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**Upcoming Events**

- Fri, May 25, 2012 .....**Annual ISA Hamilton Section Golf Tournament**  
Chippewa Creek Golf Club - Mount Hope, Ontario
- Tues, May 29, 2012.....Annual General Meeting  
& speaker: “Energy Management Solutions & Capital Expenditures in Relation to ISA 50001”  
ABB Canada, 3450 Harvester Road, Burlington

**Spring 2012 Newsletter**

**Section President**  
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**1. Joint DLC with ISA Districts 5 and 13 – District Leadership Conference Report**

The District Leadership Conference, also known as the DLC, is one of the building blocks of the ISA’s program for developing its volunteer leaders. DLCs are focused on providing leadership development opportunities for members of ISA Sections. These annual events give ISA members a chance to get to know each other, to attend leadership development workshops, and collaborate on event planning. They are also venue for the each district’s annual business meeting to take place.

On the weekend of May 5-6 section leaders from ISA District 5 and District 13 came together in Sarnia, Ontario, Canada to hold their 2-day 2012 District Leadership Conference. Hosted by the ISA Sarnia Section, the event brought together ISA members from Eastern Canada (District 13) and Midwestern United States (District 5). District 13 attendees included members from the Hamilton, Sarnia, Toronto, Montreal and Saguenay/Lac St. Jean sections. District 5 attendees included ISA members from the Cleveland, Niagara Frontier, Dayton, Michigan and Toledo sections. Together the members of the two districts were able to collaborate, share ideas, and network.

The DLC kicked off with an evening social and dinner on the Friday night at a well-known fish restaurant looking out over the St. Clair River. Attendees from the Montreal and Saguenay were happy to enjoy the Sarnia hospitality after making the long

drive from Quebec. Participants from ISA District 5 were pleased from smooth trip across the Canadian border. ISA President Bob Lindeman also made the long trek from Tennessee to join the DLC for the dinner and social.



*Group photo from the District 5 & 13 DLC in Sarnia, Ontario, Canada on May 4-6, 2012.*

Saturday had a busy program that began with a 7:30am breakfast. District 13 DVP Antonio Alves called the meeting to order, and opening remarks were made by District 5 DVP Debashis Sadhukhan. ISA Sarnia section president Rob Dickson, and host of the DLC, also welcomed the attendees to the Sarnia area.



The first speaker of the day was ISA President Lindeman. Lindeman gave a motivational speech about the "ISA Structure and Challenges" which talked about new initiatives that ISA leadership is undertaking to increase the services and relevance of the ISA for today's automation professional. This presentation lead to a spirited round table discussion, where volunteer leaders from Districts 5 and 13 discussed various different options and ideas on how to promote the ISA and encourage new members to join.

After the round table discussion, section members from both districts presented the following workshops for their peers:

- ISA Section Responsibilities  
- John Milhevic, ISA Cleveland Section (District 5)
- Process Flow for Standards Approval  
- Bill Stange, ISA Dayton Section (District 5)
- ISA Cooperation with the CPCA (Canadian Process Control Association)  
- Ryan Kershaw, ISA Toronto Section (District 13)
- Leadership and How it Relates to ISA  
- Bill Stange, ISA Dayton Section (District 5)
- Managing Leadership  
- Patrick Bouwman, ISA Montreal Section (District 13)
- An Overview of the ISA's Technical Divisions  
- Graham Nasby, ISA Hamilton Section (District 13)
- Test your ISA IQ: Question & Answer Section  
- Bob Popek, ISA Hamilton Section (District 13)

The Saturday concluded with a Roast Beef dinner in the Winners Circle Room at Sarnia's OLG Waterside Casino. At the dinner, ISA Sarnia president Rob Dickson thanked the group for making the trip to Sarnia and encouraged everyone enjoy the city's nightlife.

The Sunday consisted of two morning meeting rooms: one for the District 5 Council Meeting and the other for the District 13 Council Meeting. Topics discussed by each district included items such as annual reports from each of the district's sections; the annual review of their district's business plan, membership statistics and trends; and the selection of nominators/delegates for the upcoming international-level SLM/FLM meetings. In the meetings, Section presidents also gave PowerPoint presentations highlighting the events and accomplishments of their individual sections.

The DLC wrapped up with a special joint session with District 5 and District 13 members being brought together for certificate presentations. ISA Section presidents for the past year were recognized with appreciation plaques, and special certificates

were given out individuals to recognize outstanding volunteer service. The DLC concluded with a group photo of attendees and a farewell catered lunch.

