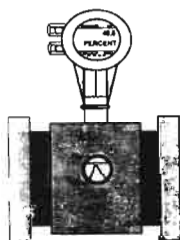


BAILEY PRODUCTS REPRESENTED EXCLUSIVELY BY:

TubeTech Ltd.
829 Phillip Street
P.O. Box 968
Sarnia, ON N7T 7K3

Tel: (519) 344-5271

Fax: (519) 344-8334



Phone: (416) 622-9894

Fax: (416) 622-1847

Products:

Analog Monitoring, Annunciators, Digital Indicators, Electric Actuators, Encoders, Flow Monitors - Flow Sensors - Flowmeters for Direct Reading Liquids and Gases, Graphic Mosaic Display Panels, Indicating Temperature Controls & Recorders, Lamp Cabinets, Manual Stations, Position Transmitter, Pressure Switches, Resolvers, Signal Conditioners, Temperature Switches, Two Wire Transmitters, Voltage Protection (Transient) Systems Solid State With Soft Clamping, Valves (Pneumatic Control & TFE Lined Valves - Self Contained Regulators - Backpressure Regulating)

Manufacturers:

PROCESS CONTROLS & ACCESSORIES

ACTION INSTRUMENTS

CASHCO CANADA, INC.

DATA INDUSTRIAL

JORDAN CONTROLS, INC.

PANALARM

PSYTRONICS

RCM INDUSTRIES

UNITED ELECTRIC



Instrument Society of America

LAMBTON COLLEGE STUDENT SECTION

LAMBTON COLLEGE: STUDENT ISA SECTION

The first ISA dinner of 1994 was held on January 24th with a lecture on valve control and maintenance. Mr. Ken Hargraves, from Ontario Hydro was the guest speaker on the topic. The student members were present with a count of 20.

On January 20th, 1994 a general membership meeting was held. New executives were elected and new membership and renewals were accepted.

The new ISA Student Section Executive is as follows:

President: Scott Crawford, 3rd year
Vice President of Activities: . Randy Henderson, 3rd year
Secretary/Treasurer: Roger Allen, 2nd year
Newsletter Editor: Jonathan Pickard, 1st year
Kates Report: Garey Murray, 1st year
3rd Year Representative: Frank Pitro
2nd Year Representative: Taryn Ployart
1st Year Representative: Thomas Beaton

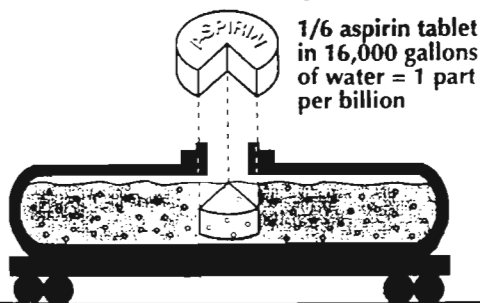
On January 27th, 1994, an executive meeting was held. What evolved from that meeting, was that the executives are in the process of organizing a student section technical field trip during the March Break. Our executives are also beginning to plan for the ISA 1994 student competitions. In the near future our executives will be contacting the Sarnia Section Executives about a possible joint social activity.

INTERNATIONAL HEADQUARTERS

67 Alexander Dr., P.O. Box 12277, Research Triangle Park, NC 27709 (919) 549-8411 Telex 802-540
FAX 549-8288

Instrumentation • Systems • Automation - for the benefit of mankind

How Much is a Part per Billion?



If the water in the tank car were consumed at a rate of a half-gallon per day, it would take 88 years to drain the tank and ingest the one-sixth aspirin tablet.

Source: Ohio Municipal League

Ph: 519 337 7758

Fax 519 337 7933

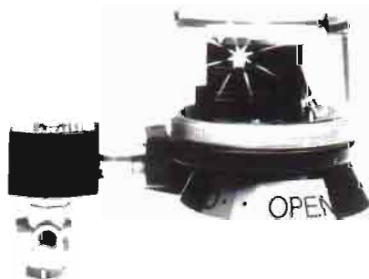


REGIONAL PROCESS EQUIPMENT

Presents

StoneL

Lighting the way to the future in switching technology

**Position Transmitters & Limit Switches with LED's**

spirax/sarco

If it is a Question of....

HEAT TRANSFER, FLUID CONDITIONING, MONITORING
AND/OR CONTROL, THEN SPIRAX SARCO CAN HELP YOU
FIND THE ANSWER!

PHONE FOR YOUR GUIDE TO IMPROVING PLANT AND
ENERGY EFFICIENCY.

(416) 660-5510

Ask for Carol

ARMATEK CONTROLS LIMITED

Process Instruments & Controls – Sales & Service

- | | | |
|-----------------------|-------------------------------|----------------------|
| • BURNS ENGINEERING | • ITT BARTON | • O'BRIEN |
| • FLUID DATA / AMSCOR | • INDUSTRIAL CONTROL SERVICES | • PRINCO INSTRUMENTS |
| • FLUKE ELECTRONICS | • L&J TECHNOLOGIES | • ROHRBACK COSASCO |
| • GENERAL MONITORS | • MOORE INDUSTRIES | • SHAND & JURS |
| • G.W. DAHL | • NUSONICS | • THERMOELECTRIC |

TEL: (519) 332-0100 FAX: (519) 332-8821

Sales & Service since 1966

LISLE-METRIX LTD.

49 Sheffield Street, Toronto Ontario M6M 3E5
Telephone: (416) 249-9151 Fax: (416) 249-2952

WATER QUALITY ANALYZERS - pH, ORP, Conductivity,
Dissolved Oxygen, Turbidity

FLOW METERS - Area, Doppler, Flume, Impeller, Mass,
Nozzle, Thermal, Turbine, Venturi

PROCESS PHOTOMETERS - Dust, Oil-In-Water,
Ozone, Turbidity, Colour, Nitrate, Dissolved Organics,
Solvents in Effluent, Water in Organic Solvents

LEVEL SENSORS - Conductance, Magnetic Coupled

I.S. BARRIERS, ISOLATORS, LOGIC CONTROLS

PROXIMITY SWITCHES - Capacitive, Inductive, Optical,
Ultrasonic, Magnetic, Photoelectric, Fibre Optic

PANEL INDICATORS & CONTROLLERS

OVANTUM

SALES INC. (Ontario Valve & Instrumentation)

FLOW

Orifice & Pitot
Mag & Turbine

LEVEL

Conductive & Ultrasonic
Magnetostrictive
Tank Gauging

GAUGES

Pressure & Temperature

6 Guildford Crescent
London Ontario N6J 3Y1

VALVES

Sales & Repairs of:
Solenoid & Y
Manual & Actuated
Ball, Butterfly & Globe Safety

MISCELLANEOUS

Metering Pumps
Safety Devices

TEL: (519) 474-3044

RALPH FISH

FAX: (519) 471-0571

MILLTRONICS

...solutions to

Process Measurement problems

Reliability

That's why industries worldwide trust Milltronics whenever they need:

☒ non-contacting
ultrasonic technology for
level or volume inventory
of liquids and bulk solids
to heights of 200 ft.

☒ belt scales and solids
flowmeters for continuous
in-line weighing

☒ motion sensors for
under and overspeed
protection

Innovation for Industry from Canadians

Contact: Milltronics

P.O. Box 4225, 730 The Kingsway,
Peterborough, Ontario K9J 7B1

Tel: (705) 745-2431 Fax: (705) 745-0414



MILLTRONICS

LANGTREE CONTROLS LTD

P.O. BOX 2326
CHEMWAY BLDG
509 SOUTH VIDAL STREET
SARNIA, ON N7T 7S6

Ph: (519) 344-6868

Fax: (519) 344-7944



THE "ROOT" TO QUALITY ENGINEERED CONTROLS

ENGINEERING SERVICES

- Project Feasibility Studies
- Project Budget Preparation
- Detailed Project Engineering
- CAD and Drafting Services
- Control Application Programming
- Project Management
- Field Services and Training
- Training Manuals
- Plotting Services (A-E Size)

EXPERIENCE WITH

- Triconex TMR PLC
- Honeywell TDC2000/3000
- Bailey INFI-90
- Foxboro Spectrum
- Fischer & Porter DCI2000
- PLC's - Allen Bradley, Modicon, Honeywell, TI, Square D
- UPS Systems, Fiber Optics, Field Instrument Specification

ABB...

INSTRUMENTATION SALES AND SERVICE

...COMMITTED

KENT-TAYLOR PROCESS ANALYTICS

FLOW
PRESSURE
TEMPERATURE
ANALYTICAL
CONTROL
RECORDERS

GAS CHROMATOGRAPHS
MULTIWAVE PHOTOMETERS
SAMPLING SYSTEMS
SHELTERS
ENVIRONMENTAL ANALYZERS
SUPERCRITICAL CHROMATOGRAPHY

ABB Instrumentation Inc
1362 Lambton Mail Road
Sarnia, Ontario
Phone: (519) 541-0011
Fax: (519) 541-0012

ABB Instrumentation Inc
75 Tycos Drive
Toronto, Ontario
Phone: 1-800-461-0980
Fax: (416) 787-5355

**75 YEARS
IN CANADA**



INSTRUMENTATION PRODUCTS

461 Scott Road, Sarnia, Ontario N7T 7H5
Tel.: (519) 337-2329 — Fax: 336-0998

- | | |
|--------------------------|--|
| APOLLO | - Ball Valves & Actuators |
| BELLOFRAM | - Positioners and Pressure Regulators |
| B S & B | - Rupture Discs |
| DELPHIAN | - Combustible Gas Monitors |
| GALTEK | - Teflon Tube Fittings & Valves |
| ITT DIAFLO | - Diaphragm Valves |
| J-TEC | - Vortex Flowmeters |
| JACOBY
TARBOX | - Sight Flow Indicators and Turbidity Meters |
| LEAR
SIEGLER | - Opacity Monitors and Combustion Analyzers |
| MONITOR | - Bin Level Indicators |
| NICHOLSON | - Steam Traps & Drain Orifice |
| PMV | - Valve Positioners |
| PULSAFEEDER | - Metering Pumps |
| PYRAMID | - PVC Covered Copper Tubing |
| ROSEMOUNT | - Combustion Controls |

**PLUS AUTOMATED
BALL AND BUTTERFLY
VALVES**

ALPHA

CONTROLS AND INSTRUMENTATION

THE PROBLEM SOLVING PEOPLE

OFFERING A VARIETY OF
QUALITY INSTRUMENTS
AND
CONTROL PRODUCTS



ALTEK

setra



SIEMENS



INOR

Sensall



QSDM

rotronic

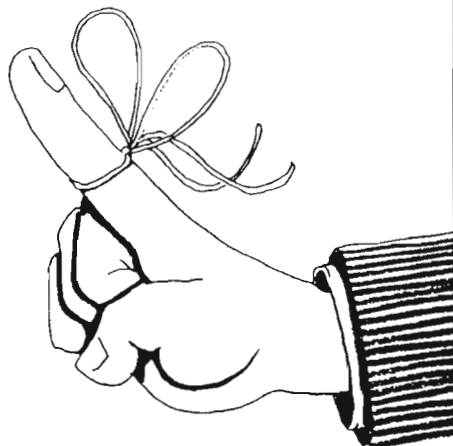
DGH

MAJOR



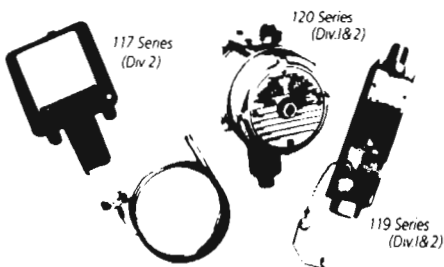
361 Steelcase Rd. West
Unit 3, Markham, Ontario, L3R 3V8
TOLL FREE: 1-800-567-8686
TEL: (905) 477-2133
FAX: (905) 477-4219

New ISA members
have a lot to offer.



Make a point of introducing
yourself at the next meeting.

A COMPLETE LINE OF TEMPERATURE AND
PRESSURE/VACUUM CONTROLS FOR HAZARDOUS AREAS



CSA APPROVED
MANUFACTURED IN CANADA



UNITED ELECTRIC CONTROLS (CANADA) LTD.
5320 BRADCO BLVD
MISSISSAUGA, ONTARIO L4W 1G7
TELEPHONE 905-625-5082 FAX 905-625-5709



Unleash The
Unlimited Resources
Of The Cat.

It's easy to receive a free copy of Transcat's new comprehensive,
full-color 1993-1994 Catalog of Test, Measurement and
Calibration Instruments. Just call us at **800-268-4739**.

TRANSCAT
The Unlimited Resource



- **50XM, 50SM** Micro Converters
- **COPA-X, COPA-AC** Magmeters
- **K-MAG** - Ceramic Magmeter
- **MINI-MAG** - Wafer Magmeter
- **CK-MAG** - Electrodeless Magmeter
- **LV4** - Vortex Meter
- **DCI SYSTEM SIX**
- **ROTAMETERS** - Variable Area Meters
- **MICRO DCI** - Modular Controllers
- **SUPERVISOR PC** - Operator Station
- **U.V. + CL₂** - Disinfection Systems
- **R.F. CAPACITANCE** - Level Probes

FISCHER & PORTER (CANADA) LIMITED

Call or Write: Jeff Talbot

554 Cardiff Drive, Sarnia, Ontario N7S 4C3

Tel: 519-337-0055, Downsview 1-800-663-7097

Fax: 519-337-5542



Campbell Scientific dataloggers

accurately measure input from:

INDUSTRY

- analyzers
- load cells
- temp probes
- speed sensors
- flow meters
- 4-20mA transducers
- analog devices
- strain gages
- digital devices
- V/mV transducers

AUTOMOTIVE

- magnetic pulse transducers
- incremental encoders
- potentiometers
- temperature sensors
- relays
- solenoids
- pressure transducers
- electrical systems
- weighing scales
- chiller systems

ENVIRONMENT

- relative humidity probes
- water-level sensors
- air pressure sensors
- rainfall sensors
- snow depth sensors
- wind speed sensors
- wind direction sensors
- soil temperature probes
- soil moisture probes
- radiation sensors

On Site Demonstrations Available

Established in 1978

192 st clair st. chatham . ontario . N7L 3J6 . (519) 354 7356 fax (519) 354 1558

11564 149 st. edmonton . alberta . T5M 1W7 . (403) 454 2505 fax (403) 454 2655

Fuzzy Logic Made Clear

Although fuzzy theory originated in the U.S. over 25 years ago, it took the Japanese to get it into production. Manufacturers such as Canon, Hitachi, and Nissan led the way, putting fuzzy logic into cameras, trains, air conditioners, vacuum cleaners, and cars. These firms cooperated to develop the technology because their common design objectives could not be met with conventional techniques.

So what can fuzzy logic do that traditional computing methods cannot? For starters, it provides accurate control using low-cost sensors and 4 or 8-bit microcontrollers. It tolerates noisy signals and component variations. Fuzzy logic also offers quick development cycles and easy programming. And it is essential when control is based on vague rules for human experts because mathematical models are unavailable and input data are imprecise.

In essence, fuzzy logic is a mathematical approach that lets computers deal with the uncertainty and imprecision of the real world. Like humans, fuzzy computers employ approximate reasoning techniques to make quick, accurate decisions despite ambiguous, contradictory, and imprecise information.

Consider the reasoning involved in something as simple as adjusting a thermostat. First you must "know" what you'd like the temperature to be. This knowledge is usually vague and is more easily verbalized than defined mathematically. You might say that a comfortable temperature is, "not very hot and not very cold."

Next, you "judge" room temperature based on your perceptions of hot, warm and cold. Human perceptions cannot be precisely defined and often seem ambiguous. For example, someone might conclude that 72F is both sort of hot and sort of warm.

To complete the reasoning process, the judgement about temperature is compared with the knowledge model to decide the control action. Even the control strategy is non-mathematical, a typical rule being, "IF I'm very cold THEN I turn up the heat a lot." Someone who has a good feel for the thermal dynamics of the house and heater may use 20 to 50 such rules to keep the temperature right where they want it. All this comes with crude sensing and without calculations.

