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Cover: The High Museum of Art's recent expansion features a daylighting system that is both technically sound and artistically realized. PHOTO: FLOTW+WARNER

This page: The Lick-Wilmerding High School, San Francisco; white aluminum shields of the High Museum's skylights, Atlanta; detail of Cornell University's Solar Decathlon home; drawing detail of the High Museum daylighting system.
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One Special Issue

This month, a second topic, appropriate for editorializing, presented itself at the IALD Education Conference held October 21 and 22 in Alexandria, Virginia. (See “IALD Conference,” page 13.) The event, which counted 31 students among its almost 200 attendees, and which made impressive efforts to incorporate the younger crowd into its program, reiterated how essential it is for practitioners and professional organizations to speak to and respect their successors. The IALD—a unique organization in its sense of community and spirit, in my experience—seems to be making such dialogue a priority, an effort that will serve it well as these students mature and contribute to the cause of well-designed lighting in general, and the IALD in specific.

The next generation, and the issue of sustainability, are not unrelated. As “Designers Revisit Sustainability” points out, it is the younger professionals that are pushing boundaries and agendas when it comes to sustainable design—even without the topic being required course content in U.S. design education. It is this community that will push the issue, with the design firms, manufacturers, and clients it encounters. It is the next generation that will turn a “special” issue into an everyday best practice.

EMILIE W. SOMMERHOFF
GROUP EDITOR-IN-CHIEF

JAN/FEB 2006 EXCHANGE QUESTION:
As A|L enters its 20th anniversary year, we’d like to know what you consider landmark moments in the architectural lighting profession? Is it a specific project, a technical advancement, the design of a luminaire, the formation of a group or a professional organization? What, to you, have been the key moments in the lighting industry?

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REPORT FROM GREENBUILD

GREENBUILD 2005, THE ANNUAL INTERNATIONAL CONFERENCE AND EXPO ORGANIZED by the U.S. Green Building Council (USGBC) was held this November in Atlanta. Attended this year by nearly 12,000 people (up 3,000 from last year), Greenbuild attracts a larger audience every year. Keynote speakers included industrialist Ray Anderson, CEO of carpet manufacturer Interface; natural science writer Janine Benyus, author of Biomimicry: Innovation Inspired by Nature; environmentalist Paul Hawken, author of Natural Capitalism; and Duane Elgin, author of Promise Ahead: A Vision of Hope and Action for Humanity's Future.

Most architects and designers associate the USGBC with the various Leadership in Energy and Environmental Design (LEED) rating products. However, what many do not realize is that LEED is only one of six strategic goals of the USGBC, all of which were addressed at Greenbuild. The other five categories include: Community, Research, Education, Advocacy, and Organizational Excellence. Here are some of the issues discussed in relation to these topics.

LEED The big announcement this year was that development has begun for LEED-New Construction version 3.0. This product has been reconfigured to score projects by addressing greenhouse gas emissions as they relate to specific regions. Another significant development was the announcement of a new streamlined LEED documentation and certification process. Projects can now be filed online at either the design or construction phase.

COMMUNITY As LEED 3.0 proceeds, new partnerships in the various professional communities will be needed to provide improved peer involvement and peer review. Now that trade and professional organizations are entitled to full membership, new opportunities exist for the IALD (represented at Greenbuild by Stefan Graf and Nancy Clanton) and the IESNA to have more input into credits that deal with lighting.

RESEARCH Although the number of seminars devoted to lighting were but one, “Daylighting R&D Applied to Hospitals and Offices” offered presentation from three leaders in the field: Daylight specialist G.Z. Brown, director of the Energy Studies in Buildings Laboratory at the University of Oregon presented on daylighting for hospitals and energy-efficient patient room design; and Stephen Selkowitz and Eleanor Lee from the Lawrence Berkeley National Laboratory discussed the results from the New York Times Building mockup.

EDUCATION The conference included five full days of workshops, learning sessions, and tours, with categories as diverse as Life-Cycle Assessment, Livable Communities, Investing in Sustainability, and the Ups and Downs of Marketing Green. Although there was really only one seminar that addressed lighting directly and relatively few of the 300-plus exhibitors were from the lighting community (Lutron, Osmar Sylvania, Philips, and Acuity Brands were some of the manufacturers that did attend), the show provided an opportunity for lighting professionals with concern for the environment to meet like-minded peers.

ADVOCACY Design practitioners come to Greenbuild to meet colleagues they can collaborate with, to understand the resources available to design and build responsibly, and to learn how to navigate the boundaries between their skills and those of others to produce truly integrated sustainable projects. These practitioners realize they cannot do it alone and that no one single professional discipline has all the tools or answers.

ORGANIZATIONAL EXCELLENCE With the introduction of an initiative called “Dynamic Governance,” those who attended the Chapter Leadership Forum experienced the future of decision- and policy-making in the USGBC. Dynamic Governance not only hopes to clear the way for better communication and support of new policies throughout the membership, it also provides new incentive for design professionals to become involved at the chapter level, in committees, and as attendees or corporate sponsors.

Whether a seasoned professional or “emerging green builder,” attendees come away from Greenbuild with much more than can be packed into a carry-on bag. Greenbuild is bigger than LEED; it is about a future we can only obtain when we share between professions. Greenbuild 2006 will be held in Denver, Colorado, next November.

NYC GREEN BUILDING CHARTER

IN AN EFFORT TO REDUCE NEW YORK CITY’S ENERGY CONSUMPTION and the production of pollutants, the city council voted in September 2005 to amend the New York City charter in relation to green building standards for certain capital projects (those paid for in whole or in part by the City). New York now follows other municipalities such as Atlanta, Austin, Boston, Boulder, Chicago, Dallas, Los Angeles, Portland, San Diego, San Francisco, San Jose, and Seattle in adopting Leadership in Energy and Environmental Design (LEED) criteria. New section 224.1 requires compliance with green building standards and reduction in building energy costs. It features a specific addition pertaining to lighting: As of January 1, 2007, any capital project involving the installation or replacement of lighting systems in any building at an estimated construction cost of $1 million or more shall be designed and constructed to reduce energy costs by a minimum of 10 percent, as determined by the methodology prescribed in LEED energy and atmosphere Credit 1 or the New York State energy conservation code, whichever is more stringent.

Placing an emphasis on LEED standards, the addition of the new section is the council’s response to the impact of building construction on human health and the environment. As written in section 224.1, “The use of green building criteria will substantially reduce the city’s electricity consumption, air pollution, and water use, as well as improve occupant health and worker productivity, and encourage market transformation, reducing our dependence on foreign oil and allow new power plants to displace power from less efficient and dirtier existing plants.” AIL
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IALD CONFERENCE ADDRESSES ENERGY CODES AND STUDENTS

THE TRAJECTORY OF ENERGY CODES AND MOBILIZATION of the next generation of lighting designers were dominant themes at the Fifth Annual IALD Education Conference, held October 21 to 22 in Alexandria, Virginia. The conference saw double the attendance of the 2004 event held in Vancouver—with almost 200 attendees representing eight countries. In addition to 12 sessions addressing topics in two tracks (professional development, and new technology and design), activities like the second annual Lighting Cross Talk and the Town Hall Meeting, also held for the second time, encouraged interesting and productive dialogue on a range of lighting-related topics.

The Cross Talk took the form of a two-hour session in which groups of specifiers visited a manufacturer-sponsored table for 30 minutes, for a discussion moderated by the manufacturer, before changing tables. There were 12 sponsored tables.

At the Town Hall meeting, moderated by incoming IALD president Graham Phoenix, conversation focused on concerns about national energy codes—their restrictiveness and the lack of involvement by lighting professionals to date in developing the codes. Town Hall attendees called for "evidence-based standards" and "feasible and reasonable" sustainability codes. They also encouraged the organization to speak with "one voice" in advocating for appropriate standards.

The IALD Board of Directors meeting on October 23 began to address these issues, with approval of an IALD energy policy as well as the initiation of a business plan for the organization's Energy Task Force to help it better communicate with energy-policy-making bodies around the world. (See Charles Stone and Julie Blankenheim's Exchange response, page 96.) The association hopes to adopt the plan at its board meeting in January 2006.

This year, it was hard to miss the student presence, with 31 in attendance from the Bartlett School in London, the Hochschule Wismar in Germany, Parsons School of Design in New York City, and Pennsylvania State University. This was "a significantly higher number of students than in the past," noted Heather Ryndak, marketing manager for the IALD. The IALD Education Trust solicited students to attend and helped defray the costs. The conference actively incorporated the next generation of designers into its two-day agenda, with Penn State students even joining their professor, Dr. Martin Moeck, on a panel about façade engineering and lighting design. This year also saw the Students' Portfolio Showcase, a new opportunity for students to demonstrate their work for and solicit critiques from attending professionals. Next year's conference will be held in San Diego, which Ryndak hopes will draw students from West Coast schools.

IALD LAUNCHES NEW WEBSITE

THE IALD LAUNCHED A NEW WEBSITE (IALD.ORG) DURING ITS 5TH ANNUAL IALD Education Conference held this October in Alexandria, Virginia. (See "IALD Conference," above.) The purpose of the redesign was "to provide a more efficient, effective, and streamlined website that is easier to navigate," says Samantha LaFleur, an associate IALD member, who headed the website taskforce.

While the primary imperatives for the new site were aesthetic, it was equally important to redevelop the back end, making it easier to update. The new site includes an expanded search feature: "Find a Lighting Designer," which allows searching by metropolitan area. The enhanced website, explains LaFleur, "also presents a crisp, contemporary international look and has the capability to showcase design better than the old site."

Members of the IALD Website Taskforce—Faith Baum, Stefan Graf, and Mary Rushton-Beales—worked with the website redesign team, led by IALD marketing consultant Jan Stone and web developer Michael Jeongco. The site has been well received by members and non-members alike, according to LaFleur, and represents the IALD's mission to promote quality lighting design.

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ULTRALIGHTS AWARDS ARCHITECTURE STUDENTS

TUCSON-BASED MANUFACTURER ULTRALIGHTS ARCHITECTURAL LIGHTING HAS CREATED a unique program to bring the disciplines of architecture and lighting design closer together—the Ultralights Design Competition. Partnering with the University of Arizona's College of Architecture and Landscape Architecture, and the School of Architecture in Tucson, the inaugural competition was open to fourth-year students. Fifteen entries were received that smartly bridged the gap between architecture and lighting design.

Conceived by Ultralights company president Jim Restin as a means of working with and giving back to the local community, the competition also served to introduce students to the importance of lighting, the manufacturing process, and perhaps inspire students to consider lighting as a career choice. The competition program was described during the students' visit to the Ultralights facility, where they viewed the manufacturing process firsthand.

Program requirements asked students to design an ADA-compliant wall sconce or wall bracket using a compact fluorescent lamp and electronic ballast for corridors, measuring 10-feet wide by 8-feet high, of a high-end contemporary hotel in Los Angeles. Fixtures would be located alternating side to side, 15-feet on center. Budget per fixture had to fall within a range of $150 to $250.

A panel of five design, architecture, and lighting professionals judged the qualifying entries and awarded two prizes. Laren Sakota's rectangular-shaped sconce received $1,500 for first prize, Borja Gomez Martin received $500 as runner-up.

Going forward, there are no final decisions regarding whether or not the two winning entries will be put into production. Chris Bedwell, in business development at Ultralights, explains: "It was our intent to educate and encourage students about the possibility of lighting design, not to solicit designs to manufacturer.

Judges noted Sakota's "understated, yet functional design" (left), while Martin's sconce was recognized for its versatility (right).

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**1000 LIGHTS** [TASCHEN.COM]

This two-volume encyclopedia, part of Taschen’s Decorative Arts series, catalogs over 1,200 lights. Arranged chronologically by decade, these volumes document some of the most iconic luminaires of the nineteenth and twentieth centuries, up to today’s latest LED offerings. Each entry has extensive text and images. An introductory essay provides a historical overview.

**MADE OF LIGHT: THE ART OF LIGHT AND ARCHITECTURE** [BIRKHAUSER.CH]

Part theoretical essay, part history, part monograph, this compelling volume traces the work and thinking of London-based lighting architects Jonathan Spiers and Mark Major. Divided into 12 sections—source, contrast, surface, color, function, form, space, image, movement, boundary, scale, and magic—this “exploration of the illuminated world” investigates different relationships between light and architecture. By examining projects from both a historical and contemporary perspective, created in nature and the built environment, Spiers and Major challenge us to reconsider what is light and how we interact with this subtle and elegant medium.

**ULTIMATE LIGHTING DESIGN** [TENEUES.COM]

This monograph presents an overview of the work of Hervé Descottes, founder of the New York design firm L’Observatoire International. His impressive body of work that spans North America, Asia, and Europe, and a decade of collaborations with some of the world’s leading architects, produces a catalog that reminds the reader of the importance of the architecture and lighting collaboration. Photographs and drawings accompany discussion of each project. An interview with Descottes provides insight into his working process and approach to light. A|L

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LETTER TO THE EDITOR

IN RESPONSE TO THE SEPT/OCT 2005 EXCHANGE COLUMN "THE GREAT DESIGN AWARDS DEBATE":

The Exchange column on design awards in the Sept/Oct issue of A|L raises issues on the self-diminishing value of too many awards programs. The problem is that many of the presentations are worthy of awards as "eye candy," for several reasons.

Many first-rank lighting designers decline to submit their projects for awards not only due to the high cost and time involved, but because they feel they are not being judged by their peers. When the judging rules were established for the Lumen Awards many years ago, it was a requirement that at least one judge visit the finished project and report on how it compared to the presentation—and this was even before there were programs (i.e., Photoshop) that allowed for photographic enhancement, as described by Naomi Miller in her Exchange response.

Secondly there are now mandatory energy codes limiting energy use as Naomi points out. And even if there weren't, design professionals should not be giving lip service to saving the planet; we should be practicing restraint in the use of energy. Rarely do presenters give details on how they did more with less, how the lighting design meets the requirements for visual task performance, or in the case of retail installations, increased sales. Steve Margulies, in his design of the Charlotte, North Carolina, Bank of America trading floor (Sept/Oct 2005, page 40) demonstrates that watts per square foot are not as meaningful in energy conservation as watt-hours per square foot, and that controls are an essential component in design.

