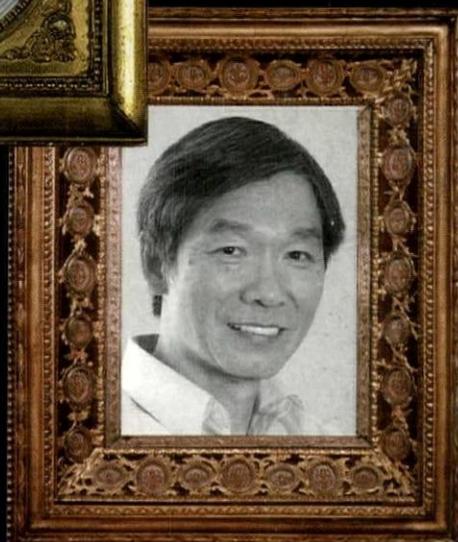
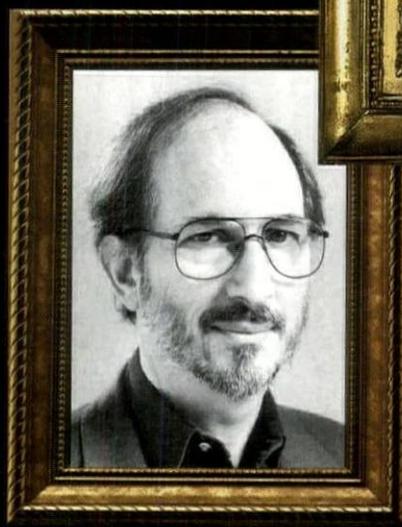
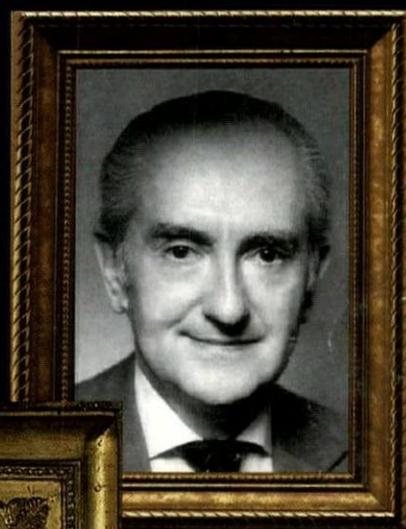


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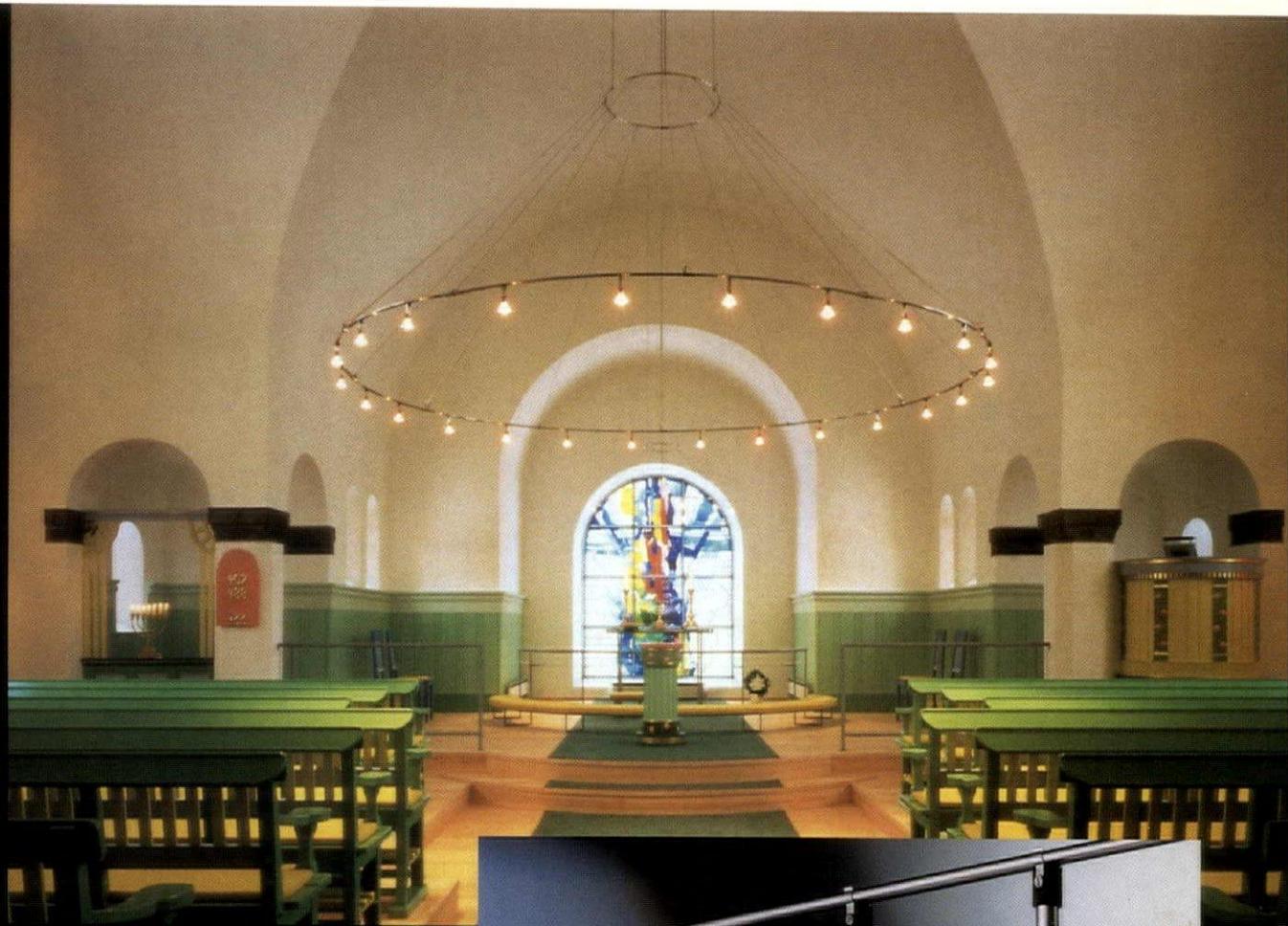
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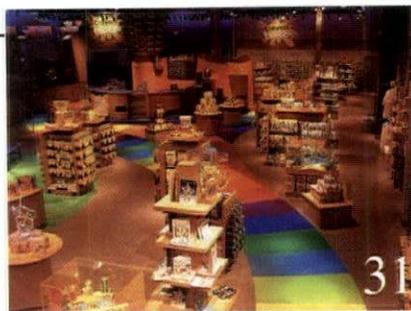
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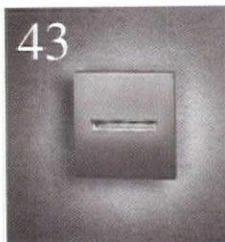
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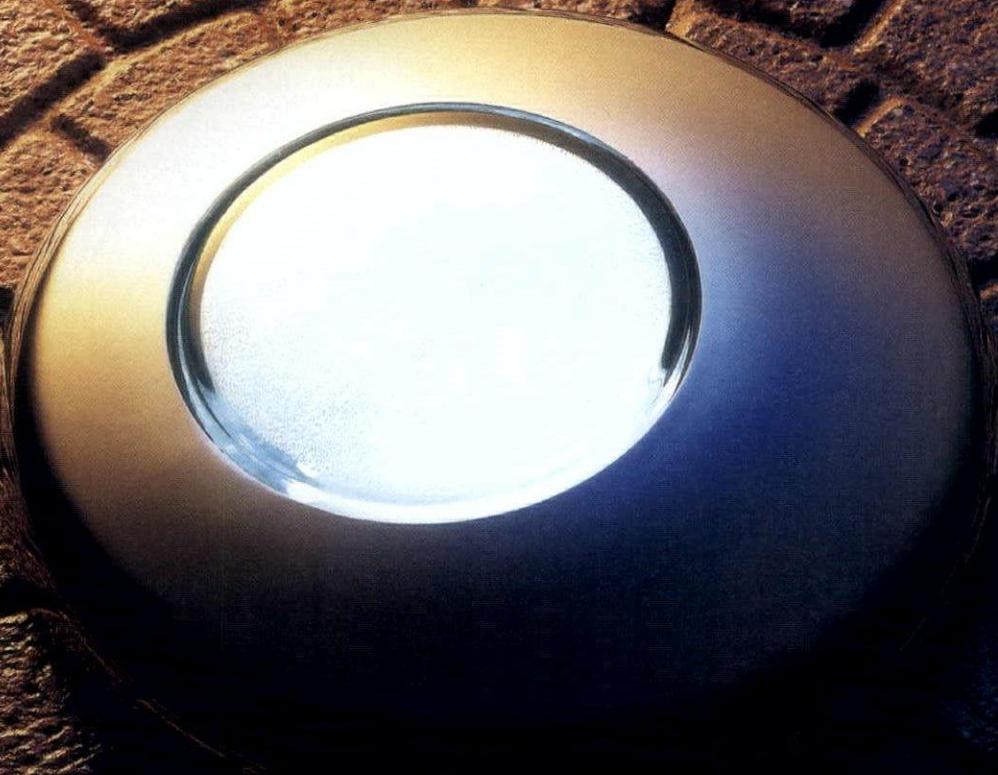
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LEVITON ACQUIRES ONQ

Leviton Mfg. Co. has acquired OnQ Technologies, Inc., a supplier of structured wiring and home networking technology. OnQ will be joined with Leviton Integrated Networks, the company's existing structured wiring division to create Leviton OnQ. The integration of the two organizations is expected to occur gradually and for now, Leviton and OnQ will run in parallel, and existing relationships with channel partners will remain in place.

INDUSTRIAL LIGHTING TAKES CENTER STAGE

To educate facility operators on the benefits of strategic industrial lighting, Philips Lighting has unveiled its Industrial Theater complex located in Somerset, NJ. The new 3,000-sq.-ft. facility is an interactive space designed to allow facility managers to experience firsthand the operation, security and energy- and cost-saving benefits of lighting and is the latest addition to the company's Lighting Application Center. Equipped with two sets of luminaire drums housing a range of light sources, the Industrial Theater will host workshops and offer tools to demonstrate the benefits of an appropriate lighting solution. For more information, visit www.lighting.philips.com/nam/education.

NCQLP ANNOUNCES EXAM RESULTS

Joseph M. Good, III, president of the National Council on Qualifications for the Lighting Professions (NCQLP) has announced the results for the 2002 exam. Of the 209 lighting practitioners who sat for the exam, 78.5 percent passed, increasing the roster of lighting certified individuals by 154 full LCs and 10 Intern LCs and bringing the total number of LCs to 1,127.

Lighting designers/consultants form the largest group (36 percent) of exam takers over the past three years; they are followed by electrical engineers (16 percent) and manufacturers' representatives and sales representatives (12 percent). Thirty-four percent of all exam takers list experience levels at 6-10 years, with another 38 percent indicating 11-20 years of experience. An average of 50 percent of exam takers have earned bachelor degrees and 18.7 percent went on to pursue advanced degrees. As to professional associations, 68 percent identify themselves as members of IESNA; 14 percent, the IALD; and 4 percent respectively cite primary affiliation as AEE, IEEE or the AIA.

This year, 16 graduate and undergraduate students took the LC exam as participants in the NCQLP Intern program, which is open to accredited colleges offering a minimum of 12 credit hours in lighting or lighting-related courses. Of the 16, seven attend Penn State University; four are students at Rensselaer Polytechnic Institute; and five are enrolled at Parsons.