Telling a computerized thermostat to apply similar reasoning is nearly impossible. A typical control algorithm might activate a heater when temperature drops below 67F (very cold), for instance, and turn it off when temperature rises above 69F (very hot). However, a sharp cut off point at 67F is a poor definition for very cold. Lacking judgement, it implies that 67.1F is somehow much more comfortable.

There are two ways out of this dilemma. One assumes the control method is the problem and merely applies more math. In the example, cutoff points might be smoothed with proportional bands using equations or lookup tables. This is acceptable in many instances. But in other cases, mathematical models may be unavailable or too complex for the required accuracy and speed of response. The alternative approach assumes the math is the problem, and that's where fuzzy logic enters the picture.

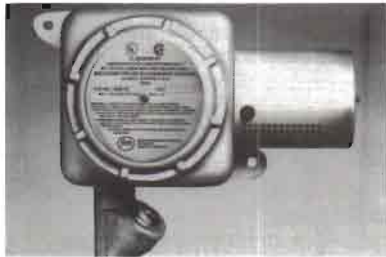
Fuzzy logic stems from "fuzzy set" theory proposed by UC-Berkeley professor Lotfi Zadeh in 1965. Unlike conventional (crisp) set theory, where objects are either in or out of the set, Zadeh's theory allows objects to have partial membership. Each object has a membership value from zero to one, zero meaning non-membership and one meaning full membership. Thus, crisp sets are a limiting case for fuzzy sets.

It turns out that human perceptions like cold are more naturally defined by fuzzy sets than by crisp ones. The crisp definition for very cold, any temperature below 67F, is simply unrealistic. A fuzzy set, on the other hand, is more consistent with what people have in mind when they define very cold.

According to fuzzy nomenclature, very cold is a "fuzzy variable." Measured temperatures relate to very cold through a membership function, a distribution of membership or truth values from zero to one. Temperatures below 65F, for example, would have a membership value of one (definitely cold), and temperatures above 70F would have a membership value of zero (definitely not cold). A linear or curved segment joins the two lines. Other fuzzy variables for temperature might include slightly cold, cold, warm, slightly hot, hot, and very hot.

(Continued on Page 28)

Astro Infrared Gas Detection



*Don't
Take
Chances*

*Take
Control*

A unique infrared detection technique will ensure reliable measurement, automatic self-checking, and provide a unit unaffected by high humidity, poisoning agents or high gas concentration environments.

FOR INFORMATION CONTACT:

Astro International Corporation
100 Park Avenue
League City, Texas 77573
(713) 332-2484
Fax (713) 554-6795

Detect Industries
251 Campbell Street
Sarnia, Ontario N7T 2H2
(519) 383-5320
Fax (519) 336-4769



WIK INSTRUMENTS CANADA LTD.

9783 - 45 AVENUE, EDMONTON, ALBERTA T6E 5V8

Telephone (403) 438-6662 • Fax (403) 437-0889

PRESSURE GAUGES – CHEMICAL SEALS – THERMOMETERS
PRESSURE TRANSMITTERS – TRANSDUCERS
– DIGITAL INDICATORS –

REPRESENTED BY SHARP VALVE

336-8484



CHUCK DOUGLAS
JOE LAWLESS
TONY OLSEN
RANDY HADDON
MIKE REID

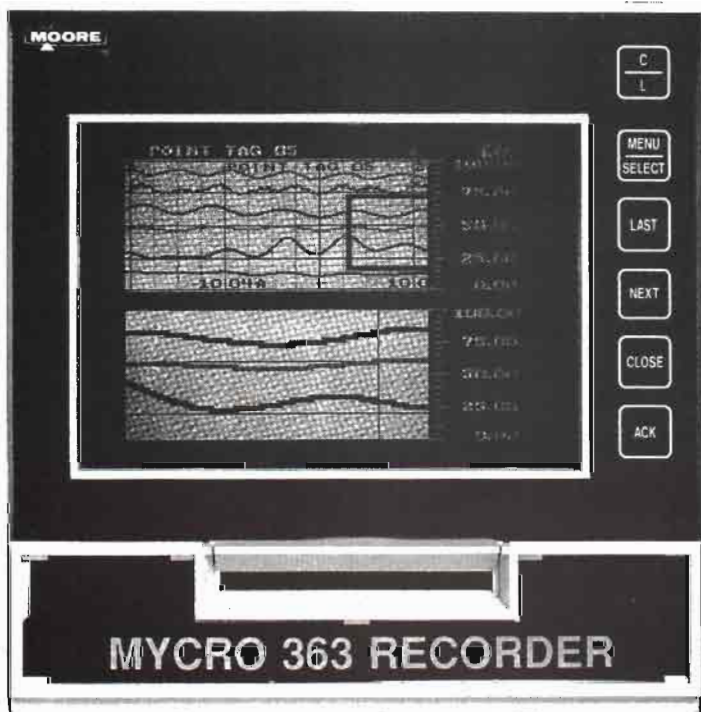
P.O. Box 386
Sarnia, Ontario N7T 7J2

(519) 336-3453
Telex 064-76120

AVOID THE PAPER CHASE

Look into Moore's new Model 363
Paperless Recorder for all your recording needs.

High in Flexibility, Low in Maintenance & Price.



Moore Products Co. (Canada) Inc.
Formerly Moore Instruments Ltd.
P.O. Box 370, Brampton, Ontario L6V 2L3
Tel: (905) 457-9638 Fax: (905) 457-4182





CB ENGINEERING (EASTERN) LTD.

P.O. Box 2523
Sarnia, Ontario N7T 7H9
Tel: (519) 337-3105
Fax: Same

OFFICES ACROSS CANADA

• CALGARY • SARNIA
• EDMONTON • TORONTO
• MONTREAL • VANCOUVER



INDUSTRIAL, CUSTOM, COMPUTER
KEYBOARDS



"COMMANDER" & "EXTENDER" TO
EXTEND AND CONTROL MULTIPLE
COMPUTERS & MONITORS



INDUSTRIAL FIRE & GAS DETECTION
SYSTEMS



TURBINE METERS
LOW FLOW METERS (0.001 gpm)
CALIBRATORS / FLOW PROVERS



INDUSTRIAL COMPUTERS / DISPLAYS
MCA & AT BUS
PERSONAL COMPUTERS - PS/2 SERIES



INDUSTRIAL COMPUTERS
INDUSTRIAL MONITORS
INDUSTRIAL TERMINALS



"THE FIX & FIX DMACS" PC BASED
SOFTWARE FOR INDUSTRIAL CONTROL
AND DATA MANAGEMENT



PRESSURE SWITCHES
TEMPERATURE SWITCHES
DIFFERENTIAL PRESSURE SWITCHES



VORTEX & MAGNETIC FLOW METERS
PID & BATCH CONTROLLERS
PROGRAMMABLE RECORDERS
PRESSURE TRANSMITTERS
OXYGEN ANALYZERS
CONDUCTIVITY & PH METERS



REMOTE & DISTRIBUTED I/O
HIGH - ACCURACY TEMPERATURE
AND DATA COLLECTION SYSTEMS
VOICE ALARMING



MAGNETIC LIQUID LEVEL GAUGE
PRODUCTS



CONTINUOUS EMISSIONS MONITORING
SYSTEMS



GAS TURBINE DIGITAL GOVERNORS
STEAM TURBINE DIGITAL GOVERNORS

VERMEER ENGINEERING

A Division of Comteq Instruments

35 WEST PEARCE STREET, UNIT 2, RICHMOND HILL, ONTARIO L4B 3A9

PHONE: (905) 889-7502

FAX: (905) 889-7739

- Signal Conditioners, 7 Year Warranty
- O₂ Analyzers, Process and Combustion
- Combustion Efficiency Analyzers, O₂-CO Portable and In-Situ.
- Analyzers for Petro-Chem Applications
- CO, CO₂, H₂, N₂, SO₂, HCl, NO, NO_x, H₂O, HF
- I-P and P-I Converters, Digital Pressure Meters
- SCR Power Pak and Control
- pH and Conductivity Measurement and Control
- Toxic Gas Monitors
- Water Quality Analyzers
- Gas Chromatographs
- H₂S Process analyzers
- Dewpoint and R. H. Sensors

*That's not a lie,
it's a terminological inexactitude.*

ALEXANDER HAIG

CHEMICAL STREAM SAMPLING



12
inputs

1
output

- Diverts any one of 12 streams into your analyzer
- For chemical or gas streams
- Unsampld streams can be flow-thru or dead-ended
- C_v from 0.10 to 0.24 (air)
- Electrical position feedback

Scanivalve Corp. 



® TECHNEL ENGINEERING INC.

120 Whitmore Road, Unit 8
Woodbridge, Ontario, L4L 6A3

Tel: (905) 851-4244 Fax: (905) 851-5743



ROEVIN

TECHNICAL PEOPLE

TEMPORARY & PERMANENT PLACEMENT

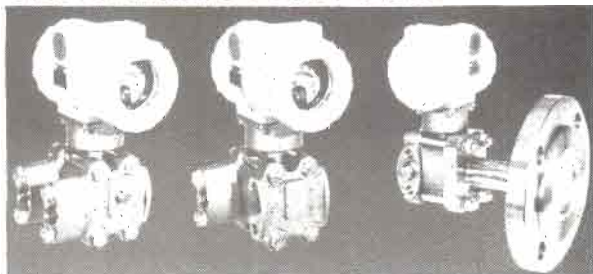
- Project Management
- Engineers
- Designers
- Technical Writers
- Draftspersons
- Drafting Service
- CAD Operators
- Tradesmen
- Clerical

YOUR LOCAL AGENCY WITH INTERNATIONAL RESOURCES

smar-T

LD 301 *Now CSA Approved

The Intelligent Family of Pressure Transmitters From Smar



- 0.1% Accuracy • 20:1 Rangeability • Pressure (Gage, Differential and Absolute), Level and Flow
- Advanced microprocessor-based electronics • Compact and light-weight (only 6lb)
- Capacitive sensor • No moving parts • Non-interactive zero and span adjustments
- 0-1 in H₂O to 0-3625 psi • Linear, square root or linearized output • Remote Calibration
- 4-20 mA output or direct digital communication • Wide selection of forms and materials

G.L. STEBBINS COMPANY (1982) LTD.

LONDON, ONTARIO N5V 1R4

(519) 455-1350 FAX (519) 455-1351



YOUR ISA MEMBER BENEFITS

You receive many benefits as an ISA member. In addition to developing valuable contacts with others in the instrumentation field through **Section Activities**, ISA offers . . .

Division Activities—An opportunity to join any of 24 technical interest divisions that keep you current in your particular field.

Directory of Instrumentation—A free annual guide of products, manufacturers, services, trade names, sales offices and more.

Standards and Practices—International industry guidelines that help improve performance and communication, reduce costs and promote safety. Free as issued.

Leadership Development—Educational programs and materials designed to enhance your leadership skills in preparation for Society and career advancement.

Instrumentation Publications—Over 400 publications and educational aids available at member discounts.

INTECH—The leading international journal of instrumentation that keeps you up to date every month—free.

Inside ISA—A free publication supplement that highlights member activities.

Technical Training Courses—An opportunity to update your technical skills at member discounted rates.

Symposia, Conferences, Exhibits—Forums that allow you to discuss practical applications with engineers, scientists, educators, researchers and technicians.

Peer Recognition—ISA honors and awards that acknowledge outstanding achievements.

Resume Referral Service—Free employment assistance to unemployed members.

Optional MasterCard, Insurance—An opportunity to get a MasterCard or sign up for supplemental insurance at low group rates.

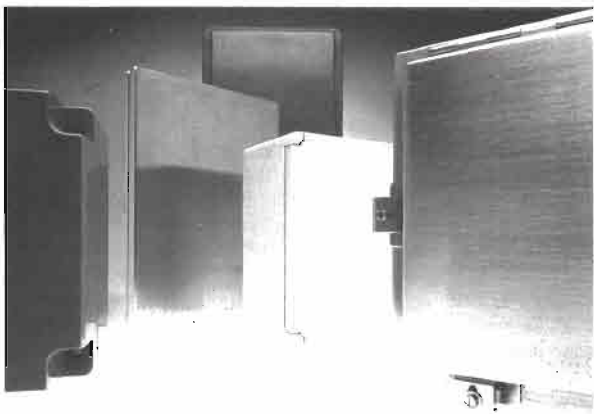
FOR MORE INFORMATION ON ISA MEMBER BENEFITS, CONTACT:

Instrument Society of America

67 Alexander Drive, PO Box 12277 • Research Triangle Park, NC 27709 • (919) 549-8411

ROBROY INDUSTRIES. THE ENCLOSURE SPECIALISTS.

Stainless Steel, Fiberglass, and Aluminum enclosures may be special, but they are standard to us. Robroy maintains a large inventory of standard and special use enclosures, stocked and ready to ship. We provide fast turnaround on standard, modified and custom enclosures. Robroy is committed to the highest quality in the industry.



ROBROY
INDUSTRIES

ROBROY INDUSTRIES, LTD.

RR #3, McLean Road, Guelph, Ontario N1H 6H9
Phone 519-763-1432



PATON CONTROLS LTD.

CONSULTING ENGINEERS
CAD SERVICES

SPECIALIZING IN INSTRUMENTATION
AND ELECTRICAL ENGINEERING

OTHER SERVICES INCLUDE:

MECHANICAL - PROJECT MANAGEMENT -
COST ESTIMATION - SCHEDULING -
PROCUREMENT - DESIGN & BUILD PROJECTS

332-1717

501 SCOTT ROAD, SARNIA, ONTARIO

In addition to membership functions, fuzzy logic also defines mathematical operations that programmers can use to process data with expert rules. "Inference" methods determine rule outcome, and "defuzzification" methods convert the outcomes to an analog value. As a result, computers can finally make sense of statements like, "IF I'm cold THEN I turn up the heat a lot."

The combination of fuzzy math and knowledge-based (expert) logic is what gives fuzzy logic systems the ability to "reason" like humans. Previous attempts to implement expert systems were hampered by conventional math. But fuzzy membership functions are a convenient interface between the expert system and real-world data, providing a sort of machine perception and judgement.

All philosophy aside, fuzzy logic is quite practical and is proving to be the quickest and easiest way to automate price-sensitive applications using closed-loop controls. Some manufacturers claim that development times are cut by a factor of 10.

Fuzzy logic is also making an impact on high-end applications, including robotics, data communications, and image analysis. The reason is that it eliminates the need for complex mathematical models typically required in conventional computing.

Fuzzy algorithms model the decision maker, not the process. This is good news if the process is non-linear or subject to constant variation. A case in point is a Japanese shipbuilder that automated the controls for dredging ships, overcoming the effects of irregular wave action with fuzzy logic.

With an established technique for modeling human reasoning, manufacturers can control almost any process by getting an "expert" to come up with 20 to 50 rules they normally use to make decisions. Because accuracy does not depend on a process model and fuzzy math tolerates imprecision, sensor feedback is less critical and noise and component variation are not a big concern.

The general consensus among industry experts is that fuzzy controllers can match or beat their conventional counterparts in terms of set-point accuracy, settling time, and overshoot. But researchers at the Southwest Research Institute found that a fuzzy-controlled robot had slightly higher trajectory errors (0.05 in.) compared to one using state-space control. They consider this a good trade-off, however, because the fuzzy robot is also 33% faster and more robust.

Fuzzy controllers are inherently robust because their decisions include contributions from dozens of rules. If a few rules "misfire" because of a bad sensor or electrical component, for instance, the other rules compensate and keep the output smooth and continuous. For the reason, fuzzy controllers also respond better to system upset, having faster settling times than both proportional - integral - differential (PID) and state-space controls.

Another advantage of fuzzy control is that it can be easily upgrade or modified by adding new rules and sensor membership functions. The fuzzy robot was enhanced this way with an obstacle-avoidance system. New rules can also reflect new control priorities such as energy savings, quiet operation, and less on-off switching. Even if the new rules conflict with the old ones, fuzzy math determines an appropriate response.

