

# AL

architectural lighting

## COLOR CONTROL

TRANSFORMS A SEOUL SHOPPING CENTER

PLUS

CITY LIGHTS COMPETITION WINNERS  
HEALTHCARE DESIGN FOCUS

JAN/FEB 2005

ENR BUSINESS PUBLICATIONS USA

U.S. \$7.00



**If you think you  
can't leap at new  
opportunities safely,  
*think again.***

WIRING SYSTEMS

LIGHTING

POWER SYSTEMS

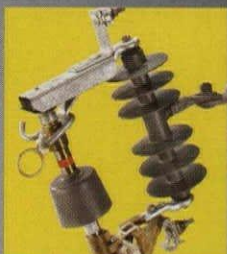
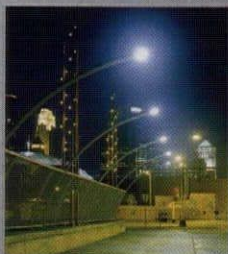
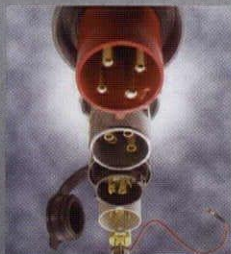




“No guts, no glory.” So the saying goes. And it certainly has some application in business. But when it comes to choosing electrical products, your safe choice can also be a progressive one – with Hubbell. Sure, we’re the name you know and trust for staunchly reliable products. But now there’s another side. We’re growing. We’re pushing ahead, launching new products at an increasing rate, with revamped manufacturing that’s made us leaner and more responsive. We’re helping you make decisions more easily, with innovations like our Power Systems e-catalog, the most comprehensive guide in the industry with 40,000 products and a cross-reference to more than 100 competitors. We’re bringing answers to the field with Wiring Device ShopTalk™ on-site seminars. And with “Hubbell 2006,” we’re moving to a unified platform to enhance service across the whole corporation. So the next time you want to try something new, go ahead – jump in with both feet. Just make sure you’re pointed at Hubbell. [hubbell.com/thinkagain](http://hubbell.com/thinkagain)

## INDUSTRIAL TECHNOLOGY

## ELECTRICAL PRODUCTS



In 2004, Hubbell introduced more new products than ever before across all of our operations. And in 2005, we're introducing even more. However, the distinction won't be in our pace of development, but in the features each Hubbell product contains – new and otherwise. Mindful innovation is how we make your work easier. And it's the driving force behind our growth.



584 Derby Milford Road • Orange • CT • 06477-4024 • [www.hubbell.com](http://www.hubbell.com)

Circle No. 105 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)



**SILENT LIGHT.**





VirtualSource®

**Shhhhhh.** Prescolite's Virtual Source optics keep the lighting quiet, comfortable and unobtrusive, allowing your space to sing. No striations. No hot spots. No visual noise or glare to distract the occupants' eye. That's the Virtual Source promise.

Patented Virtual Source optics are available standard with Prescolite's ArchitektOr specification-grade downlights. To learn more about Virtual Source and the range of Prescolite products that feature this unique technology,

visit [www.prescolite.com](http://www.prescolite.com) or call **888-PRS-4TEC**.



PROFESSIONAL LIGHTING EQUIPMENT BY

 prescolite



WHERE ELSE CAN YOU FIND HOT  
NEW PRODUCT INTRODUCTIONS,  
THE LATEST LIGHTING NEWS BRIEFS  
AND COMPANY BUZZ, A PRESSING  
INDUSTRY QUESTION BEGGING FOR  
YOUR OPINION, AND DESIGN  
COMPETITION UPDATES?

## ARCHLIGHTING.COM

THE SUPER SITE FOR LIGHTING SPECIFIERS



THE WEB ICON ATTACHED TO PRINT ARTICLES  
INDICATES EXPANDED WEB CONTENT.

VISIT ARCHLIGHTING.COM

### EDITORIAL STAFF

#### EDITOR-IN-CHIEF

EMILIE W. SOMMERHOFF  
esommerhoff@archlighting.com  
(646) 654-5775

#### MANAGING EDITOR

ELIZABETH DONOFF  
edonoff@archlighting.com  
(646) 654-4482

#### ART DIRECTOR

CASEY MAHER  
cmaher@architecturemag.com  
(646) 654-5778

#### CONTRIBUTING EDITORS

WANDA JANKOWSKI, JESSICA N. JOHNSON,  
JEAN NAYAR, ENRIQUE ROJAS,  
FRANCIS RUBINSTEIN

#### EDITORIAL ADVISERS

JAMES BENYA, HOWARD BRANDSTON,  
RENEE COOLEY, CRAIG DILOUIE,  
KENNETH A. DOUGLAS

#### SUPPORT

##### PRODUCTION

VINCE HABICK  
fax (646) 654-7317  
(646) 654-7238

##### CIRCULATION

MIA SHELTON  
mshelton@vnubuspubs.com

##### LIST RENTAL MANAGER

JOHN LOGIUDICE  
(800) 223-2194

##### REPRINTS

RSi Copyright  
al@rsicopyright.com  
(651) 582-3800

##### CUSTOMER SERVICE

(847) 763-9050

#### PUBLISHER

GARY GYSS  
ggyss@vnubuspubs.com  
(646) 654-5756

#### GROUP MARKETING MANAGER

KELLY CARSON  
kcarson@vnubuspubs.com  
(646) 654-7654

#### ADVERTISING SALES

##### NORTHEAST/INTERNATIONAL MIDWEST/CENTRAL

CLIFF SMITH  
NATIONAL BUSINESS  
DEVELOPMENT MANAGER  
csmith@vnubuspubs.com  
(646) 654-4478

##### WEST

JON HENG/PATRICIA OLAIZ HENG  
patsbea@msn.com  
(626) 799-3610

##### TEXAS

TODD TIDMORE  
attidmore@yahoo.com  
(512) 477-3806

#### SPECIAL PROJECTS, ADVERTISING CLASSIFIED ADVERTISING

ROBYN GRANNEY  
rgraney@vnubuspubs.com  
(646) 654-4492

#### SALES COORDINATOR

LISA Y. HANUKA  
lhanuka@vnubuspubs.com  
(646) 654-5754

770 Broadway, New York, NY 10003

#### REAL ESTATE AND DESIGN GROUP

Richard O'Connor, President

**Real Estate and Design Group Publications:** Architectural Lighting, Architecture, Commercial Property News, Contract, Hospitality Design, Kitchen & Bath Business, Multi-Housing News. **Other VNU Business Publications Groups:** General and Specialty Retailing; Retail and Food Media; Retail Design; Travel, Performance and Healthcare

#### vnu business publications

President & CEO: Michael Marchesano; Chief Operating Officer: Howard Lander; Group Presidents: Robert Dowling (Film & Performing Arts); Mark Holdreith (Retail); John Kilcullen (Music & Literary); Richard O'Connor (Travel, Performance, Food Service & Real Estate/Design); Michael Parker (Marketing/Media & Arts); Vice Presidents: Joanne Wheatley (Information Marketing); Karen Palmieri (Manufacturing and Distribution)

#### vnu business media

President & CEO: Michael Marchesano; Chief Operating Officer: Howard Lander; Chief Financial Officer: Joe Furey; President - VNU Expositions: Greg Farrar; President - eMedia and Information Marketing: Toni Nevitt; Senior Vice President/Human Resources: Sharon Sheer; Vice President/Business Management: Joellen Sommer; Vice President/Communications: Deborah Patton; Vice President/Licensing and Events: Howard Appelbaum; Director of Business Planning and Development: Jonathan Gordon; Editorial Director: Sid Holt

All architectural lighting (Vol. 19, No. 1 USPS 000-846, ISSN 0894-0436) is published seven times per year (bi-monthly, except monthly in March and April) by VNU Business Media, Inc., 770 Broadway, New York, NY 10003-3635 and is distributed free of charge to individuals or firms engaged in the specification of lighting products in the US and territories. Per year, all other subscriptions in the US and territories: \$49; Canada, payable in US dollars, \$60; and foreign: \$96. Canada Post Publications Mail Agreement No. 40031729. Return undeliverable Canadian addresses to: Deutsche Post Global Mail, 4960-2 Walker Road, Windsor, ON N9A 6J3. Periodicals Postage Paid at New York, NY and additional mailing offices. Printed in the USA. For address changes, single-copy sales (\$7 in the US, \$7 + postage outside the US, payable in advance) and subscription inquiries, write to Architectural Lighting, PO Box 1061, Skokie, IL 60076-8061 or call Customer Service at (847) 847-7387 outside the US. POSTMASTER: Send changes of address to Architectural Lighting, PO Box 1061, Skokie, IL 60076-8061.

All architectural lighting is a trademark owned exclusively by VNU Business Media, Inc. Copyright 2005 VNU Business Media, Inc. All rights reserved. Reproduction of this magazine, in whole or in part, is prohibited unless authorized by the publisher. Editorial and advertising offices: 770 Broadway, New York, NY 10003. Phone (646) 654-4500.



Copyright © 2005 by VNU Business Media, Inc. All rights reserved.



# Bounce Bolland

Courtyards

Entrances

Parks

Pathways



**KIM LIGHTING**

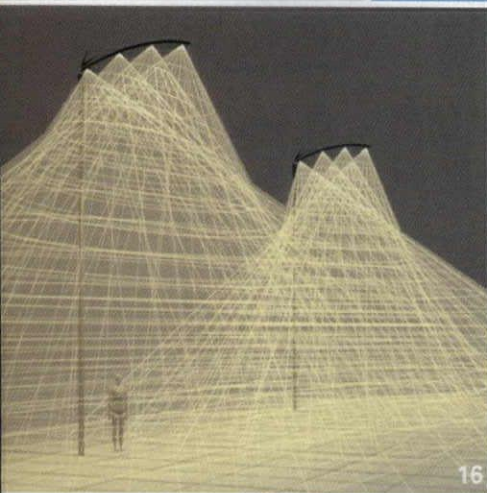
16555 East Gale Avenue  
City of Industry, CA 91745  
626/968-5666

[www.kimlighting.com](http://www.kimlighting.com)

Made in America







## industry

- 09 **comments**
- 11 **briefs** / Jacksonville Welcomes Super Bowl; LED Magazine; and more
- 56 **exchange** / Is colored light good design or a design gimmick?

## projects

- 16 **highlight** / City Lights Design Competition
- 18 **office** / Breaking News
- 22 **shopping center** / All Dressed Up
- 26 **school** / Daylighting Gets to Work
- 31 **HEALTHCARE LIGHTING FOCUS**
- 32 **project** / Dental Office, Boston
- 33 **project** / Women's and Children's Hospitals, North Carolina
- 34 **products** / for healthcare

## details

- 37 **method** / Finding Brilliance in Budget Design
- 43 **technology** / After DALI: A Look at What's Next
- 54 **ad index**

**Cover:** A colorful façade mastered by a unique control system dresses the Galleria West Shopping Center in Seoul, South Korea. PHOTO: CHRISTIAN RICHTERS

**This page:** City Lights Design Competition, New York City; Lillis Business Center, Eugene, Oregon; Magnet, San Francisco; City Lights Design Competition.

A sustainable design article

Additional information at [www.archlighting.com](http://www.archlighting.com)



# Lighting designed to make you look good.



**INTRODUCING RT5™ VOLUMETRIC RECESSED LIGHTING.** The new standard in fluorescent lighting that's far superior to parabolics. RT5



enhances the work environment, filling the entire volume of space with soft light. So both the room and the people in it look better and feel more comfortable.

RT5 is also good to the natural environment—its optimized design makes it up to 33% more energy efficient than a standard parabolic. Choose RT5. And put yourself and your space in the very best light. Contact your Lithonia sales representative or visit our website to learn more. **RT5. ENHANCE YOUR ENVIRONMENT™.**



**LITHONIA LIGHTING®**  
An **AcuityBrands** Company

[www.lithonia.com/RT5](http://www.lithonia.com/RT5) | 1-800-858-7763

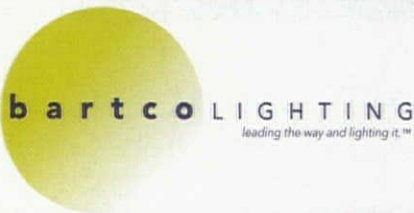


# design. ENHANCED

YOUR VISION. YOUR PROJECT. YOUR LIGHTING SOLUTION.



architect: OMA / Rem Koolhaas lighting design: Kugler Tillotson photography: Floto + Warner



- retail
- hospitality
- commercial
- institutional
- residential

ONE MORE **ADVANTAGE** OF USING BARTCO LIGHTING.

[bartcoLIGHTING.com](http://bartcoLIGHTING.com)

tel 714.848.0892 fax 714.848.6843

Circle No. 49 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

Visit us at **LIGHTFAIR** booth number **1767**

manufacturers of quality lighting products







## Speak Up. I Can't Hear You.

**FRANKLY, I AM DISAPPOINTED IN ALL OF YOU.** A|L's readers have let us down.

Our redesign a year ago incorporated a column, one page located at the back of the magazine. We called it Exchange, for obvious reasons: It was to be a forum for dialogue about significant issues on the industry's philosophical table. In twelve months we have addressed a menagerie of compelling topics, including LEDs (technological marvel or flash in the pan?); Lightfair (relevant or washed up?); energy codes (environmental savior or creativity's death knell?); the independent lighting consultant (valuable resource or industry albatross?); copying (flattery or intellectual property theft?); and, in this issue, colored light (God in the details or the gimmick in design?). We tagged these issues for Exchange questions because we heard you—lighting designers, architects, manufacturers, advertisers—buzzing about them at meetings and trade shows. At the time, you had a lot to say.

So what happened? Where are your responses every month? Given our interactions with A|L readers, who do not seem to lack opinions, managing editor Elizabeth Donoff and I expected each posting of a new exchange question on the home page of [archlighting.com](http://archlighting.com) to illicit enough responses to overload the e-mail box. Instead, we are often forced to hunt down and cajole most of our responders. We are sincerely grateful to those of you who have offered your opinions without solicitation. You are exempt from this admonishment. (However, I will say—because I love sitting ringside—it would be a better read if you were a little less polite. Willard Warren's letter about energy codes in the April/May 2004 issue; Amie Ziner's response to Warren's letter in the July/August 2004 issue; and Wayne Hinson's Exchange comment about the IALD's policy on independent lighting consultants, also in the July/August issue, are my favorites to date.)

This passivity is particularly surprising to me, having come from an editorial position on *Architecture* magazine, which publishes at least five letters a month, most of them controversial, others vitriolic, and some downright hostile. Similarly, *Architectural Record* magazine has an extended letters section. Architects apparently have a lot to say, and at least half of our readers fall into this professional category. In my experience, however, lighting designers have even more to say, and while not as large a group, they are among the most actively involved with the magazine.

Act locally, think globally, as they say. I am calling on my small industry to shout louder about issues that in most cases do not affect the general population, but as editors often do with editorials, I would like to make a grander point: We have

become a society in which the average person sits idly by, political dishrags (at best) in a noisy world that requires a booming voice to be heard. I don't care which side of most fences you are on; it is about the passion involved in taking and declaring a stance, and the energy that is carried with it. Is not the right to and power of dialogue our legacy as a country—the very legacy we are currently trying to encourage globally?

However, with that diatribe concluded, I maintain that as much as possible the magazine, and I with it, must remain a neutral and independent forum for the industry; it should be a space where everyone feels free to express his or her perspective. (In my defense, however, I spent my college career working for various causes, and outside of the lighting industry, I am a contentious letter writer.)

A|L is obviously not a venue for debate about the war in Iraq or assisted suicide, but it is the place to share ideas about the future of lighting design, the designer's responsibility to the environment, licensure, copying, and any other industry issue that needs hashing out—such as the role of lighting in architectural education programs. That is the March 2005 Exchange topic, an issue I know many of you have an opinion about. The question is:

Lighting designers don't feel architects understand or value their work. Architects feel they can take care of basic lighting requirements themselves. So where does the communication between architecture and lighting start? In a formalized design education? What is the role of lighting in an architectural and design education? There are only a handful of degree programs in the United States that concentrate on lighting as a discipline unto itself. Should there be more? How and should architectural programs better incorporate lighting into their curriculums?

You have another chance. Make us proud.

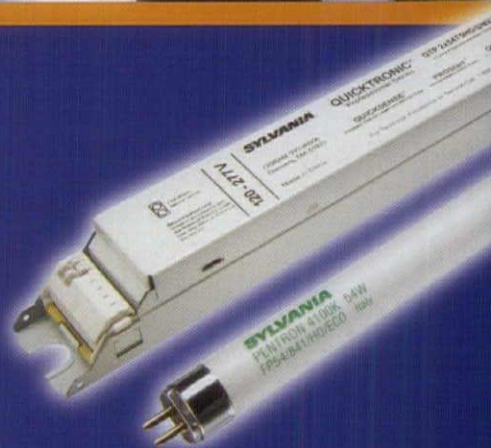
**EMILIE W. SOMMERHOFF**  
EDITOR-IN-CHIEF

IF YOU WOULD LIKE TO BE ALERTED TO NEW EXCHANGE QUESTIONS VIA E-MAIL BLAST, PLEASE SUBMIT YOUR ADDRESS TO [EXCHANGE@ARCHLIGHTING.COM](mailto:EXCHANGE@ARCHLIGHTING.COM). WE WILL GLADLY ADD YOU TO THE LIST. IF YOU HAVE A PRESSING TOPIC FOR THE EXCHANGE COLUMN, PLEASE E-MAIL ME AT [ESOMMERHOFF@ARCHLIGHTING.COM](mailto:ESOMMERHOFF@ARCHLIGHTING.COM).





## Choosing the right lighting reflects well on you.

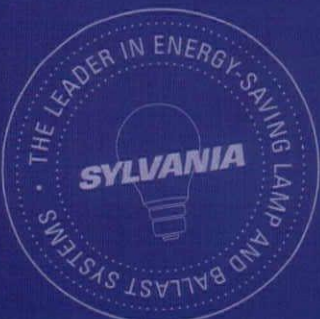


**Bright. Efficient. Environmentally friendlier.** That describes advanced PENTRON® T5 fluorescent systems from SYLVANIA...as well as the people who choose them.

Creating a comfortable, well-lit environment is becoming easier, thanks to slim, 5/8" diameter, high performance PENTRON T5 lamps and ballasts. T5 lamps use less mercury, glass and phosphor than "environmentally friendly" T8 lamps. Teaming up the state-of-the-art phosphor technology of PENTRON T5 lamps with highly efficient QUICKTRONIC® electronic ballasts delivers unparalleled performance. These slender systems drive some of the newest, most innovative luminaire designs—leading to pleasing, energy saving lighting solutions. SYLVANIA, the T5 leader, backs it all up with QUICK 60+®, the industry's most comprehensive system warranty.

Saving energy. Saving resources. Now, doesn't that reflect well on you?

© 2004 OSRAM SYLVANIA



SEE THE WORLD IN A NEW LIGHT

**SYLVANIA**



Call 1/800-LIGHTBULB, your SYLVANIA representative or visit [www.sylvania.com](http://www.sylvania.com).

Circle No. 38 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)



## OptoEngineering Makes Donation for LED Research

Tulsa, Oklahoma-based LED company OptoEngineering, a manufacturer of patented pre-designed, pre-assembled LED lighting arrays for the sign industry, has made a substantial donation to the Department of Industrial Engineering and Technology at the University of Texas A&M-Commerce. The donation, the first of several that will occur over the next five years, will enable the purchase of light measuring equipment and software to gather empirical data for specification standards for LED modules. Researchers will explore the electrical and mechanical efficiencies of LED modules and their cost effectiveness. "They have a well-staffed department geared toward this type of research," says OptoEngineering president and donor Kevin Hannah, who spoke with several universities before selecting Texas A&M-Commerce.

"There are currently no standards for LEDs," says Dr. J. K. Crain, Head of the Industrial Engineering and Technology Department. "Our research will be examining specific systems to gather information for ourselves and for OptoEngineering, and we will be integrating this research program throughout our department to include both faculty and student contributions." Hannah has worked in the LED industry since 1996, and formed OptoEngineering in 2004. The company will be opening a manufacturing facility in Commerce, Texas, to coincide with the ongoing research. **AJL**

## NEW ONLINE LED PUBLICATION

UK-based Institute of Physics Publishing and Cabot Media have recently launched LEDs Magazine, an online publication comprised of a website and a weekly subscriber e-mail newsletter available free of charge. A print version may be introduced at a future date. This new endeavor focuses on high-brightness LED applications and technologies, and targets end users, system integrators, and LED-component supply chain companies. Content includes technical articles, case studies, a buyer's guide, news, and events. LEDs Magazine has also partnered with on-line publication LightNOW. "LEDs in time will represent a greater part of the lighting business than they do today," says Craig DiLouie, principal of ZING Communications and editor of LightNOW. "By partnering with LEDs Magazine, we hope to provide superior LED-based content to our subscribers, while offering them a broader venue for the information they produce." For more information visit, [www.ledsmagazine.com](http://www.ledsmagazine.com). Inquiries can be sent to the editor, Tim Whitaker, at [editor@leds.iop.org](mailto:editor@leds.iop.org). **AJL**



## Give your light new direction.

Let our new series of recessed architectural products light the way. Their compact design blends into virtually any installation. Each faceplate is machined from solid copper-free aluminum, brass, or stainless steel billet to provide decades of performance under tough, outdoor conditions. Two housing styles allow for installation in new construction or retrofit projects.

