Lighting Design + Application
August 2002

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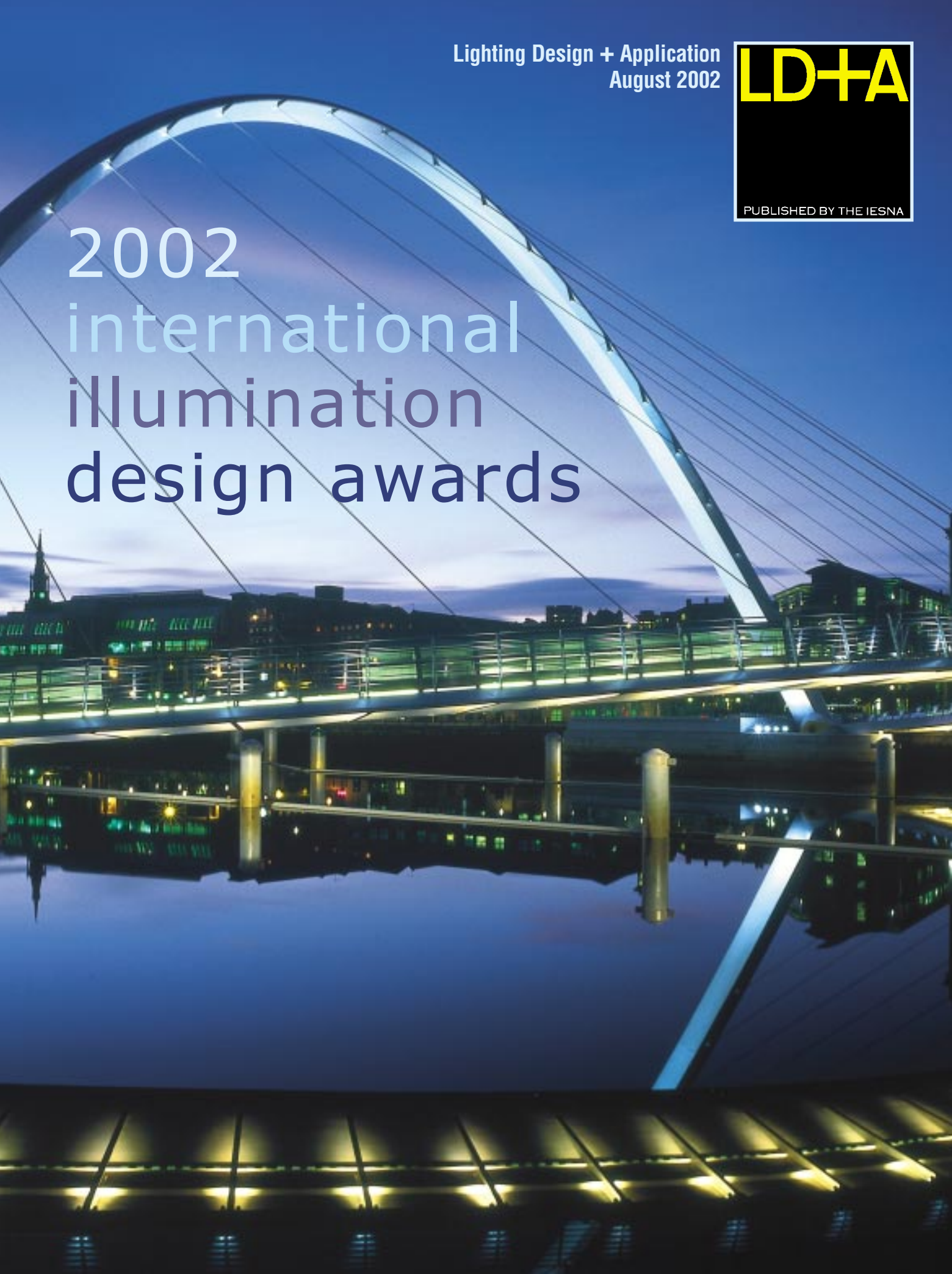

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HOUSES OF WORSHIP

DEPARTMENTS

ON THE COVER: Gateshead Millennium Bridge is the first tilting bridge of its kind in the world. For Jonathan Speirs and Associates Ltd., the lighting concept stressed simplicity—reinforcing form and creating a nighttime icon. The lighting was honored with the IIDA Paul Waterbury Award of Distinction for Outdoor Lighting Design.
Photo: Graeme Peacock

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BEARDSLEY'S BEAT

Charles Beardsley, Editor

"'I feel wanton,' Jory whispered softly."

"I have stage fright," said Fern Michaels, author of the best-selling romance novel, *Serendipity*, in which the above sentence appears.

Ms. Michaels was seated to my right at a literary awards banquet. Also on the dais was Wendy Benchley, wife of Peter, author of *Jaws*.

"I'd like to buy one of your books," she said to me.

"Well, I don't write books," I replied. "You see, Wendy, your husband writes about terror and suspense. Fern writes about passion and romance. I write about lighting."

"Lightning?"

"No, lighting. Radiant energy capable of exciting the retina and producing a visual sensation."

Her eyes glazed over.

I shut up.

Obviously I wasn't exciting her retina!

Actually, the evening did offer some interesting insights into the creative process—my conversational meanderings notwithstanding. Although I attended the dinner as a mere engineering editor, the other speakers were genuine literary celebrities.

Fern Michaels's books have sold more than 27 million copies worldwide. Yet she confessed she was told by her seventh-grade teacher that she would never amount to anything.

Peter Benchley wrote *Jaws* in the back room of a furniture supply outlet, according to his wife. "Peter was a sophisticate from the canyons of Manhattan and couldn't write in the peaceful quiet setting of Princeton," she said. "He can write in noise and chaos, however."

Best-selling novelist Belva Plain, another speaker that evening, told the audience she still keyboards her books on a 1945 Olympia typewriter. She's frequently asked during book-signings where she gets her ideas. "I'm tempted to say Bloomingdale's, but I keep such thoughts to myself," she said.

So, what lessons does literary creativity have for the lighting designer? Engineers and scientists are, of course, inspired in their own ways.

Poincare—the 19th century mathematician who had more than his share of creative hunches—relied on an active unconscious and a sense of the beauty of numbers. In fact, his first treatise on Fuchsian numbers came after drinking too much coffee. "I then began to study other arithmetic questions," he wrote. "Disgusted at my want of success, I went away to spend a few days at the seaside, and thought of entirely different things. One day, as I was walking on the cliff, the idea came to me, again with the same characteristic of conciseness, suddenness, and immediate certainty."

Einstein once wrote "the words of language" played little role in his mechanisms of thought, which, he said, "relies on more or less clear images of a visual and some of a muscular type. What you call consciousness is a narrow thing."

Call it inspiration, discovery, or insight—all are appropriate names for that creative flash that happens all too infrequently. Poincare experienced it with Fuchsian numbers, Peter Benchley with a black shark off Nantucket Island. Me, I'm still looking for an idea for this month's Beat.

Editor's Notes

July's cover story, "Keeping Her Eye on the Ball" described the work of Flack + Kurtz over the course of a number of years. Considering this time frame and the magnitude of the projects, the design was not completed by a single designer, but was a collaborative effort of the designers employed by F+K at the given time. We acknowledge their contributions to the success of these projects.

REGIONAL VOICES

Kimberly Szinger, Great Lakes Region RVP

The end of a year is an occasion that affords us an opportunity for reflection. We all can benefit from taking some time to evaluate recent accomplishments and to set goals for the year ahead. We're most accustomed to doing this on the new calendar year, when we refer to our goals as resolutions. But in truth, many year-ends don't follow the calendar—our Society's program year has just recently come to a close. The feeling is nonetheless the same, that of a "giant reset button." This makes it a good time to wonder, "Am I doing the things that are most important to me?"

I'd like you to consider with me for a moment the notion of your personal mission statement. We usually think of a mission statement as applying just to businesses, but each person has an individual mission statement as well. Consultant Franklin Covey states this concept quite succinctly: "A mission statement describes your unique purpose in life. It captures what qualities you want to develop, what you want to accomplish, what contributions you want to make." Every decision we make impacts the direction of our life. We might create and follow a personal mission statement without ever thinking about it, but it's when we do make an effort to think about it that the true benefits are realized.

A mission statement answers the following questions:

- What do I do?
- For whom do I do it?
- How do I go about it?

To answer these questions, we should think about the roles we fill (spouse, parent, employee, member, etc.), the talents we have (conflict resolution, leadership, technical capabilities, etc.), and the contributions we want to make (to society, to the world, etc.). Then, we should use the new-year occasions in our lives to review and revise our personal missions.

Personally, I update my mission statement annually and am always amazed at the magnitude of change in all three of these areas (roles/talents/contributions). I find as I work toward achieving my contribution goals, I inevitably increase my set of talents and the number of roles I fill. The amazement I experience, during my mission update, is due to the fact that we all tend to forget about our achievements as we work through our day-to-day lives. The annual review is a tool we can use to remember these achievements.

What, you may ask, does all this have to do with the IESNA?

As I mentioned in the opening, the current program year has just ended and the new one started. This is a perfect time for you to find a new way to participate in the Society, and in so doing, to pursue some of your own personal goals. The IESNA has a lot to offer to its individual members and, as an active participant, you'll receive considerably more than the great monthly publications and discounts on car rentals. IESNA positions at the section, regional, and society levels are surprisingly accessible for a technical society. I, have found the roles I've filled within the IESNA have expanded my set of talents and increased the level of contribution that I can make to the Society and to my employer. My skills in conflict management, leadership, organization, public speaking, workshop facilitation, and technical capabilities have all improved in ways that my job alone could not accomplish. You can have the same results.

When you update your personal mission statement this year, think about all the goals that the IESNA can help you achieve. Actively participating in the Society will improve your talents in ways that a management seminar cannot. And, if you start to include these benefits when you think about membership renewal and participation—the annual membership fee is a fantastic value. Speak to one of your Board of Manager members, today, and find new ways to participate in your section of the IESNA.

LD+A

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LD+A is a magazine for professionals involved in the art, science, study, manufacture, teaching, and implementation of lighting. *LD+A* is designed to enhance and improve the practice of lighting. Every issue of *LD+A* includes feature articles on design projects, technical articles on the science of illumination, new product developments, industry trends, news of the Illuminating Engineering Society of North America, and vital information about the illuminating profession.

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"Natural light levels vary continuously throughout the day, beginning with sunrise, followed by the bright sunlight of noon, and then gradually decreasing until sunset. After sunset, variable amounts of moonlight may be available, or the sky may be cloudy, making the night much darker and the following day dull and gloomy."—Records, R.E.; Brown, J.L. 1982. *Biomedical Foundations of Opthalmology*. Philadelphia.

"The sensitivity of the eye to radiant energy is about three hundred thousand times as great as that of the most sensitive bolometer... The peripheral threshold with complete dark adaptation corresponds to a stimulus surface brightness of about 0.000015 candles per square meter, while the brightness of the disk of the sun approaches 1,000,000,000 of the same units."—Troland, L.T. 1930. *The Principles of Psychophysiology*. New York: Greenwood Press.

"The range of intensity of illumination, over which the eye can see with practically equal comfort, is enormous: The average intensity of illumination at noon of a sunny day is nearly one million times greater than the illumination given by the full moon, and still we can see fairly well in either case; that is, the human eye can adapt itself to enormous differences in the intensity of illumination and that so perfectly that it is difficult to realize the differences in intensity without measuring them."—Steinmetz, C.P. 1909. *Radiation, Light, and Illumination*. New York: McGraw-Hill.

Despite the fact that the eye is the most sensitive of the body's sensory systems, IESNA, though acknowledging the existence of changes due to adaptation, has nonetheless isolated itself from their use, noting in *The IESNA Lighting Handbook*, Ninth Edition "Because scotopic vision is irrelevant and mesoptic vision has not been officially defined, virtually all photometric quantities used in lighting practice are measured using the CIE Standard Photometric Observer."

Why should we be concerned with the level of adaptation? In his book *Visual Intelligence* (W.W. Norton & Co., 1998), Donald Hoffman reminds us, "Without exception, everything you see, you construct: color, shading, texture, motion, shape, visual objects, and entire visual scenes." None of these properties is absolute. Each changes with the visual adaptation of the viewer.

The external stimulus, luminance (cd/m^2), prompts the subjective response brightness—measured in Trolands in honor of L.D. Troland. Luminance and the Troland are numerically equal if the viewer's pupil area is one square millimeter. "Numerically" is emphasized because only the numbers can be equal; an external stimulus and a subjective mental response can never be equal.

In December 2001 *LD+A*, I outlined three steps by C.P. Steinmetz, tracing the process of visual adaptation. He continues his discussion of the logarithmic law of sensation with an example: "Thus a change of intensity from 1 to 1000 is 1000 times as great a change of intensity as from 1 to 2, but the change of sensation in the first case, log 1000=3, is only 10 times as great as the change in the latter case, log 2=0.301."

This expression follows Fechner's law—specifically that sensation increases as the logarithm of stimulus intensity. In *The Principles of Optics* (McGraw-Hill: 1932), Arthur Hardy and Fred Perrin verify, "to a very close approximation, the sensation varies directly as the logarithm of the stimulus over the useful range of field brightness."

This significant relationship seems to have been rejected by the illuminating engineering community. Even the log scale of adaptation is used only as the abscissa of sensitivity curves, so when we change from luminance to brightness, from subjective considerations to subjective judgments, this log relationship is ever present. In *Scientific Basis of Illuminating Engineering* (McGraw-Hill: 1936), Parry Moon summed up, "The trouble is fundamental, is inherent in the very fact that sensation does not reside in the world of physics and thus can never be

VIEWS ON THE VISUAL ENVIRONMENT

Louis Erhardt

treated as a physical quantity."

This month's essay calls attention to changes that take place every day. All factors contributing to vision are equally active indoors, but the exterior scene has only ground reflections and other interreflections of lesser importance than the inter-reflectance factor in interior calculations. Adaptation out-of-doors covers the entire range of vision (roughly twelve log steps) while interior adaptations are limited to three or four. The natural prime source is the sun; the secondary source, the sky. The study and nature of these two is essential to their effective use in design.

The sun is our brightest source, some 10 billion cd/m^2—about three times the brightness of a clear sky at noon, and the sky is only slightly brighter than the full moon on a clear night. At times we cannot tolerate the sun's full brightness and retreat into the shadows or wear broad-brimmed hats. Too great brightness, sustained, can damage the retina. In average daylight, with the sun outside our visual field, we perform the majority of outdoor tasks and enjoy most sports activities. After dusk, glare becomes our prime enemy. In the January 2001 issue of *LD+A*, Naomi Miller dismisses the lack of understanding of glare when she writes, "It's hard to define because glare is something perceived, and the context, experience, and psychological differences of the perceiver will affect to the degree to which he or she perceives glare in a given situation."

Exterior sources for interior illumination

In his forward to *Daylight in Architecture* (McGraw-Hill: 1980), William Caudill reminds us, "The huge temples at Karnac, built 4000 years ago, were lighted by sun and sky through clerestories. The high windows of the great cathedrals advanced daylighting." And then, in more recent times, he finds that, "Cheap energy and air conditioning did us in."

Cheap energy was displaced by rapidly rising prices when it was realized crude oil and gas were being rapidly depleted and were not inexhaustible. Architects met the challenge with designs that were far more energy efficient.

Noted architect William Lamb concludes, "After centuries of painstakingly and often ingeniously manipulating our buildings to suit the vagaries of natural light, we find, paradoxically, that we have very little aptitude for manipulating our new wealth of artificial light to suit the vagaries of our buildings."—Lamb, W. 1977. *Perception and Lighting*. New York: McGraw-Hill.

The solution seems to be twofold: Return to building designs that allow beneficial light to enter, and employ electric light more efficiently. Designers participating in the Daylighting Collaborative, using an approach called "cool daylighting," have achieved significant cost reduction over the lives of their buildings (50 percent or more in initial cost and lifetime maintenance combined), while providing improved visual conditions and comfortable interiors. Much remains to be done by both architects and lighting designers.

Transportation

Automobiles, aircraft, trains, and ships have interior as well as exterior lights and are frequently in motion. All are guided and regulated by signal lights rigidly defined as to position, intensity, color, and distribution. All such transportation must allow for every kind of ambient light conditions that may occur at any time.

Autos travel roadways and highways, sometimes lighted, sometimes dependent on headlamps for visibility. Aircraft require special facilities for landings and take-offs, as well as provisions for the passengers. The problem for the pilot is extreme. He must adapt to the ambient while simultaneously reading his instruments. Trains have their own tracks, but the engineer must be constantly alert to any danger ahead. Ships have docking provisions that also accommodate the loading and unloading of cargo and the arrival and departure of passengers. All these means of transportation must have some kind of lighted facilities where they are built, maintained, or stored.