Although fuzzy control offers many advantages over conventional control, the two are often used in complement. Some controllers use fuzzy logic to adjust PID parameters on-the-fly, others apply fuzzy or PID depending on the conditions. PID loops lock in on set points under normal operation, while fuzzy algorithms take over during system upsets and set-point changes. Hybrid controls respond up to twice as fast with less overshoot than conventional ones.

Fuzzy controllers inherently produce analog outputs with smooth control surfaces. This allows motors, for example, to run more efficiently over a continuum of speeds. Camcorder designers have tapped into this capability, using fuzzy logic to control autofocus motors over 127 speeds. Conventional software running on similar microcontrollers produces only three motor speeds and annoying focusing errors.

Researchers at NASA- Johnson Space Center are also exploring fuzzy logic's analog nature. Their simulations show that fuzzy control can reduce both fuel burn and structural stress in spacecraft maneuvers. Compared to a conventional digital autopilot, fuzzy control uses 70% less fuel in attitude-hold runs and 40% less fuel in attitude maneuvers. In terms of control authority, fuzzy logic is more responsive to commands and corrects errors more quickly.

(Continued on Page 31)

Instrument Society of America

MEMBER RECORD CHANGE

This form is designed to facilitate your request for changes in your member record. In order to stay in touch with you, ISA needs to know when you move or change jobs. Also, ISA would like to upgrade your member status if you qualify.

Name _____ (Last) _____ (First) _____ (Middle) _____
ISA Member Number: _____ Day-time Phone Number: _____

Check all changes that you are requesting:

- ☐ Change my address, phone number and/or company (Complete Part 1)
☐ Change my section affiliation (Complete Part 2)
☐ Apply for Life Member/Life Fellow Status (Complete Part 3)
☐ Apply for Senior Member Status

PART 1: MOVING?

PLEASE CHANGE MY ADDRESS, COMPANY NAME AND/OR PHONE NUMBER:

Preferred
Mailing
Address

☐ Home

☐ Company

Please provide your address exactly as you wish it to appear on our official records.

Preferred Mailing Address:

Street Address: _____

P.O. Box: _____

City: _____

State/Province: _____

Country: _____

Postal Code: _____

Also provide the following information:

Company Name: _____

Company Telex: _____

PART 2: CHANGING SECTIONS?

PLEASE TRANSFER ME:

From _____ Section To _____ Section

PART 3: APPLYING FOR LIFE MEMBER/LIFE FELLOW STATUS?

PLEASE CHANGE MY STATUS TO LIFE MEMBER/LIFE FELLOW: (You must meet both qualifications below.)

☐ I have retired from full-time employment.

☐ I have been a regular Member, Senior Member, Fellow or Honorary Member for twenty (20) or more years. (Years as an Associate or Student member do not count toward the 20-year requirement).

_____ Date joined ISA (Month & Year)

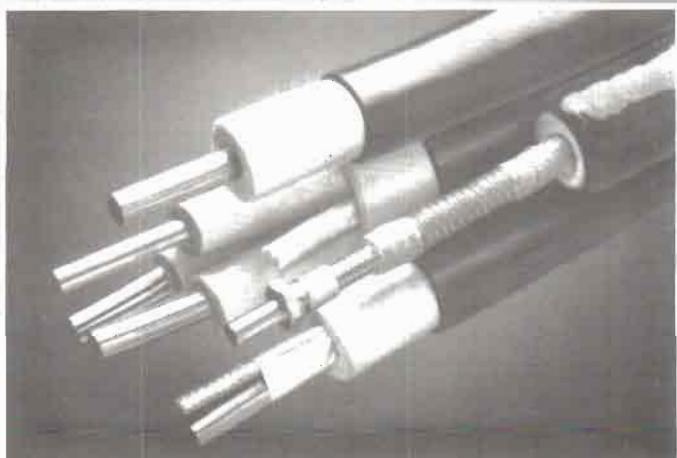
Signature _____

Date _____

RETURN TO: **Membership Services**
Instrument Society of America
67 Alexander Drive P.O. Box 12277
Research Triangle Park, NC 27709



Pre - Insulated & Heat Traced Tubing



Single and multiple tube pre-insulated,
electrically traced and steam traced bundles.

- Standard or custom engineered designs
- Wide choice of tubing materials, sizes, jacket materials and other options to match your application

Now Available Through:

Bestobell Canada, Ltd.

Sarnia & Toronto Locations

Sarnia Telephone: 519.542.4554

Toronto Telephone: 416.231.9216



FURON UNITHERM

1531 Commerce Creek Boulevard

Cape Coral, Florida 33909

813.995.8111

While conventional control theory provides several mathematical proofs to verify controller design particularly for stability, fuzzy logic is outside the umbrella of conventional math and its related proofs. There are no gain margins, phase margins, root-locus diagrams, and Routh-Hurwitz criteria. Instead, engineers must simulate and validate their designs using empirical methods.

A good starting place is to make sure that all designs agree with proven input-output states, and that they also produce acceptable results for new data. Designers are also advised to check for numerical convergence.

Fuzzy technology is still in its infancy and there are no hard-and-fast rules for its development and implementation. Users must grapple with new issues such as how to find the best shape for membership functions, what inference methods to use, and how to choose the right defuzzification method. Development systems can help by allowing users to observe the effect of various approaches and pick the one that best suits the application. Nonetheless, fuzzy systems are still easier to program and take less time to develop than conventional math-based controllers.

As the technology matures, the issues will become clearer. Also, other forms of programming such as neural networks will make fuzzy systems adaptive enough to aid in their own development.

There is hope that a standard development cycle is on the horizon. Users have noticed a strong similarity in rule sets for different control problems based on error and error rate. As a result, they speculate that there may be a universal form for fuzzy control that could lead to a more systematic and rapid development process.

Except form ISA, 1993 PAPER # 93-148.

The Six Laws of Work

- 1. A man must drive his energy, not be driven by it.*
- 2. A man must be master of his hours and days, not be their servant.*
- 3. The way to push things through to a finish effectively must be learned.*
- 4. A man must earnestly want.*
- 5. Never permit failure to become a habit.*
- 6. Learn to adjust yourself to the conditions you have to endure, but make a point of trying to alter or correct conditions so that they are most favourable to you.*

—William Frederick Book



January Dinner Meeting Highlights

The ISA Sarnia Section started 1994 off with a dinner meeting on January 24 at the Sarnia Golf and Curling Club. The meeting was attended by 89 members and guests.

Brian Smith and Mike Spearman set up a demonstration of the new ISA Sarnia Section Bulletin Board for viewing and testing.

Past President, Bob Kelly, chaired the meeting as President, Bill Arundell was at the ISA Presidents Winter Meeting in Tampa, Florida.

Irvin Hawkes introduced the guest speaker, Mr. Ken Hargraves, Shift Maintenance Supervisor, with Ontario Hydro at Bruce B Generating Station. Ken presented a talk on "Air Operated Valve Maintenance Program Using Valve Diagnostics".

The next Dinner Meeting is March 28... Please phone your reservation in by March 24.

SARNIA PIPING SPECIALTIES LTD.,

765 EVETT ST. P.O. Box 2018, Sarnia, Ontario. N7T 7L5

Phone: 336-8820

Fax: 336-2033

..... OLIVER VALVES

..... GO REGULATORS

..... LEEDS + NORTHRUP

..... SIGMA TECHNOLOGIES

..... G.S.I LEVEL INSTRUMENTS

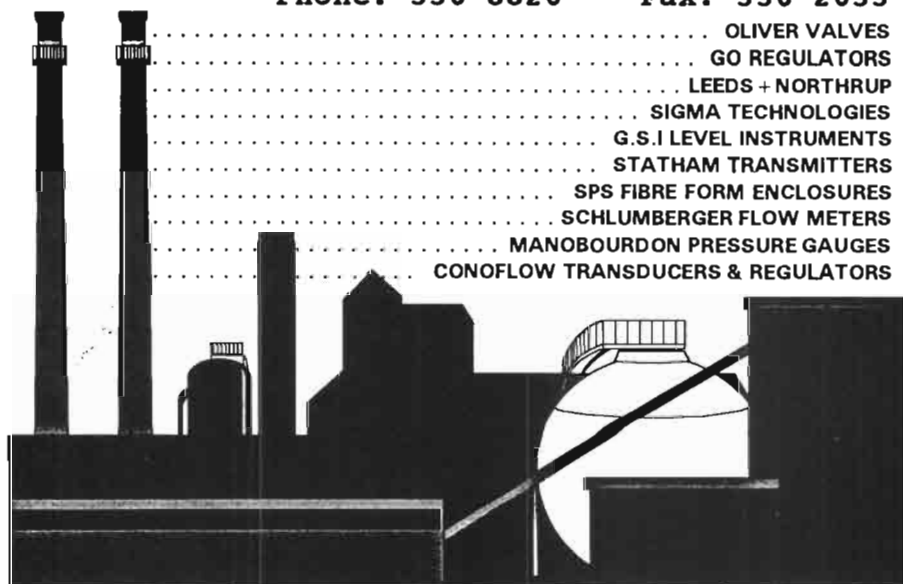
..... SATHAM TRANSMITTERS

..... SPS FIBRE FORM ENCLOSURES

..... SCHLUMBERGER FLOW METERS

..... MANOBOARDON PRESSURE GAUGES

..... CONOFLOW TRANSDUCERS & REGULATORS



[illegible]

To support the Consolidated® pressure relief valves, Sharp is a fully certified Dresser Green Tag® Centre offering relief valve repair to the M.C.C.R. and National Board V.R. programs.

Sharp Valve & Instrumentation Inc. and Dresser combined, offer the best in technical products and customer-focused support services.

Ontario Representatives:

Burlington: (905) 332-9515
Fax: (905) 332-9532

Sarnia: (519) 336-8484
Fax: (519) 336-0928

Sudbury: (705) 671-1684
Fax: (705) 671-3674





CUSTOM HEATING ELEMENTS

... the high performance line from WATLOW



STRIP HEATERS

Mica insulated. All lengths, widths and ratings to 1200°F.



IMMERSION HEATERS

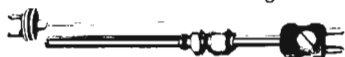
Screw plug and flange mounted. Copper/steel, Incoloy stainless and aluminum.



FIREROD

FIREROD CARTRIDGE HEATERS

Two to 20 times longer life. Std. diam. 1/4" to 1". 400 sizes and ratings in stock.



THERMOCOUPLES

Mil spec, ASTM and RDT applications. Diameters from .010" to .500".



FLEXIBLE HEATERS

Designed for continuous use at 428°F. Sizes to 35" x 120" — 35 w per sq. in.

CERAMIC FIBER HEATERS

Operating up to 2200°F. For surface heating, crucibles, conveyor holding surfaces, etc.



TUBULAR HEATERS

Seven std. lengths - to 23 ft. formed to your specs. Applications to 1600°F.



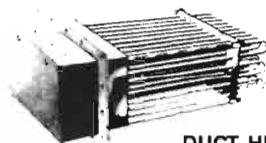
RADIANT HEATERS

Rugged steel, sizes to 24" x 35". Watt densities to 25 w/in² any voltage.



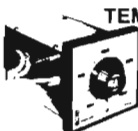
BAND HEATERS

Mica insulated-steel sheathed for up to 900°F. - stainless to 1200°F.



DUCT HEATERS

Easily installed into forced air ducts, supplies clean steady heat for industrial processes up to 800°F.



TEMPERATURE CONTROLS

Many models and ranges to 2000°F, loads to 675 amp.

Zesta Engineering Ltd.

*Write for the new edition of
**Watlows Electric Heater &
Control Systems Catalogue.**

212 Watline Avenue
Mississauga, Ontario L4Z 1P4
Phone (905) 568-3100
Fax (905) 568-3131

Branch Offices

4754-14 Street N.E.
Calgary, Alberta T2E 6L7
Phone (403) 291-1156
Fax (403) 291-2630

7866 Express St.
Burnaby, B.C. V5A 1T4
Phone (604) 420-0236
Fax (604) 420-6236



Analyzer Systems Specialists

CONTRACT ENGINEERING

Specifications, Detailed Designs and Consulting Services

(519) 336-9606

676 Rosedale Avenue, Sarnia, Ontario

CANTECH

CANTECH CONTROLS

DIV. OF CANTECH CORPORATION

Serving industry

with dependable measurement and control equipment"

Sarnia Office and Warehouse

251 Campbell St., Suite 226, Sarnia, Ont. N7T 2H2

Phone - (519) 332-6162

Fax (519) 332-3944

Tobar - Flow, Level & Pressure Transmitters

W.E. Anderson - Flow Switches, Ground Continuity Monitors

F.W. Murphy - Level, Vibration, Temperature & Pressure Switch Gauges

Micon - Microprocessor Based Controller & Control Systems

Intellitron - Intelligent Alarm Annunciators

Skinner - Solenoid Valves, Spool Valves

Strahman - Drain & Sample Valves, Cleaning Stations

Devar - Signal Conditioning, Temperature

HydriL - Turbine Flow Meters

Conductive Technologies - Electric Heat Tracing

Ogontz - Temperature Control Valves, Steam Traps

Cantech Systems - Heat Tracing Control

Penny & Giles - CRT Based Recorders & Indicators

Eaton IDT - Man Machine Interface and Industrial Computers

Anderson Greenwood - Instrument Manifolds, Gauge & Hand Valves,
Spring Loaded & Pilot Operated Relief Valves

Transtector Systems - Transient Surge Protection Equipment

KEYSTONE

CANADA INC.

**"YOUR WORLDWIDE FLOW
CONTROL RESOURCE"**

For Information

- ✓ **Keystone Valve**
- ✓ **Yarway**
- ✓ **Anderson Greenwood**
- ✓ **Vanessa**
- ✓ **Valvtron**
- ✓ **Keystone Controls**
- ✓ **Kunkle Industries**

Tel: (905) 681-1100

Fax: (905) 634-9606

"Did You Know?"

The Sarnia and Toronto Sections will combine forces to achieve another successful ISA "Canada Exhibit" in April 1995. Therefore, both Sarnia and Toronto will not have local shows in 1995. With this announcement, your executives are looking forward to allowing our Sarnia Exhibitions the best exposure possible in this "National Show".

Further information will be published as it becomes available.

Charitable Activity

The Sarnia Section will be donating \$4800.00 to St. Joseph Health Care Centre for the purchase of an "Infusion Pump." The presentation will be taking place in early March 1995.

Engineering Week

The Sarnia Branch of the Society of Professional Engineers will be holding Engineering Week from March 10 through March 12 at Lambton Mall. The Sarnia ISA Section will once again take part in this event and will have a booth including several interesting exhibits on display. We need your help to man this booth. Please contact out Vice-President, Larry Corbett, who is coordinating the exhibit. Larry's phone number is 339-9701.

Lambton County Science Fair - 1994

This years fair is being held April 15 & 16 at St. Patrick's High School. Your Sarnia Section will be offering six awards of \$50.00 each plus plaques to the 1st and 2nd place finishes in the junior, intermediate and senior categories.

Membership Announcement

The 1994 membership theme is simply "members recruit a member." Wouldn't it be great for each of us to sign on a new member, then bring this fellow to an upcoming "Dinner Meeting." Could the Sarnia Golf and Curling Club handle this kind of turnout? It would be interesting to be part of such an event!

*Bill Arundell
President, Sarnia Section ISA*

elenex Ltd.

An Affiliate of London Airpower Ltd.

Electrical / Electronic Control & Systems

480 Riverview Dr.
Chatham, Ont. N7M 5J5

Phone: (519) 351-0637
Chatham Fax: (519) 351-0117
London Fax: (519) 685-7336
Inwats: 1-800-387-1658



Timers, Counters, Relays, Intelligent Panel Meters, Process Controllers, PLC's, Temperature Controllers, Proximity Sensors, photoelectrics, Laser Measurement Systems, Ultrasonic Sensors, Operator Interface Terminals.