Featuring precision-milled, louver designs available in round or rectangular patterns, with 0 or 30 degree cutoff angles to direct light precisely where you need it. Even the lamp adjusts behind the faceplate to optimize its distribution to your requirements. Choose from round, square or rectangular faceplates in more than 200 finishes.



**B-K LIGHTING**  
Quality to Last a Lifetime™

559.438.5800 • [www.bklighting.com](http://www.bklighting.com)



## JACKSONVILLE WELCOMES SUPER BOWL XXXIX

Jacksonville, Florida, is pulling out all the stops. To prepare for its Super Bowl XXXIX host-city status, it has embarked on a citywide beautification program that includes the permanent illumination of a downtown landmark, the Main Street Bridge. Completed in 1939, the bridge spans 1,680 feet over the St. Johns River. The lighting scheme and installation were particularly tricky because of the bridge's structure: 11 steel stringer spans; three Warren through trusses; two 200-foot-high lift towers; and a 365-foot-long vertical lift span at the center, the longest of its type in Florida.

Conceived by Stone Mountain Lighting Group, a division of Atlanta-based Stone Mountain Productions, a company that specializes in large-scale sound and light spectacles for amusement park and special events markets, and completed with its new partner Orlando-based Chameleon Productions, the lighting design utilizes close to 1,200 feet of LED linear optical arrays from manufacturer OptiLED. Ten rows of linear arrays, with 26 modules per row, are connected together vertically to create an LED matrix, like a video screen, within the bridge's counterweight structure on the top third of each lift tower. The lighting system is programmed for a sequence of different graphics in the form of geometric patterns and pre-programmed lighting effects. "We were trying to create an environment, a different experience, not just a sign or advertising," says Stone Mountain-Chameleon partner Dan Markham.

Given the bridge's structural significance, the team was cognizant of the quantity of extraneous equipment and hardware that would need to be attached. The OptiLED luminaires were chosen because they are line-voltage and do not need remote power supplies. The optics also made an impression, as lead programmer Brad Haynes explains, "You can see the colors from five miles away."

While at first glance the project might seem like a simple bridge illumination scheme, given that the system is controlled by wireless DMX, the possibilities are endless and the project far more complex. The installation itself presented many challenges



The new illumination scheme for Jacksonville's Main Street Bridge reinvigorates the city's downtown waterfront.

and a few logistical issues needed to be resolved with the radio frequency of the wireless system: the equipment had to be installed on the north and south lift towers, metal structures which are over 300 feet apart and 150 feet up, over an interstate highway and the St. Johns River, which is a shipping lane. The DMX system chosen by the lighting designers, a product by Intelligent Technologies, runs a separate universe for each tower, and a passport system converts the ethernet signals to DMX. The system has both a T1 and DSL line, so in the future, program changes and downloads can be accomplished remotely via the Internet. "Working on a project like this poses many challenges, but that's what makes it interesting," says Haynes. **ELIZABETH DONOFF**

## UNION STRIKES OVER OUTSOURCING

The question and consequence of outsourcing in the lighting industry—not just abroad, but domestically—recently took on a new character with the strike of IBEW Local 3's Fixture Division on November 8, 2004. According to the New York City Central Labor Council's website, this is the Fixture Division's first strike since its founding in 1936. Manufacturing plants still being struck are Linear Lighting and Edison Price in Long Island City, New York; and Rambusch in Jersey City, New Jersey. Members struck after 17 weeks of negotiations, reported the website. Manufacturers that signed an interim agreement, and are consequently not being struck, include: Apogee Translite, Atlite, Legion Lighting, Lightolier, Mark Lighting, and Zumtobel.

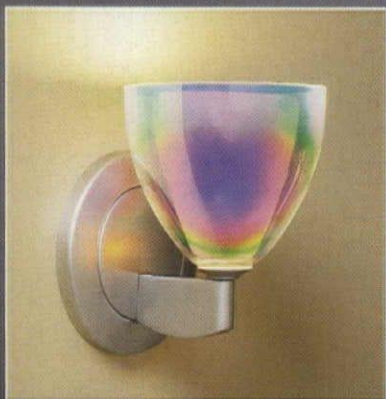
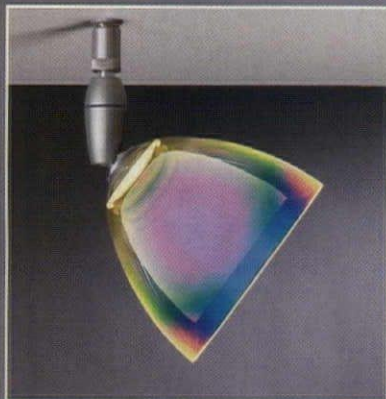
The news brief on the website maintains that the struck employers want the option to outsource to non-union plants, and that the union is not willing to concede on this issue. "Prior to the unfair conduct by the employers, all economic issues pertaining to wages and benefits were settled and the only issue left on the table

was the issue of outsourcing," states Fixture Division Business Representative Thomas Scotland in the brief. The manufacturers being struck maintain that the conflict has not interfered with productivity. Speaking anonymously, an executive with one of the involved manufacturers noted the length of the strike indicates the waning influence of unions in the U.S. manufacturing community.

To date, the dispute does not seem to have substantially affected the design community. "We are aware of the Local 3 strike," says New York City-based lighting designer Charles Stone, "but it hasn't affected our specifications or—to our knowledge—deliveries on our projects. I've had conversations with company presidents while they are tightening wirenuts. That's rolling up your sleeves." Stone notes outsourcing is not a phenomenon being experienced solely by the manufacturing community. "Our clients are outsourcing their renderings to Asia, where convincing images can be produced overnight for one-tenth of what it would cost us," he says. "It's a changing world." **EMILIE W. SOMMERHOFF**



# Rainbow\*



Bruck's Rainbow is a patented innovative technology with an inner cased glass and a dichroic coated outer glass. When off, the Rainbow glass has a mirror-like effect. When on, it shows a fusion of colors. It casts a clean and even task light. Rainbow is compatible with all Bruck track systems, or as a single fixture with canopy.

\*Patent No.: US 6,742,915 B1  
Pendant shown in actual size.

**BRUCK LIGHTING SYSTEMS** 714 424-0500 Fax 714 424-0505 Costa Mesa, CA [www.brucklighting.com](http://www.brucklighting.com)  
Circle No. 15 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

**BRUCK**



## UPBEAT BUT CAUTIOUS PROJECTIONS

A recent survey by the National Association of Electrical Distributors (NEAD) indicated sales expectations among electrical distributors remains steady. In the most recent Quarterly Sales Change Expectation survey results, 84 percent of the 275 respondents reported a projected increase in sales for third quarter 2004. Projections for fourth quarter 2004 were more cautious, with only 77.5 percent of participants anticipating continued growth. Despite this "tempered optimism," overall evaluation of the last six quarters, second quarter 2003 through third quarter 2004, shows an increase in distributors' sales expectations of more than 15 percent.

Regionally the Midwest led in sales expectations, with an increase from 86.1 percent in the second quarter to 92.6 percent in the third quarter. The South and Northeast saw a slight decline in sales expectations, decreasing from 85.5 percent in the second quarter to 82.9 percent in the third quarter. The western region observed the greatest decline after leading sales expectations for the first and second quarters, 85.9 percent and 93.3 percent, respectively. All companies, regardless of number of employees, reported expected increased sales for the fourth quarter; medium size businesses, companies with 30 to 49 employees, showed the most optimism. NAED distributed the survey in early September via fax and e-mail to approximately 3,700 distributor locations. **A|L**

## Good Design Awards for 16 Lighting Products

Results are in for the Good Design Awards from the Chicago Athenaeum, the Museum of Architecture and Design. Established in 1950 by Museum of Modern Art curator Edgar J. Kaufmann Jr., the program honors designers and manufacturers for "new and innovative product concepts and originality, and for stretching the envelope beyond what is considered standard product and consumer design." Lighting is one of the 13 categories, which include: Office and Residential Furniture, Housewares, Transportation, Electronics, Hardware/Tools, Business and Industrial Equipment, and Environmental Design.



This year, there were 16 winning lighting submissions from around the world. Companies with products honored by the competition included Zumtobel Staff, Foscarini, Cooper Lighting, Tobias Grau, Erco, Modular Lighting Instruments, Luxo, and Leucos. Several of the winning products have been covered by A|L in the past year: Zumtobel's Solar Spotlight System, Cooper Lighting's Phocus Flood Light, and Luxo's Arketto Lamp (shown).

The winning products will be exhibited at the Chicago Athenaeum from October 2005 through January 2006. **A|L**

## Finely Crafted Lighting for Architectural Spaces

**METALUMEN**

Distinguished Design ↔ Engineered Excellence

[www.metalumen.com](http://www.metalumen.com)

1-800-621-6785 t 519-822-4381 f 519-822-4589

Product featured:  
Amatura I

ADAMATURA020512



**A STREETLIGHT. IT SEEMS A SIMPLE PROPOSITION—A POLE AND A LIGHT SOURCE.**

But ask any of the entrants who tackled this challenge in the two-stage City Lights Design Competition, and they will tell you otherwise. Organized and launched in January 2004 by New York City's Department of Design and Construction, in partnership with the Department of Transportation, the competition received 201 entries from 23 countries. It was an obvious collaboration for these two agencies who are both involved in the installation, operation, and maintenance of streetlights in New York City's five boroughs. "There was general consensus among the two agencies that the most ubiquitous fixture in their catalog, the cobra head (developed in the 1950s and installed in New York in the early 1960s) was really out of date," explains competition advisor Ralph Lerner. To start planning for the next generation of city streetlights—fixtures that will incorporate energy-efficient design; a bright, even light; and the many pole add-ons, such as street signs and wireless elements—the City decided to hold a design competition to generate ideas.

That the City should decide to hold a competition is both a reflection of the increasing awareness of design on the part of government agencies, and a reassuring sign that this perhaps will become the norm rather than the exception. In particular it gives the City an opportunity to step forward and compete with other international venues, like London, Paris, and Barcelona, as a leader in urban streetscape design.

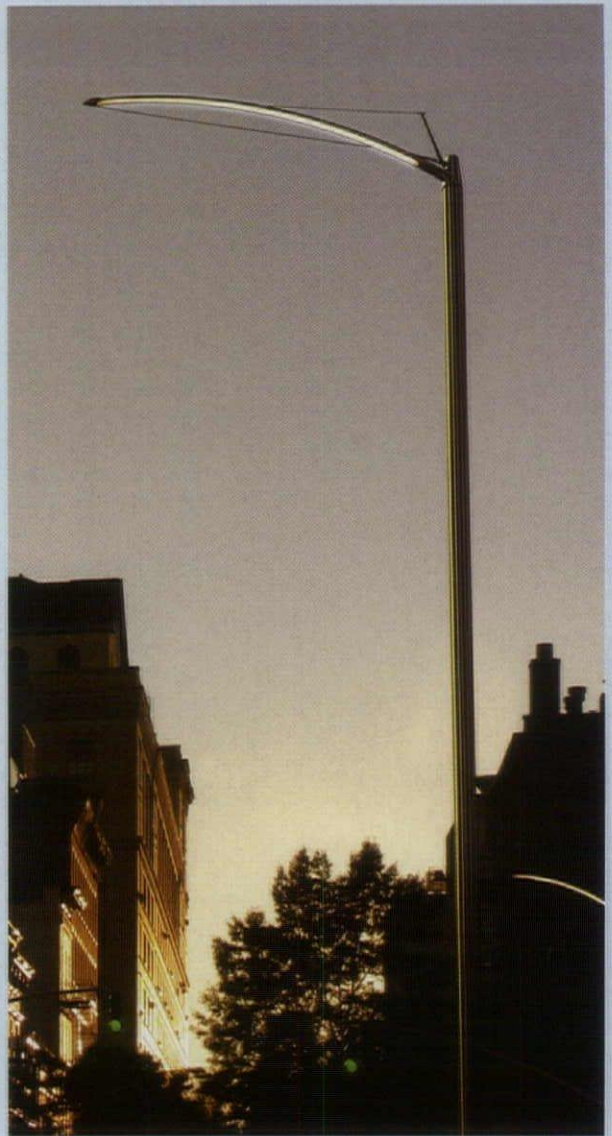
Equally important is the competition's more subtle result: the fact that it inspired a process of inclusion and collaboration between groups that do not normally begin the project process together and continue to communicate throughout. The first stage was an open call. "We were really seeking people who might take on this problem from a number of points of view," says Lerner. The second stage required the finalists to fulfill a number of technical specifications, requiring multi-disciplinary teams to draw on each other's expertise in architecture, structural engineering, optics and lighting design, and the manufacturing process. In particular, for lighting designers, who often feel reduced to a role that does not acknowledge their expertise and design skills, the competition offered a chance to step forward and prove that lighting design is about more than just the number of luminaires installed in a space.

The proposed designs are not meant to replace every streetlight in New York City, but instead act as a twenty-first-century representative to the City's existing catalogue of fixtures. In May, three teams (Thomas Phifer and Partners, Atelier Imrey Culbert, and SOM) were selected by a jury of their peers to further develop their designs. Although the Phifer design was selected as the winner—meaning the City will go forward with development—each luminaire concept offers innovative design and technical solutions that far exceed the current streetlight offering.

The competition considers a seemingly mundane object—a streetlight—and evaluates its potential, not only as an entity in and of itself, but also as a catalyst for discussion about the urban streetscape. As the "City Lights" process proves, with dialogue and a collaborative design process between government agencies, architects, lighting designers, and engineers, innovative design and technology can coexist. In fact, they rely on one another, and this reality has an increasing importance in the everyday public realm. **ELIZABETH DONOFF**



FOR A COMPLETE DISCUSSION OF EACH FINALIST'S SCHEME, VISIT [WWW.ARCHLIGHTING.COM](http://WWW.ARCHLIGHTING.COM).



**1ST PLACE: THOMAS PHIFER AND PARTNERS, NEW YORK CITY**

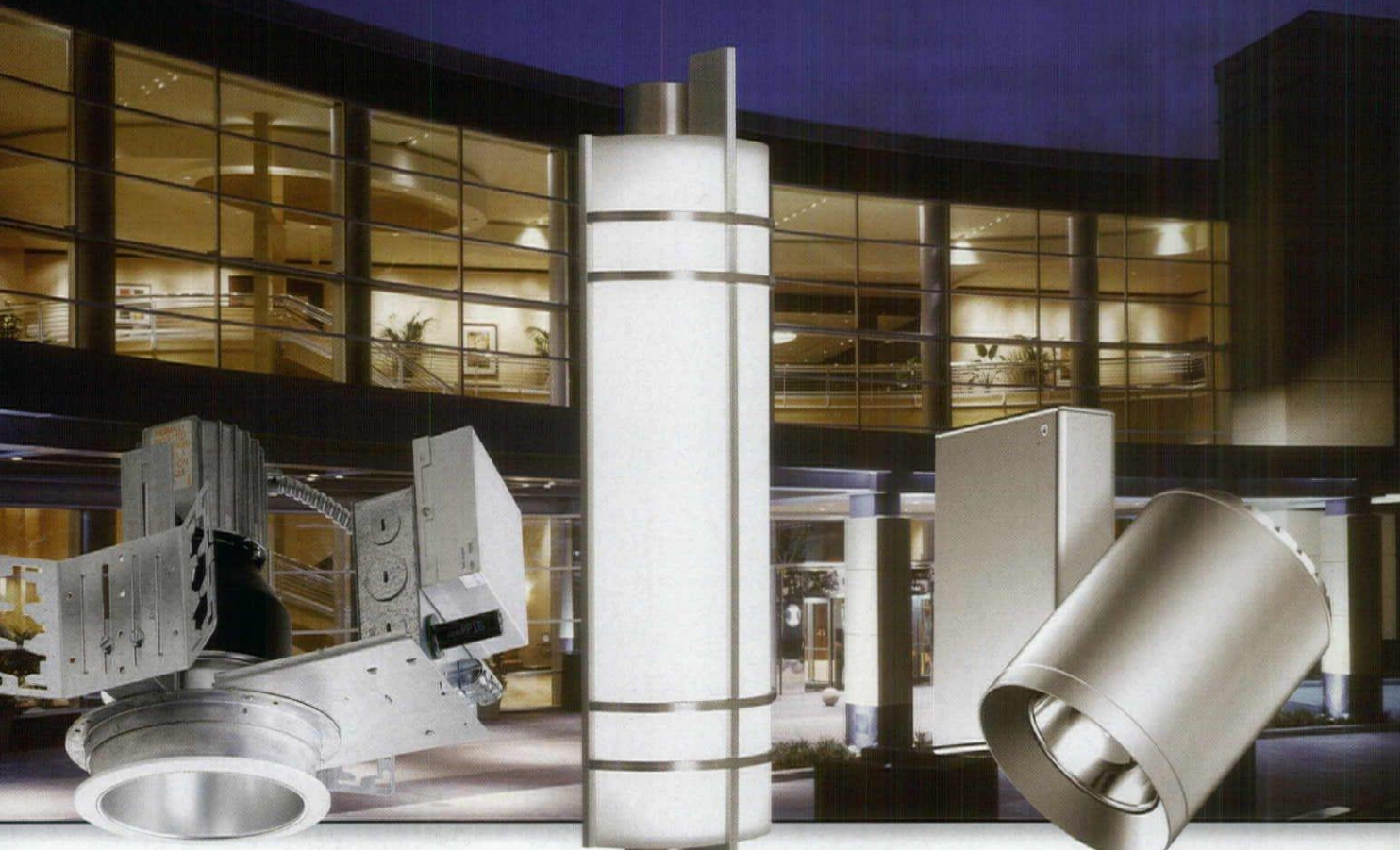
**STRUCTURAL ENGINEER:** Werner Sobek **LIGHTING DESIGN:** Office for Visual Interaction **PHOTOVOLTAIC ENGINEERING:** Transsolar **MANUFACTURING PARTNERS:** LED Specialists, Fraen, and Erco **RENDERINGS:** dbox **DESIGN FEATURES:** LED technology; extruded aluminum pole, T-shaped slots for slide-and-lock system to incorporate add-ons; new asymmetrical base design; and photovoltaic component.

ALL IMAGES COURTESY OF THE CITY LIGHTS DESIGN COMPETITION



thinking healthcare?

think cooper lighting



**portfolio™ EMH SERIES**

[Recessed Downlight]

A state of the art electronic ballast allows more light with lower power consumption. The EMH Series maintains excellent CRI, color stability, and long life of ceramic MH lamps over a wide range of input voltage fluctuations and between multiple fixtures. The EMH Series boasts long lamp life (9,000 - 15,000 hours). Center-beam optics in adjustables ensure maximum output with no flashback. With active safety features, the ballast automatically shuts off if it senses an end of lamp or voltage problem and resets when power to the ballast is switched off. With up to 95 lumens per watt these fixtures are ideal for large, high traffic indoor or outdoor areas.



**shaper™ 674**

[Decorative Wall Sconce]

Shaper specializes in Standard, Modified and Custom Surface, Interior & Exterior Wall, Pendant, Bollard and Post Top luminaires. Our new 674 Wall Luminaire compliments commercial, hospitality and retail applications. The 674 housing and decorative trim are shown in solid brushed stainless steel and are available in many other materials and finishes. Available with linear T-5, high lumen CFL or incandescent lamps. Custom colors and design options such as perforated stainless or color inserts available upon request. Contact [shaperlighting.com](http://shaperlighting.com) for more information.



**RSA™ PROFILE SERIES**

[Machined Aluminum Track Fixtures]

MACHINED FIXTURES include such unique high-tech features as lockable horizontal and vertical aiming, auto-extending lamp holders, bayonet-action accessory bezels and front loading lamps and accessories. These products are 100% machined 6000 series aluminum construction and manufactured in the U.S.A. Standard finishes include white, black or natural aluminum which accents the quality of the craftsmanship. Machined Fixtures are available in both closed back and open back configurations. Both styles offer the same superior features but with an individual appeal. Low voltage and metal halide models are offered with integral transformers/ballasts.