In her Exchange response, Carrie Knowlton pointed out that "receiving an award can be an excellent marketing opportunity." How true. On the other hand, she remarked that awards "also educate young and future lighting designers, as well as the public, about the value of lighting design." Here too, the original documentation of the Lumen Award entries required discussion of technical issues, which were emphasized in the awards presentations. That's the proper way to educate.

Ours is a profession practicing the Art and Science of Illumination, yet we don't give enough credit to the goals and accomplishments of the lighting design, other than its transitory visual appearance. There must be a set of criteria established for each award, with judges of the highest reputations, so that the awards are respected by the community, or they will gradually diminish in importance and credibility.

Willard L. Warren, PE, PC, FIESNA
WILLARD L. WARREN ASSOCIATES
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Designers Revisit Sustainability

SUSTAINABILITY. IT'S THE BUZZWORD YOU HEAR IN every conversation these days, but it is neither a new issue, nor uncomplicated in its focus. From business to politics, "environmentally friendly" is part of today's discourse. One area on which it has had great impact is the design and building industries. In fact, one could argue that it is transforming the current paradigm for architectural and lighting design practice, certainly in the United States, which in the last decade has seen the creation of the U.S. Green Building Council (1993), the American Institute of Architects Resource Guide (1992), and the cradle-to-cradle design and manufacturing process (1995).

I spoke with architect Rafael Pelli of Pelli Clark Pelli Architects in New Haven and New York; lighting designers Denise Fong of Seattle-based Candela and New York-based Matthew Tanteri of Matthew Tanteri + Associates; and R. Todd Gabbard, assistant professor at Kansas State University, to survey their opinions on sustainability and its role in design. No matter the discipline practiced—architecture, lighting design, or interior design—several themes emerge. One is a sense of responsibility, both personally and professionally, among those who incorporate sustainability into their own professional practice. Another is that sustainability has to be more than just something one "does" at work. The challenge is to use one's design background to find creative solutions to these pressing issues.

A NEW BREED OF DESIGNERS?
The fact that there are now, according to the U.S. Green Building Council (USGBC), 21,600 LEED-accredited professionals might suggest so; as recently as 2001, there were just 527. Another indicator is the number of projects currently seeking LEED certification. As of November 2005, the USGBC announced that "more than 390 million square feet and 3,000 projects have registered to become LEED-certified—including nearly 400 projects in just the past four weeks." These numbers are substantial, considering that the LEED process, from registration to certification, takes an average three to five years.

While most would agree that, sustainability is creating a new breed of designers, it is actually not that simple. Architecture and lighting have always addressed the topic; the issue now relates more to the fact that designers today have different tools and technologies available to them, which enable new approaches to an old problem. Moreover, sustainability-conscious codes and rating systems are encouraging, and in some cases demanding a more proactive approach as well. As Rafael Pelli explains, "Good designers have always looked to incorporate relevant issues. What we call sustainable now and think about as a new idea is, in many ways, the oldest of ideas. Historically, an architect had to be very involved in thinking about the positioning of a building, the access to sun, air, and water; those were the essential criteria by which you would evaluate a structure." Denise Fong echoes the point: "Designing sustainable buildings just has to be part of what we consider good design."

As Pelli suggests, what distinguishes good design and architecture is that it involves more than aesthetics. "I think sustainability is restating some basic propositions about architecture, not only in how buildings are built and the technology that is incorporated, but in the tools with which we design and analyze alternatives." The ability to engage in sustainable design requires a tremendous amount of knowledge, begging the question: How much does a designer need to know? Matthew Tanteri believes that this new breed of designer contains both generalists and specialists. "People find their place within these two groups based on the way they think," he says. "It's a certain type of person who wants to wrap their arms around the whole thing and stay with the big picture, whereas others like to focus on one thing and optimize that."

It is precisely this interdisciplinary approach to design, knowing who to bring to the project table, that Fong views as the essence of sustainability. "The big benefit to the sustainable design movement is that it is promoting cross-disciplinary work. Prior to this acknowledgement, it was very common for people to work in 'their' areas and communicate as little as possible to other team members, particularly when pressured on time, fee, and schedules." As Tanteri explains, "the ability to facilitate and engage all these parties in the whole building design process, peo-
people who might not necessarily be used to working together,” is critical.

Pelli too acknowledges the importance of collaboration. “The process of designing a building incorporates enormous specialized knowledge in a lot of different fields, and it has made architects much more dependent on input from specialists. As our ability to do more has increased, the ability for any one individual, or firm, to have complete command over all those fields of knowledge is decreased. Sustainable design is trying to reconnect across some of those disciplines in a more complete way.”

Fong believes that her interests and experience are broad enough that she can participate as a team member beyond just the realm of lighting. “At the end of the day, we all take responsibility in terms of drawing and documentation for our disciplines. It is the part that comes before the drawings, during charrettes when the big picture is discussed, that you can create synergies. That’s when we work in the broader terms of a designer. That some people would choose to be sustainable and others wouldn’t—that doesn’t make sense make sense to me.”

**SUSTAINABLE EDUCATION**

When a designer’s sustainable education should commence is up for discussion. Should there be more emphasis on it while in school? The short answer for Fong is yes; it should start in kindergarten, meaning a sustainable education begins before one enters design school. “It has to be something that permeates on a much deeper level than just what you do for a living, so that when you get to design school and focus on the built environment, sustainability becomes just another aspect of the design process.” To that end, she argues that students would be better served in their design education if an interdisciplinary connection was made at the studio level, rather than having the odd lecture here and there.

Sustainable design is only prevalent in some design curricula. “There isn’t any national criteria right now that is pushing the integration of sustainability into design education,” says R. Todd Gabppard. “Yes, LEED is a national standard, but the National Architectural Accrediting Board (NAAB), the sole agency authorized to accredit U.S. professional degree programs in architecture, isn’t telling schools sustain-

ability has to be part of the curriculum.”

Much the way students and young professionals have played a role in bringing computers and 3D visualization tools into the architectural workplace, Gabppard sees their influence on sustainability. “Students and young professionals have really taken hold of sustainability and educated themselves. Many people who are getting LEED accreditation are quite young.”

Pelli believes that schools can do more, but they cannot be looked to as the answer. "A school only has a student for three to five years; that’s a really short period of time given that this is a profession that takes decades to understand.”

**WHEN IT COMES RIGHT DOWN TO IT OUR WORK IS REALLY ALL ABOUT COMMUNICATION. IF YOU WANT TO CALL SUSTAINABILITY A MOVEMENT, I THINK THE MOVEMENT IS GOING TO MAKE THE WHOLE PRACTICE OF DESIGN MORE INTERESTING AND SATISFYING FOR THE PEOPLE WHO PARTICIPATE IN IT.” -DENISE FONG**

**PRACTICE AND RESEARCH**

One extension of the role of education is in the integration of research and professional practice. Unlike other fields where research can exist for the sake of research alone, in architecture and lighting, Gabppard points out, it has to move beyond the lab. “Research is usually applied. With the Solar Decathlon, for instance, there is research, but it’s actually in the application that it’s made manifest.”

Fong tries to integrate research into her own practice. “Showing results and putting it in a format that can be used to further educate our clients about why we are making certain recommendations and what the benefits will be—there’s not enough of it here in the United States.”

Pelli sites Northern Europe, particularly Sweden, the United Kingdom, France, and Germany, as currently driving advancements in building technologies and products. And while he believes “academia can help foster research, it cannot happen in a purely academic setting.” As he sees it, the real issue is that there is no centralized U.S. building research center, and as a result advances in building technologies in the United States are falling behind.

One step toward reclaiming a role in developing advanced building technologies might be to reconsider sustainable building features not as “extras” but “integra-

**NEXT STEPS?**

Thirty-five years since the establishment of Earth Day, first celebrated on April 22, 1970, there has been significant progress, but there is still much to be done.

“Sustainability is broadening the conversation about what good design is, and that’s healthy,” says Pelli. These designers suggest that, if sustainability is to be truly effective and successful, it has to become inherent in the processes of our everyday lives. Moreover, it should decrease cost, not increase it. “Anything that raises awareness about the whole notion of sustainability is a good thing,” says Fong. “While it’s not necessary to have a LEED accreditation to be a sustainable building, it is useful for some people. It’s a well-defined methodology that promotes a common understanding.”

Today we are at a threshold, where we must come to terms with the technology that has given us great innovations, but at a cost to our resources and climate. The industrial revolution, as Pelli sites, has enabled us to design and construct taller and larger structures that support self-sufficient and self-contained environments, thanks to artificial heating, cooling, and lighting systems. But in turn, our indoor surroundings are completely devoid of any relationship with nature. As we begin to understand the consequences of our overuse, we must decide if we will continue to accept current practices or push to find new solutions. Sustainability may still be considered a choice for some, but unless we reconsider our actions the choice will be made for us.
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THE RENZO PIANO-DESIGNED EXPANSION HAS DONE MORE THAN DOUBLE THE SIZE OF Atlanta's High Museum of Art. It has added another must-read chapter to the story of daylighting in architecture.

If a variation on a common theme exists in the museums designed by this Pritzker Prize-winning architect, it is in their formal interaction with natural light. Indeed, it is arguably the respective roof detail dedicated to managing sunlight that most distinguishes each building. For the Menil Collection in Houston, Piano's first building in the United States when it opened in 1986, the architect designed "leaf-like" modular components to control the sun. At the Beyeler Foundation in Basel, Switzerland, 900 brise-soleil panels orderly jutting from the roof plane manage harmful rays, while the recently completed Nasher Sculpture Garden in Dallas regulates its daylight with 500,000 diminutive aluminum shells.

The approach at the High, which Piano designed in collaboration with Atlanta-based Lord, Aeck, Sargent Architecture, is even more self-assured. Standing on the roof of the two new buildings—joined to the original Richard Meier-designed facility and to each other via four bridges—one gets a sense of the current momentum around daylighting, not just in Piano's designs, but architecture in general. The effect is bold. One thousand "velas" (sail in Italian, the design team's nickname for the white aluminum shields), standing 7 feet tall, strut confidently toward the downtown Atlanta skyline. Their message is clear: design around daylight is coming into its own both aesthetically and technically.

The proximity of Piano's addition to Meier's space underscores this point. An elegant structure, the 1983 building did not involve a daylighting consultant, and consequently found itself under renovation 20 years later to correct an overabundance of natural light ("Measuring Daylight," Jan/Feb 2004). The new buildings, buoyed by extensive studies and modeling, suggest a matured approach to the incorporation of this resource. Computer tests (using Radiance) and a vast array of models, from cardboard and part-scale to a full-scale mockup constructed at the High's storage facility outside of Atlanta, helped insure the plan worked on all levels, with fine-tuning into the eleventh hour. "We had an interesting condition that revealed itself in the full-scale mockup," says London-based Arfon Davies of Arup Lighting, who worked with Renzo Piano Building Workshop on both the natural and electric lighting design. (Arup Lighting was also behind the rehabilitation of the Meier structure.) On the south-east side, the "transition" panels—where the facade wraps around onto the roof—were allowing direct sunlight into the galleries during the summer; a custom frit pattern was added to the skylight glass associated with these panels to correct the problem. "We know now that 365 days a year there will be no direct light," says Marjorie Harvey, director of architectural planning and design for the High.

More telling than the technical accomplishments of the daylighting system, however, are its aesthetic presence and visual

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**PROJECT:** High Museum of Art's Wieland Pavilion and Anne Cox Chambers Wing  
**LOCATION:** Atlanta  
**ARCHITECT:** Renzo Piano Building Workshop, Genoa, Italy, in collaboration with Lord, Aeck, Sargent Architecture, Atlanta  
**LIGHTING DESIGNER:** Arup Lighting, London  
**ENGINEER:** Arup, London and New York  
**PHOTOGRAPHER:** Floto+Warner, New York, except where noted.

A total of 1,000 skylights (top)—800 on the Wieland Pavilion and 200 on the smaller Anne Cox Chambers Wing—harvest a diffuse natural light for the third-floor galleries (bottom).
After an extensive renovation to its original building to correct an excess of natural light and sunlight penetration into the galleries, the High Museum was particularly conscious of the daylighting design for its new buildings by Renzo Piano Building Workshop (RPBW). The trouble-shooting process involved an elaborate series of mockups—from a part-scale model at RPBW's office in Italy (far left), to a full-scale mockup at a location outside of Atlanta (second from left). Though often a budgetary luxury, "full-scale mockups are invaluable to understanding the quality and distribution of natural light," says Arfon Davies, an associate with Arup Lighting. On this project, the full-scale investigation helped uncover that the geometry of the "transition panel," which wraps around onto the roof, was allowing direct light into the gallery during the summer months. (An animation, second from right, shows the panels' vulnerability.) A custom frit pattern was applied to the susceptible area of the skylight glazing (far right).

The daylighting system, which is completely passive, is comprised of three elements: The "soffitto," a tubular unit constructed of glass-fiber-reinforced gypsum, diffuses and directs light from the skylight (in fabrication, above). The skylight, cut at an angle with the lowest point facing north, features low-iron glass with a low-E coating and a laminated interlayer. The white aluminum "velas," oriented due north 26 degrees off the building's axis, are the final piece (shown in construction, below). A combination of the northern orientation and reflected sunlight, bounced into the galleries off the white surface of the vela in front, helps capture the appropriate amount of light from Atlanta's sunny climate. Inside, track lighting (an iGuzzini fixture designed by Piano) supplements the natural light. The track is on two circuits: one controlled relative to the amount of daylight, and the other independently to meet the requirements of the artwork. Generally, however, the ambient illumination is generated by the sun. "It is a certain quality of light that is not often used in American museums, and a good demonstration of how natural light can be applied," says Davies. "It will encourage discussion, I think."
More telling than the technical accomplishments of the daylighting system, however, are its aesthetic presence and visual incorporation into the architecture. “The natural lighting design process was a key driver in the geometry and shape of the roof,” says Davies. “It is a true synergy between architecture and lighting design.” Indeed, subdued in most regards, the new buildings come to life on their upper floors, where the soft north light morphs with the passage of clouds and time. The ceiling, dimpled with 1,000 skylights, provides a surface as interesting as the vertical canvases of, among others, Ellsworth Kelly and Gerhard Richter. “We certainly don’t want to say that the architecture is more important than the art,” says architect Elisabetta Trezzani, of RPBW, modestly. But it certainly deserves a place in the collection.

Indeed, if there is one criticism of the space, it is that visitors cannot visually access the roof and the sculptural form of the velas. When something as simple as a skylight becomes a striking architectural detail (both inside and out), it deserves recognition as art in its own right.