Trabtech surge protection, Signal Conditioners, Power supplies, High Density Terminal Blocks, Custom Interface Modules, Electronic Modules, Varioface Interface Modules.

"experience and expertise you've come to expect"



ISA

SARNIA SECTION

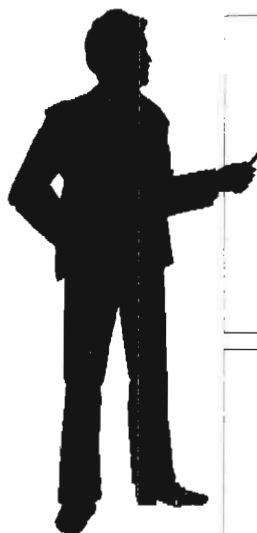
DINNER MEETING

MARCH 28, 1994

SARNIA GOLF & CURLING CLUB

COCKTAILS 6 pm

DINNER 7 pm



GUEST SPEAKER

John Hodgins

**MICROSOFT
CANADA**

MENU

Tossed Salad

Roast Sirloin of Beef

*Glazed Carrots - Duchess
potato*

Liqueur Parfait

Please phone in your reservation by

THURSDAY, MARCH 24

to either

Gayle at Provincial Controls 336-7301
Maureen at Willer Engineering 336-3006

**MEMBERS \$8
NON-MEMBERS
\$13**

FLOVAL

EQUIPMENT LTD.

250 RAYETTE ROAD, UNIT 1, CONCORD, ONTARIO L4K 2G6
TELEPHONE: (416) 669-4500 FAX: (416) 669-4905 TOLL FREE: 1-800-387-3784

As a Supplier of Valves, Control Valves and Process Control Equipment, we are proud to introduce you to our wide range of products.

ANNUBAR / DSC	Flow Measurement Equipment / Energy Monitoring System
ASCOELECTRIC	Solenoid Valves, Pressure and Temperature Switches
B.N.W.	Sluice Gates, Mud and Flap Valves
CHEMLINE	Plastic Valves & Piping Systems
CONTINENTAL DISC	Rupture Disc
DEZURIK	Plug, Butterfly, V-Ported Ball Valves and Knife Gates
FLOW RESEARCH	Flow Instrumentation
K&M VALVE CO.	Sliding Stem and Rotary Control Valves
KOMAX	In-Line Motionless Mixers
KREBS ENGINEER	Cyclones and Parts
NORTHERN VIBRATOR	Industrial Vibrators & Bin Cleaning Systems
SHAN ROD INC.	Fabricated Butterfly Valves and Flexible Connectors
WAHLCO	Specialty Dampers and Metal Expansion Joints
WORCESTER	Ball and Control Valves

BRANCH OFFICES

891 ALLOY PLACE
THUNDER BAY, ONTARIO
P7B 6C4
(807) 344-4686

767 BARRY DOWNE RD.
3RD FLOOR
SUDBURY, ONTARIO
P3A 3T6
(705) 560-4811

6 GURDWARA ROAD
SUITE 200
NEPEAN, ONTARIO
K2E 8A3
(613) 226-2299

NELES-JAMESBURY

BALL VALVES

BUTTERFLY VALVES

MANUAL & AUTOMATED

CONTROL VALVES, ROTARY & LINEAR

ACTUATORS, POSITIONERS & SWITCHES

METAL SEAT TECHNOLOGY

NOISE & CAVITATION CONTROL

CONTROL VALVE SIZING

NOISE PREDICTION

APPLICATION ENGINEERING

FUGITIVE EMISSION CONTROL

CERAMIC & FIBERGLASS VALVES

FACTORY AUTHORIZED SERVICE CENTRE

NELES-JAMESBURY

PHONE 519-336-3025 FAX 519-336-0763

atlas alloys

ENGINEERED PRODUCTS DIVISION

NELES-JAMESBURY

WESTLOCK CONTROLS

SMITH VALVE

ISHIDA

KITZ

**COMPLETE IN-HOUSE AUTOMATION, ASSEMBLY
AND VALVE TESTING FACILITY**

QMI REGISTERED TO CAN3-Z299.4-1985

MCCR REGISTERED FOR THE MODIFICATION OF FITTINGS, FLANGES & VALVES

FLUIDS HANDLING PRODUCTS

INSTRUMENTATION TUBING

FASTENERS/WELDING PRODUCTS

atlas alloys

PHONE 519-336-0530 FAX 519-336-0797

V A R I A N

A N A L Y T I C A L

I N S T R U M E N T S

Varian Associates, Inc., is a diversified, international company that designs, manufactures, and markets high technology systems and components worldwide. The company has factories in eight countries and over 100 sales and service offices throughout the world. Major product lines include analytical instruments, health care systems, semiconductor wafer fabrication systems, electron devices, and vacuum equipment and components.

At Varian, providing quality products and services is not just good business practice, it is our license to exist. As a matter of policy, Varian is committed to a process of continuous improvement which demands that we understand and then meet or exceed the needs and expectations of our customers in everything we do. In 1992, the plants responsible for chromatography, optical spectroscopy, and nuclear magnetic resonance products, among others, were registered to ISO 9000 series standards, rigorous quality benchmarks used worldwide to gauge a company's commitment to quality. When you work with Varian, you join forces with a partner committed to delivering world-class quality, reliability, and value — a partner for life.



*Chromatography Systems and
Optical Spectroscopy Instruments*



*Nuclear Magnetic Resonance
Instruments*

varian 
1-800-387-2216

ATOMIC ABSORPTION SPECTROMETERS

UV-VIS-NIR SPECTROPHOTOMETERS

SAMPLE PREPARATION PRODUCTS

NUCLEAR MAGNETIC RESONANCE
SPECTROMETERS

INDUCTIVELY COUPLED PLASMA
SPECTROMETERS (AES AND MS)

GAS CHROMATOGRAPHS

GAS CHROMATOGRAPH/
MASS SPECTROMETERS

LIQUID CHROMATOGRAPHS

SAMPLING DEVICES FOR GC AND GC/MS

DATA SYSTEMS AND LIMS

varian 

Chris Walker
Marketing Representative, Instruments

Varian Canada Inc.
6705 Millcreek Drive, Unit #5
Mississauga, Ontario L5N 5R9
Local 905-819-8181
Toll Free: 1-800-387-2216
Fax: 905-819-8348

ISA Perspectives



Why is Bob Kelly peering down the mic?

Because he had to chair the last dinner meeting while Bill was in Florida.

Mike Spearman (right) explains to Ron Thurier the Sarnia Section BBS set-up.

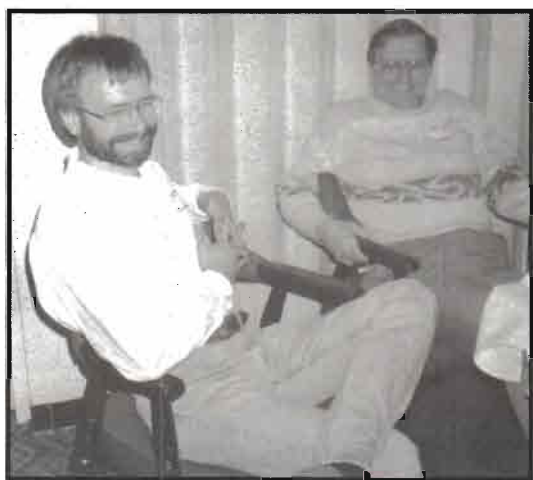


Guest speaker, Ken Hargraves (left), receives a token of appreciation from Program Chairman, Irvin Hawkes.

ISA Perspectives



*January
Dinner Meeting
participants.*

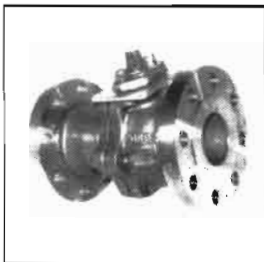


KTM

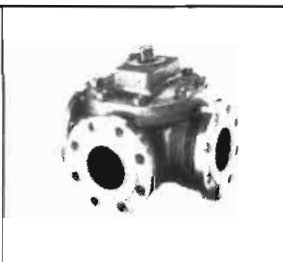
PRODUCTS INC.

**KTM Manufactures the
most complete line of
quality ball valves
available ...anywhere!**

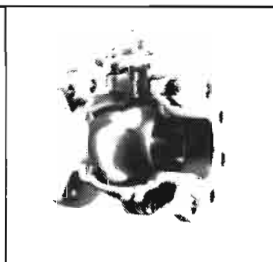
**2-way, 3-way, Unibody, Split-body, and Welded body Ball Valves.
"Super-Teflon", High-Temp. (500°C), and Metal seats.**



**"OMNI"
SPLIT-BODY TYPE**



**THREE WAY VALVES
FOUR SEATED "L"
OR "T" PORT
TWO SEATED "L" PORT**



**METAL SEATED
BALL VALVES**

As a major supplier of ball valves, we can provide the exact ball valves, and actuators to meet the most demanding application requirements. KTM ball valves set industry standards for quality and performance.



ASSOCIATED VALVE CORPORATION LTD.

4404 - 97 Street, Edmonton, Alberta T6E 5R9 • Toll Free: 1-800-661-7363

Phone: (403) 436-9030 • Fax: (403) 436-9036

401 The West Mall Suite 500, Etobicoke, ON M9C 5J5

Phone: (416) 695-8200 • Fax (416) 695-8202

KTM Represented in Sarnia by



REGIONAL PROCESS EQUIPMENT



Instrument Society of America

SARNIA SECTION DONATES

TO ALL SARNIA SECTION MEMBERS:

In March of this year, your executive will donate to St. Joseph's palliative care unit a "Pharmacia Cadd 5800" infusion pump. The cost of this unit is \$4200 plus taxes.

The Cadd 5800 is the newest computerized ambulatory drug delivery system available at the present time, that will meet the criteria set by the Ontario Health Care system and the College of Physicians and Surgeons.

Key features of the Cadd 5800 infusion pump are:

- Continuous drug doses are delivered around the clock
- The patient controls the extra drug doses required during peak pain periods.
- A precise patient program is locked in to eliminate the possibilities of overdoses.
- It is portable and easily managed.

In order for a patient to receive an infusion pump, a palliative physician evaluates each potential patient and he or she must have interactable pain, interactable nausea, or the inability to swallow before being granted a pump.

Ann Baker, Nurse Manager in the palliative care unit, was most happy for our support in donating the Cadd 5800 pump.

VICE PRESIDENT

LARRY J. CORBETT

Ten Success Rules

- 1. Put success before amusement.*
- 2. Learn something every day.*
- 3. Cut free from routine.*
- 4. Concentrate on net profits.*
- 5. Make your services known.*
- 6. Never worry over trifles.*
- 7. Shape your decisions quickly.*
- 8. Acquire skill and technique.*
- 9. Deserve loyalty and co-operation.*
- 10. Value character above all.*

—Herbert N. Casson

MEET THE PEOPLE WHO CAN HELP YOUR CAREER

Open a whole new world and put your career on the fast track.

As a member of ISA, you'll be part of an international network of over 43,000 instrumentation and control professionals - a network for getting ahead, meeting people, exchanging information and keeping up.

ISA membership provides you with resources essential to career advancement. You'll have access to information on the latest equipment and technology through monthly publications and special symposia. You'll have opportunities to exchange solutions to problems and discuss practical applications with engineers, managers, scientists, educators, researchers and technicians. By participating in ISA section and district activities, you'll meet others, close to home, who can offer valuable contacts for career advancement. And, by joining technical divisions in your areas of specialization, you'll learn, first-hand, of technological progress as it occurs.

Getting Ahead Instead Of Just Keeping Up.

Enhance your leadership skills through formal ISA leadership development programs. Update and improve your technical skills through ISA training courses, conducted in our state-of-the-art Training Centre in Raleigh, North Carolina, or at regional locations across the U.S., or even on-site in your plant.

Keep abreast of the latest applications with your free subscription to INTECH® Magazine, and use ISA media products to expand your technology base. As an ISA member, books, videos, training materials, and conferences and exhibitions will be yours at a special member discount.

Influence Your Peers And Enjoy The Recognition You Deserve.

Assume a position of responsibility in your section or district, opening doors to a more influential leadership opportunity. Or, participate in the development of ISA Standards and Practices which are often adopted by industry around the world. Your accomplishments could achieve recognition through ISA honors and awards programs and, at the same time, effect progress for your company and your career.

Join Now And Stay One Step Ahead.

Your annual ISA membership includes:

- A FREE subscription to INTECH®, the leading international journal of instrumentation.
- A FREE copy of the annual *ISA Directory of Instrumentation*®, featuring manufacturers listings, specifications and information.
- The latest ISA Standards & Practices - guidelines that improve performance, reduce costs, promote safety and improve communication - FREE on request, as issued.
- Discounts on ISA publications and training materials, including books, journals, directories, subscription services, reprints, software, videotapes and interactive videodisc instructional materials.
- Discounts on internationally-recognized ISA conferences and exhibitions, training courses and symposia, which provide unique opportunities to enhance your personal potential.
- Worldwide contacts within your area of specialization.
- Opportunities for peer recognition for your accomplishments and contributions to ISA.

Seize the opportunity. Become a member of the ISA global network.

Call or write to ISA today.

INSTRUMENTATION SERVICES

FLOW	Magnetic Flowmeters Strain Gauge Flowmeters Open Channel Ultrasonic Flowmeters Viscosity Monitoring Absolute Gauge and Differential Pressure Transmitters Signal Conditioning Modules Open channel (Robotic Microprocessor flowmeters) Insertion Sensor Flowmeters (Magtap)
VALVE POSITIONERS	Pneumatic, Single & Double Acting Electric/Pneumatic
ACTUATORS	Pneumatic
PUMPS	Vacuum (Stainless Steel Bellows) Chemical Feed Self Priming Centrifugal
WASTE TREATMENT SYSTEMS	Automatic Gravity Pressure & Vacuum Filtration Systems Waste Water Portable Samplers Sludge Samplers Effluent Samplers
FILTRATION SYSTEMS	Chemical Oil Reconditioning Station
ANALYTICAL	Dissolved Oxygen Systems — PPM PPB Suspended Solids Monitors Sludge Level Detectors — Optical and Ultrasonic Sludge Interface Detection — Ultrasonic Laboratory Instruments pH 0-14 or 2-12 pH ORP & Specific ION Measurement Sludge Samplers Effluent Samplers
ELECTRONIC MANUFACTURING INDUSTRY	Environmental Test Chambers Semiconduction Handlers Programmable Semi Automatic/Manual Water Probing Station & Accessories
TEST & CALIBRATION	Complete Range of Testing and Calibration Monitors for Process Industries
TEMPERATURE CONTROL	Mobile Temperature Computer Control Probe
PORTABLE EYE WASH STATION	Emergency Portable Eye Wash Station
FLANGE SPREADER	Peineman Flange Spreader

CANCOPPAS LIMITED

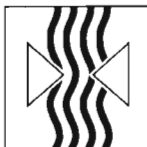
1045 South Service Road West

Oakville, Ontario L6L 6K3

Tel : (905) 847-2740 Fax: (905) 827-6984

Endress + Hauser Canada Ltd.

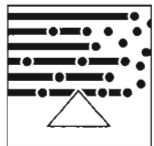
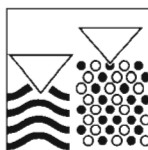
FLOW



Magnetic Flowmeters:
Vario/Tech/Speed Exi-mags,
Autozero 3000 & Fluitector.
Coriolis Mass Flowmeter
straight-tubed 'm' point.
Vortex Meter with the E+H
patented DSC sensor.

Level detection and
measurement by:
Conductivity, Vibronics,
Capacitance, Hydrostatic;
Ultrasonic, Microwave &
Gamma - the *widest* choice
by any manufacturer.

LEVEL

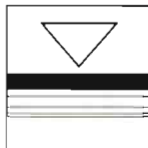


SOLIDS

Movement and mass
flow measurement using
Doppler, Inclined Plate
Weigher, Belt Weigher
and *unique* Cross-
Correlation Granucor for
two phase flow.

