January 2009

LONMARK® INTERNATIONAL

LONMARK® magazine

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LonMark Magazine: the official magazine of LonMark® International

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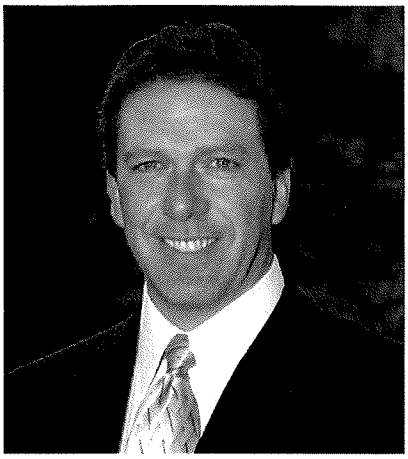
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A Vision Becomes Reality



Ron Bernstein, *Executive Director*

2009 is ushering in many significant opportunities that you should be aware of. Along with a challenging economy and a new governing team in the US which certainly will change some economic policies, we are also seeing a focus on improved efficiency. Just yesterday I read a speech by President-elect Obama stating the new administration will have to become more efficient starting with all government buildings. Buildings will have to run more efficiently starting with the heating, air conditioning, and lighting. While the US military has already started upgrading their bases using the open, LonWorks specification developed by the Army Corps of Engineers, there is a new opportunity emerging to provide a similar objective to the GSA. Several meetings with key contacts have begun as we work to support them.

For LonMark and the LonWorks community the recent announcements of our successful ISO/IEC standardization efforts will pave the way for more specifications declaring LonWorks as the open control system of choice. Inside this issue of the LonMark Magazine there are several articles discussing the importance of the ISO/IEC designation and how this will affect all of us worldwide. However, I would like to recognize here the few key individuals who have been instrumental in ensuring LonWorks and LonMark International were successful in reaching this goal:

We all owe a debt of gratitude to those key people that have helped make this vision a reality:

- **Jeremy J. Roberts – LonMark's Technical Director –** Jeremy has acted as co-editor and LonMark's leader for this effort since the very early stages of development. Jeremy has been working with many volunteers, working groups, standards bodies, committees, and directly with ISO/IEC to ensure all efforts were well coordinated. I personally extend my sincere thanks to Jeremy for seeing this project through to success.

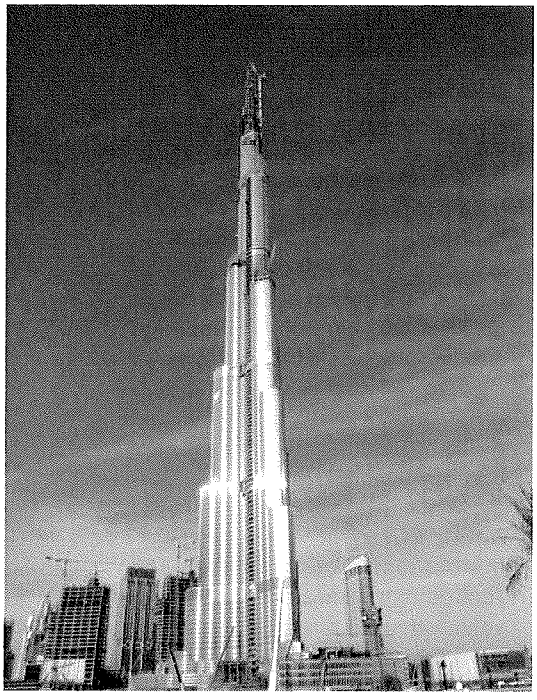
- **Vijay Dhingra – Echelon VP Product Marketing –** Vijay, also a co-editor, has been the key person within Echelon driving this effort and working very closely with LonMark and the volunteers. Vijay's tenacity and perseverance have been outstanding as he has been working with the countless "players" and national bodies to achieve a successful vote. Vijay was intimately involved in the document preparation, comment resolution, and he spearheaded the process we used to achieve a successful outcome. Vijay's ambassadorship and skillful communication efforts have been invaluable.

- **Jan Brissman – LonMark International Board Member, TAC Technology Manager –** Jan has volunteered his time on several key committees, the primary one being the CEN TC 247 committee which has been a very active team working towards European adoption of

LonWorks. Jan coordinated efforts with many of the European national standards bodies and was instrumental in ensuring efficient and successful communication with all of the involved parties.

- **Chris Broennimann – LonMark International Board Member, LonMark Switzerland Chair, and CEO of IBT –** Chris is the chair of the LonMark Technical Committee and was instrumental in coordinating efforts, both technical and political, within the European community. Chris's leadership and dedication have been exemplary.

- **The Supporters –** Many of our members, associates, and friends have helped encourage their local standards bodies to support LonWorks becoming an ISO/IEC standard including: Hans-Joerg Schweinzer and Ernst Eder (Austria), Robert Bothe (Belgium), Jürgen Hertel (Germany), Roberto Pietra (Italy), Jae-Gun Wee (Korea), Henny van de Bovenkamp and Mark Ossel (Netherlands), Nariman Fakhraee and Knut Løe (Norway), Pawel Kwasnowski (Poland), Miha Erklavec (Slovenia), Peter Palensky (South Africa), Rene Quirighetti (Switzerland), Mark Buckland and Peter Colebrook (UK), Barry Haaser and Kenneth P. Wacks (US), and the many hard-working participants of CEN TC 247, without whom this technology may not have become European, and then international, standards. We are very grateful to these persons and the many others that have helped the process along the way. Our sincere thanks and gratitude towards you.



The Burg Dubai – tallest building in the world when complete.