EMILIE SOMMERHOFF
LESS IS MORE

A MINIMALIST APPROACH TO LIGHT SAVES ENERGY.

SUSTAINABILITY AS A WORD, AT LEAST IN ITS ARCHITECTURAL USAGE, TENDS TO BE CONSTRUCTED IN TERMS OF THE PRESERVATION OF NATURAL RESOURCES, SUCH AS A PROJECT’S ENERGY EFFICIENCY OR ITS “LOW IMPACT” ON THE NATURAL ENVIRONMENT. AS IMPORTANT AS THIS IS, THERE IS AN OFTEN-OVERLOOKED FACET TO THE CONCEPT THAT IS NO LESS ESSENTIAL—A PROJECT’S PRESERVATION, OR, MORE APTELY, IMPROVEMENT OF THE BUILT ENVIRONMENT. WHEN LICK-WILMERDING, A PRIVATE SAN FRANCISCAN HIGH SCHOOL WITH AN EMPHASIS ON ARCHITECTURE, DESIGN, AND TECHNICAL ARTS, HELD AN INVITED COMPETITION TO FIND AN ARCHITECT FOR A MUCH-NEEDED CAMPUS EXPANSION IN 2000, IT WAS PF AU ARCHITECTURE’S INNOVATIVE PLANNING SOLUTIONS, AS WELL AS THE FIRM’S DEDICATION TO THE MORE STRICTLY GREEN ASPECTS OF SUSTAINABILITY, THAT GARNERED IT THE COMMISSION.

LICK (THE SCHOOL’S ABBREVIATED NAME) HAD OUTGROWN ITS FACILITIES AND NEEDED A MODERN SHOP, EXPANDED CAFETERIA, AND ADDITIONAL SEATING FOR ITS PERFORMANCE HALL. THE DIFFICULTY WAS FINDING A PLACE TO PUT NEW BUILT SPACE ON THE ALREADY CRAMPED CAMPUS. A STRETCH OF LAWN WAS AVAILABLE, BORDERED ON THREE SIDES BY THE EXISTING THEATER AND CLASSROOM BUILDINGS, AND THE OPEN EASTERN EDGE OF THAT SPACE, WHICH ABUTTED HIGHWAY I-280. BUT BUILDING ON EITHER THE LAWN OR EASTERN EDGE THREATENED TO BLOCK AN EXPANSIVE VIEW OF THE HILLS TO THE EAST THAT WAS VALUABLE TO LICK’S STUDENTS AND THE QUALITY OF LIFE ON CAMPUS. WHILE THE OTHER FOUR COMPETING FIRMS DID JUST THAT, PF AU CAME UP WITH THE SOLUTION OF DIGGING BENEATH THE LAWN AND INSERTING A SUNKEN SHOP BUILDING THAT NOT ONLY PRESERVED CAMPUS VIEWS, BUT ACTUALLY IMPROVED VISUAL AND PHYSICAL CONNECTIVITY ON CAMPUS.

EFFICIENCY AND LIGHTING


Inventive solutions help to create architectural spaces, as well as modulate daylight and electric light, at for the progressive San Francisco Lick-Wilmerding High School. By submerging the new shop building (facing page, bottom), the architects were able to create a landscape of contrasting surfaces, from the sodded roof that provides an outdoor gathering space for students (inset), to the glass shop's signature feature—900 square feet of pho-
All exposed walls on the shop and cafeteria buildings are clad in double-glazed, low-E glass, which is both highly energy efficient and highly transparent. "The challenge," says Dwight Long, Pfau principal in charge of the project, "was how to control the natural light so that glare didn't become a problem." While this was not difficult in the shops, which predominantly admit passive light through the submerged Workyard, the east-facing cafeteria had to handle direct light all morning. To mitigate this, the architects placed a series of louvers over the curtain wall. In addition to softening direct light, the louvers also reduce heat gain on the structure and introduce a dynamic light pattern on the interior.

The approach to electric lighting, though minimal with a view toward energy efficiency, was similarly dynamic. "We applied different approaches to different spaces," says Webb. The shop was outfitted with industrial 8-foot fluorescent fixtures, each featuring six 32W T8 lamps. These were installed to direct light downward, though perforated metal reflectors provide some upward distribution as well. The fixtures were also painted silver to complement the shop's industrial aesthetic. This character was continued in the cafeteria—all interior spaces of the new construction feature exposed steel structural members and mechanical systems—although the fixtures there were chosen to introduce more of a residential feel. Uplights that feature 250W metal halide improved-color lamps produce a warm glow on the cafeteria's wood-paneled ceiling. To introduce a decorative element to the space that adhered to the modernist "less-is-more" educational philosophy of Lick, pendants with 60W halogen lamps were hung over the dining area.

The solar panels are only one part of a larger alternative energy program that Pfau Architecture is developing for Lick. At the start of 2006, the firm will begin the approval process for a series of windmills to be sited at the eastern edge of the campus, a process that the architects expect to take nine months to complete. They had also been aiming for a LEED certification for the project, but during the documents phase, the school decided not to pursue it owing to the cost of consultant work associated with the certification process. Nonetheless, Pfau Architecture has put Lick well on its way, with an efficiently and amply lit building that has done its part in sustaining the heart of the school.

**SURFACE AND SYMBOL**

All of the shop's roofs, except for one, were sodded or paved, to maintain usable open space, as well as to provide extra insulation and cut down on temperature fluctuation within the building. The exception is the roof of the glass shop, which hosts 900 square feet of photovoltaic panels. "We set the solar panels symbolically at the center of campus to get the students to appreciate the benefits of solar energy," says Long. And indeed, the panels are more of a symbolic gesture than a complete energy solution: On a good day, they produce enough energy to power the school's computer lab—about 2 to 3 percent of the overall energy usage. But the architects gave as much weight to the gesture as they could, going so far as to install a read-out display in the cafeteria that keeps students updated on how much energy the panels are generating.

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**ARCHITECTURAL LIGHTING**

The facade of the double-height cafeteria is articulated with a series of louvers placed over the curtain wall. The louvers, constructed of ipe, a sustainable Brazilian wood, reduce heat gain on the structure and introduce a dynamic light pattern on the interior. Behind the shop building sits the theater, also clad in wood, and beyond, the hills of San Francisco.
Minimal electric sources supplement the school's interior spaces, which are illuminated primarily with daylight. The shop is outfitted with industrial fluorescent fixtures (facing page, top), and metal halide uplights and halogen pendants round out the cafeteria (top). By submerging the new shop building and creating an exterior space referred to as the Workyard, Pfau Architecture allowed daylight to permeate these work areas, which otherwise would not have benefited from this type of illumination (facing page, bottom). The next phase of the school's energy-savings master plan includes a series of windmills to be sited on the eastern edge of the campus (above).
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NEW PARK WEST, CHARLOTTE, NORTH CAROLINA

CHALLENGE When architect/developer Anderson Pearson formed his one-person firm, his inaugural project was the New Park West condominiums, completed in March 2005. Sited on a corner lot, facing a busy street on one side and a quiet cul-de-sac on the other, the project presented many challenges. Among them was working with city officials and neighborhood groups to rezone the lot, from single-family to multi-family use, a process that determined much of the project's program: The units had to be family-oriented, have no less than two bedrooms each, and provide off-street parking. Pearson also hoped to create a memorable entrance to the neighborhood and make the development appear uncrowded on its half-acre lot.

ARCHITECTURAL AND LIGHTING SOLUTION The seven-unit project is comprised of two buildings connected by a one-story porte-cochere that spans the entry drive. Each three-story townhouse offers a street-facing garden, a tandem garage on the first floor, living and kitchen areas on the second, and bedrooms on the third. The rest of the neighborhood had previously been developed with condominiums; townhouses directly across the street and stacked flats fill out the rest of the cul-de-sac. "I tried to pick up on some of their elements—the cedar siding, the stain—without copying them," says Pearson. "That also introduced a visual continuity that was lacking on the street."

Perhaps the most striking visual element of New Park West is the stair tower that anchors the corner condo—the single three-bedroom unit in the project. Crowned with a glazed reading loft, the tower features a series of projecting fins that frame slotted windows. Day or night, the tower serves as a recognizable landmark, functioning as what Pearson calls a neighborhood "porch light."

Lighting plays an important role in the overall design of the exterior. Round wall sconces accent the busy street façade and provide illumination, modulating the building's massing at night, while low-voltage halogen recessed path lights mark unit entrances. This theme is continued by uplighting the porte-cochere and the trees in the entry gardens. All of the exterior lighting is placed on photocells to illuminate the site at night and provide a sense of security.

Careful detailing is not exclusive to the exterior. Pearson applied a standardized arsenal of luminaires on the interior, including recessed can-lights in the ceilings and pendants over the open-kitchen bar tops, which combine economy with elegant design. Concealed fluorescent striplights placed above the kitchen cabinets create a warm glow on the ceilings. The same luminaires are also looped behind the half-bath mirror, causing that reflective surface to seemingly float.

Charlotte is currently experiencing a condo boom, making it an easy field for developers. Nonetheless, New Park West stands as a testament to the use of imaginative design in speculative projects. Not only were all the units sold under contract before construction, but the dramatic lighting and unique architectural elements have made the townhouses favorites among tenants and the neighborhood as a whole. AARON SEWARD

DETAILS

PROJECT | New Park West Condominiums, Charlotte, North Carolina
DESIGN TEAM | Anderson Pearson Architecture, Charlotte, North Carolina (architecture and lighting)
PHOTOGRAPHER | Carolina Photo Group, Charlotte, North Carolina
TOTAL SQUARE FOOTAGE | 14,000
LIGHTING COST | $1.72 per square foot
WATTS | 55 watts per square foot
MANUFACTURERS | Cooper, Intermatic, LBL Lighting, Lumiere, Lumark, Metalux, Progress Lighting
SOLAR DECATHLON, WASHINGTON

CHALLENGE Sponsored by the United States Department of Energy as part of an effort to more completely integrate sustainable energy into mainstream society, the second Solar Decathlon, held October 7 to 15, 2005, pitted 18 student teams against one another in a battle on the Mall. Like its Olympic equivalent, the Decathlon included 10 "events," ranging from architectural merit to hot water generation. In the lighting competition, teams were required to handle both quantitative (measured) and qualitative (judged) criteria, which together comprised 100 points out of 1,100 available in the competition.

ARCHITECTURAL AND LIGHTING SOLUTION The Latin roots of the word "competition" mean "strive together," and the Solar Decathlon exemplifies that, with the communal goal of exploring residential building options that can help reduce national dependence on fossil fuels. Currently, residential buildings account for 21 percent of the energy consumed in the United States.

This event demonstrated the beauty of efficiency—not just in energy consumption, but also in the layout of living spaces that ranged from 650 to 800 square feet. In their designs, teams incorporated a role for the occupant, fostering a more active relationship between user and dwelling that allowed for continual optimization of light and heat conditions. Although full automation might have been technologically achievable, there was a philosophical notion that an intimate relationship with the building would lead to more ownership for residents. Emphasizing interactivity, the Cal-Poly team called its design "switch-rich"; it took first place in the quantitative lighting competition, and third place overall. Judges noted the house for its fully integrated design and "livability.

Teams that succeeded in the lighting category featured natural and electric lighting solutions that emerged organically from the architecture. Daylighting schemes tended to rely on more established techniques of solar orientation and shielding; however, there were several attempts toward innovation. In order to allow light penetration without excessive glare and solar gain, some teams explored translucent panels as an option. The University of Colorado team, first place overall winner, as well as Virginia Tech, winner in the Architecture and Dwelling contests, explored a low-transmission Polygal/Aerogel sandwich for their clerestories.

With electric lighting, innovation came in the form of fluorescent and LED sources. "It's one thing to put fluorescent in a box and say, 'Wow, this looks just like an office,'" says Gary Steffy, a Michigan-based lighting designer who served as one of three lighting judges. "It's another thing to make it so you don't notice." Cal-Poly satisfied this goal through its use of uplighting, notably with a T6HO Cerra Wall fixture from Peerlite.

The Virginia Tech team also received critical acclaim from the judges, winning the qualitative lighting competition. Its "clean and integrated" design included Lithonia low-profile strip fluorescents to illuminate the roof profile, and sandwiching LEDs between translucent walls, which created a nighttime glow both inside and outside the house. Many teams, including the two mentioned above, were indebted to the generosity of manufacturers, who donated products and materials.

