Tech Forum

www.iesphl.org

Fall, 2001

President's Welcome

Welcome to the IES Philadelphia Section Calendar Year 2001 - 2002! Our section membership continues to grow steadily - now at 223 members. We would like to see all of our members participating in our section programs this year. Our Vice President and Program Chair, Jeff Long, has put together an exciting program schedule, which includes many interesting tours of great lighting projects in our area. The popular IES/Lamplighters Emory Zimmers Memorial Golf Outing,chaired by Jack Graham, is again scheduled for May 21, 2002. Mark your calendar now.

In order to reach out to all of you, our Membership Chair, Sam Zussman, is updating our e-mail directory. With an updated e-mail directory we will be able to keep all of you better informed about upcoming events. Let us know what your e-mail address is so we can include you on the list. Brian Hahnlen, Publications Chair, will be keeping our website (www.iesphl.org) up to date and Li Huang has been doing a wonderful job editing and designing the Tech Forum.

Our Secretary and Education Chair, Joe Doyle, is busy setting up this Fall's ED150 Intermediate Level Lighting Course, which will be an excellent opportunity for LC candidates to take as a study course in preparation for this Fall's LC exam. With the planned move of the Electrical Association offices, Joe Doyle is also heading up the committee to study the options for our section's future home.

Philadelphia Lights 2002 is in the works for Fall 2002, with Paul Kyack leading up the efforts as Liaison Chair on educational seminars.

Our Sections 'Design With Light' competition for the students is starting up again this school year with Julie Panassow as Chair and with HK Lighting as the 2001-2002 sponsoring firm.

Thanks go out to our past President Kathy Beacher for a wonderful 2000-2001 year and to Dave Safford for his many years of service as IIDA chair. Kathy Beacher is now the new IIDA chair and Dave Safford is continuing as Awards Chair, focusing on the new Fellowship of the Philadelphia Section, which recognizes members for committed service to the section.

Handling the financials for all of our wonderful programs and funding of educational lighting endeavors is acting Treasurer, Larry Abramovitz, and Funding Chair, Howard Lewis.

Special thanks to all our committee chairs and committee members. A complete listing of the committees members are listed on our website, www.iesphl.org. We always welcome new faces for committees and at Board Meetings, please contact any committee chair or myself if you would like to become more involved. Board meetings are typically held at noon time on the first Friday of the month unless otherwise noted. We look forward to seeing you there.

Mary Alcaraz, PE, LC
President, 2001-2001
IES Philadelphia
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IES Philadelphia 2001-2002 Program Schedule

Date	Topic
September 20, 2001	Tour of the Lighting of the Philadelphia Waterworks
October 18, 2001	Tour of the Lighting of the Philadelphia Airport
November 15, 2001	Tour of the Lighting of the QVC Studios
December 13, 2001	Holiday Social Overlooking the Lighting of the Ben Franklin Bridge
January 17, 2002	The Design Process; Learning from Artistic and Engineering Viewpoint
February 21, 2002	Technology Uptate - LED's
March 21, 2002	IIDA Awards Banquet
April 18, 2002	Dark Skies / Light Trespass Update - Joint Meeting with Lamplighters
May 21,2002	Golf Outing
June, 2002	Officers Installation Banquet

IES Philadelphia Corporate Sponsors

IES Philadelphia Section welcomes our new corporate sponsors:

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Penn Lighting

You can become a corporate sponsor and support IES sponsored education programs and scholarships. Here is how.