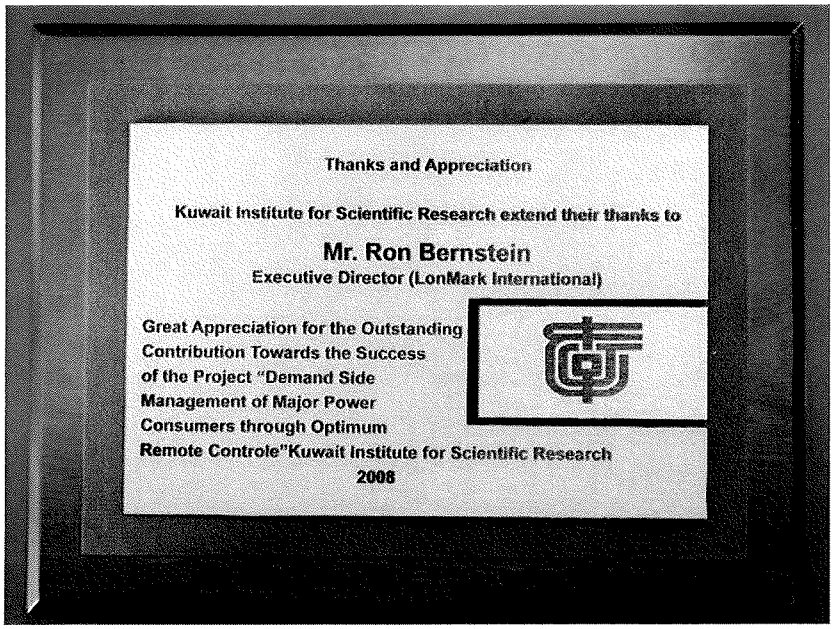
The LMI Board on tour at the construction site of the Burg Dubai.

- **The Creators –**No note of appreciation would be complete without recognizing the key people responsible for creation of the LonTalk protocol. Bob Dolin, Glen Riley, Robert Einkauf, and Marek Friedrick first put pen to paper and later code to computer and created what we now commonly refer to as LonTalk. Their effort started in the 1980s and their work to enhance, improve, and expand the protocol goes on today. Recently, I had a chance to congratulate several of them individually on this tremendous personal and professional accomplishment.

- **The Creators Part 2 –** In addition to the protocol, there are three other parts to the ISO/IEC 14908 suite of standards: The twisted pair transceiver, powerline transceiver, and IP protocol. I would also like to recognize the key individuals responsible for these technologies, as they are examples of simple ideas benefiting the world in a huge way.
  - The twisted pair transceiver we refer to as FTT – Free Topology Transceiver used in more than 90% of all open LonWorks projects was developed by Rod Sinks, Mike Berke, Don Bauman, Kurt Stoll, and Bob Dolin in the early 1990s.
  - The Powerline transceiver technology, a rather complex signaling challenge, was developed by Phil Sutterlin, Walter Downey, Mark Stewart, and Amy Hurlbut and they continue to improve and expand the usage of powerline signaling today.
  - Finally, the IP-852 technology, part 4 of the ISO/IEC suite for LonWorks was developed by a team of people including Darrell Duffy and Fremont Bainbridge. We congratulate all of them on their accomplishments and having the world recognize this in the form of issuing an International Standard based on their efforts makes us very proud indeed.
  - We hoist a drink in their honor and we offer our sincere appreciation and recognition.

In other recent news...

The LonMark International Board of Directors Meeting was recently held in Dubai, UAE where we met with various local individuals to discuss the usage of LonWorks in projects in the area. Our meeting was co-located with



LonMark award of appreciation from Kuwait Institute of Scientific Research.

a real estate show and hosted key individuals from the entire Middle East region. The board had the opportunity to tour the city of Dubai and learn first hand about the building projects underway in the city. Several of the famous projects we visited are using LonWorks for their control systems, an added benefit to our tour. The meetings confirmed our view that there are tremendous opportunities in the region for open LonWorks systems. Discussions are underway to explore increasing the awareness of LonWorks through educational outreach program.

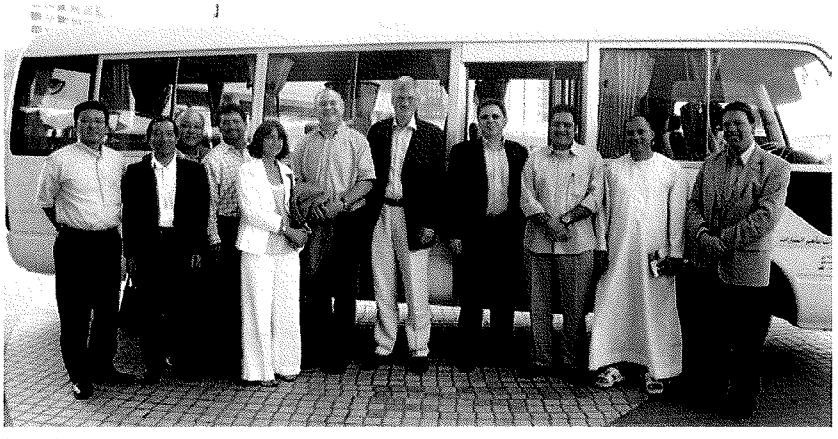
LonMark's Technical Director, Jeremy Roberts, recently met with key members of the NAFEM (National Association of Food Equipment Manufacturers) Trade Association and McDonalds to discuss how LonMark International can support their efforts to develop and deploy smart restaurant equipment. The meeting opened the door for additional discussions such as profile development, equipment testing and certification, industry education, and ongoing collaboration. The QSR (Quick Serve Restaurant) market, through McDonald's stewardship, is a potentially very large new market for LonWorks.

The Kuwait Institute of Scientific Research (KISR) honored LonMark with a plaque of recognition for their energy conservation project with the Government of Kuwait. We are quite honored to have received this recognition for supporting their ongoing efforts. KISR's Dr. Ahmad Al Mula and his team have implemented a LonWorks solution in a pilot project for Demand Response load limiting for a variety of buildings in Kuwait as they address a power distribution limitation. The remotely accessed and activated system uses a combination of LonWorks products and technologies as the first phase of a potentially very large implementation. We hope to have a case study on this project later this year. Additionally, we are working with KSIR to develop educational programs in the region.