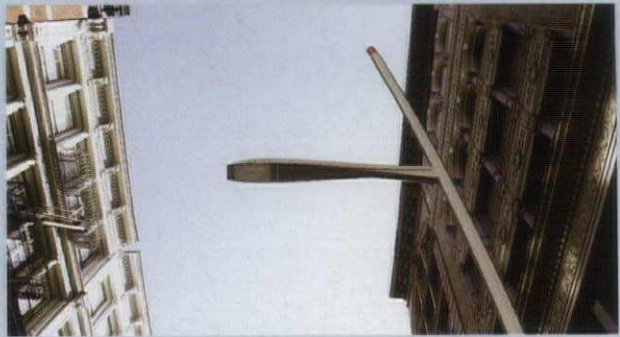
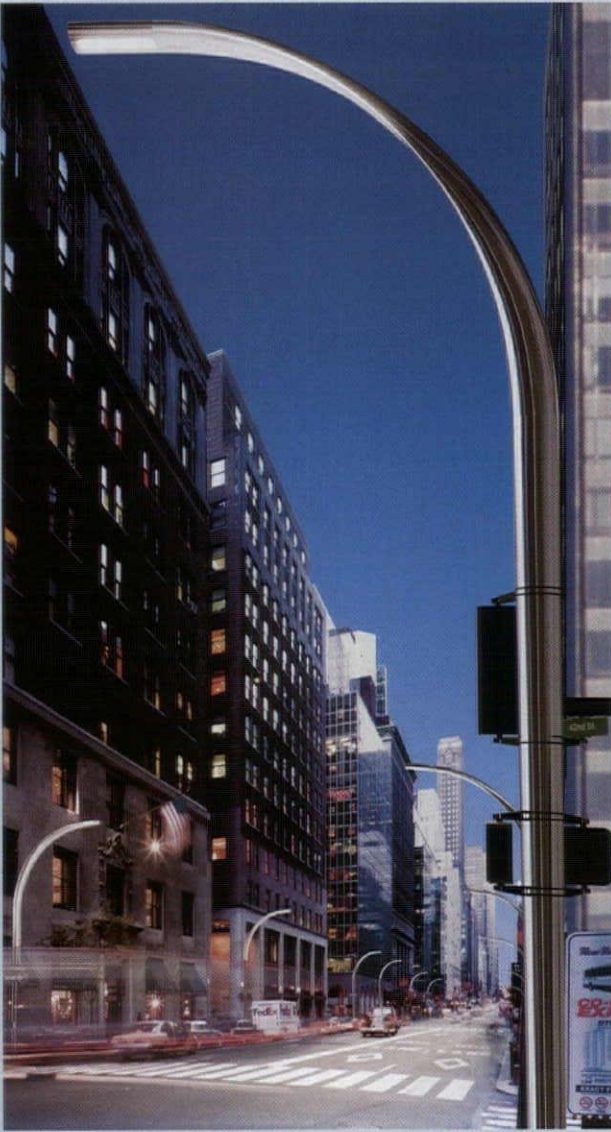


**COOPER** Lighting

[www.cooperlighting.com](http://www.cooperlighting.com)

Circle No. 78 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)





**2ND PLACE: SKIDMORE OWINGS AND MERRILL, CHICAGO**

**MANUFACTURING PARTNER (STAGE TWO):** Selux

**DESIGN FEATURES:** Pole fabricated from a cylindrical steel tube flattened into an elliptical shape; integrated technology (the standard add-ons fit within the pole); lampsource is a standard color-corrected high-pressure sodium lamp, a metal halide lamp could also be accommodated.

**3RD PLACE: ATELIER IMREY CULBERT, NEW YORK CITY**

**STRUCTURAL ENGINEERS:** RFR **LIGHTING CONSULTANT:** Tillotson Design Associates **OPTICAL DESIGN:** Kilt Planning **MANUFACTURING PARTNERS:** Valmont Poles USA, Feralux, and Lumec-Schreder, Canada

**DESIGN FEATURES:** Arced pole; innovative re-examination of high-pressure sodium lamps (refined optics, eliminates glare, full dark-sky cutoff); lens and lamp as one sealed unit.

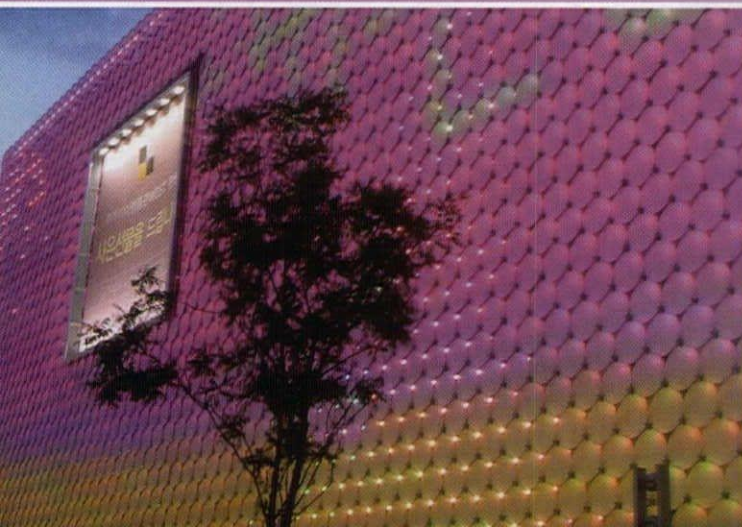




## ALL DRESSED UP



A HIGH-END MALL IN SEOUL ATTRACTS CUSTOMERS TO THE FASHION INSIDE WITH A FLASHY LIGHTING SCHEME ON THE OUTSIDE FEATURING LEDS AND A USER-FRIENDLY CONTROL SYSTEM.



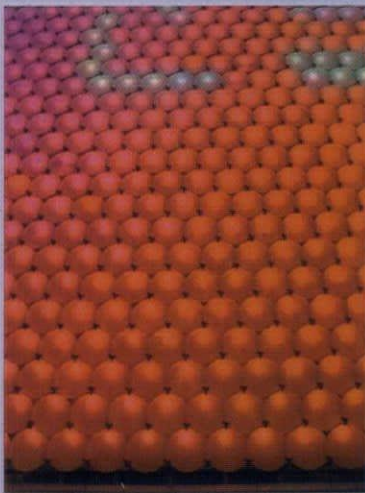


**THIS STRUCTURE IS NOT JUST ANOTHER PRETTY FACE IN FASHIONABLE DRESS—**

like the customers inside. The lighting mechanics behind the kaleidoscopic façade for the Galleria West Shopping Center in Seoul, South Korea, are one of a kind. Designed by UN Studio Architects, with Rogier van der Heide of Arup Lighting, the building's exterior is slowing traffic and passersby at this busy intersection, and attracting visitors to the high-end shops it houses.

Client Hanwha Stores wanted "the most modern, trendy, and fashionable store in Korea to beat the competition," says the project architect, Astrid Piber of UN Studio. "They wanted something that was constantly changing, from day to night, and from the viewer's perspective on the street." Displaying everything from text to amorphous images recalling the sea or sky, the façade has arguably achieved this goal. With a "refresh rate" of 20 updates per second (faster than the average consumer-grade video camera, notes Van der Heide) over each of the 13,000 DMX channels and with 16 million potential colors, the system is capable of an infinite variety of scenes. "It's very smooth," says Van der Heide. "DMX can go higher. There are systems that have 32 updates per second, but they never have this many channels." This rate provided both the stability and fluidity the designers were seeking for a surface of this size.

The shell, which from afar looks like colored bubble wrap, is actually formed of 4,330 overlapping glass discs, 33 inches in diameter and a half-inch thick. "Since it is a fashion mall, we wanted to create a 'dress' for the building, with



**A showstopper is what client Hanwha Stores wanted for its shopping mall in Seoul, South Korea, and that is what UN Studio Architects and Rogier van der Heide of Arup Lighting designed. The façade's texture, which architect Astrid Piber equates to "mermaid skin," is actually 4,330 laminated glass discs; the 16 million potential colors are produced by LED fixtures behind the discs. All together, 18 different combinations of glass materials, LED luminaires, and fixture angles behind the glass discs were mocked up before the team selected the current arrangement.**

a texture like fabric," says Van der Heide, who experimented with various materials, including metal mesh. The laminated glass discs, however, exhibited the most exciting qualities in the studio. Full-scale mock-ups with nine discs enabled the team to test glass and light combinations and angles, as well as different glass finishes. Given the building's location on a major shopping thoroughfare, the designers worried that glare from the discs might blind drivers. They chose a custom-made solution of acid-etched glass on both sides, with a dichroic coating in between: The outside treatment minimizes glare from the sun, while the inside creates a more uniform light distribution. The dichroic interlayer, meanwhile, interacts with the angle of the sun and the viewer to add a level of intricacy and color during the day, when the artificial lighting is not utilized. The laminated treatment ensures that during occasional typhoons, the layers that form the 40-pound discs will not separate and fall, only crack.

The LED light sources that give life to the building's exterior were also custom designed by the team in conjunction with Dutch company Xilver, which has since the completion of the project made the product part of its standard offering. "They had something like this in the pipeline," says Van der Heide, who had worked with Xilver on other projects. "We gave a big push because we needed it. It was a collaboration."

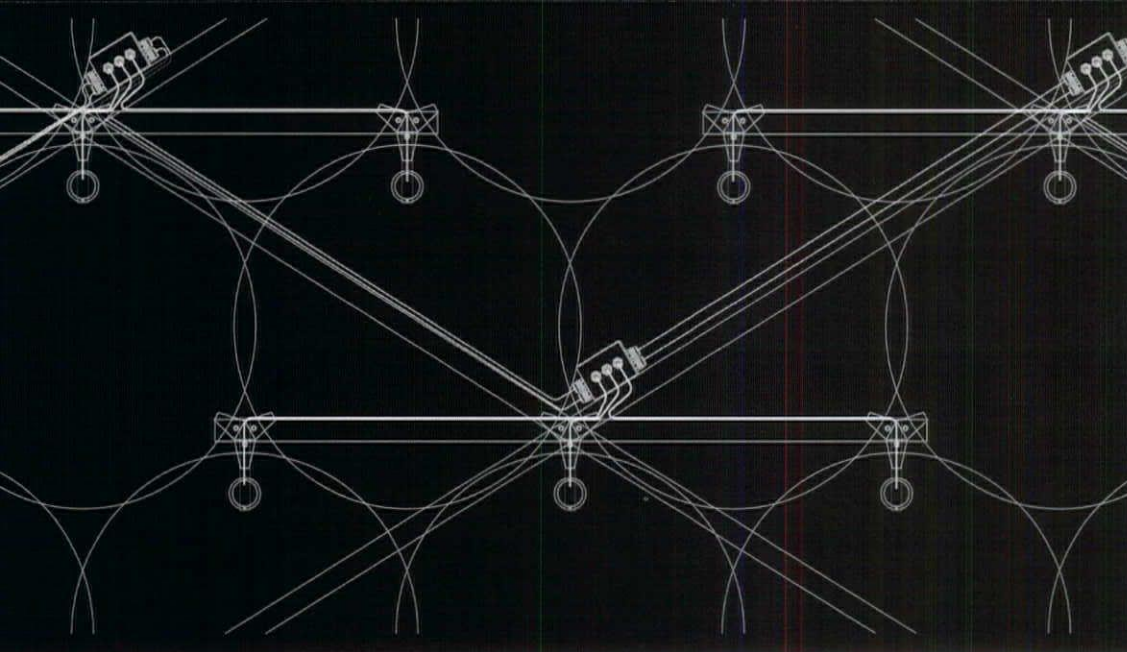
Together, the manufacturer and designer tackled a major challenge for the industry when it comes to LEDs: color mixing. One LED fixture comprised of four 1W LEDs (one red, one blue, and two green) backlights each disc. After multiple tests, it was determined an extra green component would help balance the color. "Every reputable manufacturer today has a color-changing LED fixture, but almost all of them have a pinkish/magenta hue. I was looking for something very crisp and cool," says Van der Heide. The mockups demonstrated that an extra green LED (proposed by Xilver) would create a neutral hue.

Perhaps in deference to the pop culture that has welcomed colorfully animated buildings, the shopping center's façade works like a large low-res television, with each LED fixture acting as one pixel. It is the control system that converts and transmits data to the 40,000-square-foot screen that most sets this project apart. "This is the first time the user doesn't need lighting programming skills," explains Van der Heide, who wanted an intuitive solution. "You can create animations using any software that you are com-

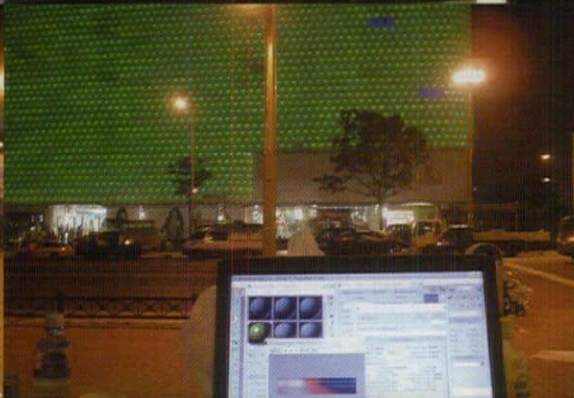
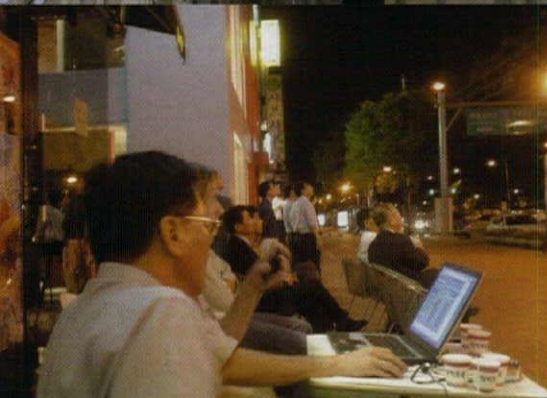
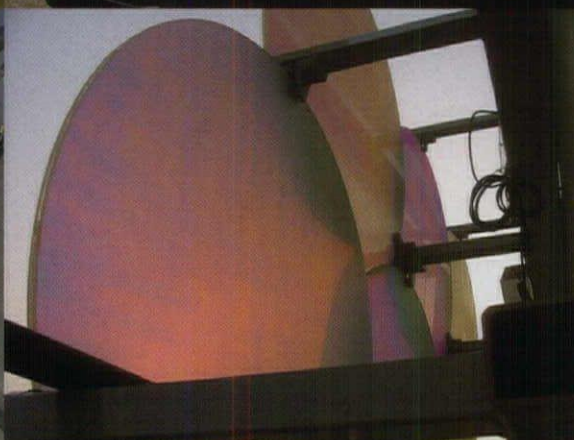
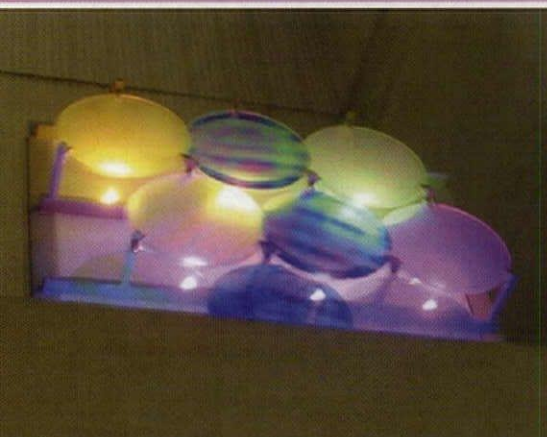
fortable with, and just upload it to a server." Once the data on the server is converted into a proprietary protocol based on TCP/IP, it then travels over 32 DMX lines (or universes), which control 512 channels each, to deliver the many commands that "dress" the façade. The system can also be connected to and programmed wirelessly from a laptop on the street, for example. (See "Staying in Control" on page 21.)

Several days of training had Hanwha Stores ready to create its own façade displays, which included images of snow falling and a "Merry Christmas" message during the recent holiday. While not exactly what Van der Heide had in mind when he developed the façade design, he admits "that is part of the game. You make it interactive and easy to program, and the risk is they are going to do awful things with it. But they may also do wonderful things." **EMILIE W. SOMMERHOFF**

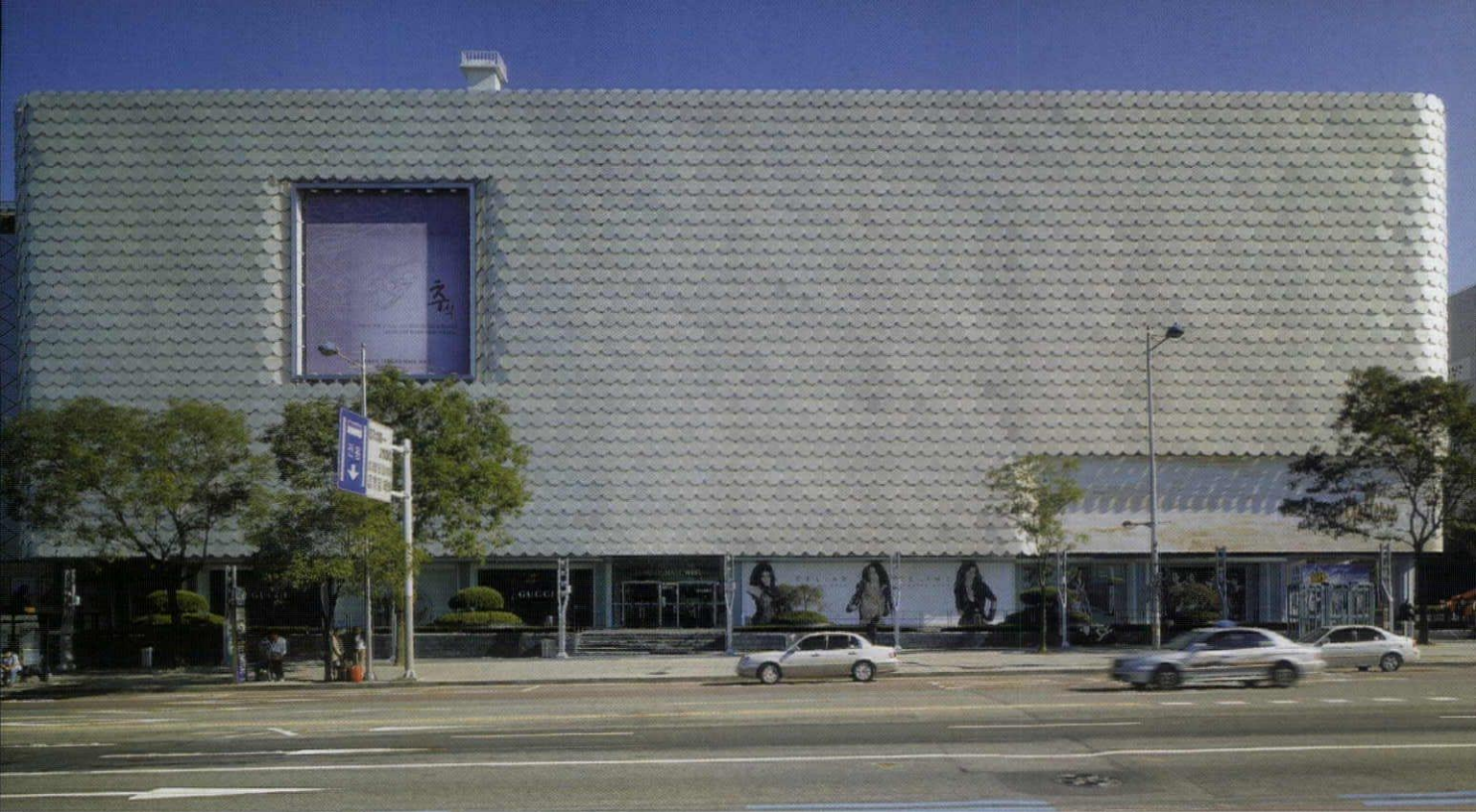




The fixture (right), which Dutch manufacturer Xilver developed with Van der Heide, is made up of four LEDs—one red, one blue, and two green. Multiple mockups (below, top row) helped the team determine the disc material in front of the LED luminaire; they settled on two pieces of etched glass laminated to a dichroic filter, which gives the building an interesting sheen in the sunlight (middle row and facing page). Once the 40-pound discs were attached to the building, the team programmed a range of scenes for the client (bottom row).







## STAYING IN CONTROL

To design a system based on nearly 4,330 pixels of light, each capable of over 16 million colors, is a wild idea. The real challenge, however, was not the concept, but rather to stay in control of it.

The RGB light source behind every glass disk decorating the façade of the Galleria West in Seoul is ultimately connected to a personal computer that runs a video file, such as a DVD or a QuickTime movie. The difference from other lighting installations—even the colorful ones—lies in the fact that the system accepts this video format as input and converts it to lighting control commands. It is the computer that works out how the video image is mapped onto the façade by assuming that every light source is a pixel in a large image. Using a video format gives creative freedom to the designer, who can craft his latest work in Adobe Premiere, or 3D Studio Max, or any other animation program. Even a handi-cam is applicable, because the Galleria's control system can accept and convert plain video footage into lighting commands.

But before the signals end up as regulated low-voltage power at the fixtures, they go through a chain of devices, each critical to the final result. The personal computer (or its backup machine, since the whole system is fully redundant) produces TCP/IP signals over ordinary ethernet CAT5 cable, similar to the network cable in your office. This signal is distributed to ethernet-to-DMX converters, each having their own IP address to create a stable, industry-strength platform that is based on the same network protocol as the World Wide Web.

The DMX-converters send the DMX-512 to the power supplies of the RGB fixtures. As each fixture needs three control channels to create the smooth colors that make up the Galleria design, only 170 fixtures can be driven with every DMX-512 line. Having nearly 4,330 fixtures installed, 32 DMX lines or "universes" are needed to control the entire façade in total synchronicity.

