

ANNUNCIATOR

August 1994



SARNIA



SECTION



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Editor's Notes

Watch for the continuing saga...

"WRITTEN ON A ROLL CHART"

These are the collective writings of HOWARD HOBBS,
with commentary by Bob Connell.

ADVERTISERS: Please note that the deadline for the September ANNUNCIATOR is August 22, 1994. Please forward information to the editor by that date in order to have items updated.

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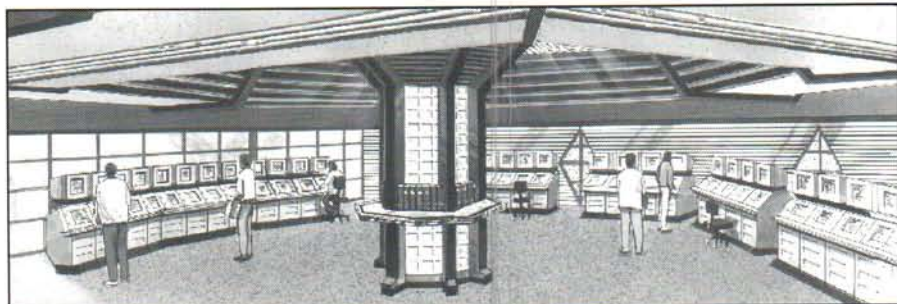
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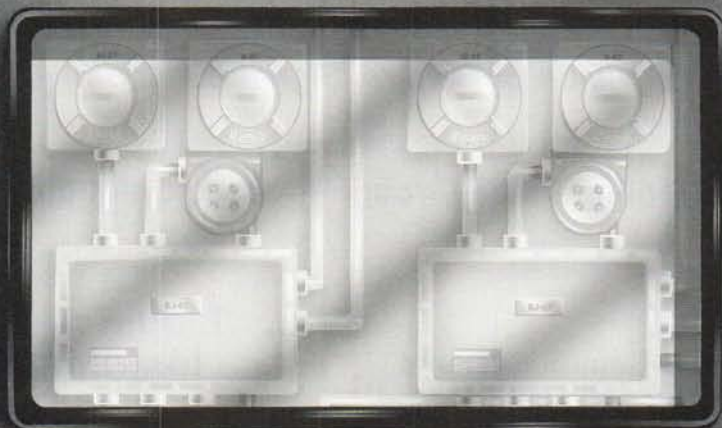
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Steps For Preparing a Speech

By Marjorie Brody

This issue we've selected some good advice from Ms. Brody's new book, which we think will benefit many of you. In this section she lists the steps for preparing a speech.

- | | |
|---|--|
| 1. Select or tailor a topic based on your purpose, your audience, and the details of your speaking situation. | 7. Check for accuracy. |
| 2. Limit the topic to one central theme. | 8. Design a catchy, energetic introduction. |
| 3. Collect data about the subject. | 9. Write a strong conclusion. |
| 4. Select a method of organization. | 10. Put together your final draft. |
| 5. Outline the main points; use three to five points to support your central theme. | The 10 steps are supported by five additional steps: |
| 6. Gather supporting information, such as stories to support your main points. | 11. Practice. |
| | 12. Practice. |
| | 13. Practice. |
| | 14. Practice. |
| | 15. Practice. |

That is Ms. Brody's advice for this issue. If you really would like to know more, go out to your favourite book store and pick up a copy of her book. ■

Marjorie Brody, is President of Brody Communications, a communications training firm which specializes in leading seminars and one-on-one consulting in the areas of Executive Speaking, Effective Meetings, Powerful Presentations, and Sales Presentations. Her recent book: "Power Presentations: How to Connect With Your Audience and Sell Your Ideas", was published by John Wiley & Sons.

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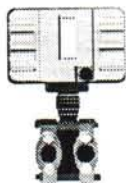
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ISA District 13 Montreal Workshop

April 22 / 23, 1994

The theme of the Montréal Workshop as expressed by Jim Lomax was:

"Building Bridges or Building Walls"

- What can we do to help each other.
- Set achievable goals and accomplish them.
- Getting members to buy into the Society's goals.

The Society is going to go forward. We as individuals and Sections have a choice, we can lead, follow, or get out of the way. Our District should be among the leaders, helping to point out the directions that the ISA should take.

The ATCAN, Hamilton, Montreal, Northern Ontario, Toronto, and Sarnia Sections were represented. The Saguenay and Quebec City Sections sent their regrets.

BBS:

There was considerable discussions about using BBS systems within the district. Howard Zinchlag, presented a proposal entitled "Electronic On-Line System for ISA" that was passed in Philadelphia.

The proposal involved spending in excess of \$200,000 (\$50,000 up front) in the next 3 years to put in the ISA on-line.

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They will also digitize all new publications and educational material and make it available.

STATE OF THE SOCIETY: ISA Membership is stagnant or decreasing. In order to try and reverse the trend, headquarters has announced a contest to get new members from now until the end of September 94. Prizes include an ISA mug for every new member up to the grand prize, which is a laptop computer. There is also a contest at the section level for greatest percentage increase in membership.

ISA is trying to improve its image. It will be spending \$675K in the next 2 years to do so. This will include ads in "Industry Week", "Plant Engineering", "Business Week" and the "Wall Street Journal". The idea being to raise the publics awareness of the ISA and its mission.

Next year is the 50th Anniversary of the ISA. A massive birthday party is planned for the show in New Orleans.

CREDENTIALLING: The credentialling program continues to evolve and be popular. There are a number of Canadian concerns which need to be addressed.

NEWSLETTERS: A presentation on newsletters was made. It was suggested that copies be sent to local libraries and high schools.

A better system of sharing articles has been proposed between the sections in the district. This will give the editors access to a pool of articles for use in the local publications.

STUDENT SECTION: CHALLENGE: How can we get financing to send a student team to Anaheim for the ISA Bowl?

DAVE GOOCH

July 7, 1994

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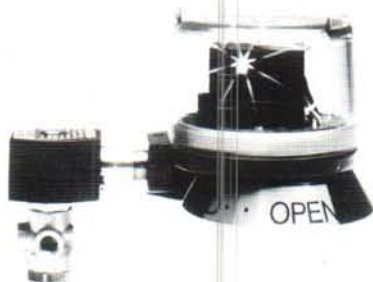
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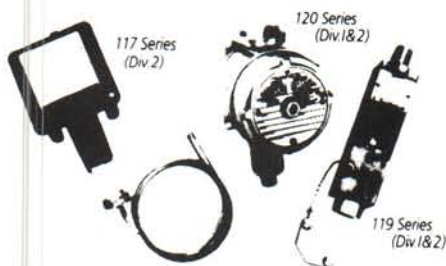
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"Written on a Roll Chart"

By Howard Hobbs

F O R W A R D

This publication contains the literary works of Howard Hobbs, generated at the time when he was employed in the Instrument Maintenance Department of the Dow Chemical Company of Canada, at Sarnia, Ontario. This was during the 1950's, when petroleum and petrochemical expansion was going on all over. At the time, the big three of Process Instrumentation, Foxboro, Taylor, and Honeywell, were vying with each other to produce newer and fancier instruments which they hoped would gain them a larger share of the market. Some of the new instruments turned out to be well thought out, and were consequently useful. Others were bad at first, but were improved to a useful state after field experience showed what design improvements were required. Still others were bad from the start, and stayed that way.