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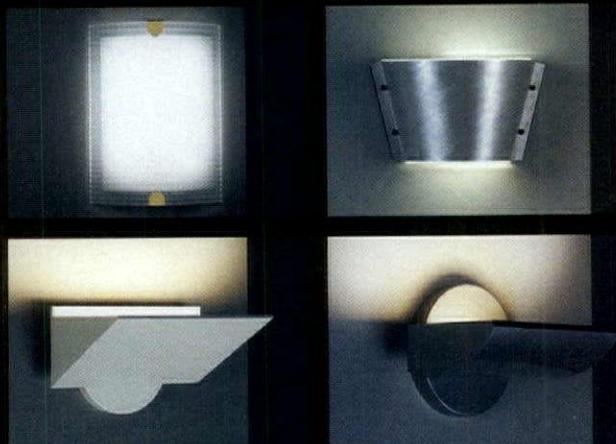
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HOLOPHANE HOLDS SEMINAR

Holophane will hold a three-day Utility Lighting Seminar April 21-23 at the company's Light & Vision Center in Newark, OH. The seminar will provide a multi-level exploration of roadway lighting fundamentals and concepts and design. Topics covered include fundamentals of light, visibility, light control, lamps and ballasts, calculations, cityscape and streetscape lighting and decorative lighting.

The seminar is free. Holophane will provide all hotel, meal and transportation amenities once participants arrive and arrange for transportation between Newark and Port Columbus International Airport. Reservations are required, as space is limited to 26 participants. For more information, contact your local Holophane representative or Katie Barker at (740) 349-4258, fax (740) 349-4474.

IES PHILLY ANNOUNCES CLASSES

The Philadelphia Section has announced its ED-100 Lighting Education Fundamentals Spring 2003 Program. The five-week introductory course will cover light, color, vision and perception, light sources, luminaires, calculations, lighting applications, lighting for visual impact, energy management and daylighting. The program is ideal for entry-level individuals working for contractors, lighting designers, electrical distributors, utility companies and lighting manufacturers. Classes will be held April 1, 8, 15, 22 and 29 in the evenings at the Holiday Inn in Philadelphia. Course fee is \$300. For more information, contact Joe Doyle at (215) 686-5515 or email iesphila@msn.com.

CON-TECH ANNOUNCES CONTEST

Con-Tech Lighting is accepting submissions for its 2003 Sirius Award contest. Installations featuring the company's Sirius fixtures that were completed between April 20, 2002 and April 20, 2003 are eligible for the current contest. Entries will be judged on creativity, originality and effective use of Sirius lighting products. The first-prize winner will receive \$2,500. For more information on rules and submissions, contact a local Con-Tech Lighting representative. Entries must be postmarked no later than April 19, 2003.

OSI ACHIEVES ISO9001:2000 CERTIFICATION

Osram Sylvania Inc.'s Electronic Control Systems division has successfully achieved compliance with the International Standard ISO9001:2000. This achievement follows a six-day audit conducted at the division's headquarters in Lake Zurich, IL; facilities in Danvers and Beverly, MA; and New Delhi, India.



Milwaukee Art Museum Calatrava Architects Kahler Slater (architect of record) Ring & DuChateau Inc. (lighting design)

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LIGHTSHOW/WEST 2003 PARTNERS WITH SAN FRANCISCO CHAPTER OF AIA

LightShow/West 2003 has signed the San Francisco chapter of the American Institute of Architects (AIA) as the official sponsor of its 2003 inaugural event, which will be held September 24-25 at the Concourse Exhibition Center at the San Francisco Design Center in San Francisco.

As an official event sponsor, AIA will provide strategic input toward the LightShow/West 2003 Conference Program to attract

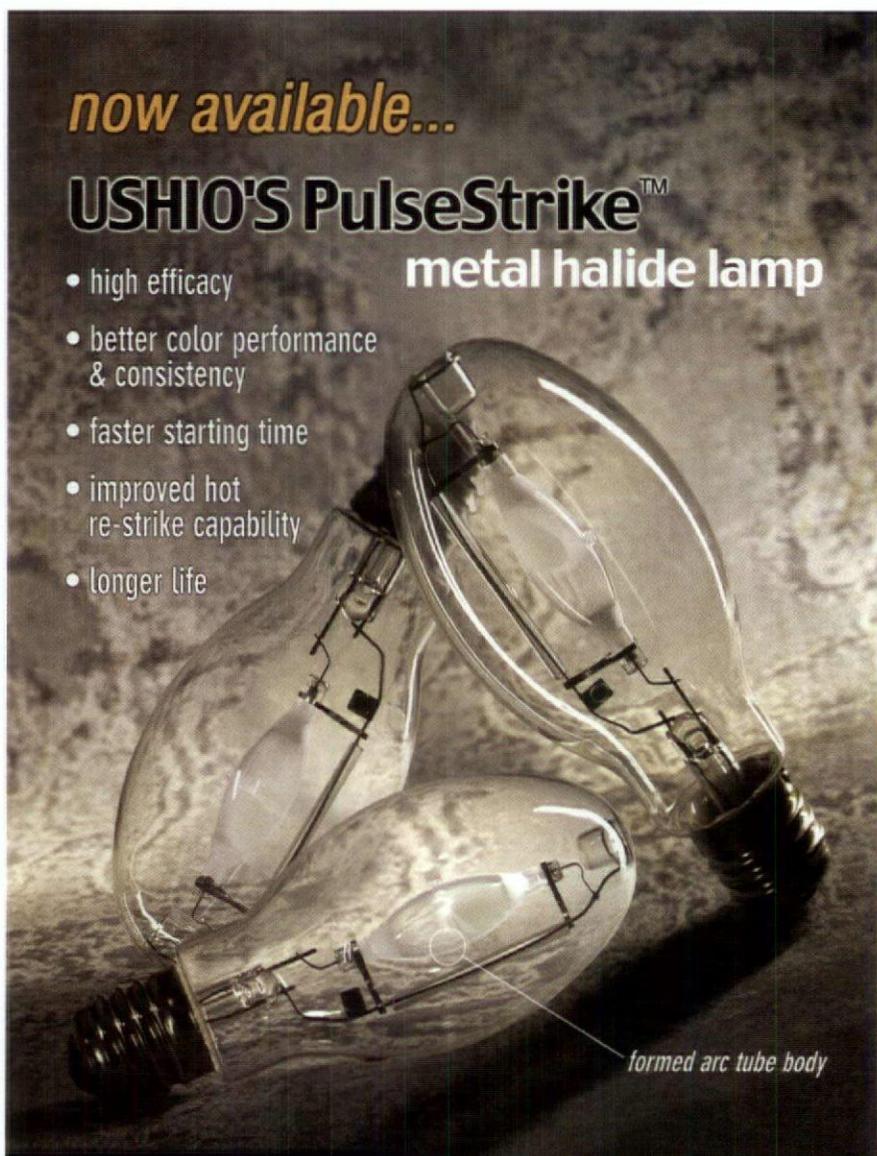
west coast architects and specifiers to the event. In addition to creating the architectural arm of the Conference, AIA will also accredit each session with continuing education units for their organization. The San Francisco chapter of the AIA has over 3,500 professional members.

For more information on attending or exhibiting at LightShow/West 2003, visit www.lightshowwest.com.

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USITT RECOGNIZES FOUR

The United States Institute for Theatre Technology (USITT) has announced the winners of the USITT Architecture Awards for 2003. Receiving Honor Awards, the highest designation, are the Roda Theatre, a part of Berkeley Repertory in Berkeley, CA and the Coronado Theatre in Rockford, IL. The Roda Theatre was designed by ELS Architecture and Urban Design; Auerbach•Pollock•Friedlander, theatre consultant; Charles M. Salter Associates, Inc., acoustical consultant. The Coronado Theatre was renovated and expanded by van Dijk Westlake Reed Leskosky, architect; Richard L. Johnson Associates, Inc., associate architects; Sachs Morgan Studio, Inc., theater consultants; The Talaske Group, acoustical consultants.

The Merit Award winners are: The Miller Performing Arts Center in Alfred, NY, which was designed by Kallmann McKinnell & Wood, architect; David Weiss, theatre consultant; Lewis Goodfriend & Associates, acoustical consultant; and the Royal Academy of Dramatic Art in London, England, which was designed by Avery Associates Architects, Theatre Projects Consultants and Paul Gillieron Acoustical Design. For more information about the program, visit www.usitt.org.

ON THE MOVE

The New Jersey office of **Mancini•Duffy** has relocated to 115 Route 46, F1000 Mountain Lakes, NJ 07046; phone (973) 984-2700, fax (973) 984-6594.

The Regional East Coast office of **Louis Poulsen Lighting** has moved to 46 Portsmouth Avenue, Staten Island, NY 10301; phone (718) 876-2675, fax (718) 876-9867, email: pci@louispoulsen.com.

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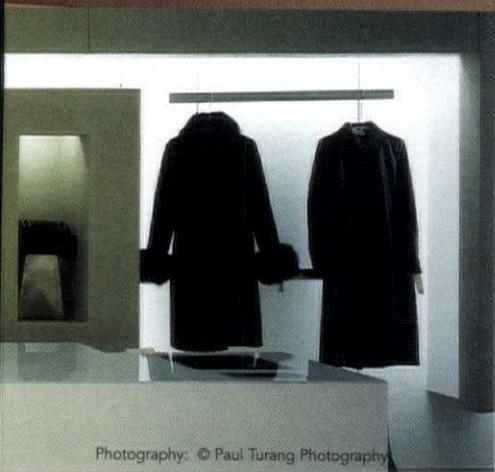
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Michael Stewart Hooker, lighting designer and principal of MSH Visual Planners of Berkeley, CA died on January 11, 2003 at his home in Oakland, CA. He was 52.

Michael graduated from the University of Michigan in 1971 and began work in Chicago theater and television. In addition to traditional work, he was a pioneer in the fields of multiple media production and trade show design. Prominent works included the Ghosts of the Globe Theater, a multiple media stage production at the Canadian National Exposition in 1978, and the bicentennial multimedia exhibit in Franklin Hall in Philadelphia. He became active in architectural lighting with Smith Hinchman and Grylls in 1980 and in 1986, founded MSH Visual Planners. In 1993, Hooker relocated his practice to Berkeley. Recent works included the House of Blues Hotel in Chicago. In 1998, Michael and partner Jan Moyer won the Edison Award for their design of the Far Niente Winery in Napa, CA. At a memorial in Berkeley, Stefan Graf described Hooker as "reminiscent of the Rolling Stones' Keith Richards, a man with outward creative genius and gonzo lifestyle, but privately warm, genuine and with a great passion for life."

Lutron Electronics has named **John E. Longenderfer** CEO and **Michael W. Pessina** executive VP and COO.

W.A.C. Lighting has appointed **Richard Kurtz** president and COO.

Holophane has appointed **Robert J. Drago** and **Jon L. Memsic** VP of sales for the eastern and western regions, respectively.

David Holladay has rejoined Quality Lighting as VP, general manager.

Flack + Kurtz Inc. has named **Randy J. Meyers, PE** president and CEO.

Syska Hennessy Group has named **Kenneth Klein, PE** and **Keith Fitzpatrick, PE** VP in the New York office.

David Fetterolf has been appointed southeast regional sales manager for Hadco's landscape division.

Nora Lighting has appointed **Michael Collier** northeast regional manager.

Bob Murphy has joined A.L.P. Lighting as western regional sales manager.

Catalina Lighting Inc. has promoted **James W. Scott** to managing director of its Canadian operations.

Al Michejda has joined HNTB as VP, national director of aviation architecture.

IA Interior Architects has named **Alfonso D'Elia, AIA** managing principal of the firm's New York office.

Edwin Taylor has been named sales representative for LEDtronics in Canada.

Cannon Design's **Robert L. Newsom, FAIA** has been named president of the AIA California Council.

2003 SCHEDULED EVENTS

March 16-18 Globalshop 2003, McCormick Place, Chicago. Contact: (800) 933-8735, fax (770) 291-5409, www.globalshop.org.

March 18-20 National Facilities Management and Technology Conference/Exposition (NFM&T), Baltimore Convention Center, Baltimore. Contact: www.nfmt.com.

March 19 DLF of New York Seminar: "Light Fantastic Works of Art," New York. Contact: (212) 613-1599, www.dlfnyc.com.

March 19-21 The 2003 Phosphor Global Summit, Renaissance Scottsdale Resort, Scottsdale, AZ. Contact: (207) 781-9800, www.intertechusa.com/phosphors.html.

March 19-21 Restoration & Renovation/Baltimore, Baltimore. Contact: www.restoremedia.com.