The power supplies, which are mounted all over the façade, accept DMX-512 and output a regulated power that is specifically designed to drive LEDs. Each power supply drives three light fixtures, which is in alignment with the structural layout of the façade. **ROGIER VAN DER HEIDE**

### DETAILS


**PROJECT** Galleria West, Seoul, South Korea  
**CLIENT** Hanwha Stores, Seoul, South Korea  
**ARCHITECT** UN Studios, Amsterdam  
**LIGHTING DESIGNER** Arup Lighting, Amsterdam  
**PHOTOGRAPHERS** Design team, except where noted

#### MANUFACTURERS

CGE Glass  
 e:cue  
 Xilver

#### APPLICATIONS

Custom laminated glass discs  
 Control system  
 Custom-designed LED fixtures

 more commentary at  
[WWW.ARCHLIGHTING.COM](http://WWW.ARCHLIGHTING.COM)





# breaking news

The first company in New York to install a lighting control system with a digital addressable lighting interface, the Associated Press gives its employees illumination control 24/7.

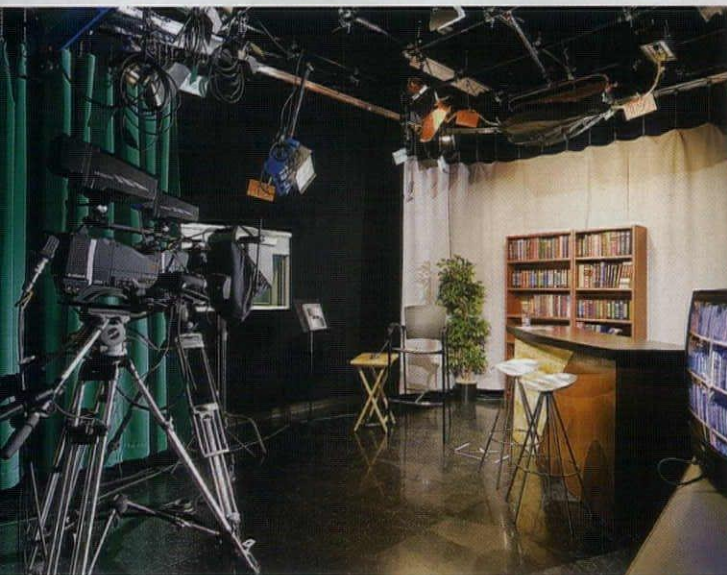
**THE INTERNET, NEW MEDIA, AND 24-HOUR NEWS CHANNELS MAY HAVE CHANGED** the way we receive national and international news, but the new headquarters office for the Associated Press (AP) has dramatically transformed the environment in which its editors and reporters gather and deliver it. After operating for 66 years in disparate offices at 50 Rockefeller Center and two other buildings in New York City, the 153-year-old news agency has consolidated its 950-person New York staff at a more expansive single location on Manhattan's West Side. One of the ingredients that makes the new space a news-maker is a state-of-the-art lighting system—employed for the first time in New York City—that substantially improves the quality of the organization's workspace and promises to inspire lighting upgrades in other New York offices, too.

Over the course of its history, AP, the world's oldest news organization, has occupied three other headquarters buildings in

New York, and went from transmitting news via Morse code and typewriters, to disseminating it through the digital-technology age. Although AP's offices at Rockefeller Center served as the heart of its worldwide operations for more than six decades, the space no longer adequately accommodated the organization's ever-expanding staff and technological needs. Furthermore, its separate locations made interaction among its various news departments difficult. So when its lease recently came up for renewal, AP opted to relocate to a newer building with lower rent and floor plates the size of two football fields. Here, all of its news divisions now operate on a single floor and function in a context that is geared toward the future.

"When AP made the decision to move from a prestigious building in a prime location at the center of town to a 1960s structure on 10th Avenue and 33rd Street, the human resources aspect of





**The focal point of the 14th-floor newsroom at the Associated Press' new headquarters (facing page), is a faux skylight that gives a sense of order to the kinetic floor plan. The massive acrylic lens covers numerous fluorescent lamps, which were spaced on center a distance equal to the depth of the skylight cavity to create the impression of even illumination. These sources are dimmed to a 30 percent output level. Each news division on this floor is lighted with indirect fixtures (above right) whose sources are linked to a DALI control system. Indirect fixtures are used throughout the workspaces (top left). Studio and work lights from the former Rockefeller Center space were reused on the existing grid in the television studio (above left).**

that transition was very much in the forethought of AP's management," says Bob Heizler, the lead architect on the project. "AP took the initiative to make the design as palatable as possible to the staff." Enhancing the work life for AP employees, the new 291,000-square-foot facility, designed by Griswold, Heckel & Kelly Associates (GHK), includes an array of amenities on three floors, including an in-house cafeteria, a fitness center, expanded work spaces that address the specific needs of each division, and an advanced lighting system that allows for unprecedented illumination control, says Heizler, who is a senior principal of New York-based Applied Design Initiative. (Heizler was a vice president at GHK at the time the headquarters was designed.)

AP's new lighting system, developed by the New York office of Horton Lees Brogden Lighting Design (HLB), was actually on AP's employee wish list long before the technology to execute it existed. "We worked on another AP project nine years ago," says HLB principal Barbara Horton. "They were very dedicated to their employees and keen on keeping them happy, so they wanted the ability to give all employees individual control of their lighting,"

she says. "But we had to laugh, since at the time this was impossible to do."

By the time AP was planning its move to the new building, however, lighting technology had changed, says Horton, and a lighting control system based on the Digital Addressable Lighting Interface, or DALI, had been developed and employed in Europe. "It is an industry protocol that allows various DALI-compliant components like ballasts, controls, and sensors to communicate together on a lighting network," says project manager and lighting designer Lee Brandt. The lighting designers employed an intelligent lighting system created by Lightolier called IGEN, which utilizes the DALI ballasts in the fixtures with controls. This new lighting control system could now provide the organization the flexibility and control it wanted for its employees. "Every ballast for a fluorescent or compact fluorescent fixture is given an IP address during commissioning," says Brandt. "The software program groups single fixtures or zones of fixtures." That way, items—such as time of day, load shedding, scenes, or dimming levels—can be predetermined and addressed automatically. Other types of loads are





**A standard control system and new fixtures were employed over the workspaces. A mix of recycled 100W ED17 metal halide and fluorescent sources were used on the mezzanine. Along the monumental staircase (facing page, left) recessed adjustable MR16s highlight the landing, while recessed slot fixtures provide both ambient illumination and a luminous design feature. In the 14th-floor conference room, recessed slot fixtures offer general illumination (facing page, bottom). Outside the 15th-floor conference room, a cove light and soffit linear fluorescents provide 20 footcandles (facing page, top).**

controlled via a relay, which would also have an address and which can turn a group of fixtures on or off. According to Frances Pionegro, director of administrative services for AP, "DALI was important to us so that we could address the creativity of our employees. Photo editors will depend on a softer light, while others may need additional light," she says. "DALI allows us to work within these individual requirements."

In addition to benefiting employees with precisely calibrated light levels suited to their individual division's needs, AP's new lighting system also allows the organization to conserve energy and simplify reconfiguration, which will enable it to save a significant sum over the long haul. "Although there was an up-charge involved in installing the system, we did a cost analysis during the course of value-engineering the entire project, and we determined that savings on the client's use of kilowatts of energy per hour in New York, where electrical costs are high, would allow the pay-back period to occur within a year," says Brandt. According to Heizler, whose firm Applied Design Initiative is continuing with ongoing work for AP, the lighting system will also save on costs associated with any future interoffice relocations. "If, say, the photo group, which works under reduced lighting conditions, moves to

a new location on the floor, the costs associated with changing the lighting levels will be virtually nil," he says.

The DALI system was primarily employed on AP's newsroom floor, which spans two city blocks and includes work zones for all 17 of its news divisions, such as reporting and editing teams ranging from sports and business to local and international news. Since each division has unique needs, AP employees were involved in creating workspaces that would serve their own interests, including determining light levels that ideally support the nature of their work as a division. The dimming over the photo area, for example, is always at 20 percent output. The system also allowed the lighting designers to precisely control light levels in different zones throughout the day and night. While the office operates 24/7, only certain divisions require graveyard shifts, explains Horton. "There are large areas surrounding people working the night shift that don't need illumination after normal working hours," she says. "We brought the light levels of the adjacent areas down to 25 percent so they wouldn't feel like they were surrounded by darkness."

Because workspaces on the newsroom floor were customized to employee adjacency requirements, "the floor looks chaotic,"





says Heizler. Interestingly, the lighting design—which, over the work areas, are indirect fluorescent fixtures with a CRI of 85 and color temperature of 3500K—actually gives the space its sense of order. “It’s a huge floor plate with miles of furniture, so it’s the secondary ceiling plane that draws your eye,” says Horton. The indirect fixtures also enhance the employees’ work environment by eliminating glare on computer screens, and by softening the overall ambient illumination. A faux skylight, made of translucent acrylic panels covering a mix of fluorescent sources, creates a visual focal point over the center of the newsroom floor, where the data stream area and supervisors’ desks for each division are located; the support staff expand out around it.

Just after AP moved into its new space last August, the lighting designers urged the employees to “live in the space” for a while and provide them with feedback for fine-tuning. It was a “slow go with the DALI system,” says Pionegro. “It is not all that user friendly and we have had to reprogram it several times. However, once we worked out the kinks, it meets our requirements and has exceeded our expectations.” According to Horton, AP management was “much more oriented toward keeping their employees happy than they were energy conscious. But within the first week they could already see how much they were saving.” Since then, people from other news organizations have come to see the new offices to learn more about the lighting system, reports Horton. “AP is leading the industry,” she says, “which is important in such a competitive business.” **JEAN NAYAR**

## DETAILS

**PROJECT** The Associated Press Offices, New York City

**ARCHITECTURE** Griswold, Heckel & Kelly Associates, New York City

**LIGHTING DESIGN** Horton Lees Brogden Lighting Design, New York City

**WATTS PER SQUARE FOOT** 1.5 watts per square foot

**PHOTOGRAPHER** Peter Paige, Upper Saddle River, NJ

### MANUFACTURERS

Bronzelite  
Illuminating Experiences  
Lightolier

Linear Lighting  
Louis Poulsen  
Mark Lighting

Nemo  
Peerless  
Starfire  
Selux

Tango Lighting  
Tech Lighting

### APPLICATIONS

Ramps  
CEO restroom  
Offices, conference and training rooms, photo library, lobby, support areas, simulated skylight, corridors  
Boardroom  
Café  
Conference rooms, executive dining room, corridors, and restrooms  
Stairwell and corridors  
Elevator lobby  
Coves and display cases  
Stairwells and executive dining room  
Executive dining room  
Lobby





## DAYLIGHTING GETS TO WORK

A commitment to sustainable design features enables the Lillis Business Complex to articulate its curriculum through its building's architecture.





**SOME PROJECTS ANNOUNCE THEMSELVES WITH GREAT FANFARE, AND OTHERS** quietly take their place letting the architecture do the talking. Such is the case with the Lillis Business Complex at the University of Oregon in Eugene. What started off as a renovation and addition project for an existing business school facility was transformed through a collaborative process between client, architects, engineers, and energy and lighting specialists, into an excellent example of sustainable practices, and an advanced application and integration of daylighting and shading controls. As Kent Duffy, principal of Portland, Oregon-based SRG Partnership, explains, he knew from the initial meeting that he had an engaged client. "Having recently redefined its curriculum, the buildings that housed the school did not reflect this," he says. "You couldn't see it manifested in the physical surroundings. They said to us, 'We want to figure out what it takes to be the business school we want to be.'"

Like many projects today, the design and schematic development stages of the project involved numerous meetings and "workshop" sessions. Client, design team, and consultants analyzed and evaluated design and building technology issues, and determined what could be built on the very tight site that lay between three existing buildings, and a fourth, the oldest building on campus, registered with national landmark status. Added to this process, which commenced in 1999, were campus planning and university budget approval processes. The building was completed in the fall of 2003.

From the University's perspective, sustainable building systems were not part of the original project scope. "During the programming process, we were really struck by the faculty and students' desire that the building strive for energy-efficiency," says Duffy. "They

**The building's east-west siting and the atrium's transparency reestablish a historic campus axis while creating a new public gathering space for the university (top left). The four-story atrium acts as a natural complement to the building's passive ventilation strategy (lower left).**

came to us before we could bring up the issue." This push toward sustainability is not just lip service; it is the very foundation of the school's curriculum, which believes that businesses that do not practice sustainability will not survive in the coming decades. When it became clear to the university that this was a critical aspect of the project, the institution realized if it was going to do this, it had to do it right. Daylighting specialist G. Z. Brown, who is the director of the Energy Studies in Buildings Laboratory at the school of architecture just across campus, along with the local utility, and energy and solar consultants, were brought on board. "We started very early on in the process with a wide number of ways to address energy issues and key among them was lighting," says Duffy. "The cornerstone of any conservation plan, from my point of view, is daylighting, and so we set out to daylight as much of the building as we could."

The spaces where this becomes particularly apparent are the atrium, the lecture hall, and the case study rooms. Faculty programmatic requirements requested that entrances to lecture and classrooms be at the rear of the space so as not to interrupt lectures in progress. This layout meant the "front" of the classroom would be along the exterior window wall. But after several site visits to business schools on the West Coast, and witnessing lecture halls with problematic window placement and shading control, the client told the architects to omit windows from the classrooms completely. Not willing to give in so quickly to what they considered a rather harsh idea, the architects discussed the benefits of daylighting with the client, and the way it could be controlled in a space. Computer models prepared by G. Z. Brown showed that the proposed classroom layout would achieve daylight factors (the percentage of available light in the sky that is actually in the room) that would satisfy the requirements for both video presentations and note-taking. However, the values were occurring in the wrong places. "We showed the

client that if you turned the room around 180 degrees and entered from the front, with the exact same arrangements of sun shades and light shelves, you would produce the daylight factors ideal for students to take notes, and the preferred contrast ratios for video projection," states Duffy. Achieving this quality of light was far more important to the faculty than classroom disruption, and from this point forward they became completely committed to the idea of daylight as the primary light source.

This is exactly lighting designer Jim Benya's philosophy about lighting and his design approach for the project. As he says, "It seems a bit like fuzzy logic, but if you let spaces be lit with more natural light, if you let the light itself rise and fall naturally, you do not have to rely on electric lights." Benya, whose firm Benya Lighting Design is based in Tigard, Oregon, puts this into practice in the four-story, 65-foot-high atrium, an area treated as part indoor, part outdoor space. It is already so filled with light, that relatively few electric sources were required, and those that are included are meant to accent the different spaces within the atrium. "The approach was to not really light the space too much," Benya says, "but to create light that was delicate and disappearing, a little bit of light in a little bit of space." MR16s are used in the south portion of the atrium, custom-designed T5HO pendants hang in the corridors that lead into the space, and low-voltage monorails light the stair in the circular section of the rotunda.

Of the electric light sources used on the project, the real workhorse is a very small indirect/direct T5 fixture from Smedmarks. "It has a lot of design appeal; it's delicate, yet robust," explains Benya about his luminaire selection. Its versatile mounting options also allowed it to be installed in a number of locations throughout the project. "All sustainable issues tie back to doing the most sustainable thing that we can do to get more light out of a luminaire," explains Benya, who actually worked with the manufacturer to modify the lens and parabolic baffles. "The net result," Kent Duffy says, "is that we got more light out of it, more efficacy and efficiency."

Lutron was also key to the lighting story. The architects had called for separate lighting control and shading systems, initially thinking they would have to use two different manufacturers. Receiving the contract for both, Lutron was able to work with Benya to customize a system of integrated lighting and shading controls rather than two separate systems. Not only did Lutron develop new software to make this control integration possible, it changed the course of its product development, eventually leading to its Graphik 7000 offering.

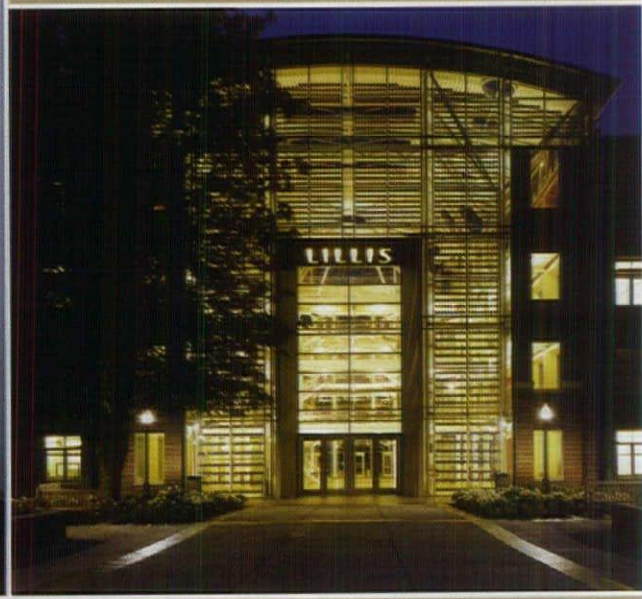
All the controls are the same in every room, and Lutron worked closely with the design team and faculty to create four pre-set scene functions that would respond to the different working and presentation scenarios. Basically the system works this way: upon entering a room and hitting the light switch, the lights come on, automatic roller blinds located in the window sill roll up, and adjust to the right position in accordance with the amount of daylight in the room, and then the lights dim back off. There is a manual override if necessary. A full-scale classroom mock-up was constructed to evaluate and analyze the lighting, shading, and control interface.

The Lillis Business Complex is an example of concept manifested into architectural form, both in terms of the school's curriculum, and the implementation of that mission through the building technologies used on the project: daylighting, integrated lighting and shading controls; thermal mass in the building to help moderate temperature fluctuations; and a passive ventilation strategy. "People think if your doing a sustainable building you end up with passive systems and that it requires less engineering, but the truth is it requires more engineering because you have to count on every subtle difference to make things work," says Kent Duffy. The result is a building that its designers and inhabitants are proud of, and in a true academic sense, serves as a laboratory of ideas. **ELIZABETH DONOFF**





Heat gain in the four-story atrium of this LEED-certified Silver building, is modulated on the south wall with 4-inch bands of photovoltaics that contribute to the 45 kilowatts of power the building generates for itself (above and left). At night the building glows from within utilizing only interior sources, rather than illuminating exterior surfaces (below). Skylights allow daylight to illuminate the lecture hall (facing page, top). An integrated lighting and shading control system, along with light shelves at the rear of the case study rooms, provide the perfect daylight factor balance: a factor of 4 for student note-taking over the seats, and a factor of .25 at the front of the room for video presentations (right).







## DETAILS

**PROJECT** Lillis Business Complex, University of Oregon, Eugene, OR

**CLIENT** University of Oregon, Eugene, OR

**ARCHITECT** SRG Partnership, Portland, OR

**MECHANICAL, ELECTRICAL, AND CIVIL ENGINEERS** Balzhiser & Hubbard Engineers, Eugene, OR

**LIGHTING DESIGNER** Benya Lighting Design, Tigard, OR

**ENERGY EFFICIENCY CONSULTANTS** Energy Studies in Buildings Laboratory, University of Oregon; Solarc Architecture & Engineering; Eugene Water & Electric Board

**SOLAR DESIGN** Solar Design Associates

**PROJECT SIZE** 137,346 square feet

**PHOTOGRAPHER** Lara Swimmer (facing page); Rick Keating (this page)

### MANUFACTURERS

Advent  
Cooper  
Edison Price  
Lutron  
Shaper  
  
Smedmarks  
  
Translite Sonoma  
Winona  
Zumtobel

### APPLICATIONS

Corridor custom-designed T5HO pendants  
Atrium column uplights  
Seminar room accent lighting  
Integrated lighting and shading control system  
Corridor compact fluorescent luminaires and bathroom vanity lights  
T5 indirect/direct luminaires in case study rooms, classrooms, and offices  
Atrium MRI16s  
Atrium compact fluorescent uplights  
Suspended T5HO luminaires in faculty offices





# Fascia Plates

Part scone, part architecture, part decoration and part identity system, Fascia Plates are completely unlike any exterior lighting system ever invented. These are luminaires which recess neatly into building facades to perform a myriad of practical, architectural and decorative duties. And because the system is engineered by Gardco, one finds luminaires that offer limitless flexibility of configuration, are durably engineered and then constructed to be considerate of first installation and long-term service needs.



GARDCO  
LIGHTING



For more information contact your Gardco representative, or [www.sitelighting.com](http://www.sitelighting.com)  
Circle No. 98 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)



## LIGHT MATTERS FOR HEALTHCARE

**THERE IS EVIDENCE THAT HOSPITABLE AND CALMING** healthcare environments can actually contribute to how quickly patients recuperate and how well staff provides care. Key components of these spaces are warm interior colors, comfortable furniture, beautiful artwork, daylighting, quality artificial lighting, reduced noise levels, improved wayfinding, and a connection to nature. In 1984, Dr. Robert Ulrich (now the Director of the Center for Health Systems and Design at Texas A&M) pioneered the notion of correlating patient recovery and the environment. Today, sources in the fields of design and healthcare credit a less stressful, more relaxing atmosphere with faster recovery, reduced hospital stays, less need for pain medication, and improved staff performance.<sup>1,2,3</sup> Encouraged by these findings, large hospitals and small ambulatory centers alike, regardless of budget, are adopting this design approach at various levels.

Daylighting and fixtures with low-glare luminaires and high-color-rendering sources applied to approximate the qualities of natural light help establish that essential connection to nature.