When I first met Howard, I was at work in the Engineering Division of Imperial Oil at Sarnia. Our paths crossed due to our association with the Sarnia Section of the I.S.A. For a few years, I undertook the Program Chairman's job, since I had numerous contacts which could prove beneficial when we were looking for good speakers for our meetings. Howard took on the job of Editor of the Sarnia Section Bulletin, which came out each month a meeting was scheduled.

Although Howard tended to be suspicious of Engineering types, he and I managed to develop a certain amount of mutual respect. I was intrigued by his literary talents. He more or less accepted me because he knew that I had learned and important lesson, namely that there are plenty of guys in coveralls out in the plant diligently trying to make something useful out of some ill-conceived scheme that was spawned in the Engineering Department.

What you will be reading are the Written On A Roll Chart articles which Howard wrote for the Bulletins produced between 1952 and 1959, and which, with unusual foresight, I saved. The first few offerings are mostly warm-ups to his really good material, so don't get hung up on their relatively insipid, (compared to his later works), quality. They have been included mainly for the sake of completeness.

Howard tended to write about people and situations which were the bone of his chosen occupation, instrument maintenance.

Characters who fitted this description included:

Instrument and system designers who had never been inside a real operating plant.

Contractor personnel who had no idea of what a Canadian winter was like, but were put to work specifying instrument installations and winterizing anyway.

(Continued on Page 28)

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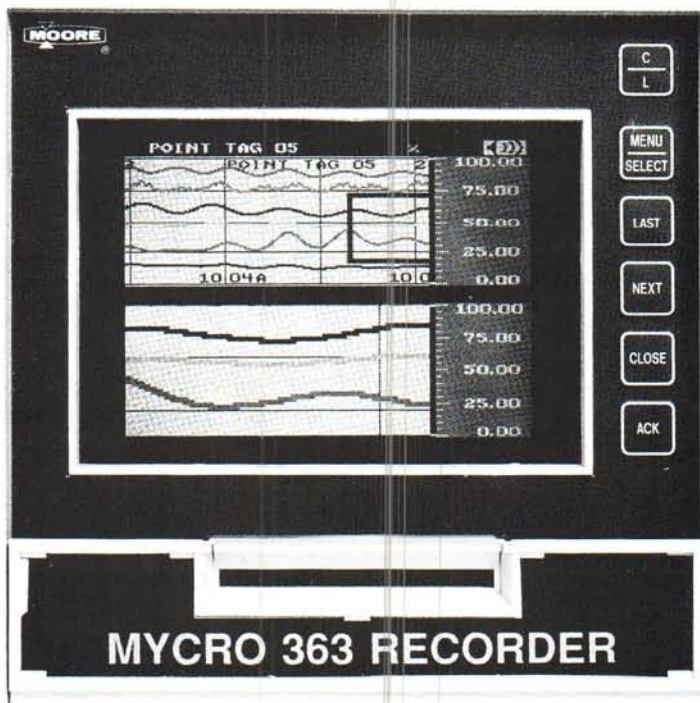
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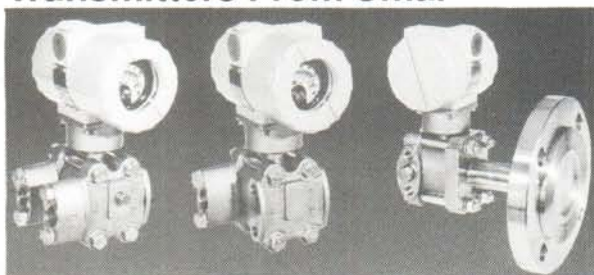
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You will no doubt notice that in some of his works, Howard tends to be rather critical, to the point where some persons might consider him to be offensive. In the 1950's, when he created Written On A Roll Chart, this would have been only a minor concern. However these days, 40 years later, when there are people who are actually going around looking for ways to be offended his comments could conceivably stir up some real opposition. Be that as it may, the bottom line is that Howard, as a bona fide process Instrumentation person, wrote all of these works for the enjoyment of other process Instrumentation people, and today, just as 40 years ago, they are the ones who will see the humorous side of all he is saying.

I trust that you will get the same enjoyment as I do from reading the classic Writings of Howard Hobbs, the Bard of Process Instrumentation. My comments, where they appear throughout the book, are in the font of this type. And to Howard, this footnote -

*So Howard, Here are your finest works,
Rife with the jibes and groans and chuckles and smirks.
Though wimpish souls might think you are cruel,
I'd rate your efforts as really cool.*

*I hope you won't feel any consternation,
'Cause I messed about with your punctuation.
It was just my poor effort the keep things neat,
When it comes to rhyme, you sure have me beat!*

Bob Connell

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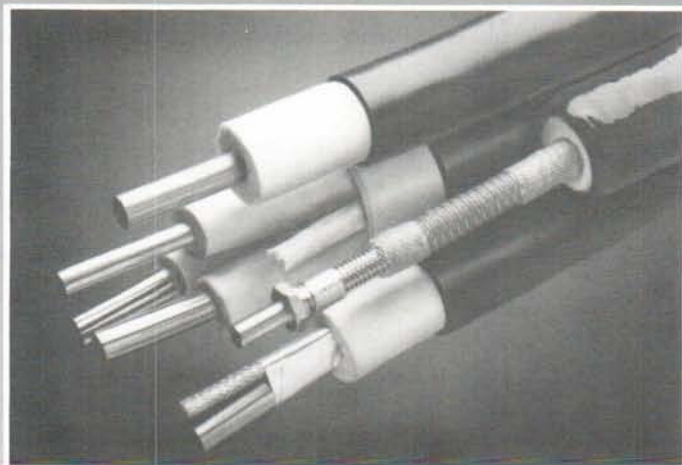
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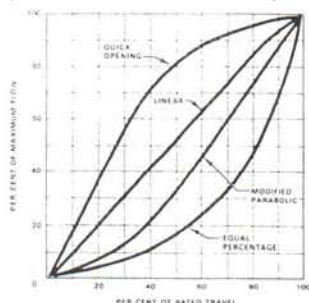
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CONTROL VALVE SELECTION CRITERIA

Most of the considerations that guide the selection of valve type and brand are rather basic. However, there are some matters that may be overlooked by users whose familiarity is mainly limited to just one or a few valve types. Table 1 provides a checklist of important criteria, each is discussed at length following.