ABOUT THE AUTHOR

**Graham Nasby, P.Eng., PMP** is the VP & President-elect of the ISA Hamilton Section. He can be contacted at: [graham.nasby@eramosa.com](mailto:graham.nasby@eramosa.com)

## 2. New Mailing Address

Please note that as of May 1, 2012 our mailing address has changed. Please update your records accordingly. Our new address is as follows:

ISA Hamilton Section Inc.  
2030 Headon Forest Drive  
Burlington, Ontario  
L7M 2M3

## 3. May 29 - Annual General Meeting (AGM)

The annual general meeting of the ISA Hamilton Section Inc. will be held on May 29, 2012 at in the "Canada Room" at ABB Canada, 3450 Harvester Road, Burlington, Ontario. Dinner will be provided courtesy of ISA Hamilton Inc. Attendees need to RSVP to [program@isahamilton.com](mailto:program@isahamilton.com) beforehand. The agenda is as follows:

- 6:00pm – Networking and Dinner
- 6:30pm – Annual General Meeting
- 6:45pm – Guest Speaker

At the annual general meeting, the previous AGM's minutes will be reviewed, an annual report given by the section president, and the slate of officers will be confirmed for the following year.

All of our current Directors will continue through the second year of their two-year term.

- President - Kenneth Hamilton
- Vice-President - Graham Nasby
- Secretary - Bob Popek
- Treasurer - Alice Kelly

In addition, our Committee Chair positions will remain the same for the 2012/2013 season.

Some of our executive members are chairing more than one committee. We are eager to welcome new and interested individuals from our Hamilton Section membership to more fully develop our executive board slate. If you're interested in becoming more active in the ISA Hamilton Section, please contact anyone of the executive board directors or committee chairs for more information.

#### 4. May 29 – AGM Guest Speaker

Hamilton Section’s Annual General Meeting will be held on Tuesday May 29<sup>th</sup>, 2012 at ABB Canada (3450 Harvester Road, Burlington). Dinner will be served at 6pm and presentation will begin at 6:45pm. Dinner is provided courtesy of ISA Hamilton Section. Please RSVP to [program@isahamilton.com](mailto:program@isahamilton.com)

#### Title: **Energy Management Solutions & Capital Expenditures in Relation to ISO 50001**

Speaker: Mahin Derakhshanian  
Can-Technologies Inc

Time: 6:00pm dinner  
6:30pm AGM meeting  
6:45pm Guest Speaker

#### Abstract:

Our speaker for the evening, Mahin Derakhshanian, has a vast knowledge about Energy Management and its life cycle and is one of the leaders in establishing and promoting ISO5001. Her vision on Green Initiatives has helped Can-Technologies to become a pioneer in Energy Conservation and Green House Gas (GHG) Emission Reduction for manufacturing and industrial sector providing the industries with ENTELEGIS™ Energy Management Software Product as well as Consultancy Services for Auditing, Metering, Data Collection, Monitoring, Targeting, Validating and Reporting.

#### About the Speaker:

Mahin Derakhshanian with over 20 years of experience in Electrical, Automation, Control and Information Technology has managed several medium and large capital projects within several industries including Primary Steel, Secondary Steel, Automotive, Power Generation, Material Handling, Water Treatment, Food & Beverage, Chemical, Tobacco and Cement.

Her experience with different SCADA packages (RSViewSE, Wonderware Archestra, iFix, WinCC, Cimplicity and Monitor Pro) for redundant server/clients or thin clients architecture for large size applications is a well-known fact within Can-Technologies customers.

Extensive experience with several Manufacturing Execution System (MES) solutions, delivered the largest (\$1M+) implementation to-date of MES solution for a joint venture Automotive Powertrain manufacturer, providing Performance Monitoring, Downtime Tracking, Birth History Management, and ERP/legacy systems integration for two complete production operations. Contact: [info@can-technologies.com](mailto:info@can-technologies.com)

#### 5. Apr 24 Members Meeting Report: Model-Based Pump Control Demonstration

ISA Hamilton members were treated to a demonstration of model-based pump control as part of the April 24, 2012 members meeting at Toshont Power Products in Burlington. Chris Rowles presented a seminar that covered the typical considerations when selecting a pump control system that uses model-based control. As part of the members meeting, Chris used a demonstration skid consisting of two VFD controlled pumps, along with a throttling valve to simulate load, to show how model-based control can be used to effectively control multiple pumps automatically.

From the presentation abstract:

#### Adaptive Model-Based Control for Multiple Pump Applications

Adaptive model-based control, when used for controlling multiple pumps or fans, has the ability to realize significant improvements in both application performance and energy efficiency. In this presentation, the model-based control techniques used by Toshiba’s VLP (Virtual Linear Pump) technology will be explored in terms of how they can be successfully used for multiple pump installations. In particular, the benefits of using a model-based approach to reduce surges when individual pumps are start/stopped within a bank of pumps will be discussed. Rather than relying on the traditional “setpoint minus process variable” error algorithm (commonly used by PID controllers), the VLP’s model-based technology uses an adaptive internal model to control pumps. Model based control is shown as a way to solve the ever-present problem of how to effectively control a pump, with its non-linear “pump curve”, to efficiently match linear changes in process demands.