BULK

PRESSURE



Cerabar family of Pressure
Transmitters & Switches and
Deltabar Differential
Pressure Transmitters with
the *first* single chamber self-
checking ceramic cell.



MOISTURE

Full range of Hygrometers
and Relative Humidity Meters
using polymer, omega and
smart aluminum oxide
sensors for *all* your moisture
Measurement needs in both
gases and liquids.

Call

1-800-668-3199 (ext. 101)

for the name of your local E+H
Representative.

Endress + Hauser

Measurement for Automation.



Meeting Dates

MEMBERSHIP DINNER MEETINGS

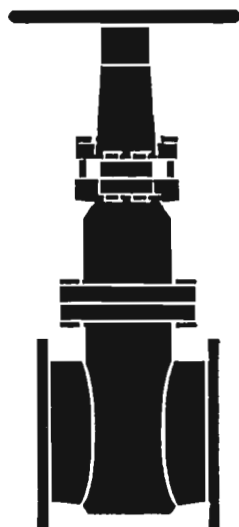
Date	Place
September 27, 1993	Sarnia Golf & Curling Club
November 29, 1993	Sarnia Golf & Curling Club
January 24, 1994	Sarnia Golf & Curling Club
March 28, 1994	Sarnia Golf & Curling Club
May 30, 1994	Sarnia Golf & Curling Club

Time: Cocktails @ 6:00 p.m. **Dinner:** @ 7:00 p.m.

Executive Meetings

Date	Place
September 13, 1993	Drawbridge Inn
November 8, 1993	Drawbridge Inn
January 10, 1994	Drawbridge Inn
March 7, 1994	Drawbridge Inn
April 25, 1994	Drawbridge Inn

Time: 7:00 p.m.



Professional Valve Service Ltd.

Quality Service For Over 25 Yrs.

859 Ontario Street, N7T 1N1

P.O. Box 761 Sarnia, Ontario N7T 7J7

Tel: (519) 336-3933 • Fax: (519) 336-6157



24 HR SERVICE



In the U.S.: P.O. Box 610097, Port Huron, MI, Zip Code 4806-0097

**SSCAN** TECHNOLOGIES

SAFETY SUPPLY CANADA

Bringing You The Finest Instrument Lines In The World.**INDUSTRIAL
SCIENTIFIC**

- Portable Gas Detector Instruments

Lucas

- Sound Level Meters
- Noise Measurement Instruments

BACHARACH

- Combustible and Toxic Gas Detection and Measurement Systems

GMD SYSTEMS, INC.

- Toxic Gas Detection and Measurement Systems

**environnement s.a.**

- Environmental Gas Analyzers

AMETEK

- Industrial Hygiene Pumps
- Noise Monitors and Accessories

*At SSCAN TECHNOLOGIES,**we strive to bring**you the best**instrumentation**products,**excellent service and**technical expertise.**Call us today for**the full story.***HOLADAY**

- Non Ionizing Radiation Test Equipment

**INDUSTRIES**

- Radiation Monitors

EXTREL

- Process Mass Spectrometry

**Kam
Controls
Incorporated®**

- Ultrasonic Liquid Flowmeters

Dräger

- Detector Tubes



- Heat Stress Measurement
- Relative Humidity

**Thermo Environmental
Instruments Inc.**

- Portable Environmental Analyzers

SSCAN TECHNOLOGIES

A Div. of Safety Supply Canada
90 West Beaver Creek Road
Richmond Hill, Ontario L4B 1E7

Telephone: (905) 731-8975
Fax: (905) 731-4723
Head Office Location

Branches Across Canada

Sarnia
Tel: (519) 337-8895
Fax: (519) 337-4179

Ottawa
Tel: (613) 722-1923
Fax: (613) 722-3590

Sudbury
Tel: (705) 671-3058
Fax: (705) 671-1561

Montreal
Tel: (514) 332-5903
Fax: (514) 332-4584

Winnipeg
Tel: (204) 949-5810
Fax: (519) 474-2115
1-800-661-2173

Dartmouth
Tel: (902) 468-9399
Fax: (902) 468-2655

Calgary
Tel: (403) 243-7300
Fax: (403) 243-2233

Edmonton
Tel: (403) 437-7680
Fax: (403) 436-0377

Burnaby
Tel: (604) 421-9042
Fax: (604) 421-9041

"ENGINEERED PRODUCTS AND SERVICE ACROSS CANADA"



- air quality analyzers
- meets EPA specifications
- SO₂, H₂S, NO, NO_x and Ozone

AMETEK

- photometric process analyzers
- moisture analyzers
- process diode array
- emission monitors



Applied Automation
Hartmann & Braun

- gas chromatographs
- octane FTIR
- continuous analyzers (UV, IR, TC & O₂)

Berthold Systems Inc.

- radioactive measurement
- level, density, massflow, basis weight, belt weigher, ash content, sulphur & lead
- microwave moisture measurement

FISONS

Instruments

- process & environmental mass spectrometers
- pH and ORP measurement systems
- dissolved oxygen analyzers
- turbidity

INGOLD



- flow rate controllers

LAND

combustion

- opacity monitors
- CO monitors
- portable flue gas analyzers

Omni

- liquid and gas flow computers



Capabilities:

- applications engineering
- manufacturing of integrated systems
- start-up supervision
- staff training
- service centres across Canada
- inventory of equipment and parts
- complete performance warranty

Westech Industrial Ltd.

1001, 1149 Vanier Rd.

Sarnia, Ontario

N7S 3Y6

Tel: (519) 383-6320

Fax: (519) 383-6322

Solartron

- liquid and gas densitometers
- viscosity

Z sieger

- combustible and toxic gas detection
- infra-red open path hydrocarbon gas detection
- infra-red point gas detection
- portable gas detection



TA
Instruments, Inc.

- thermal analyzers



WHESSOE VAREC

- tank breather vents
- flame arresters
- manhole covers, gauge hatches
- tank level gauges
- tank farm inventory management systems
- waste gas control equipment
- waste gas burners



- packaged analyzer systems and shelters
- continuous emission monitoring systems
- flame detonation arresters



- portable sample vessels
- manual and automated sample systems
- odorant injection systems

Halifax 902-865-5486 • Montreal 514-636-8761 • Toronto 905-890-5265 • Sarnia 519-383-6320
Saskatoon 306-652-2300 • Calgary 403-252-8803 • Edmonton 403-464-4740 • B.C. 604-278-5112

CENTURY VALVE & MACHINE LTD.
1915 - 30 AVENUE, CALGARY, AB T2E 6Z5
TEL: (403) 250-9742 FAX: (403) 250-8624

REPRESENTED BY:

BRIAN CONTROLS (519) 337-7591

MANUFACTURERS OF
CM
MANIFOLD VALVES
GAUGE VALVES
NEEDLE VALVES
BLEED VALVES
GAUGE SIPHONS
THERMOWELLS



J & M INDUSTRIAL SUPPLY LIMITED

2899 STEELES AVE., W., UNIT 4 DOWNSVIEW, ONTARIO CANADA M3J 3A1 / TEL (416) 665-2300 FAX (416) 665-7530

**Representing The Experts In
Measurement and Control**

Badger Meter Inc.

*Liquid Meters and Batching Control Systems
Ultrasonic Flowmeters, Open Channel and Closed Pipe,
Flow Tubes, Ultrasonic Level*

Wallace & Tiernan Inc.

*Flowmeters • Chlorinators
Metering Pumps • Feeders • Calibrators
High Precision Pressure Gauges • Lime Slakers*

Haenni Instruments Inc.

Pressure Gauges • Instruments

Dynapar

Digital Meters and Encoders

K-Tek

Level and PH Indicators Transmitters

Where You Get Old Fashioned Service

CONVAL EQUIPMENT

FEATURING:

ASCO JOUCOMATIC

PROTECTOSEAL®

ASHCROFT **DRESSER**

Bellofram |||

H.D. BAUMANN
CONTROL VALVES

KAYE & MAC DONALD

TL **T RUELINE**
VALVE CORPORATION

MCC POWERS
PROCESS CONTROL

conval

111 Finch Ave. West, Unit 39
Downsview, Ontario
M3J 2E5
1-800-265-1430

News Release

Bailey Canada

Bailey Canada is pleased to announce that they have appointed TubeTech Limited as their exclusive representative for southwestern Ontario.

Established for more than 35 years in southern Ontario, TubeTech's commitment to customer service is second to none.

Together, Bailey and TubeTech look forward to meeting your requirements for quality instrumentation products, analyzers and small systems.

Sarnia Piping Specialties

Is pleased to announce that we now represent LEEDS AND NORTHRUP for all of southwestern Ontario.

This line features Liquid Analytical Instrumentation (PH/ORP Conductivity/ Resistivity Measurement), Speedomax for data acquisition, Max 1000, Micromax 2, Support Services. See Leeds and Northrup ad in this month's annunciator.

Ovantum Sales Inc.

Ovantum Sales Inc. is pleased to announce their appointment as distributor for ACTION INSTRUMENTS manufacturer of Signal Conditioning Devices, Transmitters, Alarms, Controllers and Indicators and OHIO Semitronics, Inc. producers of Electrical Transducers and Monitoring Equipment.

We are pleased to announce that G.L. Stebbins Co. (1982) Ltd. and LTS Sales Ltd. have favoured Ovantum Sales Inc. with the representation of their product lines in southwestern Ontario as encompassed by the counties of Middlesex, Lambton, Essex, Kent and Elgin.

Note: To have your News Release or Career Opportunities published in the Annunciator, please forward the information to:

ISA Sarnia Section

Box 206

Sarnia, Ontario / N7T 7H9

Att: Newsletter

Rosemount Instruments

Your Single Source ... 1-800-268-1151
Toll Free

FAST TRACK means Transmitters, Analyzers,
Sensors and Flowmeters **IN STOCK**,
ready for **NEXT DAY DELIVERY**.

CALL OUR ORDER DESK
TOLL FREE!



FISHER-ROSEMOUNT

Rosemount Instruments Ltd
515 Vidal Street South
Sarnia, Ontario • N7T 2V5
Phone: (519) 339-9701
Fax: (519) 339-9702

CALGARY • VANCOUVER • EDMONTON • SASKATOON • WINNIPEG • SARNIA • OTTAWA • TORONTO • SUDBURY • MONTREAL • MONCTON • HALIFAX

Controls

Equipment (Mississauga) Limited

NEW !

1-800-268-9094

2410 Tedlo Street, Unit 15
Mississauga, Ontario
L5A 3V3
Phone (905) 275-7440
Fax (905) 275-7440

Call us for all your Valve needs


 **VALTEK**

DANIEL

Automax
CONTROLS INC.

 **TRANSMOTION inc.**

DURCO

 **Appalachian Controls Co.**

Kämmer
Valves

 **ATLANTIC GROUP INC.**
Specialty Valves and Process Equipment

KITZ


Bebco Industries


CLARKSON

RSA

"Over 100 Years of Process Control and Instrumentation Experience to Serve You"



INDUSTRIES CANADA

PRESENTS

**SIZE MASTER
PLUS III
INDUSTRY'S
MOST
EFFICIENT
SIZING AND
SELECTION
PROGRAM.**



1022 Gladwish Drive
Sarnia, Ontario
Tel. (519) 332-0141

Why Salespeople Fail

LACK OF POSITIVE ATTITUDE

When you assumed the leadership role of sales manager, you also assumed the sum total of the organization's strengths and weaknesses. If the strengths more than offset the weaknesses, you will be successful. But to whatever degree your salespeople fail, your own success is hindered, and the company fails. A company can endure only with a consistent exchange of its products or services for money. The results obtained by the sales force are, then, vital to the life of the organization.

It is essential to the success of your company and your career that salespeople continue to sell. It is your primary responsibility as sales manager to see that the people on your sales force succeed. Naturally, in spite of your best efforts, some salespeople will fail. But the more skilled you become in recognizing danger signs and in taking steps to prevent failure on an individual basis, the more successful you will be. Because a good portion of your time is spent in identifying and dealing with individual needs, it will help to know why some salespeople fail while others succeed. You need to learn to recognize the danger signals that tell you your help is needed.

Most of the reasons for failure in selling can be traced to the lack of a specific quality of personality or lack of a definite skill related to selling. Salespeople who are not succeeding to the degree they should, often lack personal motivation based on specific personal goals. They may also lack the knowledge and experience necessary to develop good selling skills. As a result, they are deficient in self-confidence and lack determination to stick to the job.

Other salespeople fail because they have inadequate training in the basic selling skills - prospecting, setting up sales interviews, or managing their time effectively. Still others fail because they lack **ego drive** and **empathy** - the qualities that together impart vitality to the sales situation and make it possible to bring presentation to a successful close.

Salespeople may lack any one or any combination of these qualities that the majority of successful salespeople have developed to a relatively high degree. A deficiency in one of these qualities is likely to produce a negative attitude - the most frequently observed characteristic of salespeople who fail. When you as a sales manager detect a negative attitude and find a way to help the salesperson overcome it, you pave the way for development of a greater degree of each quality that marks successful salespeople. A positive attitude is a self-developed habit of confidence and self-assurance; it makes successful selling a predictable result of activity, rather than an occasional accident.

When your sales people learn to adopt a positive attitude, they have available the most important tool for success in selling. A positive attitude gives them these benefits:

1. GOAL DIRECTION

Salespeople with a positive attitude know exactly where they stand now and where they want to go. They have a clearly defined personal plan of action with short-range and long-range goals. Their goals provide a definite reason for making every sale.

2. FLEXIBILITY

A positive attitude enables salespeople to remain flexible. They are able to alter or modify selling tactics to fit into any selling institution.

3. ANTICIPATING OF THE FUTURE

Salespeople with a positive attitude can plan ahead and anticipate possible changes that affect their sales activities. It is then possible to make any needed temporary readjustments.

4. RELATIONSHIP TO THE ORGANIZATION

Salespeople with positive attitudes function equally well in individual selling situations and as cooperative members of a sales team.

All these reflections of positive attitudes are an advantage for you, the sales manager. Your problems in motivation would evaporate if every member of your sales force operated with this kind of positive expectancy. While this is highly desirable, it isn't probable. But it is much more likely to happen if you take definite action to make it come to pass.

THIS ARTICLE COMPLIMENTS OF GUY BEAUCHAMP OF MOTIVA.

The Best Measure of Our Success.

Alcan Smelters and Chemicals Ltd.



Alcan Smelters and Chemicals Ltd.

11 March, 1993

Mr. Carl Rosenquist
President
Willer Engineering Limited
472 Consumers Road
Willowdale, Ontario
M2J 1P8

Dear Carl:

Just a note of thanks to you and your people for your ongoing assistance.

I have always been able to count on Willer for the information we need to make an informed purchase decision. Your people are always helpful and easy to deal with, and your understanding of our needs has been clearly apparent. Furthermore, product selection and quality are always first rate.

I look forward to doing further business together.

Sincerely,

Belle Patin
Gilles Potvin

GPO:PVE

Copies to: Mr. André Couturier

Alcan Smelters and Chemicals Ltd.



WILLER
ENGINEERING LIMITED

Temperature • Pressure • Flow • Humidity • Analyzers

1960 **33** YEARS 1993

Your satisfaction is our success

Toronto

(416) 499-4421

Fax: (416) 499-0816

Montreal

(514) 333-8555

Fax: (514) 333-4662

Sarnia

(519) 336-3006

Fax: (519) 344-0607

Sudbury

(705) 673-8900

Fax: (705) 673-8806

Dartmouth

(902) 469-4400

Fax: (902) 463-1010

Send for our latest Product News Bulletin.

Now Produced in Canada
Klinger Magnetic Level Gauge.
Standard or customized -
to you in 2 weeks or less.

Davis Controls manufacture and warehouse across Canada to ensure fast delivery of custom and standard products. You also get the benefit of our broad application experience, problem solving success and ability to customize to your specifications.