TABLE 1 - Suggested check list of general criteria for selecting a type and brand of control valve.

- Body pressure rating
- High and low temperature limits
- Material compatibility and durability
- Inherent flow characteristic and rangeability
- Maximum pressure drop (shutoff and flowing)
- Noise and cavitation
- End connections
- Shutoff leakage
- Capacity versus cost
- Nature of flowing media



Pressure ratings. Body pressure ratings ordinarily are considered according to ANSI pressure classes - the most common ones for steel and stainless steel being 150, 300 and 600. (Source documents are ANSI Standards B16.34, "Steel Valves," and ANSI B16.1, "Cast Iron Pipe Flanges and Flanged Fittings.") For a given body material, each ANSI class corresponds to a prescribed profile of maximum pressures that decrease with temperature according to the strength of the material. Each material also has a minimum and maximum service temperature based on loss of ductility or loss of strength. For most applications, the required pressure rating is dictated by the application. However, since all products are not available for all ANSI classes, it is an important consideration for selection.

Temperature considerations. Required temperature capabilities are usually also a foregone conclusion, but one which is very likely to further narrow the valve selection. The considerations here include the strength of ductility of the body material as well as relative thermal expansion of various parts. Temperature limits may also be imposed due to disintegration of soft parts at high temperatures or loss of resiliency at low temperatures. The soft materials under consideration include various elastomers, plastics and TFE. They may be found in parts such as seat rings, seal or piston rings, packing, rotary shaft bearings and butterfly valves liners. Typical upper temperature limits for elastomers are in the 200-350F range, and the general limit for TFE is 450F.

Temperature affects valve selection by excluding certain valves that do not have high- or low-temperature options. It also may have some effect on the valve's performance. For instance, going from TFE to metal seals for high temperatures generally increases the shutoff leakage flow. Similarly, high temperature metal bearing sleeves in rotary valves impose more friction load on the shaft than TFE bearings do, so that the shaft cannot withstand as high a pressure-drop load at shutoff. Selection of valve packing is also done largely based on service temperature.

Material selection. The third criterion in Table 1 - material compatibility and durability - is a more complex consideration. The issue here may be corrosion by the process fluid, erosion by abrasive material, flashing, cavitation or simply a matter of process pressure and temperature. The piping material usually indicates the body material. However, since velocity is higher in valves other factors must be considered. When these items are included, often valve and piping materials will differ.



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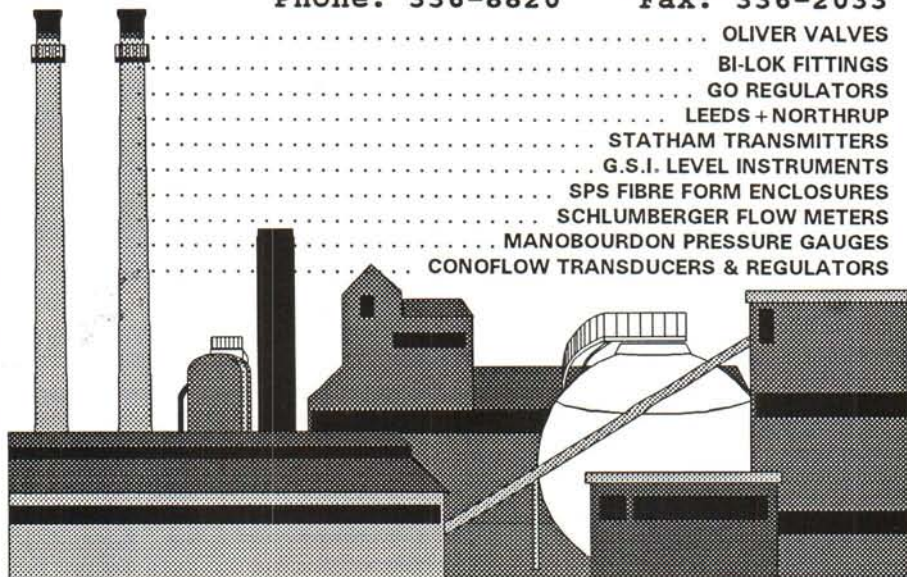
Dinner Meeting Highlights

The Sarnia section of ISA held its annual honours and awards dinner on Monday, May 31, 1994 at the Sarnia Golf and Curling Club. It was a pleasure to welcome many spouses, guests and honourees. Hord'oeuvres were served prior to the steak and lobster dinner while guests had an opportunity to mingle. Following dinner, Bill Arundell presented the slate of candidates for the 1994/1995 executive which were anonymously approved. Mike Murray presented awards to the 1993/1994 executive. Bob Devine and his Newsletter team of Dick Bouterse and Frank Baugh were especially recognizes for their efforts in producing the ANNUNCIATOR. Irvin Hawkes presented Gayle and Maureen with roses and gift certificates in appreciation for their efforts throughout the year. Jim Lomax, District 13 V.P., gave an update of District and ISA activities.

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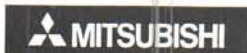
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DID YOU KNOW?

On Monday, June 13, 1994, the Sarnia Section ISA Committee held its annual "Turnover" meeting.

While the majority of the members will be returning in various capacities, there are several outgoing and incoming members to note. Our thanks to three members who fortunately will not be serving on the committee next year; Bob Kelly, Irvin Hawkes and Mike Spearman. Their past contributions have helped to make the Sarnia Section as strong as it is.

We would also like to welcome three new Executive members; John Baker, Randy Dennie and David Founk, and thank them for becoming part of the next year's committee.

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The trim materials in turn are usually a function of the body material, temperature range and qualities of the fluid. When a body material other than carbon, alloy or stainless steel are required, use of alternate types such as lined or bar stock should be considered.

Flow characteristic. The next selection criterion - inherent flow characteristic - refers to the pattern in which the flow at constant pressure drop changes according to valve position. Typical characteristics are quick-opening, linear and equal-percentage. The choice of characteristic may have a strong influence on the stability or controllability of the process, since it represents the change of valve gain relative to travel. Most control valves are carefully "characterized" to exhibit a certain flow characteristic by means of contours on a plug, cage, or ball element. Some valves are available in a variety of characteristics to suit the application, while others offer little or no choice. To quantitatively determine the best flow characteristic for a given application, a dynamic analysis of the control loop can be performed. In most cases, however, this is unnecessary; reference to established rules of thumb will suffice.