Although by its nature the Decathlon is experimental, the hope is that the techniques developed will have a broader reach. "I think there's mass interest," says Bill Sykes, vice president for programming at the Do It Yourself network, which served as one of the primary event sponsors. "People want to believe that solar, in the right parts of the country, can be practical and cost effective." ZACHARY R. HEINEMAN

Zachary R. Heineman is an employee of Public Architecture, a San Francisco-based nonprofit dedicated to improving the built environment.
Open to the public, the Solar Decathlon on the National Mall in Washington was visited by 25,000 people during October (facing page). One pedagogical aim of the Decathlon is to integrate the architecture and engineering disciplines, to familiarize each with the considerations of the other. “Because it was a design-build process, architecture and engineering students worked together the whole time,” says Marc Miller, a student from the Cornell team, whose house (above left) received second place overall honors. The University of Colorado’s house (top) took first place overall honors. Virginia Tech’s house stands illuminated on the Mall (above right). Visitors gather in front of the Cal-Poly house (right).
HOME IS WHERE THE LIGHT IS

ALEXANDER LERVIK | BRIGHTHANDLE | BRIGHTHANDLE.COM
Using colored light as a communication tool, the fiber optic track encased within BRIGHTHANDLE's acrylic surface is green in the unlocked position. When locked, the surface changes to red. Battery operated or supplied electricity through wiring in the door, the handle can be programmed to coordinate with emergency functions, switching colors when an alarm has been activated to help designate building evacuation routes. CIRCLE 125

COLORADO VNET | TP1-1D TOUCHPAD | COLORADOVNET.COM
A cross between a touchscreen and a keypad, the TP1-1D is designed to interact with Colorado vNet’s home automation system. Reacting to commands based on the length of time that the user presses the button, the touchpad can be programmed to switch and dim lights; control drapes and fans; or activate a pre-programmed lighting scheme. A removable acrylic faceplate allows for customization of backgrounds and buttons. CIRCLE 126

ONDINE | KRYS TAL ELS | ONDINESHOWERS.COM
A combination of water, colored light, and Swarovski crystals create the Krystal Electronic Light Shower. The 12-inch-diameter showerhead, with its crystal-lined perimeter, contains 270 no-clog precision-engineered spray channels individually illuminated by fiber optics. Colored light rotates from blue to green to yellow to white, and users can stop the rotation at the color of their choice. CIRCLE 127

LUZIFER | ICON | LUZIFERLAMPS.COM
Consisting of three sheets of material, two of metal and one of natural wood veneer, the Burkhard Dämmer-designed Icon offers two perspectives—a slim view from the side and a full silhouette from the front. Almost 8 inches in diameter and just over 1 foot tall, the fixture is lamped with a 60W E27 incandescent source. CIRCLE 128
ZIA-PRIVEN DESIGN | WALLPAPER COLLECTION | ZIAPRIVEN.COM
Dauphine, Malabar, and Mimosa—a trio of luminaires in the Wallpaper Collection, a series of 12 vintage-inspired pendants and table lamps—have hand-printed wallpaper drum or cylinder shades, the largest of which has a diameter of 18 inches and is 9 inches tall. Available with a polished nickel or walnut stem, the fixtures feature shades in 10 patterns. CIRCLE 129

PROGRESS LIGHTING | HOME THEATER PACKAGE | PROGRESSLIGHTING.COM
This customizable theater package comes with controls, fixtures, and trims. A variety of housing choices are available, including step lights, wall sconces, and recessed lighting that can be programmed at the touch of a button to fade in and out at the start and end of a film. Control functions are supplied by Lutron. CIRCLE 130

LBL LIGHTING | NEPTUNE 1 | LBLLIGHTING.COM
Available with single-circuit monorail, two-circuit rail, and monopoint mounting options, the Neptune 1 mini pendant consists of a 5-inch-wide blown-glass sphere and satin nickel or bronze hardware. The shade houses a 35W lamp and is offered in amber, blue, opal (shown), and red. CIRCLE 131

SEASCAPE LAMPS | PAVLO | SEASCAPELAMPS.COM
The 29-inch-tall Pavlo table lamp has a solid oak base (shown with an ebony finish) and brushed aluminum hardware. The cotton-blend fabric shade, which measures 16 inches in diameter, diffuses a three-way 150W lamp. All luminaires are made to order and custom finishes are available. CIRCLE 132

DELTA LIGHT | QUEEN TEAK | DELTALIGHT.COM
This outdoor luminaire is just under 11 inches tall and just over 7 inches square. Its polycarbonate diffuser conceals a fluorescent lamp, whose power is provided through a connection in the ground. The fixture is available in teak or metal, and several sizes. CIRCLE 133
**D'AC | OLIVIA | DACLIGHTING.COM**

This disc-shaped wall sconce consists of sandblasted glass, an inset convex mirror, and aluminum fittings. The 12-inch-diameter glass shade extends beyond the light source, capturing and diffusing the light. The luminaire takes two 60W halogen lamps and extends approximately 3 inches from the wall. CIRCLE 134

**BOYD LIGHTING | LONDON PENDANT | BOYDLIGHTING.COM**

This pendant, inspired by London's Savoy Hotel, has a white linen shade nestled inside a black silk shade and is suspended from a hexagonal tapered stem offered in polished nickel, satin nickel (shown), antique Boyd brass, blackened brass, or gossamer gold. The London pendant is available in four sizes. CIRCLE 135

**LEUCOS | FOLD | LEUCOS.COM**

The curved satin glass of Fold, available in white, red, yellow, and blue, is set in a chrome or titanium frame. At just over 18 1/2 inches long and 7 1/2 inches high, the luminaire is also offered in pendant and ceiling-mounted versions, as well as with a perforated chrome front panel. CIRCLE 136

**RALPH REDDIG DESIGN | HORIZONTAL SLIDER LONG | REDDIGNDESIGN.COM**

The plastic guides on the front of this fixture are horizontally adjustable, allowing for variety in the quality and intensity of light. The 35-inch-wide by 14-inch-high aluminum frame holds a cast acrylic diffuser lens, concealing three incandescent lamps. CIRCLE 137

**MODISS | LOE | MODISS.COM**

The Loe floor lamp is actually suspended from the ceiling and consists of a 14-inch-diameter fabric shade and a matte aluminum base. The adjustable shade can be used to create general illumination as well as task lighting, and is available in both white mesh, and white, brown, or yellow raffia. CIRCLE 138

**ROTALIANA | EYEBALL | ROTALIANA.IT**

Eyeball, offered in both pendant and table versions, is made of a 12 1/2-inch-diameter externally etched, hand-blown opaline glass diffuser and an injection-molded, polycarbonate diffuser support, available in translucent (shown), blue, and orange. CIRCLE 139
Gallery Collection

Color and unique form bring to life the Bolero and Belzebu chandeliers from the Gallery Collection. The classical craft of Murano glassmaking and infused it with subtle contemporary profiles. Available in red, white or clear and with a complementary wall lamp. The Belzebu chandelier makes an impressive statement by grand size and bold color. At over 50 inches in width, the black glass adds a grandeur that is only possible with a piece such as this. Eurofase, your premier source for architectural lighting.

www.eurofase.com
www.archlighting.com/productinfo
CALCULATIONS PROVIDE INTERPRETIVE AND CONCRETE DATA

CALCULATIONS: THE WORD ALONE HAS A REPUTATION OF BEING BOTH UNINTERESTING and intimidating. However, lighting and its related calculations are a necessary component in any successful project, though more commonly a necessity in non-residential applications.

Generally calculations can be considered in two tiers, primary calculations (what is needed for the specific project) and secondary (what is needed to meet industry standards such as ASHRAE 90.1 and LEED). Additionally, calculations quantify light in two different ways: illuminance, ambient light measured in footcandles and watts; and luminance, the visual character of a space.

1. THE COMPLEXITY OF THE SPACE DETERMINES THE TYPE OF CALCULATION. There are several project variables that dictate the quantity and detail of the calculations necessary. The calculations required to light a fairly simple room differ greatly from those required in more complicated spaces. Cambridge-based Lam Partners principal Keith Yancey explains, "If it is a very basic geometry and simple task, we are usually just doing illumination calculations." Illuminance is the result of light reaching a surface directly and by interreflections from surrounding surfaces. There are two types of illumination calculations: The first type is used to determine how much light reaches a surface point directly from a luminous surface, and the second type is used to determine how much light reaches the same surface or point from a secondary source of light, which is, luminous by reflection.

However, the complexity of the space is directly proportional to the type and quantity of calculations needed. "When you are talking about public spaces or the exteriors of buildings like façade situations," Jeff Gerwing of Detroit-based SmithGroup notes, "then sometimes the numbers become a little less important in terms of illuminance levels. At some point, it becomes more about the perception of a space than what the numbers say." However, it is always imperative that there is enough ambient and task light in the space.

For luminance calculations, Gerwing finds it imperative to use 3D lighting analysis tools. "Not only can you get the technical information, but you can also get the actual image of what the space is going to look like. It becomes more about where the light is being placed and less about just a hard number." Of course, no program is without limitations. If designers are considering spaces with backlit elements, even 3D programs aren't always sufficient. For specific issues like this, both Yancey and Gerwing stress the importance of building physical, mockups, which have particular importance when working with daylighting.

Daylight studies for the Gwinnett Environmental and Heritage Center, designed by Lord Aeck Sargent Architects displays two types of lighting calculation studies, both rendered in Lumen Micro: the luminance of the space (above) and footcandle contours—illuminance (below).

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3. **DO MOCKUPS, ESPECIALLY WHEN CALCULATING FOR DAYLIGHT.**

"Calculating artificial light is about as easy as it gets," Gerwing explains, "because you are talking about a static system. Obviously, with daylighting, you are talking about a dynamic system that is constantly changing throughout the day. It is an unending variable." Because of this, a lighting designer cannot simply rely on one calculation for the space, as its results would only reference a specific time and day. The complexity of calculations increases tremendously with daylighting projects, although most lighting programs are sophisticated enough to derive some basic daylighting computations. Physical models, however, allow a designer to see how the daylight will interact with the room volume.

Generally, though, daylighting is not a stand-alone component of a lighting plan. Even in the most advanced daylight spaces there is a need for a supplemental electric lighting system. Yancey explains, "We are still going to design our electric lighting to a certain level when it is dark outside. Most spaces will not be used only during the day. Even in late afternoon, when you have very little daylighting, the need for electric lighting is present."

4. **INVESTIGATE SPECIAL REQUIREMENTS FOR CODE AND STANDARD COMPLIANCE.** The tension between the functional and aesthetic aspects of calculating light becomes further obvious when a project must comply with codes. Requirements for state code compliance have become more stringent in recent years. Gerwing explains how "Regulations have basically required states to lower the limits for allowable lighting power, and it is becoming a big issue in the lighting industry. It gets to the point where codes start to limit the wattage so much that you begin sacrificing aesthetics." For Gerwing, the bigger issue is always visual, solving the problem functionally in a way that retains the aesthetic intention. Sami warns of relying too heavily on the calculations that are part of the LEED daylighting credit. He explains that the LEED credit requires a daylighting factor calculation, "which honestly is not always a great solution. The daylight factor was developed for conditions in England, which are pretty cloudy. It's great if you are working in Seattle, but for most places, it's not a great thing to go by. You can do the calculation for the LEED credit, but it is always worthwhile to do the simulations in one of the [more sophisticated] programs."

Depending on the project, calculations can act as best practice guidelines or to reinforce code compliance. In either case, the process of lighting calculations provides a balance between aesthetic and functional considerations.

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Into the Limelight: Manufacturers Go Green

SALLIE MOFFAT

THE SUSTAINABILITY TRAIN IS AT THE PLATFORM AND everyone—including the lighting manufacturer—is getting on board. In the flurry to take an environmental stance, they are not only reacting to, but initiating change in, a market that is revealing a pressing need for "green" products, technologies, and business practices. But what is driving this sudden attention? And how are lighting manufacturers responding to the issue?

TAKING THE WHEEL
Several influential factors are driving lighting manufacturers' sustainable initiatives, including a combination of energy codes and regulations, new design standards, and consumer consciousness and demand.

Energy regulations, such as California's Title 24, which went into effect last October, not only ensure that energy-efficient products are being used, but encourage manufacturers to create more code-compliant goods to meet demand. Progress has been made in addressing commercial architectural lighting, and the residential lighting market is not far behind. As one of the most advanced and the few required residential energy codes, Title 24 is pushing homeowners to buy products that comply with its stringent requirements. Numerous products have already been released, with many more in development.

Regulations cited in the Leadership in Energy and Environmental Design (LEED) green building ratings system—whose requirements are based on a variety of energy codes, and stipulate compliance with IESNA 90.1-2001 as a prerequisite—are being referenced in state energy legislation, establishing LEED as a major standard. Currently, 13 states require new-construction public buildings to adhere to LEED. With energy conservation being the largest category in the increasingly influential system, efficient lighting design (as a direct and indirect contributor) has become more critical than ever. Moreover, the program's recent focus on homes (LEED-H), in the pilot test phase, and neighborhood development (LEED-ND), currently in draft, promises manufacturers another outlet for new families of efficient products.

Perhaps the most encouraging influence on manufacturers is the consumer. In a 2003 survey by the Alliance for Sustainable Built Environments (ASBE), 70 percent of American consumers said they are more likely to buy a product if they know the manufacturer uses environmentally friendly practices—a testament to the kind of market toward which customers leaning.

NO MANUFACTURER LEFT BEHIND
Today, manufacturers' commitment increasingly extends beyond their products. Company-wide "green" initiatives and operating philosophies, partnerships with federal agencies and environmental organizations, and other genuine efforts to lessen their environmental footprint are becoming a standard part of the corporate profile.

Large lighting manufacturers have dedicated entire business models to the issue, affecting every facet of the company. "Ecologic, Osram Sylvania's comprehensive initiative for both overall environmental commitment as well as a baseline for environmentally preferable products, was launched in 1996, explains environmental marketing manager Jennifer Dolin, "to address the environmental impact in our products, processes, and packaging." The number of products that now bear the Ecologic logo numbers over 800. GE has recently followed suit with Ecomagination, launched in May 2005, which encompasses all aspects of the company's numerous divisions. Through it, GE Lighting plans to significantly expand existing "green" offerings. In addition to doubling research investments in greener technologies to $1.5 billion annually by 2010, the company expects to perform upgrades to its manufacturing plants that include new energy-efficient lighting systems by 2008.

As a founding member of the U.S. Green Building Council (USGBC), the organization responsible for LEED, and part of the ASBE, Philips' sustainability policy was integral to the company's strategic thinking "far before it was popular," claims Steve Goldmacher, director of corporate communications. "We have an entire office—the Philips Corporate Sustainability Office—dedicated to just that." In 1995, Alto was introduced, establishing Philips as a pioneer in the category of low-mercury fluorescent lamps. Today, as well as EcoDesign—an initiative focusing on all phases of product design to ensure environmentally conscious procedures—Philips' manufacturing plants are audited to comply with Phillips' own sustainability cri-
teria and those of ISO 14001 environmental management system standards.

For some manufacturers, sustainability is more than an initiative; it is a founding principle. David Bergman, founder of Fire & Water, an environmentally conscious product design firm established in 1992, says, “As a practicing architect, I knew that there were limited choices in decorative eco-lighting, which designers assume means ugly color rendition and ‘tree-hugger’ granola aesthetics. My goal has been to make those assumptions obsolete.” Bill Gray founded HereThere Designs in 2001 after noticing a growing interest for sustainable products, as well as a glaring inadequacy in the market. “Customers weren’t being presented with real sustainable options. Most people talking about sustainable products are speaking in terms of twenty-five percent post-consumer recycled waste, which doesn’t address the issue.” To fill the void, Gray’s decorative luminaires are 100 percent non-toxic, sustainable, and recyclable.

LET THE SUN SHINE IN
It goes without saying that the quest for energy efficiency places an emphasis on the use of natural light. Not only a significant way to decrease power usage, daylighting, studies have shown, offers benefits for productivity and health. But the classic challenge: controlling the sun. Steps must be taken to minimize glare, maximize visible light transmission, and maintain thermal control. High-performance insulated windows, effective shading and window treatments, carefully placed reflective finishes, sensors, and controls can add up to a well-lighted space that requires minimal electric lighting during the day.