March 21-October 5 James Turrell: Knowing Light, Stroum/South Gallery, University of Washington, Seattle, WA. Contact: (206) 543-2281, www.henryart.org.

April 9 IESNY Seminar: "Sustainability and Lighting Design," New York. Contact: admin@iesny.org, www.iesny.org.

April 9-11 The TFM Show, McCormick Place, Chicago. Contact: (800) 524-0337, www.FacilityCity.com.

April 9-14 EuroLuce 2003, in conjunction with the Salone Internazionale del Mobile, Milan Fairgrounds, Milan, Italy. Contact: www.cosmit.it.

April 16 DLF of New York Seminar: "Photovoltaics: What's New Under the Sun," New York. Contact: (212) 613-1599, www.dlfnyc.com.

April 22-August 3 National Design Triennial: Inside Design Now, Smithsonian's Cooper-Hewitt, National Design Museum, New York. Contact: (212) 849-8400.

April 26-29 Lightstyle 2003, International Trade Fair for Domestic Lighting, Frankfurt Fair and Exhibition Centre, Frankfurt am Main, Germany. Contact: www.lightstyle.messefrankfurt.com.

May 1-3 HD 2003 Expo & Conference, Sands Exposition & Convention Center, Las Vegas, NV. Contact: Carrie Cavis, attendee marketing manager at (703) 488-2771, email cchavis@vnuexpo.com, www.hdexpo.com.

(Continued on page 15)

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May 6-8 Lightfair International 2003, Jacob Javits Convention Center, New York City. Contact: (404) 220-2205, email tiffanyw@lightfair.com, www.lightfair.com.

May 7 DLF of New York Seminar: "Your Guide to Lightfair," New York. Contact: (212) 613-1599, www.dlfny.com.

May 8 IESNY Seminar: "Masters of Light," New York. Contact: admin@iesny.org, www.iesny.org.

May 8-10 AIA 2003 National Convention and Expo, San Diego Convention Center, San Diego, CA. Contact: (888) 242-1824, www.aia.org.

June 11 DLF of New York Seminar: "Watt are You Doing to My Home," New York. Contact: (212) 613-1599, www.dlfny.com.

June 11-14 The 8th Guangzhou International Illumination Exhibition, Chinese Export Commodities Fairground, Guangzhou, China. Contact: (0086) 20-82578498, fax (0086) 20-82578955, www.illuminationchina.com.

June 14 IESNA Lumen West Awards Banquet, Los Angeles. Contact: Lisa Passamonte Green at (818) 786-3500, email lispag@visualterrain.net, www.iesla.org.

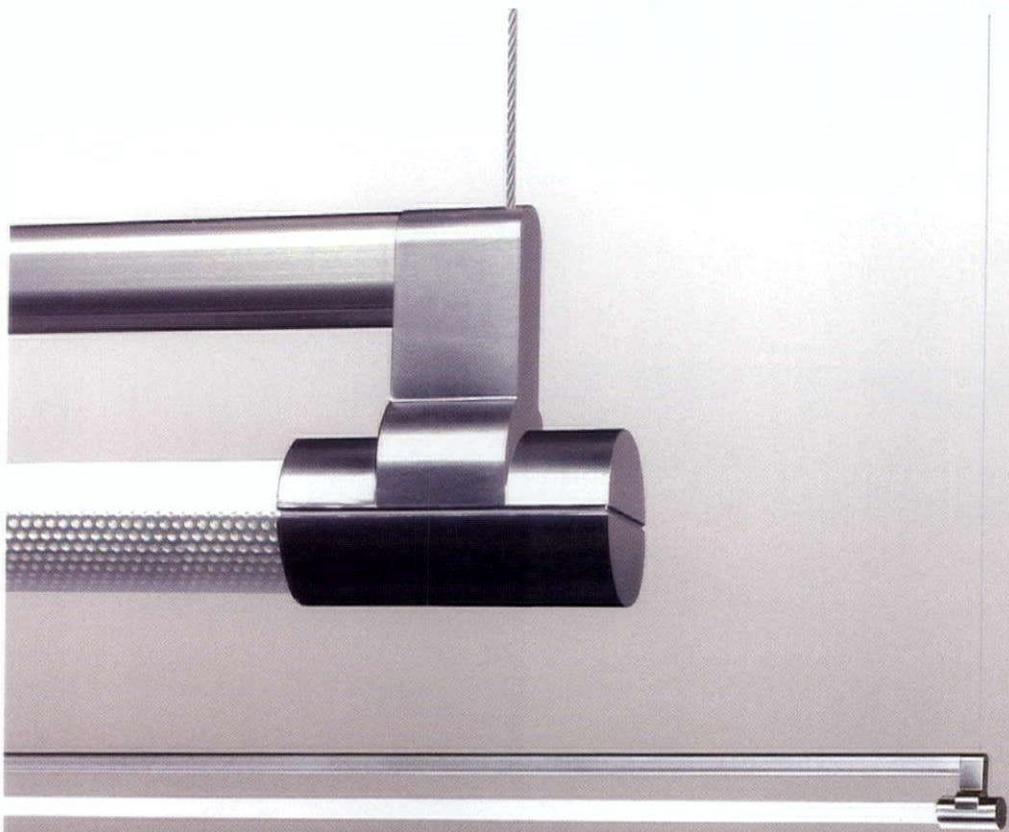
June 16-18 NeoCon World's Trade Fair, The Merchandise Mart, Chicago. Contact: www.merchandiseart.com.

June 18 Lumen Awards Banquet, New York. Contact: admin@iesny.org, www.iesny.org.

August 3-6 IESNA 2003 Annual Conference, Chicago. Contact: Valerie Landers (212) 248-5000, ext. 117, www.iesny.org.

September 24-25 LightShow/West 2003, Concourse Exhibition Center, San Francisco Design Center, San Francisco. Contact: www.lightshowwest.com.

November 19-21 ISH Light+Building Asia, Singapore Expo, Singapore. Contact: 0065 6737-1704, fax 0065 6732-9296, email info@singapore.messefrankfurt.com, www.light-building.messefrankfurt.com.



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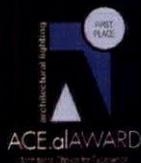


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Hall of Fame 2003

Legends & leaders in professional lighting design

"*Lighting is my life,*" said one of this year's Hall of Fame inductees. But each of the people profiled on the following pages, I'm quite sure, could make the same assertion. And what lives they have led. For all, lighting has been more than just an integral part of their careers, it has been their all-consuming passion. And thank goodness for that, as their drive, persistence and confidence—not to mention knowledge and inspiration—have helped define our industry today.

The careers of the five professionals honored on the following pages have spanned many years of lighting history, and at least three of them can be credited with being there at the beginning of it all: Jules Horton, Jules Fisher, and certainly, Carroll Cline spent 35+ years mentoring, questioning and "tinkering" to become prominent leaders in the field. The accomplishments of these three gentlemen have been more than peer-recognized, award-winning achievements; their work has won the respect and hearts of the public. And after all, as every lighting designer I interview tells me, "lighting of a space—interior or exterior—should *always* be for people."

In addition to the two Jules and Carroll, *Architectural Lighting*—and its readers—celebrate the careers of Naomi Miller and Peter Ngai, both of whom have played enormous roles in the areas of research and advancement of technology. Both Naomi and Peter have made unparalleled strides in impressing upon the industry issues of performance—from both design and engineering perspectives—and energy efficiency, developed in tandem with good design. In fact, sure enough, they share a common title: Naomi served as chair of the IESNA's Quality of the Visual Environment Committee and Peter now heads it.

Curious. Pioneering. Passionate. Inquisitive. Involved. Active. Determined. Individual. And even *curmudgeon*. These are just some of the words used to describe these five talents. And there are plenty more—plus the stories and personal anecdotes behind them. So, turn the page and read on to found out why ... ■

—Christina Trauthwein, Editor-in-Chief



You can help us start planning for next year's issue. Please submit your nominations to Architectural Lighting, 770 Broadway, New York, NY 10003, Attn.: Hall of Fame; fax them to (646) 654-5816; or email them to ctrauthwein@vnubuspubs.com. Please include the name/names of the lighting designer/industry professional you believe should be honored and a brief statement explaining why. All nominations will be considered.

JULES HORTON

Lighting Designer

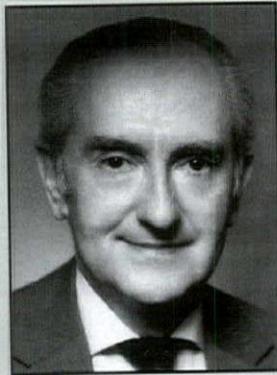
The word **pioneer**—\ pi'ō-nir' \ *one who opens or prepares others for a new line of thought or activity*—is definitely synonymous with Jules Horton.

If one were to ask what Jules Horton contributed to the lighting design profession, it would have to be that he believed in lighting design and its future as a recognized profession. During his 35-year career, he mentored so many of us, not only as designers but leaders of the second and even third generation of lighting professionals. As many in lighting know, Jules used his worldly experiences, raw talent, determination, style and charm often to create exceptional design solutions. He thrived on challenges and fought for what he believed in—sometimes too hard and in the process lost the battle. Although he may have lost some battles, lessons were learned by all of those who learned from him. We understood his enormous passion for the search of excellence in lighting.

Jules retired from the profession starting in 1994 and in 1998, was honored by the IALD in recognition for his many contributions. At the time, the firm now known as Horton Lees Brogden Lighting Design Inc. (HLBLD) prepared a list of all those who worked with Jules over the past 35 years and are still in the lighting profession—amazingly, 125 people have crossed paths with Jules Horton and many have gone on to become leaders and principals of their own firms or principals in HLBLD.

As many in the industry may know, Jules was trained as a structural engineer at the Polytechnic Institute in Warsaw, Poland and in 1947, came to the U.S. to obtain his Masters at Columbia University. He earned his PE and designed the radio tower located above the Empire State Building. His passion for art, music, language and literature connected him to many interesting circles of friends. One of the most significant people he met was Abe Feder, who introduced Jules to the world of architectural lighting. He apprenticed under Abe for several years and eventually left to start a lighting department with Syska & Hennessey. After several years of working on projects such as the new Madison Square Garden and the Triborough Bridge, he was asked to design the lighting of the Whitestone and Throgs' Neck Bridges for the 1964 World's Fair.

By the time Jules was ready to open his own firm, he had several large-scale, monumental lighting projects under his belt. The firm was launched in 1969 from his living-room studio. He incorporated the firm in 1970 and opened a studio on Park Avenue South with the commission of one of his first large-scale projects for the Dallas Fort Worth



International Airport with HOK. The project, like most airport projects, was several years in the making. Simultaneously, he developed a strong relationship with several prominent architectural firms across the country, which led to the design of several international projects including Jeddah International Airport, University of Petroleum and Minerals in Saudi Arabia and Tour de Crédit Lyonnais in Lyon, France. His European background and fluency in English, Polish, German, Russian, French and Italian served him well.

In a conversation with Jules some years ago, he revealed that he was the innovator of the 2x2 lensed fixture used widely in offices in the 1970s. Having learned that the sign industry had developed a U-shaped fluorescent lamp for compact signage, he saw an opportunity and went on to design a white metal box with a prismatic lens to shield the light source. The fixture was used in a large office project located in New York in the early '70s. It is amazing that his one simple move would dramatically influence the lighting industry as we know it today. And as anyone who knows Jules could attest, while he naturally boasts of his many accomplishments in life or often tells stories of his survival in a Russian labor camp in the Arkhangelsk Islands, Russia, in this

case and in many others, when it came to truly discussing his innovations, he checked his enormous ego and became almost unaware of the impact that his idea had on today's office environment.

In 1976, he hired Stephen Lees, who went on to become a partner in the firm in 1984. In response to their West Coast clients, Jules and Stephen opened a San Francisco office in 1984 with Denise Bruya-Fong. In 1992, Barbara Horton stepped into his shoes as president after

many years of being mentored. As Jules phased out of the business, the two partners expanded the firm once again with a Los Angeles office headed by Teal Brogden. The firm thrives with over 32 studio members in three offices—New York, Los Angeles and San Francisco—and is owned and managed by four principals: Barbara Horton, Stephen Lees, Teal Brogden and Angela McDonald.