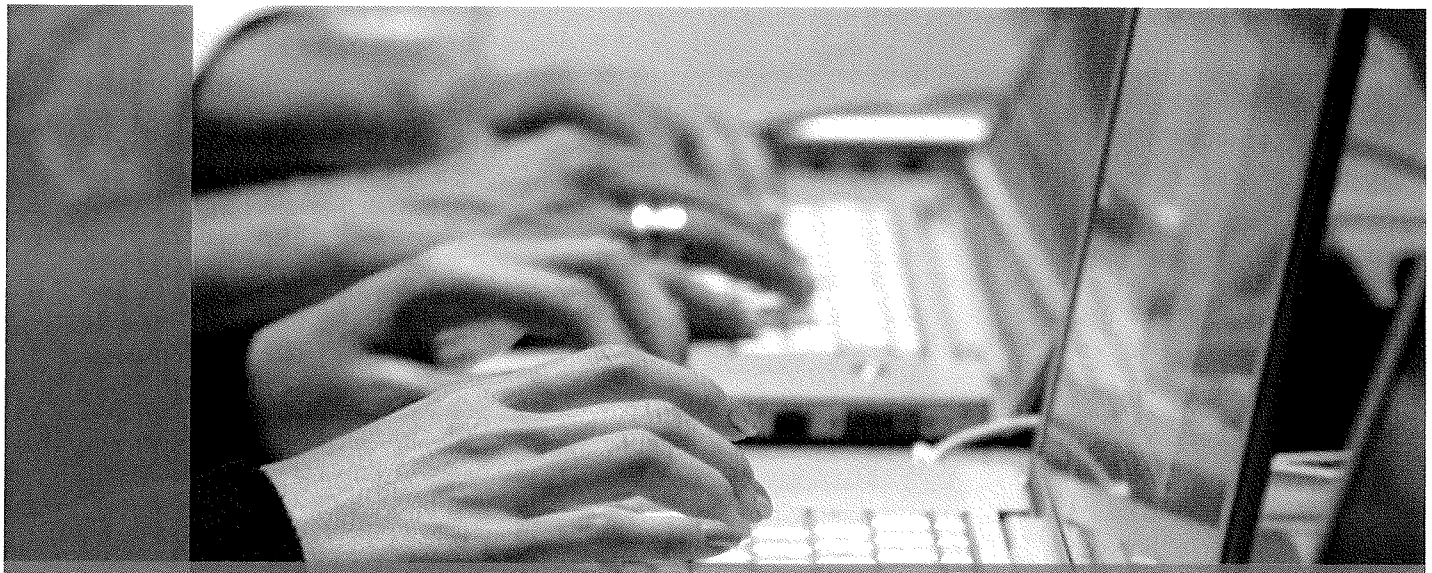
2009 will be a year of growth and opportunity for our members. On the technical front, the ISO/IEC standardization, the efforts of the working groups developing new open specifications, new profile and LonMark guideline enhancements, ensures we have our work cut out for us. On the marketing, promotion and educational fronts we are working on a variety of projects including a new job board for professional job placement, a new educational Webinar program, and we are investigating a new series of community networking and educational events called LonMark Connection – Building Community. More information will come via email and on our website.

Not a member of LonMark International? Joining LonMark International is simple and valuable. Our objectives are simply to support our membership and the market through a variety of technical, educational, and promotional efforts. Consider supporting these efforts and gain exceptional value while helping fund our ongoing activities.

Respectfully, **Ron Bernstein**
Executive Director
LonMark International



LonMark board tours city of Dubai.



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- The 1-day training class is a preparatory course for professionals wishing to become LONMARK certified. The training class is designed as a refresher course for individuals already familiar with the basic concepts of LON and for those who have had prior training and field experience.

- The test is open to any industry professional involved in the design, specification, integration, or installation of LON control networks. Those passing the test are recognized LONMARK Certified Professionals and hold the credentials associated with comprehensive LON technology knowledge.

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LonWorks as an ISO Standard

We have been asked a great deal about how important open standards are, a simple but direct illustration fits best as a reply " imagine phones, faxes, email even television all being produced independently with no standard way of communicating or broadcasting. The chaos for consumers and businesses alike would be intolerable". It is because of open standards that manufacturers and suppliers are able to interchange products of like functions.

How can this be important? Look at the latest acquisition of a LonMark manufacturer. Regardless of how or why it took place, the representatives and customers were left without product support, or warranty! If the system had been of a proprietary nature, everyone would have suffered. The fact is that the manufacturer conformed to the LonMark platform, the representatives are signing with new manufacturers, and their jobs in progress are being completed. Without a common standard it may not have been possible without changing out the entire system.

Likewise, existing buildings do not need to worry if a controller fails, it's LonMark! I'm not suggesting that it has or will be easy; technicians need to be retrained on new systems, relationships have to be established and the inevitable bugs and workarounds figured out. Nevertheless, the systems with LonMark Certified controllers and the integrators that represent them will continue to have a wide abundance of controls to choose from for years to come.

This international recognition by ISO/IEC brings a great deal to manufacturers as well as to the engineering community. Having an international standard brings true value to the customer by allowing manufacturers to produce identical products worldwide! Engineers no longer have to choose if they should use this standard or that standard; simply use the recognized worldwide standard. The four parts of the standard set comprise the core protocol; the twisted-pair, free-topology-wiring transfer medium, the powerline transfer medium, and the use of the Internet Protocol (IP) as a tunneling transfer medium.

The future is bright indeed thanks to the hard work of the LonMark® International Technical Committee and most notably;

- **Jeremy Roberts** (LonMark Technical Director),
- **Ernst Eder** (LonMark Certification Director, Europe),
- **Christoph Broennimann** (LonMark Technical Committee Chairman, and Chairman, IBT Ingenieurbüro Broennimann Thun),
- **Jan Brissman** (LonMark Board Member, Technology Manager, TAC) and
- **Ron Bernstein** (Executive Director, LonMark International)

Thanks to the efforts of all involved we have a new international standard along with the proven technology we have come to depend on! Moving forward as a distributor on two continents our life just got a whole lot better. Conformance to one country or the next, as far as standards are concerned, is a daunting task. The international ISO/IEC standard makes the task a great deal easier. The open system market reminds me of the "spirit of competition and fair play of the days of old" by allowing small and large players to bring their innovations, service and brilliant ideas to the market. QA America will continue to support LonMark and open systems. Our future is exceptional because we align ourselves with the open systems market.