Arguably, the increase in the thoughtfully applied use of natural light is breeding a new kind of “lighting” manufacturer. Companies with product lines dedicated to harvesting and managing daylight (i.e., shading systems, louveres and light shelves, sensor and controls) are increasingly targeting the lighting specifier. Lightfair, the lighting industry’s primary U.S. tradeshow, even launched in 2003 a special set of seminars and an area of the show floor dedicated to daylighting.

REDUCE. REUSE. RECYCLE.
In the lighting industry, recycling and the use of recycled materials as a practice seems to have a ways to go. According to the Association of Lighting and Mercury Recyclers (ALMR), technologies to reclaim mercury from spent lamps and recycle them in a safe and compliant way were developed in the United States starting in 1989; however, there were few service providers. From 1990 until mid-1999, the recycling rate for mercury lamps grew to about 12 percent, and has continued to increase. Helping the number along, on July 12, 2005, New York joined Minnesota, Vermont, Maine, Connecticut, Rhode Island, California, and Florida in requiring that all commercial facilities recycle mercury-containing lamps.

But there is still much room for improvement: The Environmental Protection Agency’s Reduce, Reuse, Recycle initiative hopes to raise the national recycling rate for mercury lamps to 80 percent by 2009. In this, the agency faces a challenge; the current national recycling rate for mercury lamps is only about 24 percent. Of the poor rate, Jennifer Dolin suggests, “people tend to throw things away because they can.”

Some manufacturers are trying to make the alternatives as easy. Many company programs are tailor-made, providing the ease of convenience. Case in point: Fiberstars’ Reuse Recycle Program, established at the request of their client Whole Foods, is a comprehensive program in which the company reuses 97.1 percent of the product (by weight), recycles 2.4 percent, and responsibly disposes of the remaining .5 percent. And it could not be any easier. When a client requests a replacement lamp, Fiberstars sends out a box with a return sticker. Once the spent lamp has been received by Fiberstars, the client is sent a coupon for 10 percent off her next replacement lamp. Although the cost is 20 percent greater than the cost of procuring and assembling new materials, Ted des Enfants, vice president and general manager of Fiberstars, says, “it’s another benefit that we can bring to our customers. It’s helped our product sales and the customers’ confidence in our technology.” HereThere Designs’ luminaires are “Designed for Disassembly,” meaning that each of the constituent components can be removed and recycled independently. Although Gray has the ability to recycle the acaba fiber used for shades in-house, “all this talk of recycling is somewhat funny, since our work is designed to last forever with proper care.”

RECOGNITION BREEDS EDUCATION
Manufacturer efforts must ultimately follow consumer demand; however, “we have to educate both our clients and end users about the responsibilities and limitations that come with super-efficient lighting systems,” explains Charles Stone, president of both the IALD and Fisher Marantz Stone. Inadequate consumer information about the energy, economic, and environmentally beneficial technologies will prevent widespread usage.

Additionally, environmental organizations, and clients to increase their chances of success. Fiberstars, for example, is working with supermarket chain Albertsons and Southern California Edison to validate the energy and heat savings expected from its EFO ICE product in refrigerated cases. Many manufacturers (including Sea Gull, Progress, MaxLite, and Lithonia) have chosen to par-
participate in the Energy Star program, introduced in 1992 by the EPA. As the program's icon has appeared on more items—from air conditioners to light fixtures—consumers have gained awareness. A 2004 survey by the Consortium for Energy Efficiency found that consumer awareness of the Energy Star label had increased from 56 to 64 percent, between 2003 and 2004.

Smaller companies, such as Fire & Water, often rely on the technologies of larger manufacturers. Bergman says, "Our first two product lines were not especially green because we were waiting on the technology. I had designs 'in waiting' for the dimmable compact fluorescent technology that I knew was coming out."

**THE FUTURE LOOKS BRIGHT**

Technological breakthroughs will continue to provide more sustainable options. While the technology is not yet fully developed, many are hopeful that LEDs will eventually render traditional light sources obsolete. The Energy Policy Act authorized the Department of Energy to invest $50 million annually from 2007 to 2013 in LED research and development.

Design practices and standards also promise to evolve, as they have already. The creation of the Cradle-to-Cradle (C2C) certification program, for example, promotes the idea of self-renewing design. Conceived by architect William McDonough and chemist Michael Braungart, the program challenges cradle-to-grave manufacturing of products that end up in landfills at the end of their 'life.' Instead, McDonough and Braungart are making "cradle-to-cradle" products, whose materials are perpetually circulated in closed loops. Programs like this lend a way to police the industry, encouraging the serious to be certified. Mechoshade's recyclable EcoVeil product, for example, is in the process of receiving "Silver" certification in McDonough Braungart Design Chemistry nomenclature, and the company plans to expand its range of products for evaluation under C2C.

Of course, there is plenty of cynicism about the true breadth and depth of company sustainability claims—and perhaps for good reason. Greenwashing, the marketing of "green" initiatives when they really are not, is a documented problem. Blaming this ploy on a lack of regulation, organizations such as Canada-based Green Shift, who perform environmental assessments, are fighting back, analyzing products and "the companies behind the products" to determine whether or not they are "Genuine Green." While there is no doubt the sincerity of most manufacturers' environmental concerns, they are definitely positioning themselves to take financial advantage of the growing market. This is, after all, business. Whether touting sustainable initiatives for PR pitches, business strategies, or for the general good, does it really matter as long as the manufacturers' response is the means to a sustainable end?
Designing an open fixture? Call the people with the most significant patent since, well, his.

Meeting 2005 NEC NFPA 70 requirements was never easier.

Before you look to design or manufacture your next open-fixture lighting product, talk to Leviton. You’ll benefit from our years of experience in lampholder design. In fact, we’re the company that designed and patented the lampholder that meets 2005 NEC NFPA 70 code changes for open fixtures, because Leviton’s patented lampholders only accept shielded metal halide lamps. Today we offer a full line of medium- and mogul-base lampholders that can be incorporated into a wide variety of designs. Call us at 800-833-3532, or visit our web site at: www.leviton.com. Let us open the way to open fixtures for you.
Useful Tools: Sustainable Technology Reviewed

BY NOW, MOST NORTH AMERICAN LIGHTING PROFESSIONALS have addressed sustainability on one or more projects. Once limited to a few forward-thinking buildings, the U.S. Green Build Council's Leadership in Energy and Environmental Design (LEED) requirements have become standard criteria for most government facilities, and common on academic and healthcare projects. This is not a North American phenomenon, either: the Chinese government has opened its first LEED-certified building and pledged to follow sustainable growth for China’s future, as a matter not of social conscience so much as of pure necessity.

As with a small lighting budget, sustainable practices necessitate changes in design approach and techniques, and in the choice of products and materials. As momentum has gained around the issue, manufacturers’ offerings have improved. Today, there are a number of lighting technologies and products that make it easier to meet sustainability criteria.

BEST BULBS. For most applications, skinny fluorescent tubes rule. It is almost impossible to beat the 100+ mean lumens per watt of the latest "super" T8, T5, and T5HO lamp and ballast systems. The most recent developments include amalgam T5HO lamps, which maintain rated lumen output over a wide range of temperatures. However, for a number of applications, the efficacy of skinny tubes is now challenged by ceramic metal halide, the latest of which can achieve almost 90 mean lumens per watt, with a color rendering index (CRI) of 85 or higher. And when it comes to displaying lighting, the efficacy of ceramic metal halide sets it apart from everything else. With lamps ranging from 20 watts on up, and in a variety of envelope styles from the tiny T4 up to a brilliant PAR64, the ceramic metal halide with an electronic ballast appears to be the energy-efficient choice of now and the near future.

The benefits of compact fluorescent lamps (CFL) have been touted for years. Compact fluorescents remain a good choice for use in downlights, wallwashers, and decorative lighting. Keep in mind that CFLs are typically about 60 mean lumens per watt, so they are not quite as good as skinny tubes or high-wattage HID lamps. But for demanding aesthetic applications where long lamps do not work, CFLs are often the best choice.

Some of the more esoteric lamps are also worth considering. For example, the efficacy of induction lamps is like that of the compact fluorescent, somewhere between 50 and 60 mean lumens per watt. These sources are the king of long life (up to 100,000 hours), a worthwhile consideration in those hard-to-reach locations. Likewise, as practical white light LED lamps evolve, expect to use them more.

SUPER BALLASTS. In order to achieve the high efficacy of the latest sources, efficient ballasts are absolutely necessary. Take, for example, the "super" T8 lamp: using the efficient "super" ballast, rather than a generic electronic ballast, saves 2 to 3 watts per lamp with no change in light output. Electronic ballasts make an even bigger difference when used with HID lamps. Metal halide lamps last longer and have higher maintained lumens when operated on electronic ballasts, and the internal loss of power in the ballast is reduced. Savings are achieved by a combination of improved ballast efficiency and significantly improved lamp lumen maintenance. In typical 400W metal halide applications, power savings are over 100 watts per lamp.

EFFICIENT INDOOR LUMINAIRES. Using more efficient luminaires in conjunction with more efficacious sources is a dream combination for sustainable design. To meet this need, manufacturers have introduced a number of important products capitalizing on the latest lamps, aided by 95 percent or higher reflective specular or white surfaces, to achieve phenomenal overall lighting efficiency. For instance, it is now possible to achieve up to 85 maintained footcandles of general lighting at 1 watt per square foot using a lighting system that is an attractive improvement on the familiar fluorescent troffer. Likewise, imagine high-bay retail space, using the latest reflector technology that helps keep the luminaire clean: lighting levels of 50 to 60 maintained footcandles or more are possible at 1 watt per square foot with lamps that render colors spectacularly with CRIs ranging from 85 to 92.

Product improvements are not limited to just the standard vanilla options. Today, every manufacturer of lighting products is seeking to improve the energy performance of its product line, ranging from fabulous new American and European commercial luminaire systems that emphasize T5 and T5HO sources to a wide variety of standard and semi-custom decorative...
DIMMING AND NEW LAMP TECHNOLOGIES

GIVEN THE INCREASING
EMPHASIS ON CONTROLS AS A MEANS OF ENERGY EFFICIENCY, DIMMING IS A HIGHLY DESIRABLE
CAPABILITY. BUT UNFORTUNATELY, DIMMING IS NOT AS EASY OR UNIVERSAL AS WE WOULD LIKE IT TO
BE. HERE IS A LOOK AT CONTEMPORARY LIGHT SOURCES AND THEIR CURRENT DIMMING ISSUES:

T8  Electronic dimming ballasts are not as efficient as non-dimming, although new
efficient dimming ballasts are entering the market. Also, use only 32W lamps; the
25W, 28W and 30W energy-saving lamps are not designed for dimming.

T5H0  Some brands cannot be dimmed owing to ultra-low mercury levels, so choose
products that guarantee dimming without problems or short lamp life. Note that the
new amalgam lamps cannot be dimmed. (See “What’s an Amalgam Lamp?” right.)

T5  It is very hard to find non-DALI dimming ballasts.

CERAMIC METAL HALIDE  Metal halide lamps have warm up and restrike issues and
a limited dimming range. Dimming ballasts are available for both the 39W to 150W
class lamps and the 250W to 400W lamps. Electronic dimming ballasts are relatively
new for metal halide lamps, so choose lamp and ballast systems carefully.

LED  Most LED lighting systems can be dimmed, but due to lack of standards, do not
assume compatibility with conventional electric lighting control systems.

WHAT’S AN AMALGAM LAMP?

THE LOW-_PRESSURE MERCURY ARC IN FLUORESCENT LIGHTING IS SENSITIVE TO TEMPERATURE,
RESULTING IN SIGNIFICANTLY REDUCED LIGHT OUTPUT WHEN THE LAMP BECOMES ESPECIALLY
HOT OR COLD. FOR EXAMPLE, THE T5H0 LAMP’S RATED LIGHT OUTPUT IS ONLY ACHIEVED WHEN
OPERATED IN FREE AIR AT 35°C (ABOUT 95°F), WHEN OPERATED IN FREE AIR AT 20°C (ABOUT
68°F) OR 60°C (ABOUT 160°F), OUTPUT DROPS ABOUT 20 PERCENT. THE WORD “AMALGAM”
MEANS A COMBINATION OF MERCURY WITH ANOTHER METAL OR METALS. IN AMALGAM
LAMPS, THE USE OF OTHER METALS HELPS MAKE THE LAMP OPERATE AT OR NEAR RATED OUTPUT
OVER A WIDER TEMPERATURE RANGE. THE T5H0 AMALGAM LAMPS MAINTAINS AT LEAST 90 PER—
CENT OF RATED LIGHT OUTPUT BETWEEN 5°C AND 80°C. THE PRIMARY DRAWBACK OF AMAL—
GAM LAMPS IS POOR DIMMING OPERATION.

PENDANTS, SCONCES, AND CHANDELIERS USING EFFICACIOUS SOURCES. NEW DEVELOPMENTS
IN TRACK LIGHTING, INCLUDING POWER-LIMITING DEVICES AND LOW-WATTAGE HID, WILL REVOLU—
TIONIZE RETAIL LIGHTING TO MEET THIS NEED.

DARK SKY-FRIENDLY LIGHTING. LEED IS NOT THE
ONLY STANDARD THAT REQUIRES LIMITATIONS TO OUTDOOR LIGHTING; THERE ARE
OVER 1,000 DARK SKY ORDINANCES IN THE UNITED STATES AND CANADA, AND A NEW
MODEL LIGHTING ORDINANCE IS UNDER DEVELOP—
MENT JOINTLY BY THE IESNA AND THE INTERNATIONAL DARK-SKY ASSOCIATION.

THE NEED FOR NEW LIGHTING SYSTEMS, COMBINED WITH THE CALL FOR REPLACING THE
MAJORITY OF EXISTING OUTDOOR LIGHTING, HAS INSPIRED WHOLE NEW FAMILIES OF PRODUCTS
FOR EVERYTHING FROM STREET LIGHTING TO SIGN LIGHTS. WHILE IT IS EASY TO DESIGN CONTEM—
PORARY DARK SKY-FRIENDLY LUMINAIRES, THERE ARE NOW TRADITIONAL DESIGNS THAT RETAIN THE
HISTORIC CHARM OF ANTIQUE LIGHTING WITHOUT THROWING HUGE AMOUNTS OF LIGHT INTO THE
NIGHT SKY—OR YOUR BEDROOM WINDOW. ALSO, EXPECT TO SEE LIGHTING SYSTEMS THAT
USE VERY LOW-WATTAGE CERAMIC METAL HALIDE LAMPS, LEDS, AND OTHER SOURCES
REPLACING HIGH-WATTAGE LIGHTS IN RURAL AND SUBURBAN AREAS. IMAGINE ROADWAYS OUT—
LINED WITHLEDS OR PARKING LOTS LIGHTED AT LESS THAN 0.5 FOOTCANDLES WITH WARM,
INCANDESCENT-LIKE LIGHT.