Visual ergonomics are also important in healthcare lighting plans. For instance, direct-indirect fluorescent lighting in corridors reduces the glare caused by some recessed downlights, which can be uncomfortable for patients in a supine position and stressful for nervous patients and anxious visitors. Well-placed indirect lighting can also emphasize destination nodes and offer subliminal wayfinding cues—critical goals for hospital planners.

Likewise, more hospitable patient rooms are in demand. In Steffian Bradley Architects' recently completed addition to Milford-Whitinsville Regional Hospital in Massachusetts, the artificial lighting in the new patient rooms is comprised of direct-indirect fluorescent wall sconces (next to the pull-out visitor's couch) and custom-built, multi-level wood valances (controlled via pillow-talk remotes). User-controlled stepped lighting allows a patient or staff member to dial up a light level that is suitable for them. Prismatic lens fixtures in the patient-wing corridors have been replaced with less institutional, dual-switched or dimmable indirect fluorescent sconces and low-glare recessed downlights.

Quality lighting is critical in support spaces (such as doctor suites and staff lounges) as a way to promote employee well-being. In the award-winning D'Amour Center for Cancer Care in Massachusetts (see A|L, July/August 2004), natural lighting is maximized in public "living rooms," infusion treatment areas, staff workspaces, and lounges. Sunlight is supplemented with integrated indirect coves (to enhance luminance balance)

and accent lighting to emphasize nature-themed artwork. In 24-hour facilities, fixtures in staff areas are specified with either dimmable or multi-switching options to allow users better control of lighting levels depending on the time of day or climatic conditions. Nurses' stations are fitted with indirect fluorescent coves to increase surface luminance and improve visual acuity and alertness.

Lighting has also become a consideration in special care nurseries (SCN) for pre-mature babies. In the *Journal of Pediatrics'* February 2002 issue, researchers from Duke University noted that cycle-light exposure helps pre-term infants "grow faster" (thereby developing their immune system quicker), which may reduce the risk of pre-term complications. At present, there is no consensus about what constitutes the ideal lighting environment for SCNs and well-baby nurseries. Although the delicate visual system of the pre-term newborn cannot handle intense light or exposure to UV or IR radiation, SCN units have been developed that allow diurnal-cycle (daylight) illumination at conservative levels.

A soothing environment is uniquely essential in psychiatric units, but there are few "welcoming" options among available security fixtures. However, creative designers are integrating multi-level or dimmable fluorescent lighting into custom millwork in order to meet both recommended healthcare safety standards and needs of the patients and staff.

Medical facilities designed to create a healing environment are likely to proliferate in a market where an increasingly informed public prefers a less institutional atmosphere. In a heavily competitive field for recruiting and maintaining well-trained staff, these types of environments can also help draw and keep personnel.<sup>2</sup> The future looks bright for quality lighting in healthcare!

**ENRIQUE ROJAS**, a member of the IALD and a senior associate at Steffian Bradley Architects in Boston, is an award-winning international lighting designer with experience in daylighting, and architectural and urban lighting design.

#### FOOTNOTES:

1. MOTOKO RICH, "HEALTHY HOSPITAL DESIGNS," WALL STREET JOURNAL, NOVEMBER 27, 2002
2. ROBERT CASSIDY, "POSITIVE PROGNOSIS," BUILDING DESIGN & CONSTRUCTION, FEBRUARY 1, 2003
3. RUSSELL C. COILE JR., "COMPETING BY DESIGN," THE PHYSICIAN EXECUTIVE, JULY/AUGUST 2002

**The D'Amour Center for Cancer Care (right), which won a 2004 A|L Design Award, exemplifies many of the new standards for healthcare lighting design.**





## SOWLES TRAURING, DENTAL PARTNERS, BOSTON

## DETAILS

PROJECT | Sowles Trauring

Dental Partners, Boston

DESIGN TEAM | Visnick &amp;

Caulfield Associates,  
(architecture and lighting)

PHOTOGRAPHER | Clements

Howcroft

MANUFACTURERS | Alkco, Belfer

Lighting, Beta Calco, Columbia

Lighting, Edison Price Lighting,

Finelite, Mark Lighting,

Prescolite, RSA, Tech Lighting

## CHALLENGE

Located on the second floor of the first high-rise built in Boston in the early 1970s, the offices of Sowles Trauring is one of the largest dental practices in the city. The space served first as a cafeteria for Prudential Insurance employees, and then as a health club. In renovating the space to accommodate the dental office, the design team was charged with several goals. First, the client wanted the space to be inviting for patients and a pleasant place to work for employees. Second, the layout of the office positioned most of the operatories along the building's northwest-facing perimeter, taking advantage of the floor-to-ceiling window walls; this meant creating a lighting system compatible with vast amounts of daylight, as well as darkness. "In New England, at about 3:30 in the afternoon, from late fall through early spring, darkness falls and the window walls become black holes," says Burton Visnick, principal of Visnick & Caulfield Associates, the Boston architecture firm that designed the project. "If the lighting weren't well planned, the glare that bounces back from those windows could be uncomfortable and distracting."

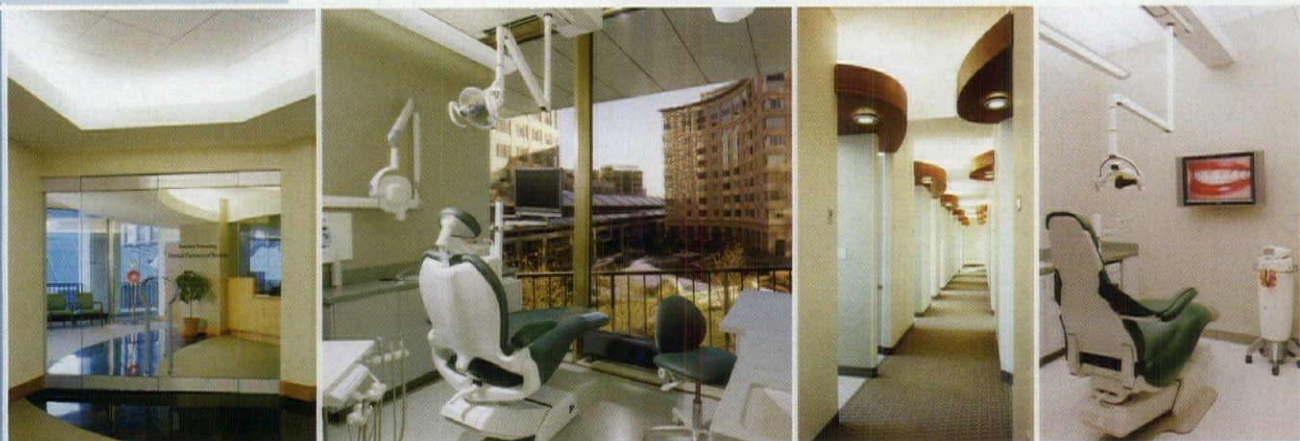
## ARCHITECTURAL AND LIGHTING SOLUTION

From Visnick's experience, dental practitioners usually have a hand in how the space is to be designed. "Dr. Charles Trauring happens to have great vision, a sense of functionality, and a good eye for design," says Visnick. For example, the long, narrow corridor leading to the operatories was at the minimum width of 44 inches required by code. Lighting was used to help it feel more spacious than it actually is. "We created cloud-shaped soffits constructed from gold-painted wood, and set them at varied heights on opposite sides of the corridor to mark the entrances to the operatories," Visnick explains. Each "cloud" includes an uplight and a downlight component: an 18-inch-long fluorescent tube brightens the

ceiling and emphasizes its height, and a compact fluorescent marks each operatory entrance. The operatories enjoy ample illumination from a system of two 8-foot-long indirect fluorescent pendants suspended by aircraft cable. Task light fixtures illuminate the patient's mouth area. "We wanted the lighting of the room to be at a similar level, so that when the practitioner needs to look away and reach for a piece of equipment, the irises aren't strained by continually opening and closing to accommodate significant light level changes," Visnick explains. Moreover, the indirect lighting system allows patients to recline and gaze up comfortably during examinations and procedures and prevents any severe glare problems resulting from the evening darkness. The design team also selected surfacing materials to avoid glare, such as matte finishes on the neutral-toned countertops and cabinetry.

The entrance and waiting room design have the patient in mind, but with a different look. Furniture with subtle, yet inviting, colors in shades of yellow and blue is complemented by artwork. Though the operatories and services areas are lit with fluorescent sources, ceiling-recessed MR16s highlight the wall-mounted prints and give the space a residential feel. While the operatories enjoy 100 footcandles of illumination, the entrance and waiting area are lit to 40 footcandles, low enough to create a calming atmosphere, but bright enough to allow patients to fill out required paperwork.

The collaboration between the design team and the client has succeeded in addressing not only the aesthetic considerations, but the challenges created by the architecture. "The client really wanted to create a special place for both patients and staff," says Visnick, proud of his success in achieving just that. And the client, Dr. Charles Trauring concurs: "The office has a classic look that's timeless. In ten years, it's going to look just as great." **WANDA JANKOWSKI**





## WOMEN'S AND CHILDREN'S HOSPITALS, CHAPEL HILL, NC

### CHALLENGE

When the University of North Carolina Hospitals demolished its Women's and Children's buildings in order to build two expanded structures covering 440,000 square feet, the task facing Dallas-based architecture firm HKS was to improve access and wayfinding for patients and visitors, and to create a stress-reducing atmosphere that appealed to all ages. The new facilities were mandated to connect at multiple floor levels with the existing hospital buildings, and faced site constraints on all four sides. The lighting system, which was one of the final projects worked on by Craig Roeder before his death in 1998, proved a key element in producing uplifting and differentiated environments.

### ARCHITECTURAL AND LIGHTING SOLUTION

A glass and steel concourse connects the two existing and two new hospital building entrances, each with its own distinctly designed canopy, signage, and lobby interior. The children's facility is colorful and playful. "The owner was very willing to use color in the lighting to differentiate the spaces," says HKS principal Jeff Stouffer. "The Women's and Children's Hospitals are located next to each other. We wanted to make the Children's public areas playful, but not childish, so that adults could relate to them as well. The Children's lobby is bolder, with more reds and yellows than the Women's Hospital. The use of geometric shapes—circles, squares, and triangles—adds playfulness."

Each building function has a corresponding lighting concept integrated into the architecture. Bright yellow neon tubing formed into overlapping geometric shapes adorns the wall behind the information desk. Indirect fiber optic lighting, fitted with color wheels, accents the curved ceiling coves, and changes color throughout the day to keep the multi-level concourse lively. Incandescent downlights provide general illumination and enhance the striped patterns of the terrazzo flooring. Off to one side of the lobby, a kinetic sculpture and theatrically lit stage for performances add to the uplifting atmosphere.

The adjacent Women's Hospital uses the same materials—stone, wood, and terrazzo—but in a style reflecting elegance rather than playfulness. The lobby centerpiece is an ornate glass ceiling backlit with neon to resemble a skylight, which lifts the eyes upward. "Backlighting the ceiling creates the illusion of dome height, where we couldn't do a dome," Stouffer explains. "Neon lasts a long time, making it cost effective to use." Wallwashers and downlights bring out the rich tones in wood-paneled walls and terrazzo patterned floors.

In both hospitals, window walls and skylights have been placed in strategic locations so that as the day progresses and the natural light changes, the perception of the lobby changes as well, adding to the kinetic feeling of the interior. "The staff loves being in those spaces," remarks Stouffer, "and employee satisfaction is becoming an issue in hospitals today." The desire to attract qualified staff, and create welcoming environments for patients and visitors, has prompted designers of healthcare facilities to look beyond their field for inspiration. "Today, elements of hospitality design are being carried over into the healthcare arena," Stouffer explains. "For example, you might see dramatic entrances with a grand piano or fireplace in the lobby. The experience of checking in is made to feel more like checking into a hotel."

Lively, uplifting spaces that aim to brighten the patients' and visitors' experience while in the hospital facilities, all accomplished at about 1 watt per square foot, place the North Carolina Women's and Children's Hospitals on the cutting edge of healthcare lighting design.

WANDA JANKOWSKI

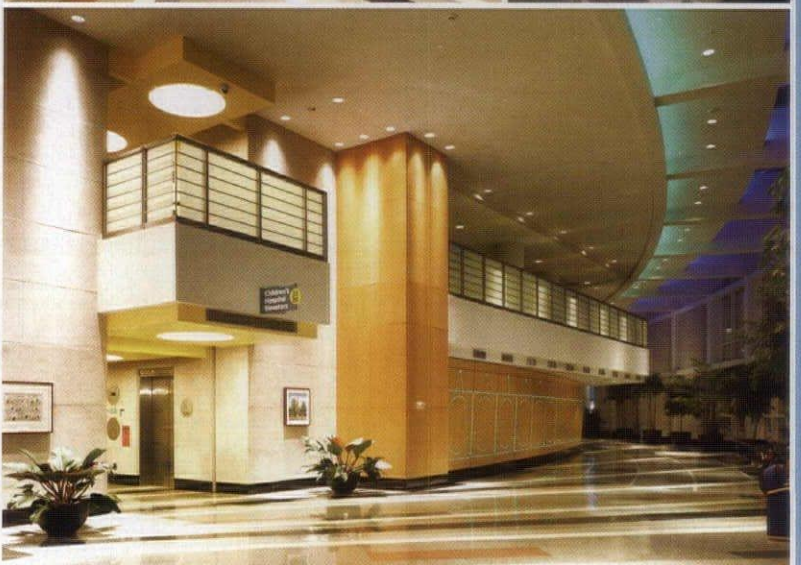
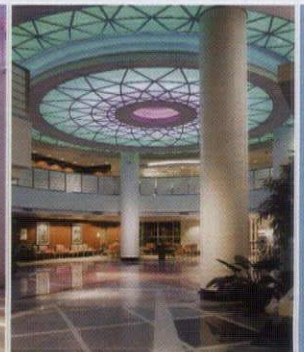
### DETAILS

**PROJECT** | North Carolina Women's and Children's Hospitals, Chapel Hill, North Carolina

**DESIGN TEAM** | HKS (architect); Corley, Redfoot Zack (associate architect and civil engineer); Craig Roeder (lighting designer); HKS Healthcare Interiors (interior design)

**PHOTOGRAPHER** | Ed LaCasse

**MANUFACTURERS** | Chloride, Daybrite, Kirlin, LSI, Omega, Targetti



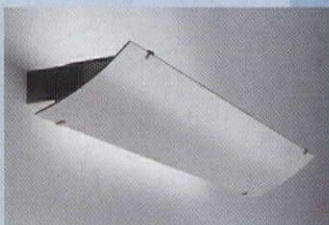




## DOCTOR RECOMMENDED

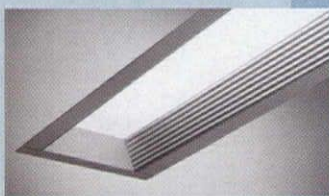
### 360 LIGHTING | APOLLO | [WWW.360LIGHTING.COM](http://WWW.360LIGHTING.COM)

Designed specifically for healthcare applications, this family of luminaires combines the functionality of patient exam lights with ambient lighting, and is fitted with both T8 and T5HO lamps for flexibility. Features include: a low-brightness acrylic lens with a toolless locking system, a sealed optical compartment that wards off dirt and dust, a matte-white paint finish, and ballast accessibility from below. The luminaire measure 5 1/4 inches deep by 24 inches wide. **CIRCLE 150**



### PEERLESS | LIGHTFOIL 2 & 3 | [WWW.PEERLESS-LIGHTING.COM](http://WWW.PEERLESS-LIGHTING.COM)

This family of indirect luminaires is available in two styles—with or without a cylindrical tubular end. The curved foil, made of a lightweight yet rigid composite material, conceals the extruded aluminum housing, electronic components, and faceted optics. Balanced illumination provides maximum ceiling surface coverage, and a small portion of the light is redirected down the wall just below each luminaire. The fixture is available in lengths of 35, 45, 57, and 69 inches, for use with T5 or T5HO lamps, and white, silver, or bronze finishes. **CIRCLE 151**



### FOCAL POINT | AVENUE SERIES | [WWW.FOCALPOINTLIGHTS.COM](http://WWW.FOCALPOINTLIGHTS.COM)

This family of luminaires utilizes a single T5 or T5HO lamp. Avenue A has a precision-formed micro-optic that delivers vertical illumination and washes walls from ceiling to floor. The 2-inch aperture is visually unobtrusive, and a black perforated diffuser minimizes lamp glare. Luminaires can be mounted end to end or spaced 6 feet or more on center. Avenue B has an aperture under 3 inches, a frosted acrylic lens, and a variety of trim options including recessed and flush. A semi-specular parabolic louver option is also available. **CIRCLE 152**



### ARDEE | LED LIGHTTILE | [WWW.ARDEELIGHTING.COM](http://WWW.ARDEELIGHTING.COM)

This surface-mounted luminaire, available in square, rectangular or round housings, combines the benefits of LED technology with contemporary design. It can be used as illuminated room identifiers or as supplemental emergency lighting in building corridors. The tile can be used individually or grouped together. The ADA-compliant fixture is fabricated with a die-cast cover plate, and is available in five standard plated metallic and painted finishes. Twenty-six LEDs with a color temperature of 5000K illuminate the fixture. **CIRCLE 153**



### SPI LIGHTING | ECHO 3.5 | [WWW.SPILIGHTING.COM](http://WWW.SPILIGHTING.COM)

The Echo 3.5 combines the benefits of T5 and T5HO fluorescent lamps. The fixture features a 4-inch-diameter housing; a compact three-step mounting bracket for quick installation; cast-aluminum end caps; an integral electronic ballast; spring-loaded sockets for simple relamping; a variety of shielding and lensing options; and an efficient optical design. The fixture can be mounted directly to wall surfaces, or ceiling or stem mounted. The luminaire is available in 12 paint finishes and 4 metallic paint finishes, and is UL listed for wet locations. **CIRCLE 154**



### DERUNGS MEDICAL LIGHTING | HALUX IRIS | [WWW.WALDMANNLIGHTING.COM](http://WWW.WALDMANNLIGHTING.COM)

This light features a "self-cooling" reflector design that allows air to circulate around the lamp. It provides an even light distribution and beam pattern, using one 12V/50W halogen lamp with an infrared reflective coating for increased energy conservation. The luminaire also features a fully pivoting 270-degree head, and radial grab ring for ease of use. A two-step switch enables the light to use either 60 or 100 percent intensity depending on the medical application. Measuring almost 62 inches tall in the freestanding version, the fixture is also available in wall- and ceiling-mounted options. **CIRCLE 155**



**13/18.04.05**  
**Euroluce**

**International Lighting Exhibition**

**Together with the Salone Internazionale del Mobile**

**Milan Fairgrounds**

Circle No. 13 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

Cosmit spa  
Foro Buonaparte 65  
20121 Milano, Italy

+ 39 02725941  
+ 39 0289011563 fax

[www.cosmit.it](http://www.cosmit.it)  
e-mail [info@cosmit.it](mailto:info@cosmit.it)

ufi

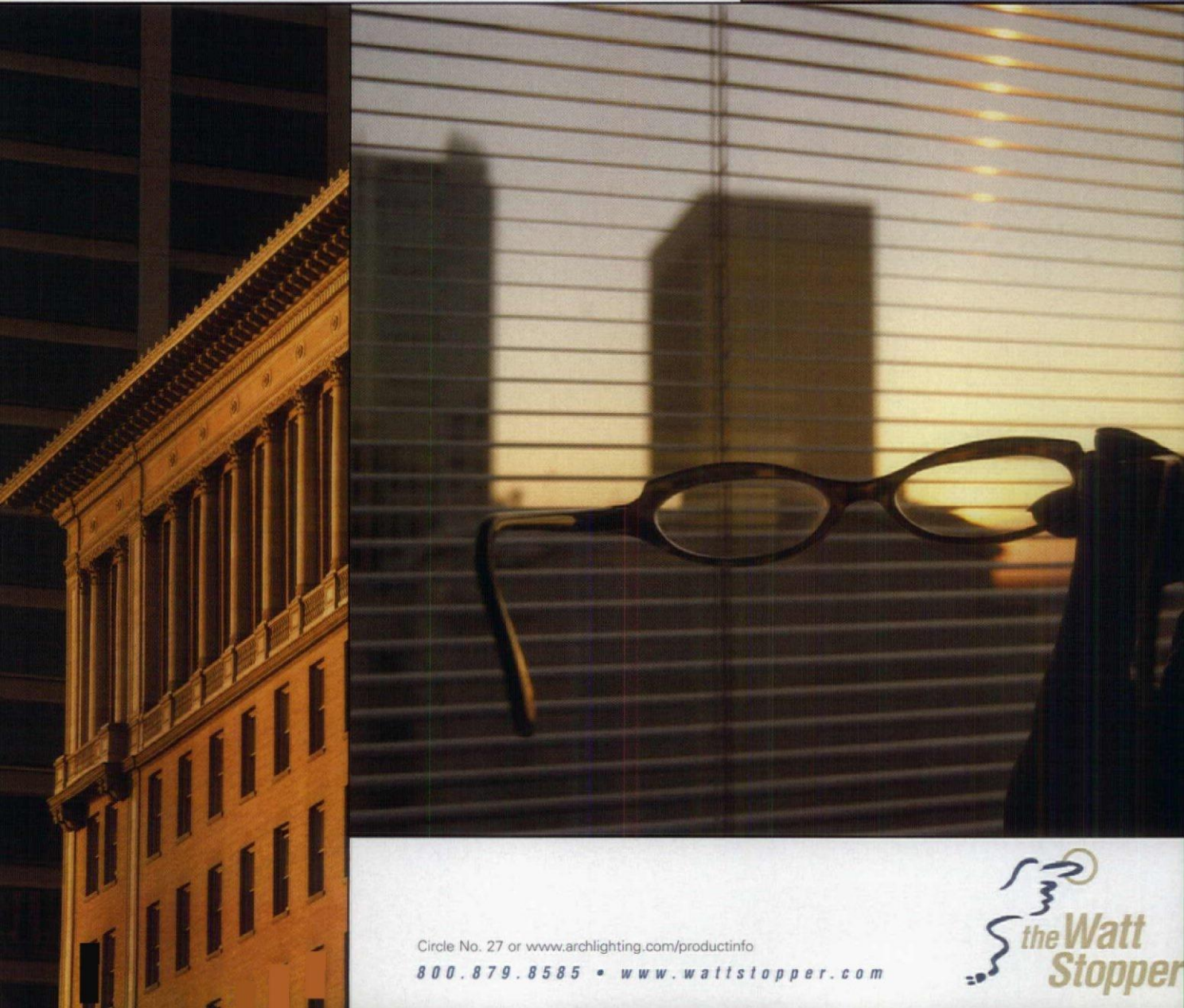




# Seen the light yet?

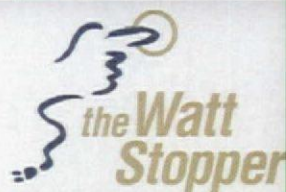
Daylighting's never been easier! The Watt Stopper's **NEW** LS-301 Dimming Photosensor represents a major advance in the science of daylighting control. This innovative control combines precision dimming with the ease of remote control adjustability. No more cumbersome ladder climbing. No more irritating over- or under-dimming. Just unprecedented ease of set up with individual occupant adjustability.