The accompanying drawing illustrates typical flow characteristic curves. The quick opening flow characteristic provides for maximum change in flow rate at low valve travels with a fairly linear relationship. Additional increases in valve travel give sharply reduced changes in flow rate, and when the valve plug nears the wide open position, the change in flow rate approaches zero. In a control valve, the quick opening valve plug is used primarily for on-off service; but it is also suitable for many applications where a linear valve plug would normally be specified.

The linear flow characteristic curve shows that the flow rate is directly proportional to the valve travel. This proportional relationship produces a characteristic with a constant slope so that with constant pressure drop, the valve gain will be the same at all flows. The linear valve plug is commonly specified for liquid level control and for certain flow control applications requiring constant gain.

In the equal percentage flow characteristic, equal increments of valve travel produce equal percentage changes in the existing flow. The change in flow rate is always proportional to the flow rate just before the change in valve plug, disc, or ball position is made. When the valve plug, disc, or ball is near its seat and the flow is small, the change in flow rate will be small; with a large flow, the change in flow rate will be large. Valves with an equal percentage flow characteristic are generally used on pressure control applications, and on other applications where a large percentage of the pressure drop is normally absorbed by the system itself, with only a relatively small percentage available at the control valve. Valves with an equal percentage characteristic should also be considered where highly varying pressure drop conditions can be expected.

Rangeability. Part and parcel of a valve's flow characteristic is its rangeability, which is the ratio of its maximum and minimum controllable flow rates. Exceptionally wide rangeability may be required for certain applications to handle wide load swings or a combination of start-up, normal and maximum working conditions. Generally speaking, rotary valves - especially partial ball valves - have greater rangeability than sliding stem varieties.

Use of positioners. A positioner is an instrument which helps improve control by accurately positioning a control valve actuator in response to a control signal. They are useful in many applications, and are required with certain actuator styles in order to match actuator and instrument pressure signals or to provide operating stability. To a certain extent, a valve with one inherent flow characteristic can also be made to perform as though it had a different characteristic by using a nonlinear (i.e., characterized) positioner-actuator combination. The limitation of this approach lies in the positioner's frequency response and phase lag compared to the characteristic frequency of the process.

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While often automatically furnished, positioners can be detrimental to good control for fast processes such as liquid flow loops. Since they also add to initial cost and system complexity, their use should be studied carefully.

Pressure drop. The maximum pressure drop the valve can tolerate at shutoff and when partly or fully open is an important selection criteria. Sliding stem valves are generally superior in both regards because of the rugged, well supported nature of their moving parts. Unlike most sliding stem valves, many rotary valves are limited to pressure drops well below the body pressure rating - especially under flowing conditions, due to dynamic stresses imposed on the disk or ball segment by high velocity flow.

Noise and cavitation are two considerations which, while unrelated, are often grouped together because they both usually accompany high pressure drops and flow rates. They are handled by special modifications of more-or-less standard valves. Cavitation is the noisy and potentially damaging implosion of bubbles formed when the pressure of a liquid momentarily dips below its vapor pressure when passing through a constriction. In controlling gases and vapors, noise results from the turbulence associated with high-velocity streams. When cavitation or noise is judged likely to be a problem, it's severity must be predicted from the valve's specifications according to well known techniques, and valves with better specifications must be sought if necessary. Cavitation - control and noise-control trims for various degrees of severity are widely available in regular sliding stem valves - at a progressive penalty in terms of cost and flow capacity. Rotary valves are much more limited in this regard and are generally much more susceptible to cavitation and noise at a given pressure drop.

End connections. At some point in the selection process, the valve's end connections must be considered. The question is simply whether the desired connection style is available in a valve being considered. In some situations, this matter can limit the selection rather narrowly. For instance if a piping specification calls for welded connections only, the choice may be limited to sliding stem valves. The few weld-end butterfly and ball valves that are available are rather expensive.

Shutoff capability. Some consideration usually must be given to a valve's shutoff capability, which ordinarily is rated in terms of classes specified in ANSI/FCI 70-2-1976. In actual service, shutoff leakage depends on many factors, including pressure drop, temperature, the condition of the sealing surfaces, and - very importantly for sliding stem valves - on the force load on the seat. Since shutoff ratings are based on standard test conditions which may be very different from service conditions, service leakage cannot be predicted very well. However, the ANSI shut off classes provide a good basis for comparisons among valves of similar configuration.

Valve users tend to over specify shutoff requirements, incurring unnecessary cost. Actually, very few throttling valves really need to perform double duty as tight block valves. Since tight shutoff valves generally cost more initially and to maintain, serious consideration is warranted. Tight shutoff is particularly important in high pressure valves since leakage can cause seat damage leading to ultimate destruction of the trim. Special precautions in seat materials, seat preparation and seat load are necessary to ensure success.

Flow capacity. Finally, the criterion of capacity or size can be an overriding constraint on selection. For very large lines, sliding stem valves are much more expensive than rotary types. On the other hand, for very small flows, a suitable rotary valve may not be available. If the same valve is desired to handle a significantly

ISA "Perspectives"

„B612B6C1162„



Gayle & Maureen receive flowers from Irvin Hawkes in appreciation of their dinner reservation services.



Bill Arundell presents Jennifer Southcombe with a token of appreciation for her executive assistant duties of the past year.



Mike Murray (left) thanks Bill Arundell for serving as President.

(Continued on page 44.)

ISA "Perspectives" (continued from page 43)



*New incoming Executive Members welcomed by Larry and Bill.
(Left to Right)*

John Baker, Larry Corbett, David Founk, Randy Dennie and Bill Arundell.



The newsletter team, Bob Devine, Dick Bouterse and Frank Baugh receiving an award from Mike Murray.



Jim Lomax, District 13 President.

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larger flow at a future time, a sliding stem valve with replaceable, restricted trim may be indicated. Rotaries generally have much higher maximum capacity than sliding stem valves for a given body size. This fact makes rotaries attractive in applications where the pressure drop available is rather small. But it is of little or no advantage in high pressure drop applications such as pressure regulation or letdown.

Conclusion. At the risk of over generalizing, we may simplify the process of selection roughly as follows: For the very least demanding services, in which price is the dominant consideration, one might primarily consider economy sliding stem valves for the small size applications and butterfly valves for the largest. For most general applications, it makes sense both economically and technically to use sliding stem valves for the lower ranges, ball valves for intermediate capacities, and high performance butterfly valves for the very largest sizes.