Since retiring, Jules has stayed quietly at home exploring his passion for music, art and literature. His travels have been curtailed because of arthritis, which stemmed from knee injuries during the war. For those of you who know Jules, this is a terrible thing for him because he so loved to travel abroad, explore art galleries, attend concerts and opera and was never daunted by adversity. He recently began to venture out with the help of an attendant and his world, at almost 84, is reopening again. ■

—Barbara Cianci Horton



University of Petroleum and Minerals, Saudi Arabia

JULES FISHER

Lighting Designer

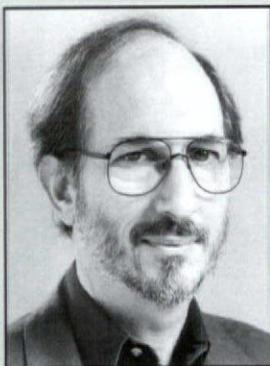
Curiosity may not be very kind to cats, but it is the key personal characteristic that enabled Jules Fisher to successfully apply his extraordinary talent to an extraordinarily wide range of venues. "I am an inquisitive person," said Fisher. "I still want to learn new things to this day." Fisher's inquisitiveness over the past 40 years has led to the formation of his three New York-based associated companies: Fisher Marantz Stone, an architectural lighting design firm; Fisher Dachs Associates, Inc., specializing in theater design consultation; and Third Eye Ltd., an entertainment lighting firm.

Fisher's curiosity drew him to the theater as a teenager. "I began in the theater just out of high school as an apprentice and then stage manager at the Valley Forge Music Fair," said Fisher. "In the second year of summer stock, I began looking closely at lighting." Fisher dovetailed the practice of lighting design in summer stock with formal study, earning a degree from Carnegie Institute of Technology.

"I moved to New York in 1960 and began lighting off-Broadway shows," he said. Fisher broadened his range to include lighting designs for industrial shows and in 1963, lighted his first Broadway production, *Spoon River Anthology*. The first of his seven Tony Awards for the lighting design of a Broadway show came in 1972 for *Pippin*. "Though my theatrical lighting designs continued, along the way in 1968, I established an architectural lighting firm with Paul Marantz," Fisher said. Today, in addition to third principal, Charles Stone, Fisher Marantz Stone boasts six experienced senior design associates. The firm's international portfolio includes a range of project types, such as the Jacob Javits Convention Center, the Four Seasons restaurant and the renovation of Carnegie Hall.

In 1971, Fisher added the role of producer to his credits with the Broadway production of *Lenny*. Other Broadway ventures followed, including *The Rink*, starring Liza Minelli and *Bob Fosse's Dancin'*. When his curiosity bubbled up once again, it led Fisher to address the environments in which the plays he lighted were performed. "I was interested in the design of the theaters themselves," said Fisher. "I saw that theaters have design mistakes in them. The Music Box in New York, for example, had no box office. The Forest Theater in Philadelphia had no dressing rooms. Our theater design consultation company, Fisher Dachs Associates, is able to fix these mistakes or help create new spaces that avoid them."

Fisher Dachs Associates, formed with partner Joshua Dachs, has been responsible for the design of New York's Second Stage, Circle in the Square and Joyce theaters; the renovation of Radio City Music Hall and the New Jersey Performing Arts Center; and the design of numerous U.S. civic centers and regional theaters such as Guthrie Theatre, Alley Theatre and Arena Stage. "I am interested in problems of scale that you find in venues such as rock-and-roll



concerts." Fisher explained. Fisher has also served as production supervisor for tours of rock performers such as the Rolling Stones, Kiss and David Bowie.

Six years ago, his thirst for knowing and doing more led to a partnership with theatrical lighting designer, Peggy Eisenhauer. They formed Third Eye Ltd. to create designs for all types of entertainment lighting projects, from Broadway plays to films and concerts. Third Eye's credits include the 2003 hit movie, *Chicago*. "We lighted 15 musical numbers for *Chicago* and Peggy called the cues live for each

take, which gave the scenes a sharper and crisper look," said Fisher. "When the cue lands perfectly, it's thrilling. The audience may not know it's happening, but if the cues were missed, the scene would be ruined. Lighting shouldn't call attention to itself and pull the audience out of the play or film."

Having accomplished so much, where would Fisher like his curiosity to lead him in the future? "I love doing new things—not the standard," Fisher explained. "I want to keep



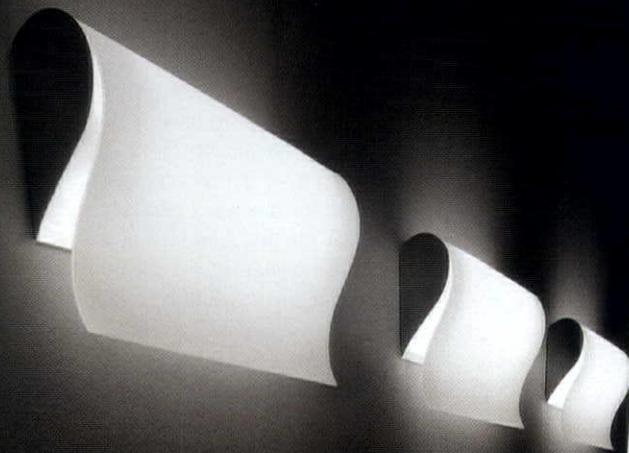
Chicago, 2003

doing new plays. I've collaborated with such great directors as Mike Nichols, George Wolfe, Bob Fosse and Graciela Daniele. Now, Peggy and I are working with Sam Mendes on the Broadway revival of *Gypsy* and am still loving the chance to figure out how to make the lighting count." Fisher has received 17 Tony Award nominations. Shows garnering Tony wins include *Bring in 'da Noise, Bring in 'da Funk; Jelly's Last Jam; The Will Rogers Follies; Grand Hotel; Dancin'*; and *Ulysses in Nighttown*.

"I've been successful because of the passion I have to do a job well, rather than as a smart business person," said Fisher. "My advice is don't give up until you do the best you can achieve." Fisher spends his days creating illusions with light in theatrical venues that suspend reality to reveal deeper truths through art. It's no surprise that in his spare time, the genius behind Fisher's curiosity is expressed in the practice of magic.

—Wanda Jankowski

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NAOMI JOHNSON MILLER

Educator

It's one thing for a lighting designer to know how to measure light, it's another to know why that measurement is important. That is the driving force behind Naomi Johnson Miller's goal to get the word out about the importance of human factors in lighting design. "It is absolutely essential to understand the 'people' side in order for us to do our job properly," she said. "We also have to use both sides of our brain in the design process. We need to know what makes a design work both visually and technically."

As the principal of her eponymous lighting design firm in Troy, NY, Naomi Johnson Miller has made great strides in the areas of lighting quality, human factors and energy efficiency, to name only a few. Her design experience runs the gamut from her 20 years in the industry working for an architectural firm, an electrical engineer, a lighting manufacturer, a research institution and even as partner at two lighting design firms in San Francisco. She chaired the Illuminating Engineering Society's Quality of the Visual Environment committee for eight years and is a Fellow of the IESNA and a professional member of the IALD.

Her passion for lighting education was stimulated by her experience directing the lighting case study program DELTA



becomes obvious to them that there is more to good lighting design than laying out circles in a plan," she said. "The students who are listening know they need to learn more."

Miller says that the future of lighting education is going to be more focused on sustainability and environmentally friendly lighting. "It's rather disappointing to see how little sustainability is stressed in education for architects," she said. "They need to learn much more about energy and efficiency and the impact of architectural products so they can create healthy buildings and minimize long-term environmental damage."

According to Miller, an abundance of natural light is a key prescription for making a building healthy. "Daylighting can help us get the spectrum we need," she said. "It enhances physical well-being, has great color-rendering properties, and it reduces lighting use during peak demand hours." Along with stressing the importance of more daylight within buildings, Miller feels that controls are also critical in keeping down the energy burden: Occupancy sensors, daylighting controls and timeclock systems help to keep energy use to a minimum.

Miller doesn't just espouse her views in the classroom; she also uses her knowledge base in her lighting practice. "I can

"It is absolutely essential to understand the 'people' side in order for us to do our job properly...We also have to use both sides of our brain in the design process."

at Rensselaer's Lighting Research Center. She was able to observe and document lighting installations in use and communicate through the publications which lighting techniques worked well and which didn't. She also believes it is important to teach architects, engineers, interior designers and end users about the importance of lighting, and this is evidenced by the various lighting courses she teaches each year. Well educated herself—a B.S. in architectural design from MIT and an M.S. in Lighting from Rensselaer Polytechnic Institute (RPI)—Miller believes it is especially important for lighting designers to continue learning about technology, sustainability issues and human factors research results, because architectural lighting designs today impact users for decades into the future.

According to Miller, human factors are how all people respond to the presence or absence of light. "Light affects us both psychologically and physiologically," she said. "Psychologically, the lighted environment affects our moods, attitudes and responses. Physiologically, light is an essential ingredient for vision and visibility. Also, light affects our circadian rhythms, our ability to sleep, to remain healthy, and is vital for good immunological health."

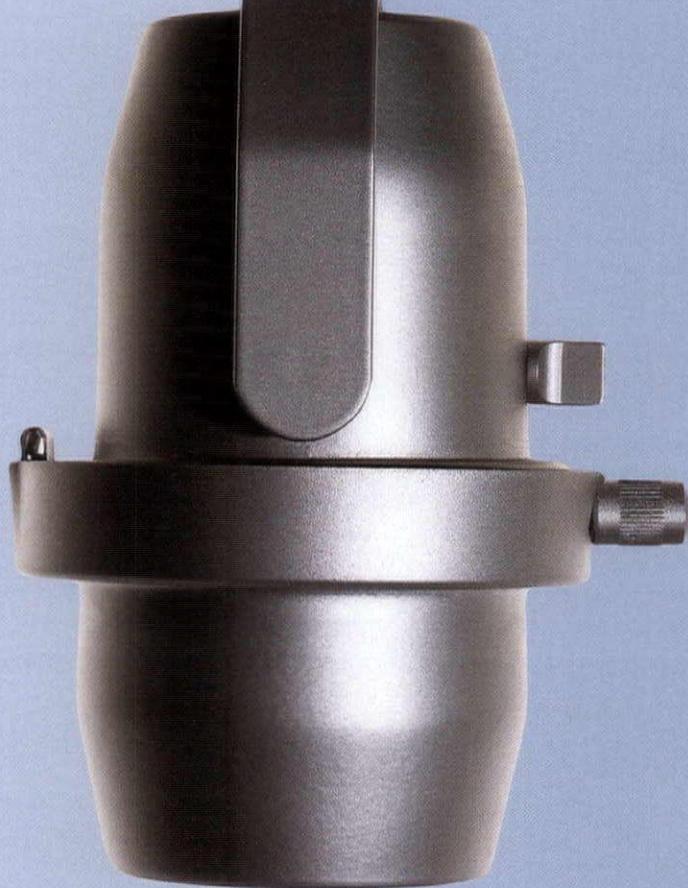
In her efforts to get the point across, Miller is actively involved in teaching architectural students the importance of human factors in lighting. Currently, she is teaching architects at RPI and Cornell University. "Hopefully, it

count on one hand—maybe on just a couple of fingers—the number of jobs where I've used all incandescent lighting. And those were extraordinary circumstances," she said. "Even in my own home, I worked hard to put in lighting systems that aren't traditional. It's a way for me to show that fluorescent lighting can be used in an appealing way. I want people to say 'Oh that's great lighting' not 'Oh that's great for fluorescent lighting.'"

Miller is quick to add that she doesn't *only* use fluorescent lighting. "There are halogen sources that do what no fluorescent sources can do," she said. "Halogen is ideal for display lighting and for getting the right effects for minimal wattage in some applications."