**Dimming control that's clear as daylight.**



Circle No. 27 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

800.879.8585 • [www.wattstopper.com](http://www.wattstopper.com)





# Finding Brilliance in Budget Design

JESSICA N. JOHNSON

## FOUR PROJECTS OVERCOME THE CHALLENGES OF A LOW BUDGET

WHEN ARCHITECTS AND LIGHTING DESIGNERS ARE CONFRONTED WITH A LOW budget, the initial fear is creativity will be value engineered out of the project completely or reduced to lack-luster solutions. Even the most experienced design professionals are challenged to provide a universal definition for the term; at the most basic level, however, "low-budget" means there are not enough funds in the project's coffer to meet the client's and the designer's first choice for material selections to achieve their aesthetic ideal. Hence, any building type can be a "low-budget" project. It is a relative concept, changing for each space, designer, and client.

Speaking with several lighting designers—all of whom submitted a range of projects in the "Best Lighting Design on a Budget" category for the 2004 A|L Design Awards program—reveals the challenges in balancing strong lighting design goals with a tight budget. It also proves high-quality, economical design can be done by keeping a few basic guidelines in mind.

### 1. CHOOSE SIMPLE, AND THUS AFFORDABLE, SOLUTIONS

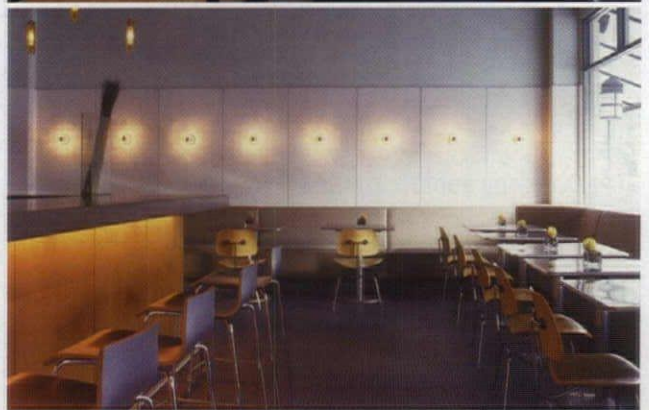
For Michelle Haim of Fanny Haim & Associates in Miami, regardless of budget, "lighting is an important part of a good project; it makes it or breaks it." For the Miami restaurant Q-Lounge, project designer Haim wanted the lighting to be clean and simple, following on her theory that "one light alone can be very beautiful," and that one light does not have to cost a fortune. "Materials don't need to be pricey to look good," she says. "Find affordable options and use them with definite intentions." Haim acknowledges, however, that it is not always easy to find less expensive materials that still reach the design goals. "You have to go through the process. It takes patience, ambition and drive to get the lighting effect across," she explains.

To light the venue's lounge area, Haim specified a basic A-lamp fixture with a chrome tip, forgoing the standard shade attachment, and arranging them in a striking row across the wall. Using a typical, inexpensive fixture in a non-traditional way worked to the project's advantage. Haim notes that the main lighting feature happened to be the least expensive detail of all.

### 2. CONSIDER GENERIC VERSUS CUSTOM

Bob Hogan, lighting principal of Rhode Island-based firm Hogan/Macaulay, suggests using generic rather than custom fixtures to solve lighting problems. Multiple lighting scenarios were needed to satisfy the different program requirements of Lumiere Salon, which won a 2004 A|L Commendable Achievement Design Award. The mirror wall is illuminated using generic fixtures, and by integrating the lighting element into a piece of the architecture or a built object: the mirrors at the individual workstations, for example. "The fixture itself was just a generic fluorescent bulb, but it is mounted inside the casework and behind the etched glass so that it has a much different effect than just a mounted light fixture."

Lighting the space above each cutting chair, however, could not be resolved in the same manner. "We knew we needed an element that would give us some warm light at the face level," Hogan says. Here, a custom treatment actually worked within the budget. In order to create the "luminous cloud," the term he uses to describe



Four projects—an office, a restaurant, a salon, and a health center—show that design integrity can be maintained despite a low budget. (See page 40 for the Magnet health center.) From top to bottom:

**ORR DESIGN OFFICE, Sacramento, California:** Circline fluorescents provide an interesting but inexpensive detail in the conference room.  
**Q-LOUNGE, Miami:** Arranged in a row across the wall, simple A-lamps with a chrome tip offer a striking detail, as well as general illumination.  
**LUMIERE SALON, Providence, Rhode Island:** Custom-designed diffusers paired with inexpensive pendant kits fit the lighting budget.



the arrangement of opal-glass pendant lights that hang in the main space, the designers called upon local glass artist, Tracy Glover. Rather than creating the fixture in its entirety, Glover made only the diffusers, which were added to inexpensive, widely available pendant kits. Knowing the locally available resources, whether artists or materials, can be invaluable in the process of creating custom features that both enhance the design and meet the budget.

### 3. PRIORITIZE THE EFFECT, NOT THE FIXTURE DETAILS

Garry Orr, design principal of his own firm in Sacramento, California, takes an architectural approach. "It's not about the light fixture," he explains, "it's about the light itself; lighting the space and creating the sculptural form." One of the problems with focusing on a particular fixture, says Orr, "is it's a commodity item and it can date the project." For his firm's office, Orr maintained the project's budget by "putting my creativity on a diet." Fixtures with unique decorative features were omitted from the specification, leaving what Orr refers to as "utility-grade fixtures," like circline fluorescents as pendants. For Orr, the challenge is to "create the same basic effect that you might be able to accomplish with more expensive fixtures." This approach is used throughout the project and the *light* becomes the source of the design, rather than the fixture. In the lobby, for example, he concealed inexpensive fluorescent fixtures behind the valance to create a wallwash that reflects light off the vertical surfaces and into the space, making the room appear as if it were floating.

### 4. PREPARE FOR SUBSTITUTIONS

Claudio Ramos, senior lighting designer with San Francisco firm H.E. Banks + Associates, faced a particular cost challenge in the design of Magnet, a health center for a nonprofit organization: Not only was the budget limited, but team members donated their design services pro-bono. Alternatives and substitutions played a key role in maintaining the budget for Magnet, which won the 2004 A|L Best Lighting Design on a Budget award. Although the client wanted an eye-catching color feature in the project, Ramos explains, "Our first idea, a rainbow of colors, would have blown the budget." His solution: T5 lamps with color gels (presently blue) in the cove at the back of the space, an alternative that adheres to the budget, meets the client's expectations, and still adds excitement to the project.

### 5. THINK LONG-TERM

With this project, Ramos notes, he had to focus not only on the short-term budget, but on the center's long-term operating costs as well. He describes his approach as, first thinking about the design and what is best for the project, and then evaluating how it could be approached with lower-budget equipment. "You must choose the right equipment and the right lamping carefully," he says. "You have to consider the cost of paying the energy bills." Ramos's specification of T5 lamps was "more expensive than T8 lamps, but in the long term, more economical for the project." ■

*Jessica N. Johnson is a project manager in New York City. She works on retail projects across the United States for Polo Ralph Lauren. Store Development. She received her Master of Architecture degree from North Carolina State University.*

## LISTEN TO WHAT THE DESIGNERS SAY:

### MICHELLE HAIM (Q-Lounge)

■ Keep it simple. "You don't have to be a minimalist to practice that idea. You can have your own aesthetic values, but simultaneously, if you respect and celebrate a certain material, it will come across more powerfully."

■ Pull from past projects and learn from current ones. "This is not going to be the last time I use the products I chose for this project. I definitely plan on exploring how I can do more with them."

### BOB HOGAN (Lumiere Salon)

■ Make sure the owner understands the importance of lighting in the project. The biggest safeguard for the lighting budget is ensuring clients understand what they are getting. With a visual idea of the lighting effect, clients should understand lighting's value to the project.

■ Research materials and use mock-ups. "I am a big believer in mock-ups. Especially in conjunction with materials, because it is not just the light, it is light's interaction with other materials that is important."

### GARY ORR (Orr Design Office)

■ Focus on the light effect itself, not the fixture. "I am careful not to date a project by using light fixtures that will have to be replaced later."

■ Do not rely too heavily on a catalogue from a manufacturer. "We rarely start with a manufacturer. Instead we start with the effect of the light, and find a way to achieve that quality of light with the least expensive fixture."

### CLAUDIO RAMOS (Magnet):

■ Be conscious of the short and long-term budgets. "For example, Magnet has three different levels of lights," says Ramos. "We save money by saving energy during the day when you don't need great quantities of light."

■ Try to work with different sales representatives. "We designed the lighting in such a way that we were able to specify two different products that could perform exactly the same way and wouldn't destroy the integrity of the design." Ultimately, though, if the lighting package can be purchased from one sales rep, the designer can ensure a more cost-effective lighting package as a whole.

(SEE PROJECT CREDITS, PAGE 40.)



**Introducing Z-MAX with "zero current" switching.  
Never before have zeros added up to so much.**

**Zero current leakage.  
Zero-crossing switching.  
Zero contact pitting.  
Zero arc showers.  
Zero competition.**



DeVos Place  
Grand Rapids,  
Michigan

**Z-MAX**

Now there's a relay system that gives you incredibly more life for your money—plus a broad range of energy management solutions. ■ Z-MAX, the proprietary switching circuitry from Leviton Lighting Management Systems, is specifically

designed to control electronic ballast loads and deliver an industry-leading *10-million-cycle life*. Far above the 6,000-cycle UL requirement, Z-MAX's performance is made possible by innovative design that lets you switch under full load conditions at zero crossing with true zero current. The result is air-gap switching that completely eliminates arc shower pitting at the contacts, the number one obstacle to longevity. ■ A built-in astronomical time clock, advanced networking and your choice of digital and low-voltage switches make Z-MAX the most advanced lighting control relay system available. There's simply nothing else like it. ■ Leviton's Lighting Management Systems delivers the broadest range of energy management solutions. From occupancy sensors to fully networked daylighting controls to facility-wide control, we're your single-source solution. To learn more, call 800-996-2276 or visit us at [www.leviton.com](http://www.leviton.com).

Circle No. 46 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

Z-MAX is a trademark of Leviton Manufacturing Co., Inc.  
© 2005 Leviton Manufacturing Co., Inc.  
An ISO-9001 Registered Quality Manufacturer.

**LEVITON**<sup>®</sup>

*Building a Connected World*



**DETAILS**

**Q-LOUNGE**

**INTERIOR DESIGNER** Fanny Haim & Associates, Miami Beach, FL  
**PHOTOGRAPHER** Carlos Domenech  
**PROJECT SIZE** 1,350 square feet  
**LIGHTING INSTALLATION COST** \$4,100

**LUMIERE SALON**

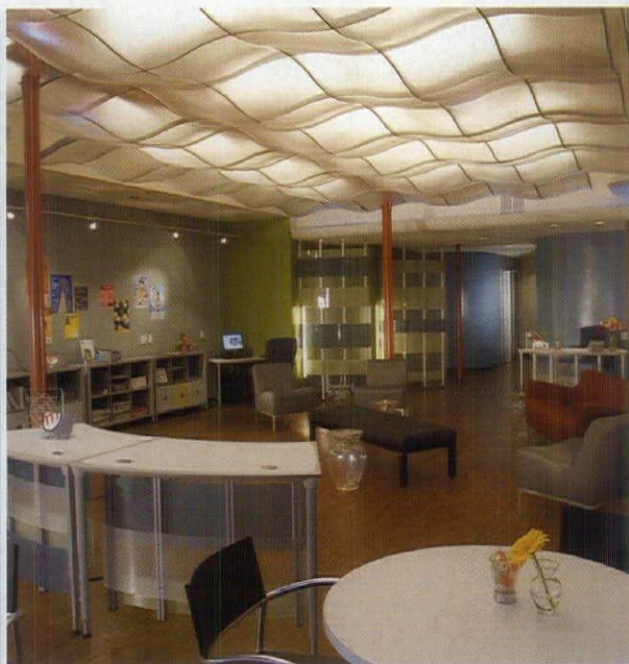
**LIGHTING DESIGNER** Hogan/MaCaulay Architects, Providence, RI  
**INTERIOR DESIGNER** Studio 360, Providence, RI  
**PHOTOGRAPHER** John Horner  
**PROJECT SIZE** 1,900 square feet  
**LIGHTING INSTALLATION COST** \$12,700

**ORR DESIGN OFFICE**

**ARCHITECT** Orr Design, Sacramento, CA  
**PHOTOGRAPHER** Jay Graham  
**PROJECT SIZE** 1,600 square feet  
**LIGHTING INSTALLATION COST** \$6,000

**MAGNET**

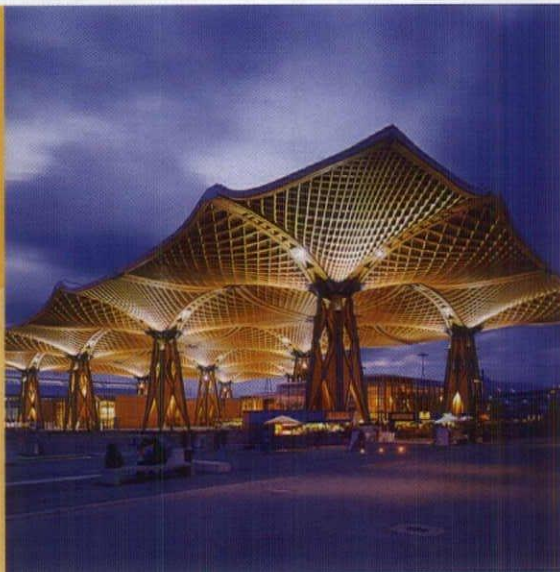
**ARCHITECT** Hamilton & Company, Berkeley, CA  
**LIGHTING DESIGNER** H.E. Banks + Associates, San Francisco  
**INTERIOR DESIGNER** MK Think, San Francisco  
**PHOTOGRAPHER** David Toerge  
**PROJECT SIZE** 1,100 square feet  
**LIGHTING INSTALLATION COST** \$6,900



**MAGNET, San Francisco:** Winner of A|L's 2004 Best Lighting Design on a Budget award, Magnet, a nonprofit health center in San Francisco, features T5 lamps with color gels, a budget solution for the "rainbow of colors" the client wanted.



se'lux



**SILL PRO Series Floodlights**

PRO Series spot/flood lighting systems from SELUX offer architects and lighting specifiers tried and true solutions to a wide range of project demands. Architecturally designed in three sizes and constructed of the highest quality materials, SILL PRO Series fixtures are used to precisely illuminate buildings, monuments, pedestrian areas, interiors, etc. Many mounting options, beam patterns, lamp types, louvers, lenses and other options available.

Light. Ideas. Systems.

www.selux.com/usa | 800.735.8927



# After DALI: A Look at What's Next

FRANCIS RUBINSTEIN

**IF YOU'RE INVOLVED IN COMMERCIAL LIGHTING DESIGN THESE DAYS, YOU HAVE** probably heard about DALI. Although few DALI ballasts are sold today (compared to "analog" dimming ballasts), the numbers are increasing, and all the major ballast companies now either produce ballasts obeying the DALI protocol or will do so in the near future.

DALI (Digital Addressable Lighting Interface) can be viewed less as an end in itself, but rather as a stepping-stone to a more complete and more capable building equipment automation system. I envision a time when all building systems—lighting, HVAC, envelope systems, even security and life safety—are effectively integrated, from the smallest device and sensor all the way to the Internet. Such a vision implies an integrated infrastructure of intelligent systems and components that are able to communicate wirelessly with one another in order to maximize comfort and reduce energy consumption. In the smart building of the future, the building operator and occupants will have appropriate access to all building comfort systems, not just lighting, and they will effortlessly exert this control to accomplish useful things in buildings. The capabilities and requirements of such smart building systems greatly exceed the capabilities of DALI, which was designed to control lighting ballasts only.

## WHAT IS DALI?

While many A|JL readers are already familiar with DALI, it is worth quickly reviewing the basic concept behind this technology. DALI is a digital communications system that sends digital signals over a cable to provide full dimming and switching control of fluorescent lights down to the individual ballast level. Each DALI ballast has an address and can be individually controlled from digital signals transmitted over a pair of control wires. The attraction of DALI is that all DALI ballasts in a zone are connected in parallel to the two control wires (technically, a "field bus" or "data bus"). Even though all the ballasts share the one data bus, they can be addressed either individually or in groups, as shown in Figure 1. This simplifies wiring and installation. The DALI field bus is particularly convenient for lighting applications because the wire polarity does not matter, and the power supply runs sufficient current through the field bus to power the DALI chips that reside in each ballast.

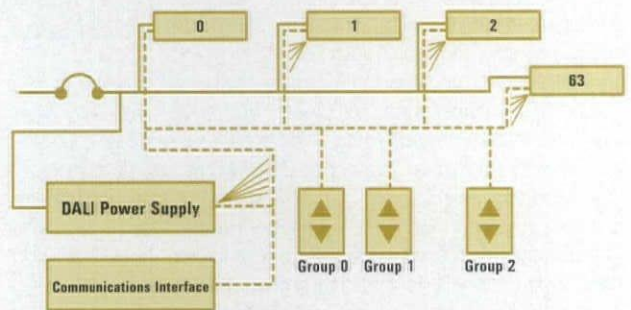
But DALI has significant limitations. First, it is a wired system. To use DALI in a building, one has to install additional wiring in the ceiling. Adding wiring to existing buildings is an expensive proposition and all wired systems are highly susceptible to wiring errors. This generally limits DALI to new construction or major renovations where the additional wiring can be integrated into the electrical design from the beginning. The huge existing inventory of commercial building floor space—some 60 billion square feet—is economically unattractive for DALI. (*Buildings Core Data Book*, Department of Energy, Office of Building Technologies, 2002.)

To comprehend the second limitation, it should be understood that any complete control system consists of three types of devices: actuators, sensors, and controllers. (See Figure 2.) Actuators are devices that activate something (like a ballast, switch, or motor); sensors measure environmental parameters (such as light or occupancy); the controller decides which actuators to control based on the sensor inputs. DALI was only designed to operate lighting ballasts, which are a specialized type of actuator, it does not address sensors at all, so a large class of

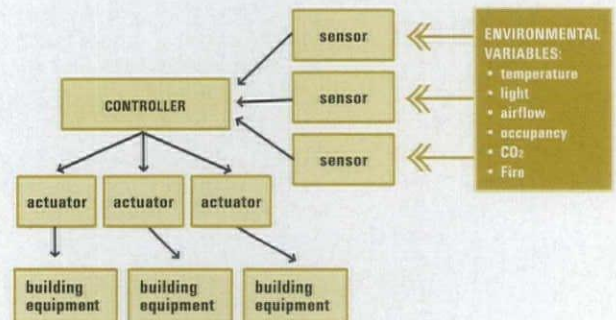
control devices is not handled by the DALI protocol. Recently, the NEMA Joint Sections Committee on DALI has taken up the challenge to extend the DALI protocol to a limited range of sensors. But this should only be considered a band-aid on the lighting control problem rather than a complete solution.

## A WIRELESS FUTURE

Given the limitations on DALI, are there any other full-featured communications protocols that would be up to the challenge? The answer is increasingly "yes," but there are also uncertainties



**FIG. 1:** Illustration showing several DALI ballasts, switches, and other components connected to a digital field bus (dashed lines).