CONTROLS: THE SECRET INGREDIENT.

BECAUSE ENERGY IS THE PRODUCT OF POWER (WATTS) AND TIME, CONTROLS HOLD THE KEY TO
ENERGY MANAGEMENT. MOTION SENSORS AND OTHER CURRENT TECHNOLOGIES ARE SO EFFECTIVE,
THEY ARE PART OF MOST ENERGY CODES. LEED GOES BEYOND JUST SAVING ENERGY, BY ACTUALLY AWARDING POINTS ON THE BASIS OF ENERGY COST SAVINGS, FORCING THE USE OF DAYLIGHTING CONTROLS AND OTHER TECHNIQUES THAT CUT LIGHTING ENERGY USE AT PEAK TIMES.

TECHNOLOGY HAS EVOLVED TO MAKE THE MOST POWERFUL CONTROL SYSTEMS USEABLE
AND COST EFFECTIVE. PLUG-AND-PLAY WIRING AND COMMUNICATIONS SYSTEMS ARE WORKING
to eliminate costly and complex hardwired analog controls, and digital programming of powerful control functions has become, at long last, a lot easier and more intuitive. As daylighting becomes a prominent part of lighting design work, specifying shading and other lighting control systems like louvers will become standard practice for lighting designers and architects. These systems must, in turn, be closely integrated with all types of electric lighting controls from daylight dimming to motion sensing. In the future, smart designs will enable the building to shed power, either when asked by the utility or, perhaps, when the price of electricity rises above an acceptable maximum rate.

ADDRESSING THE MERCURY ISSUE. LEED-EB, a recently launched rating system for existing buildings, has taken a bold new step: in addition to rewarding energy savings, LEED-EB requires building managers to record and track the use of mercury in lighting systems. This will promote retrofitting with specific products that are both energy efficient and use ultra-low levels of mercury in most lamps. Approaching work on existing buildings, designers should generally favor T5 and T8 lighting systems for indoor lighting, and (as much as I hate to say it, given its ugly yellow hue), the use of high-pressure-sodium lighting for the exterior. Eliminate mercury vapor and traditional metal halide lamps, and minimize the use of compact fluorescent systems (which tend to have a lot more mercury per lumen than the skinny tubes). Incandescents and LEDs are mercury free, but make it difficult to meet efficiency criteria.

THE FALL OUT. As sustainable design matures and designers learn to do more with less, we can expect continuing refinement and increasingly tough requirements. The reason for change is obvious, and as more of these requirements become code, our industry and its products will evolve to meet the coming challenge. Now we must develop the design skills to match.

James Benya is a professional lighting designer and principal of Benya Lighting Design in Tigard, Oregon. He serves on the editorial advisory board of AJL.
Lighting Control at a higher level

lighting control panels • occupancy sensors • daylighting controls • DALI dimming controls

From revolutionary remote-controlled automatic daylighting to personal desktop lighting control, Watt Stopper/Legrand’s lighting controls offer superior performance, flexibility, and code-compliant energy efficiency. Whether you’re looking for integrated system solutions or controls for specific applications, we can help you maximize your lighting dollars. Visit www.wattstopper.com to discover the possibilities.
As the call for more sustainable practices necessitates change in design approach and technique, lighting professionals will require new tools to achieve evolving eco-friendly criteria. Advancements in technology have increased the breadth of materials and products available. Here are a few to make your next sustainable lighting scheme a little easier.

**ALANOD | MIRO-DAYLIGHT | ALANOD.COM**
This anodized aluminum strip has a highly reflective surface for an optimal distribution of daylight. Total reflection of visible light for anodized surfaces is generally about 87 percent, but is increased to approximately 95 percent with the Miro reflection-enhancing layer. Offered in different grades of tensile strength, strips and custom solutions for all types of systems are available. Strips can be wholly or partially perforated, created in a variety of shapes, and custom painted. CIRCLE 140

**WATT STOPPER | VACANCY SENSORS | WATTSTOPPER.COM**
Compliant with California's Title 24 energy code, Watt Stopper's vacancy sensors can replace any standard wall switch. They use passive infrared technology to detect occupancy, automatically turning the lights off when a room is vacant for up to 30 minutes. Lights can also be turned on and off manually. CN, one sensor in the series, has an LED nightlight incorporated into its faceplate. Faceplates are available in white, ivory, and almond. CIRCLE 142

**GOOD EARTH LIGHTING | GLENCOE FLUSH MOUNT | GOODEARTHLIGHTING.COM**
As with numerous products by Good Earth Lighting, the Glencoe Flush Mount is recognized by the Environmental Protection Agency as an Energy Star-compliant fixture. At 15 inches in diameter, the luminaire has a brushed nickel finish and an opal diffuser, and is lamped with a SOW circline compact fluorescent, estimated to last 10,000 hours. CIRCLE 143

**LUTRON | DAYLIGHT SENSOR | LUTRON.COM**
Compatible with all Lutron control systems, the fixture-mountable Daylight Sensor allows automatic dimming of electric lights when available daylight is high, and brightening of lights when daylight is low, maintaining a specific light level throughout a space. Small and unobtrusive, the sensor is both fixture- and ceiling-mountable. Special features include low-voltage wiring and calibration for daylight sensitivity. CIRCLE 144

**NYSAN | GREENSCREEN ECO | NYSAN.COM**
The newest addition to the GreenScreen family of PVC-free solar-control fabrics, GreenScreen Eco is made of pre-stretched polyester that allows the fabric to maintain stability over large areas. With a 3 percent open weave, the fabric is available in five colors, and can be matched to any color specification. Nysan also offers customized dual coloring, in which each side of the fabric is a different color for a greater level of heat control, glare reduction, and outward visibility. CIRCLE 145
PPG INDUSTRIES | SOLARBAN 70XL | PPG.COM
Surpassing the Department of Energy's commercial building requirements of a light-to-solar-gain ratio of 1.25 or higher, and out-performing comparable products on the market, Solarban 70XL's light-to-solar-gain ratio is 2.33. The low-E glass offers a combination of solar control and visible light transmittance with a transparent, color-neutral appearance. The color-neutral glass may be combined with tinted glass. CIRCLE 146

SOLATUBE | BRIGHTEN UP SERIES | SOLATUBE.COM
These tubular skylights are available in 10- and 14-inch diameters. From an impact-resistant roof dome, with a maximum visible light transmission of 92 percent, daylight travels down a highly reflective aluminum shaft with a silver film, providing over 99 percent total reflectance. At the end of the tubing, daylight is distributed through a die-cut acrylic diffuser. Flush diffusers with a frosted finish, or curved diffusers with a prismatic finish, are available, as well as options and accessories, including a ventilation add-on kit and a Daylight Dimmer. CIRCLE 147

VISTAWALL | SOLAR ECLIPSE | VISTAWALL.COM
This sun-control product joins with curtain wall systems to shade a building's interior, reducing glare and solar heat gain. With a total projection of 24 to 36 inches, brackets, louvers, and fascias are available in several styles and shapes, which can be mixed and matched to create custom designs. CIRCLE 148

CYBERLUX | Aeon Pro | CYBERLUX.COM
This LED fixture for residential task and accent lighting produces over 55 lumens per watt, exceeding Energy Star and the 40-lumen-per-watt requirement for kitchen and bath lighting under California's Title 24. Customizable, the luminaire is available in sizes from 8 to 48 inches in black, white, and anodized nickel. Custom surface finishes and light colors are also offered. The LEDs are available in two color temperatures—3,000K and 5,000K—and light levels can be dimmed. CIRCLE 149

Xelogen xenon lamps taken to the next level

CAN BE USED IN OPEN FIXTURES
NO SHIELDING REQUIRED

Long Life - up to 20,000 hours
Dimmable - dimming does not shorten lamp life
Greater tolerance towards unstable voltage output
Virtually no UV output - safe around sensitive fabrics & materials
Filled with low pressured Xelogen gas - glass shielding not required
Lower heat output - safer and offers more flexibility in fixture design
Handling - can be installed with bare hands without affecting lamp life

Circle No. 62 or www.archlighting.com/productinfo
(626)330-8368, U.S. Toll Free 1(877)XELOGEN
sales@thhclighting.com www.xelogen.com

THHC LIGHTING
Synonymous with Quality Lighting
Since 1986
Dimming and switching solutions for convention centers

At Florida's Orange County Convention Center, facility teams save time and money by controlling over 12,000 lighting circuits — 9,000 switched and 3,000 dimmed — from a single system. Maintenance-friendly features include: 1,000,000-cycle reliability with Softswitch relays, customized eLumen control software for convenient system operation and real-time telephone control for changes to event lighting from anywhere in the new 1.3 million square-foot expansion.

Shown: Lutron GRAFIK 7000 dimming and switching panel and customized PictureIT software screen.

For more information on Lutron dimming, switching and shade control solutions, visit: www.lutron.com/al or call us toll free at 877.258.8766 ext. 221.

© 2004 Lutron Electronics Co., Inc.
It is with great pleasure that we announce the 2005 winners of Architectural Lighting Magazine’s Architect’s Choice for Excellence. The ACE.al Awards recognize manufacturers who have provided you and your projects with superior products and services. ACE ballots appeared in the April and May/June issues of Architectural Lighting. The ballots were also made available to architects at the Lightfair and AIA and conventions.

We salute all of the industry leaders, as voted by you, the readers of Architectural Lighting, for their commitment to product excellence in the areas of durability, customer service, value, and design. Innovation, customer collaboration, and superior performance are hallmarks of all winners as they strive to meet and exceed design expectation, cost criteria, and demanding deadlines. New this year, are three additional awards that recognize the Most Innovative, Most Respected, and the Most Specified lighting suppliers for 2005.

We also extend our appreciation to those who took the time to select this fine group of winners. To provide a valuable resource for you, the ACE.al Award winners will be available on our Web site—www.lightforum.com—throughout the year. Cheers, to the best in the business.

Gary Gyss
Publisher
**2005 ACE.al Award Winners**

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<th>MOST INNOVATIVE</th>
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<td>MOST RESPECTED</td>
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<tr>
<td>MOST SPECIFIED</td>
<td>Lithonia Lighting</td>
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**TOP 30 MANUFACTURERS**

| 1. Lightolier             | Halo |
| 2. Lutron Electronics    | Holophane |
| 3. Bega Lighting          | Hubbell |
| Alkco Lighting            | Hydrel |
| Artemide                  | Juno Lighting |
| Beta Lighting             | KIM Lighting |
| B-K Lighting              | Kurt Versen |
| Bruck Lighting Systems    | Lithonia Lighting |
| Color Kinetics            | Louis Poulsen Lighting |
| Cooper Lighting           | Metalux |
| Elliptipar                | Osram Sylvania |
| ERCO                      | Prescolite |
| FLOS                      | Tech Lighting, LLC |
| Focal Point               | Visa Lighting |
| GE Lighting Systems       | Zumbotel Staff |

**METHODOLOGY**

The ACE.al ballot and manufacturers list ran in the April and May/June issues of *Architectural Lighting*, each reaching the complete 25,000+ nationwide circulation. In addition, email and fax campaigns are conducted to ensure the broadest base of response. Ballots are provided and collected at Lightfair International, AIA Annual Convention, and other industry conferences. *Architectural Lighting* also does random sampling, consults with industry experts, and the list of nominated manufacturers is subject to review by an in-house publishing team.
THREE INCH.
THE NEXT EVOLUTION.

Delivering the optical performance, mechanical precision and visual comfort you have come to expect from Evolution downlights. All from an aperture less than 3" in diameter.

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Circle No. 52 or www.archlighting.com/productinfo
Industry Insight
"Timely and dependable ship dates are critical in today's competitive environment," says national sales manager Kevin Orth. "Part of Beta's mission is to respond quickly to our customer's needs as a partner in their building project. We pride ourselves on our timely and dependable ship dates. Our typical lead times on standard products are less than one week."

Beta Lighting

Beta Lighting is dedicated to providing high-quality, high-performance specification grade luminaires for both interior and exterior lighting applications at competitive prices, and in a timely manner. This allows Beta Lighting to deliver the best value to the specification market today.

Beta Lighting's luminaires are elegant, yet versatile, and provide excellent performance and reliability. Beta luminaire designs are contemporary and complement a wide variety of architectural design styles. The technical excellence designed into each luminaire solves a lighting challenge and sets standards for performance. Before a Beta luminaire is ever physically created, Beta Lighting design engineers utilize state-of-the-art design tools to ensure that products meet or exceed Beta's high performance standards. The design team also involves customers in the prototype design stage and incorporates their feedback into final designs. As a result, its designs offer performance, long-term durability, and serviceability. All luminaires are manufactured in an ISO9001:2000 certified facility in Sturtevant, Wisconsin, with predominantly die-cast aluminum housings and other primarily domestic components. Lamps and ballasts are sourced from high volume, high-quality manufacturers both inside and outside the United States. The optical design and the materials selected for luminaire reflectors ensure excellent performance and efficiencies.

Beta Lighting Specifier Reference Now Available

Beta Lighting has just introduced a Specifier Reference that contains the latest product information necessary to select and specify Beta Lighting products. The 432-page Specifier Reference is a full-color guide to Beta Lighting's complete line of luminaires. It also includes company information, lighting industry technical information and an index to the new product nomenclature and previous generation nomenclature.

For more information: (800) 236-6800; www.beta-lighting.com

Photos: Beta Lighting fixtures are specified for a variety of applications, such as corporate headquarters, collegiate athletic facilities, and accent lighted cityscapes.
AIRFOIL INSPIRATION

Where does inspiration come from? Sometimes it is simply a new way of looking at the world around us.

The new Aviator Series from Beta Lighting is exhilarating in its dayform, versatile in its function and exceptional in its performance.

While the Aviator’s engaging aesthetics complement and blend with virtually any environment, it is the uncompromising performance and unique engineering for easy installation and maintenance that warrant your interest.