Ambient light conditions are indeterminate so autos have been designed to meet desert glare, arctic night, tropical rain, and every conceivable weather condition. Aircraft must provide their own climate conditions for passengers at extreme altitudes. They must endure storms, desert heat, snow, or any other conditions that Mother Nature chooses to impose. Trains are of steady steel construction with comfortable interiors for long journeys. Ships are exposed to moist and wet environments. Such conditions of nature are the same for the lighting equipment, for the lamps and luminaires.

Signals that operate continuously must have long life and simple maintenance. Because they share the responsibility for safety, they must be reliable beyond that required for interiors. Development of transportation lighting has been both scientific and empirical. Continued use and development have resulted in sophisticated designs frequently found in the specification by the manufacturers of the cars, planes, trains, and ships.

Merchandising

With visual excitement that encourages purchases, merchandising is more a theatrical event than a solution to vision without glare. Signs and displays are meant to attract attention. Brighter, more colorful surroundings are desired. Display windows are like small stages and can have the same dramatic impact. Reflections from lighted buildings on the opposite side of the street often causes glare, obscuring the display. But carefully planned windows can draw and hold attention.

Signs identify the establishment, direct traffic within the store, and indicate emergency exits. Interior displays, strategically placed, identify the department, exhibit the latest fashion, and encourage the customer to purchase merchandise. Problems are not limited to the excitement desired; malls and shopping centers come in all sizes and shapes. They are single story or two or more stories. They may be enclosed with skylights or open to the weather. Some are small shops, others large, national chains. Lighting programs range from simple HID industrial luminaires to carefully composed examples of the

designer's best. Some seek minimum cost and operating expense, others the highest quality, from parking to sales. Malls may offer restaurants, shoe repair shops, pet shops, jewelry stores—the entire gamut of sales outlets, with their myriad of lighting problems, both exterior and interior.

Sports

Sports lighting is perforce a continuing contest between natural and artificial light. This month's column began by exploring the power of the sun and sky, which combined, produces an illuminance of 10,000 fc on a clear day. Consider a stadium at a time when the sun's position is such that a line crosses the field, with combined sunshine and skylight on one side, illumination solely from the sky on the other. The sun's contribution to the total is ten or more times that of the sky. This line of contrast moves across the field as the sun sets. The contrast is a problem for the team facing the bright end of the field, for the team facing the darker end, and for spectators on either the bright or dim side, whose views differ greatly, largely the result of an individual's adaptation.

Contrast—as a perception of difference between two contiguous areas—cannot be measured directly or stated by a single number. Maximum contrast results from the smallest, brightest source; minimum contrast from an extensive luminous ceiling. High contrast outdoors comes in sunlight, followed by a minimum with an overcast sky. This effect is amplified when the sky is nighttime dark and illumination comes from small, bright sources.

The transition from daylight to dark represents an extreme change of adaptation by both players and spectators during which visual errors may abound. Sunlit grass may have a luminance of 2000 cd/m^2, but in shadow, 100 cd/m^2. At night, under electric lights, the grass drops to 100 cd/m^2; black-and-white uniforms may have luminances as high as 800cd/m^2, while the black may be as low as 1 or 2 cd/m^2. Note the ratio is 20:1 for sunlight, 400:1 or more at night.

Most sports activities are subject to self-imposed regulations that specify illuminances for both horizontal and vertical surfaces, as well as positions and directions for the lighting equipment. Sports are of such variety that only this brief treatment can be set down here. Further details may be found in IESNA's new *Recommended Practice for Sports and Recreational Area Lighting*, RP-6-01.

In closing, there can be no more fitting resolution than the words of M. Minnaert. "It is indeed wrong to think that the poetry of Nature's moods in all their infinite variety is lost on one who observes them scientifically, for the habit of observation refines our sense of beauty and adds a brighter hue to the richly colored background against which each separate fact is outlined."—Minneart, M. 1954. *The Nature of Light and Color in the Open Air*. New York: Dover Publications.

It is encouraging to hear discussion in the lighting community on the issue of sustainability. There are still many products in the built environment where this discussion has not even begun. The IALD Sustainability Committee should be applauded for providing a reference point for the lighting community with the following definition:

Sustainable lighting design meets the qualitative needs of the visual environment with the least impact on the physical environment

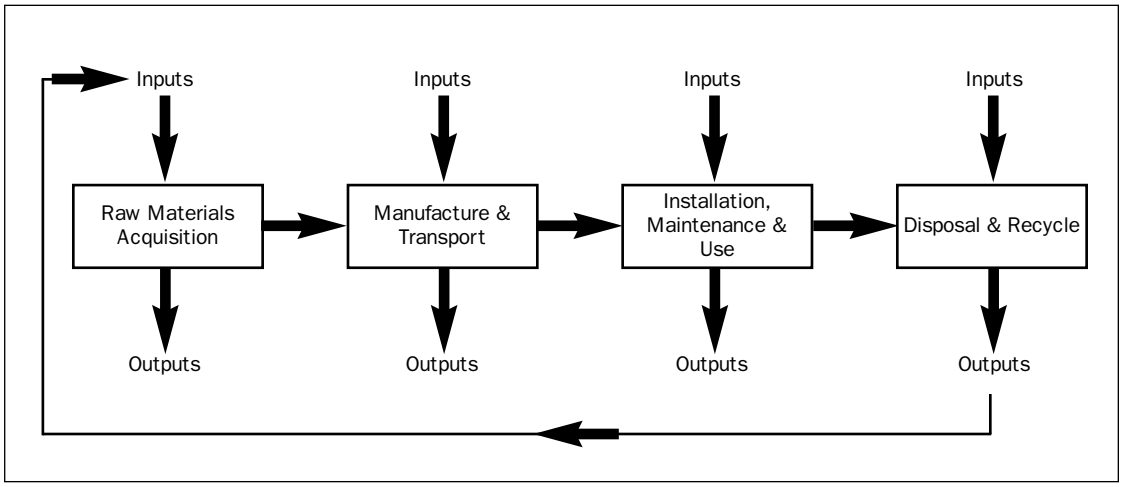
Frequently cited elements of sustainability include integrating daylight, maximizing energy efficiency, utilizing individual occupant controls, and even applying dark sky principles. Many of these topics have a long history of debate resulting in a substantial, although not always definitive, base of knowledge to act upon. And while as a specifier, I am grateful to have another platform to champion these benefits, I am well aware that sustainability does not end with these topics. In many respects it acts as a natural extension of these issues by expanding the question of how our solutions are weighed against their impact on the physical environment. Unfortunately, there is a lack of information allowing the next step – fully understanding the impact of these solutions on the physical environment. We know that maximizing energy efficiency reduces the impact of systems on the physical environment, but there are many other aspects of lighting equipment which impact the environment.

What is missing in the current discussion of sustainable lighting is a deeper investigation of how lighting systems impact the physical environment. Consider any product. Raw materials are extracted and processed to produce an end product, these products are transported and installed in a building, they are used, maintained and eventually are disposed of, and, if lucky, some portion is recycled. At each step along the way there are inputs and outputs and until we understand the environmental impacts of all these steps, we do not have a complete picture.

ESSAY
BY INVITATION

Nick Ferzacca

A structured analysis evaluating the environmental impacts of all these inputs and outputs is referred to as Life Cycle Assessment (LCA). As you can imagine, this is not a simple task. Depending on the scope of an LCA study, resultant environmental impacts from each of these steps are grouped into categories such as indoor air quality, acid rain, global warming, acidification, environmental toxicity, resource depletion and similar recognized environmental concerns. In



my experience, LCA vocabulary has not found its way into mainstream lighting literature; yet, this is not a new concept. The origins of LCA date back to the 1960's and 1970's and were formalized in the 1990's with documents produced by organizations such as the Society of Environmental Toxicology and Chemistry (SETAC) and the International Standardization Organization (ISO). LCA, similar to life cycle costing, can be used as a decision making tool meant to look at all aspects of product life, from "cradle to grave."

When applying this type of analysis to energy using products such as lighting equipment, the environmental impacts related to its use –primarily energy use – will tend to dominate the impacts. Even though, it can be rationalized that energy is the strongest variable, do we know what the other impacts are? Many fixture families have options on fixture housings (extruded aluminum vs steel) or louver coatings (specular vs low iridescent). Which of these has the least impact on the environment? Energy use may result in heavy impacts in the areas of acid rain and global warming for instance, but could a specific reflector coating or material create problems in ecological toxicity? What is the impact of selecting products manufactured and shipped locally as opposed to ones that might be shipped from overseas? A high reflectivity reflector coating may result in higher fixture efficiency but does the coating process have a heavy environmental impact? The answers to these questions are not intuitive, and who knows, one of these seemingly benign variables may have a large impact. In my understanding, these types of investigations have not been done, and simply using energy efficiency as a proxy for meeting environmental impact goals of sustainability is disingenuous.

Unfortunately, unlike life cycle costing, lighting designers are unlikely to be in a position to carry out their own LCA studies. With the increased awareness and use of LCA concepts, various consulting services and software solutions producing LCA based information for the building industry have emerged, as described in a recent issue of *Environmental Building News*. More recently the National Institute of Standards and Technology (NIST) with the support from the EPA has developed a free downloadable program called BEES (Building for Environmental and Economic Sustainability) to provide analysis for designers to compare products. Currently only a small number of building products (mostly architectural) are available for comparison, but BEES is hoping to expand. The idea is that manufacturers pay NIST for a BEES analysis of their products. This then allows designers to select their products through the BEES software for comparison against alternatives. The BEES website indicates that it typically takes about 10 - 20 hours for four departments within a given manufacturer (accounting, production, facilities, environmental) for comparison, and by having a central agency such as NIST be the clearinghouse, confidentiality can be maintained.

Of course the lighting industry must determine the proper tool for decision making and how to produce it; however, there is a danger in latching onto easily measured variables which do not give the whole picture. For instance, many downstream variables are cited such as recycled content, embodied energy, or biodegradability, all of which are good to know, but taking any one of these by themselves does not give the complete picture. In the absence of a full analysis, these metrics at least provide some guidance, and in fact are the basis of many of the US Green Building Council LEED (Leadership in Energy and Environmental Design) certification criteria. Some also talk about applying life cycle thinking to questions that do not have LCA data available. There are also "streamlined LCA" approaches.

The challenges with various analysis techniques could be presented in length; however, the point is there is little evidence this discussion has even begun in the lighting industry. This is not totally fair. At the LIRC lunch during LIGHTFAIR INTERNATIONAL, the IALD Sustainability Committee presented a show titled "Its Not Easy Being Green," revealing environmental measures various lighting manufacturers have implemented. Many of the actions cited by manufacturers related to the use of recycled content in aluminum or the use of biodegradable packing. This not only showed that manufacturers are already applying some environmentally friendly thinking, it also announced to the

manufacturers that designers are interested in the environmental impact of their manufacturing if not their products.

Ultimately, I would like to see the necessary information on the product level to make informed decisions of fixture selection from a sustainable point of view. Is it possible to have a table of environmental impact benchmarks next to other fixture performance data on cut sheets? Could a division 16500 specification be written to default fixture construction with "the least impact on the environment?" Other products, such as floor covering and systems furniture, are moving in these directions. I realize this is down the road, but what makes this topic so interesting is that it has the potential to change, if not at least impact, the current decision making process of lighting systems.

Of course, there's a lot that has to happen before these types of measures can take place. First of all, there is no consensus in the design community on how or what to measure with respect to environmental impacts. My hope is that the design community lobbies, encourages and/or sponsors the work necessary to obtain LCA based data. Whether this occurs through the IALD Sustainability Committee or some other forum is unclear especially in the absence of other established forums – there is no similar committee at the IESNA addressing sustainability.

Second, it would be helpful for manufacturers to develop the internal infrastructure facilitating the transfer of information to designers on sustainable lighting in its full definition (quality, energy, materials, etc…) Call a lighting manufacturer and try to get technical information on sustainability or "green" products and processes and you will find that after a few transfers no one other end really knows where to direct you. Obviously, the IALD Sustainability Committee members were able to extract some of this information for the LIRC lunch, but as a practical matter, the average specifier does not have access to this information.

The topic of sustainability seems to be gaining momentum in the building construction industry, and it is exciting to see interest in the lighting community. I welcome any feedback especially ideas and interest on how to move forward.

*Nick Ferzacca, PE, is the Electrical Department Manager at Symmes Mani McKee & Associates (*www.smma.com*), an architectural/engineering firm which is a member of the USGBC (U.S. Green Building Council). He has 15 years of experience at various architectural/engineering firms and holds a Bachelor of Science in Electrical Engineering from the University of Notre Dame and Master of Science in Lighting from Rensselaer Polytechnic Institute. He teaches lighting at the Boston Architectural Center. Any and all feedback is welcome at Tel: 617-520-9243; fax: 617-354-5758; or* email: n_ferzacca@smma.com

ENERGY CONCERNS

Willard L. Warren, PE, LC, FIESNA

The LIGHTFAIR INTERNATIONAL 2002 in San Francisco was a blast, with over 14,600 attendees, 553 exhibitors and 37 workshops and seminars, including five sessions on "energy conservation in lighting."

Jim Benya, PE, Benya Lighting Design, had two super workshops on energy and environment codes. In addition, he covered model codes, light trespass laws and dark sky laws, which he predicts will soon become a reality nationwide. Jim recommended the following web sites for additional info; *www.bcap-energy.org* for code adoption data, *www.usgbc.org* for details on the U.S. DOE/LEED program portion of the U.S. Green Building Council, *www.energycodes.org* for the U.S. DOE energy code data and *www.icbo.org* for the new International Energy Conservation Code, which will be coming to your state very soon, if it's not there already. Jim is a masterful speaker and always full of helpful ideas for new designs and retrofits.

Stan Walerczyk, LC, Sun Industries, and Brian Liebel, AfterImage + Space, conducted a workshop on cutting edge retrofitting and relighting and moved their group to the PG&E Energy Center, just down the street, for the second half of their session to illustrate fluorescent and HID retrofit projects they have recently completed.

The reason why Stan Walerczyk is able to successfully retrofit one year old T8 lamp installations was revealed by Roy Sierleja, General Electric, and Howard Wolfman PE, OSRAM SYLVANIA, in their seminar "Lamp and Ballast Update." Roy pointed out that recent technological advances in metalurgical research has produced lamps with more durable electrodes, better amalgam fill gases for cooler operation and new phosphors for better color. Howard told the seminar audience that the new 'program start' electronic ballast for T8 lamps has a temperature sensitive soft start circuit, which will soon replace the rapid start electronic ballast, and doubles the T8's effective lamp life with significant improvements in lumen maintenance. These second generation lamp/ballast designs for T8 lamps provide more energy savings than the switch from T12 to T8 lamps did a decade ago.

For example, the new high lumen 86 CRI 4 ft T8 lamp has approximately 32,000 initial lumens, 30,000 hrs rated life, with a 93 percent lumen maintenance after 12,000 hrs. The new generation, two lamp electronic ballast, with a 0.74 ballast factor, drops the load from 62 to 47 W, saving 24 percent in energy. Each watt saved is worth $1 a year in a 24/7 operation at a utility rate of $.10/kWh, for a $15 annual saving, and delivers higher footcandles throughout a 50 percent longer life. There also have been great improvements in pulse start HID lamps with electronic ballasts providing energy savings with much better color, especially with ceramic metal halide lamps.

> I also saw a new "smart" fluorescent floor lamp luminaire with daylight harvesting and occupancy sensing capabilities for energy savings

Bill Attardi, Attardi Marketing, and I conducted a seminar on the latest news on energy issues in North America and the measures being used today in retrofits. Bill will send you a monthly energy report if you contact him at *www.wattardi @attardimarketing.com*

Carol Jones, Battelle/Pacific Northwest National Laboratory, and Mark Jewell, RealWinWin, conducted a seminar on energy effectiveness and its impact on the bottom line. Carol is doing research on the benefits of quality energy efficient lighting in the workplace and recommended going to the Light Right Consortium web site, *www.lightright.org* to learn what work has already been done regarding improved lighting and employee satisfaction. Mark pointed out that most real estate managers are not familiar with the true savings to be gained at the "bottom line" from lighting energy conservation measures, because their accounting methods may not be appropriate to their goals.

The quest in all of this is to demonstrate that better quality lighting has a significant impact on worker output and saves considerably more money than employers realize.

The crusade I won with my own building department in New York City concerned the use of the words "when occupied." The building codes were written before there were occupancy sensors, and stair and corridor lighting was required 24/7 in buildings even if the only occupant was a guard at a desk in the lobby. But occupancy is typically 10 percent in stairways and 35 percent in corridors, so why light them continously at high lighting levels? Hence, I recommend the use of bi-level lighting to reduce the illuminance, and the energy expended, when those public spaces are unoccupied. My friend Jake Pauls, who is on the ANSI safety committee, is trying to get ANSI to require a minimum of 10 fc in all stairways, when occupied. He'd like to increase the level to 20 fc where seniors are involved, because of all the accidents that befall seniors when they misstep due to low light levels.