For sizes less than 3 in., general purpose sliding stem valves provide an exceptional value. For a minimal price premium over rotary products, they offer unparalleled performance, flexibility and service life. In size 3in. and larger, the premium for these devices over rotary products is warranted. For severe service applications the most frequently used and often the only available product is the sliding stem valve.

The obvious point here is this: different types of valves are appropriate to use in different size ranges, because they provide the most cost-effective solution in each given instance. If one sticks with the same type of valve over an extremely wide range, one sacrifices either performance at the low end or economy at the high-end - or both.

After going through all the other criteria for a given application, a specifier often finds he can use several types of valves. From there on, selection is a matter of price versus capability as discussed here - coupled with the inevitable personal and institutional preferences. Since no single control valve package is cost-effective over the full range of applications that are normally encountered, it is important to keep an open mind for alternative choices.

Control Valve Selection - Summary

- Sliding stem valves provide the widest variety of capability in the industry. Their performance and versatility make them very popular. In large sizes they may be expensive, but for sizes 2" and less they are first choice.
- Rotary ball and eccentric plug valves provide excellent control and are especially good values in sizes 3"-to 6". Erosion resistant designs and trims are available to extend their life in many difficult applications.
- Butterfly and high performance butterfly valves are most popular and economical in sizes above 6". In many cases, in large sizes, they are the only choice.
- Special requirements require special valve solutions. Valve designs and special trims are available to handle high noise, cavitation, high pressure, high temperature and combinations of these.

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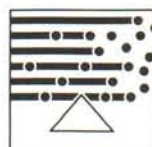
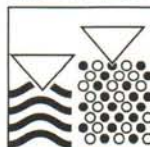
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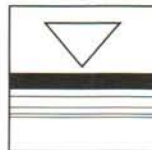


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MEMBERSHIP DINNER MEETINGS

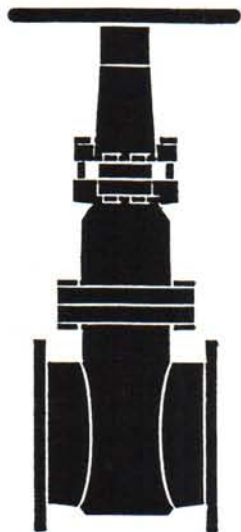
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| September 25, 1994 | Sarnia Golf & Curling Club |
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| T.B.A. | Sarnia Golf & Curling Club |
| T.B.A. | Sarnia Golf & Curling Club |

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

EXECUTIVE MEETINGS

| Date | Place |
|---------------|----------------|
| July 25, 1994 | Drawbridge Inn |
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Time: 7:00 p.m.



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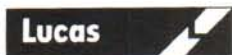
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ISP Foundation, WorldFIP, NA Boards Agree on Merger

AUSTIN, TX and RESEARCH TRIANGLE PARK, NC, June 10, 1994
– The boards of directors of the Interoperable Systems Project (ISP) Foundation and WorldFIP North America announced today that they have agreed on the principle to merge their organizations and to work jointly to develop a single interoperable fieldbus.

A memorandum of intent will be submitted to the members of both organizations for approval. A majority of the members of each organization must approve the memorandum of intent for the merger to take effect.

This is what end users have been asking for. This "expands interoperability which has been the fundamental driving force of ISP," said John Berra, the Canadian of the ISP board of directors.

Steve Hinson, a member of the WorldFIP Inc. board of directors expressed similar sentiments and added, " This is consistent with the direction of the standards organization and combined the work of ISA, IEC, FIP, WorldFIP, PROFIBUS and ISP. It is the world's best chance for a single fieldbus."

Both boards announced that the merged organization will be know as the Fieldbus Foundation.

The fieldbus to be developed by the new organization will be based on the IEC/ISA standard for the Physical Layer; the emerging IEC/ISA Standard for the Data Link Layer; the ISPF Rev. 3.0 Specification for the Application and User Layers; and the work of ISPF and WorldFIP North America for the Network and System Management. Interoperability will be maintained through the Device Description Language and device and application profiles.

The Fieldbus Foundation members will submit the specifications for their feildbus to standards-setting bodies, such as the ISA and the IEC, seeking their endorsement. Boards of the ISPF and WorldFIP stressed that the new organization will continue their support of these bodies in their efforts to develop a global feildbus standard.

While only WorldFIP North America - which covers members in North America and Asia – is a party to the memorandum of intent, WorldFIP

(continued on page 57)

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"Written on a Roll Chart"

By Howard Hobbs

I know that our readers will agree that we find instrument work very interesting, and that every good instrument man takes pride in solving each problem as it arises, and in compelling the reluctant instrument to do its duty.

A little reluctance is all right, whether it be in instruments, or in women, and tends to add pleasure to the ultimate conquest. Once in a while, however, we lay come across a control system so ill-conceived, or an instrument so inadequate, that success is always beyond the horizon, and repeated failure only frustrates us, and we lose what shreds of reputation we may have with the uninformed, but (alas) powerful process men.

A case of this kind came to my notice last week when I saw in our shop a small control valve which had all the marks of long service and hard usage. One of our mechanics, who, I fear, does not possess the self control so desirable in our work, stood near it muttering obscenities.

Me. Just a moment here. Why are you in such bad humour?

He. Why? We had this valve in here for repair nine times in the last seven months and I am growing sick at the sight of it.

Me. I am amazed! It is only a one inch pilot operated steam reducing valve. It was bought to work and it should work. You must be doing something wrong.

He. (*Through clenched teeth*) Each time I have examined the springs and sealing diaphragms and found them faultless. I have cleaned and polished the pilot piston to a mirror like finish. I have restored both plug and seat to good condition. I have cleaned all passages and renewed any doubtful gaskets. I have, furthermore, tested it on the bench as on air reducing valve and it works fine. Any suggestions?

Me. You seem to have covered everything. Why do **you** think it doesn't work?

He. I've got lots of theories, such as too much superheat in the steam, too much condensate, or too great a pressure drop, but nothing that helps to make it work as we want it

(Continued on Page 56)

to. It is supposed to control steam to a building heat system and the way it works, the tenants either freeze to death or the relief valve blows constantly. No happy medium.

Me. Could not this be controlled by an ordinary diaphragm valve, properly sized, and with a suitable return spring to balance the downstream pressure if it were piped back to the diaphragm?