A $500 Corporate Sponsorship in the IES Philadelphia Section includes the following:

- $250 goes Toward Sponsor Designated Educational Programs and/or Scholarships.
- Sponsors are Highlighted in Tech Forum publication and on our Web Site www.iesphl.org
- Ten complimentary company passes for attendance at IES Philadelphia Section monthly programs (Passes may not be used for the Awards Banquet, Golf Outing or Officer's Installation Banquet)

Please make checks payable to IES and send to:

The Illuminating Engineering Society of North America - Philadelphia Section
c/o The Electrical Association of Philadelphia

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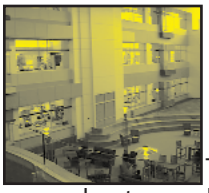

Integrating Lighting Controls with Building Management Systems

There are three basic approaches to overall lighting control. These are stand alone systems, integrated systems, and interoperable systems. This article will attempt to explain the differences between integrated and interoperable, as well as what lighting designers need to know in order to design and specify a control system that is either integrated or interoperable. First, let's review some advantages of integrated or interoperable control systems:

* Energy savings
* Less duplication of control equipment
* Ease of maintenance (failures are easier to discover; routine maintenance can be better scheduled ; use of standardize maintenance software)
* Multiple systems can be monitored from one location (monitoring can be remote)

Additional advantages for interoperable systems are as follows:

* Enhance security (if security system is also connected)
* Make off-hour work easier for employees.

DEFINITIONS

An "integrated" lighting control system operates through the same "front end" (computer system) as the BMS. This could mean that the same software is used for both HVAC and lighting controls, or that the software for lighting is different than the software for HVAC but both are accessed through a common computer. An "interoperable" lighting control system uses signals generated by the BMS to control lights and/or uses signals generated by the lighting control system to operate mechanical equipment.

Whether integrated or interoperable, the HVAC and lighting control systems are separate systems that communicate with each other through software language, and there are two ways to approach this communication. The project team may decide to use a proprietary system or a multi-vendor system that uses translators or open protocols. A proprietary system allows complete system design to be included in CD documentation, but involves a single name specification which many clients do not want and locks-in that manufacturer for all future renovations and maintenance. There are a number of different approaches to the multi-vendor systems. One approach would be through the use of "translators". Translators convert one manufacturer's "language" to another's. If this is the system used, careful attention must be given to the performance specification that indicates exactly what pieces of information are to be shared. Future changes may be difficult, as the translator may not be able to accommodate system changes. Another approach would be through the use of "open protocol". ASHRAE developed a standard language called "BACnet" that would allow all manufacturers to use a common language. However, most manufacturers maintained their proprietary language and added "gateways" to their systems that translate their data to "BACnet". Therefore, the same problem exists in that these gateways may or may not be able to accommodate future changes. The Echelon Corporation also developed a common operating protocol known as "LonWorks". Equipment manufacturers include in their product a neuron processor with LonTalk protocol, which allows all manufacturers with this processor to communicate without the use of gateways. Microsoft also developed a product that would allow complete sharing of information between vendors without the use of gateways. This product is known as "OPC Servers". OPC Servers have been used in the industrial controls industry for a while, but only recently have been introduced to the architectural market. Many control experts that I've talked with think this is the future of building control systems.

WHERE DO I START?

1. Meet with the HVAC controls engineer and the security designer, then proceed together:

2. Evaluate the building. What are the hours of operation and off-hour usage? How is maintenance performed? (Group or spot relamp? Is maintenance staff located within building?) How is HVAC controlled/zoned? What type of security controls are used?

3. Get your clients "wish list" for what they would like the control system to accomplish. This may include items such as:

- centralized control/monitoring
- maximize energy efficiency
- operational efficiencies
- competitive bids (initial project as well as future work)
- ability to make future changes to information included in maintenance software
- simplify maintenance
- assure equipment is off when people are not present
- make it easy for the occupant to control lights and HVAC during off-hour work
- enhance security
- reflect company's commitment to innovation

4. Compare wish list to the building analysis and determine what items can easily be done, what items can be done but may limit the acceptable manufacturers, what items can be done but will have a significant cost impact, and what items cannot be done. Review this comparison with the client to determine the final direction the project will take.