The New Products Showcase at

LIGHTFAIR INTERNATIONAL identified 140 exciting new lighting products. If you have been following my column you know that I've been extolling the virtues of bi-level lighting, and telling you of the arrival on the market of "smart fixtures" that self contain bi-level ballasts, occupancy sensors, daylight harvesters that are energy savers and can include emergency battery packs when required. LaMar Lighting submitted their "Occu-smart" with bi-level lighting to the LIGHTFAIR INTERNATIONAL 2002 judging committee and was awarded two prize ribbons, one for having the best luminaire in its category for emergency lighting, and one for the most energy saving lighting product of the show.

A 120/220 V wall box dimmer for CFL lamps was shown at the exhibit. It dims down to 20 percent light output, which could prove to be a great energy saver for track lighting in the home or office, for new or retrofit applications. I'm getting a unit to test and I will report to you on the results.

I also saw a new "smart" fluorescent floor lamp luminaire with daylight harvesting and occupancy sensing capabilities for energy savings. It seems like a great idea for temporary office space, or even a home office where installing ceiling lighting fixtures is not feasible. Plug loads have a different status under energy conservation laws, and depreciation rates for portable lamps can be accelerated, or expensed, for tax purposes and these user benefits may be very attractive for certain applications.

The building codes were written before there were occupancy sensors

Technology has enabled the lighting industry to provide wonderful new energy saving products in the past 12 months. Along with those new products, organizations and government agencies have sponsored research aiming to prove there is a better way to perform visual tasks and save energy at the same time. Just when we thought there was nothing new under the sun from one year to the next, we discover that improvements in lighting design and application develop quite rapidly.

I look forward to seeing you at the IESNA Annual Conference in Salt Lake City from August 4-7, to discover what we have learned about sight and perception in the past year. Maybe it will help you convince your employer clients to improve the quality of their lighting in a win-win situation for them and for their employees.

FOLLOW THE MONEY

Stan Walerczyk

I would appreciate your feedback on this subject, because it is not an easy subject to address. When I asked one person for feedback on this article, he said I was too idealistic. But my experience confirms Miracle on 34th Street, when Macy's told customers that for certain items that they would be better off at Gimbel's and that Gimbel's told customers for certain items that they would be better off at Macy's. This increased sales in both stores. The purpose of this column is to help people reflect a little more on what really is the right thing to do for the customer and in doing so, becoming more profitable.

Whenever I see or hear a person or company with a vested interest, the follow-the-money light bulb goes on in my head. Do they want to provide the best solution to the end customer or just want to sell what they have?

It may be good to define various types of customers. There are end customers, who include property owners and school districts and intermediate customers, who can include general contractors, ESCOs, lighting designers, engineering firms and architects. The priority should be to do what is best for the end customer.

There was a person who represented the three major lamp manufacturers in succession. When he represented the first company, he promoted those lamps as the best. Later when he represented the second manufacturer, all of sudden, those lamps were best. When he represented the third company, guess what!

It is difficult to respect sales people who sacrifice lighting quality, use inferior products, and/or inflate energy savings in order to hit a target payback and make as much money as they can.

It is frustrating dealing with manufacturers and manufacturer reps who try to get some of their products specified and sold, because there are no equivalents, instead of because they are the best solution. For example, I have seen many fixtures that worked well initially, but became problematic down the road. I have had to retrofit or replace way too many fixtures because the end customer did not want to pay the high prices for replacement lamps (double-ended MH lamps) or expensive lenses or wait to get single source lamps from Italy.

Although there are many reps who know their own products and their competitors' products, I am amazed how many reps do not know how their products compare with market competition. One rep told me that the company policy is to focus only on its own products. How can someone effectively sell in a vacuum?

I am amazed how many reps do not know how their products compare with market competition

It is a shame so much marketing literature is really nothing more than marketing hype. An example is one lamp company stating long life ratings on some T8 lamps with a just a footnote to a reference in small print on another page of the catalog, mentioning that the rating is based on twelve-hour instead of the industry standard three-hour starts. Some lamp manufacturers have published bloated lumen ratings on various lamps. When I talk with manufacturers' technical people, they are surprised how their own marketing people manipulate the specs. I have seen one manufacturer's electronic ballasts for T8s that consume up to four watts higher than what was published. However, this problem has been resolved so actual wattage has been reduced to match literature. Who knows what other overly optimistic claims have not been corrected?

In over 12 years a few suppliers recommended competitor's product or service, because it was better for the application. Because I trust them and rely on their expertise, I have bought more from them over the years than if they were like most of their counterparts. Here is an example. My main fluorescent hibay manufacturer will tell me HID hibays are better for some applications, even though that company does not make HID hibays. My main HID hibay manufacturer will tell me that fluorescent hibays are better for some applications even though that company does not make fluorescent hibays.

If each of us does what is best for the end customer, we will also do best for ourselves and our companies in the long run. I often ask myself, "Would I want to do business with companies like the one that I work for?" I am not talking about reducing profit on most projects. Providing the best total value to customers can often allow for more profit. Educated customers understand that the extra money is well spent. Customers appreciate honesty. They want to be able to trust people that they do business with. It reduces the 'buyer beware' attitude.

Over the last 12 years, I often told customers that they would be better off with one or more specific competitors of mine for certain types of projects. These customers not only gave me numerous other projects, but they told their friends and counterparts at other firms about me, which resulted in substantial business. The benefits are still being reaped.

If the customer really wants a retrofit that is not even close to optimal, I tell him or her that I would rather walk away from the project than do it in a manner inconsistent with our design philosophy and qual-

ity standards. Over the years I have done this numerous times and all but once the customers said, "Hold on, if you are that committed to other ways, let's sit down and talk". In the end the customer got a much better overall value and my company remained true to my business philosophy.

Another tricky situation is a lead from a specific manufacturer, manufacturer rep or distributor, who cannot provide products best suited for the application. It could be 320 W pulse start MH lamps that can be operated in a horizontal position or fixtures with the best price/performance balance. I try to explain to these suppliers that I appreciate the lead very much and will use their product in these situations when it is the best or close to the best solution, but I cannot sacrifice the customer's best interests. This does not always go smoothly, but there are some silver linings. One is that I have been working with one of the major lamp companies for over a year to develop a high lumen, universal start, extended life, F32T8 lamp. The company just introduced it at LIGHTFAIR INTERNATIONAL, which will make it easier to specify more of their equipment in general.

> I often told customers they would be better off with one or more specific competitors of mine for certain types of projects

The bottom line is if people are patient and willing to act on behalf of the best interest of the end user, doing the right thing will indeed bring in more money in the long run.

Afterward

There are a lot of ethical and knowledgeable people in this industry and they should be commended. I thank David Mann, Robert Ofsevit, Willard Warren, Duncan Frederick and Bart Wallace for their help on this article.

Stan Walerczyk, LC, oversees lighting design practices for Sun Industries, the largest design and build lighting retrofit contracting firm in the western states. He is a member of IESNA's National Energy Management Committee and chair of its Retrofit/Upgrade Subcommittee. For questions, comments and updates, contact swalerczyk@sunindustriesinc.com

LETTERS TO THE EDITOR

Kudos

In the sense I am the ghost of eons past, I am an 87-year-old ex-university professor and a Fellow of IESNA. When my copy of the May 2002 *LD+A* arrived, the first article I read was Bill F. Jones's essay and then his letter to the editor. It is my opinion that this essay is one of more important articles to grace the pages of our Society's publication in my years. It brilliantly places the emphasis that illuminating engineering is both a science and an art and that the art is closely related to the concept of the quality of the lighting design. Anyone at the technician level can calculate the footcandles, but it takes a sensitive and artistic person to produce a design that goes unnoticed by those who occupy the lighted space! This should be required reading for every member of the Society.

George Roland Peirce (FIES)
Professor Emeritus
University of Illinois

Centennial Memories

Neal Shapiro, president of Original Cast Lighting (OCL), was prompted by LD+A*'s April story on the centennial of Guth Lighting to share some memories of his own—ed.*

In 1988, I was approached by Russ Viehman, then CEO of Guth Lighting. He was interested in a joint venture to upgrade the lighting in Collier County Courthouse in Florida. The idea was to take the Guth indirect metal halide reflector and put it in one of OCL's decorative fixtures. Thus, the courthouse would have a historic looking fixture with a very modern, efficient light source.

Over the next several months, we spoke often on the telephone, working out the details of the project. Guth sent a reflector to me and, as luck would have it, it fit!

During the course of the project, Viehman visited our facilities and was surprised to find it on the grounds of the 1904 St. Louis World's Fair. Guth Lighting had provided fixtures for the Fair.

During the visit, I traced the history of OCL, which started in 1972, with my wife Linda and I salvaging architectural antiques, including historic lighting fixtures. Among my many great finds were fixtures that had been removed from the St. Louis Civil Courts building. Viehman realized they were originally designed and fabricated by Guth. In fact, he was able to search Guth's archives and find the original drawings.

After Collier County Courthouse was completed, I found that Russ Viehman was retiring from Guth, and I asked him to work with us as a consultant. He agreed. The company was small enough to be a close-knit unit, yet large enough to produce quality fixtures in a timely manner.

Over the last 30 years, OCL has strived to continue the tradition of quality craftsmanship started by Guth Lighting 100 years ago.

Neal Shapiro
President, Original Cast Lighting
St. Louis, MO

Ballast Behavior

Diarmuid McSweeney and Jeffrey Gibbs brought up some very useful information about the emerging technology of high wattage dimming electronic ballasts for pulse start metal halide lamps (June *LD+A*). I would appreciate the authors' input on the following points for my and other readers' continuing education.

1. I do not understand why so many people focus on mean lumens, especially for HID. For example the listed 400 W PS MH lamp with magnetic ballast has 44,000 initial lumens, 33,000 mean lumens and 24,000 EOL (end of life) lumens. That means that this lamp will lose another 9,000 lumens from 40 percent of lamp life to end of lamp life. That is very significant if these lamps will not be group relamped at about 75 percent of rated life. (It is my experience is that group relamping is not done most of the time) I find that designing systems based on EOL, which is worst case, is much more useful and realistic. The benefits of EOL lumens per watt are even better with the electronic ballasts compared to magnetic ballasts.

2. It is my understanding that electronic ballasts increase lamp life. For example 400 W PS MH lamp life is increased from 20,000 hours with magnetic ballasts to 25,000 hours with electronic ballasts. The lamp life may even be longer if the lamps are dimmed with electronic ballasts a majority of the time.

It takes a sensitive and artistic person to produce a design that goes unnoticed by those who occupy the lighted space!

3. I did not see any mention of ceramic MH lamps, especially 400 W. Did the authors lump these with regular PS MH lamps? The ceramic MH lamps have 90+ CRI, which is much better than the 65-70 CRI of regular high wattage PS MH lamps. That can be a big deal in upscale retail applications. In fact the 90+ CRI is better than most fluorescents that are used for hibay applications. It is my understanding that the ceramic MH lamps work very well with electronic ballasts, but may turn green when dimmed below 50 percent.

4. One big advantage of using

dimming electronic ballasts is that MH lamp types can often be minimized. We just did a project that, before the retrofit, had many wrong lamp types and wattages in many fixtures. MH lamps were in MV (mercury vapor) fixtures, MV lamps were in MH fixtures, and a bunch of wrong wattage lamp in both MV and MH fixtures. We replaced the 250 W MH, 400 W MH, 400 W MV, 1000W MH and 1000 W MV hibays with high performance hibays that have 400 W PS MH lamps and factory preset dimming electronic ballasts, providing correct light levels in each location. The wattage/lumen relationship is fairly linear down to 40 percent, so wattage was not sacrificed. The PS MH sockets will not allow standard MH or MV lamps to be used.

5. This article was probably written before it was allowed to include the new 350 and 450W PS MH lamps that are designed to operate only with electronic ballasts. The performance of these dedicated lamps is better than PS MH lamps that are primarily designed for magnetic ballasts.

Stan Walercyzk, LC
Sun Industries
Concord, CA

The authors reply:

This letter is in response to Stan Walerczyk's questions regarding the "Essay by Invitation" piece that appeared in the June issue of LD+A*. In that article, we discussed the new electronic ballast technology for metal halide lamps and its advantages based on Holophane's initial studies of our new Prismatron electronic ballast. Each of his points is addressed individually.*

First, in regard to our focus on mean lumen vs. end of life (EOL), we used mean lumens as a measurement because it is a more conservative approach to determining a lamp's performance throughout its entire life. Chapter 9 of the IESNA Lighting Handbook*, Ninth Edition, recommends using a lamp lumen depreciation factor in lighting calculations—it does not specify which to use. Mean lumens is the most readily available figure as provided in all the lamp company catalogs; it is a metric understood by virtually all members of the lighting community.*

Further, in the Holophane study, the focus was on the impact of electronic ballasts on lamp performance. Mean lumens were a key value selected by the lamp manufacturer that participated in the study. Presently, the manufacturer is offering an improved lamp performance warranty for its lamps exclusive to their use with the Prismatron ballast.

Because lamps are designed to operate at full power, their efficiency is significantly reduced when they are operated in a dimmed mode.

As he pointed out, the EOL lumens of lamps operated on electronic ballasts are greatly improved over those operated on magnetic ballasts. The graphs in our article illustrate that the lumen depreciation curve for electronically ballasted lamps is much flatter and has less slope than the curves for magnetically ballasted lamps. There is less variation in light output over the life of the lamp with electronic ballasts than with magnetic ballasts. Therefore, mean lumens on electronically ballasted lamps are closer to the average lamp output over life than the mean lumen value on the curve for magnetically ballasted lamps. The "Essay by Invitation" article is a synopsis of a factual research program. One of the next logical steps is to review the advantages and disadvantages of various application methods once the basic performance data is established.

Please note that designing an electronically ballasted lighting system based on EOL lumens can maintain uniform light levels over life. However, the design will require 10-15 percent more fixtures compared to an electronically ballasted system designed using mean lumens. Alternatively, using mean lumens results in fewer fixtures and perhaps lower energy costs at the expense of declining light levels over life. When designing a lighting system, the individual user's requirements should always be considered—including light level preferences and capital and operating costs.

Second, we agree that electronic ballast technologies show favorable indications of increasing lamp life. Certainly the studies conducted on our electronic ballasts have shown improvements in some lamp characteristics—most notably in the arc tubes. At the time the article was written, however, we were not aware of any lamp manufacturer offering warranties of extended lamp life for any standard, pulse start or ceramic metal halide lamps in the 400/350/320-watt range operated on electronic ballasts. When there is enough life data to substantiate extended life, the lamp manufacturers will definitely announce their findings.

Third, ceramic metal halide lamps were not included in the tests conducted with the ballast. However, the lamp manufacturer chose to extend the warranty to this class of lamps because their construction and operation are very similar to the pulse start lamps that were studied during the tests and are warranted by

the manufacturer. The 90+ CRI and improved lumen maintenance above .90 make the combination of Prismatron and ceramic lamps very appealing. Regarding color shift with metal halide lamps dimmed to lower wattages, our testing shows some change of color but less than with previous capacitor switching "hi-lo" magnetic ballast systems. Lamp companies do not recommend dimming their lamps below 50 percent. Because lamps are designed to operate at full power, their efficiency is significantly reduced when they are operated in a dimmed mode.

Fourth, in regard to using dimming electronic ballasts to minimize metal halide lamp types, this is a desirable solution if the user's primary goal is to install fewer lamp types. It is true that the lumens/watt relationship is fairly linear for some electronic ballasts. However, the slope of the lumens/watt curve is not one-to-one. Lumen output falls off much faster than the reduction in power.

For example, a 50 percent lumen output reduction requires a 30 to 40 percent power reduction for metal halide lamps. As a result, a magnetically ballasted 250-watt pulse start lamp has the equivalent efficacy of a 400-watt pulse start lamp dimmed to an equivalent lumen output using an electronic ballast. Resulting energy operating costs would then be similar. However, equipping every fixture in the lighting system as an electronically ballasted fixture would increase the lighting system's capital costs. The user must determine the economic tradeoff.

However, the slope of the lumens/watt curve is not one-to-one

Finally, he was correct when he surmised that the 350- and 450-watt pulse start metal halide lamps were not available when we began the study that was detailed in the article. Continued use of lamp technology designed for magnetic ballasts may not take maximum advantage of the improvements associated with electronic ballasts. Hopefully, lamp manufacturers will continue to develop lamp technology specifically for electronically ballasted HID systems.

We share the excitement regarding the availability and potential of electronic medium wattage metal halide ballasts.

Creative Composition

Kris L. Wilde's lighting design for Phoenix's Sapporo Sushi and Teppan Yaki combines layers of colored light and architectural surface enhancements.

Outside, light grazes the sandstone, accentuating texture and color. Lamps with blue lenses illuminate the façade and fins along the building's sides. The juxtaposition of cool against warm colors is used throughout.

