

ISHE ISSUES

Publication by and for the
Healthcare Engineering Industry

2008 NUMBER 1

FEATURES IN THIS ISSUE

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A photograph showing the silhouettes of three people standing on a hilltop with their arms raised in triumph or celebration. They are positioned in front of a vast landscape of rolling hills under a sky transitioning from blue to warm orange and yellow hues at sunset.

Reaching BEYOND TOMORROW

2008 MIDWEST HEALTHCARE ENGINEERING CONFERENCE
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Wanted: Articles

If you would like to contribute an article and photos to the next issue of ISHE Insights, please contact Steve Thurston at stthurston@indy.rr.com. Materials would be due by July 15, 2008.

ISHE ISSUES

Publication by and for the
Healthcare Engineering Industry

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About ISHE ISSUES

ISHE ISSUES is a quarterly publication by and for the Healthcare Engineering Industry.

Our goal is to promote communication between members and to facilitate the exchange of information for the betterment of our Society and of our Members.

ISHeweb.org's goal is to promote communication between members and to facilitate the exchange of information to those interested in becoming a member. You also have access to an electronic copy of ISHE ISSUES, our quarterly newsletter, as well as an updated Calendar of Events. For more information, log on to isheweb.org.

Opinions expressed in articles are those of the authors, not necessarily those of the Advisory Board of membership.

Credo

The members of ISHE continually strive to live up to the motto, "Quality Healthcare Through Engineering Excellence."

That quality and excellence is best achieved in an environment of teamwork and cooperation between the professionals entrusted with attaining the overall goals of healthcare organizations and of the individual institutions that we serve.

That a continuing program of skills enhancement is important, and participation of individuals working together will improve the standards and performance of all in the group.

That the application of advancements in our field, coupled with conscientious attention to the costs of operation is necessary to achieve maximum efficiency in the carrying out of our duties.

That we have responsibility to the public to provide safe and dependable institutions dedicated to the highest ideals of patient care, and to foster this image in community relations.

That the collective interchange of knowledge and experience, couple with the individual integrity of the membership, will make ISHE an effective means of advancing its members in their profession.

Mission Statement

The mission of the Indiana Society for Healthcare Engineering is to promote the professional role of the healthcare engineering professional and advance the development of health care engineering through effective communication, educational opportunities and establishment of professional standards.

ISHE 2008 Calendar



May 15 -17, 2008	ISHE Spring Meeting JAWACDAH Farm (Board - May 15th)
June 19, 2008	Board Meeting Performance Services
June 26, 2008	Midwest Conference Call Meeting
July 17, 2008	Board Meeting Moore Engineers
August 21, 2008	Southern District Meeting St.Vincent Hospital
August 22, 2008	Northern District Meeting Riverview Hospital
September 18, 2008	Board Meeting Trane
October 16, 2008	Board Meeting Thomas L. Grantham Co.
November 5-7, 2008	Indiana Convention Center
December 11, 2008	Board Meeting (Christmas Dinner - Board Members)

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BSA LifeStructures designing facility to study learning



Purdue Discovery Learning Center will research teaching environments, practices

INDIANAPOLIS - BSA LifeStructures has been challenged to create a facility where researchers can test and explore new approaches to teaching and learning science, technology, engineering and math.

Discovery Learning Center - a \$17.5 million, 90,000-square-foot facility - will enhance Purdue's position as a leader in science, engineering and math education. To be successful, the center must provide extensive flexibility and accommodate the latest technological capabilities.

Discovery Learning Center's mission is to provide an environment for creating and studying the impact of new teaching methods and cutting-edge learning environments. The new space must be imaginative and able to adapt to future needs. BSA LifeStructures is designing the facility with those goals in mind. For example, learning spaces will be nimble, with movable walls and furniture so researchers can experiment with the learning environment. The learning labs will also incorporate a theatrical tension grid for overhead flexibility.

"The learning center design will reflect the research conducted inside the walls," said Geoff Lisle, architectural principal at

BSA LifeStructures. "That's a challenge, since it needs to be the ultimate flexible learning and research space."

The facility will include at least one black-box room, a space that allows researchers to test different room configurations.

Construction on Discovery Learning Center is expected to begin this coming spring, with completion scheduled for fall of 2009. BSA LifeStructures is providing architectural services, mechanical, electrical and plumbing engineering, as well as civil and structural engineering. Maregatti Interiors is providing interior design services.

Discovery Learning Center will be located in Purdue's Discovery Park, a \$100 million complex taking a multidisciplinary approach to developing new technologies. The park also includes the Martin C. Jischke Hall of Biomedical Engineering (also designed by BSA LifeStructures), the Birck Nanotechnology Center, Bindley Bioscience Center, Burton D. Morgan Center for Entrepreneurship and an e-enterprises center, Gerald D. and Edna E. Mann Hall. The architectural vocabulary of the buildings in Discovery Park departs from Purdue University's main campus.

BSA LifeStructures is a national leader in designing healthcare, higher education, research and technology facilities. For more information on BSA LifeStructures, visit www.bsalifestructures.com.



In Brief:

Project: Purdue University AddressPro dimming system installation

Location: West Lafayette, Indiana

Products Used: Programmable AddressPro™ fluorescent ballasts and modules (a Triad® brand)

Number Installed: Installation ongoing as classrooms are remodeled and new classrooms are built

For More Information About:

Purdue University
West Lafayette, Indiana 47907
765-494-4600
www.purdue.edu



Photograph courtesy of Purdue University

Purdue University

Cuts Costs Dramatically with AddressPro Dimming System

For 30 years, Purdue University has provided its instructors with the ability to dim the lighting in their classrooms. "For uniformity, every room has a switch with four settings," said Charlie Beard, Senior Electrical Engineer for the university, "bright, medium, dim and off. This allows our teachers to change the lighting for lectures and audio-visual presentations." Beard said professors once used the dimming feature for lectures using slide projectors, filmstrips and overhead projectors. Today they use computers with PowerPoint™ presentations and DVDs, but the need to vary the lighting in the classrooms remains the same.

"For years we built our own lighting control panels, and the cost was around \$4,000 per classroom," said Beard. "Then about four years ago we changed to a wallbox with a Programmable Logic Controller dimming configuration with a 0- to 10-volt ballast. That solution cost us about \$2,000 a room. Last year we were made aware of Universal's AddressPro™ system. We did a test by installing a unit in a conference room in the engineering building, and it worked well. Then our lamp crew put the controller through

its paces and, after extensive testing, we decided to purchase the AddressPro. We are now able buy an off-the-shelf system for lighting control for less than \$1,000 per room."



Beard said the fact the AddressPro digital dimming system is a standard, programmable controller that can be purchased off-the-shelf is important for a couple of reasons. "The nice thing about the AddressPro is that it is not a custom device and our staff can easily program it to assure uniformity throughout all of our classrooms. Custom building is expensive and time-consuming."

Universal manufactures AddressPro ballasts for compact fluorescent, T8, T5 and T5HO lamps. All AddressPro fluorescent



Photograph courtesy of Purdue University

ballasts feature installer-friendly universal input voltage as a standard option.

The wall switch is extremely simple to operate. On its right side, a rocker switch is used as the up and down lighting control.

An infrared receiver is also built into the wallbox, allowing the user to adjust the room's light level with a handheld remote control.

For conference rooms and other areas or lighting applications where complex scenes or reconfigurable zones may be required, AddressPro digital dimming ballasts and controls also allow users to independently control multiple lighting zones. This innovative technology is perfect for applications requiring sophisticated dimming such as classrooms, conference rooms, hotel lobbies, churches and restaurants.



AddressPro is part of Universal Lighting Technologies' comprehensive family of dimmable ballasts that span the full range of dimming needs - office, commercial and industrial. Dimming systems save money, save electricity, and provide the user with a broad range of settings and lighting versatility.

26 Century Blvd., Suite 500, Nashville, TN 37214-3683, Phone: 1-800-BALLAST, E-mail: webmaster@universalballast.com, Web site: www.universalballast.com

About Universal Lighting Technologies

Based in Nashville, Tenn., Universal Lighting Technologies has offered the most innovative selection of lighting ballasts for nearly six decades. The company manufactures ballasts for all lighting applications, with a full line of ballasts designed for exceptional performance in lamps ranging from 5 to 2,000 watts. These include magnetic, electronic, and compact fluorescent, high intensity discharge, sign and neon. As a major manufacturer of electrical equipment, Universal Lighting Technologies plays a lead role in setting industry standards for quality and energy efficiency. The company actively participates in trade associations and assists in the development of many standards through ANSI, NEMA and IESNA. With operations and distribution worldwide, the products of Universal Lighting Technologies are marketed under the Universal®, Triad® and Signa® brand names.

Want to Know More?

Universal Lighting Technologies is focused on designing, manufacturing and distributing the industry's finest lighting ballasts and transformers.

To learn more about the full line of Universal Lighting Technologies' ballasts or to request a catalog, call 1-800-BALLAST, fax your request to 615-316-5162, or visit the Web at www.universalballast.com. Universal Lighting Technologies-Energy Intelligence in Lighting.

www.isheweb.org
**Visit the ISHE website for up to date
 information on upcoming events, news, and
 job opportunities.**

The screenshot shows the homepage of the Indiana Society of Healthcare Engineers (ISHE) website. At the top, there are navigation links for Home, About ISHE, Sponsors, Publications, Conferences, Membership, Education, Resources, and Contact Us. Below the header, there is a banner for the "2008 Annual Meeting". The main content area features a large image of a modern healthcare facility, followed by text about the meeting's focus on Quality Healthcare Through Engineering Excellence. There are sections for "Events", "Meetings", and "Education". A sidebar on the right lists "Silver Sponsors" including MOORE and ARTEKNA.