For more detailed information, call us or visit the Beta Lighting website.

(800) 236-6800  ·  www.beta-lighting.com

© 2004 Beta Lighting Inc.
Industry Insight

"Good is the enemy of great," says Ron Naus, Executive Vice President at B-K Lighting and Telllumination. "We spend each day working to make a great product for our customers. This simple idea inspires us to continually improve every aspect of our business. We know there are many choices available and we do not want our customers to have to settle for good."

In 2005, B-K Lighting continued to enhance its position as a key industry innovator with the introduction of several new products. "At Lightfair in New York, we introduced the award-winning Mini Micro Series, an entire family of products that utilize two new lamp sources—an axial reflector halogen lamp from Sylvania and a solid state LED package with an integral driver," said Ron Naus, executive vice president for B-K Lighting. "Reducing scale to a functional, 1-inch-diameter product earned us a coveted New Product Showcase Award for the series," Naus continued.

In addition, B-K Lighting introduced ICEE, a patent-pending solution that significantly reduces the lens temperature for its in-grade products. "The industry's answer has been ineffective at addressing this issue," said Naus. "ICEE incorporates our patented ACV (Anti-Condensation) Valve system to eliminate air from the sealed chamber, which permits 90 percent lumen efficiency and full biaxial lamp control," he said. ICEE is available on B-K Lighting's Tenaya2™ and Precision2™ luminaires.

B-K Lighting also completed its acquisition of Teka Illumination in September. "Teka adds a new level to our capabilities," said Naus. "Most importantly, it gives the design professional new flexibility, addressing both standard and custom lighting challenges which will in turn drive our business," he concluded.

Quality, service, innovation, and value all add up to make B-K Lighting a top choice in outdoor architectural and landscape lighting.

For more information: (559) 438-5800; www.bklighting.com; www.teka-illumination.com

Photos: Ceramic metal halide Sign Stars™ highlight B-K Lighting's exterior; (top right) a Mini Micro floodlight; (bottom right) the patent-pending ICEE system for lens temperature reduction.
Industry Insight

"At Focal Point, we believe the development of outstanding new product designs is the lifeblood of our business, and we're devoting significant resources inside and outside the company to assure the success of this ongoing effort," says Christopher Thornton, president of Focal Point. "We're excited as to what lies ahead in the new year while continuing to service the needs of our customers."

Focal Point

The Art of Light® is what drives us. More than a tag-line, it expresses what Focal Point wants to do—bring artistry to the North American Lighting market. And innovative product design is only part of the story. This award-winning company continually works on new ways to develop its conviction to The Art of Light®. By collaborating with outside design firms, specifiers, and architects, Focal Point generates a wide number of new product ideas for consideration. Some of its newest luminaires—Avenue, twelve, and Apollo—are a direct result of the open dialog they have with the lighting industry and how they're committed to solving today's unique requirements.

Equally vital is how Focal Point brings products to market, and how well the company services specifiers, contractors, and customers in the process. Because of the firm's significant investments in space, equipment, efficient warehousing, and distribution—and access to low-cost materials—Focal Point is able to offer some of the world's finest architectural lighting luminaires at affordable price points.

Focal Point is committed to sustainable product design and manufacturing procedures. Continually striving to improve these procedures has been a commitment that began with the founding of the company, more than 10 years ago. Its commitment to the environment is a key component to its manufacturing philosophy—to be a responsible steward of limited natural resources while employing the latest manufacturing technologies to optimize efficiencies.

2006 promises to be an exciting year for Focal Point. Its new hardback catalog, now at 400 pages, exemplifies the company's level of commitment to bringing the absolute best product to its customers. Focal Point continues to grow in new directions while maintaining its commitment to The Art of Light®.

For more information: (773) 247-9494; www.focalpointlights.com

Photos: Sky Harbor Int'l Airport, Phoenix, Mark Boisclair Photography; (top right) Reception area, Chicago; (bottom right) Open office, Chicago; inset photos by Craig Dugan, Hedrich Blessing.
Holophane

Holophane, a visionary leader in innovative optical design and provider of lighting systems for commercial, industrial, emergency, and outdoor applications for over 107 years, has once again taken innovation and glass manufacturing design to new heights. 2005 marks the unveiling of a bevy of new Holophane product innovations, earmarked both for indoor and outdoor lighting applications.

Holophane's newest introduction, ISD SuperGlass™, or Ideal Synergetic Distribution, is a revolutionary scientific advancement in optical design, thanks to two new reflector designs. With ISD SuperGlass reflectors, the entire Spacing and Mounting Height Ratios (SMHR) are covered with only two reflectors. The new ISDs were developed by Holophane scientists to perform over an expanded range of SMHR's without adjusting the optimized light centers, resulting in 28 percent more efficiency and up to 59 percent energy savings.

Also on the indoor front, Holophane is pleased to introduce a new line of Fluorescent Highbays, the IntelliVue™ and IntelliBay™ with its new patented P.O.L.A.R.™ Technology. P.O.L.A.R., or Passively Optimized Lumen output with Automated Regulation, is a revolutionary passive thermal management system that reduces fluorescent lamp temperature sensitivity over a wide range of room temperatures. Increased illumination levels make it possible for fewer fixtures to light up a given area.

Holophane also introduced two new aesthetically pleasing outdoor product lines in 2005. The Pechina™, a contemporary new entry from Holophane Designer's Group Outdoor, is designed with strong mechanical attributes, and a natural fit for roadway and large-area applications. The MetroVue™ is positioned as a transitional product targeted for bouquet and area lighting applications. Transitional, a new category from Holophane, adds elegance to urban settings where site architecture shifts from historical to modern.

For more information: www.holophane.com
Introducing
ISD SuperGlass™
A Revolutionary Scientific Advancement in Optical Design

- Up to 28% More Efficient Than Any Other Reflector!
- Up to 59% Energy Savings!
- Unbeatable Savings on Installation and Maintenance
- Two Reflectors Do It All!

For more information on how you can experience lighting's best visit our web site at holophane.com

or contact your local Holophane factory sales representative, call (740) 345-9631 or write to Holophane, 214 Oakwood Ave, Newark, Ohio 43055.
Lithonia Lighting

Lithonia Lighting, one of North America's largest manufacturers of lighting equipment, has created a fixture that may very well be one of the industry's most significant advancements in fluorescent lighting. The new fluorescent recessed lighting fixture has been designed to replace standard parabolics with a softer, more comfortable light while using less energy.

RT5™ Volumetric Recessed Lighting uniformly illuminates the entire volume of the space, eliminating harsh shadows, dark walls, and the "cave effect" arising from the sharp cutoff of parabolics. In addition, the new lighting system uses up to 33 percent less energy than a standard parabolic fixture. According to Gary Trott, director of product development for Lithonia Lighting's Fluorescent Group, RT5 delivers high-quality lighting that fills a space with the right amount of light. Plus, the fixture's high efficiency can easily accommodate stringent energy regulations such as California's Title 24, ASHRAE 90.1, and IECC.

What’s the secret behind the fixture’s high efficiency? A unique lamp/ballast combination is key. The advanced T5 lamp provides the industry's highest efficiency than standard T5 or T8 lamps. The ballast includes end-of-life sensing and stepped switching bi-level output. This combination helps make the RT5 system the first to achieve up to 100 lumens per watt. No dark spots with RT5, either. While parabolic lighting delivers light primarily to the workplane and avoids sending light into the glare zone, RT5 Volumetric Recessed Lighting provides an even distribution of soft light, eliminating harsh overhead light or the dark spots associated with parabolics. RT5 is an ideal solution for offices, hospitals, retail stores, and other open-plan areas. The fixtures are available in 2'x4', 2'x2', and 1'x4' configurations.

For more information: (800) 858-7763; www.lithonia.com/RT5

Photo: RT5 Volumetric Recessed Lighting creates a well-luminated environment that is both soft and comfortable.
You’ve filled the space with great ideas. Now fill it with light. 

INTRODUCING RT5 VOLUMETRIC RECESSED LIGHTING. The new standard in recessed fluorescent lighting that’s superior to all others. With its innovative luminaire design, RT5 fills the entire volume of space with soft light. So every wall, work surface, and face is comfortably and evenly lit. Helping to create an environment that’s both pleasing to the eyes and a pleasure to work in. Choose RT5. And get a lighting fixture that not only delivers light, it delivers visual harmony while providing up to 33% savings in energy. Contact your Lithonia sales representative or visit our website to learn more. RT5. ENHANCE YOUR ENVIRONMENT.

LITHONIA LIGHTING
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www.lithonia.com/RT5 | 1-800-858-7763

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EXPERIENCE VOLUMETRIC LIGHTING AT AN RT5 DEMO ROOM! VISIT LITHONIA.COM FOR THE NEAREST LOCATION
Prescolite

Prescolite, an innovator and leader in recessed, surface, and track lighting, has been designing solutions for its customers throughout its 60-year history. Founders Pres Jones and Wally Runswick focused on developing cutting-edge products and providing superior customer service. The combination proved to be a winning strategy. Early successes include the design of the first downlight with a pre-wired junction box in 1944; the first indoor HID downlight in 1966; the first compact fluorescent recessed downlight in the U.S. in 1982, and the first multi-volt, multi-watt "intelligent" electronic ballast in 1992.

Now a part of Hubbell Lighting, Inc., Prescolite is committed to manufacturing excellence and exceeding customer expectations. Training programs, informative literature, and expert representatives support the company goal of being a leading industry provider of downlighting, track, and surface products.

With luminaires to satisfy even the most demanding applications, Prescolite continues to deliver new products into the marketplace. Whether a commercial contract calls for a large variety of fixtures, or a contractor needs a specific solution for a design/build or residential project, Prescolite provides many high-quality, flexible options.

With more than 800 products available to ship within 24 hours, Prescolite has created a handy Express Pocket Catalog to showcase this valuable service program. This catalog includes ordering instructions and examples, product dimensions, lamp information, application advice, and a convenient index.

Headquartered in Spartanburg, South Carolina, Prescolite markets its products through independent manufacturer's representatives in the United States, Canada, and internationally.

For more information: www.prescolite.com; (864) 599-6059.

Industry Insight

"Today, Prescolite is more active than ever, introducing products at an astonishing pace. We are known for our ease of doing business, as well. As a company, we believe in offering the most advanced services to our customers and forging partnerships based on personalized programs combined with experienced personnel, dependable support, and custom services."
Walk the well-lit path to innovation with Prescolite’s LED cylinders. The new LD4 family provides a new solution to achieve illumination patterns on vertical surfaces and paths of egress. Developed based on LED technology, Prescolite specification grade LD4 cylinders are suitable for a wide variety of applications, including building exterior, column, and corridor illumination where maintenance costs are of primary concern. To learn more about Prescolite’s innovative 4” LED cylinders, visit www.prescolite.com or call 888-PRS-4TEC.
Top 30 Manufacturer

Tech Lighting, LLC

Since 1988, Tech Lighting has been the premier choice of architects, lighting designers, interior designers, and homeowners who seek the best in architectural lighting systems. Headquartered outside of Chicago, Tech Lighting is known for combining precision design and high-quality materials to create beautiful, functional lighting. Tech Lighting systems, such as MonoRail, Kable Lite, TwinRail, and FreeJack can be found in lighting showrooms and through sales representatives across North America.

T-trak is the first hand-bendable, line-voltage track lighting system and winner of the Lightfair 2003 Design Excellence Award for most innovative new product. Designed for retail, commercial, and residential applications, T-trak offers architects and designers complete flexibility. It is one of the most complete track system solutions in the market today. T-trak highlights for 2005 include:

- Three new line-voltage heads featuring both ceramic metal halide and incandescent lamping
- Seven new 2thousand degrees™ pendants to stylize and enhance the T-trak aesthetic
- New white powder coat finish that blends seamlessly with a white ceiling

For its low-voltage product offering, Tech Lighting has looked beyond glass to make a design statement with indoor lighting fixtures. MonoRail is already a recognized leader in low-voltage lighting systems, and Tech Lighting has extended its portfolio of cutting-edge products with a line of stylish fixtures that incorporates unexpected materials like silk, paper, ceramics, and concrete. "There are only so many ways to enhance metal or glass, and most of it has been done before. We want our customers to be excited about the products we provide and the ones we continue to create. The designs should leave customers feeling inspired," says Steve Harriott, vice president of sales and marketing.

For more information: (800) 522-5315; www.techlighting.com

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For more information: (800) 522-5315; www.techlighting.com

Industry Insight

"Our latest T-trak™ addition was the launch of a new white powder coat finish that blends with white ceilings, and will not crack when bent by hand," offers Steve Harriott, Vice President of Sales and Marketing. "For our low-voltage systems like MonoRail, we have looked beyond the world of glass and launched a line of fixtures that turn unexpected materials into stunning lighting designs. It's a great way to consistently offer something new."
Winner of the Lightfair Design Excellence Award

The revolutionary design features a satin nickel finish that can be curved in the field to form practically any shape. Complete with powerful and versatile illumination options, including incandescent and ceramic metal halide lamp configurations for heads and a host of decorative pendant designs. Now available in a white finish.

F-trak — it's track lighting with a twist.
The specification landscape need not be barren. While others focus on market share, we focus on customers. While others focus on cost, we focus on value. While others focus on products, we focus on solutions.

One brand rises above the rest.

Prescolite
Taking you Above and Beyond.

www.prescolite.com
### The Brighton Collection

The Brighton Collection is a manufacturer of traditional lighting. The only thing traditional about our lighting is that it is made the traditional way, otherwise our fixtures embrace modernity and the dramatic, sculptural lighting designs, with very dramatic, artistic forms, we offer an extensive selection of pendant, coves, and table lamps. Materials include high-quality cast aluminum, American art glass, wrought iron, bronze, and faux metal finishes. Derek Marshall offers excellent choices for residential, contract, and hospitality applications. UK approved, AEA compliant. Full catalog at www.derekmarshall.com.

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<td>Sandwich, NH 02727</td>
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### Design Elements

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<tr>
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Despite the technological prowess exhibited at every turn... Despite the keen intellectual discussion...

In the final analysis, it's still one of these that turns on in your head.

The world's leaders and innovators at LIGHTCongress 2006.

Once again the leaders of the lighting industry will converge at the fourth annual LIGHTCongress to discuss, debate and explore the technologies and issues facing the future of our industry. Be the first to see new products and technologies on display from the world's leading manufacturers and participate in our open forum panel discussions. Discussion topics will include Lighting, Daylighting and Daylighting Technologies, and Innovations and Designs.