Inside, 150 W T-4 tungsten halogen lamps uplight the water features and steel bowls, refracting the light.

Fluorescent strips with blue gel sleeves uplight the ceiling, creating a cool color contrast to the warmer halogen and xenon lighting. Five watt, 24 V xenon lamps accent the wood ceiling panels, enhancing the illusion they are floating. The pebble wall is grazed from the pool to emphasize the texture of the wall and the movement of the water.

Fifty watt narrow spot, 42 W very narrow spot, and 35 W spot lamps in small aperture fixtures accent the table and other interior elements. A dimming system creates atmosphere, reduces energy consumption and extends lamp life.

Custom torchieres, fitted with 3500K neon, create a luminous centerpiece and frame the staircase leading to the glowing sushi bar. The top bar glows, illuminated by end-lit fiberoptic channels with a 150 W metal halide lamp. Two zones of fiber optic bundles were inserted into frosted glass features inside the aquarium. Each zone changes color, creating an interesting dynamic to the bar.

The jellyfish created a challenging opportunity. The blue backdrop was illuminated from behind with F32T8/SP40 lamps on inexpensive strips, giving visual depth to the tank. The jellyfish were accented with 42 W MR16/C/VNS lamps fitted with orange dichroic lenses. The power density ratio on the job is 4.6 W/ft, and the cost of the fixtures was $12.50/ft.

Wilde, of Creative Designs in Lighting of Phoenix, received the 2001 GE Lighting Edison Award of Excellence for Sapporo.

PHOTOS: ROBERT RECK

PHOTOS: DAVID M. SCHAD

Full Spectrum Dining

Founded in 1993, Cameron Mitchell Restaurants have grown from a single establishment to an 18-unit multi-concept chain throughout Columbus, OH, and greater Cincinnati, Louisville, and Pittsburgh. The new Miranova "M" in Columbus offers eclectic American cuisine.

An internally illuminated architectural chandelier with pendants defines the center of the restaurant, the bar/lounge area. Counter fixtures draw patrons to the bar. The liquor display is highlighted with low voltage track fixtures and adjustable downlights.

The original design for the dining rooms incorporated a black pipe grid with miniature theatrical fixtures, one per table, to softly enhance the dining ambiance and provide separation with sparkle. But budget and time constraints required the use of adjustable low-voltage downlights.

The rear mural wall is enhanced with concealed halogen uplights, inviting clientele toward the dining area. Decorative pendants define specialty dining areas. Sheer curtains offer additional separation, and LED color washers add elegance and excitement.

Creating a cutting-edge restaurant that appeals to a diverse age group, as well as offering a unique dining experience, presented the design team with several challenges—major of which was a 12-week build-out period. In addition, intimacy and privacy were desired in an open, high-ceiling environment.

Synchronized, color-changing LED fixtures illuminate the back bar high glass wall. An onyx communal table is internally uplighted with fluorescent lamps. A hidden access panel allows easy relamping from below.

Exterior window wood blinds are grazed with low-voltage 50AR111/4/SSP track fixtures to add interest and effect. Downtown skyline views were not affected by this lighting. Lamps are dimmed for effect, energy saving, and lamp life.

Lighting designer: David M. Schad, IESNA, Designed Illumination, Grove City, OH.

Glory Gathering

The name "King of Glory," taken from Psalm 24, was given to this Dallas church in 1957—the first Lutheran church by that name in the United States. The original congregation numbered 33. By 1995, membership had expanded to over 1800.

In 2001, the congregation decided to keep their existing chapel, but to demolish remaining buildings and rebuild a cohesive structure to house all other church activities.

The concept of a common gathering area at the center of the community took shape in the form of a central rotunda, open to the adjacent freeway, and by extension, to the Dallas community.

Lighting emphasized symbolic aspects within the architecture. Fixtures and sources remained discreet. The "floating" concrete ring can be clearly seen from the freeway, radiating the message of church family and community as a unified whole.

Even lighting of the ring was accomplished with wall-mounted and window mullion-mounted uplights. Accents recessed in the ring illuminate all non-central spaces. In the ceiling are stained glass story panes.

Instead of expensive skylight architecture, lightboxes with dimmable fluorescent strips and diffusion media hinge open for lamp access. Reverse daylight harvesting technology matches light behind the storypanes to available skylight, while incandescent and halogen sources are switched off. Manual override allows storypanes to be turned off during the day or illuminated for evening functions.

Triangular columns, tapered toward the outside but apparent toward the center, are uplit from each starpoint in the floor pattern.

Long discussions with architect, contractor, and manufacturer were required to strategically locate fixtures at window mullions, essential for uniform lighting.

Budgets were tight and design priorities consistently reviewed. A dimming system was deemed essential for scene setting and lamp maintenance.

In 2002, expanded education facilities offer opportunities and challenges for ministries and missions.

Lighting designers: Jill Klores, formerly of Roeder Design; James E. Langford, James E. Langford Architects & Planners; and Robert Mapes, formerly of Roeder Design. Photographer: James F. Wilson

PHOTOS: JAMES F. WILSON

ILLUMINATING ENGINEERING SOCIETY NEWS

VOLUME 32, NUMBER 8
AUGUST 2002

IESNA Awards Presented at 2002 Annual Conference

Lighting professionals received awards at the annual IESNA Honors Luncheon, held on August 5, 2001, Salt Lake City, UT.

Marks Award

The Louis B. Marks Award, first presented in 1985, is named in honor of the Society's founding president and presented to a member of the Society in recognition of exceptional service to the Society of a non-technical nature. The 2002 Louis B Marks Award was presented to **Joseph B. Murdoch**, FIES, Professor Emeritus, University of New Hampshire, in recognition of his conspicuous leadership in the advancement of the Society's educational endeavors, for his service to the Society as president, as vice president-educational activities, as chair and member of numerous IESNA committees, and for his numerous papers and presentations to the Society membership. He was instrumental in developing the modular model for the IESNA's ED series, and in the creation of the Technical Review Council; he developed the Society's CEU program; he fostered Society programs, which assisted those teaching lighting, most noticeably through his leadership of the IESNA Summer Workshop for Teachers of Lighting. His service to related lighting organizations such as the CIE/USA, the CSI, the Lighting Research Institute, the NCQLP, and the Nuckolls Fund for Lighting Education, has all aided both these organizations and, indirectly, the membership of the Society.

Taylor Technical Talent Award

The 2002 Taylor Technical Talent Award was presented to **Robert Levin**, Ph.D., **William Brackett**, **James Burke**, **Norma Frank** for their paper "Field Studies of Luminaire Dirt Depreciation." This paper is particularly important at this time because of the enormous potential for energy and cost savings that should flow from this research. IESNA grants the Taylor Technical Award each year for the technical contribution which best represents the objectives which George Taylor outlined: to honor a paper detailing research work which furthers the application knowledge of lighting practice.

Distinguished Service Award

The Distinguished Service Award was established in 1967 to honor those who have significantly furthered the mission of the IESNA in non-technical areas. To be eligible for the DSA, a candidate shall have performed at least fifteen years of dedicated service to the Society. **Joseph M. Good, III**, Principal and Lighting Designer, Spectrum Professional Services, Inc., Salt Lake City, UT, was awarded the IESNA Distinguished Service Award in recognition of his conspicuous leadership of the Society as president, vice president- member activities, regional vice-president, and section president, and for exemplary service as chair or member of over ten committees. He has provided the Society with valuable leadership in both administrative and technical areas, noteworthy examples of which were the revised Sustaining Member program and Regional reorganization.

FELLOWS

Fellow Awards, a classification of membership established in 1945, recognizes members for valuable contributions to the technical activities of the

continued on following page

IESNA Calendar of Events

August 4-7, 2002
2002 IESNA Annual Conference
Salt Lake City, UT
Contact: Valerie Landers
212-248-5000, ext. 117
www.iesna.org

October 6-9, 2002
IESNA
Street & Area Lighting Conference
Scottsdale, AZ
Contact: Valerie Landers
212-248-5000, ext. 117
www.iesna.org

October 20-24, 2002
IESNA Aviation Lighting Seminar
Nashville, TN
Contact: Wes Hazelton
207-775-3211
whazelton@dufresne-henry.com
www.iesalc.org

IESNA Awards

continued from previous page

IESNA and to the art and science of illumination or to a directly related scientific field. Fellow awards were presented to:

Frank Florentine, Lighting Designer and Project Manager, National Air and Space Museum, Smithsonian Institution, Washington, D.C., in recognition of his many technical contributions to the art of museum and display lighting, and for his dissemination of relevant information through designs and papers, and as chair of the IESNA Museum and Art Gallery Lighting Committee.

David M. Keith, Principal, Marshall Design, Inc., Boulder, CO, in recognition of his contributions to the improved efficiency of both outdoor and indoor lighting systems. His analyses of roadway lighting systems illustrates optimizing techniques that reduce energy requirements, lower initial and maintained costs, and reduce unnecessary uplight. His research with occupancy sensors and lighting controls illustrates techniques for significant energy savings in indoor lighting systems.

JoAnne Lindsley, Lighting Designer and Educator, Lindsley Consultants, Inc., New York, NY, in recognition of her development of methodologies to achieve lighting design quality and flexibility within the framework of energy effectiveness; for her innovative approach to lighting design problems leading to unique concepts, often utilizing new technologies; and for her leadership in lighting education, including outreach to students, design professionals and the public.

SUSTAINING MEMBERS

The following companies have elected to support the Society as Sustaining Members which allows the IESNA to fund programs that benefit all segments of the membership and pursue new endeavors, including education projects, lighting research and recommended practices. The level of support is classified by the amount of annual dues, based on a company's annual lighting revenues:

Copper: $500 annual dues
Lighting revenues to $4 million
(Copper Sustaining Members are listed in the March issue of *LD+A*, as well as in the IESNA Annual Report. There are currently 233 Copper Sustaining Members).

Silver: $1,000 annual dues
Lighting revenues to $10 million

Gold: $2,500 annual dues
Lighting revenues to $50 million

Platinum: $5,000 annual dues
Lighting revenues to $200 million

Emerald: $10,000 annual dues
Lighting revenues to $500 million

Diamond: $15,000 annual dues
Lighting revenues over $500 million

DIAMOND

Cooper Lighting
General Electric Co.
Lithonia Lighting
OSRAM SYLVANIA Products, Inc.
Philips Lighting Co.

EMERALD

Holophane Corporation

PLATINUM

Day-Brite Capri Omega
Lightolier
Lutron Electronics Co, Inc.
Ruud Lighting, Inc.

GOLD

ALP Lighting Components Co.
Altman Lighting, Inc.
Barth Electric Co., Inc.
BLV Licht und Vakuumtechnik GmbH
The Bodine Company
Daeyang Electric Co., Ltd.
Edison Price Lighting, Inc.
Finelite, Inc.
Florida Power Lighting Solutions
Gardco Lighting
Indy Lighting, Inc.
The Kirlin Company
Kurt Versen Co.
LexaLite Int'l Corp
Lighting Services, Inc.
Lightron of Cornwall, Inc.
LiteTouch, Inc.
Louis Poulsen Lighting
LSI Industries, Inc.
Martin Professional, Inc.
Matsushita Electric Works, Ltd.
Musco Sports Lighting, Inc.
Niagara Mohawk Power Corp
Prudential Lighting Corp
San Diego Gas & Electric
SPI Lighting
United Illuminating Co.
Zumtobel Staff Lighting, Inc.

SILVER

Ardron-Mackie Limited
Associated Lighting
Atofina Chemicals, Inc.
Axis Lighting, Inc.
Bartco Lighting, Inc.
BJB Electric Corporation
Canlyte, Inc.
Carinci Burt Roger Eng, Inc.
City of San Francisco
Con Edison Co. of New York
Con-Tech Lighting
Custom Lighting Services LLC
Custom Lights, Inc.
Day Lite Maintenance Co.
Defense Supply Center
Delta Power Supply, Inc.
Elko Ltd
Elliptipar
ENMAX
Enterprise Lighting Sales
ETC Architectural
Eye Lighting Industries
Eye Lighting International of North America
Factory Sales Agency
Fiberstars
Focal Point
Gammalux Systems
H E Williams, Inc.
HAWA Incorporated
High End Systems, Inc.
Hubbell Lighting, Inc.
InfraSource
Kenall Mfg Co.
Lee Filters
Legion Lighting Co.
Leviton Mfg Co, Inc.
Linear Lighting
LiteTech
Litecontrol Corp
Litelab Corp
Lowel Light Manufacturing
Lucifer Lighting Co.
Metalumen Manufacturing, Inc.
Northern Illumination Co., Inc.
Optical Research Associates
Optima Engineering PA
Paramount Industries, Inc.
Portland General Electric
Prescolite, Inc.
PSE & G
R A Manning Co, Inc.
Reflex Lighting Group, Inc.
Sentry Electric Corporation
Shakespeare Composites & Electronics Division
Southern California Edison
Stage Front Presentation Sys.
Stebnicki Robertson & Associates
Strand Lighting, Inc.
Sternberg Vintage Lighting
Sterner Lighting Systems. Inc.
StressCrete
Sun Industries
TXU Electric & Gas
Utility Metals
W J Whatley, Inc.
WAC Lighting, Co.
Winnipeg Hydro
Wisconsin Public Service Corp
Xenon Light, Inc.

IES SUSTAINING MEMBERS

As of July 2002

LIGHTFAIR INTERNATIONAL 2002 Posts Record Number Of Attendees In San Francisco Venue

The 2002 event held in San Francisco, CA, June 2 – 5, 2002 at Moscone Convention Center broke all previous attendance records for San Francisco and featured the largest number of exhibiting manufacturers and booths for San Francisco. Highlights include: registered attendance of over 14,633 architectural, design, engineering and end user professionals from around the world, and 553 domestic and international exhibiting companies, occupying over 1,156 booths.

Winners of the New Product Showcase Awards included:

Best New Product of the Year Award and Best of Category Award for Flood and Façade Lighting Category:
Lumiere Monaco 2002 by Lumiere/Brand of Cooper Lighting

Design Excellence Award and Best of Category Award for Suspended Indirect and Bi-directional Pendants Category:
Lightedge by Peerless Lighting

Technical Innovation Award and Best of Category Award for Components Category:
Accessmount by Accessmount LLC

Energy Award and Best of Category Award for Exit Signs and Emergency Lighting Category:
Occusmart-Voyager Series by Lamar Lighting Co. Inc.

Roeder Award:
iColor(r) Accent by Color Kinetics Incorporated

Judges Citation Award and Best of Category Award for Controls Category:
The Task-Rite line of DALI compatible controls by Starfield Controls, Inc.

Judges Citation Award and Best of Category Award for Systems Category:
PCA EXCEL Compact Fluorescent Ballast by Tridonic, Inc.

Best of Category Award for Incandescent Lamps Category:
Halogena Flood and Spot by Philips Lighting Company

Best of Category Award for Fluorescent Lamps Category:
SYLVANIA Octron Curvalume Xps Ecologic by OSRAM SYLVANIA - Lamp Division

Best of Category Award for HID Lamps Category:
350 watt ConstantColor(r) CMH™ SPXX by GE Lighting

Best of Category Award for Specialty Lamps Category: Luxeon Star 5 Watt by Lumileds Lighting

Best of Category Award for Downlights, Wallwashers & Accent Lights
Category: Hole-In-the-Ceiling by Engineered Lighting Products

Best of Category Award for Tracklighting, Low Voltage Cable and Rail Systems Category:
MH Track Lighting Series by Juno Lighting, Inc.

Best of Category Award for Troffers, Commercial Recessed and Surface Fixtures Category:
Lumex by Prescolite

Best of Category Award for Decorative Sconces, Chandeliers, Ceiling, Table and Task Lamps Category:
Fontana by Zaneen Lighting Systems

Best of Category Award for Site and Roadway Lighting Category:
FARO by Hessamerica

Best of Category Award for Landscape and Fountain Lighting Category:
Bali High Light by TEKA Illumination Inc.

Best of Category Award for Fiber optic and Remote Source Lighting Category:
Fiberstars EFO 6 WAY by Fiberstars, Inc.

Best of Category Award for Theatrical and Entertainment Lighting Category:
Eclipse II Iris Dowser- Model 7230/ 23010 by Wybron, Inc.

Best of Category Award for Sports Lighting Category:
Moire' Dual Pattern Rotator- Model 4610 by Wybron, Inc.

continued on following page

Ramon Noya, 1940 – 2002

Ramon Noya, IESNA member since 1979, and an internationally distinguished and recognized lighting designer, died on Wednesday, June 5, 2002. He was 61.

Noya came to the United States in 1956, hoping to study electrical engineering at Georgia Tech. He would eventually earn his degree in 1965. Not satisfied with electrical engineering, he decided to try lighting, which satisfied his artistic inclinations. In 1972 he opened his own company, Ramon Luminance Design.

For Noya, lighting was a deeply spiritual art.