The meeting attendees were treated to a pizza dinner, courtesy of ISA Hamilton. We thank Chris Rowles, Tom Johnson, and the staff of Toshont Power Products ([www.toshont.com](http://www.toshont.com)) for hosting our April 24th meeting.



*ISA Hamilton member Andrea Loar looks on as Chris Rowles from Toshont shows how multiple VFDs can be used to do automatic load-sharing in pumping applications.*

## 6. ISA Hamilton Expo 2012 Report

Once again, the ISA Hamilton Expo held at the Royal Botanical Gardens on Tues, March 20, 2012 to a full house.

The main hall at the Royal Botanical Gardens was filled to capacity with over 50 vendor booths.

In the Technical Program, the following technical talks were presented:

- “Improving Operational Performance with Standard Device Integration & FDT Technology” – David Riemer, FDT Group
- “Advances in Digital Control Valve Technology” – Tim Jentz, Lakeside Process Controls.
- “Pump Control with Virtual Linear pump (VLP Technology)” – Yotam Bar-Eli, Toshiba International Corporation
- “Migrating Legacy Systems to the Cloud” – Bob Wynnyk, Vishay Precision Group
- “Flow Measurements Best Practices” – Paul Cieri, Lakeside Process Solutions

A draw was held for the attendees and the following individuals received various prizes:

- Daniel Niksic/McMaster University: Kobo Vox E-Reader
- Paul Gagon/City of Hamilton: Garmin GPS
- Jake Zwart/Spectrum Tech: Sony Digital Picture frame
- Joseph Curcio/Enbridge: iPod Nano

We would like to thank our sponsors, volunteers and everyone who came to see the exhibitors and technical seminars.

### SAVE THE DATE

## ISA Hamilton EXPO 2013

**Instrumentation & Process Technology  
Exhibition & Conference**

**TUESDAY, APRIL 2, 2013**

Trade Show, Seminars, and Exhibits

Royal Botanical Gardens  
680 Plains Road West  
Burlington, Ontario

## 7. ISA Hamilton Turns 50!

On May 16, 1962 the ISA Hamilton Section Inc. received its charter. This means that as of May 2012, our section has been active for 50 years.



The ISA Hamilton Section is proud to be serving the needs of automation professionals in the Golden Horseshoe and the Niagara Peninsula. As a non-profit organization with over 130 members we are proud to be the local section of the International Society of Automation.

Now in its 50th year, ISA Hamilton Section continues its tradition of holds regular member meetings, sponsoring educational endeavours, producing an annual exhibition, encourages an open exchange of career opportunities, and promoting the goals & objectives of ISA. We are also pleased to help bring the Canadian perspective to the ISA organization as a whole.

## 8. ISA Hamilton Golf Tournament – Sold Out

For the first time in several years, the ISA Hamilton Golf Tournament is now sold out. Taking place Friday, May 25, 2012 at Chippewa Creek Golf Club in Mount Hope Ontario (about 20 minutes from Hamilton), the annual tournament gives a chance for fellow automation professionals to get to know each other. Like past years, the tournament begins with a shot-gun start at 12:00noon and finishes with a steak dinner and door prizes. A big thank you goes to our long-time golf-tournament coordinator Bob Popek. Information about next year’s 2013 golf tournament will be made available this fall.



## 9. FDT Technology Workshop Report

On May 15, 2012 a local FDT Technology Workshop was held at the Holiday Inn Burlington Hotel and Conference Centre. Entitled “Solving the Automation Productivity Puzzle”, the workshop gave an overview of the IEC 62453 standard which defines FDT communication and configuration interface between field devices and host systems. (The ISA connection to FDT, is that the ISA103 standards committee is involved with the development and maintenance of the IEC62453 standard..) The workshop was well attended and several ISA Hamilton members were in attendance.



The ISA Hamilton Section was pleased to lend its support to this local workshop put on by the FDT Group. David Riemer from the FDT group was also the keynote speaker for our 2012 ISA Hamilton Expo.

**TECHNICAL ARTICLE:**

## 10. A Brief Overview of Pulse Width Modulated or Variable Frequency Drives

by Glen Taylor, eWerks

By controlling the voltage and frequency supplied to an electric motor, the variable *frequency* drive (also known as the variable speed drive, adjustable speed drive, or inverter) provides a ‘continuous range’ of process speed control when compared to ‘discrete’ speed control provided by conventional gearboxes or multi-speed motors.