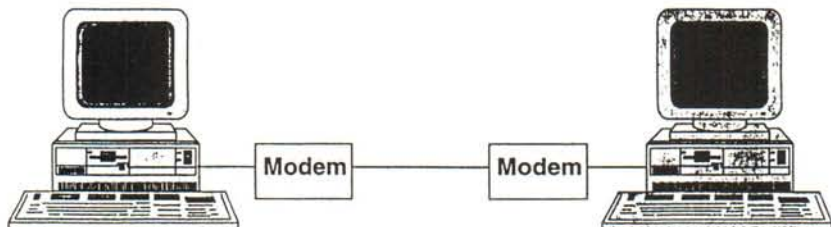
He. Certainly, but such a valve costs a little more, and so we will spend more for maintenance than a good valve is worth in an effort to make this mechanical miscarriage work. Whoever bought this must be a low grade idiot, or a relative by marriage of an instrument salesman.

Me. You are getting bitter now. Did you put all those on the victim?

He. No. In the early days, a hammer blow would make it throttle for a while, so these scars were caused by maddened process men. Enough of this, however. I must get it overhauled and out again for we have another one to work on this afternoon.

Well, I don't see much future for an instrument man who takes such a defeatist attitude. If it was bought to work, it should work, even if the Purchasing Department does do their shopping at Kresge's.

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NEWS RELEASE (continued from page 53)

Inc., the umbrella organization covering WorldFIP North America and WorldFIP Europe, has endorsed the merged development effort.

Fieldbus is a term used to describe digital networks connecting field-level devices with each other as well as supervisory control systems. Fieldbus, which is expected to replace the analog communications networks based on the 4-20 mA standard, provides numerous advantages to users, such as reduced wiring, bi-directional communications between field-level devices and control systems, self-diagnostics and greater accuracy and repeatability.

The ISPF is a multi-company consortium formed in late 1992 to develop an interoperable fieldbus. Among its members of the board of directors are Fisher-Rosemount, Siemens, Yokogawa, ABB, Fuji Electric and Foxboro.

WorldFIP was organized several months later with a similar mission. Among its members are Honeywell, Group Schneider, ELSAG Bailey, Allen-Bradley, Cegelec, ENEL and Masoneilan-Dresser.

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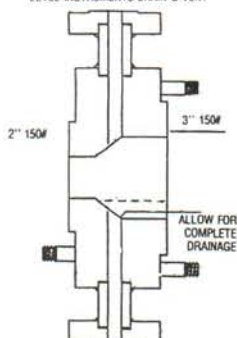
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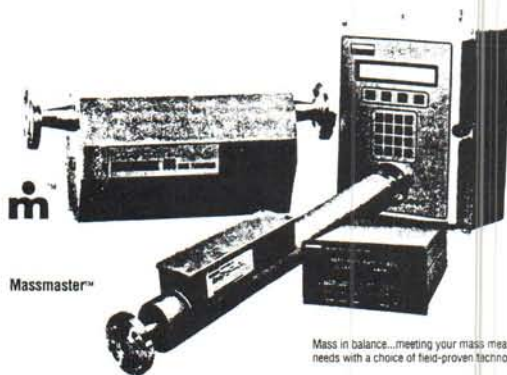
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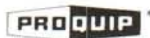
CANCOPPAS LIMITED
CONPASS INTERNATIONAL (CANADA) LIMITED



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

ENVIRONMENTAL
PRODUCTS

- Oil Absorbent Products
- Oil Skimming Devices
- Drums & Accessories
- Permanent Harbour Boom
- Epic Waste Water Samplers
- ADI Pressure/Vacuum Gas
Sampling Pumps
- Royce Instruments



- Rupture Disc
- Check Valves
- Line Blinds



SYBER SYSTEMS INC.

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

PRODUCT LIST

- IML • Intrinsically Safe Barriers
- A.H. Emery • Hydraulic Load Cell Weighing Systems
- Fuller • Electronic and Pneumatic Liquid Filling Systems
- Hiltcroft • IS Earth Proving Unit • for tanker trucks etc.
- RGS • Intrinsically Safe Valves
- Larad • 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

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

| | |
|--|----------------------------------|
| 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 |
| AFE | elenex Ltd. |
| 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 |
| Advanced Pollution Instrumentation (API) | Westech |
| 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 R | omatec |
| 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 |

Manufacturer / Tradename

Atkins
 Autocal
 Autoclean
 Automax
 Autotech
 Azonix
 B & K
 B/W Controls
 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
 Bristol Babcock
 Brooklyn Thermometer
 Brooks Instrument
 Burkert
 Burkert Contromatic
 CSI - Microloggers
 Cajon Pipe Fittings
 Cal
 Canadian Meter
 Cancoppas
 Cash-Acme
 Cashco Canada
 Cashco Canada
 Cellex
 Century Valve
 Century Valve
 Chandler
 Chemtrol
 Chessell
 Clarkson
 Clif Mock
 Colder
 Collins Instrument Company
 Compressor Controls Corporation
 Computer Keyboard Systems (CKS)

Local Sales Representative

Transcat
 Leeds & Northrup, Canada
 Leeds & Northrup, Canada
 Controls
 Davis Controls
 Transcat
 Transcat
 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
 Westech
 Transcat
 PMP Instrumentation
 Transcat
 Transcat
 Transcat
 Brian Controls
 Willer Engineering
 Transcat
 Brian Controls
 Sharp Valve
 Transcat
 PMP Instrumentation
 Ovantum Sales Inc.
 Provincial Controls
 Campbell Scientific (Canada) Corp.
 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
 Davis Controls
 Sharp Valve & Instrumentation
 SSCAN-Grodyne
 CB Engineering

Manufacturer / Tradename

Conant Controls
Conders
Conoflow
Consolidated
Consolidated Controls
Consolidated Controls
Contaq
Control Instruments Corp.
Control Microsystems
Controlotron
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
Datel
Davis Controls Ltd.
Davis Instruments
Defelsko
Dekoron
Delphian
Delta C Technologies
Delta-P Cell
Deltapilot
Detector Electronics
Devar
Dianachart
Dickson
Digitec
Dopak
Dover Gas Technologies
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.