RELIABLE POWER HELPS - BEAUMONT HOSPITAL SAVE LIVES

Industry: Healthcare

Objective: Provide more access to status information for Beaumont Hospital's EPSS through installation of a reliable and easy-to-use power monitoring system

Solution: A PowerLogic® power monitoring system from Square D®, including Telemecanique® Modicon® Momentum™ PLCs and Magellis® iPC units, Square D® PowerLogic® 800 series power meters and PowerLogic® Ethernet Gateways (EGX) 100 in custom ATS interface and generator communications enclosures

Benefits:

- Easy EPSS test reporting to meet code requirements
- Improvement in overall power reliability and response time
- Easy access to system status - faster identification and assessment of power issues
- Trending information for evaluation of loading and preventive maintenance

PowerLogic®



The idea of "critical power" has no more important application than in the healthcare industry. With sensitive equipment that demands extreme levels of power quality to operate correctly, even a momentary lapse in power quality - or even worse - a power system failure, can result in a tragic event. Patients take for granted that when you check into a hospital, the lights won't suddenly turn off just as the surgeon is preparing to perform a delicate maneuver.

Keeping power issues under wraps is no small task even at a small medical center, but it's especially demanding when you're one of the nation's largest healthcare facilities. Beaumont Hospital started in 1955 as a single 238-bed hospital suited to serve a small community in Royal Oak, MI, and has grown into a two-hospital regional medical center, with outpatient locations throughout Metro Detroit. In fact, the Royal Oak hospital is now a 1,061-bed tertiary care, teaching, research and referral hospital that is now the largest inpatient hospital in the country for inpatient volume and second for surgeries performed. Its medical staff includes more than 2,400 physicians representing more than 91 medical and surgical specialties.

The Royal Oak facility is not only large in volume, scope and scale, but a heavyweight in terms of influence and reputation. It's a regular industry award winner, and is repeatedly named on best hospital lists, such as the annual *U.S. News & World Report* "Best Hospitals" list.

And Beaumont Hospital continues to grow and rapidly expand its campus. But with this growth comes more demanding energy and power requirements and a significant staff to keep it running. In 1997, Beaumont brought in Optim, a company specializing in providing consulting and management services exclusively to hospitals and the healthcare industry for construction, technology and facilities programs, to provide energy efficient buildings and systems for the hospital.

Now, Optim has integrated staff in-house at Beaumont Hospital, including an architect, an energy engineer, a mechanical engineer, electrical engineers and skilled tradesmen in related fields all working together.

Blackout Brings EPSS System to Forefront

One of the areas in which Optim has played a major role at Beaumont, has been managing the hospital's emergency power

supply system (EPSS). The EPSS supplies the critical back-up power needed during a power issue or outage. And this is no small task, as the Royal Oak Beaumont Hospital campus EPSS contains 107 automatic transfer switches (ATS) and 11 diesel-powered generators distributed over the expansive three million square feet of the facility.

A major test came on August 14, 2003, when a large portion of the East Coast fell under a wide-spread power blackout. Its reach spread far into the state of Michigan, and caused significant power interruptions in Detroit and much of southeastern Michigan. While Beaumont's emergency power supply system (EPSS) performed as it was intended to and kept the facility online through the blackout - keeping all important areas and functions up and running - the event was an eye-opening experience for the staff.

"It was very stressful with so much area and equipment to cover," said Steve Fox, Electrical Engineer, Optim. "But the event helped us realize that we needed more accessible status information on the EPSS system. We also wanted to be better prepared for any more normal utility issues we might experience. It was determined that a reliable and easy-to-use power monitoring system for the EPSS was required."

While in this case, the EPSS performed as it was intended to, hospitals like Beaumont must perform and document routine EPSS tests to show preparedness for events such as a blackout. This is to stay in compliance with National Fire Protection Agency (NFPA) 99: Standard for Health Facilities and 110: Standard for Emergency and Standby Power Systems, as well as codes regulated by the Joint Commission.

The Joint Commission standard requires documentation proving the reliability of a facility's emergency power system. Meeting this requirement can be very time and labor intensive for a hospital's staff, as it covers rigorous testing of on-site generation, power control and power transfer equipment.

"We need to do EPSS testing every month, as required by the Joint Commission," said Fox. "The stopwatch-and-clipboard method wasn't very efficient for us anymore with 107 ATS and 11 generators. We needed something easier and more automated."

After an extensive request for proposal (RFP) process, Beaumont Hospital selected a power monitoring system from Square D®

and its PowerLogic® group. Upon being selected, Square D personnel immediately began working closely with Optim's and Beaumont's staff on the project.

Team Effort Produces Robust System

"The power monitoring system we specified from Square D gives the detailed information necessary to monitor the operation of the EPSS and quickly locate and respond to power loss," says Fox. "It also helps us examine EPSS loading, determine reserve capacity, and use that capacity appropriately; saving cost and providing a more reliable EPSS."

An important feature was that everything needed to seamlessly integrate into the existing facility; a solution that could connect into their existing system and communicate to existing Modbus ASCO 7000 monitoring equipment. This approach allowed for quick installation by eliminating the need for numerous ATS shutdowns.

The installation of the project was a complete team effort involving Square D staff, Optim staff and an electrical contractor. Square D provided a state-of-the-art power monitoring solution designed to monitor Beaumont's 11 Gen Sets and all 107 automatic transfer switch units. The PowerLogic system controls and monitors all aspects of the emergency power system supply such as Gen Set vitals, fuel levels, battery units (UPS), ATS loading/trending and much more.

Another feature of the system allows for partial monthly testing when areas such as operating rooms cannot be shut down and for required testing at a later date. This is done through the system's ability to "select all" and "deselect" ability with ATS lists specific to Beaumont Hospital.

Constant Change Requires Service and Support

More than just equipment, Beaumont Hospital needed reliable and local service available 24/7 for phone, site and online support and system updating. Furthermore, the Square D team demonstrated a thorough understanding of generator and ATS systems, as well as reporting requirements throughout the process.

During construction, the Optim staff recognized that enhancements, and clarifications, to the original RFP could provide a system even better than originally conceived. Square

D worked with Optim to incorporate the desired enhancements into the design.

"Square D was very willing to work with us and meet all our needs, and they really went above and beyond just the design scope of the project and the original RFP," said Fox. "We never felt like we were stuck with an off the shelf solution; they were able to customize it every step of the way when we found something that needed to be tweaked during the process. As a result, now that the initial phase of installation is complete, the system is able to grow and expand with us over time."

"Square D has also provided on-site and factory training to our staff so that the system can be expanded and administered by Optim in the future," said Glowinski.

Going forward, it's understood that the EPSS will change often, and that EPSS changes create changes in monitoring system hardware and programming. To deal with that, Optim expects to have a Priority Support agreement with Square D in place by the expiration of the system start-up warranty period.

"In some cases, Optim will modify the system on projects that it completes in-house," says Glowinski. "In other cases, Optim will provide the system specifications to electrical contractors modifying the system. Program changes will have to be made as soon as an alteration is made."

A Strong Foundation for Future Growth

With the original scope of the project complete, a new one is now underway at Beaumont Hospital to add monitoring of essential UPS's and emergency lighting inverter systems to the emergency monitoring system. These systems are located between the EPSS now being monitored and the essential loads.

There are also plans to expand the system to other Beaumont facilities and connect them all via the Ethernet LAN to the server on the main campus.

With a reliable and robust EPPS and power monitoring system in place, Beaumont Hospital is prepared for future challenges, and for more growth in the next 50 years.

Schneider Electric - North American Operating Division, 295 Tech Park Drive, LaVergne, TN 37086, Tel: 866-466-7627 Toll Free, PowerLogic.com

BSA LifeStructures' Patrick C. Mendel Earns Accreditation in Green Building Practices



INDIANAPOLIS - Patrick C. Mendel, LEED® AP, a contract manager for construction services at BSA LifeStructures, recently achieved status as a LEED Accredited Professional by the Green Building Certification Institute, which is backed by the U.S. Green Building Council. The accreditation signifies his thorough understanding of green building practices and principles and LEED requirements, processes and resources.

Mendel's 20-year career includes several roles in building design and construction, including his recent position as the

full-time, on-site project manager for Memorial Hospital and Health Care Center's \$27.5 million new patient tower, located in Jasper, Ind.

Mendel earned a bachelor of science degree in building construction management from Purdue University.



BSA LifeStructures, with offices in Indianapolis and Chicago, is a national leader in designing healthcare, higher education, research and technology facilities. For more information on BSA LifeStructures, visit its Web site at www.bsalifestructures.com.

Environmental Compliance Initiatives: What you need to know to avoid liability.



Over the past five years, Region 2 of the U.S. Environmental Protection Agency (the “EPA”) has been reviewing whether hospitals and healthcare providers are in compliance with environmental regulations. In 2002, the EPA started the Hospital and Healthcare Environmental Compliance Initiative (the “Initiative”) in response to the growing number of environmental violations within the healthcare sector. According to the EPA, most hospitals and healthcare providers are simply not aware of their responsibility under federal environmental guidelines and have failed to implement effective compliance strategies. Through this Initiative, the EPA is taking a closer look at the hospital and healthcare facilities, stepping up inspections and enforcement activities.