Magnetic level gauges eliminate the visual problems, hazards and maintenance problems of glass level gauges. The gauge operates on the principle of magnetic interaction between an engineered float in a vessel and a proprietary display outside the vessel. Transducers add remote continuous read-out capability as required.

Ask for literature and catalogue today. Davis Controls represent or distribute such well known brand names as Barber Colman, Dwyer, Endress+Hauser, +GF+, Honeywell, HyCal, Mercoind, Mitsubishi PLCs, Polysonics, Charles F. Warrick.

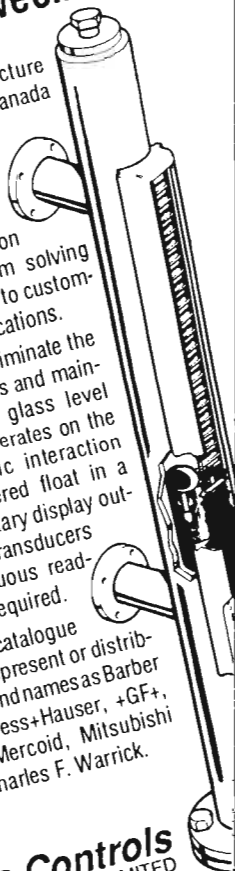


Davis Controls
LIMITED

2200 BRISTOL CIRCLE
OAKVILLE, ONTARIO L6H 5P3

Tel: (905) 829-2000 • Fax: (905) 829-2630

LONDON, ONT. OFFICE TEL/FAX (519) 641-8953



CASHCO

- PNEUMATIC CONTROL VALVES
- ELECTRIC CONTROL VALVES
- REGULATORS

GGOSCO ENGINEERING LTD.

- KINETROL VANE ACTUATORS
- FLOWTEK BALL VALVES
- GGOSCO NEEDLE VALVES
- PROXIMITY LIMIT SWITCHES
- GGOSCO STEAM TEST VALVES
- VALVE BRACKETS & COUPLINGS

NUMATICS

- FILTER/REGULATOR/LUBRICATOR
- SOLENOID VALVES
- AIR CYLINDERS
- ENERTROL SHOCK ABSORBERS
- AIR LOGIC CONTROL
- PANELS - Pneumatic & Electrical

MAGNETROL

- LEVEL CONTROLS: FLOAT, CAPACITANCE, ULTRASONIC
- FLOW CONTROLS

M.T.L.

- INTRINSIC SAFE BARRIERS
- INTRINSIC SAFE SYSTEMS

PRIBUSIN

- SIGNAL CONDITIONERS, CONTROLLERS, TRANSMITTERS
- POWER SUPPLIES

THERMO-KINETICS

- THERMOCOUPLES, RTDs, THERMOWELLS, INFRARED THERMOMETERS
- TEMPERATURE CONTROLLERS, RECORDERS, SCANNERS



PROVINCIAL CONTROLS

DIVISION OF 660567 ONTARIO LIMITED

P.O. BOX 2946
373 VIDAL ST. S., SARNIA, ONT. N7T 7W2

TELEPHONE: (519) 336-7301
FAX: (519) 336-8082

FIBERGLAS INSTRUMENT ENCLOSURES

FITTINGS

- IMPERIAL EASTMAN
- LEGRIS

CJEN COUPLERS

HANSEN QUIK CONNECTS

PRESSURE & TEMPERATURE SWITCHES

PIPING ACCESSORIES

- SS & TEFLON HOSE ASSEMBLIES

BURKERT

- PRECISION VALVES FOR PROCESS CONTROL.

PERMACAL GAUGES

- DIRECT DRIVE TEST AND PROCESS GAUGES

PRESSURE GAUGES

ORANGE RESEARCH

- DIFFERENTIAL PRESSURE INSTRUMENTS - PISTON & DIAPHRAGM.

BIMETAL INDUSTRIAL & TEST THERMOMETER

TIME TO TEE UP!

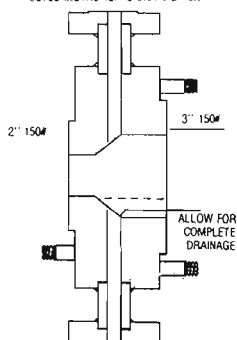
Level Instruments Require Reducing Flanges: Instrument Tees have become an accepted product for draining fluid from the diaphragm of Level Instruments (see below). It used to be that the device did not comply with pipe specification requirements. The argument most often used was that the pipe specification break was at the vessel valve. This "reducing filler flange" now has a Canadian Registration Number which makes it acceptable to pipe specifications.

Specifications: Instrument Tee for draining/venting pressure instruments with 3" 150# diaphragm seals:

- small volume to drain
- easy installation
- specify 1" x 3", 2" x 3", or 3" x 3" 150# or 300# flange
- material 316/L, Monel, Hastalloy, A350/LF2 or as required
- one or two 3/4" taps
- cost effective
- concentric or eccentric style (hot gases)
- hydrostatic tested
- device is registered with MCCR
- eliminates messy eccentric pipe stools
- available from stock (316/L)

INSTRUMENTATION & FITTING MANUFACTURER
1323 LOUGAR AVENUE, SARNIA, ONTARIO N7S 5N5
TEL: (519) 332-1388 FAX: (519) 332-3280
1-800-563-0292

Quality Assurance to ISO 9003
STANDARD 150#/300#
REDUCING FILLER FLANGE FOR
LEVEL INSTRUMENTS DRAIN & VENT



The
LAMBTON COLLEGE



ISA TRAINING MATERIALS DISTRIBUTION CENTRE

Instrument Society of America

IS NOW OPEN

HOURS: 8:30 A.M. - 4:00 P.M. EDT June - August
8:30 A.M. - 4:30 P.M. EST September - May

TELEPHONE: (519) 542-7751 Ext. 358
(519) 542-5033 Direct Line
(519) 542-1017 Fax

ADDRESS

Lambton College, ISA Distribution Centre, 1457 London Road
P.O. Box 969, Sarnia, Ontario, Canada N7T 7K4

INDUSTRIAL PROJECTS LTD.

204-7100 WOODBINE AVENUE

Markham, Ontario

L3R 5J2

REPRESENTING

Conant Controls Inc.

Selector Valves
Venting Valves
Stack Valves
Electric and Pneumatic Operators
Specials, Name Plates



**THE ELECTRON
MACHINE
CORPORATION**



**INTERNATIONAL
SENSOR TECHNOLOGY**



RONAN



RONAN

SUB



**KING
INSTRUMENT
COMPANY**

In-Line Refractometers
Black Liquor Analyzers
Stock Consistency Transmitters
Wire Gauges

Toxic and Combustible Gas Analyzers

Monitoring Systems
Annunciators, Temperature and Vibration Monitors,
Two and Four Wire Transmitters, Lamp Cabinets, Graphic
Displays, Motion Detection, Leak Detection, Intrinsically
Safe Barriers, Calibrators

Nuclear Measurement - Density, Level,
Mass Flow and Weight

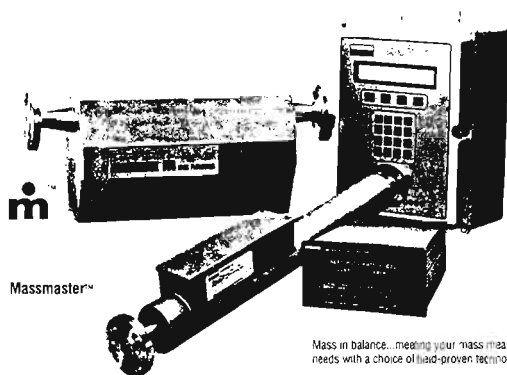
Pressure and Temperature Switches
Level and Flow Switches

Flow Meters - Rotometer

Tel: 905-477-0017

Fax: 905-477-1495

Schlumberger Industries the leader in mass measurement solutions.



- Highest accuracy mass or density
- Lowest pressure drop
- More standard features and outputs
- Secondary Containment
Asme Section 8 and B31.3

Mass in balance... meeting your mass measurement needs with a choice of fluid-proven technologies

Call your Sarnia liquid flow measurement specialists :

SPS

Sarnia Piping Specialties Ltd.

Tel.(519) 336-8820 fax (519) 336-2033

Start to Finish...Fisher Service is your control valve repair expert.



No other organization offers more expertise in control valve repair than Fisher Service Company.

Fisher Service Company can perform expert valve repairs either in-house or onsite at customer locations.

Call your local Fisher-Rosemount Sales Representative today to find out more.

FISHER SERVICE COMPANY
(905) 333-1500

5510 HARVESTER ROAD,
BURLINGTON, ONTARIO L7L 5V4

FISHER

FISHER-ROSEMOUNT

BEP Bestobell
ENGINEERING PRODUCTS

SARNIA - Gary Coles

Telephone (519) 542-4554
Fax (519) 542-3686

LEVEL CONTROL

- Mobrey
- Madison
- Proximity
- Lumenite

FLOW MEASUREMENT

- Erdco
- Mobrey
- Oilgear

WATER QUALITY ANALYZERS

- Zullig
- KDG Mobrey

TEMPERATURE SENSING

- Wahl Instrument
- Armtec Industries

CONTROL VALVES

- Kammer

FIRE PROTECTIVE ENCLOSURES

- Darmatt

PRE-INSULATED TUBING

- Dekoron / Unitherm

STEAM TRAPS & TRAP TESTERS

- Bestobell

BUTTERFLY VALVES

- Tomoe
- Tricentric

CLOSED LOOP SAMPLING

- Texas Sampling Inc.

FIRE DETECTION

- Armtec

Honeywell—The World's leading core control system supplier.

Consistent system evolution

Since 1974 when Honeywell introduced TDC 3000, the world's first microprocessor-based distributed control system, there has been a *proven* commitment to improve the product platform via the addition of hardware or software enhancements using the latest technology.

Our aim? To keep customers at the competitive edge. Their Honeywell systems can be integrated with Tomorrow's products.

Fact

- Over 4,000 TDC 3000 systems are installed worldwide
- TDC 3000 systems help produce:
 - half the world's gasoline
 - 40 million metric tons of paper products annually
 - ⅓ of the world's chemical fertilizers
 - ¾ of the world's de-salinated water

Beyond basic control

Advanced Control Solutions from Honeywell are the next logical steps in the evolution of your control strategies. They are designed to improve your process and operations and squeeze out extra profits from your production investments. And customers report that they start seeing significant paybacks within weeks.

From sensors to the boardroom

Whatever your control needs Honeywell has a complete range of advanced automation tools to choose from.

For accurate, dependable and cost-effective field instrumentation it's hard to beat the SMARTLINE family of 'Smart' pressure, temperature and flow transmitters.

Fact

- 13 of the top 15 North American pulp and paper manufacturers use the Honeywell ST 3000 pressure transmitter

For standalone applications, the LEADERLINE family of controllers and recorders is fast gaining a reputation for its impressive selection of cost/performance alternatives.

And of course, TDC's plant-wide automation architecture can connect all levels of information from the *sensor to the boardroom*. No other supplier can provide the broad range of truly integrated process-level and business-level system solutions.

Total support programs

Honeywell offers a portfolio of services that optimize system performance, maximize the use of all system features and extend system life.

System support ranges from on-call services to fully-defined support packages that provide comprehensive hardware and software support. On-site and classroom training is also available for successful implementation of automation projects.

In addition to system and product support of Honeywell equipment our BLANKET SERVICE™ program offers third party system service support on other manufacturers' industrial-related computers, PCs, PLCs, printers, terminals...you name it.

Project support ranges from technical and budgetary feasibility studies to installation and commissioning.

Fact

- Honeywell has over 70 years experience in the support of process control and factory automation systems.
- Over 99% of customer systems pass *all* tests the first time.
- 98% on-time delivery.

Sarnia: (519) 383-3700

Hamilton: (905) 573-4550

Toronto: (416) 502-5000

Honeywell

Helping You Control Your World



SRP control systems Ltd.

12 YEARS SERVICE
1980 1992

SOLUTIONS FOR MEASUREMENT AND CONTROL

TORONTO

5155 Spectrum Way, Unit 19
Mississauga, ON L4W 5A1
(905) 238-2880
Fax (905) 238-9590
Toll Free 1-800-268-2605

PRINCE GEORGE

211 Gordon Crescent
Prince George, BC V2M 4R2
(604) 561-0622
Fax (604) 563-4752

CALGARY

114, 5151-3rd Street S.E.
Calgary, AB T2H 2X6
(403) 640-4119
Fax (403) 640-4142

PRODUCT LISTING

TEMPERATURE RELATIVE HUMIDITY PH CONDUCTIVITY DEWPOINT MOISTURE

- Thermocouple Assemblies
- Industrial Thermowell Assemblies
- RTD Assemblies
- Components
- Digital Temperature Controllers
- PH Recorders & Controllers
- Dewpoint Systems

- Thermocouple & RTD Elements
- High Temperature Assemblies
- M-System Temperature Transmitters
- Digital Temperature Indicators
- Relative Humidity Transmitters
- Conductivity Monitors/Controllers
- Moisture Content

PRESSURE

- Low Cost Solid State Pressure Sensors
- Precision Pressure Transmitters
- Aerospace/Military Pressure Transducers
- Low Cost Pilot and I-to-P Converters
- Digital Manometers and Barometers
- Air Data Test Sets
- Pressure Calibration and Testing Services
- Low Pressure Transmitters

- Druck Industrial & Process Pressure Transducers
- Druck CSA Intrinsically Safe Pressure Transmitters
- Plastic Melt Pressure Transducers and Transmitters
- Digital Pressure Gauges
- Portable Pilot Static Testers
- Automatic Calibration for Aircraft Instruments
- High Pressure Down Hole Transducers

SIGNAL CONDITIONERS LIGHTNING PROTECTION UNITS BARGRAPH INDICATORS DIGITAL PANEL METERS

- Field Mounted Two-wire Signal Conditioners
- M-System CSA Approved Isolators
- Transducer Signal Conditioning
- Power Transducers
- Computation Units
- Bargraph Indicators
- Instrumentation Amplifiers
- Programmable Transducer Amplifiers
- Low Cost Digital Process Meters

- Field Programmable Signal Conditioners
- Limit Alarms
- Power Supplies
- M-System Lightning Protection Units
- Frequency Transmitters
- Pneumatic Transducers
- Programmable Filter/Amplifiers
- Smart Digital Panel Meters

INTRINSIC SAFETY BARRIERS

- Plug-In Shunt Diode Safety Barriers
- Eicon Instruments, Isolators

- High Density Intrinsically Safe Isolated Barriers
- Transformer Isolated Barriers and Signal Conditioning

TEST MEASUREMENT AND CALIBRATION INSTRUMENTS

- Deadweight Testers
- Druck CSA Intrinsically Safe Portable Digital Pressure Indicators and Calibrators
- Digital Pressure Gauges
- Druck Portable Digital High Pressure Hydraulic Calibration Systems
- Pocket Digital Pressure Gauges
- Unomat Smart Loop Calibrator for Millamps
- A.S.L. Resistance Thermometry Bridge
- A.S.L. Temperature Calibration Baths
- A.S.L. Standards Psychrometer

- Unomat Frequency Tester & Calibrators
- Piston Gauges
- Druck Multichannel Portable Digital Pressure Indicator and Calibrator
- Druck Precision Pressure Controller/Calibrators
- Unomat Multi-Function Calibrators
- Pressure Calibration Services
- A.S.L. Automatic AC Resistance Bridge
- Precision Thermometer
- Low Pressure Calibrators

LEVEL FLOW

- Depth/Level Pressure Transducers and Transmitters
- Liquid Level Control Systems
- Leak Detection Systems
- Overfill Prevention Control Systems
- Flow Meters

- Tank Level Gauging
- Precise Liquid Inventory Management
- Vehicle & Railroad Grounding Systems
- Bottom Loading Systems
- Flow/Level Switches

POSITION DISPLACEMENT LOAD FORCE

- Rectilinear Position Transducers
- Linear Position and Velocity Transducers
- Linear Displacement Transducers
- Force Sensors

- Rotary Position Transducers
- Programmable Position Monitors
- Linear Position Indicators
- Load Cells

VIBRATION

- Low Cost Piezoresistive Accelerometers
- Instrumentation

- Velocity Sensors
- Monitors

RECORDERS

- Graphic Recording Systems
- Transient Data Recorders
- Instrumentation Recorders

- Digital Recording/Analysis Systems
- Transient Digitizers
- Waveform Digitizers

DATA ACQUISITION AND CONTROL SYSTEMS

- Transient Acquisition & Analysis Systems
- Static & Dynamic Data Acquisition Systems
- Portable Battery-Powered Data Acquisition Systems

- Signal Capture & Analysis Systems
- Camac (ANSI/IEEE) Based Data Acquisition Systems

• SALES • SERVICE • CALIBRATION • AUTO-RECALL • ON-SITE •

Join ISA Today!