While some in the profession may have balked at the NCQLP's Lighting Certification program, Miller feels that it was one of the best things to happen to the lighting design field. "It really nudged us to learn more about the field we practice," she said. "There are groups (in the lighting design world) who are conscious they need continuing education and there are those who think they already know everything. I, personally, am constantly going through the educational process from reading articles to learning about new technologies to picking my colleagues' brains. It's unfathomable that anyone would think they don't need additional information." ■

—Mark A. Newman



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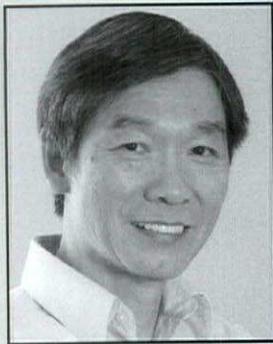


PETER Y. NGAI

Industry Professional

“I don't think you can separate me from lighting,” said Peerless Lighting's Peter Ngai. “Lighting is my life, period.” Ironic words from someone who only came across lighting when, as a college senior, he was looking to fulfill a degree requirement with an “easy” elective. “We had to take these technical electives in an engineering or technical field outside your major,” said Ngai, a graduate of the University of California Berkeley's electrical engineering/computer science department. “Being a young man and actually having to work for my schooling, I really didn't want to enroll in the tougher courses, such as aerodynamics.” To try to get a feel for the class, Ngai met the professor, Dan Finch, who seemed to be a very “kind man,” and who, he later learned, was “one of the luminaries of the lighting field.” Said Ngai, “The course sounded like it would not be that difficult, so I thought, ‘What the heck,’ and enrolled.” Thus ignited a lifelong passion for lighting and one of the industry's most illustrious careers.

“In Professor Finch's course, I found that lighting was so different from everything else I was taking at that time,” said Ngai. “Through him, I understood that lighting is just not engineering, physics, natural science, psychology, art, architecture, physiology,



that “lighting designers should not apologize for putting fixtures in a space because they might destroy its aesthetics.” Ngai was thrilled by the new shapes and went to work for Peerless. “I said to Douglas Herst, the owner of Peerless then, ‘Now your luminaires have beautiful bodies. What I want to do is to put Porsche engines into them, so that they not only look good, but also perform,’” said Ngai. This marked the beginning of almost three decades of collaboration between the two men.

Since joining Peerless in 1976, Ngai has been responsible for Lighting Research, Product Development, Luminaire Design and Application Engineering and currently serves as VP of engineering. He has helped advance the fundamental understanding of lighting theories, optical designs for luminaires and lighting applications and lent his knowledge and talent to such areas as equivalent sphere illumination, visibility studies, nearfield photometry, solar illumination, computer rendering for lighting, task lighting, brightness and glare research, and lens and reflector optics. Instrumental in introducing the application of T8 lamps to the U.S. lighting industry in the early '80s, the F50 biax and the T5/HO in the '90s, he has been a major driver in the U.S. in bringing indirect lighting to spaces where visual comfort, visual effectiveness and energy consumption are critical.

“Energy savings must be done within the context of good quality lighting.”

biology. It's everything combined. It is so encompassing that you need to have a very broad view of the world in order to be good at it. It was fascinating. I was just like a sponge, soaking up everything I could get.” So much so that by the time he completed his undergraduate degree at Berkeley, Ngai had taken every illuminating engineering course offered by the university and decided that he would never become a computer engineer.

Following Finch's retirement, Ngai studied with Ronald Helms at the University of Colorado, where he pursued a Masters degree in architectural engineering with an emphasis in lighting and visual perception. His knowledge of psychology would later help him in his work with brightness perception. Said he, “The idea of introducing brightness in a luminaire to make the room look brighter and issues of glare and visual comfort have a lot to do with not just the physical intensity of a luminaire, but also the perceptual response from the occupant.”

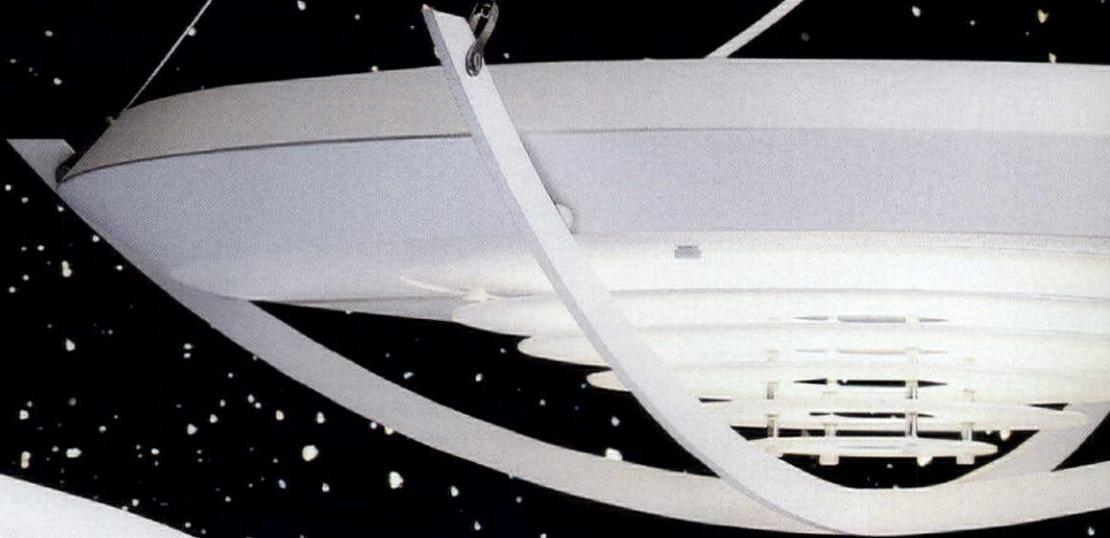
At Holophane, where he was hired as a lighting research engineer after graduate school, Ngai grappled with such concerns as the visibility theory, visual contrast and equivalent sphere illumination. His stint at Holophane concluded after about three years, however, when the new luminaires being produced at Peerless caught his eye. “They had introduced a method of manufacturing these long linear luminaires with aluminum extrusion,” he said. “What that did was that it allowed the shape and form of a luminaire to be very compatible and appropriate with interior architecture.” Ranging from rounded to rectilinear cross-sections available in different lengths, the forms provided an attractive alternative to the 2-x-4 lensed and parabolic luminaires and surface-mounts popular at the time. A firm believer that luminaires can complement architectural interiors and

Ngai's passion has also extended to collaborative research efforts with institutions such as the University of California at Berkeley, Cornell University and Rensselaer Polytechnic Institute. He has published numerous articles, holds many patents and is an active member and Fellow of the Illuminating Engineering Society of North America. In 2001, he received the IES Taylor Technical Talent Award and is currently chairman of the Quality of the Visual Environment (QVE) Committee, a post that speaks to one of his key concerns. Although energy savings is often stressed nowadays, Ngai emphasizes that “energy savings must be done within the context of good quality lighting: The sheer trying to save energy without the consideration for quality lighting is very short-sighted.” To that end, one of his hopes for the future is the development of a system by which one can “predict and design a lighting environment that is effective for its intended purpose.” Said Ngai, “For example, if we want to create a lighting system that is appropriate for the learning environment, what are the different alternatives for designing a classroom that will really promote the idea of learning?”

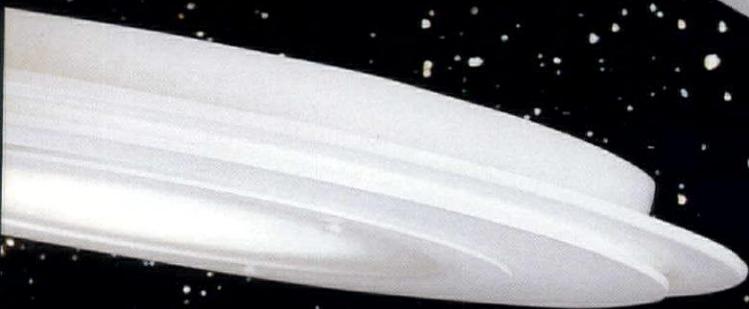
Despite his many accomplishments, Ngai still has a lot that he wants to do. For him, lighting is all-consuming, and when asked to give advice for newcomers to the industry, he answered, “With lighting, you are completely involved not only in your own little area of expertise, but you also talk to the lighting designers, architects, engineers, luminaire designers, ergonomists, educators, material scientists, optics specialists, psychologists and physiologists—you are constantly involved with all of these areas, so there's no way for you not to be interested.” He added, “So watch out: In lighting, it's easy to get in, but very difficult to get out.” ■

—Alice Liao

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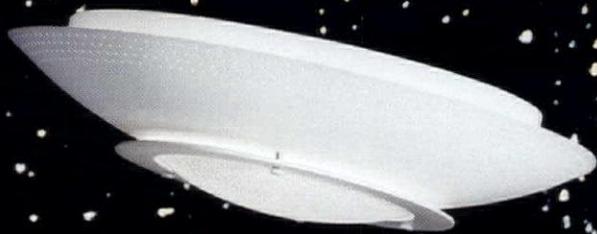
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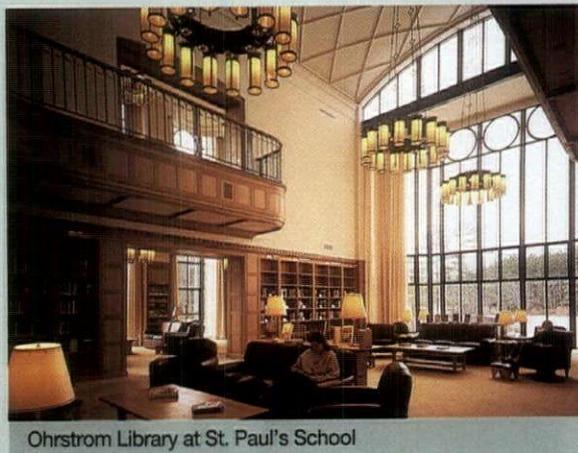
CARROLL CLINE

Lighting Designer

Carroll Cline's career in lighting design spanned 40 years of changing technology, changing tastes and fat and lean times for the building trades. Through these changes, Carroll stuck to his own approach—a unique meld of the minimalist principles he first encountered at the IIT Institute of Design in the '50s and his own zealous brand of functionalism: For Carroll, fixtures were raw materials and there was always a "task," even if that task was simply "to invite" or "to make apparent a way through." Carroll's work on a lighting project always began with a careful analysis of the drawings and the question, "What are we going to light?" Not, "What effect do we want to create?" or even "What is the architect's intent?" As he and his associates discussed the "what," Carroll would begin to draw. In the words of his son, Henry, "you could barely have a conversation with him about lighting—or food, or ballet, or traffic, even—where he didn't reach for a pencil and a roll of yellow trace."

His award-winning work on both residential and commercial projects included several lighting "firsts":

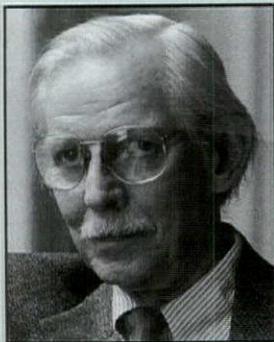
- One of the first uses of MR16s in a residential design at Robert Stern's Cohn house;
- One of the first uses of compact fluorescents in large decorative fixtures, again with Stern, for the St. Paul's School library;
- The first illuminated sign on Madison Avenue (a zoning variance for elegantly thin, rear-illuminated lettering at Pratesi Linens); and, certainly,
- The first lighting scheme, with Edison Price, for a large-scale geodesic dome at Expo 67 in Montreal, Canada.



Ohrstrom Library at St. Paul's School

The variety of these "firsts" also suggests the diversity of Carroll's projects and his ability to conceive at both the macro and micro levels: A small street sign was as carefully considered as an illuminated monument that was visible for miles, and a residential staircase was as serious a design problem as a museum lobby.

Carroll worked with many of the great designers and architects of the last quarter century, from Gropius and Moholy-Nagy to I.M. Pei and Bob Stern, as previously mentioned. He was influenced immensely by his early apprenticeship to Edison Price, the innovative fixture designer and manufacturer.