Steven D. Stewart

Steven D. Stewart
Chief Operating Officer
QA America, LLC

Editors Note:
QA America is a LonMark International Sponsor member and holds a seat on our Board of Directors. With roots in the Americas integration market, they are highly qualified to discuss openness from both the integrator and supplier perspectives. Steven Stewart has stepped forward in 2008 to take a leadership role in the controls market volunteering to support our efforts. We appreciate and honor his commitment.

The ISO/IEC 14908 Standards

It is indeed official: the LonWorks control-networking platform has been granted International Standards status by the ISO and the IEC. The specifications, based on the European Norm (EN) specifications of the same numbering, apply to the communication protocol and associated transport channels for networked control systems in commercial Building Automation, Controls and Building Management.

ISO/IEC 14908-1 defines the Protocol Stack; the rules and instructions of how to address and exchange data between devices.

ISO/IEC 14908-2 defines the Twisted Pair Communication; the free-topology, two-wire channel specification known more commonly as TP/FT-10.

ISO/IEC 14908-3 defines the Power Line Channel Specification, which allows power lines within buildings to be used to carry data peer-to-peer.

ISO/IEC 14908-4 defines IP Communication for the protocol. It allows for LonWorks networking packets to be tunneled through local and worldwide Internet Protocol -based networks without translation into an alternate encoding of the data.

These LonWorks technology components have been approved national standards in Europe (EN 14908), America (ANSI/CEA 709), and China (GB/Z 20177) for several years. As a natural course of standards development, the standards were presented to ISO/IEC for inclusion in their standards portfolio. The EN 14908 series of standards was submitted for international standardization to ISO and IEC's Joint Technical Committee 1 (JTC 1) by the US InterNational Committee for Information Technology Standards (INCITS) in 2007. Through a standard balloting and review process over the past year, LonWorks was formally awarded ISO/IEC standards status in November 2008.

History of the Standardization Effort

Echelon Corporation created the LonWorks control-networking platform in the early 1990s. Toward the end of the 1990s, in an acknowledgement of the maturity of the protocol and in an attempt to recognize the nascent open-platform movement of the time, Echelon encouraged the porting of the protocol to processors other than the dedicated protocol microprocessors, called "Neuron® Chips" (with the original implementation of the protocol known as LonTalk®). Since then, Echelon has offered that free-of-charge reference implementation for the 1999 specification as a template for others.

Through the help of Echelon and many other companies, the protocol was standardized by the Consumer Electronics Association (CEA) in the CEA R7.1 committee (at the time, under the Electronic Industries Alliance, EIA). The standard has since gone through a few revisions to improve it over time, and each revision was favorably voted upon within the American National Standards Institute (ANSI).

Through the European Committee for Standardization (CEN), the protocol was then standardized through the British Standards Institution as a European Norm by the CEN TC 247 committee.

Subsequently, the Standardization Administration of China ("SAC") standardized the protocol through the SAC TC 124 committee.

Interestingly, several other organizations reference one or more of the different national protocol standards for LonWorks within their own standards and/or within their own guidelines/recommendations. Some of those include AAR, CECED, IEEE, IFSF, SEMI, and others.

What's Next?

While ISO/IEC standardization was certainly a very important goal, our efforts do not stop there.

The CEA R7.1 committee is working on the next version of the IP tunneling standard, with several additional benefits over the initial standard; and they are also standardizing the Interoperable Self-Installation (ISI) protocol, which allows LonWorks networking devices to logically join to each other without the use of a network-management tool or software.

The CEN TC 247 committee is standardizing the LonMark Guidelines, the Standard Network-Variable Types, the Standard Configuration-Property Types, the Standard Enumerations, the Device Interface file format, and the LonWorks File-Transfer Protocol.

Gradually, those familiar with the ANSI/CEA-709.1 and EN 14908-1 designations, will begin to see references to ISO/IEC 14908-1 replace the regional standards in documentation, handbooks, website text, and training materials; as well as in product descriptions and reference material

supplied by various manufacturers. Further, CEN TC 247 is looking into the melding of the ISO/IEC versions with their parent EN versions; perhaps further blurring any differentiation between the two sets of standards, and perhaps even resulting in a combined naming (e.g., ISO/IEC EN 14908-1, or similar).

To get involved in these efforts, please visit the CEA and CEN websites for details about participation in those standards bodies. For more information on the various standards related to LonWorks technology, please visit www.lonmark.org/standards.

Jeremy J. Roberts,
Technical Director
LonMark International



Frequently Asked Questions:

Q: Where can I read the Press Release?
A: The Press Release is located at this link: http://www.lonmark.org/news_events/press/2008/1208_iso_standard

Q: What are the official standards numbers?
A: The numbers are: ISO/IEC 14908-1, ISO/IEC 14908-2, ISO/IEC 14908-3, and ISO/IEC 14908-4.

Q: What do they standardize?
A: The specifications apply to the communication protocol and associated transport channels for networked control systems in commercial Building Automation, Controls and Building Management.

Q: What are the document titles?
A: The documents have been given the following titles, as per the EN 14908 documents from which they are derived:

* **ISO/IEC 14908-1:** Open Data Communication in Building Automation, Controls and Building Management – Control Network Protocol – Part 1: Protocol Stack
* **ISO/IEC 14908-2:** Open Data Communication in Building Automation, Controls and Building Management – Control Network Protocol – Part 2: Twisted Pair Communication
* **ISO/IEC 14908-3:** Open Data Communication in Building Automation, Controls and Building Management – Control Network Protocol – Part 3: Power Line Channel Specification
* **ISO/IEC 14908-4:** Open Data Communication in Building Automation, Controls and Building Management – Control Network Protocol – Part 4: IP Communication

Q: What is the history of this standardization effort?
A: LonWorks has been approved national standards in Europe (EN 14908), America (ANSI/CEA 709), and China (GB/Z 20177) for several years. As a natural course of standards development, the stand-

ards were presented to ISO/IEC for inclusion in their standards portfolio. The EN 14908 series of standards was submitted for international standardization to ISO and IEC's Joint Technical Committee 1 (JTC 1) by the US InterNational Committee for Information Technology Standards (INCITS) in 2007. Through a standard balloting and review process over the past year, LonWorks was formally awarded ISO/IEC standards status.