DOING THE DESIGN

Once you know how the overall system is to function, you can select the individual components for the lighting control system. This often involves a selection between controllable circuit breaker panelboards, lighting relay panelboards, or distributed control modules. In making this selection, it is imperative that you understand how each manufacturer's equipment operates. For example, not all controllable circuit breaker panelboards or lighting relay panelboards operate the same way. Some common questions are outlined below. Be sure to find out if the features/capabilities are standard with the product or an additional feature available, as this can significantly affect pricing.

* How does the system communicate between panels? (share overrides?)
* How does the system communicate with other vendors?
* Can BMS signals operate lighting relays?
* Are lighting override signals communicated to the BMS?
* Does monitoring include current draw, signal status, and/or relay position?
* What types of override devices can be connected to system? (What voltage?)
* How many relays per panel and how many override devices per panel?

Now that you know how the lighting system is to function and what equipment is to be used, that information must be conveyed in the construction documentation. Lighting plans should include a relay number reference for each light fixture, overrides should be located and identified, relay panels should be located and identified, and the general notes should reference the relay panel schedule. Relay panel schedule should include for each relay a load description, panelboard name and circuit

Integrating Lighting Controls with Building Management Systems

number, load, override devices, and time schedule. Specifications must be carefully coordinated with the BMS specification. Depending upon the approach taken, lighting control panels and override devices are sometimes included with the BMS specification. In such a case, it is the lighting designer's obligation to review the document and make sure that the lighting control equipment and performance is properly specified. Here are three requirements that you may want to consider including in your speicification:

1. Contractor shall, as part of bid package, provide a list of deviations/exceptions to performance specification outlined within this section. Include verification of compatibility with all override device specifications/manufacturers as well as BMS specification/manufacturers.
2. Contractor shall field verify system operation.
3. Manufacturer shall provide on site field instruction for end users upon project completion.

In addition to the lighting plan, relay schedule, and specification, you may want to consider including a control zone diagram. This is typically a diagrammatic floor plan with different hatching patterns used to illustrate the extent of the different lighting control zones. Override locations may also be located on this plan.

Karen Murphy, CUH2A

PENN STATE Student Chapter Update

Penn State University has a new lighting faculty member, Dr. Martin Moeck, who was previously a faculty member in Architectural Engineering at the University of Kansas. He earned a Ph.D. in architecture from the University of Stuttgart in Germany and brings a strong background in lighting and daylighting design to Penn State. His expertise in the design process and visual perception related to design techniques will be a valuable addition to Penn State's lighting curriculum, particularly since Penn State is arguably the top university in placing undergraduates into lighting design positions. His teaching places emphasis on hands-on demonstrations that are designed to enhance student learning. Dr. Moeck's students have been very successful in winning the IESNA Howard Brandston Lighting Design Education Grant in recent years.

This year, the Howard Brandston Lighting Design Education Grant was awarded to a pair of Penn State students, Andrew McNeil and Xavier Fulbright, for their lighting design solutions for a Scandinavian Cultural Center in New York City. The project submission was an assignment in Prof. Mistrick's Computer Aided Lighting Design & Analysis course.

Prof. Mistrick has continued to develop the World Campus Architectural Lighting Design program. Penn State's introductory lighting design course was offered during the Spring 2001 semester with 10 students (building industry professionals) completing the course on-line. This course will be offered again during the Fall semester (beginning in late August), with the Daylighting course being offered starting in January. The Daylighting course is designed to help architects, lighting designers, and engineers integrate daylight into buildings. "With the current push toward sustainable and green design, daylight is becoming more important, particularly in buildings such as schools," says Dr. Mistrick. A third course, that will focus primarily on advanced design applications and lighting analysis software, such as Lightscape, is currently under development. That course will likely be offered in Fall of 2002. More information on the World Campus courses can be view at www.worldcampus.psu.edu/pub/archlighting/index.shtml.

This year promises to be an exciting year for the lighting program at Penn State. A large fifth-year class will be returning to campus with significant summer design experience. With the addition of Dr. Moeck, we will be expanding topic coverage in our lighting design courses and outfitting the illumination laboratory with a variety of new hands-on demonstrations and state-of-the-art lighting equipment.