Notoriously mistrustful of "snake oil" and "eyewash," Carroll regarded all ornament with suspicion. Nevertheless, as his career developed, Carroll broke away from the strict grids of his work on International Style projects. By the time of his death in 2000, he had designed fixtures and schemes that certainly appeared decorative to the uninformed observer. Of course, there was always something else going on as well. In his early work, Carroll was careful to hide the lighting source. As the variety and versatility of source types burgeoned in the '80s and '90s, Carroll

found more room to "play."

Carroll always took a tinkerer's approach to design. He pounced on new fixtures and sources, intent on understanding them before attempting to customize them for a particular job—and customize them he would. He is accused by affectionate co-workers of having once "sawed in half" a particularly mysterious new fixture before anyone else in the office got a chance to see it intact. It was this gift for reinvention that enabled him to persuade notoriously anti-fluorescent architect Robert A.M. Stern to choose compact fluorescents for the Ohrstrom Library at St. Paul's School. Carroll mocked up sample fixtures and gave Stern a choice between one that housed an incandescent lamp and another that contained a compact fluorescent—color-corrected by hand with theatrical gels and an opalescent veil (aka drafting vellum).

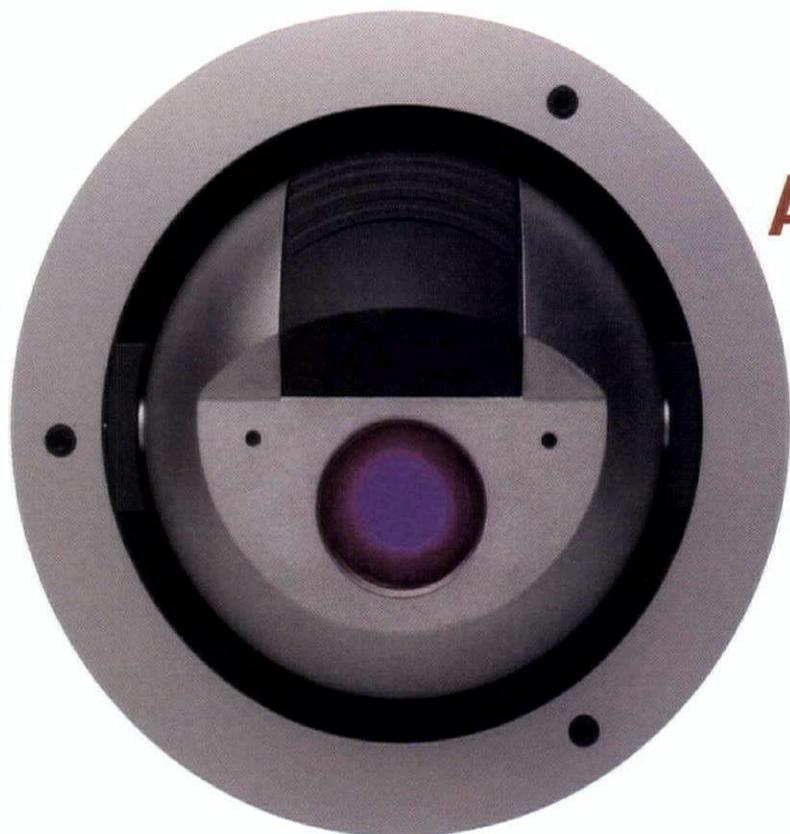
As one of the pioneers of lighting design, Carroll was active in the IALD, serving as president and elected as a Fellow. For the IES, he served on the Board of Managers. His innovative work was recognized by the lighting community with more than 20 awards.

Though often perceived as a man of few words and sometimes called a "curmudgeon," Carroll's remarks were often wryly humorous. Once, when asked whether his design for a residence might consume excessive energy, he remarked that "energy conservation in residential use is called a switch." When something went wrong, more often than not, Carroll would say, "carefully planned and skillfully executed!"—whether or not he had been in on the planning or execution. He was driven by an intensely critical eye and a great sensitivity to beauty in many forms and when something met or exceeded his expectations, his enthusiasm was palpable—his voice seemed to go up an octave when he expressed approval. Again, his words were few but there was no mistaking his meaning.

For the last, and most productive, 20 years of his career, Carroll enjoyed a fruitful partnership with Francesca Bettridge and Stephen Bernstein, both of whom learned the business of lighting design from the ground up in Carroll's studio. Besides his creativity, Stephen noted that what set Carroll apart was his ability to always approach a job with a fresh eye, never relying on a "bag of tricks." Francesca fondly remembers, "Of the many lessons he taught us, two stood out. When you start a job, the first question to ask is 'What are we lighting'; and the last thing you should ever say on a job, when you walk through the project with the architect is 'Gee, this looks great!'" Bettridge and Bernstein continue to run the firm, which continues to produce award-winning designs and—just as important—talented young designers.

—Rachel Cline

martinarchitectural



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design focus report

Retail Lighting

Retail today is extremely competitive; most stores have tight margins and are constantly looking for ways to attract consumers. Whether it is a grocery store, convenience store, "big box" or high-end retail, merchants have realized the importance of lighting to help attract customers and sell merchandise.

In addition, many retailers understand the significant operating cost of lighting and are looking for ways to reduce their expenditures.

A high-quality, energy-efficient lighting system can help add to a retailer's competitive advantage by attracting more customers and reducing operating costs, which directly helps the company's bottom line. The U.S. EPA ENERGY STAR program's retail experts state that for grocery stores, "saving \$1 in energy costs can improve profits as much as increasing sales by \$80." That's a lot of tomatoes.

As lighting experts, we need to understand the visual environment needs of our clients and other important factors, such as operating and maintenance costs, in order to design comprehensive high-quality, energy-efficient retail lighting. Today's lamp, ballast and luminaire technologies provide us the tools to design a vast variety of retail lighting layouts that are aesthetically pleasing, energy-conscious and are overall fun and interesting to design.

RETAIL LIGHTING NEEDS

Lighting designs will widely vary between the types of retail environments. There are three general types of retail: basic, intermediate and high-end. Basic retail environments, such as discount stores and warehouse clubs, usually only have simple ambient lighting systems that provide high illumination levels to create a "discount" look and rely on high traffic volume for sales. High-end establishments usually have very low ambient lighting and rely on high use of accent lighting. The lighting in these stores provides a more relaxed atmosphere and lower traffic volume. Most stores fall into the intermediate category, which requires a mix of various ambient, task and accent lighting systems. Today's grocery, "big box" department and most other stores belong to this category. What has changed over the years is that many stores, such as grocery, that once had simple ambient lighting systems, now require more comprehensive systems to provide ambient lighting as well as accent lighting for special displays, and use color and contrast to draw the customer through the store.

Regardless of the store, retail lighting needs to: 1) attract consumers into the store; 2) guide them through the store; 3) allow consumers to examine the merchandise; and 4) help complete the sale. Basic store types will simply use high illumination levels to achieve these goals, whereas intermediate and high-end retail will use color, contrast, accent and other lighting design techniques to create an ambiance that attracts the consumer to the merchandise and closes the sale.

Historically, very high illuminance levels and a lot of track, spots and floods were used to meet these retail needs. However, today there are numerous lighting technologies that allow designers to meet these needs with better quality and energy-efficient design.

THE SYSTEMS

Before discussing specific technologies, let's first discuss the common types of retail lighting systems used independently or concurrently to create the necessary lighting effect. A high-quality lighting design will use all or a combination of these following systems: *Ambient lighting* provides uniform illumination throughout the space usually using lay-in, surface-mounted or pendant-type fixtures. *Task lighting* provides illumination for a specific functional area, such as the check-out counter. This is not to be confused with accent or focal-point lighting. Pendant luminaires are very common for task lighting and are suspended close to the activity. *Accent lighting*,

which illuminates specific merchandise to draw customer attention, should be at least 3x brighter than the surround to be noticeable; 5x brighter than the surround to be meaningful. Track-, spot- or floodlighting is typically used, but strip wall-washing luminaires can accent a wall or other display just as effectively. *Focal-point lighting*, which highlights a specific central display with feature merchandise, should be 10x brighter than the surround and generally uses spotlighting. *Display case lighting* illuminates merchandise in glass or open cases and shelves. It can be linear fluorescent or spotlighting depending on the type of display. *Perimeter lighting* provides vertical illumination for merchandise along walls, such as vertical shelving and can use valance systems or

linear wall-washing systems. *Support space lighting* provides general illumination for spaces other than the merchandise floor, such as dressing rooms, stock rooms and restrooms.

TECHNIQUE & TECHNOLOGY

A high-quality, energy-efficient lighting system uses a variety of the above-mentioned lighting systems to meet the retailer's goals of attracting customers, selling merchandise and minimizing operations and maintenance. Today, there are many lamps, luminaires and design techniques that help meet these needs. A few of these technologies and design techniques are discussed below.

The most important advancement for high-quality, energy-efficient retail lighting in recent years is the increased availability of high-color-rendering linear and compact fluorescent light sources. In the past, incandescent sources—including halogen—were the only choices for adequate color rendition in retail, and fluorescent sources were left for discount stores. However, with compact fluorescent lamps (CFL) at 80 CRI or greater and linear sources readily available with 80+ CRI,

Lighting quality and energy efficiency can create competitive advantage by gaining customers, reducing operating costs.

these sources should almost always be used in ambient, perimeter and support space lighting and should be strongly considered for task and some accent and display lighting where appropriate.

T8 lamps are readily available as an "800" series or 80+ CRI. T5 lamps with excellent color rendering should also be considered for linear applications, but make sure to control glare and not over illuminate. Proper use of T5/HO lamps may lead to a decreased number of lamps and fixtures, which saves on replacement costs, and is a plus for the retailers. Linear valence lighting for wall-washing perimeter displays is a natural fit for T8 or T5 fluorescent. T5 is becoming popular with retailers because the low profile leads to smaller valances and coves, and although T5/HO is not more efficient than T8, its higher lumen package helps meet the required vertical illuminance levels for the merchandise, minimizing the number of lamps.

In many smaller stores, pendant bowl fixtures have become popular for ambient lighting. In these applications, CFLs should be specified. The excellent color, efficacy and long life make CFLs a natural option for these ambient applications. Today, many fixture manufacturers are making a variety of CFL decorative pendant bowls.

When spotlighting is necessary in accent, focal-point and display lighting, use halogen. Infrared halogen sources that are more efficient than standard halogen are also available. Also consider the use of multiple MR16s or MR11s that can create the same or better visual effect with overall less wattage. If a wide-beam floodlight is needed, consider compact fluorescent flood-type fixtures. Not only will CFLs save energy, but their long 10,000-hour life reduces maintenance costs.

Also consider the use of color LEDs instead of color neon or even white light in interior sign or architectural lighting. The remarkable color variations, efficacy and long life of color LEDs make them an excellent light source for color in the store. Color can be used to attract the consumer's attention without having to be excessively bright.

Retailers are discovering the benefits of daylighting and are demanding more daylight integration. A study conducted by the Heschong Mahone Group found that a store using daylight from skylights is likely to have 40-percent higher sales (www.H-M-G.com). When daylighting is available, remember to use dimming or bi- (or tri-) level switching systems to reduce the illumination from the HID or fluorescent lighting. For an excellent brief guide to retail skylights, visit The Northeast Energy Efficiency Partnerships' DesignLights Consortium (DLC) web site at www.designlights.org.

For additional energy savings, consider the use of automatic controls in support spaces. For example, the use of occupancy sensors in stock rooms is strongly encouraged. If turning the lights off is a safety concern, consider using bi-level switching systems to dim the lights and save energy when the stock room is not being used.

Exterior lighting also deserves attention. The most exciting advancement for quality and energy efficiency is the use of LEDs in sign lighting. Again the efficacy and long life of LEDs is very attractive to retail decision-makers. Although parking lot lighting

generally uses efficient HID sources, consider the use of bi-level dimming controls either on timeclocks or maybe even occupancy sensors to dim the lights after hours when high illumination levels are not needed but the lights need to remain on for security reasons. The same technique can be used for under-canopy and entrance lighting control after hours.