"He lit spaces not because of what they were but because of the people who were in them," said his business manager, Scott Davis of Chamblee. "He thought the most important thing is how it would make people feel as opposed to how good it would look."

Noya designed the lighting for such famous Atlanta buildings and landmarks as the Touch Towers at Centennial Olympic Park, the expansion of the Georgia World Congress Center and Trinity Presbyterian Church. His projects ranged as far as France, South Korea and Martinique.

LIGHTFAIR *continued from previous page*

Best of Category Award for Vandal Resistant and Industrial Specialty Lighting Category:
L-1820 Dark Sky Security Light by The Designers Edge
Best of Category Award for Research, Publications and Software Category:
AGI32 by Lighting Analysts, Inc.
Best of Category Award for Specialty Innovations Category:
LLedge Edgelit Panel by LexaLite International Corporation
Best of Category Award for Ballast and Transformers Category:
PowerSelect II by Reliable Ballast Inc.

Winners of the Image Awards were:
Attendance Promotion/Direct Mail (single piece):
Electronic Theatre Controls, Inc.
Attendance Promotion Campaign (multiple pieces):
Light Guard
On-site Promotional Giveaway:
Electronic Theatre Controls, Inc.
Advertisement Promoting Your Company Presence at the Show:
The Bodine Company; and Prescolite

Winners of the Best Booth Awards were:
600 sq ft and larger:
Martin Professional
400 to 600 sq ft:
Xenon Light Inc.
300 to 400 sq ft:
Leucos USA Inc.
100 to 200 sq ft:
Ivalo Lighting Inc.

Two HOK-Designed Buildings Named to Top 10 'Green' Projects List

Hellmuth, Obata + Kassabaum (HOK) has designed two of the "greenest" buildings on the planet, according to the American Institute of Architect's Committee on the Environment: Edificio Malecon office building in Buenos Aires, Argentina, and the National Wildlife Federation Headquarters facility in Reston, Virginia. HOK is the only architectural firm with multiple projects on the annual list, which recognizes architectural design solutions that are both "high-performance" and "sustainable." Projects were evaluated based on performance, aesthetics, community connection and stewardship of the natural environment.

Edificio Malecon office building in Buenos Aires, Argentina

"We're grateful for this recognition of HOK's global commitment to sustainable design. These projects are 'real-world' models that meet business objectives while providing exemplary design solutions," says Sandy Mendler, HOK sustainable design principal based in San Francisco. "These winning green projects are great buildings – they are exciting architecture, great places to work, and, contrary to expectations, they cost less to build than their conventional counterparts."

The jury that selected this year's winning projects included Randy Croxton, FAIA, Croxton Collaborative; Sim van der Ryn, Van der Ryn Architects; Horst Berger, City University of New York; and Guy Battle, Battle McCarthy.

National Wildlife Federation Headquarters facility in Reston, Virginia

Launched in 1995, the Top 10 Green Projects program recognizes projects that integrate architecture, technology and natural systems to create exemplary design solutions. Projects are evaluated for their contributions to their sites and ecosystems, connections to the surrounding community, use of high-performance technologies, energy and water conservation, and use of environmentally preferable materials.

Member News

Abhay Wadhwa has joined Available Lighting, Salem, MA. As their newest principal designer, Abhay has also been tasked with opening a new office in New York City.

W.A.C. Lighting Company, Garden City, NY, named Philip Duva chief financial officer and promoted Richard Kurtz to vice-president of operations.

Interface Engineering, Inc., Milwaukie, OR, added lighting designers **Carol A. Gjerstad** and **Mark Martin** to its staff. Gjerstad has 28 years of experience in the electrical and construction industries. Her lighting design experience ranges from clean rooms and warehouses to churches, parking garages, condominiums, office buildings and hospitals. Gjerstad has worked in all facets of lighting, including sales, distribution, purchasing and project management. Martin brings experience in designing lighting systems for both new construction and remodels, and has schematic design experience with HVAC systems as well as concrete and steel design.

Frederick Wenzlaff has won the 2001 Los Angeles Ovation Award in the category of "Intimate Theater Lighting Design" as well as the LA Weekly Theater Award for best lighting design for "Infinity"—an original work produced by "The Collective" theater company in Los Angeles. In addition, Frederick owns and operates a successful design firm, Terra Firma Architectural and Landscape Lighting in Eagle Rock, CA, specializing in residential and commercial lighting design.

Alfred R. Borden IV, president of The Lighting Practice, Philadelphia, and **Helen K. Diemer**, vice-president, awarded two scholarships of $1,000 each to students Shannon Zura, Temple University, and Patrick Yu, Pennsylvania State University. This is the second year of the firm's scholarship program.

Indy Lighting, Inc., Fishers, IN, appointed **Charles Stover** vice-president of sales. Stover will direct Indy's sales force and independent agents. Kevin Fagan was named vice-president – general manager and will be responsible for operations including engineering, customer service, and production.

Jerry Malone has joined **A.L.P. Lighting Components, Inc.**, Niles, IL, as product engineering manager for Triboro brand wiring devices.

High-Lites, Inc., Waterbury, CT, appointed principal **Dick Coopersmith**, Cooper Smith Lighting Agency, Inc. rep of its product line for Kansas and western Missouri. **Bill Nelson**, The Lighting Agency Northwest, Inc. will represent the product line for Washington state.

Public Review of IESNA Publication

The BSR/IESNA LM-73-2002, *IESNA Approved Method for Photometric Testing of Entertainment Lighting Luminaires*, is the approved method for standard procedure by which entertainment lighting luminaires, specifically designed for use in the theater or TV environment, can be measured. Entertainment lighting luminaires usually have much narrower beam spreads than other luminaires, thus different test methods and forms of presentation may be used. IESNA LM-73 is to be used in conjunction with BSR E 1.9, *Entertainment Lighting Luminaires – Presentation of Photometric Performance Data*, developed by the Entertainment Services and Technology Association. LM-73 is a new IESNA document and is being submitted for the first time for approval as an ANSI standard. Public review dates are July 5 – September 3, 2002. Copies of the draft standard may be obtained from Rita Harrold at Tel: 212-248-5000 ext. 115 or email: *rharrold@iesna*

IESNA, 120 Wall Street, 17th Floor, New York, NY 10005-4001 ($15 per copy).

New Members

Membership Committee Chair Jean Black announced the IESNA gained two Sustaining Members and 127 Members (**M**), associate and student members in June.

SUSTAINING MEMEMBERS

BLV Licht-Und Vakuumtechnik Gmbh, Steinhoering, Germany
Delta Power Supply, Inc. Cincinnati, OH

INDIVIDUAL MEMBERS

Canadian Region

Martin A, Aitkenhead (**M**), Ministry of Transportation (Province of Ontario), St. Catharines, ON
Pierre-Felix Breton, 9113-0245 Quebec, Inc., Chambly, ON
Michel Froment, PMA, Hull, QC
Pierre Gervais (**M**), City of Longueuil, Longueuil, QC
Nicolas Occhionero, Luxtec, Ltd., Montreal, QC
Ken Preston, Wood Banani & Associates, Ltd., Nepean, ON
Jean-Pierre Rioux (**M**), CIMA+, Quebec, QC
Raymond G. Stoodley (**M**), BAE-Newplan Group, Ltd., Mount Pearl, NF
Bruno Villeneuve (M), Ville de Montreal, Montreal, QC
University of Manitoba
Hen-hui Han

East Central Region

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Claire Falkowski (**M**), Gannett Fleming, Mechanicsburg, PA
Randolph L. Thompson (**M**), Dominion Consulting Engineers PC, Reston, VA
Douglas A. Kirkpatrick (**M**), Great Falls, VA
James Pfefferkorn Jr. (**M**), Clark Nexsen, Norfolk, VA
Scott Rosenfeld, Smithsonian Institution, Baltimore, MD
Linda O. Schade, Schade Engineering, Inc., Narberth, PA
University of Virginia
Emily Pan

Great Lakes Region

Denny Beasley (**M**), Delta Power Supply, Inc., Cincinnati, OH
Michael Cherock, LLI Technologies, Inc., Pittsburgh, PA
Thomas E. Drew (**M**), Drama Lighting, Inc., Buffalo, NY
Thomas Fox, L.A. Woolley, Inc., Buffalo, NY
Jean-Marc Gagnon (**M**), Delta Power Supply, Inc., Cincinnati, OH
DeVeaux Gauger, Illuminart, Ypsilanti, MI
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Thomas C. Howard (**M**), W. E. Monks & Company, Columbus, OH
Paul E. Petrilli (**M**), H.F. Lenz Company, Johnstown, PA
Jerry Sasser, GE Lighting, Lyndhurst, OH
University of Akron
Stephanie Oldfield

South Pacific Coast Region

Tim Bachman, Leviton Mfg., Co., Inc., Agoura Hills, CA
Leslie E. Burton, Harris Consulting Engineers, Las Vegas, NV
Greg DeSmet, DPI Labs, Inc., LaVerne, CA
Ward Fulcher, Associated Lighting Representatives, Inc., Oakland, CA
Caroline F. Groux-Holt, CCGH Lighting Design, Santa Cruz, CA
Linden C. Johnston (**M**), Spectrum + Bennion, Salt Lake City, UT
Brian R. Kane (**M**), BRK Associates, Inc., Walnut Creek, CA
Henry Kim (**M**), Sunrise Lighting Systems, Fresno, CA
Ken Meechudhone, TJ Krob Consulting Engineers, Inc., Las Vegas, NV
James Mesplay (**M**), Apex Consulting Engineering, Inc., Boise, ID
Randall V. Moss (**M**), Fountain Valley, CA
John M. Newcomb (**M**), Newcomb Anderson & Associates, San Francisco, CA
Mark Pavich (**M**), Electro Arts, Murray, UT
Rohini Pendyala, Horton Lees Brogden Lighting Design, San Francisco, CA
Christle A. Petrisevac, Southern California Illumination, Irvine, CA
Raymond A. Pustinger (**M**), RPM Solutions, Chula Vista, CA
Donald J. Sexton, Lite Touch, Inc., Salt Lake City, UT
Tim D. Thomas, Tim Thomas & Associates, Inc., Santa Monica, CA
Irwan Yowanto, Walnut, CA
Canada College
Sonia Chang
Arizona State University
William B. McNally IV

Midwest Region

Julie Blankenheim (**M**), Lighting Design Alliance, Milwaukee, WI
Craig A. Eigenberg, William Worn Architects, P.C., Chicago, IL
Kenneth I. Granle (**M**), Sebesta Blombern & Associates, Inc., Rochester, MN
Gregory Parro (**M**), Advance Transformer, Rosemont, IL
Allyn Vodicka, Charter Sills & Associates, Chicago, IL
University of Kansas
Nicole C. LeClaire

Southeastern Region

Mary B. Akers, Nicholson's Hi-Fi, Nashville, TN
Jeanne Mercer Ballard, NCIDQ, LC (**M**), Envi Studio, Inc., Mooresville, NC
Patty A. Barton Sr., LTG Services, Alpharetta, GA
Fernando Cerda (**M**), American Pole, Sarasota, FL
Gilbert M. DeFreitas, FPC, Lake Mary, FL
Tom Haberstock, Holophane Lighting, Aroen, NC
Kurt K. Heinmiller (**M**), Sesco Lighting, Inc., Ft. Lauderdale, FL
Lynn Holste, GE Lighting Systems, Hendersonville, NC
Mark Keener, Holophane, Atlantic Beach, FL
Larry Linn, Elliptipar, Decatur, GA
Kevin Matthews, Holophane, Alpharetta, GA
John E. Meyer (**M**), ProAnalysis, Alpharetta, GA
Dempsie Barney Morrison (**M**), H&M Architects & Engineers, Jackson, TN
Homer Ooten (**M**), Ooten and Associates, P.A., Tallahassee, FL
David R. Pohl (**M**), University of Memphis, Memphis, TN
Alan T. Richbell, SEFL, Inc., Ft. Lauderdale, FL
Peter R. Seckinger (**M**), Seckinger Design Associates, Inc., Fayetteville, GA
Gary A. Steinberg, GE Lighting Systems, Inc., Hendersonville, NC

Northeastern Region

Peter Boynton (**M**), Holophane, Milford, CT
Kenneth A. Douglas (**M**), The Mintz Lighting Group, Inc., Newark, NJ
Suzy Dunser (**M**), Arlington, MA
Gary R. Durgin (**M**), Dialight Corporation, Farmingdale, NJ
Jeffrey Fadden, PSEG Energy Technologies, Edison, NJ
Matthew D. Franks, Arup, New York, NY
William A. Grindal, CLS, Hartford, CT
Christopher R. Kruger, James Conway Engineering, Brookline, NH
John C. Mamo, Specialty Store Lighting, Hoboken, NJ
Charles Merjave (**M**), Washington Group, Ozone Park, NY
Michael D. Nachman, Michaels Electrical Supply Corp., Lynbrook, NY
Thomas G. Nelson (**M**), Philips Lighting Company, Somerset, NJ
Stephen A. Pertusiello (**M**), Con Edison Co., New York, NY
Marc Pfeiffer (**M**), Marc C. Pfeiffer Lighting Design, Newport, RI
Steven Rothschild, Bulbs.com, Worcester, MA
Mark Sadick (**M**), Holophane, Port Washington, NY
James Shomilak, Graybar Electric, Port Monmouth, NJ
Majdood A. Siddiqui (**M**), URSCORP, New York, NY
Jeffrey Zaro, Amerlux Lighting Systems, Fairfield, NJ
New York Institute of Technology
Rahul S. Walawalkar

Northwest Region

Joyce Cassidy, Sea-Tac Lighting Sales, Seattle, WA
Eric C. Dawson, Entranco, Bellevue, WA
George R. Fee, LP Engineered Wood Products Ltd., Golden, BC
William McQueen, Nordstrom, Seattle, WA
Amee D. Quiriconi (**M**), Tiger Mountain Consulting, Inc., Issaquah, WA
David W. Reed, EDC, Inc., Anchorage, AK
Lisa Warnock, Laughlin Designs, Inc., Portland, OR

Southwestern Region

Ayodele M. Alaran (**M**), PVI Engineering, Inc., Dallas, TX
Jose L. Bonilla (**M**), Lumisistemas De Mexico S.A. de C.V., Edo de Mexico, Mexico
Margaret Cuccia, Jefferson Parish Louisiana, Jefferson, LA
Tim Galvin, Architectural Lighting Associates, Dallas, TX
Edsel P. Hamilton III (**M**), E.P. Hamilton & Associates, Inc., Pflugerville, TX
Sharon Hidalgo (**M**), Bell and McCoy, Houston, TX
Dan Nottoli, Advance Transformer Co., Carrollton, TX
David O'Neal, CEW Lighting, Dallas, TX
Valentina Ortega, Philips Mexicana, S.A. de C.V., Mexico City, Mexico
William M. Stevens (**M**), Myrdin, Dallas, TX
Marcus Vahling, ABS Consultants, Denver, CO
German Villalobos Sr., Philips Mexicana, S.A. de C.V., Mexico City, Mexico
Javier Villasenor Sr. (**M**), Philips Mexicana, S.A. de C.V., Mexico City, Mexico
Kevin Williams (**M**), Carter Burgess, Fort Worth, TX
Louisiana Tech University
Misty L. Scroggs

Foreign

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Gian Paolo Bulla (**M**), Italy
Tauhid D. Handani (**M**), Thag Sdn Bhd, Malaysia
Krishnaswamy J. Iyer (**M**), Bechtel India Pvt., Ltd., India
Tetsuo Kato, BLV Licht-Und Vakuumetechnik, GmbH, Germany
Frederick Koh (**M**), Ideal Electric Singapore Pte, Ltd., Singapore
Jungwook Lee, Daehan TLC, Inc., Korea
Luis Santos Jr., Washington Group International, Puerto Rico
Martin R. Vargas Sr., Elec Chile, Ltd., Chile
Heimt-Jurgen Wesseling, BLV Licht-Und Vakuumtechnik GmbH, Germany
International Institute of Information Technology, India
Sapan Agarwal

IIDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

REFLECTIONS IN A GOLDEN EYE

The bridge slowly opens, forming a gateway arch, its lights reflected in the river Tyne. ***Jonathan Speirs and Associates Ltd.*** *lighted this powerful nighttime icon.*

The Gateshead Millennium Bridge over the River Tyne is the world's first "tipping" bridge. It has a span of 126 meters. Conceived by the talented architectural practice of Wilkinson Eyre Architects (WEA) and structural engineers Gifford and Partners, the bridge tips over to allow river traffic to pass underneath. WEA sometimes refers it to the action of an eyelid opening and closing with the two pivot points at the corners of the eye. Powered by six massive hydraulic rams the bridge has an almost balletic appearance when it opens and is spookily silent in operation.