Q: Where can we obtain the standards?

A: The standards should be available through ISO's standards catalogue after they are published.

Q: LonWorks technology is now an International Standard. How did the National Standards efforts begin?

A: Echelon Corporation created the LonWorks control-networking platform in the early 1990s. Toward the end of the 1990s, in an acknowledgement of the maturity of the protocol and in an attempt to recognize the nascent open-platform movement of the time, Echelon encouraged the porting of the protocol to processors other than the dedicated protocol microprocessors, called "Neuron® Chips" (with the original implementation of the protocol known as LonTalk®). Echelon offers that free-of-charge reference implementation for the initial ANSI/EIA/CEA-709.1-A-1999 specification.

Through the help of Echelon and many other companies, the protocol was standardized by the Consumer Electronics Association (CEA) in the CEA R7.1 committee (at the time, under the Electronic Industries Alliance, EIA). The standard has since gone through a few revisions to improve it over time, and each revision was favorably voted-upon within the American National Standards Institute (ANSI).

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Subsequently, the Standardization Administration of China (SAC) standardized the protocol through the SAC TC 124 committee.

Interestingly, several other organizations reference one or more of the different national protocol standards for LonWorks within their own standards and/or within their own guidelines/recommendations. Those include but are not limited to AAR, CECED, IEEE, IFSF, SEMI, and others.

Q: What are the national standards?

A: The following are the national standards (USA, Europe, and China, respectively) for the protocol and various transfer media:

- Control-Network Protocol Specification
- ANSI/CEA-709.1-B-2000 – LonWorks networking-protocol specification.
- BS EN 14908-1:2005 – LonWorks networking-protocol specification.
- GB/Z 20177.1-2006 – LonWorks networking-protocol specification.

Transport Media (Transceiver Channels)

- ANSI/CEA-709.2 – LonMark PL-20 power-line channel specification.
- BS EN 14908-3 – LonMark PL-20 power-line channel specification.
- GB/Z 20177.2 – LonMark PL-20 power-line channel specification.
- ANSI/CEA-709.3 – LonMark TP/FT-10 free-topology and bus twisted-pair channel specification.
- BS EN 14908-2 – LonMark TP/FT-10 free-topology and bus twisted-pair channel specification.
- GB/Z 20177.3 – LonMark TP/FT-10 free-topology and bus twisted-pair channel specification.
- ANSI/CEA-709.4 – LonMark FO-20S and FO-20L fiber-optic (lightwave) channel specification.
- ANSI/CEA-852 – LonMark IP-852 Internet-tunneling channel specification.
- BS EN 14908-4 – LonMark IP-852 Internet-tunneling channel specification.
- GB/Z 20177.4 – LonMark IP-852 Internet-tunneling channel specification.

Q: What is LonMark's role in the ongoing development and adoption of national, regional, and international standards?

A: LonMark International and our Affiliates will continue to develop and enhance the LonMark Guidelines. As additions to the core technology, infrastructure, and integration capabilities progress, LonMark staff will suggest the adoption of relevant new developments to the standards bodies. As an example, the recent proposal of ISI (Interoperable Self-Installation) to CEA may one day be handed to ISO to become apart of the 14908 suite of standards. If a new media type becomes a viable, open technology, this too might be offered as an international standard.

LonMark International's technical working groups and committees are responsible for enhancing the scope and interoperability of LonWorks and will ensure that any new, promising developments are presented as potential new standards. It will then be up to the standards bodies and their voting members to determine the viability and applicability to the world community.

Q: Will the engineering community be more likely to write open specifications using an ISO standard like LonWorks?

A: This is certainly the goal; as the market has now clearly stated that open systems, open protocols, and open development are what are desired. We expect to see an increase in the adoption of LonWorks as it is promoted as a world standard. Ongoing educational programs will encourage engineers to demand open systems and international standards be required for the control system in their specifications.

A Major Manufacturer's View of Open Standards

TAC is one of the world's leading suppliers of Building Management systems. They use LON networking extensively in their control systems. Jan Brissman and other Senior Members of the TAC technical team were instrumental in supporting the approval of LonWorks as an ISO open standard.

1. How important are open standards to a major supplier in today's market?

For a growing number of customers open standards are extremely important; in fact they are often required in specifications and RFPs. More than ever, a failure to comply with key open standards requirements means that your company will be eliminated from the competitive bid process.

2. What are the key business drivers behind standards today? (cost, reliability, integration, etc)

The market has embraced open standards because they are "future proof". The freedom that comes with not being locked into a single vendor positions customers to negotiate for more competitive pricing. Further, open standards such as LonWorks (under ISO) facilitate tighter integration between devices and systems, enabling higher business value while simultaneously lowering both CAPEX (Capital Expenditures) and OPEX (Operational Expenditures). Open standards can also deliver increased capability, reliability, and flexibility for a given investment resulting from the large community of individuals and companies that support the standard.

3. Now that LonWorks is an ISO standard how do you see the controls market responding?

LON and BACnet have been competing standards for many years within the building automation field. BACnet, as an approved ISO standard, was viewed as fully open and gained initial market traction within several large segments of the market. Many independent consultants favored BACnet's commitment to openness. Now that LonWorks is an ISO-approved open standard, it will be better positioned for increased acceptance in the controls market as well as parallel markets such as industrial control. LonWorks provides some excellent features including



Jan Brissman

a very well designed physical topology and a vast array of compatible devices that make it an attractive open networking platform.