The goal of the Initiative is to ensure that these facilities are in compliance with all federal environmental laws and regulations, although the EPA is specifically focusing on those dealing with hazardous wastes, waste water discharges, air emissions, and storage tanks.

Since the Initiative began, Region 2 of the EPA has inspected 44 healthcare facilities that have resulted in 22 enforcement actions and \$911,018 in penalties. In 2003, the EPA aggressively sought fines against Nassau University Medical Center in East Meadow, New York for \$279,900 and Mountainside Hospital in Montclair,

New Jersey for \$64,349. Both fines were sought for violations of the Resource Conservation and Recovery Act (RCRA) relating to the improper designation, storage, and labeling of hazardous wastes. The EPA also noted that neither hospital had a permit to store hazardous wastes. From 2004 through 2006 the EPA has continued to focus enforcement efforts towards hospitals and healthcare facilities by issuing more fines for noncompliance.

In light of the EPA’s Initiative and other state initiatives, hospitals and healthcare providers should review their policies and procedures before an inspection occurs. In order to be prepared for an unscheduled inspection by the EPA or state regulators, compliance with state and federal laws and regulations should be reviewed. The EPA has listed hazardous wastes, waste water discharges, air emissions, and storage tanks as the key areas that should be reviewed.

Within each category emphasized by the EPA, there are a number of issues that should be considered, which include the following:

Clean Air compliance

- Incinerators have all permits
- Labs have any necessary permits
- Asbestos removed properly
- Paint booths have all permits

Hazardous waste (HW) compliance

- Proper labeling of HW
- Inspection of HW storage sites to ensure storage areas don't exceed storage requirements
- Proper HW determinations
- Train employees on HW disposal and segregation
- Underground Storage Tanks are in compliance and properly maintained

Clean Water compliance

- Permit obtained for wastewater discharges
- Not disposing of HW through floor drains
- Spill prevention control measures are in place

Other laws that should be reviewed:

- OSHA regulations
- State environmental regulations
- Joint Commission or AOA guidance



Andrew Dick is an attorney in the Indianapolis-Downtown office of Hall Render. Andrew leads the firm's Facilities Management practice group, focusing on Environmental Compliance, Real Estate Development and other compliance initiatives for hospitals and healthcare providers across the nation. He is admitted to practice in Indiana and can be reached at (317) 977-1491 or by email at adick@hallrender.com.



\$ 6.5 M renovation giving Jay County Hospital in Portland improved features and look.



MSKTD has designed a \$6.5 renovation that for Jay County Hospital in Portland, Indiana. It will give this Critical Access facility a much improved visual presence, but more importantly provide improved hospital access with an updated and expanded emergency department. We expect this project to be completed by December 2008.



Fort Wayne's Lutheran Hospital South Entrance improves access for patients!



MSKTD designed a new South Entrance to the Lutheran Hospital located at the southwest gateway to Fort Wayne, Indiana which included a 660-car garage, covered walkway, roundabout drop-off area, canopied entrance and approximately 10,000 SF of new medical office space. This project was completed in October of 2007.



Interested in Becoming a Member?

Please contact Steve Thurston with any questions you have about ISHE Membership. ISHE also has a website where you can find up to date information about our events throughout the year.

Phone: 317-908-8222 | Email: sthurston@indy.rr.com | Website: www.isheweb.org

Sullivan County Community Hospital



In 1913, the RH Crowder Memorial Hospital was opened by Dr. Joe Reed Crowder on the corner of Crowder and Johnson streets. The first county hospital became a reality in September of 1918 when the Sullivan County Hospital opened its doors at 320 North Section Street in Sullivan. Laboratory services were added to the hospital repertoire in 1922, as well as a state-of-the-art automatic elevator donated by Mr. and Mrs. Benjamin Davis in memory of their son, Roscoe.

Cuthbert Sherman donated \$30,000 in memory of his wife, Mary, in order to build a south wing, and the hospital was then renamed Mary Sherman Hospital. Shortly afterwards, Dr. JR Crowder and Dr. GD Scott donated equipment to open an x-ray department. A west wing was added to the hospital in 1962 to provide space for food services and an emergency department.

In 1998, ground was broken at 2200 North Section Street for a new facility which was to replace the old Mary Sherman Hospital. As medical practices had changed, the layout and feasibility of remodeling the old hospital building had become impractical. The hospital was moved on July 20, 1999 with the new name of Sullivan County Community Hospital.

In contrast to the medical procedures done years ago, many may now be done on an outpatient basis. Surgeries which previously required an extended stay may now be done with the patient going home the same day (example: gallbladder surgery, tonsillectomy, etc.).

Advanced radiologic care such as MRI, CT scans and nuclear scans are now available at SCCH to more quickly diagnose Sullivan County patients.

All rooms at the new facility are private and equipped with their own restroom so patients no longer have to deal with a roommate and his/her family while they are recuperating. There are 25 private patient rooms available for the community. Four of these rooms are located in the Intensive Coronary Care unit, where patients may be monitored closely by a computerized telemetry system. Three rooms are labor/delivery/post-partum rooms where new mothers deliver and then stay while they are in the hospital.

Home Health services at SCCH are a throwback to old times, as they promote the patient's choice to stay at home to recuperate. Registered nurses and home health aides, as well as rehab service personnel visit the homebound person to provide care in a comfortable environment. Before the end of 2008, hospice services will also be added under the wing of the home health department in order to provide more of a continuum of care.

Many services provided in the present at SCCH focus on preventing illness and disease, rather than simply treating it. Lab services such as cholesterol screening and glucose testing, radiologic services such as ultrasound and mammography, surgical services such as colonoscopy, and cardio-pulmonary rehabilitation all focus on wellness issues, rather than illness.

A state-of-the-art fitness center was built in 2004 to benefit the citizens of Sullivan County by improving their overall wellness. Exercise classes, a one-nineteenth-mile walking track, weight machines, treadmills, elliptical trainers, stationary bikes, massage therapists and personal trainers are available to the public, as well as equipment to monitor body fat percentages and blood pressures while working out. The Fitness Center at SCCH is an example of the continuing commitment of the hospital board, administration and employees to the health and well-being of their community.

Sleep Lab services and 24/7 IV infusion services have been added to the list of offerings to the Sullivan County community. Also,

a new sports/industrial rehabilitation line has been developed within the past year. Presently, plans are underway for a professional office building to house additional physicians and services to increase availability for area residents.

At present, Sullivan County Community Hospital employs 270 staff and is managed by QHR with Michelle Smith as CEO. The hospital board consists of Ernest S. DuPre, MD, President; Don Hunt, Vice-President; Alice Dodd, Secretary; Alan Montella, Treasurer (ex-officio member, CFO); James Springer, DDS, Member; Henry Bobe, Member; Gene Bourgassier, MD, ex-officio member, Chief of Staff.

Get the latest ISHE news and event dates from ISHE *E-Issues* email and the ISHE website, www.isheweb.org.

The ISHE Yearbook is returning!

The cover features a large, modern hospital building with a curved glass facade and a central tower. The title "ISHE | YEARBOOK 2004" is at the top, and the subtitle "Publication by and for the Healthcare Engineering Industry" is below it.

Work Smart, Close With Contractors to Minimize Risk During Construction



The healthcare industry is in the midst of a construction boom, according to the Center for Health Design, so chances are there's a project underway, or planned soon, at your facility.

Nearly half of all construction projects run over schedule, according to the Construction Management Association of America. Projects are more complex due to high-tech advances in architecture, building systems and materials needed to provide a high performance clinical environment. Fast-track schedules create more room for error, and contractors are left with fewer resources to address the unexpected.

These factors often converge to create delays and other issues that can result in serious negative effects for a healthcare center where the impact extends well beyond the bottom line. Expectations from patients, families and staff are high, and the cost of falling short is steep.

For these reasons, hospital executives and facility managers need to educate themselves about the advancements in the construction process and recognize the potential risks. By working closely with contractors, you can avoid possible roadblocks and ensure your project comes in on budget and on time.

Establish key relationships

Healthcare executives must ensure their facilities meet the precise temperature and humidity requirements of the micro-environments located throughout their buildings. To ensure this level of environmental quality continues during, and after, construction, it's essential to assemble the key players at the earliest stage of the project.

Your contractor should gather the safety director, the operations manager and various job superintendents to review your facility's specifications, establish schedules, and anticipate manpower and materials needs. Also include essential suppliers. The best partners can offer more than just products. They are experts and can provide critical information and advice to help mitigate the risks mechanical contractors will face - and ensure facility's operations are kept reliable and efficient - throughout the project.

Superior contractor-vendor relationships are based on trust and communication. In Virginia, the partnership principle was put to use in the design of two additions to Carilion Roanoke Memorial Hospital. There, hospital executives sought to reduce operating costs by re-piping the HVAC system and adding two new chillers, without compromising the performance of the current system and the comfort of patients and staff. By



working closely with suppliers, including its HVAC supplier and mechanical contractor, the construction team achieved the upgrade without sacrificing the quality of care or the resources available to complete the project.

Schedule for success

Such precision requires careful timelines. Keeping your contractor accountable to the established timeline can help guarantee your project meets its completion deadline.

Sometimes that may mean working after hours. When Kilborn Medical Centre in Ottawa decided to upgrade its HVAC system, the project manager worked closely with an experienced and flexible HVAC vendor to set up an after-hours schedule that would minimize disruption.

During a scheduling discussion, it's important your contractor ask a few key questions:

- ***What factors are driving the timeline for the construction team?*** For instance, if construction is planned during the summer, the project may need to be expedited. But the deadlines still must allow extra time to deal with worst-case scenarios. So work with your contractor to identify issues that could affect the schedule.