It connects the two cities of Gateshead and Newcastle for pedestrians and cyclists. The River

PHOTO: GRAEME PEACOCK

(previous spread) The Gateshead Metropolitan Borough Council is delighted with the entire project as it creates a successful visual impression at night, creating the iconic vision desired for the project. (left) Maximizing the opportunity for reflection, the underside of the deck is illuminated with custom luminaires. Positioned to reinforce the structure, the luminaires were designed with rotating and locking bracketry to allow maintenance from above the deck.

Tyne is famous for its bridges with the Tyne Bridge its most famous to date, being the baby brother of the Sydney Harbour Bridge and designed by the same engineers. Constructed at a then cost of US$ 1 million it opened before Sydney in 1928. Newcastle is also famous as being the place where Joseph W. Swan invented the light bulb—before Thomas Edison.

Jonathan Speirs and Associates (JSA) were appointed in November 1997 as the Lighting Architects for the project. The project cost US$ 30 million with the lighting budget coming in at US$ 290,000. The lighting elements are as follows:

- The arch
- The underside of the deck
- The pedestrian walkway and cycle deck
- The dividing hedge
- The caissons

The designers held a series of creative sessions in the London studio of WEA to brainstorm the concepts and details. Debates ranged about the appearance of both the arch and the deck, but the design deliberations also focused on the all important connections where the moving machinery is located.

Constructed in the river 6 meters off each riverbank is a 35 meter long caisson that houses the machinery that operates the hydraulic system. Sitting atop the caisson is a box utilizing structural glass ribs to hold up the glass enclosure giving a very simple and lightweight impression.

It went without saying that the arch had to be lit. The greatest concern of the lighting designers was the avoidance of light pollution. We did not want to lose any light up into the sky or to provide a glare source from any of the many elevated positions around the bridge.

Recently a major bridge in Scotland has been re-lit and has received extremely negative feedback from the astronomical community as a result of the considerable light pollution that emanates from it.

The means of lighting the arch went through two iterations. The first was a series of metal halide luminaires with a sculpture or fresnel lens to spread the light narrowly in one axis. The intention being to project lines of light onto the line of the arch overlapping one to the next. The second option was to add the use of color for special events. The use of the Irideon AR500

PHOTOS, THIS SPREAD: JONATHAN SPEIRS

(right, both) The main arch is lighted with eight narrow-beam Irideon luminaires. Primarily using white light, the luminaires are also programmed to create subtle color changes from bank to bank.

was examined for this purpose, yet still maintaining the same attention to avoiding light pollution. Obviously there was a cost differential between the two approaches.

At the concept presentation to the client the pros and cons of a flexible white light or color change option was debated and discussed. It was felt by the client that the option for color change was worthwhile and the Irideon proposal was approved. A series of Photoshop images were created based on a daytime computer rendering provided by WEA. These included the white light option as well as differing colors with a wipe of color drifting from side to side graphically demonstrated within a PowerPoint presentation. This proved to be very helpful for the client to visualise and appreciate the lighting proposals.

The structural stays that connect the arch to the bridge deck are almost non-existent, it was decided that they should not be lit as there was so little material to reflect the light that as a result we would have spilt a considerable amount of light into the sky.

The second most important aspect of the bridge in our terms was the underside of the bridge deck. The River Tyne flows incredibly slowly, resulting in an almost mirror like appearance of the water surface.

The presentation to the client proposed that it should be lit, even though when the bridge is at rest the underside is only just visible when you are in the immediate vicinity. In many ways you "discover" this aspect of the bridge when you approach the bridge from either end.

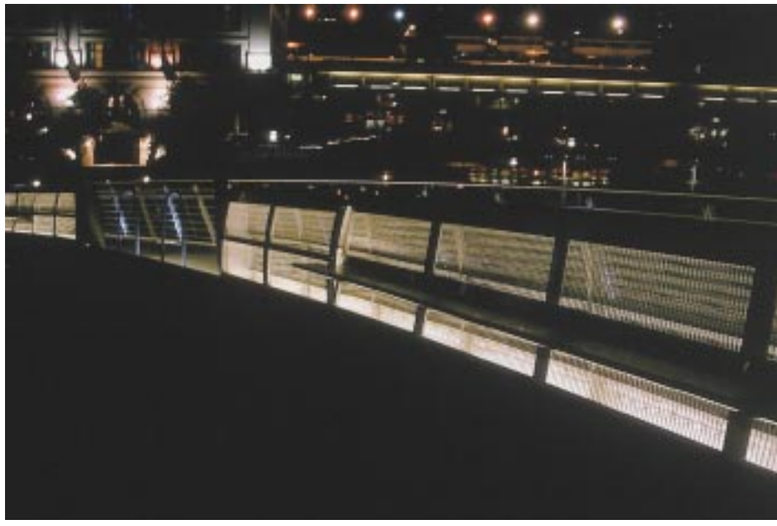
We were interested in the reflections and how the bridge would appear when it was in the open position. Unfortunately the harbor master, (who it transpires has no higher authority to whom an appeal is possible), decreed that there should be no light on the bridge when it is open to ensure that ships are not distracted when passing below. The same gentleman also decreed that there should be bridge defenses built into the riverbed with floating booms to ensure that no ships strike the bridge. This is despite the design team clearly proving that any ship will run aground before striking the structure. This decree cost the project $3 million and the rather ugly looking defenses are apparently now referred to by the witty locals as the "harbor master's piles." Compare the computer rendering without any structures in the river with the end result and see if you agree. (*See image, page 52.*)

Despite this ruling we still felt that the underside needed to be lit to give that extra dimension after dark and use the river as our foil. Ease of maintenance was crucial and therefore access to any sources below had to be through the cycle deck. The intention was to use a narrow beam source to light along the structural rib and also then illuminate the belly of the pedestrian deck

A 35 watt CDM-T PAR20 10 degree lamp was used in a specially constructed IP65 cylindrical housing painted to match the surrounding area. Accessed through a removable plate in the deck a special mounting bracket allows the luminaire housing to swivel through 90 degrees to face upwards, the front glass is removed (with captive screws) and is tethered by a short length of stainless steel wire to ensure the glass is not dropped. When re-lamped the housing is rotated back until it hits a focusing "stop".

The reflections are so good that any faulty lamps can be spotted by looking at the reflections in the water.

The pedestrian walkway and cycle deck illumination was obviously important. We wanted people inhabiting the bridge after dark to feel comfortable and want to linger. The architects had designed a series of linear benches as part of the central "hedge" that separates the pedestrian zone from the cycle zone. These provide a perfect opportunity to sit and admire the view looking west towards the other bridges and the heart of the two cities framed by the new arch.



Low energy, long-life LED luminaires delineate the outer edges of the bridge, highlighting the balustrades. The central hedge separating pedestrian and cycle pathways is internally illuminated using low-voltage cold cathode. It also provides low-level lighting across the cycle path deck.

The pedestrian deck surface is a black non-slip material and is not a particularly good reflective surface. To maximize the views outwards it was felt that a string of recessed white LED luminaires recessed into the deck would define and delineate the route as well as giving some illumination to the balustrading. These marker lights were paired at every second balustrade. Each of these LED luminaires draws 3 watts.

The cycle deck is an open aluminum grating, but it is not as open as we would have liked. Generally as you cross the bridge it appears solid but contrasts beautifully in its silver appearance with the black pedestrian deck. At night, if you look directly down you can see through the cycle decking. The reality is that pedestrians use both sides of the bridge. The paired LED's locate into the same access panel as the under deck lights.

The other lighting element that contributes to the lit appearance of the walkway is the illumination of the central "hedge."

PHOTO: GRAEME PEACOCK

Three elements integrated into the bridge deck structure: markers to delineate the deck edges, internal lighting to perforated steel 'hedges' and structural riblights to reinforce the structure beneath the deck.

Constructed in stainless steel into a three-dimensional form the steel sheets have linear perforated slots. The lighting idea was a simple one, simply to make this form glow from within. Linear white cold-cathode tubes were installed at the bottom of the hedges, which made the entire form glow. By adding a linear white acrylic diffuser, at the low level on the cycle deck, light was pushed out onto the surface of the aluminium deck. This clearly highlights the step between the levels.

At the center of the bridge there are a series of upside down U-shaped balustrades that demarcate the change in level as well as aiding people stepping from one level to the other. We located more white LED luminaires in the deck to define these handrails. The undersides of the handrails catch light from these sources in a way that we had not truly appreciated at the design stage!

These two elements provide almost no measurable light level on the surface of the decks. As most of us appreciate, illuminance is not everything. People walking across the bridge feel comfortable, safe and enjoy the experience.

Sitting on the bridge looking outwards is a delight and something we do whenever we have the opportunity.

The two caissons were originally to have a solid concrete floor, but the idea developed with the architects for the subfloor area, where the massive hydraulic rams are located, to be lit with blue light. The idea being that just before the bridge opens that the rams would be lit with white light and this would signal the impending opening. This developed into the idea that floor in the caisson would have glass lenses and the blue illumination would continue to signify the lighting "below deck." The blue lighting was achieved by using 150 watt CDM-TD metal halide with blue glass lamps. The white light to the rams is also 150 watt CDM-T metal halide, with the slow build up of intensity adding to the drama.

Recessed into the low walls are a series of louvered "brick" luminaires with custom silver colored louvers to blend with the concrete.

At the gates to the bridge, required to protect people when the bridge is opening and closing, are recessed in-ground luminaires that were customized to provide a two signal indicator. Green LED's feed end-emitting fiber optic grouped into a go arrow symbol; red LED's feed fiber again but this time it is a no entry symbol. These change automatically depending upon the operation of the bridge.

The project was a genuine pleasure to work on—an exemplar project that demonstrates yet again that where the Design Team works together with a common vision for a forward looking and supportive client the results speak for themselves.

The designers: Jonathan Speirs has more than 17 years experience as an independent lighting consultant. Trained as an architect, he formed the Lighting Architects Group in 2000, which includes Jonathan Speirs and Associates, Edinburgh, and Speirs and Major, London. His design experience spans 32 countries. Gavin Fraser is an architect and lighting designer with more than 14 years or practice in the UK and internationally as an independent lighting consultant and architect. Before joining Jonathan Speirs and Associates, he served as founder of Gavin Fraser Lighting Architects—Foto-ma Design Group. Prior to joining Jonathan Speirs and Associates in 1998, Carrie Donahue Bremner was with RMJM Scotland Ltd., Edinburgh. She received her training in architecture and fine art at the Rhode Island School of Design, Providence.

IIDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

The 2002 International Illumination Design Awards

The IIDA program recognizes individuals for professionalism, ingenuity, and originality in lighting design based on the individual merit of each entry. Judges are selected from a broad professional spectrum representing knowledge of lighting and design excellence. The judging system is entirely based on how well the lighting design meets the program criteria.

The IIDA program is not a competition.

The IIDAs comprise three parallel programs. The awards for interior lighting honor the memory of fixture manufacturer Edwin F. Guth, who held 147 patents at the time of his death in 1962. The Paul Waterbury Awards for Outdoor Lighting honor Waterbury's achievements, including the development of 1200 W metal halide lamps for stadium use. The Aileen Page Cutler Memorial Award for Residential Lighting Design honors the developer of new and creative ways to light residences.

Each of the three award programs comprises several levels. Section Awards acknowledge commendable achievement in lighting design at the local level. Regional Awards of Merit are given in recognition of meritorious contributions to lighting design. Those projects receiving a score of 85 or greater at the regional level continue on to be judged at the international level.

There are three awards given by the panel of international judges. The Special Citation recognizes superior elements of an outstanding lighting design or, in some instances, the use of lighting as an art form. The Award of Excellence is presented for an exceptional contribution to the art and science of lighting design. The Award of Distinction honors extraordinary achievement in lighting design. This award is optional and is given at the discretion of the judges.

IDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

Paul Waterbury Award of Excellence for Outdoor Lighting Design

Lighting the Gateway Arch – St. Louis, MO
Designers: Randy Burkett, Susan Jennings, and Ron Kurtz
Company: Randy Burkett Lighting Design, Inc.
Owner: The Gateway Foundation
Photographer: Debi Franke

Edwin F. Guth Memorial Award of Excellence For Interior Lighting Design

Holy Family Chapel – St. Louis, MO
Designer: Mary Jo Ward • **Company:** Light Solutions, LLC
Designer: Bruce Capelle • **Company:** Trivers Associates
Designer: Gary Behm • **Company:** St. Louis Antique Lighting
Owner: Sisters of St. Joseph of Carondelet
Photographers: Alise O'Brien

Paul Waterbury Award for Outdoor Lighting Design

Special Citation for Innovation Use of Solar, Wind & Voice Technology

Japan Expo in Fukushima 2001 – Fukushima, Japan

Designers: Hiroki Yagi, Mayumi Watanuki, Satoshi Uchihara and Makoto Tanaka

Company: Uchihara Creative Lighting Design, Inc.

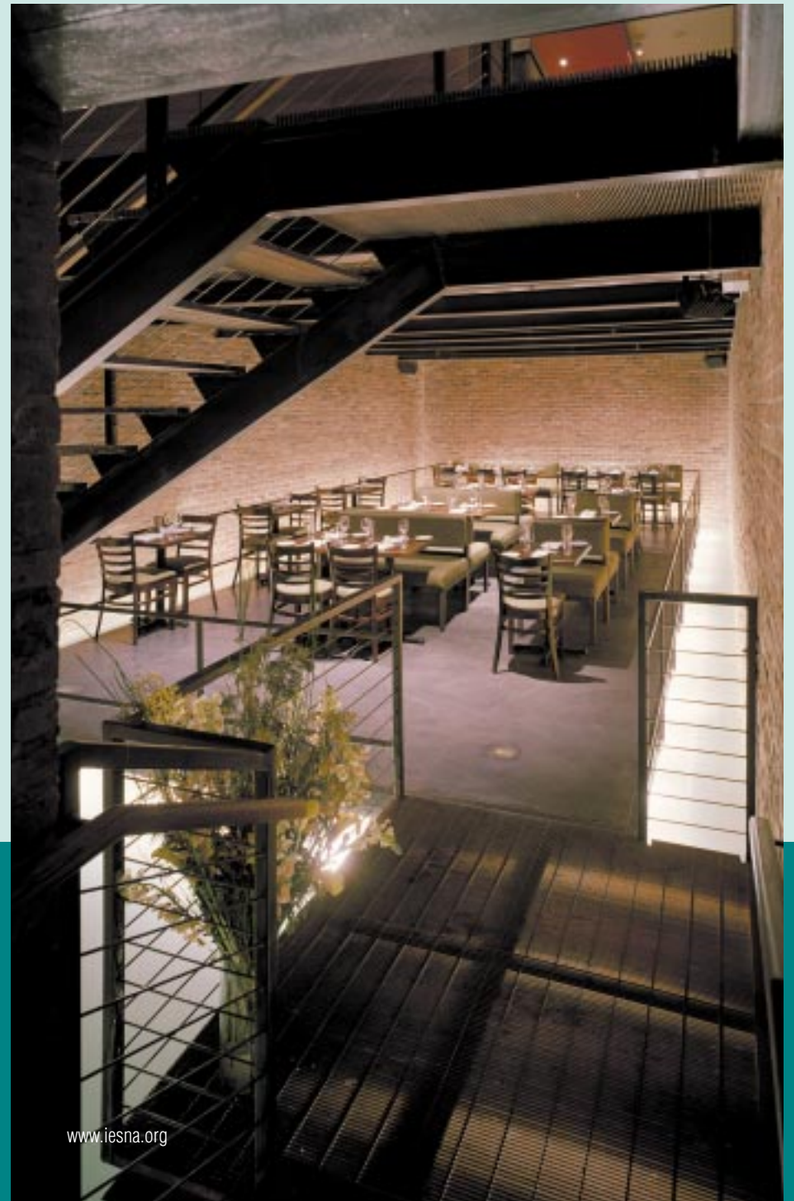
Designer: Shinji Umino • **Company:** Ushio Spax, Inc.

Designer: Kouji Mochino • **Company:** Akatsuki Art & Technology, Inc.

Owner: Beautiful Fukushima Future Expo Association

Photographers: Kanji Nakayama and Katauhiko Kobayashi

IIDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®



Edwin F. Guth Memorial Award for Interior Lighting Design

Special Citation for Creative Lighting Effects on Limited Budget

SUBA Restaurant/Bar – New York, NY

Designers: Ann Kale and Nelson Jenkins

Company: Ann Kale Associates, Inc.