### Motor Speed Control

The speed of an AC induction motor is determined by the frequency of the power supply and the number of magnetic poles in the design of its stator. When connected to a constant frequency power source, induction motors are (relatively) constant speed machines that will operate with a 2 - 5% slip from no load to full load.

A variable frequency drive (VFD) provides operators with the ability to adjust both the speed and torque of a motor. To control torque a VFD regulates the output voltage in proportion to the output frequency. The required ratio of V/Hz is determined by the characteristics of the motor. Mains AC is rectified and the ripple voltage smoothed. The resulting DC is converted back into an AC voltage using PWM techniques to vary the duty cycle of chopping power transistors. To ensure the motor is operating within spec, circuits monitor the incoming voltage supply, the speed setpoint, the DC link voltage, the output voltage, and the output current.

In simple applications, the speed is usually manually set. However, for more demanding processes a programmable logic controller (PLC) or tachometer is recommended to automatically manage the setpoint.

### Operating Costs and Savings

In applications with fixed speed motors, control elements such as dampers and valves are used to regulate flow and pressure. Energy and operational efficiencies are generally poor because of the continuous throttling action. Where variable speed operation is desirable, substantial savings from reduced energy and maintenance costs can be realized by replacing conventional control elements with a VFD.

### Electrical Energy and Demand Savings

There may be savings in terms of both energy consumed (kWh) and peak demand charges. The extent of these savings depends on the specific load profiles of the application and the local utility’s rate schedule. Since the most significant factor affecting demand is the power required by the load, a VFD can provide significant savings by reducing this demand.

### Process and Operational Improvements

Often the installation of a VFD will result in operational improvements by:

- Eliminating costs associated with the maintenance of mechanical control devices such as valves and dampers,
- Incorporating current limiting features that prevent motor burnouts caused by multiple restarts,
- Shielding motor insulation from external voltage variation,
- Operating at equipment at reduced speeds that will extend the useful life of bearings,
- Increasing MTBF (mean time before failure) by lowering stresses and metal fatigue in drive train shafts.

### Things to Remember When Considering a VFD

The following should be considered when selecting a VFD:

1. A variable frequency drive is the most cost effective choice if duty cycle is evenly distributed over the entire range of process flow rates.
2. Relative energy savings improve if the performance and system resistance curves are steep.
3. Many potential VFD applications are not implemented because benefits other than energy savings are overlooked. Frequently, process control and reliability far outweigh efficiency related benefits to the user
4. For variable torque loads, the variable frequency drive savings can be significantly greater since horsepower

varies proportionally to the cube of the speed.

- For applications above 25 HP (horsepower), installation costs are usually comparable to the total capital cost for the drive. Below 25 HP, installation costs may be more than the cost of the drive

#### ABOUT THE AUTHOR

**Glen C. Taylor** is the owner of eWerks Inc. For over 25 years he has been involved in the design and manufacture of industrial electronics. Glen holds a Master of Science degree (with distinction) in Electronic Product Development from the University of Bolton in the UK, a CID certification in circuit board design from IPC Designers Council, and is an authorized Microchip Design Partner. He is also a senior member of IEEE and ISA. Contact: [www.ewerksinc.com](http://www.ewerksinc.com) Glen also has a blog at: [www.thingsthatgoblink.com](http://www.thingsthatgoblink.com).

## 11. Member Meetings: Call for Speakers

As a service to its members, the ISA Hamilton section holds monthly membership meetings. The meetings consist of dinner and a speaker. The meetings generally start at 6:00pm, followed by a 45 minute seminar that begins at 6:30pm.

Meetings are open both members and non-members of the ISA. Pre-registration is required so that we know how many dinners to order. Please see our website for the meeting schedule.

We are currently seeking speakers for several of our upcoming membership meetings in the 2012/2013 season. Our focus is technical content. Note for Vendors: The goal of the member meeting presentations is to present technical topics of interest to our members – not to just be sales presentations. We do accept vendor presentations provided that they are geared towards general technical knowledge and not specific product lines. We have had many excellent vendor-provided presentations in the past, and we look forward to many more.

Please visit our website to see what meeting presentation slots are available. Feel free to contact us if you are interested in sharing your knowledge with your fellow automation professionals through our membership meetings program. We look forward to seeing you at our next meeting.



*Setting the Standard for Automation™*

## 12. ISA Hamilton Section Contacts

For more information about ISA membership, the ISA Hamilton section or the upcoming section events, please do not hesitate to contact any one of us. (Email addresses are @isahamilton.com)

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*The ISA Hamilton Section is the local section of the International Society of Automation for the Hamilton, Burlington, Guelph and Golden-Horseshoe areas of Southern Ontario, Canada. ISA Hamilton Section holds regular meetings, sponsors a variety of educational endeavors, produces an annual exhibition, encourages an open exchange of career opportunities, and promotes the goals & objectives of ISA.*