As always, we look forward to our continued association with the Philadelphia IES Section.

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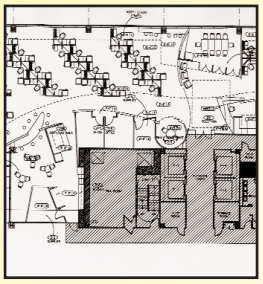
DESIGN WITH LIGHT 2001
A Student Lighting Design Competition



Year 2001 Project - Lighting of Telecommunication Center - Floor Plan

Design With Light is a student lighting design competition that is co-sponsored by the IES Philadelphia and Philadelphia area design firms that offer creative lighting design services on a commercial basis. This year our co-sponsor is HK Lighting and the project Rehab Center.

The program offers a $500 first prize and a $250 second prize for the best student-designed solution for lighting of this year's project. Also offered are $1,000 and $500 to the coordinating academic department of the first and second prize students. Details of this year's competition are made available in the competition entry package which can be obtained through participating colleges or can be downloaded from www.iesphl.org. Entry deadline is December 20, 2001. Contact Julie Panassow at 215-238-1644 or email jpanassow@thelightingpractice.com if you have any questions.

The competition is open to all students enrolled in any accredited college-level (undergraduate and graduate) degree program in the greater Philadelphia area and any campus of the Pennsylvania State University. Entries are judged by a panel of lighting design professionals. Awards are made at an awards dinner in the spring.

IES Philadelphia thanks Grenald Waldron Associates for sponsoring DESIGN WITH LIGHT 2000-2001 and congratulate Xavier Fulbright, Traci Godbey and Andrew McNeil of the Pennsylvania State University AE program as 2000-2001 Design With Light student design competition award winners.

- Julie Panassow

IES Philadelphia Contacts
www.iesphl.org

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IIDA 2002
Let Your Lighting Projects Shine!

That time is upon us again: The call for lighting design projects in the Philadelphia area is hereby underway! (You are not required to be IESNA members to enter although you may want to join after hearing about this great program.) It's time to get busy assembling project information, photography and entry forms!

I recently became the Chair of the International Illumination Design Award (IIDA) Committee for the local Philadelphia Section of the IESNA. Last year, a record 24 projects were submitted! Our illustrious past leader, Mr. Dave Safford, moved on to be the East Central Regional IIDA Committee Chair, and we wish him well! Look for the wonderful local submittals on our Section's website: www.iesphl.org and request a list of recent award winners, we'll have photography sources and advice, just point your browser to the Philadelphia Section!

IIDA Rules Are Simple.

- Project must be completed 24 months prior to March of the program year (Between March 1999 and February 2002).
- Enter each project once through an IES Section. Multiple projects may be entered. In a large installation, several projects may be submitted to cover various areas.
- Projects must be submitted on the official IIDA entry form (available on the national IESNA website), along with a 250 word maximum script accompanied by a maximum of ten (10) 35-mm slides and the entry fee. (The Philadelphia Section will foot the entry fee for our section submittals!).
- All materials become the property of LD+A magazine and will not be returned. IESNA may use the project to promote the IIDA program, locally and internationally.
- Deadline for entries: Mid-January 2002 (Date to be determined by the Regional deadline/schedule).

Who Should Enter?

- Architects
- Lighting Designers
- Interior Designers
- Engineers
- Landscape Architects
- Distributors Contractors and others affiliated with a lighting design project.

Remember:

- There are four categories to enter; Interior/Outdoor/Residential/Energy Efficient Commercial Projects.
- Open to any entrant without limitations to professional affiliations.
- No project TOO BIG or TOO SMALL.
- Not a competition-each entry will be judged on its own merits against specific criteria (not against other projects).

Hope to hear from you! We have a whole committee of members willing to help you submit your best projects ever! If you would like more information on this article or would like to request IIDA entry forms, please contact me, Kathy Beacher at kb2@chesco.com or fax 610-384-0695.

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