Bring the fixtures closer to the merchandise. Ceilings are usually very high in retail and the fixtures are generally 10-15+ ft. away. Bring the light source closer to the merchandise and avoid wasting energy and using an excessive number of lamps and fixtures. With today's smaller T5 and smaller linear fluorescent, CFL, MR16 and MR11 sources, the fixtures can be placed much closer to the merchandise without being an obstruction. An added benefit of placing fixtures closer to the merchandise is there is a less chance of consumers, signs or other obstructions casting unwanted shadows on the merchandise.

Lighting needs for grocery stores have changed over the years. Today designers need to be creative to meet energy and aesthetic needs. Bringing the lighting closer to the merchandise is a technique that should be used in almost every application.

For example, in the produce area, suspended decorative T5 or T8 fixtures can be placed a few feet over the produce bins and linear fluorescent can be suspended closer to the shelving or bracketed directly to the top of the shelves to wash the merchandise with light. Then reduce or eliminate ceiling fixtures all together and illuminate the ceiling with strip fluorescent mounted on top of the shelving units. This will result in energy savings and easier maintenance. Then consider the use of colored LEDs for sign or architectural lighting to draw the consumer to the pharmacy, bakery or other areas of the store. Also, if the store has gourmet food and wine areas, reduce lighting levels to create a more relaxed "home-like" feel to attract customers.

EPA's ENERGY STAR retail experts mention that designers need to determine how the lighting will impact all the needs of the retailer to increase profit—a design that saves energy and money can result in more flexibility for the lighting designer. Many national retailers belong to the ENERGY STAR program and have learned how high-quality, energy-efficient lighting can add value to the company and its shareholders.

Retail lighting can be fun to design but watch out for common pitfalls. Many retailers over illuminate, causing excessive brightness and accent lighting to be less effective. Some stores will use too many spots and end up "accenting everything and highlighting nothing"; because there is no illuminance contrast, the accent lighting is ineffective. Improper placement of accent lighting can cause direct or reflected glare in display cases. Believing more light is better rather than strategically directing the light is another very common mistake; so is believing that only incandescent and halogen can provide excellent color rendering—check out today's CFL and linear fluorescent sources. ■

—Paul Vrabel, LC, ICF Consulting

The author can be reached at pvrabel@icfconsulting.com.

Retail lighting
can be exciting,
dramatic and
artistic—as well as
energy-efficient.

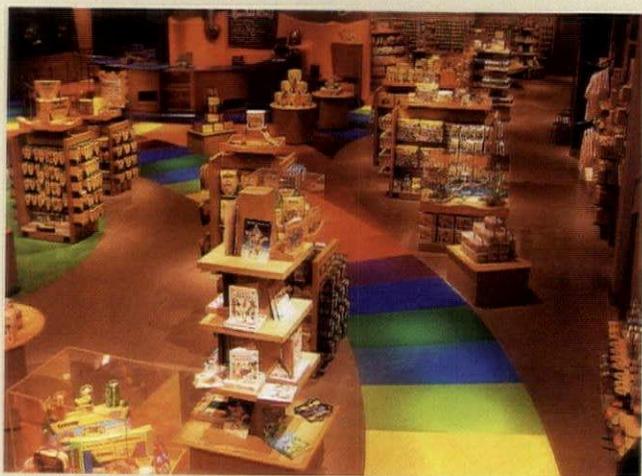
design focus report

All About Hue

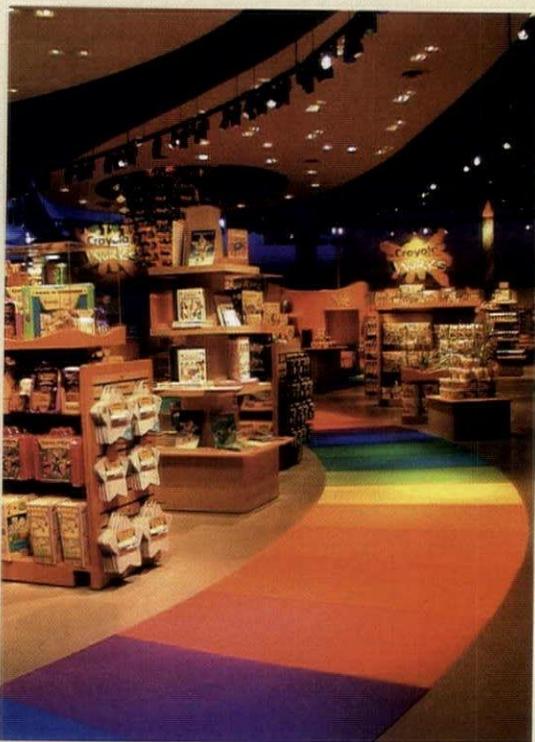
In the spirit of recent public announcements televised in the tri-state area, which encourage more arts education for the young, Crayola has opened a store in Hanover, MD that not only offers a lively parade of products for shoppers to browse and purchase, but also features a Studio Space where schoolchildren can explore the wonders of color under the tutelage of graduate art students. Designed by the Rockwell Group and lighted by Paul Gregory, principal of Focus Lighting, this 20,000-sq.-ft. retail space is in itself an exploration—and explosion—of color. From the 200-ft.-long River of Color, a rainbow path that snakes through the entire the space, to the walls and ceilings wonderfully awash in glowing hues, colors pop, sparkle and sizzle, drawing interest from passersby and inspiring creativity within the store's walls. Gregory remarked, "Our biggest challenge was to make the store exciting, but also maintainable."

Composed of 11 vibrantly pigmented tiles each measuring 4 ft. wide, the River of Color meanders through the store to serve as a unifying design element and replace an initial concept that backlit the floor with animated color effects. However, the idea was abandoned when the design team discovered that the floor could not be channeled out to the required depth. "We began evaluating the best way to 'wash' people in the river with colored light," said Focus Lighting's Sepp Spenlinhauer. Although several lamps were examined, including MR16s, PAR38s and PAR64s, after conducting full-scale, on-site mockups with samples of the river flooring, the designers opted for a ceramic metal halide solution, which would provide energy efficiency, long lamp life and the required beam spreads.

To illuminate the river, the lamps are employed in a pendant-mounted track system fitted with flexible connectors and centered over the floor tiles. Lighted with 100W ED17 ceramic metal halide sources, each of the track fixtures have been customized to produce a tight spot beam spread and include an integral 6-in. snoot/color holder. "By using metal halide and a custom-picked color to illuminate each section of the rainbow, we achieved good color rendering and a big punch," said Gregory. "The river worked out really well and the floor certainly sparkles."



lamp T8 fluorescent reflector strips with black painted tops envelope the interior spaces in a pale, lavender "wrapper." The soft, velvety hue functions as a fitting backdrop to the sparkle and drama of the lighted merchandise and is achieved by tinting one lamp red-purple and another, blue-purple. The striplights are side-mounted to perimeter track to minimize ceiling clutter and the resulting "wrapper," which extends into and around the Studio, visually connects the two spaces. "The lavender perimeter band acts as horizon line that provides unity," said Gregory. "What we do in lighting design is similar to painting a picture: it has a foreground, a background, a frame and a focus. If we've thought of all those things and the product is the focus, then we can achieve something that is truly remarkable."



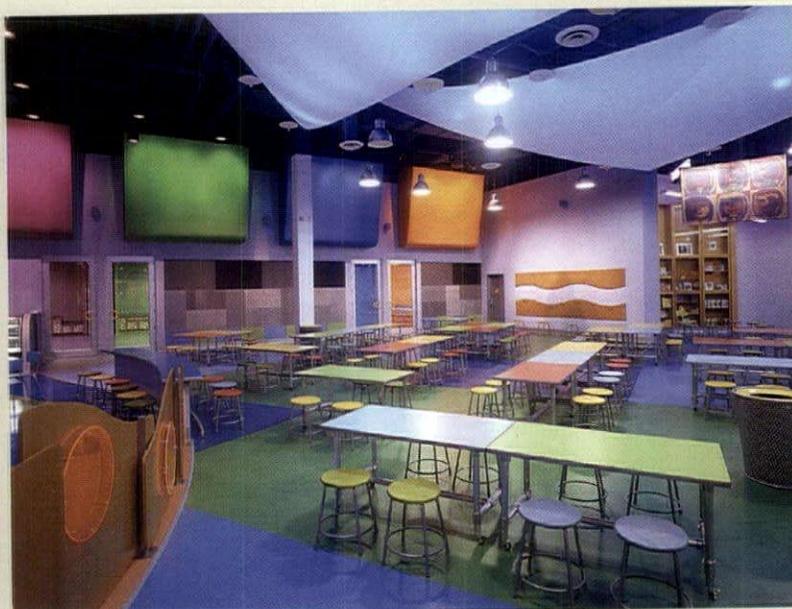
Above: The River of Color winds through the store to act as a guide and tie together the various design elements.

Below left: Ceramic metal halide fixtures add punch to the product displays.

In selecting ceramic metal halide, the design team, however, was concerned with potential problems arising from mis-lamping. To address these issues and facilitate maintenance, the solution differentiates the types of ceramic metal halides by wattage: all 100W lamps are ED17 and all 70W fixtures use PAR30. Both figure prominently in the retail area, where the charge of preserving the openness of the space was compounded by the need for high light levels and glowing, vibrant surfaces. The lighting design resolves this dilemma by mounting most of the fixtures at 16 ft. A.F.F. and relying on custom trackheads equipped with narrow spot 70W PAR30s and 4-in. snoots and lenses to call attention to the rolling displays and wall merchandise. For additional punch and a general wash of light, custom 70W PAR30 adjustable accentlights with 100W ED17 fixed downlights are recessed in sloped floating ceilings to produce ambient light levels of roughly 80 fc.

Along the perimeter of the store, a continuous row of two-

design focus report



Above left: T8 fluorescent reflector strips illuminate the perimeter, creating a lavender “wrapper” for the store. Above right: Sails lighted with metal halide custom floodlights glow blue above the Studio area. Below left: Four party rooms, each painted a solid color, feature ceilings edged with LED fixtures for extra pizzazz.

A highlight of the project is the Studio area where large sails appear to billow above walls, floors and furniture tinted in shades of red, blue, green and yellow. Formed of stretched heavy spandex, the sails are luminous with the light of 45 400W metal halide floodlights mounted close to the edges of the panels and furnished with custom-made snoot/color holders in three shades of blue. The glass color filters are sandblasted on one side to ensure an even wash on the back of the fabric, while adjustable uni-strut frames allow the floodlights to be positioned diagonally along the sails’ edges. Scattered between the spandex panels and throughout the Studio, pendant domes lamped with 42W compact fluorescent sources and suspended 70W ceramic metal halide cylindrical downlights supply ambient light, filling the space with a cheerful brightness.

Spandex also figures prominently in the media band, a 6-ft.-high curving wall that “floats” 12 ft. above the floor. Originally, the suspended wall would support video screens and traditional light boxes, however, the equipment proved to be too heavy for the ceiling. The issue of weight was resolved by Spenlinhauer, who conceived of two internally luminous, wedge-shaped boxes formed by covering an aluminum frame with a two-piece spandex sock. Lighted with 8-ft. fluorescent strips, which weigh more than the boxes themselves, the wedges feature backs and sides in solid purple and a front fascia of digitally printed spandex. A zipper at the upper edge of the frame allows for easy assemblage, cleaning and replacement of images.

Other noteworthy features of the Crayola store include a towering “beehive” and the Million Dollar Marker area, where a black and white Volkswagen bug is the focus of a kinetic show of lighting effects inspired by the program “Who Wants to Be a Millionaire?” The effects are produced with PAR38 tracklights connected to a dimmer pack and moving projectors, all of which are mounted on a truss above.

Visitors are invited to draw on the car with markers, while enjoying the experience of being in the “limelight.” For private gatherings, a quartet of party rooms—each painted a solid color—is situated off the main studio. Although furnished with recessed T8 troffers for general illumination, the rooms are given added dazzle with LED fixtures that edge the ceiling on two sides and are switched separately from the troffers for greater flexibility and drama.