- ***What are the project requirements for everyone involved?*** As a facility manager, you have different needs and considerations than your contractor. During the scheduling process, ensure everyone's requirements are met and built into the construction schedule accordingly.
- ***What are the absolute deadlines?*** Because projects are completed in stages, the various construction partners become engaged at various phases. Must-know deadlines will help define must-do phases.

Require prompt delivery

Late supply and material delivery can wreak havoc on the schedule and funding for the project, and delay installation. Your contractor should establish clear, effective and comprehensive communication with all systems representatives to ensure they have all the necessary information about the project and potential issues.

Make certain your contractor has developed key relationships with reliable vendors to minimize headaches later on. HVAC is particularly time-sensitive because the systems often lie within the core of the structure. Problems with an HVAC system can cause cascading delays on other parts of the project, potentially throwing your vision of an on-budget project out the window.

Rather than calling in suppliers at later stages, your contractor should be in tune with them every step of the way, minimizing the chance that equipment won't be on-site in time.

From the beginning of a project to the end, information is the most important ingredient in risk management. Today's complex healthcare building projects require close collaboration between hospital managers and building contractors. The most successful projects also allow all project contributors to share their expertise and experience.

For more information, contact Mark Sundstrom, at TRANE in Indianapolis, by phone at 317-255-8777 or by email at mesundstrom@trane.com.



The Next Generation in Health Care Cable: HCF MCAP®

Patient care areas of health care facilities are surrounded by metal, liquids and various electronic equipment. As such, the environment yields big potential for stray currents that can be detrimental to patients. Because of these issues, in all patient care areas of healthcare facilities, there is a requirement to provide redundant forms of grounding. To accomplish this, Section 517.13 of the National Electric Code® (NEC®) requires that any branch circuit wiring that feeds patient care areas must have two things: (1) the metal conduit or metal sheath of a cable must qualify as a grounding conductor, and (2) a green insulated grounding conductor must be installed and connected. Traditionally, designers and installers of health care facilities had two choices when selecting their branch circuit wiring: pipe and wire or Health Care Facility (HCF) Type AC cable.

Pipe and Wire Branch Circuits

Pipe and wire is an option that is used for branch circuit wiring in health care facilities. This wiring method requires more planning, has more components, and more installation processes than HCF cable. The pipe is available in a variety of diameters and comes in 10-foot lengths. The pipe is rigid and must be bent in the field as needed to achieve the desired routing. Couplings are required to join the 10-foot sections. Once the conduit is installed, the electrician must come back and manually pull the wire through. It's a lengthy and tedious process. Per section 517.13 of the NEC, the metal conduit qualifies as a grounding conductor and the addition of a green ground provides the redundant ground requirement. While the conduit ground path can be very good, the connection or ground path integrity is only as reliable as the couplings that connect the conduit.

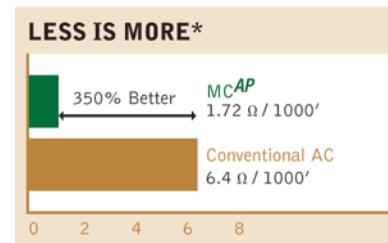
HCF AC Cable

The HCF AC cable option is commonly selected for its advantages over pipe and wire branch circuits. HCF AC cable has wires preinstalled, which means there is no need to pull the wire. It is flexible and continuous which eliminates the need for field bending and couplings. With HCF AC cable, the multistage process of pipe and wire is gone, resulting in both speed and cost advantages. Per Section 517.13 of the NEC, the armor qualifies as a grounding conductor and the addition of a green ground provides the redundant ground. The armor ground path is very reliable because it does not have couplings that can loosen over time, however the ground path performance is not as good as a grounding conductor.

Now there is a new form of healthcare cable that is a HCF Type MC cable product, HCF MCAP® cable, which offers improvements in installation productivity, cost and safety.

HCF MCAP Cable

All HCF cables are not equal. HCF MCAP, a Type MC cable, replaces Type AC cable and with it brings a significantly better armor ground path performance - over 350 percent on 12 AWG cable - and vastly improved installation performance. What does that mean for you? Improved grounding performance and reliability. Additionally, HCF MCAP cable is a Type MC cable, not a Type AC cable, making it easier to install and allowing for more conductors in a cable. This means greater installation productivity and faster completion.



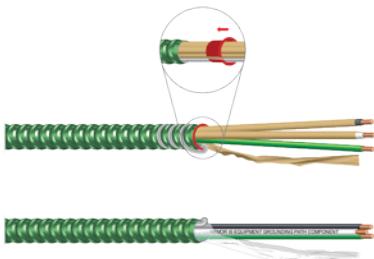
Full-Sized Equipment Grounding/Bonding Conductor

One of the greatest benefits gained using HCF MCAP Type MC cable is that HCF MCAP cable offers a full-sized equipment grounding/bonding conductor. In fact, HCF MCAP cable is the first interlocked armor cable that meets NEC 517.13 requirements for redundant equipment ground for conductor paths in health care facilities. Unlike the 16 AWG bonding strip in conventional HCF (Type AC) cable, the aluminum grounding/bonding conductor is sized based on NEC Table 250.122. And, HCF MCAP cable has no limits on the number of conductors in a cable, whereas Type AC cable for health care is limited to four current-carrying conductors. That means you may see multiple neutrals and home run cables where HCF MCAP cable is used.

Bonding / Grounding Conductor Size Comparison		
HCF Cable Size	HCF MCAP Cable	AC Cable
12 AWG Cable	10 AWG	16 AWG
10 AWG Cable	8 AWG	16 AWG

HCF MCAP Cable is Easier to Install Than HCF AC Cable

In addition to providing a better armor ground path, HCF MCAP cable is easier to install than HCF AC cable. Anti-short bushings are not required with HCF MCAP cable, single tape covering versus individually paper-wrapped conductors, secure and support every 6 feet versus 4.5 in addition to no conductor limits with HCF MCAP cable.



Southwire HCF MCAP Type MC Cable fully meets the applicable requirements of UL 1569 Standard for Metal-Clad Cables, NFPA 70 Electrical Code, UL 83 Standard, Federal Specification A-A595544 (formerly J-C-30-B), and IEEE 1202 (70,000 BTU/hr) Vertical Cable Tray Flame Test. Southwire HCF Type MC Cable is listed for use in UL 1, 2, and 3 Hour Through-Penetration Firestop Systems.

For more specific questions, feel free to contact Richard Temblador, Director, MCAP® Business Development, at 770.832.5337.

HCF MC^{AP} CABLE INSTALLATION INSTRUCTIONS

1

Cut cable with rotary cutter designed for use with interlocked armor or other suitable means and remove armor.

NOTE: If needed, spacer clips have been provided with this product to control blade depth of rotary cutters.

2

Separate the aluminum ground/bonding conductor from assembly and fold back approximately 120° over armor.

3

Cut off the aluminum ground/bonding conductor flush with armor as shown.

NOTE: Although not required, the bare aluminum ground/bonding conductor may be terminated inside the box or enclosure. The splices, connectors or terminals must be suitable for the conductor material(s) per NEC[®] 110.14.

4

Utilize MC cable fittings rated for use with HCF MC^{AP} cable to comply with NEC 517.13(A). Fittings suitable for use with MC^{AP} cable will contain an MCI-A marking on the fitting carton or package.

NOTE: For the latest list of available MCI-A rated fittings and boxes with integral cable clamps, go to www.southwire.com/MCA.

5

Connect the aluminum ground/bonding conductor to the grounding terminal on the receptacle to comply with NEC 517.13(B).



Wanted: Articles

If you would like to contribute an article and photos to the next issue of ISHE Insights, please contact Steve Thurston at sthurston@indy.rr.com. Materials would be due by July 15, 2008.

Comprehensive Health Care Program for Your Facility

Can a comprehensive approach to health care for an individual be compared to a comprehensive health care approach for your facility? TEGG® contractors believe it can. If you had a choice in the type of health care you could provide for yourself and your family, would you want the most comprehensive plan available at a reasonable cost? For most people the answer is yes. We want to be healthy and feel secure without the worry or stress of the unknown imposing a financial crisis in our lives.

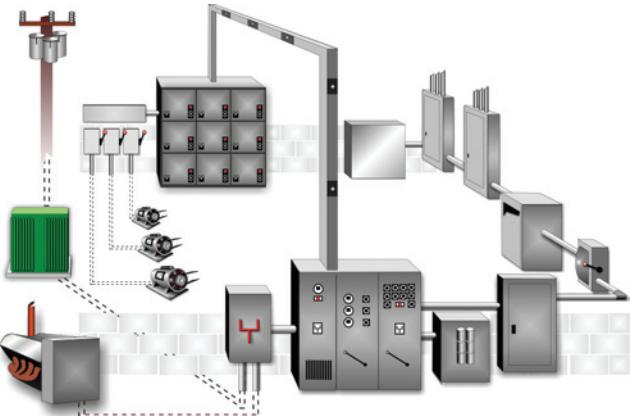
For the people in charge of a major health care facility the same feeling of security should be there for the most important system in their facility, the electrical distribution system. Without your electrical distribution system all functions in your facility would come to a halt. No power means; no communication, no security, no life support, no patient records being accessed and most important of all no revenue.

In your electrical distribution system, there are essentially no moving parts or visual indications that components aren't working properly. Your electrical system functions day-in and day-out through the stresses that your facility demands and is expected to perform without fail.