**FIG. 2:** Diagram showing relationship between controller, actuators, and sensors in a typical building control application. Sensors detect the key environmental parameters, while the controller "decides" which actuator is to be controlled and how. The actuators operate the building equipment, which, in turn affects the building environment.

to the path ahead. Most experts agree that the only way lighting controls could significantly penetrate the existing building market is to adopt a wireless (radio frequency or RF) communications protocol that eliminates the need to install control wiring in the ceiling. In the last year, there are three main wireless protocols to emerge from the electronics and computer industry that may be appropriate for building control. The key technical attributes of these RF protocols are given in Table 1.

Of these protocols, ZigBee (a name that alludes to the zigzag-



ging of bees) is probably the most appropriate for building (and lighting) control, because it supports 64,000 nodes per master, has short latencies (i.e., fast response time), and consumes relatively little power. Since there are many lighting points within a typical building, being able to control thousands of nodes per master is a definite advantage. Fast response times are also a must for lighting control: when a user throws a switch, they expect virtually instantaneous response. ZigBee's 30-millisecond response time is far faster than the other two protocols, and thus more appropriate for rapid control of lighting circuits. Finally, ZigBee nodes consume little power and are optimized to "wake up" quickly. To save power, most wireless systems "sleep," and only "wake up" when scheduled or commanded to do so from another node or controller. Compared to the other protocols, ZigBee has low-data rates; in other words, it speaks slowly. But this is not of great concern for building equipment. After all, a lighting fixture doesn't have very much to say! For these reasons, ZigBee is increasingly being considered internationally for building and lighting control systems.

Note that ZigBee is not the only way to accomplish wireless communications in buildings. A number of companies, including

TABLE 1

FEATURES	IEEE 802.11B ("WIFI")	IEEE 802.15.4 ("BLUETOOTH")	IEEE 802.15.4 ("ZIGBEE")
POWER PROFILE	Hours	Days	Years
COMPLEXITY	Very Complex	Complex	Simple
NODES/MASTER	32	7	64,000
LATENCY	Enumeration up to 3 seconds	Enumeration up to 10 seconds	Enumeration 30 milliseconds
RANGE	100 meters	10 meters	70 - 300 meters
EXTENDABILITY	Roaming possible	No	Yes
DATA RATE	11 Mbps	1Mbps	250 Kbps
SECURITY	Authentication Service Set ID (SSID)	64 bit, 128 bit	128 bit AES and Application Layer user defined

Dust Networks, Crossbow, and Millennial, offer products of different degrees of suitability and scope. It may turn out that no one protocol is used for all building control applications. Rather a number of protocols may be used, each possibly optimized for the subsystem it controls. For example, a proprietary mesh networking protocol may be adapted at the switch leg (usually room) basis, while a wired system is used to control the local lights.

Although ZigBee, as well as other mesh networks, offer great promise for wireless building control, there is still a need for a "higher-order" framework under which to operate this confederacy

## WANT 70,000 PEERS\* TO SEE YOUR PROJECT?

Submit it to Architectural Lighting's Second Annual Light + Architecture Design Awards competition.



# A|L LIGHT & ARCHITECTURE DESIGN AWARDS

Winners will be featured in the July/August 2005 issue of Architectural Lighting, and posted on the [archlighting.com](http://archlighting.com) home page for three months. That means 70,000 readers and site visitors will see your project!

[WWW.ARCHLIGHTING.COM](http://WWW.ARCHLIGHTING.COM)

For this year's entry form, SEE PAGE 51 or visit [ARCHLIGHTING.com](http://ARCHLIGHTING.com).

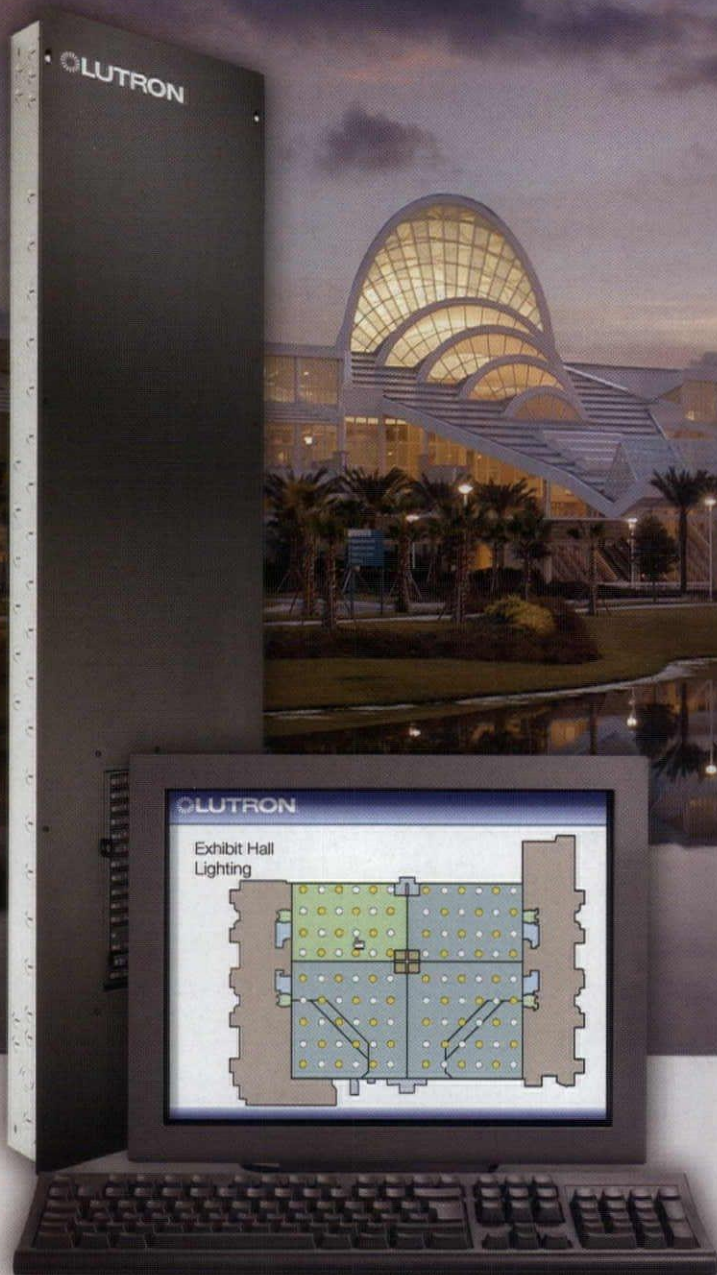
\* Includes circulation, pass-along readership, and [archlighting.com](http://archlighting.com) visitors.



# 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.

Photograph © Ben Tanner Photography. Architect: Helman Hurley Charvat Peacock Architects Inc.



*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](http://www.lutron.com/al) or call us toll free at **877.258.8766 ext. 221.**

 **LUTRON**  
Lutron controls your light..



of building control networks. This framework is usually embodied as an intelligent gateway—an electronic routing device that communicates with standard Ethernet on one side and the different relevant building communications protocols on the other. A number of companies, such as EnvEnergy and Aftek, now produce such gateways, and some can be optimized for multiple building control protocols.

A multi-protocol intelligent gateway is the key to implementing robust wireless networking for smart building control. Programs running on the gateway will take care of the messy business of commissioning, diagnosing, and operating the disparate attached control devices connected to the gateway. Most of these programs will work across different networks allowing the software industry to leverage its programming efforts.

To be successful, however, there is a need for a "Standard" that will formalize the operation of different aspects of the smart building network to reduce the risk to manufacturers that will produce the basic control devices and networks. The Institute of Electrical and Electronics Engineers (IEEE) is an enormous organization (almost 400,000 members worldwide) and has the expertise and reputation to devise such a standard. There are two reasons for adopting a standard at the gateway level: First, the building controls and sensor industry need a networking solution that works regardless of which wired and wireless protocols win the building controls horse race. We simply cannot know at this point how market forces will determine which protocol(s) will be adapted for each building subsystem. Some buildings will have both wired and wireless control devices that need to be able to "talk." Secondly, the smart building of the future will necessarily operate a wide variety of sensors

and actuators, each with its own unique properties and capabilities. The IEEE 1451 Standard on Sensors and Actuators (implemented in 1997) is a suite of guidelines each aimed at standardizing a different aspect of communications for smart transducers (sensors and actuators). Section five of IEEE 1451, for example, is concerned with wireless communications and in particular how ZigBee (and other major protocols) function. While 1451.5 is not part of the ZigBee specification, ZigBee is part of the 1451.5 standard. IEEE 1451.5 and ZigBee are complimentary standards. Whereas ZigBee is concerned with the communications protocol, IEEE 1451 is concerned with how data elements within devices are modeled and documented.

In the smart building of the future, different networks and devices will be seamlessly operated from intelligent gateways using the IEEE 1451 Standard. In the smart building of the future, the building operator and occupants will have appropriate access to all building comfort systems, not just lighting, and they will effortlessly exert this control to accomplish useful things in buildings. ■

more information at  
WWW.ARCHLIGHTING.COM

*Francis Rubinstein is principal investigator for the Lighting Research Group at the Lawrence Berkeley National Laboratory (LBNL), where he has been since 1979. His most recent work, focuses on a building equipment control network (IBECS) that will allow lighting fixtures and other building equipment to be operated and controlled from the Internet. He is a Fellow of the Illuminating Engineering Society and has authored over 20 technical papers.*

# ARCHLIGHTING.COM

THE SUPER SITE FOR LIGHTING SPECIFIERS

THE WEB ICON ATTACHED TO PRINT ARTICLES  
INDICATES EXPANDED WEB CONTENT.

VISIT ARCHLIGHTING.COM.



AL

architectural lighting

FEATURED ON THE WEB
JAN/FEB 2005

---

**PRODUCTS**

**INSTANT PRODUCT INFO**  
Browse reader service numbers for free product information. »

**Forum for LED Discussion**  
Advance Transformer has opened an online site, called LEDCentral (www.ledcentral.com), for the sharing of information about LEDs and solid state lighting technology and the marketplace. The project has potential to provide a forum for the industry that has not existed, at least in this form. Click "More" for a critique of the site's functions.  
011192005 | [MORE](#) »

**Tsunami Disaster Relief Aid**  
In light of the recent earthquake and related tsunami disaster in Sumatra, we encourage our design professional colleagues to visit the Architecture for Humanity website, www.architectsforhumanity.org to learn how you can help with relief efforts. Links to several relief organizations are also available on The American Institute for Architects website at www.aia.org.  
121312004 | [MORE](#) »

**Recycling Mercury**  
An educational CD promoting the recycling of mercury-containing lamps is now available through the Association of Lighting and Mercury Recyclers (ALMR), the Solid Waste Association of North America (SWANA) and the National Electrical Manufacturers Association (NEMA). The CD is a result of the Lamp Recycling Outreach Project (LRPP) funded in 2003 through a cooperative agreement with the United States E.P.A. For more information about the outreach project, go to: www.lamprecycle.org.

**COMPANY BUZZ**

**OptiLED** is supplying the company's Commercial, Designer, Festival and Linear Series to the **Lighting Research Center** for a three-day seminar led by LRC scientists. The next LED Lighting Institute will be held April 27 - 29, 2005.  
011192005

**Depe/IS** has announced the promotion of Stephen Kohl to the position of vice president of sales. Kohl came to Depe in 2001 from Road Lighting, where he helped initiate the Beta Lighting division.  
011192005

**Litecentral** has announced a student design competition which integrates its new **Inde-Pendants** ADA Science light fixture into architectural surroundings. It is open to all full-time undergraduate, graduate or post-graduate students enrolled in an accredited program in architecture, lighting design, interior design, engineering, industrial design, or other related disciplines. The registration deadline is Jan. 31, 2005. Entries are due April 29, 2005. For complete details and a registration form go to: www.litecentral.com and click on "Educational Support" in "The Company" menu, or contact Paping De Jr. at 701-294-0100 ext. 2146.  
01102005 | [MORE BUZZ](#) »

**SUBSCRIBE TO**  
architectural lighting

**AL**

**Incentives at WORK.com**

One site for incentive ideas, suppliers, and products!

---

**ARTICLE SEARCH**

SEARCH

**VNU Real Estate & Design Network**

- ▶ Architecture
- ▶ Architectural Lighting
- ▶ Contract
- ▶ Commercial Property News
- ▶ CRE
- ▶ Hospitality Design
- ▶ Kitchen & Bath Business
- ▶ Multi-Family News

**INDUSTRY EXCHANGE**

**QUESTION:** Color is in fashion. It has defined recent product launches, like Apple Computer's popular mini iMac, and it has influenced product design and new building materials and technologies. What role is color and color illumination playing in contemporary design, and is this for better or worse?  
**READ RESPONSES:** »

» [SUBMIT YOUR ANSWER](#) » [READ LAST MONTH'S Q & A](#)



ONLY



DISK



POLAR



O N Y  
design R.Toso, N.Massari & Associates

a.d. LEUCOS ph. STUDIO FUOCO

EPY 7431

# LEUCOS

EPY 7431

LEUCOS USA INC. 11 MAYFIELD AVENUE - EDISON, NJ 08818 - 7829 Tel. (732) 225-0010 Fax (732) 225-0250  
leuco1usa@aol.com - www.leucos.com  
Circle No. 11 or www.archlighting.com/productinfo





# 4<sup>th</sup> ANNUAL ACE.al AWARDS

ARCHITECT'S CHOICE  
FOR EXCELLENCE

CHOSEN BY  
LIGHTING DESIGNERS & ARCHITECTS

AWARDED BY  
ARCHITECTURAL LIGHTING

Recognizing  
durability,  
customer service,  
value and  
design.

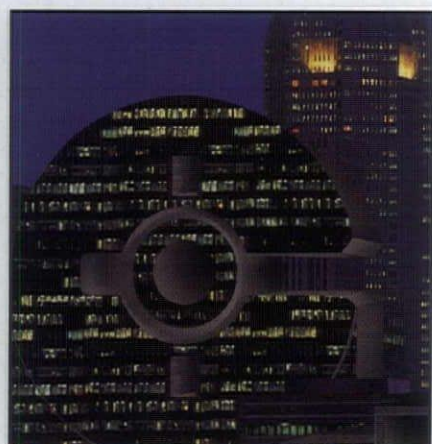
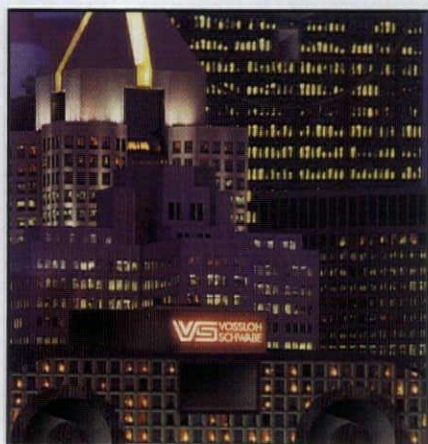
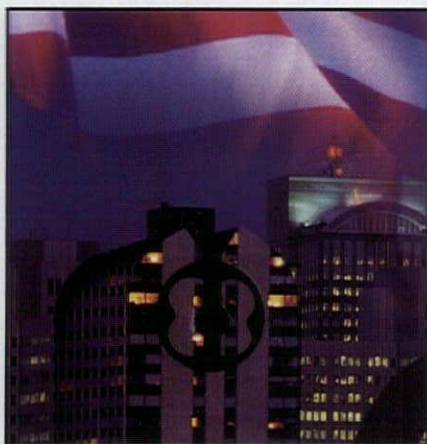
Look for your  
2005 ACE.al AWARDS  
ballot in the March and  
May/June issues of  
Architectural Lighting.

Cast your vote and let the industry know which  
lighting manufacturers you trust and rely on most



# VS

A New Lighting Experience



Visit us:



Euroshop, Düsseldorf  
19.-23.02.2005  
Hall 10, Booth F70



Lightfair, New York  
12.-14.04.2005  
Jacob Javits Center, Booth 1855



Intel, Milan  
17.-21.05.2005  
Hall 14/1, Booth B24/A27

## Let VS light up your life.

As one of the world's leading manufacturers of lighting components, Vossloh-Schwabe offers its international customers a comprehensive and practically unrivalled range of lighting products.

Vossloh-Schwabe has been putting quality first for 85 years. Today, as part of the Matsushita Electric Works Group, we are upholding this tradition as the basis of both the excellent reputation and high profile of the VS brand.

At the beginning of 2005, VS U.S. will be launching a completely new line of T5 and T8 sockets that are tailored to suit the needs of our U.S. Customers. Please ask for your personal sample display including poster and CAD files.

The extended five-year product warranty on all VS component systems is further proof of Vossloh-Schwabe's high quality standards.

Vossloh-Schwabe: A New Lighting Experience

Circle No. 107 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

Vossloh-Schwabe Inc. · 55 Mayview Road · Lawrence, PA 15055, USA  
Phone: +1 /7 24/7 43 47 70 · Fax: +1 /7 24/7 43 47 71 · [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)





## ENERGY-EFFICIENT LIGHTING ▶

Combine a **MIRO** reflector with a fluorescent lamp to create a high-performance lighting system that is both appealing and energy-efficient for today's commercial/industrial applications.

**MIRO**<sup>®</sup>—GUARANTEED FOR

**25 YEARS.**

BRIGHT LIGHTS STAY BRIGHT

YEAR AFTER YEAR.



**MIRO's** 95% Total Reflectivity is the **INDUSTRY STANDARD** for high-performance, specular surfaces. **MIRO** provides the ultimate in control and distribution of light, along with true color rendition, resulting in more light to your task. And when all your components are made from the same **MIRO** material, your system looks better and performs to maximum efficiency.

# Best Friends T5+MIRO LIGHTING SYSTEM

**D**esigners appreciate the flexibility and accuracy of **MIRO** specular optics from Alanod<sup>®</sup>. **MIRO** fixtures deliver higher illumination with lower watts per square foot, without compromising the quality of the lighting environment. **MIRO** with T5HO lamps creates fixtures that are both smaller and more efficient. Use the **MIRO** 95TR + T5 system to light areas such as high-bay warehouses, distribution centers or big box retailers. This is a great system wherever you need instant-on capability, true color rendering, and a cost-efficient lighting solution.

TO SEE IF **MIRO** IS RIGHT FOR YOUR APPLICATION, CONTACT:

Circle No. 2 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

**DAVID PARKANSKY (DWPARKANSKY@ALANOD.COM)** OR **512-733-9500** [WWW.ALANOD.COM](http://WWW.ALANOD.COM)







# A|L LIGHT & ARCHITECTURE DESIGN AWARDS

**Architectural Lighting** announces the second annual **A|L LIGHT & ARCHITECTURE DESIGN AWARDS** honoring projects in the field of architectural lighting. The **A|L DESIGN AWARDS** first recognize and reward excellent design within the unique criteria of a specific category. Then, for exceptional accomplishments, A|L will award the **A|L Virtuous Achievement (ALVA)** awards to acknowledge projects that achieve the best lighting design on a budget; the best design in a LEED-rated building; the best incorporation of daylight; and the best use of color. Winners will be featured in the July/August 2005 issue of A|L and on the web at [www.archlighting.com](http://www.archlighting.com).

## CATEGORIES

- ⊗ Corporate/Institutional
- ⊗ Entertainment/Cultural
  - ⊗ Healthcare
  - ⊗ Hospitality
  - ⊗ Outdoor
  - ⊗ Residential
  - ⊗ Retail
- ⊗ Transportation

## A|L VIRTUOUS ACHIEVEMENT

- ⊗ Best Lighting Design on a Budget
- ⊗ Best Lighting Design in a LEED-Rated Building
- ⊗ Best Incorporation of Daylight
- ⊗ Best Use of Color

**DEADLINE: MONDAY MAY 17, 2005**



# A|L LIGHT & ARCHITECTURE DESIGN AWARDS

Architectural Lighting announces the second annual A|L LIGHT & ARCHITECTURE DESIGN AWARDS honoring projects in the field of architectural lighting. Unlike other programs, the A|L DESIGN AWARDS first recognize and reward excellent designs within the unique criteria of a specific category. Then, for exceptional accomplishments, A|L will award the A|L VIRTUOUS ACHIEVEMENT (ALVA) AWARDS to acknowledge projects that achieve the best lighting design on a budget; the best design in a LEED-rated building; the best incorporation of daylight; and the best use of color. A|L believes these final four categories are increasingly important considerations for its readers, and therefore hopes to identify and showcase successful examples. All winning projects will be published in the July/August 2005 issue of A|L, and will be featured on [archlighting.com](http://archlighting.com) for three months.

## Deadline: Monday, May 17, 2005

Categories for the  
**A|L LIGHT & ARCHITECTURE  
DESIGN AWARDS** (*must check one*):

- Corporate/Institutional
- Entertainment/Cultural
- Healthcare
- Hospitality
- Outdoor
- Residential
- Retail
- Transportation

Projects may also be submitted for the  
**A|L VIRTUOUS ACHIEVEMENT AWARDS**  
(*check all for which you would like this  
project considered*):

- Best Lighting Design on a Budget
- Best Lighting Design in a  
LEED-Rated Building
- Best Incorporation of Daylight
- Best Use of Color

Entrant

Contact Name

Address

City, State, Zip

Phone Number

E-mail

Project Location

Client

Fee \$130 (first entry)

\$

\$95 (subsequent entries)

\$

Questions? Call 646-654-5775.