4. Do you have any suggestions for engineers and specification creators in regards to usage of open standards?

Though open standards should pave the way for equal implementation by all developers, some vendors do not do a very good job building the standard into their product offering. Because a poorly designed implementation is also accompanied by reduced performance, reliability, and security, it is essential that a specification creator understand the vendor's implementation of the standard at a very detailed level. Exceptional vendors will help the customer evaluate the implementation as well as provide benchmarks and testimonials from other customers, while less thorough vendors often make excuses in an attempt to conceal poor performance. In order to raise the standard, an excellent specifying engineer will educate themselves to be able to tell the difference.

5. How do you see the adoption of open technologies in the controls market affecting how projects are implemented in the future?

The adoption of open technologies in the controls market will continue to grow along with the demand for highly integrated systems that include an incredibly broad range of controllers, sensors, and actuators across multiple industrial and commercial applications. Open technologies enable companies such as TAC to unlock the business value potential, realize true gains in productivity and profit, and facilitate innovation and integration that can be leveraged across multiple projects.

6. What new or interesting technologies do you see having a positive effect on your business and which do you see having the potential to becoming an international standard?

Two of the most promising technological trends that we see having a potential powerful impact on our business are the popularity of Linux and the reduction of cost and increased performance made possible by advances in processing speed, memory, and low cost architecture. As economies of scale for these products increases and technology flows down to commercial/industrial displays and embedded sys-

tems, we expect that the sheer amount of computing power that suppliers like TAC can provide at a given price point will be several orders of magnitude greater than currently achievable. Forward thinking companies will recognize this and work to develop platforms that enable highly intelligent and information rich control systems at very competitive prices.

7. What is your organization's plans regarding open solutions? (Investigation, complete adoption, see where the market trends are, etc.)

TAC was an early adopter of open solutions, and has actively promoted our company as "The Leader in Open and Integrated Systems for Building IT" for several years. As a company, we strive to embrace next generation technologies that add value for our customers, and by adopting open solutions earlier than our competitors we have delivered on that commitment. TAC continues to invest in open solutions like LonWorks; the benefits of which are reflected both in our high levels of customer satisfaction and our dramatic business growth. With ever-increasing market demand for open solutions, TAC will continue to support open networking platforms such as LonWorks and build offerings around them.

8. Is there anything LonMark International can do to further the acceptance of open, LonWorks solutions?

LonMark should continue to promote the use and adoption of LonWorks through education and pioneering technical advancement. LonMark should also encourage the evolution of the technology so that it becomes more cost efficient and ubiquitous across many physical layers and transport systems. LonMark will achieve true success when it has a quality control program in place that incorporates vendor and end user feedback into iterative standard improvements aimed at simplifying system deployment and maintenance.

Jan Brissman,
Manager IP, Architecture and Standards, TAC Inc.

Editors Note:
TAC has been a long time supporter and sponsor of LonMark International. TAC's product offerings include a wide variety of LonMark Certified devices and they offer integration expertise around the world. The technical support and ongoing efforts of TAC and specifically Jan Brissman have significantly helped ensure that LonWorks has become an ISO standard and will continue to be enhanced over time. Thank you to all at TAC for your commitment.

LonMark International Achieves ISO/IEC Standards Designation

In the now 20-year history of LonWorks, the issuance by ISO/IEC of the 14908 suite of standards is a crowning achievement for our association and our members.

So what does this mean for you and for me? I think a bit of history is in order to fully appreciate the magnitude of this accomplishment.

In 1988, Echelon was incorporated and the vision of Mike Markkula became a reality by a team of software and hardware engineers. LonWorks was born and the LonTalk protocol was cast into silicon and named the Neuron Chip. Ever since, the protocol has been enhanced, expanded, and updated while preserving the original intent: an open, interoperable, control networking platform that any manufacturer could build to and be ensured that their products work with any other products using the same protocol. Upon successful introduction of the protocol, an effort was begun in the early 1990s to make the market aware of the value behind this technology through the process of making the protocol openly available and declared an industry standard.

In 1999, LonWorks became an ANSI/CEA national standard in the US, followed by becoming a European standard through CEN in 2000. In 2001, LonWorks then became a Chinese national standard. Along the way, other industry standards bodies adopted the protocol, including the AAR and IEEE for rail transportation, SEMI for semiconductor manufacturing equipment, IFSF for forecourt (gasoline station) control networking, and a variety of other industry standards groups.

However, the vision for LonWorks has always been to pave the way for international standardization through ISO. As soon as both ANSI and CEN approved LonWorks as a standard, efforts began to present it to ISO. Over the span of 8-10 years, a core team of individuals were working towards this vision.

On November 28, 2008, LonMark International was officially notified by the Secretariat of ISO/IEC that LonWorks was approved by the international voting members as an international standard. The stand-

ard includes four parts: the protocol, the free-topology twisted-pair channel, the power line channel, and the IP-tunneling channel.

The process to obtain ISO/IEC recognition is complex and lengthy. It involves educating voting members from national standards bodies from over 80 countries around the world.

National standards bodies have two primary paths to issue national standards: develop their own or adopt ISO's. Standards organizations such as ANSI/CEA and CEN often develop new standards, adopt them nationally or regionally (in the European case), and then submit to ISO for worldwide adoption. Other standards bodies such as JIS (Japanese Institute of Standardization) tend to adopt ISO's recommendations when the potential standards do not originate in Japan. Many other national bodies tend also to use standards approved by ISO.

This often leads to significant opportunities; and for LonMark, this is no different. Now with the ISO/IEC designation for LonWorks, the doors are open for countries around the world to embrace this technology. National acceptance tends to start with government and public sector adoption of such standards. System specifications are enhanced or created to embrace the latest standards. LonWorks has the opportunity to be written into national standards for building control systems and other control and monitoring applications. Once national bodies and governments adopt, then industry tends to follow.

The challenge for all of us now is to educate the world market and continue the process of getting LonWorks written into specifications. We need to educate consulting engineers that write specifications that LonWorks is now an ISO/IEC standard and should be specified as part of their ongoing spec development. This effort will require our members' support as well as the support from other organizations, and support of our partners around the world.