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 Services 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 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 Educational 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. If you do not want your name exchanged, 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: Others: Describe _____

What is the primary end product manufactured or service performed at your 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: \$60 US (Tax Deductible) \$ _____
- ☐ Student Member: \$3 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 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
- Acct # _____ Exp. 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, ABA053170465. Transfers 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**
PO Box 3561
Durham, North Carolina 27702
USA

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

4

Automation & Technology Divisions

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

Industries & Sciences Divisions

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

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



230 Shamrock Street, Sarnia, Ontario N7T 7J4 • (519) 336-2405

INSTRUMENTATION LIMITED

Fax (519) 332-4811

Stocking Distributor For

Robertshaw

- Level Controls
- RF/Capacitance
- Vibration Monitoring and Control
- I/P - P/I Controls

PROQUIP

- Rupture Disc
- Check Valves
- Line Blinds

BROOKS INSTRUMENT

- Rotameters
- Positive Displacement Meters
- Turbine Meters
- Mass Flow Meters
- Inventory Management System



- The Heat Tracing Specialists



- The Instrument Heating Specialists

CANCOPAS LIMITED



- Epic Waste Water Samplers
- Foxcroft Chlorine Analyzers
- Regal Gas Chlorinators
- Royce Instruments
- MSR - Magmeters

BI-LOK
The Right Alternative in Tube Fittings

- Instrument Tubefittings
- Instrument Valves



CYBER SYSTEMS INC.

TEL. 905-792-6677 FAX. 905-792-7742

PRODUCT LIST

- MTL • Intrinsically Safe Barriers
- A.H. Emery • Hydraulic Load Cell Weighing Systems
- Fuller • Electronic and Pneumatic Liquid Filling Systems
- Hiltcraft • IS Earth Proving Unit • for tanker trucks etc.
- RGS • Intrinsically Safe Valves
- Lorad • Unique, Full-bore Valves and Instrument Isolators
- Expo Safety Systems, Purging and Pressurisation

For Div 1 and Div 2, the Mini-X and Mini-Z -Purge Systems are fully pneumatic in operation, and conform to North American Standards, NFPA 496-1993. They are acceptable to Ontario Hydro, for installation in Ontario.

TYPICAL APPLICATIONS

Computer Monitors & Terminals.
Programmable Controllers.
19" Rack Apparatus.
Panels & Switchgear.

Chart & Data Recorders.
Gas Analysers.
Motor Control Centers.
Condition & Monitoring.

USERS DIRECTORY

This index lists manufacturers and trade-names alphabetically and enables users to determine the local representative for a particular manufacturer or product.

Manufacturer / Tradename

Local Sales Representative

3-D	Alpha Controls & Instrumentation
3M Circuit Tracer Kit	Transcat
A.H. Emery	Syber Systems Inc.
A.W. Sperry	Transcat
ACR Systems	Alpha Controls & Instrumentation
AEMC	Transcat
AGI	Cantrols
AGM Electronics Inc.	Vermeer Engineering
AMS Analytical Systems	Vermeer Engineering
API Meters	Lisle-Metrix Ltd.
ARi	Alpha Controls & Instrumentation
ASCO	Conval Equipment
ASCO	Lakeside Controls
ASCO	TubeTech
ASCO	Westburne Lytle
Accugard	Leeds & Northrup, Canada
Accutech	Brian Controls
Acromag	Willer Engineering
Acrotech	Transcat
Action Instruments	Cambridge Controls
Air Flow	Transcat
Alnor	Baker Instruments Ltd.
Alnor Instruments	Transcat
Altek	Alpha Controls & Instrumentation
Altek	Transcat
American	elenex Ltd.
American Cylinders	Provincial Controls
Ametek	Brian Controls
Ametek	Transcat
Ametek - Analyzers	Westech
Ametek - Mansfield & Green	Brian Controls
Ametek - PMT	Brian Controls
Ametek - U.S. Gauge	Brian Controls
Amprobe	Transcat
Amri Valves	Sharp Valve & Instrumentation
Analogic	Transcat
Anarad	Vermeer Engineering
Anderson Greenwood	Cantech Controls
Apollo	Romatec
Appalachian Controls	Cantrols
Applied Automation	Westech
Arjay	TubeTech
Armatek	Armatek Controls
Armstrong	Willer Engineering
Armtec	Bestobell Canada
Ashcroft	Transcat
Ashcroft-Dresser	Conval Equipment
Ashford Valve	Bestobell Canada
Astro International	Detech Industries
Atkins	Transcat
Autocal	Leeds & Northrup, Canada
Autoclean	Leeds & Northrup, Canada
Automax	Cantrols
Autotech	Davis Controls
Azonix	Transcat

Manufacturer / Tradename

B & K
 B/W
 BEHA
 BEI
 BOILER-GARD
 BS & B
 Bacharach
 Bacharach
 Bacharach - Hand Held Instruments
 Badger Meter
 Badger Meter - Research Control Valves
 Barber-Colman
 Barksdale
 Barnant
 Baumann Control Valves
 Beamex
 Bebcos Industries
 Beckman Industrial
 Bellofram
 Bellofram
 Berthold
 Beta
 Bi-Lok
 Biccotest
 Biddle
 Bio-Tek
 Bios International
 Brandt
 Branson
 Brian
 Brooklyn Thermometer
 Brooks Instrument
 Burkert
 Burkert Contromatic
 Cajon Pipe Fittings
 Cal
 Canadian Meter
 Cancoppas
 Cash-Acme
 Cashco Canada
 Cashco Canada
 Cellex
 Century Valve
 Century Valve
 Chandler
 Chemtrol
 Chessell
 Clarkson
 Clif Mock
 Codel
 Colder
 Collins Instrument Company
 Compressor Controls Corporation
 Computer Keyboard Systems (CKS)
 Conant Controls
 Conders
 Conoflow
 Consolidated
 Consolidated Controls
 Consolidated Controls

Local Sales Representative

Transcat
 Controls Ovantum Sales Inc.
 Transcat
 Willer Engineering
 Lisle-Matrix Ltd.
 Romatec
 Brian Controls
 SSCAN-Grodyne
 Transcat
 J & M Industrial Supply
 Lakeside Controls
 Davis Controls
 Sharp Valve & Instrumentation
 Transcat
 Conval Equipment
 Transcat
 Controls
 Transcat
 Conval Equipment
 Romatec
 SSCAN-Grodyne
 Transcat
 PMP Instrumentation
 Transcat
 Transcat
 Transcat
 Brian Controls
 Willer Engineering
 Transcat
 Brian Controls
 Transcat
 PMP Instrumentation
 Ovantum Sales Inc.
 Provincial Controls
 Huron Valve & Fittings
 Davis Controls
 G.L. Stebbins
 PMP Instrumentation
 Westburne Lytle
 Cambridge Controls
 Provincial Controls
 PMP Instrumentation
 Brian Controls
 PMP Instrumentation
 Transcat
 U & I Supply
 Willer Engineering
 Controls
 Westburne Lytle
 Westech
 Davis Controls
 Sharp Valve & Instrumentation
 SSCAN-Grodyne
 CB Engineering
 Industrial Projects
 Transcat
 Sarnia Piping Specialties
 Sharp Valve & Instrumentation
 Technel Engineering
 Transcat

Manufacturer / Tradename

Contaq
 Control Instruments Corp.
 Control Microsystems
 Cooper Instruments
 Cosense
 Crosby Safety Valves
 Custom Control Sensors
 Cybex
 DGH
 DH Instruments
 DSP Technology
 Danfoss
 Danfoss Mfg. Co. Ltd. - Denmark
 Daniel
 Darmatt
 Data Industrial
 Data Instruments Inc. - USA
 Data Lynx
 Data Precision
 Datatest
 Datavue
 Dattel
 Davis Controls Ltd.
 Davis Instruments
 Defelsko
 Dekoron
 Delphian
 Delta C Technologies
 Delta-P Cell
 Deltapilot
 Descote
 Detector Electronics
 Devar
 Dianachart
 Dickson
 Digitec
 Dopak
 Dover Gas Technologies
 Drager
 Dresser
 Druck
 Druck
 Durakool
 Durco
 Duro-Sense
 Dwyer
 Dwyer
 Dwyer
 Dynapar
 Dynapar
 E. G. & G. Moisture & Humidity
 ECD
 ECD
 ECS Control Techniques
 EG & G Flow Technology Inc.
 EIT Inc.
 ELRESCO Timers - England
 EMCO
 ERHARD Valves
 ETC

Local Sales Representative

Ovantum Sales Inc.
 Willer Engineering
 Brian Controls
 Transcat
 SRP controls
 Lakeside Controls
 Willer Engineering
 CB Engineering
 Alpha Controls & Instrumentation
 SRP controls
 SRP controls
 Davis Controls
 Lisle-Metrix Ltd.
 Controls
 Bestobell Canada
 Cambridge Controls
 Technel
 SSCAN-Grodyne
 Transcat
 Novatech
 Leeds & Northrup, Canada
 Transcat
 PMP Instrumentation
 Transcat
 Transcat
 Bestobell Canada
 Romatec
 Veronics
 Moore Products Company
 Endress & Hauser
 Sharp Valve & Instrumentation
 CB Engineering
 Cantech Controls
 Alpha Controls & Instrumentation
 Transcat
 Brian Controls
 Westburne Lytle
 Veronics
 Westech
 Sharp Valve & Instrumentation
 SRP controls
 Transcat
 Davis Controls
 Controls
 Transcat
 Baker Instruments Ltd.
 Davis Controls
 Transcat
 Davis Controls
 J & M Industrial Supply
 Vermeer Engineering
 Novatech
 Transcat
 Vermeer Engineering
 CB Engineering
 Vermeer Engineering
 Lisle-Metrix Ltd.
 Davis Controls
 Lisle-Metrix Ltd.
 Transcat

Manufacturer / Tradename

Eagle Signal
 Eaton Consolidated Controls - USA
 Echotel
 El-O-Matic
 Elcon Instruments
 Encoder
 Endress+Hauser
 Enertronic Shocks
 Enertronic
 Environics
 Environmental Technologies Group Inc.
 Environnement S.A.
 Epic Samplers
 Erdco
 Euchner
 Exac
 Expo Safety Systems
 Exttech Instruments
 F.B. Leopold - USA
 F.W. Bell
 F.W. Murphy
 Fabco Air
 Fielding Crossman
 Fike Canada Inc.
 Firedrod Cartridge Heaters
 Fischer & Porter - Rotameters
 Fisher Controls
 Fisher Research
 Fisons Instruments
 Flow Meter Co. - England
 Flowtek Valves
 Fluid Data/Amcor
 Fluidic
 Fluke
 Fluke Electronics
 Foxboro Analytical Group
 Fulier
 Furon Unitherm
 G.C. Industries
 G.S.I.
 GGOSCO Engineering
 GGOSCO Needle Valves
 GH Flow Automation
 GLA Elettronica
 GO Proximity Switches
 GO Regulators
 GP-50 New York Ltd.
 Galtek
 Gamma Silometer
 Gefran
 Genelco
 General Eastern
 General Monitors
 General Resistance
 Global
 Gralab
 H. O. Trerice
 H.D. Baumann Control Valves
 Haenni Instruments
 Hammel Dahl

Local Sales Representative

Davis Controls
 Technel
 Provincial Controls
 Westburne Lytle
 SRP controls
 elenex Ltd.
 Davis Controls
 Provincial Controls
 elenex Ltd.
 Brian Controls
 Novatech
 SSCAN-Grodyne
 PMP Instrumentation
 Bestobell Canada
 Davis Controls
 Lakeside Controls
 Syber Systems Inc.
 Novatech
 Lisle-Matrix Ltd.
 Transcat
 Cantech Controls
 Davis Controls
 Lisle-Matrix Ltd.
 Brian Controls
 Zesta Engineering
 TubeTech
 Lakeside Controls
 Transcat
 Westech
 Lisle-Matrix Ltd.
 Provincial Controls
 Armatek Controls
 Brian Controls
 Transcat
 Armatek Controls
 Vermeer Engineering
 Syber Systems Inc.
 Bestobell Canada
 Brian Controls
 Sarnia Piping Specialties
 Provincial Controls
 Westburne Lytle
 Ovantum Sales Inc.
 SRP controls
 Lakeside Controls
 Sarnia Piping Specialties
 SRP controls
 Romatec
 Endress & Hauser
 SRP controls
 Willer Engineering
 Willer Engineering
 Armatek Controls
 Transcat
 Transcat
 Transcat
 U & I Supply
 Conval Equipment
 J & M Industrial Supply
 Neles-Jamesbury

Manufacturer / Tradename

Hansen Quik Connects
Hartman-Technica
Heise
Heraeus Sensors
Hewlett Packard
Hiltcroft
Hitachi - Oscilloscopes
Hoffer Flow Controls - USA
Honeywell
Honeywell - Controllers & Recorders
Honeywell - Controllers & Recorders
Honeywell - Recorders
Honeywell - Recorders
Horiba
Hoskins
Huntron
Hy-Cal
Hydril
Hygrolog
IBM Industrial
IC Sensors
IDEC
IET
ITT Barton Instruments
ITT Diaflow
ITT Neo Dyn
IVO Industries - USA
Illinois Instruments
Imperial Eastman
Imperial Eastman
Imperial Eastman
Industrial Control Services
Industrial Scientific Corporation
Ingold
Inicon
Inor
Intecolor
Intelligent Controls
Intellitron
Intellution
Interface
Interlink
International Sensor
Interscan
Intertec
Ionics Instrument Division
Ircan
Ishida
J-Tec
JB Engineering
Jacoby Tarbox
Jamesbury
Jensen
Jofra
Jofra
Johnson Yokogawa
Jordan Controls
Joucomatic International
Jucker
Julius Bauser - Germany

Local Sales Representative

Provincial Controls
Transcat
Transcat
SRP controls
Transcat
Syber Systems Inc.
Transcat
Lisle-Metrix Ltd.
Davis Controls
Brian Controls
Cantech Controls
Provincial Controls
Transcat
SSCAN-Grodyne
Cantech Controls
Transcat
Davis Controls
Cantech Controls
Endress & Hauser
CB Engineering
SRP controls
elenex Ltd.
Transcat
Armatek Controls
Romatec
CB Engineering
Lisle-Metrix Ltd.
Veronics
Provincial Controls
U & I Supply
elenex Ltd.
Armatek Controls
SSCAN-Grodyne
Westech
Cantech Controls
Alpha Controls & Instrumentation
CB Engineering
SRP controls
Cantech Controls
CB Engineering
Willer Engineering
Vermeer Engineering
TechnologyIndustrial Projects
SSCAN-Grodyne
Tubetech
Veronics
Willer Engineering
Atlas Alloys
Romatec
Transcat
Romatec
Atlas Alloys
Transcat
Brian Controls
Transcat
CB Engineering
Cambridge Controls
Conval Equipment
Bestobell Canada
Lisle-Metrix Ltd.