Local Sales Representative

Industrial Projects
Transcat
Sarnia Piping Specialties
Sharp Valve & Instrumentation
Technel Engineering
Transcat
Ovantium Sales Inc.
Willer Engineering
Brian Controls
Westech
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
CB Engineering
Cantech Controls
Alpha Controls & Instrumentation
Transcat
Brian Controls
Westburne Lytle
Veronics
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

Manufacturer / Tradename

ELRESCO Timers - England
 EMCO
 ERHARD Valves
 ETC
 Eagle Signal
 Eaton Consolidated Controls - USA
 Echotel
 El-O-Matic
 Elcon Instruments
 Encoder
 Endress+Hauser
 Enertrol Shocks
 Enertrols
 Environics
 Environmental Technologies Group Inc.
 Environnement S.A.
 Epic Samplers
 Erdco
 Euchner
 Exac
 Expo Safety Systems
 Extex Instruments
 F.B. Leopold - USA
 F.W. Bell
 F.W. Murphy
 Fabco Air
 Fielding Crossman
 Fike Canada Inc.
 Firerod 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
 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
 Geokon
 Global
 Gralab
 Great Plains Industries

Local Sales Representative

Lisle-Metrix Ltd.
 Davis Controls
 Lisle-Metrix Ltd.
 Transcat
 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-Metrix Ltd.
 Transcat
 Cantech Controls
 Davis Controls
 Lisle-Metrix Ltd.
 Brian Controls
 Zesta Engineering
 TubeTech
 Lakeside Controls
 Transcat
 Westech
 Lisle-Metrix Ltd.
 Provincial Controls
 Armatek Controls
 Brian Controls
 Transcat
 Armatek Controls
 Vermeer Engineering
 Syber Systems Inc.
 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
 Campbell Scientific (Canada) Corp.
 Transcat
 Transcat
 Armatek Controls

Manufacturer / Tradename

H. O. Trerice
 H.D. Baumann Control Valves
 Haenni Instruments
 Hammel Dahl
 Hansen Quik Connects
 Hartman-Technica
 Hartmann & Braun
 Heise
 Heraeus Sensors
 Hewlett Packard
 Hex Valve
 Hiltcraft
 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 Scientific Corporation
 Ingold
 Inicon
 Inor
 Intecolor
 Intelligent Controls
 Intellitron
 Intellution
 Interface
 Interlink
 International Sensor Technology
 Interscan
 Intertec
 Ionics Instrument Division
 Ircon
 Ishida
 J-Tec
 JB Engineering
 Jacoby Tarbox
 Jamesbury
 Jensen
 Jofra
 Jofra
 Johnson Yokogawa

Local Sales Representative

U & I Supply
 Conval Equipment
 J & M Industrial Supply
 Neles-Jamesbury
 Provincial Controls
 Transcat
 Westech
 Transcat
 SRP controls
 Transcat
 Sharp Valve
 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.
 SSCAN-Grodyne
 Westech
 Cantech Controls
 Alpha Controls & Instrumentation
 CB Engineering
 SRP controls
 Cantech Controls
 CB Engineering
 Willer Engineering
 Vermeer Engineering
 Industrial Projects
 SSCAN-Grodyne
 Tubetech
 Veronics
 Willer Engineering
 Atlas Alloys
 Romatec
 Transcat
 Romatec
 Atlas Alloys
 Transcat
 Brian Controls
 Transcat
 CB Engineering

Manufacturer / Tradename

Jordan Controls
Joucomatic International
Jucker
Julius Bauser - Germany
K-Flow
K-Tek
K-Tek
KNF Neuberger
KTM
Kammer Control Valves
Kammer Control Valves
Kane-May
Kates
Kay Ray/Sensal
Kaye
Kaye Instruments
Keddco Mfg Ltd.
Keller
Kenwood USA
Ketema - McCrometer
Ketema - Schutte & Koerting
Kinetics Systems Corp. - USA
Kinetrol
King Instrument
Kistler-Morse
Kitz
Kitz
Klinger
Kotron
Kurz
Kurz
Kurz
L & J Technologies
LAGCO Flumes - USA
LEOPOLD
LFE Instruments - USA
LI-COR
LMI
LMI
Land
Land - Analyzers
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

Local Sales Representative

Cambridge Controls
Conval Equipment
Bestobell Canada
Lisle-Metrix Ltd.
Willer Engineering
CB Engineering
J & M Industrial Supply
Transcat
Associated Valve
Bestobell Canada
Cantrols
Transcat
Westech
Rosemount Instruments
Transcat
CB Engineering
U & I Supply
Campbell Scientific (Canada) Corp.
Transcat
Brian Controls
Brian Controls
Technel
Provincial Controls
Industrial Projects
Novatech
Atlas Alloys
Cantrols
Davis Controls
Provincial Controls
Brian Controls
SSCAN-Grodyne
Transcat
Armatek Controls
Lisle-Metrix Ltd.
Lisle-Metrix Ltd.
Lisle-Metrix Ltd.
Campbell Scientific (Canada) Corp.
Novatech
U & I Supply
Transcat
Westech
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
Ovantium Sales Inc.
Endress & Hauser
SRP controls
Transcat
Lakeside Controls
Transcat
Brian Controls

Manufacturer / Tradename

MTL
MTL IS Barriers
MTS
Madison
Magnetrol
Major
Manobourdon
Marpac
Marsh
Martel
Masoneilan
Max
Max 1000
Mead
Meeco Inc.
Mercoide
Meriam Instruments
Met One
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

Local Sales Representative

Syber Systems Inc.
Provincial Controls
Novatech
Bestobell Canada
Provincial Controls
Alpha Controls & Instrumentation
Sarnia Piping Specialties
Sharp Valve & Instrumentation
TubeTech
Transcat
Sharp Valve & Instrumentation
Willer Engineering
Leeds & Northrup, Canada
Transcat
Novatech
Davis Controls
Transcat
Campbell Scientific (Canada) Corp.
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
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Transcat
Bestobell Canada
Moore Products Company
Transcat
Transcat
Transcat
Transcat
Bestobell Canada
Atlas Alloys
Atlas Alloys
Ovantium Sales Inc.
Transcat
Bestobell Canada
Romatec
Sharp Valve & Instrumentation
Endress & Hauser
Bestobell Canada
Davis Controls
Brian Controls

Manufacturer / Tradename

Nullmatic
Numatics
Numatics
Nupro Valves
O'Brien
OMNI
Oakton
Ogontz
Ohmart
Oilgear
Oliver Valves
Omron
Orange Research
Orion
P+F - USA
PMV
PTC
PTC
Pacer Industries
Pacific Instruments
Pamark Manifolds
Panalarm
Panalarm
Panametrics PCI Division
Parker
Pelican
Penberthy
Penberthy
Pepperl + Fuchs - USA
Permacal
Phipps & Bird
Phoenix Contact
Polysonics
Polytronics
Porter Instrument Co. - USA
Posiseal
Powers Process Control
Precision Digital
Precision Digital
Preferred Rimcor Inc.
Preso
Presto-Tek
Pribusin
Pribusin Inc.
Promac
Prominent
Proquip
Provincial Instrument Housings
Provov
Proximity
Proximity Control
Psytronics
Pulsafeeder
Pyramid
QEL
QSDM
QSDM
Quad Tech
Qualimetrics
Quantum
R.M. Young