How does a comprehensive health care plan for an individual or a family compare to a comprehensive health care plan for an electrical distribution system?

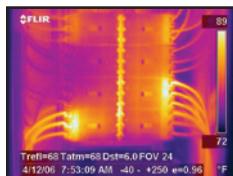
People have annual physicals performed as a proactive measure to combat health problems before they arise. The evaluation is performed by a trained and certified professional, utilizing the latest in technical equipment, medical history and updated health information provided by the patient. This assessment is used to either assure us that our internal system is functioning correctly or discover existing health issues before they reach a critical stage.

Annual checks of your Electrical Distribution System are performed as a proactive measure to combat electrical problems and to prevent loss of power to critical and life safety equipment. The evaluation is performed by a trained and certified professional, utilizing the latest in technical equipment and the facilities up to date information regarding its electrical system and daily usage. This assessment is used to either assure you that your electrical distribution system is functioning correctly or to discover existing electrical problems before they reach a critical stage.



During a person's annual physical, their trained and certified physician will examine them for possible signs of internal and external problems. This is completed with the use of x-rays, ultrasound equipment and diagnostic monitors.

During your facilities annual electrical distribution system check a TEGG® trained and certified electrical technician examines your electrical system for external and internal problems. This is completed with the use of state of the art infrared technology, ultrasonic equipment and power monitor recorders to determine any signs of system degradation or if equipment failure is evident or imminent.



A physician has standards of health care they follow to determine if there are problems within our bodies and minds. These not only include medical issued standards but also government regulated standards. Physicians attain their knowledge from years of training, experience and an availability to consult with others within the health care industry.

A TEGG® contractor has a set of standards for determining the health of an electrical distribution system. These include, Occupational Health and Safety Standards (OSHA), National Fire Protection Agency (NFPA), National Electrical Testing Agency (NETA), Institute of Electrical and Electronics Engineers (IEEE), Joint Commission for Accreditation of Health Care Organizations (JACO) and National Electrical Contractors Association (NECA). TEGG® Contractors attain their knowledge from years of training, experience and an availability to consult with the experience of an international network of TEGG® contractors.

A physician creates a living document (personal file) that tracks your health from year to year, medications, problems, family history, etc., to look at trends and changes that may indicate good health or poor health.

A TEGG® certified electrical contractor creates a living document of the electrical system noting changes from year to year with maintenance software that allows the facility to trend the equipment, track life expectancy and record all changes and modifications to the electrical system.



Most of us need health insurance to cover a significant medical expense. We are able to account for the everyday medical expenses in our household budget. But it is the catastrophic problem that would create havoc within our financial structure. The purchase of health insurance provides the security that we are financially equipped to cover these large costs and not damage our personal finances.

Most facilities budget for the year to cover the everyday items required to keep the electrical distribution system operating at peak efficiency. However, all it takes is that one catastrophic failure of a piece of electrical equipment to send the facility into a tail spin. The replacement of a piece of major equipment can place a substantial stress on a facilities budget, having adverse effects on income, client services and safety.

A TEGG® contractor can provide the peace of mind in knowing that a plan has been implemented, the cost of the equipment replacement is covered and a prompt response from qualified technicians is the expected norm from our clients.

If your facility does not have a comprehensive health care program for your electrical distribution system here are some questions to start asking.

- What is the impact of a power outage at your facility?
 - Safety Risks
 - Financial Risks
 - Reputation
- What is the inventory of your electrical system?
- What is the replacement cost of the major components of your electrical system?
- What are your critical areas?
- What is the current condition of your equipment?
- What electrical testing and maintenance program do you have in place and is it a comprehensive guaranteed replacement program?

By answering these questions and having a comprehensive health care plan in place for your electrical distribution system you can:

- Reduce business interruption costs
- Extend equipment life
- Minimize electrical utility costs
- Greatly reduce repair costs
- Minimize power quality risks
- Minimize life/safety risks

Your local TEGG® contractor is there to help you answer these questions and provide you with a comprehensive healthcare plan for your electrical distribution system.

You can visit the TEGG® website at TEGG.com to find your local TEGG® certified electrical contractor.

Matt Itce, Operations Manager - TEGG®/ Electrical Services, The Freije Company, Indianapolis, Indiana, (317) 291-6130



New Green Emergency Department Makes Difference for Patients, Staff, and Environment

By Schmidt Associates



The Community Health Network has taken further strides to make a difference in the lives and experiences of their patients and their families, along with their own staff. The expansion to the Emergency Department of Community Hospital South not only enhances the caregiving environment for the patients and staff, but also plays a part in caring for the planet. The project is registered with the US Green Building Council (USGBC) and is anticipated achieving Silver Certification from the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. Deciding to pursue the LEED Certification allows for a third party grading of their stance to provide an exceptional environment for patient care.

When anyone arrives on the campus, the new Emergency Department canopy is an obvious destination and as such, has become the hospital's new front door. The canopy is a very visible example of a progressive attitude that Community Hospital South has taken throughout the design of this project.

Phase I of the project incorporates an addition of more than 19,000-square-feet and opened in September 2007. Phase II of the project encompasses the renovation of the original 10,000-square-foot emergency department and opened in March 2008. Schmidt Associates-a full-service planning, design, and implementation firm out of Indianapolis-performed the

architectural, engineering, and interior design services for the \$9 million project.

The first phase increased the square footage for the department enabling it to grow from 15 semi-private patient treatment rooms to 26 private treatment beds. The triage area now has more space and privacy. And the expanded waiting area further enhances the patient's experience along with the patient's family's experience at the hospital. For a calming effect and to add interest, a bird aviary and a fish aquarium are part of the waiting area experience.

The second phase encompassed a new nurses' station and physicians' work area that is uniquely incorporated into one contiguous area. This was designed to encourage and enhance the communications between the physicians and nurses. The second phase also added two new trauma rooms and a new enclosed four-bay ambulance entry.

The addition and renovation work is all infused with green design, materials, and products which cumulatively are necessary to achieve the LEED Certification. The location and orientation of the addition, along with the site development, were part of the green design process. The energy efficiencies incorporated into the building-through the mechanical and lighting systems-all add to the sustainability efforts and the comfort levels of the



users of the facility. The mechanical systems and the use of low VOC products provide for improved indoor air quality-over what the building code requires-and enhance the comfort of the users.

There were even sustainable efforts incorporated into the construction process. During construction, the waste that was produced as a typical process of construction was monitored and distributed to maintain sustainable recycling efforts.

During the design development phase of the project, the design team realized that the project was easily capable of achieving LEED certification. The intentional decision to pursue the LEED Silver Certification was made without increasing the budget for the project. This standard allows the hospital and the Community Health Network to make a real statement to the community and the health care industry of their intentions to provide a quality environment for anyone that enters the facility.

Schmidt Associates is a full-service architecture/engineering firm in Indianapolis that has been providing services to a diverse clientele throughout Indiana for more than 30 years. As one of the largest A/E firms in the state, our mission is to lead a process for Owners founded on mutual respect and shared investment. For more information, please visit our website at www.schmidt-arch.com or call Adam Palmer, AIA, LEED AP, at 317.263.6226.

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Technology
Interior Design
Landscape Architecture*

High-Performance Dehumidification for Healthcare Facilities

Concerns about indoor air quality, particularly the growth and migration of mold and mildew, continue to increase in healthcare facilities. Managers and maintenance personnel are alert for new strategies to ensure the health of building occupants while protecting the integrity of the healing environment.

In response, Trane has developed the Cool, Dry, Quiet (CDQ™) desiccant dehumidification wheel. CDQ can improve the dehumidification performance of an HVAC system, eliminating humidity more efficiently than conventional reheat processing.

Cool, Dry, Quiet

The CDQ concept was created by Dr. Charles Cromer at the University of Central Florida. His patented design was developed by Trane and partially funded by the U.S. Department of Energy (DOE). Trane technology incorporates this unique method into its HVAC dehumidification systems.

The CDQ wheel utilizes desiccants - substances that attract water vapor from the air - whose performance exceeds alternative products in energy and cost competitiveness.

Adding CDQ enhances the dehumidification performance of traditional cooling coils. The coil does the system's conventional dehumidification work; the CDQ wheel transfers water vapor. But this transfer increases the coil's latent dehumidification capacity, without raising its total cooling capacity. Thus the system achieves a lower supply-air dew point without lowering coil temperature. Unlike a system using a cooling coil alone, a CDQ-equipped system allows the dew point of the air leaving the system to be lower than the coil surface temperature.

How does it work? The desiccant wheel is configured in series with the cooling coil, with the regeneration side of the wheel upstream of the coil and the process side downstream. CDQ adsorbs water vapor from the downstream air, then adds it back upstream, where the coil removes it through condensation. There's no need for a second regeneration airstream. And at only 8 revolutions per hour, the wheel won't add to maintenance problems.

System Performance: The Benefits

Most CDQ applications achieve higher latent capacity per ton of total capacity, lower achievable supply-air dew point, and reduced reheat energy.

**At ISHE's Spring Meeting:
"Temperature and Humidity in Today's ORs"
Friday, May 16, at 1:15 PM
Presented by Dave Sommer**

To remove the same amount of moisture, a cool-reheat system would need more cooling capacity and require air reheating. A CDQ system saves cooling and reheat energy and may even allow downsizing of the cooling equipment.