Manufacturer / Tradename

K-Flow
K-Tek
K-Tek
KNF Neuberger
KTM
Kammer Control Valves
Kammer Control Valves
Kane-May
Kates
Kay Ray/Sensal
Kaye
Kaye Instruments
Kedco Mfg Ltd.
Kenwood USA
Ketema - McCrometer
Ketema - Schutte & Koerting
Kinetics Systems Corp. - USA
Kinetrol
King Instrument
Kisler-Morse
Kitz
Kitz
Klinger
Klockner Moeller
Kotron
Kurz
Kurz
Kurz
L & J Technologies
LAGCO Flumes - USA
LEOPOLD
LFE Instruments - USA
LMI
LMI
Land
Larad
Leader
Leaderline
Leaderline
Lear Siegler
Lee-Dickens Ltd. - England
Leeds & Northrup
Legris
Legris Fittings
Letco
Lewis
Love
Lumenite
M and Y Valve Services
M point
M-System
M-Tek
MCF Ball Valves
MKS
MST
MTL
MTL IS Barriers
MTS
Madison
Magnetrol

Local Sales Representative

Willer Engineering
CB Engineering
J & M Industrial Supply
Transcat
Associated Valve
Bestobell Canada
Cantrols
Transcat
Westech
Rosemount Instruments
Transcat
CB Engineering
U & I Supply
Transcat
Brian Controls
Brian Controls
Technel
Provincial Controls
Industrial Projects
Novatech
Atlas Alloys
Cantrols
Davis Controls
elenex Ltd.
Provincial Controls
Brian Controls
SSCAN-Grodyne
Transcat
Armatek Controls
Lisle-Metrix Ltd.
Lisle-Metrix Ltd.
Lisle-Metrix Ltd.
Novatech
U & I Supply
Transcat
Syber Systems Inc.
Transcat
Brian Controls
Honeywell
Romatec
Lisle-Metrix Ltd.
Sarnia Piping Specialties
elenex Ltd.
Provincial Controls
PMP Instrumentation
Transcat
Davis Controls
Bestobell Canada
Ovantum Sales Inc.
Endress & Hauser
SRP controls
Transcat
Lakeside Controls
Transcat
Brian Controls
Syber Systems Inc.
Provincial Controls
Novatech
Bestobell Canada
Provincial Controls

Manufacturer / Tradename

Major
 Manobourdon
 Marpac
 Marsh
 Martel
 Masoneilan
 Max
 Max 1000
 Mead
 Meeco Inc.
 Mercoid
 Meriam Instruments
 Metricor
 Metrix
 Metrix Timers
 Metrosonics
 Micon
 Micro Motion
 Micro Movements
 Micromax 2
 Micronics Ltd.
 Mid-West Instrument
 Mikron
 Milton Roy - Liquid Metronics Division
 Mini-X Purge Systems
 Mini-Z Purge Systems
 Mitsubishi
 Mobrey
 Modulevel
 Monarch
 Monitek
 Monitor
 Monitor Labs
 Moore Industries
 Moore Products Pressure Regulators
 Multi-Amp
 Multi-Volt
 Multitrode
 Mycro
 Myron L
 NBS
 NGI
 Nassau Instrument
 Negretti
 Neles
 Neles-Jamesbury
 Neles-Jamesbury
 Neotronics
 Newman Hattersly
 Nicholson
 Nilcor
 Nivosonic
 Nohken
 Norstat
 Novalynx
 Nullmatic
 Numatics
 Numatics
 Nupro Valves
 O'Brien

Local Sales Representative

Alpha Controls & Instrumentation
 Sarnia Piping Specialties
 Sharp Valve & Instrumentation
 TubeTech
 Transcat
 Sharp Valve & Instrumentation
 Willer Engineering
 Leeds & Northrup, Canada
 Transcat
 Novatech
 Davis Controls
 Transcat
 Willer Engineering
 Transcat
 Lisle-Metrix Ltd.
 Brian Controls
 Cantech Controls
 Rosemount Instruments
 SRP controls
 Leeds & Northrup, Canada
 Veronics
 Brian Controls
 Transcat
 U & I Supply
 Syber Systems Inc.
 Syber Systems Inc.
 Davis Controls
 Bestobell Canada
 Provincial Controls
 Transcat
 Willer Engineering
 Romatec
 Brian Controls
 Armatek Controls
 Transcat
 Transcat
 Transcat
 Bestobell Canada
 Moore Products Company
 Transcat
 Transcat
 Transcat
 Bestobell Canada
 Atlas Alloys
 Atlas Alloys
 Ovantum Sales Inc.
 Transcat
 Bestobell Canada
 Romatec
 Sharp Valve & Instrumentation
 Endress & Hauser
 Bestobell Canada
 Davis Controls
 Brian Controls
 Moore Products Company
 Provincial Controls
 elenex Ltd.
 Huron Valve & Fittings
 Armatek Controls

Manufacturer / Tradename	Local Sales Representative
OMNI	Westech
Oakton	Transcat
Ogontz	Cantech Controls
Ohmart	G.L. Stebbins
Oilgear	Bestobell Canada
Oliver Valves	Sarnia Piping Specialties
Omron	elenex Ltd.
Orange Research	Provincial Controls
Orion	Transcat
P+F - USA	Lisle-Metrix Ltd.
PMV	Romatec
PTC	Brian Controls
PTC	Transcat
Pacer Industries	Transcat
Pacific Instruments	SRP controls
Pamark Manifolds	Provincial Controls
Panalarm	Cambridge Controls
Panalarm	Willer Engineering
Panametrics PCI Division	Veronics
Parker	TubeTech
Pelican	Transcat
Penberthy	Brian Controls
Penberthy	Westburne Lytle
Pepperl + Fuchs - USA	Lisle-Metrix Ltd.
Permacal	Provincial Controls
Phipps & Bird	Transcat
Phoenix Contact	elenex Ltd.
Polysonics	Davis Controls
Polytronics	Transcat
Porter Instrument Co. - USA	Lisle-Metrix Ltd.
Posiseal	Lakeside Controls
Powers Process Control	Conval Equipment
Precision Digital	Armatek Controls
Preferred Rimcor Inc.	Vermeer Engineering
Preso	Willer Engineering
Presto-Tek	SRP controls
Pribusin	Provincial Controls
Pribusin Inc.	Novatech
Promac	Transcat
Prominent	Ovantum Sales Inc.
Proquip	PMP Instrumentation
Provincial Instrument Housings	Provincial Controls
Provox	Lakeside Controls
Proximity	Bestobell Canada
Proximity Control	Provincial Controls
Psytronics	Cambridge Controls
Pulsafeeder	Romatec
Pyramid	Romatec
QEL	TubeTech
QSDM	Alpha Controls & Instrumentation
QSDM	Willer Engineering
Quad Tech	Transcat
Qualimetrics	Transcat
Quantum	Transcat
RCM Industries	Cambridge Controls
REXA	Controls
RGS	Syber Systems Inc.
RIS	Transcat
RMS Instruments	Technel Engineering
Ralston	Transcat

Manufacturer / Tradename

Ralston
Raytek
RdF
Research Control Valves
Rexcon
Robbins Myers
Robertshaw
Rochester Instrument Systems
Rohrback Cosasco Systems
Ronan
Rosemount
Rosemount Analytical
Rosemount Analytical
Rosemount Combustion Control
Rotomation
Rotronic
Royce Instruments
Rupture Pin Technology
Ruska Instrument Corp. - USA
Rustrak
S.P.S. Instrument Services
SAFFTRIP I.S.
SOR
SPM
STI
Sample Technologies Inc. (STI)
Sarasota Automation
Sarasota Measurement & Controls
Scanivalve Corporation - USA
Schlumberger
Schlumberger
Schrader Bellows
Schramm
Scully Electronic Systems
Seacor
Sealed Unit Parts
Sensall
Sensidyne
Sensidyne Gas Monitors
Servomex
Setra
Shand & Jurs
Shawflex
Shimpo
Sieger
Siemens
Siemens
Sierra Monitor
Sigma Technologies
Signet Scientific
Sigrist-Photometer Co. - Switzerland
Silometer
Simpson
Skinner
Smar
Smartline
Smartline
Smith Valve
Sno-Trik
Solomat

Local Sales Representative

elenex Ltd.
Transcat
Willer Engineering
Lakeside Controls
elenex Ltd.
U & I Supply
PMP Instrumentation
Sharp Valve & Instrumentation
Armatek Controls
Industrial Projects
Rosemount Instruments
Rosemount Instruments
Transcat
Romatec
elenex Ltd.
Alpha Controls & Instrumentation
PMP Instrumentation
Westech
Technel
Transcat
Sarnia Piping Specialties
Lisle-Metrix Ltd.
Industrial Projects
Transcat
elenex Ltd.
CB Engineering
Sharp Valve & Instrumentation
SRP controls
Technel Engineering
Sarnia Piping Specialties
Westech
TubeTech
Sharp Valve & Instrumentation
SRP controls
Transcat
Transcat
Alpha Controls & Instrumentation
Novatech
Transcat
Novatech
Alpha Controls & Instrumentation
Westburne Lytle
Bestobell Canada
Transcat
SSCAN-Grodyne
Alpha Controls & Instrumentation
elenex Ltd.
Transcat
Sarnia Piping Specialties
Brian Controls
Lisle-Metrix Ltd.
Endress & Hauser
Transcat
Cantech Controls
G.L. Stebbins
Brian Controls
Honeywell
Atlas Alloys
Huron Valve & Fittings
Transcat

Manufacturer / Tradename

Sparling
 Speedomax
 Stahl
 Statham
 Statiflow
 Stewart Electronics
 Strahman
 Sugino
 Superior Flow Products
 Swagelok Tube Fittings
 Swingwirl
 Synchro
 Systematix
 T.B. Woods
 TDC-3000
 TIF
 TLV
 TOWER-GARD
 TSI
 Taylor Hand Actuated Pressure Calibrator
 Techmation
 Technic
 Technipower
 Tegam
 Tegam
 Tektronix
 Tel-Tru
 Tel-Tru
 Teledyne
 Teledyne Combustion Efficiency Analyzer
 Telematic
 Telemechanique
 Teltronics
 Testoterm
 Texas Analytical Controls Inc.
 Texas Sampling Inc.
 The Electron Machine Corporation
 Theben
 Thermo Electric
 Thermo Electric - Calibrators
 Thermo Kinetics
 ThermoElectric
 Thermon
 Thermox
 Time
 Tobar
 Tokheim
 Trademark
 Transmation
 Transmation
 Transtector Systems
 Trerice
 Tri-Sen
 Tricentric
 Tripp-Lite
 Trueline Valves
 Tytronics Inc.
 U.S. Gauge
 U.S. Gauge
 Unimeasure

Local Sales Representative

Brian Controls
 Leeds & Northrup, Canada
 Alpha Controls & Instrumentation
 Sarnia Piping Specialties
 Westburne Lytle
 SRP controls
 Cantech Controls
 elenex Ltd.
 Ovantum Sales Inc.
 Huron Valve & Fittings
 Endress & Hauser
 Moore Products Company
 Willer Engineering
 elenex Ltd.
 Honeywell
 Transcat
 TubeTech
 Lisle-Matrix Ltd.
 Willer Engineering
 Transcat
 Lakeside Controls
 Transcat
 Transcat
 Brian Controls
 Transcat
 Transcat
 Brian Controls
 Transcat
 Armatek Controls
 Transcat
 Willer Engineering
 elenex Ltd.
 Cantech Controls
 Transcat
 Vermeer Engineering
 Bestobell Canada
 Industrial Projects
 Davis Controls
 Armatek Controls
 Transcat
 Provincial Controls
 TubeTech
 PMP Instrumentation
 Willer Engineering
 Electronics Transcat
 Cantech Controls
 Willer Engineering
 G.L. Stebbins
 Cantrols
 Transcat
 Cantech Controls
 U & I Supply
 CB Engineering
 Bestobell Canada
 Transcat
 Conval Equipment
 Novatech
 Brian Controls
 Transcat
 SRP controls

Manufacturer / Tradename

United Electric
United Electric
United Sciences Inc.
Unitherm
Universal
Universal Enterprises
Unomat
Unomat
Vaccon Vacuum
Vaisala
Valhalla
Valtek
Valvtech
Vanessa
Varec
Variomag
Vector-Vid
Velan
Versatile Measuring Instruments
Vertigage
Viatran
Vista Scientific
Vitec
Viz
W.E. Anderson
WHIPPS Inc. - USA
Walker Scientific
Wallace & Tiernan
Wallace & Tiernan - Pressure Calibrators
Waltron
Warren Jones Engineering - England
Warrick
Waterman Industries - USA
Waugh
Weksler Instruments
Welker Engineering
West
Westech
Westlock Controls
Whesso Varec
Whitey Valves
Whitman
Wika
Wilkerson
Winters Gauges
Wodex
Wood's
Worcester Controls
Y-Z Industries
Yokogawa
Zullig

Local Sales Representative

Brian Controls
Cambridge Controls
Willer Engineering
Bestobell Canada
Alpha Controls & Instrumentation
Transcat
SRP controls
Transcat
Provincial Controls
Transcat
Transcat
Controls
Controls
Westburne Lytle
Westech
Endress & Hauser
Transcat
Westburne Lytle
SRP controls
Moore Products Company
Willer Engineering
Transcat
Transcat
Transcat
Cantech Controls
Lisle-Metrix Ltd.
Transcat
J & M Industrial Supply
Transcat
Novatech
Lisle-Metrix Ltd.
Davis Controls
Lisle-Metrix Ltd.
Alpha Controls & Instrumentation
Baker Instruments Ltd.
SSCAN-Grodyne
Alpha Controls & Instrumentation
Westech
Atlas Alloys
Westech
Huron Valve & Fittings
Davis Controls
Sharp Valve & Instrumentation
Transcat
Provincial Controls
Alpha Controls & Instrumentation
U & I Supply
U & I Supply
Westech
Transcat
Bestobell Canada

- *Notes* -

THIS PAGE COMPLIMENTS OF OCTAGON ENGINEERING.

Past-Presidents of the Sarnia Section of I.S.A.

1946/47	Bill Graeb	1969/70	Ray Wechselberger
1947/48	Amby Upfold	1970/71	Bill Glendon
1948/49	Ron Chamberlane	1971/72	Curt McDonald
1949/50	Don Livingstone	1972/73	Everett Maness
1950/51		1973/74	Stan Thrift
1951/52	Ken Goldring	1974/75	E.A. Comello
1952/53	Amby UpFold	1975/76	Bernard West
1953/54	Warren McKay	1976/77	Jim Henrikson
1954/55	Jack Heatley	1977/78	Jim Johnson
1955/56	Larry Hall	1978/79	Ron Thurier
1956/57	Harold Kohlmeier	1979/80	Dave Braedley
1957/58	Ron Asselstine	1980/81	John Stassen
1958/59	Mike Hicks	1981/82	Wayne Jamieson
1959/60	Mike Hicks	1982/83	Frank Bandura
1960/61	Mike Hicks	1983/84	John Tranter
1961/62	George Mills	1984/85	Robb Sharp
1962/63	Robert Brayne	1985/86	Ron Kells
1963/64	Robert Newman	1986/87	Howie Whitton
1964/65	Robert Newman	1987/88	Joe Lobo
1965/66	Ted Stock	1988/89	Irvin Hawkes
1966/67	Ted Stock	1989/90	Rich Paterson
1967/68	Bill Rion	1990/91	Ken Blair
1968/69	Bud Dodds	1991/92	Jim Lomax
		1992/93	Bob Kelly

FISHER®

FISHER CONTROLS

- Control Valves and Regulators
Noise & Cavitation Trim
- Fugitive Emissions Packing Systems
- Plant Studies & Software Services
- Techmation Process Control
Loop Analyzer
- Available London Stock of Regulators,
Instruments and Control Valves
- High Performance Butterfly Valves

FISHER SERVICE

- Complete Control Valve Repairs
- Flowscanner - Valve Diagnostic Service

FISHER® ROSEMOUNT

RTM/I™ Solutions

- Real-Time Process Management

ENVIRONMENTAL

- Tank Blanketing and
Vapour Recovery Systems

BADGER METER

- Research Control Valves



**LAKE
SIDE
CONTROLS LTD.**

Phone: (519) 659-9300 Fax: (519) 659-0474

383 Sovereign Road, London, Ontario N6M 1A3