Total

\$

(*Make checks payable to Architectural Lighting.*)

I certify that the parties credited executed the submitted project and that it meets all eligibility requirements. I understand that *Architectural Lighting* magazine may disqualify any entry that fails to meet submission requirements. I grant *Architectural Lighting* magazine sole first publication rights to the project. (Signer must be authorized to represent those credited.)

Signature

Name

Date

Send entries to:

**A|L LIGHT & ARCHITECTURE DESIGN AWARDS**  
770 Broadway, 4<sup>th</sup> Floor, New York, NY 10003

*A|L reserves the right to reject any entry and to terminate the competition at any time. Any disputes relating to the competition shall be resolved exclusively by A|L and the panel of judges. This contest is governed by New York laws without regard to its conflict of laws principles. All entrants and clients submit themselves to the exclusive jurisdiction of courts in the southern district of New York.*

### ELIGIBILITY

1. Design professionals practicing in the United States, Canada, or Mexico may enter one or more submissions. Projects need not be located in those countries, however.

2. Projects must be completed after July, 2004.

### SUBMISSION REQUIREMENTS

3. All entry materials must be contained in one large envelope per project, with the submitting firm and project name printed on the outside of the envelope. Include in the envelope one photocopied set of all entry materials, as well as printouts of the digital images. (Photocopies and printouts may be black and white.)

4. Each submission must be accompanied by a **signed entry form and a check** covering the entry fee (see Entry Fees below). The form may be photocopied. Both the form and check should be included in the project envelope.

5. A **project fact sheet** must also be contained in each envelope. It should include (a) the project name, location and date of completion; (b) the project category, and whether the submission should be considered for any number of the four ALVA Awards (see Categories below); (c) project size in square feet; (d) watts per square foot; and (e) lighting installation cost.

Include a second page with a **brief written description** (no more than 600 words) of the client's goals, the challenges posed by the project and the design solutions applied. Submissions being considered for any of the four ALVA Awards should include an explanation (no more than 350 words) per ALVA category of why it excels in this/these category(ies). The digital image files should be numbered and keyed to the 600-word and/or 350-word description(s) to clarify what is depicted.

### 6. Images must be in digital format.

Additional image submission requirements: (a) one CD per project; (b) either TIF or PSD file format; (c) 300 dots-per-inch resolution; (d) dimensions of 1200x1200 pixels (either the height or width should be a minimum of 1200 pixels). Please include no fewer than 7 and no more than 12 images. Label the image files using a consistent titling protocol, including the project name and numbers that correspond to the written descriptions.

7. Please avoid the use of fill light when photographing the project; if its use is unavoidable, identify which shots include fill light.

8. To maintain anonymity during the judging process, no names of entrants or collaborating parties may appear on any part of the submission except on the signed entry form and on the project envelope.

### CATEGORIES

9. Identify each submission on its entry form and on the project fact sheet as one of the following eight categories. (A|L reserves the right to change the category of a submission.)

- Corporate/Institutional
- Healthcare
- Hospitality
- Entertainment/Cultural
- Retail
- Residential
- Outdoor
- Transportation

(Projects will not be judged against each other, but rather as superior examples of a lighting design solution within their category. Therefore, each category may have more than one winner or no winner at all; likewise, the number of entrants within the category will not impact whether there is a winner or how many.)

10. Appropriate submissions may also be considered for any of the four A|L Virtuous

Achievement (ALVA) Awards. Entrants must indicate that a project should be considered for these awards on the entry form and on the project fact sheet. These awards require the following additional information:

### Best Lighting Design on a Budget

Entrants must include an explanation (no more than 350 words) clarifying why theirs is a budget project; in addition, they must include project construction costs, lighting materials costs, and lighting and electrical subcontractor costs (preferably on a per-square-foot basis). Judges understand costs are relative to project type; however, they reserve the right to determine whether it is truly a budget project.

### Best Lighting Design in a LEED-Rated Building

Entrants must demonstrate that the lighting design contributed two or more points to a building's LEED rating.

### Best Incorporation of Daylight

Entrants must include an explanation (no more than 350 words) clarifying how the project integrates daylighting with electric lighting. In addition, entrants must include ASHRAE 90.1 or LEED documentation indicating that daylighting provides persistent on-peak energy savings.

### Best Use of Color

"Use of Color" may be interpreted liberally; however, judges will be asked to consider the complexity of the design.

### JUDGING

11. An independent panel of judges will award prizes to projects at their sole discretion, based on the complexity of the program and the lighting solutions applied.

12. Judging will take place in June 2005. Winning entrants will be notified in late June 2005, and their projects will appear in the July/August 2005 issue of A|L.

### PUBLICATION

13. Winners of the A|L Design Awards grant A|L first publication rights for their winning projects for the magazine's July/August 2005 issue. If the submission wins, the entrant agrees to provide further information and publication-worthy graphic materials as needed by A|L.

14. Winners of the A|L Design Awards agree to have their projects and names published in A|L and in any other media and must secure permission for publication from clients and photographers prior to entry.

15. Winners will be required to sign and return within a specified time a Publicity Release. Winners will also be required to sign a document stating that the entry is the original work of the winner and does not infringe on any proprietary right, including but not limited to copyright, trademark, and the rights of publicity and privacy of any party, and grants A|L the right to use the entry in print and electronic medium.

### ENTRY FEES

16. Each submission must be accompanied by a check covering the entry fee (\$130 for the first entry; \$95 for subsequent entries). Make check payable to *Architectural Lighting*. (Canadian and Mexican entrants, send drafts in U.S. dollars.)

### DEADLINE

17. Entries must be received by May 17, 2005.

### RETURN OF ENTRIES

18. A|L will ONLY return entries that provide a self-addressed stamped envelope. A|L shall not have liability for damaged or misplaced entries.

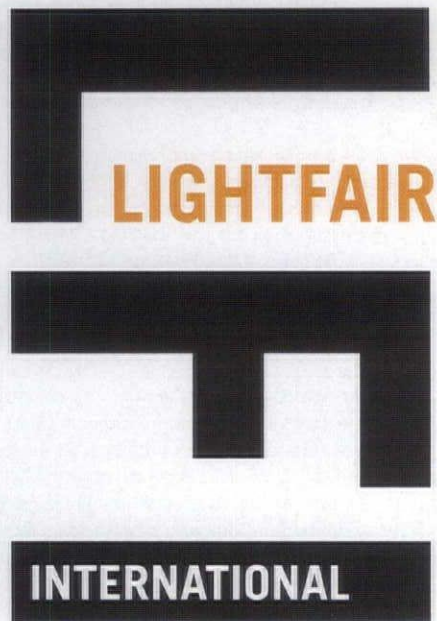




**LIGHTFAIR INTERNATIONAL™** returns to New York City this spring, offering architects, designers, engineers and industry professionals a dynamic new experience. An expanded LFI will inspire the design community to innovate, showcasing the latest in new products and technology, exciting events and environments and an unparalleled array of speakers and CEU-accredited course offerings. Find your inspiration April 10-14, 2005, Jacob K. Javits Convention Center, New York City.

## FIND INSPIRATION.

APRIL 10-14, 2005, JACOB K. JAVITS CONVENTION CENTER, NEW YORK CITY  
[WWW.LIGHTFAIR.COM](http://WWW.LIGHTFAIR.COM)



  
Sponsored by  
The Illuminating  
Engineering Society  
of North America

  
Sponsored by  
The International  
Association of  
Lighting Designers

  
Produced and Managed  
by AMC, Inc.

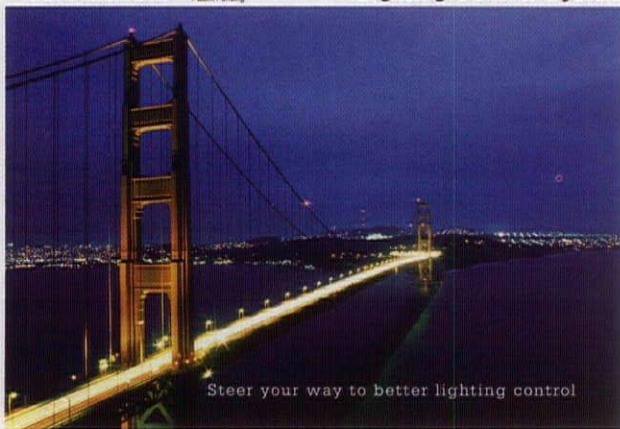
  
Official On-Site  
Event Directory

The future. Illuminated.



Vari-Ballast™ Patent Pending

Lighting Control System



**Controlling The Full Spectrum**

The VB4000 an electronic ballast that is network-ready with integrated lighting controls, accepts variable wattage and lamp type and universal input voltage.

The EB800, a dual-lamp electronic ballast that gives you the full spectrum. One compact EB800 will run two 400w lamps at the same time.

The EB1000 is an electronic ballast, based on Vari-Ballast™ technology, with entirely new functionality. It can be configured to run high-wattage and/or multiple lamps and in various combinations.



**IEPC Corporation**  
714-892-4443  
Email: al@vb1000.com  
Website: www.vb1000.com

Circle No. 101 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

**PRODUCT MARKETING MANAGER**

Ardee Lighting, a JJI Lighting Group Company has an immediate opportunity at our company headquarters in Shelby, North Carolina for a Product Marketing Manager to develop and execute our product development plan and marketing strategy.

Our ideal candidate should have at least 3 years experience in the lighting industry, an entrepreneurial spirit, be able to travel (approx 20%), posses good presentation skills with the ability to communicate to various audiences, and have fundamental product management knowledge/experience including marketing, sales and new product development.

We offer an excellent compensation package with a comprehensive benefits package.

For confidential consideration please send your resume to: [jmsyme@jjishelby.com](mailto:jmsyme@jjishelby.com) or mail to: Personnel Manager, Ardee Lighting, P.O. Box 1769, Shelby, NC 28151.

**SENIOR DESIGN CONSULTANT (LAKE WORTH, FL)**

Direct artistic dsgrn & fabrication of custom marble & granite pieces for interior decoration projects. Create scale models & scale drawings of vanities, countertops, kitchens, etc., based on customers specs. Select & classify materials like marbles, stones, granites, etc., accd to texture, thickness, dsgrn & project specs. Utilize architectural drawing s/ware, e.g., AutoCAD, BOA, etc., to create dsgrns. Implmt correction procedures for marbles, stones & granites due to texture changes & stains. Dvlp & implmt qlty control procedures to verify conformance to standards. 40 hrs/wk, 9-5 p, comp salary. Bach deg or equiv, based on education & exp in Architecture or related field, +2 yrs exp in job offd. Mail resume to: Marble Craft Design 425 Industrial St., Unit A, Lake Worth, FL 33461 Attn: Julio Giraldo

details

ad index

PAGE	ADVERTISER	CIRCLE NO.
50	Alanod	2
8	Bartco Lighting	49
C4	Beta/Kramer	64
12	B-K Lighting	7
13	Bruck Lighting	15
15	Cooper Lighting	78
35	Euroluce, Intl Lighting Exhibition	13
30	Gardco Lighting	98
C2-1	Hubbell	105
54	IEPC Corp.	101
5	Kim Lighting	12
47	Leucos USA Inc.	11
39, 41	Leviton	46, 63
53	Lightfair 2005	75
7	Lithonia Lighting	77
45	Lutron Electronics	9
14	Metalumen Mfg. Inc.	91
55	NeoCon West 2005	87
10	Osram Sylvania	38
2-3	Prescolite	28
40	Selux	85
42	Semper Fi Power Supply	96
C3	Venture Lighting	104
49	Vossloh-Schwabe	107
36	The Watt Stopper	27

Publisher is not liable for errors or omissions.



# NeoCon® West

Inspiring Solutions for the Design and Management of the Built Environment.



office



residential



hospitality



health care

march 9-10, 2005

L.A. Mart®

1933 S. Broadway • Los Angeles, Calif.

[www.merchandisemart.com](http://www.merchandisemart.com)

## GO BEYOND THE RADIUS AND DESIGN OUTSIDE THE BOX

NeoCon® West returns March 9-10, 2005 to Los Angeles, one of the hottest cities for design in the country.

- **Discover** products that rouse, captivate and inspire the senses.
- **Catapult** your career forward with networking opportunities, educational programs and association events.
- **Broaden** your scope with a forum of the most influential West Coast A&D leaders.
- **Evaluate** the latest innovations for the design and management of the built environment.

Mark your calendar now to attend NeoCon West. Visit our Web site at [www.merchandisemart.com](http://www.merchandisemart.com) (click on NeoCon West) for discounted travel and to register for seminars, association forums and special events.

For more information, call **1.800.677.6278**.



## Is the rise of colored light in architecture good design or a bad gimmick?

more commentary at  
WWW.ARCHLIGHTING.COM

Color is in fashion. It has defined recent product launches, like Apple Computer's mini iPod, and it has influenced product design and new building materials and technologies. But its ubiquity seems most apparent in the architectural lighting arena. It is everywhere, on building façades, in ceiling coves, as a downlight or a

wallwash, as a detail or the primary light source. But is this thoughtful design—or just a gimmick resulting from available product technology and a culture that increasingly appreciates “Bling Bling,” tasteful or not? What role is color and color illumination playing in contemporary design, and is this for better or worse?

**BARBARA CIANCI HORTON, PRESIDENT | HORTON LEES BROGDEN**

I admit that I love black and white movies, but I own a color TV. Color is vital to our visual world. That said, I organize our CD's by color—not by composer. Recently an art installation was created by an artist who rearranged a San Francisco bookstore's books by color—not author. My kind of store! We recently designed a color-changing lighting system for the Metlife Clock Tower building in New York City, which celebrates holidays, events, and acknowledges special occasions. It is a wonderful way to integrate color into architecture and celebrate our civic responsibility to the community. And I love when someone tells me that the building's color puts a smile on their face when they look out their living room window. More color please.

**TILOTYAMA NANDY, STUDENT, MASTERS IN ARCHITECTURAL LIGHTING | HOCHSCHULE, WISMAR, GERMANY**

Color is in fashion, especially when it comes to exterior lighting, but looking at these buildings, there is surely misuse of colored light in architecture. Each color has its respective connotation, association and symbolism. It is necessary to understand the interpretation of these individual colors and the sensation created by them before applying it to architecture, and though associations with a particular color can be universal (for example, blue light recalls water, sky, and mysticism), color symbolism may differ from culture to culture. Colored light can impart identity to a space, but can also destroy it.

In Europe colored light is used quite intelligently and meaningfully, unlike in Asian countries, which suffer “colored light pollution.” The reason for the misuse is apparent: the understanding of “colored light” by the lighting professional, and therefore its application to architecture. What we need to do is understand the space/architecture, its identity, and its inhabitants, before drenching it in the rain of colored light!

**KALYNN WEISS, SOUTHERN REGIONAL SALES MANAGER | ERCO LIGHTING**

Through the ages, color has elicited emotional responses. The easiest and least expensive way to achieve this is with paint; another, with lighting. By use of color filters, LEDs, or the T5 RGB technology, the lighting designer can paint with light. This is easier said than done, however, because of blending and balancing color. Just because a budget allows, color may not benefit the design. We have to depend on the design influence the architect and consultants have on the owner to specify the materials appropriate for the environment they are building. There are all levels of design and clients. Some projects will be inspirational and some will not. Without the use of color, we might end up with a Richard Meier white project. Hmm, what would be wrong with that?

**PAUL GREGORY, PRINCIPAL DESIGNER | FOCUS LIGHTING**

Just as beautiful reds and low-angle colored light can be found in the sunsets that coat the Mediterranean, the colors of light found in nature, when used tastefully in architectural projects, cannot be viewed as gimmicky. The creative use of light and color can evoke and convey emotions, making a project truly memorable, and inspiring the occupants to feel a connection with the space.

Color illumination is playing an increasingly important role in contemporary lighting design. The design arena is more competitive today, requiring that people be more “impressed.” The bar has been raised, competition is fierce, and designers are required to “think outside the box” in order to get the owner's project recognized. Used in a sensitive way, colored light can add uniqueness and versatility to the design.

Thanks to people like Flavin and Turrell, colored light has become its own art medium. The role of color has always been an issue in architecture. Lately, we have been bombarded with color in architecture, from red then blue then green color-changing glass panels on office building façades to brightly lit restaurant interiors. Color illumination must be used tastefully in the architectural lighting arena and carefully integrated into the design, using color to reveal the architecture and convey emotion, not using color for the sake of color.

**JESSE LILLEY, COMMUNICATIONS MANAGER | MARTIN ARCHITECTURAL**

I was at a RIBA conference recently to “explore the potential of color in the built environment.” There was agreement that architecture, where once monochrome, is now increasingly comfortable with color and colored lighting. The question for architects and lighting designers is no longer “should I,” but “how?”

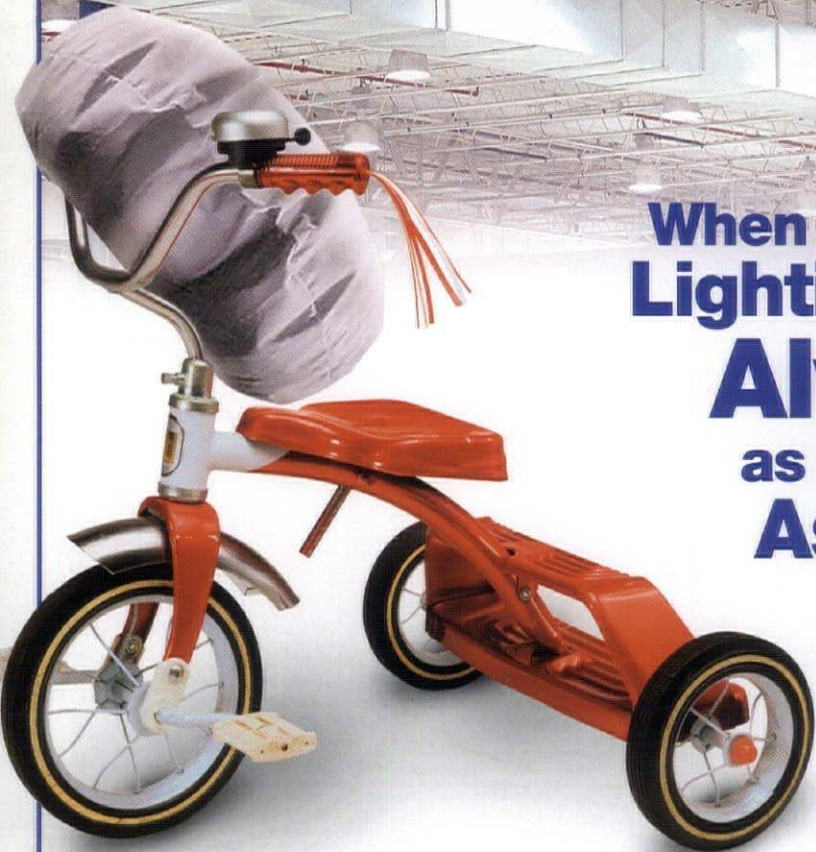
Jonathan Speirs of Speirs and Major Associates in London put it like this: Clients around the world are realizing that in order to develop a 24-hour economy and create vitality around their developments, it is important that their after-dark environments attract both aesthetically and increase a sense of security. The use of color is increasingly being used as part of a building's appearance after dark.

There are many good and bad examples. Our primary concern is that, in many cases, the profligate use of color is not adding to the external or internal appearance, and hence, detracts and creates an eyesore. But where color reinforces the architectural concept or where it enhances the visitors' experience and understanding of a building, it is a positive tool and one that architects are only recently beginning to appreciate.

From our point of view as a manufacturer, we realize that the irresponsible use of color and the inevitable backlash that will follow could cause us harm, which is why we always encourage criticism and vigorous discussion.



*Bright Ideas, Bold Innovations*



When it comes to  
**Lighting, We have**  
**Always** been  
as **Overprotective**  
**As...**

### Venture's Open Luminaire Rated MP Lamps

- Meet requirements of the new 2005 National Electric Code
- Does not require a luminaire lens, delivering **more light**
- Can be operated continuously, **no shut-off required**
- **Block more UV** with UV Shield® technology
- Can be used in open or enclosed luminaires
  - Meet ANSI criteria for use in open luminaires



**We Build Systems  
with safety in mind!**

**UNI-FORM**®  
PULSE START METAL HALIDE LIGHTING SYSTEMS



Call for more information:

**800-451-2606**

FAX: 800-451-2605 E-MAIL: [venture@adlt.com](mailto:venture@adlt.com)

**[www.venturelighting.com](http://www.venturelighting.com)**

Circle No. 104 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

© 2005 Venture Lighting International. Venture, Uni-Form and UV Shield are registered trademarks of Venture Lighting International

From



**VENTURE**®  
**LIGHTING**

An Advanced Lighting Technologies Company

VLI-0707A3-0105





# Aviator

A I R F O I L I N S P I R A T I O N

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.

designed by

**(800) 236-6800 • [www.beta-lighting.com](http://www.beta-lighting.com)**

Circle No. 64 or [www.archlighting.com/productinfo](http://www.archlighting.com/productinfo)

© 2004 Beta Lighting Inc.



Lighting®