Local Sales Representative

Moore Products Company
Provincial Controls
elenex Ltd.
Huron Valve & Fittings
Armatek Controls
Westech
Transcat
Cantech Controls
G.L. Stebbins
Bestobell Canada
Sarnia Piping Specialties
elenex Ltd.
Provincial Controls
Transcat
Lisle-Metrix Ltd.
Romatec
Brian Controls
Transcat
Transcat
SRP controls
Provincial Controls
Cambridge Controls
Willer Engineering
Veronics
TubeTech
Transcat
Brian Controls
Westburne Lytle
Lisle-Metrix Ltd.
Provincial Controls
Transcat
elenex Ltd.
Davis Controls
Transcat
Lisle-Metrix Ltd.
Lakeside Controls
Conval Equipment
Armatek Controls
Armatek Controls
Vermeer Engineering
Willer Engineering
SRP controls
Provincial Controls
Novatech
Transcat
Ovantum Sales Inc.
PMP Instrumentation
Provincial Controls
Lakeside Controls
Bestobell Canada
Provincial Controls
Cambridge Controls
Romatec
Romatec
TubeTech
Alpha Controls & Instrumentation
Willer Engineering
Transcat
Transcat
Transcat
Campbell Scientific (Canada) Corp.

Manufacturer / Tradename

RCM Industries
 REBS
 REXA
 RGS
 RIMCO - Raingauges
 RIS
 RMS Instruments
 Ralston
 Ralston
 Raytek
 RdF
 Research Control Valves
 Rexcon
 Robbins Myers
 Robertshaw
 Rochester Instrument Systems
 Rohrbach Cosasco Systems
 Ronan
 Rosemount
 Rosemount Analytical
 Rosemount Analytical
 Rosemount Combustion Control
 Rotomation
 Rotronic
 Royce Instruments
 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
 Schrader Bellows
 Schramm
 Scully Electronic Systems
 Seacor
 Sealed Unit Parts
 Sensall
 Sensidyne
 Sensidyne Gas Monitors
 Servomex
 Setra
 Shand & Jurs
 Shawflex
 Shimpco
 Sieger
 Siemens
 Sierra Monitor
 Sigma Technologies
 Signet Scientific
 Sigrist-Photometer Co. - Switzerland
 Silometer
 Simpson
 Skinner
 Smar
 Smartline

Local Sales Representative

Cambridge Controls
 Campbell Scientific (Canada) Corp.
 Controls
 Syber Systems Inc.
 Campbell Scientific (Canada) Corp.
 Transcat
 Technel Engineering
 Transcat
 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
 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
 TubeTech
 Sharp Valve & Instrumentation
 SRP controls
 Transcat
 Transcat
 Alpha Controls & Instrumentation
 Novatech
 Transcat
 Novatech
 Alpha Controls & Instrumentation
 Armatek Controls
 Bestobell Canada
 Transcat
 Westech
 Alpha Controls & Instrumentation
 Transcat
 Sarnia Piping Specialties
 Brian Controls
 Lisle-Metrix Ltd.
 Endress & Hauser
 Transcat
 Cantech Controls
 G.L. Stebbins
 Brian Controls

Manufacturer / Tradename

Smartline
Smith Valve
Sno-Trik
Solartron
Solomat
Sparling
Speedomax
Stahl
Statham
Statiflow
Stewart Electronics
Strahman
Sugino
Superior Flow Products
Swagelok Tube Fittings
Swingwirl
Synchro
Systematix
T.B. Woods
TA Instruments
TDC-3000
TIF
TLV
TOWER-GARD
TSI
Taylor Hand Actuated Pressure Calibrator
Techmation
Techne
Technipower
Tegam
Tegam
Tektronix
Tel-Tru
Tel-Tru
Teledyne
Teledyne Analytical
Teledyne Combustion Efficiency Analyzer
Telematic
Teltronics
Testoterm
Texas Analytical Controls Inc.
Texas Electronics - Raingauges
Texas Sampling Inc.
The Electron Machine Corporation
Theben
Thermo Electric
Thermo Electric - CalibratorsT
Thermo Kinetics
Thermon
Thermox
Time Electronics
Tobar
Tokheim
Trademark
Transmation
Transmation
Transtector Systems
Trerice
Tri-Sen
Tricentric
Tripp-Lite

Local Sales Representative

Honeywell
Atlas Alloys
Huron Valve & Fittings
Westech
Transcat
Brian Controls
Leeds & Northrup, Canada
Alpha Controls & Instrumentation
Sarnia Piping Specialties
Westburne Lytle
SRP controls
Cantech Controls
elenex Ltd.
Ovantium Sales Inc.
Huron Valve & Fittings
Endress & Hauser
Moore Products Company
Willer Engineering
elenex Ltd.
Westech
Honeywell
Transcat
TubeTech
Lisle-Matrix Ltd.
Willer Engineering
Transcat
Lakeside Controls
Transcat
Transcat
Brian Controls
Transcat
Transcat
Brian Controls
Transcat
Armatek Controls
Armatek Controls
Transcat
Willer Engineering
Cantech Controls
Transcat
Vermeer Engineering
Campbell Scientific (Canada) Corp.
Bestobell Canada
Industrial Projects
Davis Controls
Armatek Controls
ranscat
Provincial Controls
PMP Instrumentation
Willer Engineering
Transcat
Cantech Controls
Willer Engineering
G.L. Stebbins
Cantrils
Transcat
Cantech Controls
U & I Supply
CB Engineering
Bestobell Canada
Transcat

Manufacturer / Tradename

Trueline Valves
Tytronics Inc.
U.S. Gauge
U.S. Gauge
Unimeasure
United Electric
United Electric
United Sciences Inc.
Unitherm
Universal
Universal Enterprises
Unomat
Unomat
Vaccon Vacuum
Vaisala
Vaisala - RH, Barometric Pressure
Valhalla
Valtek
Valvtech
Vanessa
Varec
Variomag
Vector-Vid
Velan
Versatile Instruments
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 - USAL
Waugh
Weksler Instruments
Welker Engineering
West
Westech
Westlock Controls
Whesso Varec
Whitey Valves
Whitman
Wika
Wilkerson
Winters Gauges
Wodex
Wood's
Woodhead
Worcester Controls
Y-Z Industries
Yokogawa
Zullig

Local Sales Representative

Conval Equipment
Novatech
Brian Controls
Transcat
SRP controls
Brian Controls
Cambridge Controls
Willer Engineering
Bestobell Canada
Alpha Controls & Instrumentation
Transcat
SRP controls
Transcat
Provincial Controls
Transcat
Campbell Scientific (Canada) Corp.
Transcat
Controls
Controls
Westburne Lytle
Westech
Endress & Hauser
Transcat
Westburne Lytle
Sharp Valve
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
elenex Ltd.
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 |
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