Owners: Yann De Rochefort and Phillip Morgan

Photographer: Peter Aaron/ESTO

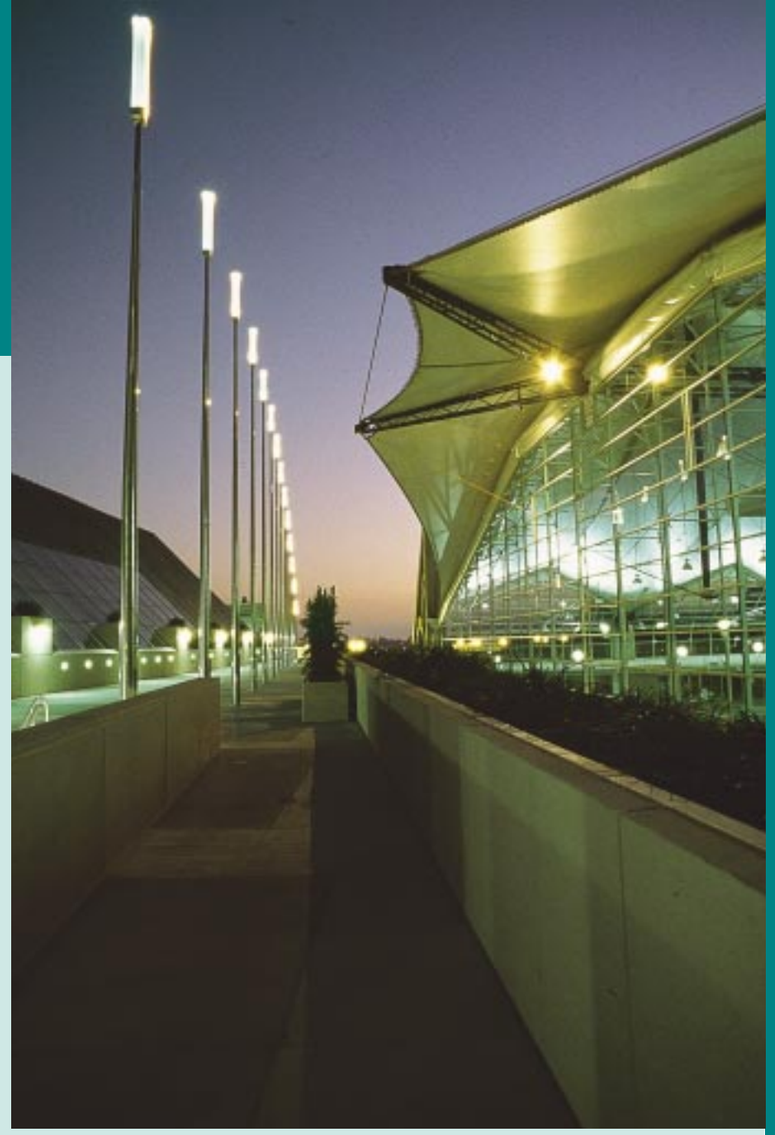
IDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

Paul Waterbury Award for Outdoor Lighting Design

Special Citation for the Integration of Sunlight and Electric Light

Luminous Arc –
San Diego Convention Center,
San Diego, CA

Designers: James Carpenter and Richard Kress
Company: James Carpenter Design Associates
Designer: Matthew Tanteri
Company: Tanteri & Associates, Inc.
Owner: San Diego Convention Center Corp.
Photographers: Brian E. Gulick and Skip Juris



IDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

Paul Waterbury Award of Excellence for Outdoor Lighting Design

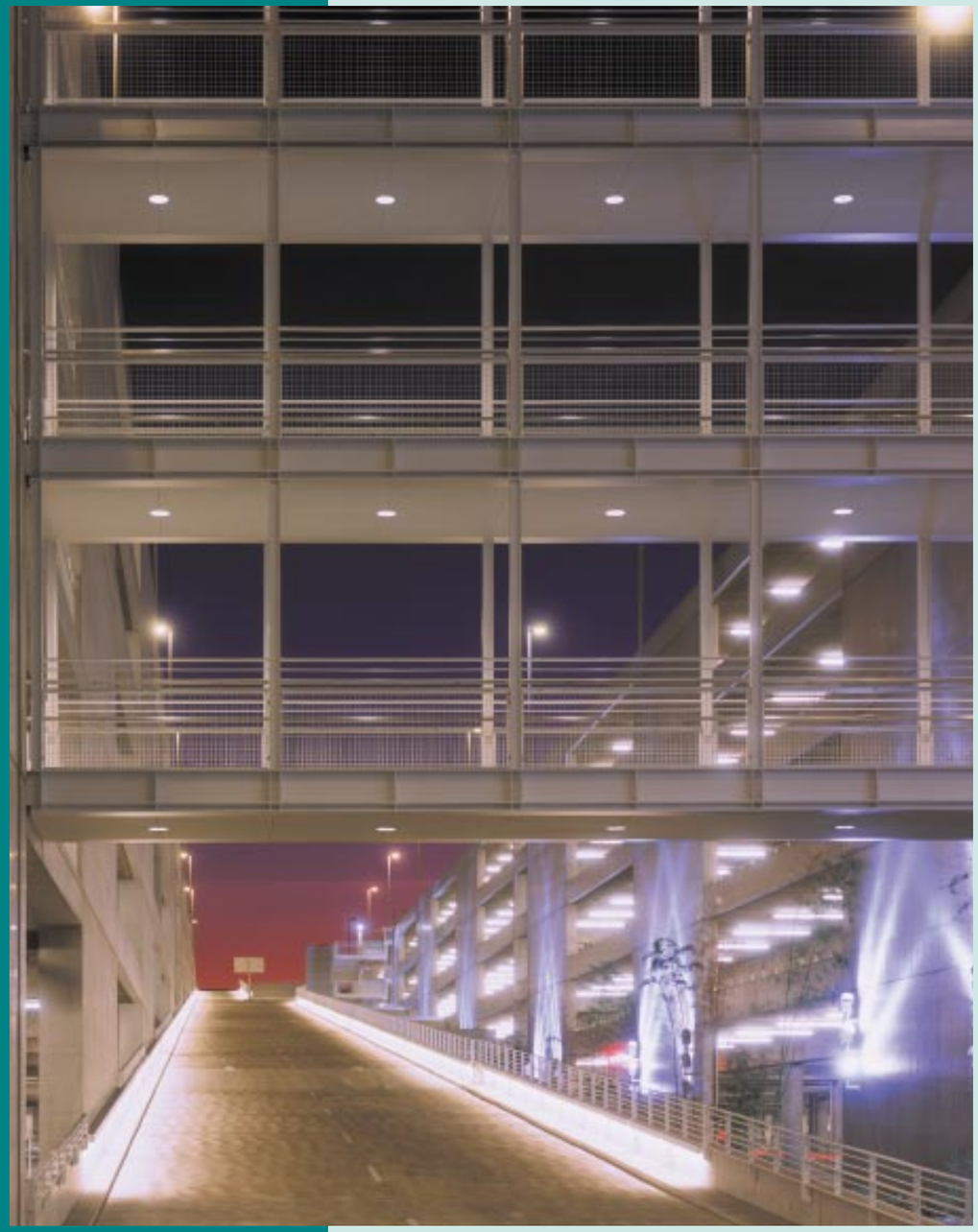
The Forth Bridge – The Firth of Forth near Edinburgh, Scotland
Designers: Ross De Alessi and Trish Connor
Company: Ross De Alessi Lighting Design
Owner: Railtrack Scotland
Photographer: Douglas A. Salin

IDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

Paul Waterbury Award for Outdoor Lighting Design

Special Citation for Integration of Light and Architecture in Transition of Vehicles and Pedestrian Egress

Mickey and Friends Parking Structure – Anaheim, CA
Designers: Paul Marantz and Scott J. Hershman
Company: Fisher Marantz Stone, Inc.
Owner: Disney Enterprises, Inc.
Photographer: ©Disney Enterprises, Inc.

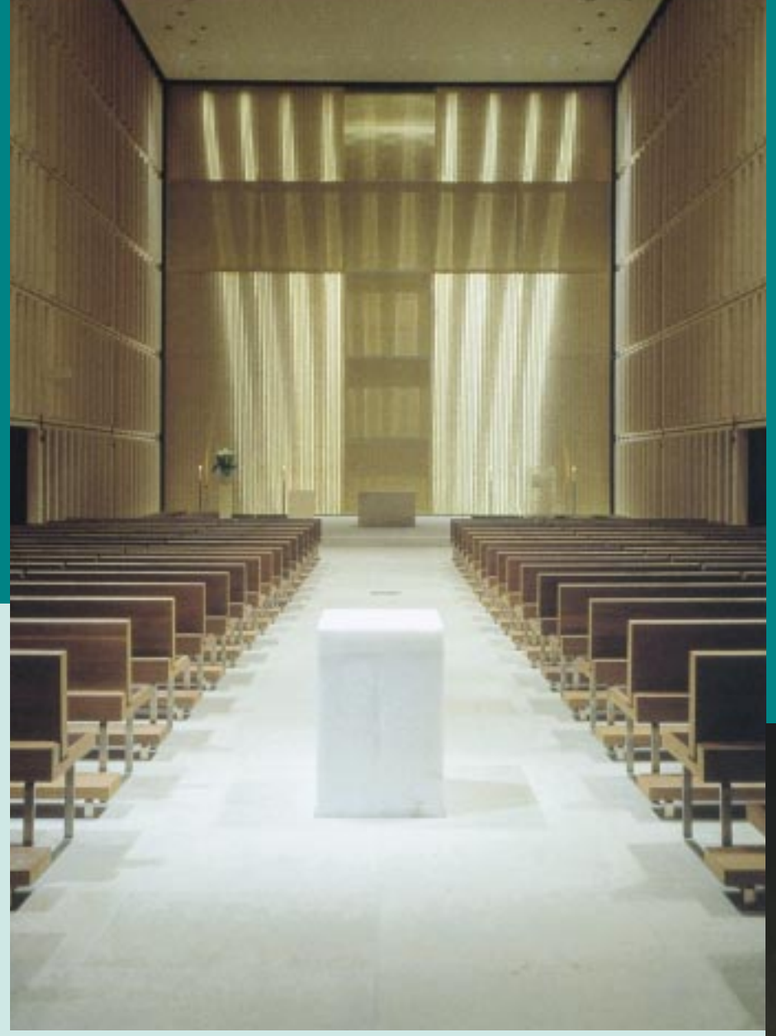


Edwin F. Guth Memorial Award for Interior Lighting Design

Special Citation for the Enhancement of Emotional Experience of the Space

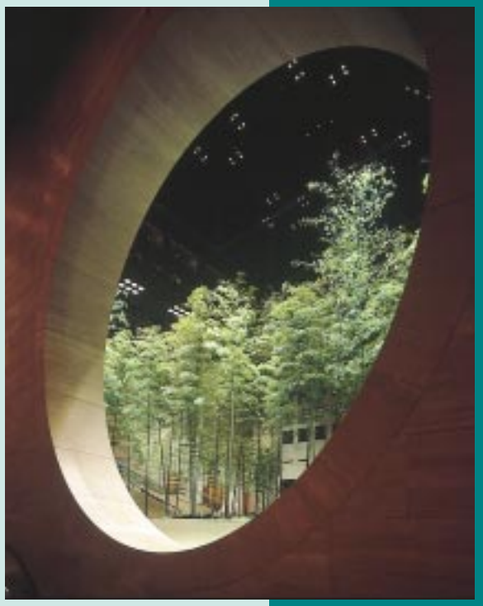
Magna Science Adventure Centre – Sheffield Road, Templeborough, Rotherham, UK
Designers: Jonathan Speirs, Mark Major, Laura Jones, Claudia Clements, Colin Ball, Philip Rose, Steven Power, Henrietta Lynch, Jamie Dobson, and Malcolm Innes
Company: Speirs and Major Limited
Owner: Magna Trust
Photographer: Edmund Sumner

IDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®



Edwin F. Guth Memorial Award of Excellence for Interior Lighting Design

Herz Jesu Kirche (Heart of Jesus Church) – Munich, Germany
Designer: George Sexton III
Company: George Sexton Associates
Owner: Erzbischhoefliches Ordinariat Muenchen
Photographer: Florian Holzherr



Edwin F. Guth Memorial Award of Excellence for Interior Lighting Design

Bank of China Head Office – Beijing China
Designers: Jerry Kugler and Alistair Wandesforde-Smith
Company: Kugler Tillotson Assoc., Inc.
Owner: Bank of China
Photographer: Higashide Kiyohiko

IDA 2002
INTERNATIONAL ILLUMINATION DESIGN AWARDS®

Paul Waterbury Award of Distinction for Outdoor Lighting Design

The Gateshead Millennium Bridge – Gateshead, Tyne and Wear, England, UK
Designers: Jonathan Speirs, Gavin Fraser and Carrie Donahue Bremner
Company: Jonathan Speirs and Associates Limited
Owner: Gateshead Metropolitan Borough Council

INTERNATIONAL JUDGES

Kathy Abernathy
Abernathy Lighting Design
Providence, RI

Lisa Bertolino
Lightolier Inc.
Centerville, VA

Helen Diemer
The Lighting Practice
Philadelphia, PA

Franz Euler
LiteControl Corp.
Hanson, MA

Kay Ferguson
Quantum Lighting Inc.
W. Vancouver, BC, Canada

Michael Lane
Lighting Design Lab
Redmond, WA

Laurie Petipas
Gensler
Charlotte, NC

Mark Ramsby
LUMA Lighting Design
Portland, OR

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THE GUIDING LIGHT

Light sets the mood of worship – from color and brightness to controlled illuminance

(top) The lighting designer worked with the Tengai's sculptor to conceal the canopy's lighting system from view. (bottom) Customized lighting fully emphasizes the presence and dignity of the Honzon, the principle object of worship, at the Shorakuji Buddhist Temple in Tokyo. (opposite)The antique lamps within the wrought iron pendants inside First Presbyterian Church in Philadelphia were replaced with energy efficient, 270 W halogen lamps that increased light levels significantly.

How do you light houses of worship? The answers are as varied as the prayers of the faithful in different churches, temples, mosques and synagogues. Some lighting designers have found the solution lies in the beliefs of the worshippers who attend services. This is only natural, because the architecture, windows, and furnishings in houses of worship are often shaped by the vision of the faithful.

For example, the main hall of the Shorakuji Buddhist temple in Tokyo was designed to represent the sacred Buddhist world through the reproduction of historic sculptures and decorations. The monks commissioned the Matsushita Electric Works, Ltd., to design a lighting system for

Shorakuji to enhance the holy atmosphere by lighting these sculptures. Moreover, the lighting would express "Gokurakujodo," the pain-free paradise where Buddha lives.

Lighting designer Shigetsu Sumiyama said, "We mapped out a lighting plan focusing on the Honzon – the principle object of worship – and Tengai, the canopy that encompasses the important objects in the hall." Sumiyama ordered specially designed lighting equipment to fully emphasize the presence and dignity of the Honzon. "For the Tengai collection, we mounted a spotlight outside the canopy and built specialized lighting equipment inside of the canopy to highlight its divine presence. It radiates a golden glow."

The lighting is hidden from view by covers crafted to blend in with the internal finishing. "We worked with the Tengai's sculptor so that the canopy's lighting system is completely assimilated by the Tengai," noted Sumiyama. Lastly, the Matsushita crew installed dimmers on all the lights at the Shorakuji temple. "Thus, monks can create a divine space where worshippers, though they are in the human world, can feel the presence of the Buddhist world." said Sumiyama.

The age of a church can also guide a lighting designer's work. The First Presbyterian Church building in Philadelphia, PA, was dedicated in 1872, as a union of three churches over three centuries: First Church (1698), Second Church (1743) and Calvary Church (1853). When the church approached its tercentenary celebration in 1998, the congregation worked with HK Lighting Design Inc. of Havertown, PA, to create a lighting that would express the architectural significance of the structure, which survived the changing illuminating technologies over the years.

Originally, The First Presbyterian's 55 ft sanctuary was lit by candlelight. When municipal electricity became available, an artist was commissioned to fashion a series of wrought iron pendants that would illuminate the sanctuary. In time, these 900 W pendants were too energy consuming. Moreover, their light levels were insufficient for aging parishioners.

Because the congregation wanted to preserve the classic architecture of the church, HK's Kristin Keilt and Annette Hladio had to retrofit the original pendants. In order not to disrupt services during First Presbyterian's renovation, the designers removed four pendants each week, replaced their 900 W components with 200 W halogen lamps, and reinstalled them. In addition to improved energy efficiency, the halogen lamps increased light levels significantly. They also extended lamp life, and with new lowering devices, facilitated maintenance.

The designers also installed a halogen track behind the church's columns to illuminate the chancel area and the cross. Because the choir area of the chancel did not require dimming, it is illuminated with PAR metal halide lamps. After the renovation was completed, the congregation was pleasantly surprised to see that the roof of their church was supported by hand carved, gilded beams that had been hidden in shadow.

Another historic house of worship lit by modern equipment that preserves its venerable character is St. Ignatius Church in Baltimore. Three lighting designers were commissioned to upgrade the lighting system for St. Ignatius, which was erected in 1856. The six month schedule of renovation included interior architecture, stained glass windows, murals, and organ.