Additionally, CDQ lowers the cooling coil sensible heat ratio (SHR) - the ratio of sensible cooling to total cooling -without reheating. This helps the unit better match building loads, especially during part load conditions. Temperature gain from the wheel is minimal, typically 3°F to 9°F, allowing the system to cool and dehumidify. The CDQ system can deliver a supply-air dew point lower than the cooling coil temperature. A cooling coil can typically dehumidify air to a dew point that is 5°F to 10°F above the fluid or refrigerant flowing through its tubes.

CDQ can also improve the energy efficiency of chilled-water systems. Producing warmer water temperatures to achieve lower supply-air dew points, chillers can be more efficient. A CDQ system may also reduce pumping power, by allowing reduced chilled-water flow rates, and eliminate or minimize the need for glycol.

Finally, using CDQ cuts the infrastructure costs associated with low dew point applications. Electrical service is reduced, separate process cooling loops are eliminated, and there's no need for separate regeneration airstreams.

Applications

The CDQ system is ideal for applications requiring humidity control, including hospital operating rooms. These are kept not only at a low relative humidity, but also at cooler temperatures. The improved latent removal capacity of the CDQ system reduces needed cooling. Additionally, the lower supply-air dew points can eliminate the need for a secondary refrigeration coil or a heat-regenerated active desiccant system. Because the latter provide hot air (which requires significant post-cooling), substituting a

CDQ system can produce significant energy savings. The CDQ wheel may also:

- Reduce “comfort complaints” by surgeons, ultimately improving surgeon retention
- Minimize breeding grounds for mold and nosocomial infections
- Reduce condensate on surgical suite ceilings, walls, and equipment
- Minimize bleeding and improve patient outcomes driven by lower temperature and humidity
- Improve drying time of glues for proper setting of joints in orthopedic procedures
- Reduce noise, improving working and healing environments

Conclusion

CDQ delivers a high level of efficiency at an affordable price. The system adds value via long life expectancy and quality engineering, plus long-term customer support and parts availability.

For more information, contact: Dave Sommer, Vice President, Trane in Indiana, phone: 317-716-2605 or email: DSommer@trane.com.



Facilities Services Asset Management Program

- Establish a strategic assessment model to help institutions achieve organizational expectations.
- Provide best practice business methods to facility managers to raise the level of awareness around the critical nature of supporting an organization's long-term building infrastructure needs.
- Integrate financial and non-financial performance measures
- Integrate facilities management system linking best in class facilities management technologies and business practices.

- Condition assessments
- Maintenance plans and budgeting
- Design and operations consultations
- Analyze all current facilities to identify current and best practices
- Meet with administrative and physical plant staff
- Establish programs for facilities management and staff
- Develop customized living documentation that quantifies and qualifies program goals and objectives.
- Track utility and energy performance
- Develop programs for inventory system management coordinated with work order system
- Assist with the prioritization of needs assessment and costs for both capital and operations budgets.
- This model provides substantial supporting material that will prioritize projects, programs and articulate needs.
- This program provides a competent quantifiable qualified base line for defining facilities condition and estimating acceptable performance.



*Please contact Steve Thurston with any questions:
Phone: 317-908-8222 | Email: stthurston@indy.rr.com*



Indianapolis Healthcare Technical Conference

Thursday,
June 26, 2008

at

Sheraton Indianapolis Hotel
Keystone Crossing

Sponsored by
Schneider Electric



Keynote Topics & Speakers

Planning for Power Failures and Sentinel Event Alert 37

Dave Stymiest, P.E., CHFM, FASHE, CEM, GBE, Senior Consultant, Smith Seckman Reid Inc.

This presentation provides comprehensive guidance on analyzing and then mitigating the effects of power system failures, including the elements discussed by The Joint Commission's Sentinel Event Alert 37. Topics to be covered include power failure risk reduction strategies, performing a comprehensive emergency power gap analysis, power system vulnerability analyses, power failure risk assessments, applying Environment of Care risk management concepts to power failure planning, holistic management of clinical and facility considerations, and dozens of sample emergency management tracers for power failures to assist attendees in verifying their own readiness.

David is presently a Senior Consultant at Smith Seckman Reid, Inc. (SSR) specializing in Facilities Engineering and Regulatory Compliance consulting for hospital clients. Before joining SSR in June 2000, he was Senior Electrical Engineer for more than 10 years for Massachusetts General Hospital and the other 11 hospitals of Partners HealthCare System. He is an AHA Certified Healthcare Facility Manager (CHFM), a Fellow of ASHE (FASHE), an AEE Certified Energy Manager (CEM) and Green Building Engineer (GBE), & a Registered Professional Engineer in 4 states.

Healthcare Electrical Systems

Hugh Nash, P.E., Eng Fellow, Partner, Nash Lipsey Burch

This presentation provides an overview of recent trends in health care electrical systems, including changes and developments in NFPA 70 (NEC), 99, 110, and 111; Guidelines for the Design and Construction of Health Care Facilities; and the IEEE White Book. The session will also address the JCAHO Environment of Care requirements & planning for pwr failures (Sentinel Event Alert 37).

Hugh Nash is with Nash Lipsey Burch, a Nashville engineering firm. He is author of the ASHE/AHA Handbook on Electrical Systems. He has been Chairman of the IEEE White Book Working Group since 1979 and has been a member of the National Electrical Code Committee since 1980. Hugh served as Chairman of the NFPA 99 Electrical Systems Committee for 12 years (and continues to serve on the Committee as a member). He also serves on the NFPA 110/111 Technical Committee. Hugh is a Fellow in the Institute of Electrical and Electronics Engineers (IEEE) and serves on the Board of Directors for the Facilities Guidelines Institute, which publishes the Guidelines for Design and Construction of Health Care Facilities.

Elective Speakers and Topics

Arc Flash Safety

Joe Weigel, Square D

This presentation provides the basics of electrical safety compliance requirements for the hazards of shock, electrocution, arc flash and arc blast in hospitals and other healthcare facilities.

Grounding & Ground Fault Protection Issues in Hospitals

Frank Waterer, Square D, BSEE, Eng Fellow

This presentation summarizes the present applicable electrical codes relating to grounding and ground fault protection systems in hospitals. It also describes and addresses common design and installation deficiencies associated with grounding and ground fault protection systems in older and newer power distribution installation within hospitals.

Hospital EPSS Monitoring Systems

Pat Lepski, Square D

Healthcare emergency power systems are required by codes & standards to be tested. This presentation will focus on the need to automate this testing process using a system consisting of software and hardware specifically adapted for this purpose.

Integrated Systems for Energy Savings & Efficiency

Jeff Groat, Square D

Understand the power of your building automation system and how to capitalize on integration opportunities with other vital systems in your facility. Systems covered will include security, nurse call, paging, power metering and lighting.

Managing Energy Costs in Healthcare Facilities

Jim Parker, Square D

This presentation addresses the importance of both the supply and demand sides to decision-making that influences the total cost of energy for a healthcare facility. Critical areas of energy use in a typical healthcare facility will be examined.

Paralleling Emergency Generators in Hospitals

Robert Forste, Square D, BSEE, P.E..

This presentation provides a review of the advantages and disadvantages of paralleled versus non-parallelized generators, and of traditional and new technology controls associated with Generator Paralleling, including 'First Start', Auto Synchronizing, Load Sharing, Loading Control, and Generator Protection Requirements.

Preventive Maintenance Strategies For Hospitals

Frank Waterer, Square D, BSEE, Eng Fellow

An issue of vital concern in any healthcare environment is the "health" of the system infrastructure that works behind the scenes. This presentation addresses the basic considerations to account for in a power system assessment.

Selective Coordination

Bill Brown, Square D, BSEE, P.E.

This presentation provides an overview of selective coordination and how it is achieved. It outlines the NEC requirements for selective coordination and associated technical issues.

Who Should Attend

This conference is ideal for Hospital Facilities Personnel including Facilities Managers and Directors, Engineers, Electricians, Safety Managers and Consulting Engineers who have an interest in better understanding some of the unique technical challenges facing today's hospitals.

Topic Overview

The conference will address the following topics:

- Planning for Power Failures & Sentinel Alert 37
 - Arc Flash Safety
 - Hospital EPSS Monitoring Systems
 - Managing Energy Costs in Healthcare Facilities
 - Preventive Maintenance Strategies for Hospitals
- Healthcare Electrical Systems
 - Grounding & Ground Fault Protection Issues
 - Integrated Sys. for Energy Savings & Efficiency
 - Paralleling Emergency Generators in Hospitals
 - Selective Coordination

Training Benefits

Continuing Education Units (CEUs):

Professional Engineers will earn CEUs for attending the event. Florida is not eligible.

Certified Healthcare Facility Managers (CHFM): Individuals accredited as Certified Healthcare Facility Managers (CHFM) can fulfill their certification renewal requirements.

***Procurement of CEUs/CHFM is based on 100% attendance at the conference and completion of the course evaluation

Location

Sheraton Indianapolis Hotel
8787 Keystone Crossing
Indianapolis, IN 46240
Phone: (317) 846-2700 | Fax: (317) 638-0782

Registration

On-Line Registration: www.regonline.com/htc-indy

Registration Cut-off: Tuesday, June 17, 2008

Advance credit card or check payment is required. Major credit cards accepted are: Visa, MasterCard and American Express.

Registration Fee: \$75.00 per Person

Early Bird Registration: Register by Friday, May 23, 2008 to be entered into a drawing for a \$100 American Express Gift Card.

This registration fee includes breakfast, lunch and refreshment breaks. A CD-ROM of all the presentations will also be provided. *Participants should make their own hotel and transportation arrangements as needed.*

Cancellation and Refund: This fee is not refundable if cancellation is made on or after Tuesday, June 17, 2008.