LonMark International is planning a wide variety of activities to support this effort including web seminars, trade-show educational sessions, articles, interviews, and white papers. The latest information will always be located on the LonMark website at www.lonmark.org/standards

A Product Distributor's View on Open Standards

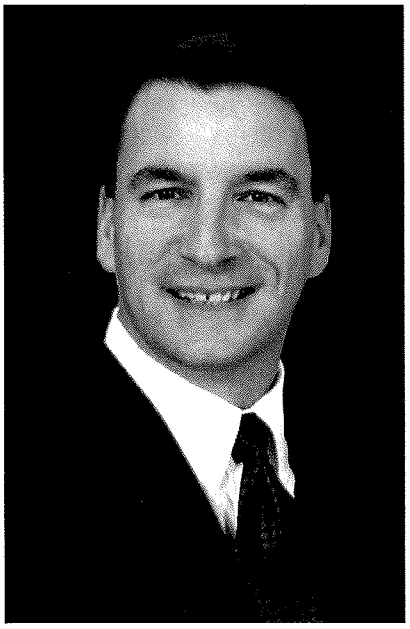
Engenuity Systems is a global distributor of open products for the controls market. In 1984, their initial offerings were LonWorks solutions. Today they offer a wide variety of open products based on LonWorks, EnOcean RF, and many other solutions. Tracy Markie has served on the LonMark Board of Directors and is currently Chairman of the Board. The Engenuity business model is founded on open availability of products to the integration market. Tracy Markie was recently asked to provide responses to key questions regarding open systems, LonMark achieving ISO standardization, and the general market direction.

1) How important are open standards to a distributor in today's market?

Very! Open standards create Open Markets fostering opportunity for third party entities like distributors. For example, look at the difference in volume sales of windows-based PC's versus Apple computers. Windows' open, published standards enabled third party developers to create scores of after-market products and software all compatible with any PC platform. These solutions were all sold through open distribution channels driving volume up and cost down. While Apple chose to go totally proprietary with limited sales channels keeping volume low which kept development limited and prices high. Regardless of your preference, the proof is in the ubiquity of PC's.

2) What are the key business drivers behind standards today?

Standards create a level playing field, allowing manufacturers to focus on innovations that add value



Tracy Markie

rather than intentionally locking in customers to generate revenue with proprietary code. By advocating open standards, confidence is created in the customer base, with the knowledge that solutions and products can be integrated. Competition becomes beneficial to businesses and consumers, as it drives costs down and innovation up.

3) Now that LonWorks is an ISO standard how do you see the controls market responding?

I believe the response will be extremely positive. In the early days, LonWorks was perceived as proprietary and consequently was not considered as the technology of choice in many specs.

Often, markets are driven by de facto standards within the industry. Lacking this, standards bodies, such as ISO, validate the true openness of LonWorks and leave nothing to dispute or debate.

4) Do you have any suggestions for engineers and specification creators in regards to usage of open standards?

Do your customers a great service by using open standards to create the foundation for an even playing field; protect them from being locked in to an unprofitable or unsupportive relationship by a proprietary standard manufacturer. Know that by using standards in specs, you reduce the risk to the author. Educate your customers that the technology has been widely scrutinized and reviewed by independent experts - who had no financial gain at stake.

5) How do you see the adoption of open technologies in the controls market affecting how projects are implemented in the future?

Open standards provide a solid framework for better integration of a project. There's no more deliberating, "Which version are we going to use?" Standards reduce problems in implementation, which translates to time and ultimately, money. I believe they also create fertile ground for innovation in the area of implementation tools as well. Creative engineers now have a reference from which to compare and communicate with other developers, integrators, and product manufacturers.

6) What new or interesting technologies do you see having a positive effect on your business and which do you see having the potential to becoming an international standard?

Wireless technologies continue to gain ground with new innovations. While I think it will be some time before an entire infrastructure can be completely wireless, I believe connectivity between wireless and LON-based systems for that last 10 or 100 feet will be a vital technology over the next several years.

Low power and energy harvesting technologies will also play a significant part of the future of controls. The possible elimination of batteries in wireless devices would remove one of the major drawbacks of wireless technologies from the past. Even though devices communicated wirelessly, either wired power (adding the cost of pulling wire) or installing batteries (and the associated maintenance due to shelf life) were necessary.

Collection, transmission, aggregation, and storage of massive amounts of data have become increasingly more cost effective. Although these capabilities have been around for a long time, I believe we are now on the leading edge of a new evolutionary portion of this life cycle. The "new" twist is - the controls industry can now tie disparate kinds of data together and apply new forms of decision making and control to save real money!

Lastly, what's old becomes new. I see the application of decades-old control strategy and knowledge addressing the global crisis of resources. Whether it is energy conservation, materials conservation, or better decision making; green practices, carbon footprint reduction, or good old-fashioned conservation, we will see our industry blossom in the new realities of our world. The controls industry and the knowledge we have possessed for a long time will play a vital role in transitioning a well-intentioned, socially conscious public to true advocators of new technology-based solutions based on open standards.

7) What is your organization's plans regarding open solutions? (investigation, complete adoption, see where the market trends are, etc.)