Bruce Dunlop of Crompton/Dunlop Architectural Lighting Services, and James Suttner and Michael Murphy, both of Murphy & Dittenhafer, Architects, designed a system that focuses light on different aspects of church services, underscores the restored architecture and statuary, integrates lighting unobtrusively, simplifies the control system, facilitates maintenance, and most importantly, provides adequate task and accent lighting for older parishioners.

The designers installed quartz lighting to achieve the highest color rendition within St. Ignatius, and selected low-glare 500 W T-4 lights for the nave. They determined that 500 W, PAR-56 accent lighting would best illuminate participants in the services, while 500 W T-3 uplights would accent the church ceiling, mural, and volume of space properly.

Dunlop, Suttner, and Murphy incorporated an LCD display

(left) By using quartz lighting, the designers who illuminated St. Ignatius in Baltimore achieved the highest color rendition for the church's restored mural.
(below) The trio of designers integrated the lighting at St. Ignatius unobtrusively to maintain the historic character of the building.
(opposite, left) The sanctuary wall of St. Vincent de Paul in Houston is washed by four, 500 W, PAR-56 wide floods, and four PAR-56 narrow floods, also 500 W, illuminate the crucifix.
(opposite, right) Acoustical pleats added to St. Vincent de Paul's ceiling compelled the designer to arrange the luminaries in bands and along the flat perimeter that reflects the uplights.

dimming system to make their lighting system easier to use, more flexible, with a longer lamp life, and more energy efficient than its predecessor.

More contemporary architecture also helps shape church lighting. This was the case at St. Vincent de Paul's Catholic Church in Houston. Lighting consultant Michael John Smith designed the illumination to serve the church's functions, and to accommodate its interior structure. All of the church's lights are energized by time clock/photocells with a 16 scene preset control system to facilitate its operation and conserve energy.

During mass, the walls and pews – each on a separate control zone – are washed with 500 W, PAR-56 wide flood lights. Because the balcony shadows the pews beneath, they are lit with 100 W, PAR-38 flood lights.

St. Vincent de Paul's ceiling was originally flat, but was later pleated to improve the acoustics. To accommodate this arrangement, Smith organized the luminaires in bands, and along the flat perimeter that reflects the uplights. The difficulty of replacing lamps in the original celestory sill strips compelled the pastor to use them less, so Smith rewired and re-lamped the strips with long-life halogen A-lamps. The lamps fade to on and 50 percent lighting capability reduces maintenance costs while preserving an original lighting element.

A large part of Smith's design was devoted to the church's sanctuary, comprising images of the Holy Family and the tabernacle. The sanctuary wall is bathed by four, 500 W, PAR-56 medium flood lights. Figures of Mary and Joseph are lit by 500 W, PAR-56 narrow spots, and angel figures are lit by 75 W, PAR-111 spots. The tabernacle and decorative plants are illuminated by three, 500 W narrow floods. The floor is washed by four, 500 W narrow floods.

The church's organ pipes are brightened by four, 500 W, PAR-56 medium floods. Here, structural limitations dictated that Smith create a playful, but symmetrical wall wash pattern. Each of the 12 Stations of the Cross, depicting Christ's road to Calvary, are spot-lit by 50 W, AR-111 spots mounted on the

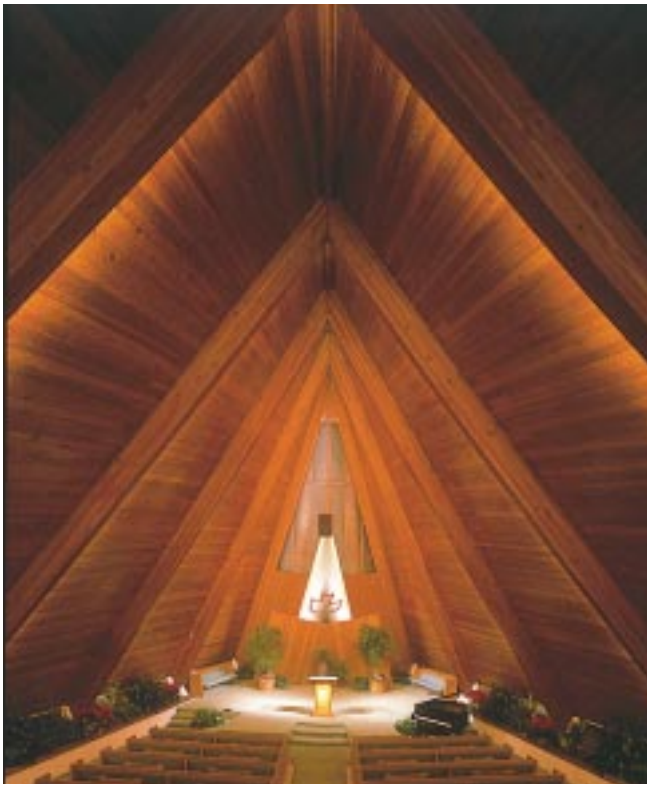
opposite side of the nave.

The startlingly modern appearance of the Calvary Chapel of the Canyons in Silverado, CA., built in 1960, posed a challenge for Shad Arnold of A & H Lighting Design and Consultation in Irvine, CA. Upgrading the sanctuary of the chapel, which was illuminated by incandescent lamps controlled by a 5000 W rheostat, was simple enough. Arnold replaced these with a fully programmable dimming system complete with hand-held infrared scene controls.

The hard part of relighting Calvary Chapel was designing an indirect cove system. This was because the building is made of continuous pitched bevel draw beams that rise 43 ft above the sanctuary floor, forming a giant A-frame. Arnold specified a custom cut-to-match cove, running from the floor to the ceiling on the stage side of each beam. He installed continuous rows of stagger-strip fluorescent lights, with T-8, 3000 K, high CRI lamps and full-range dimming ballasts to create a warm, inviting glow. Low voltage halogen lights with dichroic filters precisely light the chapel stage.

The main purpose of the lighting design was visual comfort.

PHOTO: SCOTT ROTHWELL



(top) Because of its unique, concave A-frame architecture, Shad Arnold designed a cut-to-match cove, running from the floor to ceiling on the stage side of the beams, to provide a warm, inviting light for Calvary Chapel of the Canyons in Silverado, CA. (bottom) Thomas Gregor Associates used the theatrical lighting designs it has installed in casinos, theme Parks, and cruise ships to illuminate the central altar area of Shadow Hills Baptist Church in Las Vegas.

The warm, indirect light spilling over the coves creates an environment conducive to study or religious ceremonies. Budget constraints compelled the designer to specify the two-lamp fluorescent fixtures as A/B switched. The A-side of each row was on/off, while the B-side used a full-range dimming ballast to enhance flexibility while substantially reducing the overall lighting cost.

The system uses a Grafik 3000 lighting control from Lutron Elecronics.

There are occasions when the larger, secular world can offer ways to illuminate the interior of a house of worship. What could be more natural for a Las Vegas based church like Shadow Hills Baptist Church than a lighting, video, sound and show control system for their worship center to rival the extravaganzas on the Strip? The pastor approached Thomas Gregor Associates of El Segundo, CA, a company more at home developing integrated audio, lighting, video, and show control systems for live performances, theme Parks, casinos, arenas, restaurants, retail stores, and cruise ships, but was more than willing to tackle the church project.

TGA approached the project as a professional performance space, rather than a typical church installation, according to vice president of lighting Garrett Cain. He designed the lighting for the Shadow Hills Worship Center, using standard theatrical lighting to illuminate the central altar area. "These were all ETC Source 4 lights with 26 and 36 degree beam spreads," said Cain. "We also used ETC Source 4 PARs for general stage wash."

Because the client anticipated that the church would be staging large scale musical performances, Cain installed a DMX lighting system that could be expanded with additional lights to activate effects such as the color scrollers used in rock music stage shows.

The author: Michael Valenti is a free-lance writer who has written for the *Journal for Electronic Defense* online. He was the senior associate editor at *Mechanical Engineering* magazine, the monthly publication of the American Society of Mechanical Engineers, and the editor of that magazine's annual *Power Supplement*.

LIGHT PRODUCTS

Advanced Transformer Company introduced its "F-Can" **ballasts** for the operation of pulse-start metal halide high intensity discharge lamps. Ballasts are available in 175, 250, 320, 350 and 400 W lamps and feature auto-reset thermal protection for both voltage taps. Each ballast case includes mounting tabs, and a variety of mounting and wiring accessories are available, including a mounting bracket kit, a "teepee" lead cover, and a wiring compartment with five 7/8 – diameter knockouts. **Go to www.leadnet.com/lda or Circle 100 on Reader Service Card**

The Lumière brand of Cooper Lighting features the smallest **outdoor luminaire** for outdoor architectural and landscape lighting designs. The "Monaco" series has a fully adjustable beam spread, from narrow spot wide flood, ideal for field adjustment and eliminating the stocking of multiple lamp types. The rugged fixture housing and stem are made from aluminum alloy construction, and feature heavy-duty horizontal and vertical aim locking mechanisms. The locking system prevents beam pattern from being disturbed during relamping or maintenance. **Go to www.leadnet.com/lda or Circle 99 on Reader Service Card**

Holophane presents the Vantage VK **HID luminaires** designed for food and chemical processing facilities where particles in the air and frequent hosedowns are common. The luminaires feature a smooth, rounded ballast housing that includes no ledges, latches or fins to collect contaminants. An absence of exposed labels and markings minimizes the chance of contamination. Vantage VK luminaires are offered with two distinct distributions: luminaires with wide and narrow distributions will illuminate both vertical horizontal tasks, while fixtures with a narrow distribution direct useful lighting onto the task, limiting light obstructions. **Go to www.leadnet.com/lda or Circle 98 on Reader Service Card**

OSRAM SYLVANIA Octron Curvalume XPS Ecologic **lamp** is paired with the QUICKTRONIC PROStart PSX ballast, creating the Xtreme T8 fluorescent system for 2X2 fixtures. The OCTRON CURVALUME XPS ECO lamp is the energy efficient choice for applications calling for a U-shape lamp. With a 30,000-hour average rated life, the Xtreme System provides twice the lamp life of a standard T8 IS system with similar lumen performance and low system watts of 46/48 for two-lamp systems. **Go to www.leadnet.com/lda or Circle 97 on Reader Service Card**

Gigahertz-Optick presents the P-9710-2 **optometer**. Features include a pulse energy mode and compact size enabling on-site measurement of flashing or modulated light sources. Other features include adjustable sampling and continuous offset of the pre-trigger light level as well as computation of luminous effective intensity based on the Schmidt-Clausen method. **Go to www.leadnet.com/lda or Circle 96 on Reader Service Card**

d'ac Lighting introduces the Bing-bang **pendant**. Characterized by a classic bell-shaped design, created from a single piece of white hand blown Italian glass, the pendant provides a broad distribution pattern of low-glare direct downlight, in a subtle, contemporary design aesthetic ideal for a wide range of residential and commercial environments. The curvature of the glass uses the ambient lighting to created a diffused, glow, while maximizing the downward light emitted through a 16 in. bottom opening. **Go to www.leadnet.com/lda or Circle 94 on Reader Service Card**

Juno Lighting Inc. introduces the professional halogen series of **track lighting fixtures** for high-impact display and merchandise lighting. The series includes two lines that operate both standard line-voltage light sources (PAR20, PAR30, and PAR38) and low-voltage light sources (MR16, PAR36 and AR111). The professional halogen series is also compatible with Juno's MH2 Series to flexible and energy efficiency. **Go to www.leadnet.com/lda or Circle 94 on Reader Service Card**

Quality Lighting introduces Design CH-20, high-performance outdoor area and roadway lighting **fixture**. CH-20 fixture provides highly efficient, even illumination for range of pole and building-mounted outdoor area and roadway lighting applications including corporate and university grounds, parking lots and other retail and hotel sites. The fixture is characterized by a compact, squared edge-housing design constructed from die-formed aluminum. **Go to www.leadnet.com/lda or Circle 93 on Reader Service Card**

Presocolite presents the Lunis family of recessed, surface, pendant and cable-mounted **luminaires**, employing energy efficient 40- and 55 W circular T5 fluorescent lamps. The lunis collection is characterized by a bold disk-shaped housing design, containing the new circular T5 fluorescent lamp, which provides the same evenly distributed, light output as linear T5 lamps. There compact circular design allows for use in a broader range of installations, including shallow plenum and low-ceiling applications, or where linear fixtures would be too intrusive. **Go to www.leadnet.com/lda or Circle 92 on Reader Service Card**

Ruud Lighting offers crown-weld **light poles** (PS Series). Features include a base with four formed triangular sections to which the pole shift is welded on all four sides, non-tapered poles, in four in. sq, range from 10 through 40 ft in length. All crown-weld poles come standard with deltaguard bronze finish to complement fixtures and mounting brackets. **Go to www.leadnet.com/lda or Circle 91 on Reader Service Card**

Los Angeles Lighting Mfg. Co. offers its LCD201 family of **fluorescent luminaires**. This new series of office luminaires delivers indirect clear white light using T8 and T5 fluorescent lamps mounted on top of modular room partitions to provide aesthetically pleasing soft lighting for today's office environment. The LCD201's 1.75 to 4 in. adjustable mounting brackets are available in many colors. The 2-lamp units come in a variety of finishes and tow or four-foot lengths to match the many segmented or monolithic walls used in modular office spaces. **Go to www.leadnet.com/lda or Circle 90 on Reader Service Card**

Litecontrol announces the two new classroom, laboratory and open office, LC-93 and LC-94 **fixtures**. Fixtures provide highly efficient indirect/direct lighting in a small-scale extruded aluminum housing. Both fixtures are designed for use in space with ceiling as low as 8.5 ft with fixtures suspended as close as nine in. from the ceiling. Fixtures are available in two- or three lamps T8 cross-sections in 4-, 8- or 12 ft lengths. **Go to www.leadnet.com/lda or Circle 89 on Reader Service Card**

Stingray Lighting Inc., offers adjustable dual-reflector **high-bay interior lighting fixtures**. The Stingray DRS System provides increased light output while dramatically reducing energy consumption across a range of commercial, industrial and retail building interiors. Fixtures can be specified to accommodate long life metal halide, high-pressure sodium, or induction light sources, with wattages from 100 to 1000. **Go to www.leadnet.com/lda or Circle 87 on Reader Service Card**

iColor Accent **LED linear light** is a new addition to the iColor family of intelligent illumination products. iColor Accent blends Color Kinetics' intelligent digital control with the latest LED advancements in an affordable, low-voltage indoor/outdoor direct-view linear light, offering designers and architects a cutting-edge, low-maintenance option for incorporating colored light and color changing effects in direct-view applications. It is available in one, four and eight foot lengths and is controlled in 1 ft intervals. iColor Accent can be installed in any size application to provide continuous, seamless runs of controlled colored light and effects. **Go to www.leadnet.com/lda or Circle 88 on Reader Service Card**

Luraline Andorra **sconce** is shaped in a satin-finish acrylic cowl in four jewel tones, and combined with satin white or satin-etched clear acrylic materials that turn frost white when lit by an infused soft glow cowls. Lamping options include incandescent, magnetic compact fluorescent, compact fluorescent with electronic ballast, and T5 linear fluorescent. **Go to www.leadnet.com/lda or Circle 86 on Reader Service Card**

StacoSwitch's 1X6 MET is a six-position, molded elastomer **keypad** with single-pole-single-throw momentary action switches. Each actuation button has customer defined, laser-etched legends on a durable plastic keycap that provides the user with a tactile feel. The 1X6 is fully compatible with other MET keypads; can be lighted or unlighted; and comes in a charcoal black color. Capable of resisting dust, water and humidity, they are ideal for manufacturing, industrial and other harsh environments. **Go to www.leadnet.com/lda or Circle 85 on Reader Service Card**

LEDtronics announces its 3mm (T1) white discrete **LED**. This water-clear, 8000K LED integrates a silicon carbide/gallium nitride (SiC/GaN) diode with optical grade epoxy to produce a 3500 mcd illumination at 20mA that is visible even in direct sunlight. The LED features a 22-degree viewing angel and sturdy leads for reliability in wire-wrap/through-hole PCB applications. **Go to www.leadnet.com/lda or Circle 82 on Reader Service Card**

Philips Electronics Haloginá indoor **floodlight** and **spotlight lamps** offer longer life, greater light output, an easy-to-grip shape, whiter color and energy savings lasting 50 percent longer than standard incandescent lamps of its kind. The lamps are dimmable, available in a typical 65 W BR incandescent lamp. **Go to www.leadnet.com/lda or Circle 84 on Reader Service Card**

Louis Poulsen Lighting inground/accent **luminaires** become an integral part of any landscape to set scenes, create drama and highlight architectural details as well as provide a distinctive accent. The inground/accent product family is comprised of buried uplights, namely Pharo, Nimbus and WeeBee. Inground/accent products are suitable for illuminating a wide variety of architectural and landscape projects, including building facades, columns, canopies, statues and foliage. **Go to www.leadnet.com/lda or Circle 83 on Reader Service Card**