Who's coming to LIGHTCongress 2006?

Panels for the 2006 forum are assembling now, led by keynote speaker Jim Benya, renowned lighting designer and a leading authority on Daylighting. Last year's panelists, moderators and exhibitors included: SYLVANIA, CeeLite, Lamina Ceramics, Color Kinetics, Philips, OSRAM Opto Semiconductors and others. In addition, the event was covered by over 75 reporters and writers from key media outlets.

Why should you attend?

As thery an invitation-only event, LIGHTCongress is open to all who want a window, and a jumpstart, into the latest innovations and technological advances. And, for the first time, qualified attendees can earn continuing education credits for their participation.

To reserve your seat, contact dana@greystonepartners.net

For advertising and exhibitor information contact:
Gary Gyss, AL Publisher, 646.654.5756
(East Coast) Cliff Smith, 646.654.4478
(West Coast) Meegan Coldwells, 626.577.0021

For sponsorships and speaking opportunities contact:
Jeff Johnston, GreystonePartners 845.223.1950 ext. 225

www.lightcongress.com
The Brighton Collection

The Brighton Collection is a manufacturer of traditional lighting; however, the only traditional thing about our lighting is that it is made in a traditional way. Otherwise, our fixtures also embrace contemporary designs. While our strength is in creating unique designs for high-volume hospitality trade, we also have a wide range of product lines readily available for instant delivery for architects and designers. For more information, e-mail: us@brightoncollection.com, call 973.598.1580, or fax 973.598.1583. CIRCLE 161

Cooper Lighting

Add a truly unique touch in both commercial and residential spaces with Halo Lighting's new handmade-glass Art Glass Collection. Offered in four styles, in small and large sizes, and with a variety of lamp types and wattages, the pendants can be mounted directly to Halo's new Architectural Flexible Track System or to existing Halo and Linea systems, or canopy mounted directly to the ceiling. www.cooperlighting.com. CIRCLE 162
Crestron

Crestron is an industry leader in commercial and residential lighting control and automation solutions, including the award-winning iLux multi-zone lighting and shade controller; the revolutionary infiNET wireless mesh network dimmers, perfect for MDU and retrofit applications; and the designer Cameo keypads, 75% smaller than Decora keypads, and that control lighting, HVAC, and AV systems.

CIRCLE 163

First Source

First Source, available as a printed desk reference as well as online, is an integrated building product information system. First Source delivers objective manufacturer’s product selection and specification information to industry professionals in the formats they prefer. SPECDATA and MANU-SPEC are additional products that allow users to customize, organize, and compare data and specifications to find exactly what they need. Visit www.ReedFirstSource.com, or call 770.209.4902 for more information. CIRCLE 166

Eclipse Lighting

Designer and manufacturer of award-winning indoor/outdoor architectural sconces, decorative and vandal-resistant fixtures using the latest technology in fluorescent, HID, and induction lamps. We carry a variety of sizes and styles adaptable to custom needs. Many of our fixtures exceed guidelines in light distribution (dark sky) and safety standards (ADA). Eclipse Lighting is located in Schiller Park, Illinois. For customer service, e-mail Eileen at Eileen@eclipselightinginc.com; for quotes, e-mail Jason at quotes@eclipselightinginc.com; call 847.260.0333; or fax 847.260.0344. CIRCLE 164

Jesco

The Jesco Quick Adapt System is all about design flexibility—the ability to take the same element and carry the theme throughout a variety of applications. The functional and contemporary Pendant and Spot Light designs adapt to the Monorail System, the Mono/Multipoint System, as well as the Standard Track System, with complementing Wall Ensembles. CIRCLE 167

Electrix

Electrix manufactures a wide range of performance cove systems to efficiently drive illumination across walls and ceilings. Our AX series was designed around T5 fluorescent lamp technology with an asymmetric extruded aluminum reflector that adjusts 35 degrees. This series has a compact fixture design of 3 inches high by 5 inches wide. Electrix also offers a complete line of field curveable, linear, and ramped cove lighting products for architectural applications.

CIRCLE 165

Lighting Analysts

Using the AGI32 software, you will advance your lighting evaluations beyond numerical calculation and into the realm of physically based visualization. AGI32 can tackle lighting verification for virtually any project with a variety of graphical techniques from basic mass modeling to pseudocolor and stunningly realistic imagery. See it at www.agi32.com. CIRCLE 168
**Phoster Lighting**

Super bright and super slight, available in 1W, 3W, and 7W configurations (12W, 24W, and 36W coming in Q1 2006), PLE6 provides up to 90% savings on electrical costs in a 2 1/2 x 2 x 3-inch package. Available in numerous degrees of optical spreads, PLE6 outperforms all other directed light sources in accent, spotting, directed, and ambient lighting applications. Warm white and cool white are standard; additional color temperatures are available upon request. Robust, due to its proprietary thermal and power management designs, PLE6 comes with a guarantee for zero maintenance over five years. Installation attachments allow for easy set up, indoor and outdoor, ceiling or floor, and for concrete, gip rock, and ply wood. CIRCLE 169

**Semper-Fi**

Semper Fi Power Supply manufactures UL-listed indoor and outdoor remote transformers that ensure no noise, no maintenance, and full light output. Indoor units can be recessed into an insulated wall with up to eight transformers in an enclosure. Outdoor transformers include above-grade stainless or DIRECT burial. CIRCLE 172

**Primelite**

Sign Lights by Primelite, a wide assortment of arm bends. Available in HID, PL, or incandescent, all of our interchangeable gooseneck arms and heads are sold separately, made of 100% aluminum parts, and painted with a virtually indestructible powder resin, baked for a high-quality finish. Available in 22 standard colors, custom colors are available. Primelite offers an entire line of decorative outdoor and indoor fixtures made in the USA. All cataloged fixtures can be constructed to your own unique design. Call us at 516.868.4411, 800.327.7583, or visit us online at Primelite-MFG.com. CIRCLE 170

**Tech Lighting**

All T-trak components and elements are now available in white. This new finish provides designers with an opportunity to capitalize on T-trak's versatility, while blending seamlessly with a white ceiling. Available options include incandescent, ceramic metal halide, and fluorescent lamp configurations for heads and a host of decorative pendants. Perfect for even the most demanding retail environment. For more information, call 800.522.5315 or visit techlighting.com. CIRCLE 173

**Selux**

SonneLITER offers breakthrough technology with the first photovoltaic luminaire that can run a 35W T6 metal halide lamp from a 24V direct current supply. Received "Selection" award in IESNA 2005 product report. Please visit the "SonneLITER" section in Products/Exterior at www.selux.com/usa or call 800.735.8927 for more details. CIRCLE 171

**THHC**

Introducing the new 120V Xelogen Series in E11 mini-can, E12 candelabra, and BA15D double-contact bayonet bases. These line-voltage lamps are ideal for applications where compact appearance is desired without the requirement of a low-voltage transformer. The Xelogen 120V series comes in 35W, 50W, and 75W with clear and frosted finishes. Lamp color temperature is 2900K with an average life of 5,000 hours. In addition, 120V Xelogen are cooler than a halogen lamp, emit virtually no UV rays, and can be utilized in open fixtures. Please visit www.xelogen.com or call 877.Xelogen. CIRCLE 174
PRODUCT MANAGER

W.A.C. Lighting is seeking a Product Manager to oversee the firm's Product Research and Development and Engineering teams, as well as its many design consultants. The manager will coordinate product design and value engineering efforts with W.A.C. Lighting's teams in Garden City, NY headquarters, the firm's west coast operations in California, and in the company owned, ISO 9001-certified manufacturing facilities and offices in China. This executive will also be in-charge of new product development for new and existing markets, and upgrading the firm's current lines of track, recessed, pendants, undercabinet and monorail lighting.

Qualifications
• 3-4 years product design experience in the lighting industry
• Bachelor Degree from Art or lighting design school helpful
• Knowledge of AutoCAD or drafting is helpful
• Proven creative ability with attention to recent market trends
• Working knowledge of production flow
• Proven ability to effectively manage multiple responsibilities
• Effective managerial skills
• Proven verbal and written communication and interpersonal skills. Bi-lingual in Chinese and English, both in written and verbal form is a plus

For immediate consideration, please e-mail your resume to: hr@waclighting.com. Please note salary history on your cover page. Given the high volume of responses, only qualified candidates will be contacted. W.A.C. Lighting is an Equal Opportunity Employer. M/F/D/V encouraged to apply.

LIGHTING DESIGNER

Prominent NY architectural lighting design firm is looking for highly motivated, talented designers. Our projects are diverse, global and challenging. Our staff is obsessed with the delivery of great illumination. Applicants are to be fluent in graphic programs and have a US Passport or Green Card. Please email to info@fmsp.com

LIGHTING DESIGNER/PROJECT MANAGER

Seeking architectural lighting designer with 2+ years experience, proficiency in AutoCAD and AGI32. Must have designed lighting for a variety of project types, and be capable of managing multiple design projects and coordinating with clients. Effective writing and hand drawing/sketching skills a must. Degree in Lighting, Architecture, or A/E, and NCQLP certification preferred.

Lam Partners Inc is based in Cambridge, Massachusetts and provides great opportunities for motivated individuals to take responsibility for challenging design projects in a highly collaborative, demanding, but non-authoritarian setting. Visit us at www.lampartners.com. Contact glennh@lampartners.com.
Getting the Green Light

How has sustainability impacted the design process? Do energy codes, LEED ratings, and materials recycling really foster more sustainable design? Could lighting design play a greater role than other building elements in promoting sustainability?

This month, we are excited to say, there were too many responses to print. Please visit archlighting.com for additional industry perspectives.

Charles Stone, iald President, Principal | Fisher Marantz Stone
Julie Blankenheim, Associate IALD, Senior Designer | Ida, Chicago

The growing emphasis in every project on sustainability efforts, energy-code compliance, LEED ratings, and materials recycling is having a significant impact on the lighting design process. The IALD Energy Task Force was created this January to determine how the organization can present a united front on these issues.

The importance of this topic was demonstrated by the spirited discussion during the October 22 Town Hall Meeting at the 5th Annual IALD Education Conference. Common refrains heard during the meeting include recommending an “evidence-based standard” to establish “feasible and reasonable” sustainability codes, and speaking with one voice to advocate “achievable” energy limits. The IALD has pledged to take a leading role in promoting best practices in energy and sustainability, and its Board of Directors approved an energy policy during an October 23 meeting. The IALD Energy Task Force is now working on a business plan—to be adopted at the January 2006 board meeting—outlining attainable, measurable, and affordable ways for the IALD to communicate with energy and sustainability policy-making bodies in the U.S. and worldwide.

This challenge calls for funding to enable professional lighting designers to conduct detailed analyses and widen their representation and guidance on the committees of other organizations that are developing codes, standards, and rating systems affecting lighting. Initial programs approved during the board meeting include power-density case studies, evidence-based design, lighting controls, and LEED advisory participation. Ultimately, the task force’s work will establish a unified voice for the IALD. As a unified voice, the necessary expertise of the lighting design community will be more respected, credible, and effective.

Anica LANDRENEAU, Development Mgr. | Center for Clean Air Policy

As natural lighting plays an increasingly pivotal role, not only in the energy performance of a building, but in its indoor environmental quality, lighting design is becoming more important to substantive architecture. Lighting must achieve balance and harmony with both its electrical and natural components; lighting design is increasingly a matter of where glazing will occur or if light shelves will be used. Energy codes and green building rating systems may require less energy usage, but they also invite innovative solutions to bringing light into a space in more beautiful and poetic ways. As one of the more visible components of energy-efficient design, the way light enters and moves through a building may be the best calling card for sustainability.

Ann reo, President | Id Lighting

Lighting design should definitely play a greater role in sustainable design. One could argue that poorly conceived and executed lighting systems need more maintenance than HVAC systems. I am sure there is a plethora of building owners/managers that would agree! Sustainable lighting means nothing if it’s not designed for people. Lighting professionals understand and design with this in mind. The good and bad news is the extensive array of lamps, fixtures, and controls available; it is very difficult for architects and interior designers to understand whether one solution is more sustainable than another without knowing how to read the technical data associated with the product. With that said, I believe that a building should not be deemed “sustainable” without having an IALD member responsible for the lighting. Designing quality sustainable lighting systems not only requires a good understanding of lamp technology, light fixture construction, luminaire optical performance, and lighting control methods, it also requires a keen understanding of how to create a performance-based lighting system for people!

Charles Cameron, Partner | LucE Group

Concern for sustainability is creeping slowly into the design process, but too often it is merely window dressing. In the worst cases, making a project “green” is an excuse to neglect other facets of the design. Alternately, when aesthetics are primary, there is an assumption that the environmental impact can be disregarded. Both of these approaches are irresponsible. Environmental impact must become a fundamental concern of how we design and an equal facet with aesthetics, user needs, maintenance, and capital cost. This requires lighting designers to go beyond government regulations and LEED standards, as well as work to improve these codes. As lighting is a major component of the energy used in buildings, we are irresponsible to do otherwise.

Martin Moeck, Asst. Professor | Pennsylvania State University

Sustainability has impacted the design process by lowering power-density levels and shifting attention to lamps and reflectors with higher efficiency and less mercury content. Daylighting has really not changed, because engineers don’t have the tools to determine annual daylight levels. Energy codes, LEED ratings, and materials recycling don’t really foster more sustainable design, because only a handful of firms have experience in extensive energy modeling of combined heating, cooling, and lighting, as well as the optimization of façade shape and elements. There are cases where building energy loads have gone up after remodeling to fulfill LEED requirements (i.e., the Seattle Municipal Building). And, no, lighting design cannot play a greater role in promoting sustainable design. It is building insulation that is required. Building air leakage is another problem, and inefficient building cooling. Building shape is another issue, and architects are not trained to optimize it.

Meg Smith, Sustainable Design Specialist | LightOuEr

Sustainable approaches to the built environment can only be considered a positive development; however, there is a “dark side” which should be acknowledged. Energy-code compliance constraints challenge the lighting designer’s ability to deliver an aesthetically pleasing environment that meets task requirements and responds to the “human factors” emphasized in sustainable guidelines. Fortunately, technological advances provide flexibility to help the design professional maximize energy savings, optimize the performance of the lighting design, and enhance the visual environment; all while meeting sustainable criteria.
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