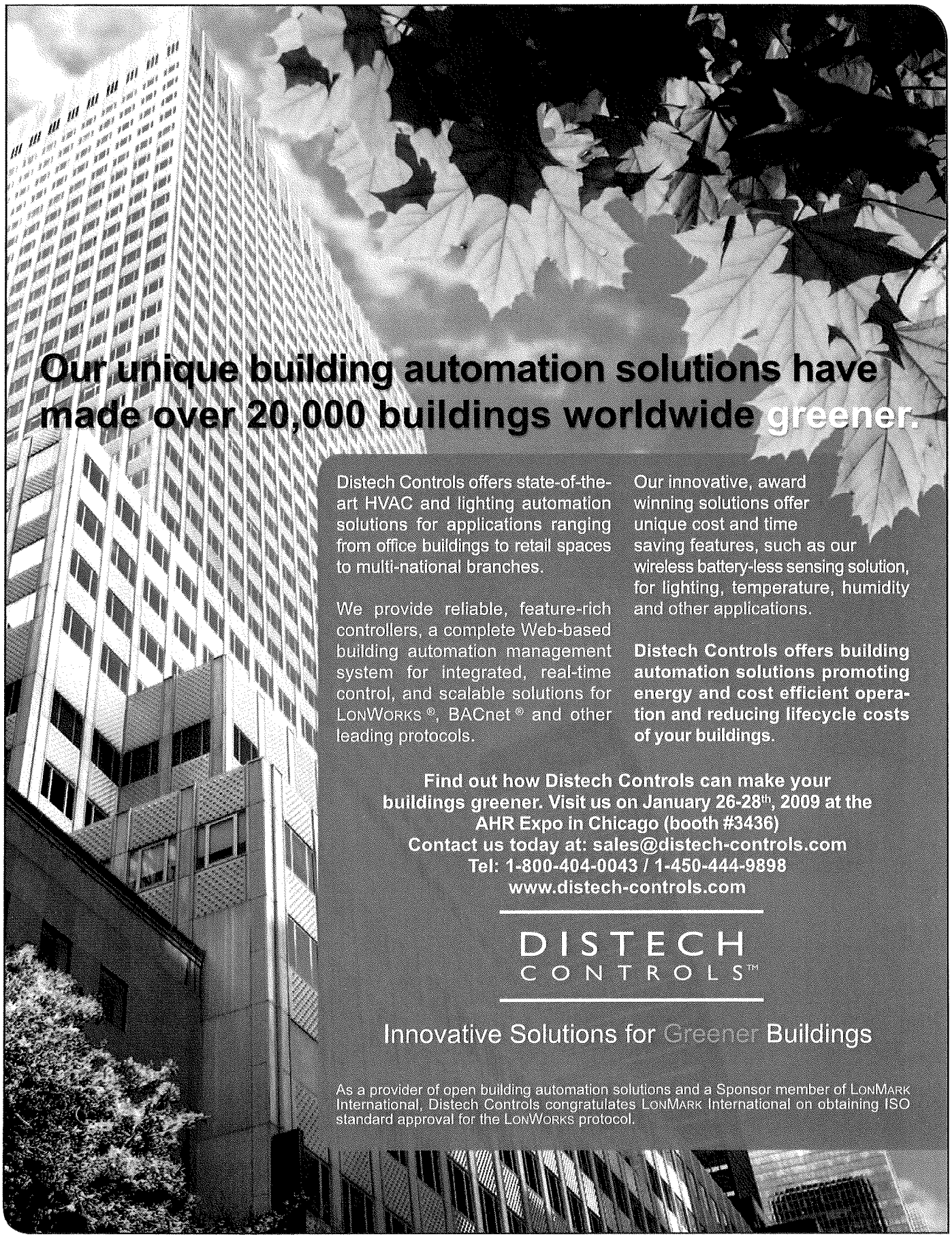
Engenuity is fully committed to promoting open standards and we will continue to work within the industry through trade associations and as "thought-leaders" to drive standardization even further.

8) Is there anything LonMark International can do to further the acceptance of open, LonWorks solutions?

Sing it from the highest rooftops! Even though we in LonMark and the LonWorks community at large may now know about the recent adoption of LonWorks as an ISO standard, it will undoubtedly take the "once-removed parties" in our marketplace much longer to fully hear and more importantly, understand this message. Marketing will be a big part of this; we need to get the word out over and over again!

Education is the second part of the equation. Announcing the adoption is one thing; truly moving people to use and apply standards within a stodgy, slow-to-change industry will take more than just marketing. LMI will need to educate the industry on the proper usage when specifying ISO standard, show how other so called "standards" fall short of the promise of a truly open standard, and most importantly, communicate the REAL benefits of LonWorks as an ISO standard. I can't imagine higher priorities for LonMark.

Tracy Markie,
President
Engenuity Systems



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As a provider of open building automation solutions and a Sponsor member of LonMark International, Distech Controls congratulates LonMark International on obtaining ISO standard approval for the LonWorks protocol.

LIVE A LITTLE
LEARN A LOT

Attend LONMARK's free educational seminars at AHR 2009 and learn about the latest trends, success stories, opportunities, strategies, and technology updates within LONMARK and the LONWORKS Community. All seminars are CEU eligible.

Monday Jan 26

ROOM S103D

8:00 a.m. – 8:50 a.m.
The ABCs of LON: LONWORKS overview, market trends, strategies, streamlining open solutions.

9:00 a.m. – 9:50 a.m.
Market opportunities for open systems vendors: quick serve restaurants, small buildings, parking and more...

ROOM S404A

8:00 a.m. – 2:00 p.m.
LONMARK Professional Certification Refresher Course

2:30 p.m. – 5:30 p.m.
LONMARK Professional Certification Test

For more details, contact testing@lonmark.org

Tuesday Jan 27

ROOM S103D

8:00 a.m. – 8:50 a.m.
Government tax incentives for businesses implementing building system upgrades.

9:00 a.m. – 9:50 a.m.
Standards and technology update: LONWORKS technology achieves ISO/IEC standardization.

Noon - 1:30 p.m.
Case studies: successful projects with real ROI and energy-savings data.

3:00 p.m. - 4:30 p.m.
Panel Session
Implementing true open systems using LONWORKS. Guest speakers from schools and municipalities as well as the U.S. Army Corps of Eng.

4:30 p.m. - 5:15 p.m.
LONMARK General Meeting directly followed by the LONMARK International **Awards Ceremony**, and the LONMARK Member Appreciation Reception.

Visit www.lonmark.org for more information about the seminars.

Wednesday Jan 28

ROOM S103D

8:00 a.m. – 8:50 a.m.
Front-end options, user interfaces and enterprise connectivity options.

9:00 a.m. – 9:50 a.m.
RF control systems: Building reliable, scalable and high-value control networks.

ROOM S404A

8:00 a.m. – 2:00 p.m.
LONMARK Professional Certification Refresher Course

2:30 p.m. – 5:30 p.m.
LONMARK Professional Certification Test

For more details, contact testing@lonmark.org

LONWORKS IS NOW AN ISO/IEC STANDARD

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