Door Prize

Conference participants are entered in a random drawing to win a portable Garmin™ GPS navigation system.

Conference Information

Meeting Logistics Questions:

Meeting Insights
Kristi Sinn
Phone: 503-662-4271 | Fax: 503-961-7466
ksinn@meetinginsights.com

Other Conference Questions

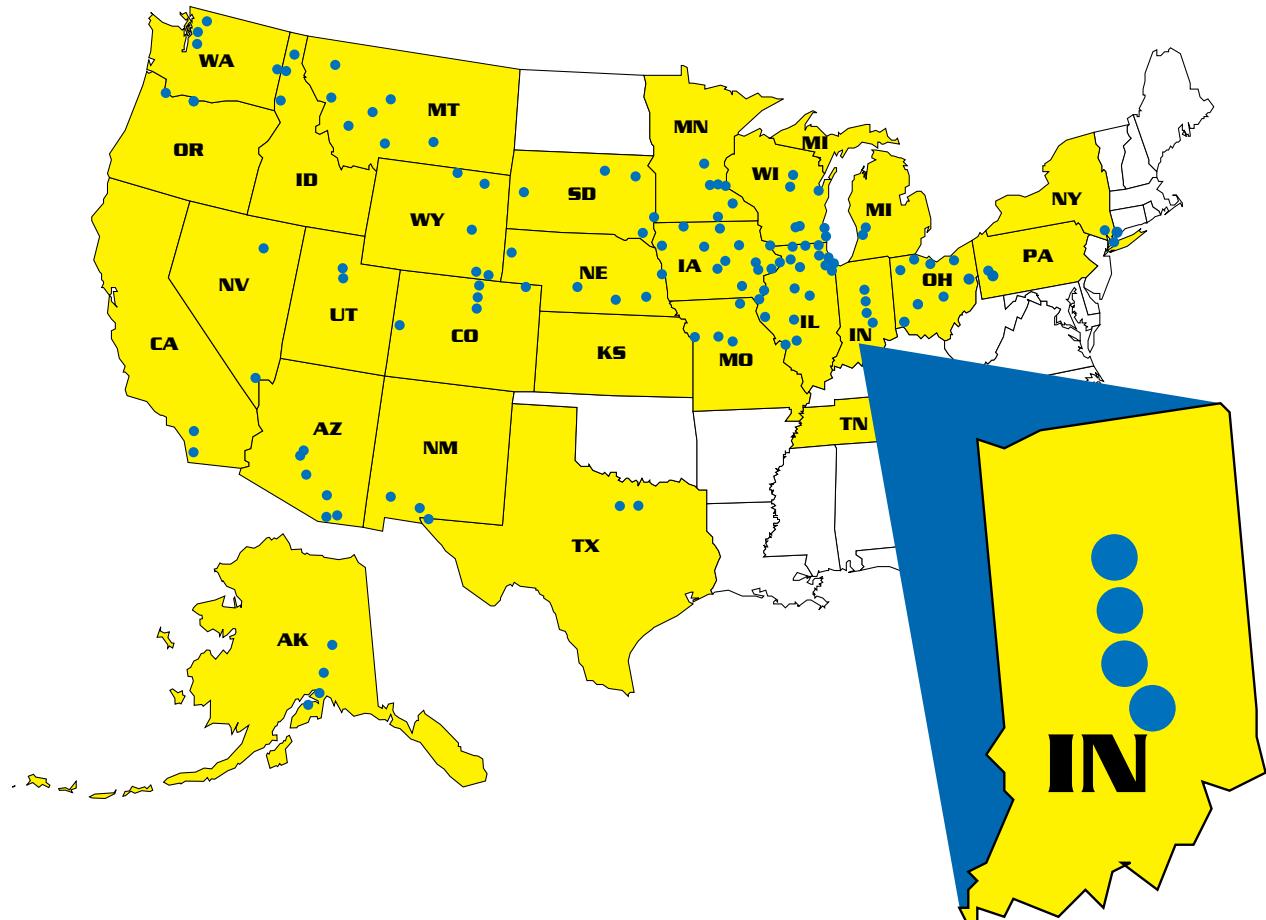
Square D
Brett Wheless
Phone: 615-844-8385 | Fax: 615-844-8444
brett.wheless@us.schneider-electric.com

Agenda

7:00-8:00 AM	Registration and Breakfast
8:00-8:15 AM	Welcome & Introduction of Dave Stymiest
8:15-9:30 AM	Keynote Speaker Dave Stymiest, Smith Seckman Reid
9:30-9:45 AM	Break
9:45-10:45 AM	Elective Speaker Topics: Track 1 #1 Arc Flash Safety #2 Hospital EPSS Monitoring Systems #3 Preventive Maintenance Strategies #4 Integrated Systems for Energy Savings and Efficiency
10:45-11:00 AM	Break
11:00-12:00 PM	Elective Speaker Topics: Track 2 #1 Selective Coordination #2 Grounding & Ground Fault Protection Issues in Hospitals #3 Managing Energy Costs in Healthcare Facilities #4 Paralleling Emergency Generators
12:00-1:00 PM	Lunch
1:00-1:15 PM	General Session Resumes & Introduction of Hugh Nash
1:15-2:30 PM	Keynote Speaker Hugh Nash, Nash Lipsey Burch
2:30-2:45 PM	Break
2:45-3:45 PM	Elective Speaker Topics: Track 3 #1 Arc Flash Safety #2 Hospital EPSS Monitoring Systems #3 Managing Energy Costs in Healthcare Facilities #4 Paralleling Emergency Generators
3:45-4:30 PM	General Session – Q & A, Feedback Survey and Raffle
4:30 PM	Conference End



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Fx (812) 376-6971

Noblesville, IN

15232 Herriman Blvd.
Noblesville, IN 46060
Ph (317) 773-5331
Fx (317) 773-5430



CRESCEENT ELECTRIC LINE CARD

Ballast

Universal
General Electric
Magnetech

Batteries-Flashlights

Rayovac
Panasonic
Medical-Industrial

Bells, Buzzers and Signal

Edwards Co. Inc.
Federal Signal

Boxes, Metal

Crouse Hinds
Bell
Walker
Wiremold

Boxes, Plastic

Krayloy
Carlon
Allied
Cantex

Cable Tray

B-Line
Cablofil
Mono Systems
PW
Wiremold

Circuit Breakers

Cutler-Hammer
General Electric
Square D
Siemens
FPE

Conduit

Wheatland
LTV
Allied
VAW (AL)
OCAL (PVC Coated)
Rob Roy (PVC Coated)
Perma Cote (PVC Coated)
Carlon (PVC)
Cantex (PVC)

Conduit Fittings, Bodies

Crouse-Hinds
Burndy
Arlington
Krayloy (PVC)
Carlon (PVC)
Meyers

Conduit Supports

B-Line
Caddy
Mineralac

Conduit, Flexible

Alflex/Southwire
AFC
Electri Flex

Conduit, Liquid Tight

Alflex/Southwire
American Flexible
Carlon

Cord, Portable

Carol
American Insulated

Dimmers & Lighting Control

Lutron
Pass & Seymour
Color Tran
ETC
Lightolier

LV Distribution Equipment

Cutler-Hammer
General Electric
Siemens

MV Distribution Equipment

Cutler-Hammer
General Electric
Siemens
S&C
RTE
FPE

Drives AC & DC

Cutler-Hammer
General Electric
Siemens
ABB

Enclosures

Hoffman
B-Line
Wiegman
Hammond
Quazite
Carlon (PVC)

Fans, Ventilating

Broan
Nutone

Fans, Industrial

Qmark
TPI-Raywall

Fastners

B-Line
Caddy
Cully

Fuses

Bussman
General Electric

Heating Equipment

Qmark
Fosteria
TPI-Raywall-Markel

Instruments-Metering

Fluke
Cutler-Hammer
GE Multilin
Siemens
Ideal

Insulation, Tape, Bonding

3M
Ideal
Panduit

Junction Boxes

Hoffman
Crouse Hinds
B-Line

Lamps

General Electric
Venture
EYE

Lighting-Emergency-Exit

Cooper-SureLites
Chloride
Exide

Lighting-Commercial

Cooper-Metallux
Halo
Neoray
Corelite
Portfolio
Iris
Shaper
Lumiere
Invue
Failsafe
Hubbell
Lithonia
Columbia
Infinity
Mercury
Simkar
Lightolier
Peerless
Tech Lighting
Kirlin
Prescolite
Daybite
Thomas

Lighting - Industrial

Cooper-Metallux
General Electric
Holophane
Hubbell
Daybrite

Lighting-Outdoor&Poles

Cooper-Lumark
Cooper-Invue
General Electric
Holophane
Hubbell- Spaulding
Kim
Moldcast
Guardco
Daybright
Union Metal
Valmont

Lighting - Residential

Cooper-Halo
Seagull
Lightolier
Thomas



crescent
electric
supply
company

CRESCEENT ELECTRIC LINE CARD

Metering-Enclosures

Siemens-Landis&Guyr
Midwest
Cutler-Hammer (Group)
General Electric (Group)
Siemens & (Group)

Motor Control &Centers

Cutler-Hammer
General Electric
Siemens
Siemens-Furnas

Photo Electric Controls and Time Switches

Intermatic
Tork
Fischer - Pierce

Poke Through Devices and Floor Boxes

Walker-Wiremold
Wiremold

Safety Equipment

Ideal
Greenlee
Klein

Safety Switches and Manual Transfer

Cutler-Hammer
General Electric
Siemens
Ronk

Smoke Detectors

BRK Electronics
Fryenicks
Edwards

LV MV Substations

Cutler-Hammer
General Electric
Siemens
RTE
S&C
ABB
FPE

Terminals, Lugs, Connectors and Splices

Panduit
Ideal
3M
Etcon
Burndy
Blackburn
NSI

Terminations - 5-34.5 KV

3M
Raychem
Elastimold
GE

Tools

Ideal
Klein
Greenlee
Cully
Lenox
Rothenberger

Transfer Switches

ASCO
Cutler-Hammer
GE Zenith
Russell
GE (Manual)
Siemens (Manual)
Ronk (Manual)

Transformers

Cutler-Hammer
General Electric
Siemens
Acme
Sola-Hevi-Duty
Hammond

TVSS - Surge Suppression

Cutler-Hammer
General Electric
Siemens
LEA
Liebert
Wiremold /Centrex
Intermatic

UPS (Uniteruptable Power)

GE
Powerware -C-H
APC

Wire and Cable

Encore
Cerro
Southwire
American Insulated
Carol Cable
Alcan
General Cable
Houston Wire and Cable

Wire Markers

Panduit
3M
Ideal

Wiring Devices-Commercial

Pass& Seymour
GE Low Voltage

Wiring Devices-Industrial

Pass & Seymour
Crouse-Hinds
Russell Stoll
Mettric
Daniel Woodhead



GE Industrial Systems

SIEMENS

COOPER Lighting

COOPER Crouse-Hinds

EATON

3M



GE Lamp

OMRON **STI**[®]

Hoffman[®]

PHOENIX CONTACT

Your Contact is:

Steve Thurston
Phone: 317-908-8222
Email: sthurston@indy.rr.com



crescent
electric
supply
company

*Franchise Restrictions Honored

Crescent Electric Value Added Services

Order Process

APPLICATION ENGINEERS

- We are dedicated to making your job easier. From troubleshooting a machine to network certification and software support, our team of highly trained Application Engineers can help you around the clock, seven days a week.

COLORS - Crescent Electric's easy-to-use On-Line order system

- 24 Hour Toll Free access from your PC or the internet at www.cesco.com
- Check price and availability
- On-Line product search
- Use your own part numbers
- Orders print directly to our warehouse for immediate picking
- All you need is internet access.



ELECTRONIC DATA INTERCHANGE

- Crescent is EDI capable. All major transaction sets in place
- Electronic Funds Transfer EFT capable

INSTANT ORDER ACKNOWLEDGEMENTS

- Lets you know now...what's on the way

BILL OF MATERIAL ORDERING

- Order groups of products using one part number
- Dramatically speeds up order placement
- Lower your order processing costs
- Minimizes errors

KITTING

- Consolidation of parts into customized packaging ready for you to install
- Delivery of "Total Product" to installation point
- Lower your production processing cost

INVENTORY IMPROVEMENT PROCESS

- Crescent Managed Inventory
- Bin Management
- Product Standardization
- Excess Inventory Relief
- Turn Improvement
- Product Identification
- Duplicate item identification and elimination
- Dedicated customer inventory
- Total Project Management



**crescent
electric
supply
company**

Measurement & Reporting

CUSTOMER SERVICE LEVEL REPORTS

Provides you with accurate performance statistics that include:

- On time delivery
- Fill rates
- Days to complete backorder
- Number of shipments per order
- Average order size

OPEN ORDER REPORTS

- Allows us to proactively expedite your orders
- Automatically generated at each Crescent facility for each and every customer

Lowering Transactional Costs

INVOICE & STATEMENT FAXING

- Convenient overnight transmittal of daily purchase invoices
- Speeds posting efforts
- Improves cash flow

SUMMARY BILLING

- Lower your payable processing costs
- Simplify payment and billing process
- Speed up posting
- Customized to meet your needs

PURCHASE CARDS

- Purchase cards accepted nationally at all locations
- Summary activity reports available

CRESCEENT FINANCIAL SERVICES

- 2 to 5 year leasing program
- Applies to equipment, tools and retrofits
- Manageable monthly payments
- Improves cash flow



UNIFORM, CONSISTENT, COMPETITIVE PRICING

- Your pricing is electronically profiled for consistency
- Price file downloads are available for most bid / estimating software titles
- Customized Blanket and Contract pricing is flexible in length and provides capped cost protection
- Experienced Quotation Staff delivers excellent Customer Service
- Crescent on-line quotations available through COLORS

FLUORESCENT LAMP, BALLAST AND BATTERY DISPOSAL SERVICES

- Pre-paid disposal of lamps, ballasts, and batteries
- Includes container, recycling fees and return freight
- Just pack up your material and UPS does the rest

Indiana Society for Healthcare Engineering

What is ISHE?

The Indiana Society for Healthcare Engineering is a resource for hospitals and suppliers. We formed in order to develop solutions to common problems. We have been recognized as a Gold Chapter by the American Society of Healthcare Engineering (ASHE) for the past six years.

ISHE's members are those professionals who are interested in personal and professional development, and engage in one or more of the following healthcare team responsibilities:

- Plant Operations
- Safety Management
- Related Hospital Fields
- Plant Engineering
- Clinical Engineering
- Suppliers to Hospitals



Benefits you can't find anywhere else.

What are the Benefits of ISHE Membership?

Membership in ISHE gives you a combination of benefits you can't find anywhere else:

Professional Development - ISHE provides educational opportunities geared toward your special needs as a healthcare engineering professional. Planning to enhance your career with CHFM certification? ISHE education is designed with CHFM in mind.

Healthcare Facility Tours - See facilities behind the scenes. Hear the insider stories, tips and challenges that only an ISHE facility tour can offer.

Connection - ISHE membership gives you the opportunity to meet and develop friendships with fellow professionals. These are people who really understand what you do for a living because it is their profession, too.

Networking - The answer to a difficult problem may just be a phone call or conversation away. You'll be surprised at how much easier your job becomes when you have a resource network of the best minds in the industry. Your fellow ISHE members are always at your fingertips with the online and print directories of members and resources.

Industry News and Trends - No one gives you as much local industry news as ISHE. The ISHE quarterly magazine, monthly email newsletter, and web site contain stories and information about Indiana healthcare facilities you can't find anywhere else.

Scholarships - To promote the field of engineering, ISHE offers two \$1,000 healthcare engineering scholarships to children of ISHE members every year. Winning one of these scholarships could immediately pay out up to 20 years of ISHE membership!

Advocacy - ISHE makes sure your voice is heard on important issues about codes, standards and other regulations that affect your career and facility. As individuals, our voices are small; but together, we can make a difference.

Recognition - ISHE provides opportunities for professional recognition. Volunteer, serve on the board, or contribute an article on your facility for the magazine or newsletter – these are all great ways to improve your profile in the industry and in your organization.

Who is Eligible for ISHE Membership?

Full Membership to the society is available for those individuals who are active in the field of health care engineering or a related health care field. Healthcare engineering embraces multiple engineering disciplines that include managing, operating and maintaining physical plant facilities, communication and biomedical equipment, and systems in health care facilities. A full membership is available at \$50.00 to those who qualify as being directly responsible for a health care facility.

Associate Membership to the society is available for those individuals whose firms provide products or services. This may include manufacturers representatives, vendors, contractors, distributors, registered architects, professional engineers and consultants. An Associate Membership is available at \$100.00.

Membership to the society becomes effective upon approval of membership application and receipt of the specified dues by the ISHE Board of Directors.

Join today using the application.

Questions? Contact Stevens & Stevens at 800-685-1248.

ISHE Membership Application

RETURN APPLICATION AND PAYMENT TO:
Indiana Society for Healthcare Engineering
P.O. Box 40727
Indianapolis, IN 46240-0727

I hereby apply for membership in the Indiana Society for Healthcare Engineering.



- My \$50.00 dues for FULL MEMBERSHIP status are enclosed.
 My \$100.00 dues for ASSOCIATE MEMBERSHIP status are enclosed.

This is for:

- New Membership Renewal Membership Replacing a Member

You may apply and pay via credit card online at www.isheweb.org.

Please make checks payable to "Indiana Society for Healthcare Engineering."

NAME: _____

TITLE: _____

ORGANIZATION: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

COUNTY: _____

TELEPHONE: _____

FAX: _____

E-MAIL: _____

SIGNATURE: _____

Requirements for Membership as quoted from bylaw as:

SECTION 1 – FULL MEMBERSHIP

A. Individuals eligible for full membership in the Society shall be those active in the field of hospital or healthcare engineering in the State of Indiana. Candidates for membership must be eligible for personal membership in the American Hospital Association and the Indiana Hospital Association.

B. A member in good standing is one who meets the requirements for eligibility and whose membership has not been terminated as specified in Article III, Section 12. Only active members in good standing may vote, be recognized, or hold office to the Society.

SECTION 2 – ASSOCIATE MEMBERSHIP

A. Associate membership may be granted to individuals not otherwise eligible for full membership, who are actively involved with hospital and healthcare engineering in the State of Indiana. Associate membership shall be granted only to those professionals who will make a significant contribution to the betterment of the Society.



Indiana Society for
Healthcare Engineering
P.O. Box 40727
Indianapolis, IN 46240-0727

Contributors to this issue of ISHE Issues are:



MSKTD
& Associates, Inc.



SCHMIDT



ASSOCIATES

Architecture
Engineering
Technology
Interior Design
Landscape Architecture