—Alice Liao



DETAILS

PROJECT Crayola **LOCATION** Hanover, MD
CLIENT Binney & Smith **ARCHITECT** The Rockwell Group
LIGHTING DESIGNER Focus Lighting, Inc. NYC —Paul Gregory, Sepp Spenlinhauer, Bill Plachy, Christine Caracciolo
GENERAL CONTRACTOR Crane Construction
PHOTOGRAPHER Sepp Spenlinhauer
LIGHTING MANUFACTURERS Times Square Lighting; RSA; Inifniti; Prescolite; Spero; A&L; Prudential; Lamar; Columbia; High End Systems; Elektralite; NSI; Abrisa; Special F/X Lighting

design focus report

Dress Code

The days of retail venues being exclusively illuminated with warm incandescent light are pretty much over. With the ever-mounting stringency of energy codes, a lighting solution designed solely around the incandescent lamp is no longer viable. Such is the case with Neiman Marcus in Tampa, FL. As upscale as any of its sister locations, this two-floor, 80,000-sq.-ft. store boasts a clean, Modernist attitude with soft, wood finishes that are lighted to show off the store's high-end wares yet promote energy efficiency and facilitate maintenance. The lighting design, executed by Integrated Lighting Concept's Bernard Bauer, is "classic" in more ways than one: Preserving Neiman's venerable, yet stylish image, it skillfully melds practical and aesthetic concerns in a remarkable example of classic retail lighting today.

"Neiman Marcus, being one of the premier retailers in the country, takes a very serious look at lighting," said Bauer, whose portfolio includes several Neiman stores. "They feel strongly that lighting is part of selling and romancing merchandise—whether it be clothing, accessories or cosmetics." Bauer remarks that Neiman, like many merchants, probably would prefer a store that is lighted with only incandescent lamps. "However, this building had to comply with the ASHRAE 90.1 energy standard," he said. "We needed to use alternate sources."

Bauer's response was to apply a mix of incandescent and fluorescent light to the store's various departments. Because each level is a composite of disparate brands and products with diverse lighting requirements, maintenance could have been a "real nightmare." "That was a big challenge," said Bauer, "balancing individuality of look and quality with a lighting design that can be maintained by the store personnel after we leave." He addressed these concerns by using families of fixtures that employ the same lamp in different quantities and configurations. Relamping is further simplified by limiting the palette of light sources to T8, T5, biax fluorescent lamps and PAR38 and PAR30 halogen IR lamps. "These kinds of issues are never seen by the customers, but they reap the benefit," said Bauer. "If the lighting is easier to maintain, then the store will maintain it properly and the customer experiences a better environment."

In departments such as menswear, cosmetics and accessories, ambient light levels are targeted at 45-50 fc, creating a sense of brightness and complementing the interior finishes. Architectural coves, ceiling slots and 8-in.-aperture downlights, rather than conventional fluorescent troffers, suggest the feeling of sleek luxury associated with the Neiman Marcus name. The coves and slots conceal asymmetrical fixtures that are equipped with 40W biax and T8 lamps, while downlights are lamped with compact fluorescent biax sources.

Product and mannequin displays in these areas are illuminated with fully adjustable, "pull-down-style" accentlights utilizing halogen IR lamps. These fixtures produce display lighting ratios ranging from 4:1 to 5:1 and according to Bauer, are preferred by Neiman Marcus because they provide the maximum flexibility and can be easily manipulated by staff. "The fixture is a kind of trade-down, because some designers will look at it and say that it doesn't keep the ceiling "clean,"" he said. Although a "clean" ceiling is achieved for some areas of the store through the use of high-quality but expensive, fully recessed, adjustable accent fixtures, Bauer acknowledges that "there is a cost differential. When you have 1,000-2,000 lampheads, \$20-\$30 begins to add up pretty quickly."

In key specialty areas, light levels drop to 25-30 fc to produce a more intimate setting and heighten the sense of exclusivity, while accentlighting ratios from 6:1 to 10:1 add drama. Ambient light in departments such as customer service, bridal registry and china and crystal boutiques is supplied by 6-in.-aperture downlights, which, coupled with lower ceiling heights, infuse the spaces with a residential quality. In the designer boutiques where individual brand identity is critical, Bauer worked closely with vendor designers to ensure code compliance and visual continuity. "Companies such as Gucci and Chanel usually do their own design, but in some instances, the vendors just adapted our lighting palette to their space," said Bauer. "In other cases, they brought in alternate sources or fixture designs and we helped them to comply with the codes and to make sure that their spaces were harmonious with the surroundings."

Throughout the store, T5 lamps ensconced in display cases and shelving add punch to the merchandise. Bauer noted that in more recent Neiman projects, T5s have replaced T8s in much of the cove-lighting as well. However, he added, be it T5 or T8, how a lamp and fixture are used is most important. He said, "These are the same strip lamps in a Kmart, yet the total look is significantly different." ■

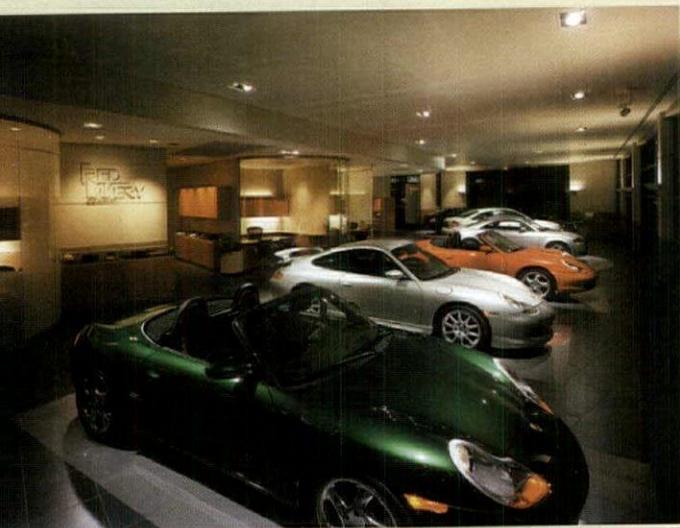
—Alice Liao



DETAILS

PROJECT Neiman Marcus LOCATION Tampa, FL ARCHITECT Diedrich/NBA LIGHTING DESIGNER Integrated Lighting Concepts—Bernard Bauer INTERIORS/STORE DESIGNER Robert Young Associates PHOTOGRAPHER Paul Bielenberg LIGHTING MANUFACTURERS Prescolite; Columbia; Indy Lighting; GE

Light in the Fast Lane



The Fred Lavery Company showroom in Birmingham, MI looks more like a jewelry store than it does a car dealership. That was the desired effect considering the cars—Porsches, Audis and Land Rovers. Ordinary fluorescents and spots just wouldn't do.

Getting the cars to shimmer like diamonds was courtesy of Stefan Graf, design director for the project, and lighting designer DeVeaux Gauger of IlluminArt Lighting Consultation and Design in Ypsilanti, MI. The owner's wish was to have the cars in an exciting environment akin to an auto show. "The owner is actively involved in the automobile industry," Graf said. "Being so close to Detroit and the International Auto Show, he definitely had an idea of what he was looking for. Lucky for us, he considers lighting an integral part of the showroom's design rather than an afterthought." Obviously, a bevy of runway models weren't going to work, so the lighting scheme had to get the point across that this was no ordinary dealership and these were no ordinary cars.

To provide that "jewelry store drama," the designers worked with owner Fred Lavery, project architect Luckenbach-Ziegelman and interior architect JGA Associates to establish fixed zones where the cars would be highlighted. "Most dealers base their display options on what's been done in the past," said Graf, "so there are typically no fixed locations for vehicles and nothing is highlighted. Because these are luxury cars, a different solution was needed, so we created product zones."

These zones use 60-degree, 4000K 70W ceramic arc-tube metal halide PAR lamps, which have a high CRI (92) to accurately reveal the color of the spectacular automotive finishes. "We mixed different sources and colors as well," said Gauger. "The 4000K metal halide we used was a pretty new source. The metal halide draws your attention to the vehicles and their vivid colors jump right out." Since there was so much direct lighting from the ceiling plane, the designers also used 3000K metal halide

uplights on the columns to minimize contrast on the cars' specular surfaces.

For passersby getting a first glimpse of the autos on display, Graf used indirect lighting in the showroom windows. The indirect sources also soften the contrast of the nearby direct lighting. "The dealership looks the most impressive at dusk and at night," said Gauger. "During the day, as with most display windows, the glass acts as a mirror. To make the interior bright enough in the daytime, it would not be cost-effective because we would need to put excessively high light levels in there. At night, the lighting really makes a strong statement about the image and character of the dealership."

Aside from the cars themselves, Graf states that it's important to properly light the showroom's vertical surfaces. "It's very much like stage or set lighting," he said. "In this instance, the cars are the actors and they're the focal point, but the set has to be illuminated in a manner that will complement the main attraction: the automobiles." The dealership's offices use indirect 3500K T8 lamps to provide transparency through the windows when the showrooms are viewed the street. The edge of the glass partitions are further defined by 5-degree, 12V spotlights.

"The important aspect is the lighting on the ceilings and walls," said Graf. "It creates a very high perception of brightness, but the actual footcandles in the space are very low. That's the beauty of indirect lighting in a retail setting."

The designers also strove to achieve energy efficiency wherever possible. A lifecycle cost analysis revealed that payback would only take two and a half years, a much shorter time frame than if less efficient quartz PARs were used. "We tried to design things in an efficient manner," Gauger said, "but by the local energy code, it isn't very stringent. There's only about 1.5W per sq. ft., which is very low for a showroom setting."

Working in the design team's favor was the owner's receptiveness to analyzing initial costs versus lifecycle costs. "We do lifecycle cost analysis for all commercial projects," Graf said. "The implications of going with cheaper equipment can really impact the maintenance and energy costs down the road. Owners get a quicker return on their investment if they invest the extra \$3,000 up front rather than every year for maintenance." ■

—Mark A. Newman

DETAILS

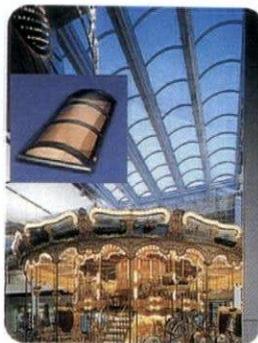
PROJECT Fred Lavery Co. Showroom **LOCATION** Birmingham, MI **ARCHITECT** Luckenbach-Ziegelman **INTERIOR ARCHITECT** JGA Associates **ENGINEER** HOK San Francisco **LIGHTING DESIGNER** IlluminArt Lighting Consultation and Design—Stefan Graf, DeVeaux Gauger **PHOTOGRAPHER** Laszlo Regos **LIGHTING MANUFACTURERS** Elliptipar; Focal Point; Cooper/Portfolio; RSA; Philips; Osram **SYLVANIA**; GE

design focus report

Catching Some Rays...

Energy efficiency, sustainability and the greening of the built environment: It's in the air and the minds of everyone in the design community. And it's certainly a concern with *Architectural Lighting*. But what about retail applications, where long operation hours and high footcandles are the norm and energy consumption is a factor in the overhead of managing a store? With up-and-coming codes clamping down on energy usage and demanding greater efficiencies from lighting systems, some retailers are looking to the sun for answers. Here are three examples of ways in which retail lighting is going "au naturel":

In the Plymouth Meeting Mall in Plymouth Meeting, PA, visitors can take a break from shopping by catching a carousel ride under a stunning view of blue sky. In recent years, these generous skylights have gained popularity in large retail venues such as shopping malls and help to bring a touch of daylight and the outdoors into interior spaces that are often otherwise completely enclosed and exclusively illuminated with electric lighting. For Philadelphia-based SPG Architects, which was commissioned to renovate the Plymouth Meeting Mall, daylighting played a significant role in the final design and is introduced via a series of Naturalite Skylight Systems' Continuous Vault acrylic skylights, which are installed in the center of the mall where the carousel is located, and through metal-framed, clear, insulated glass at the mall entrances. Studies suggest that the inclusion of daylight can benefit business. Adding skylights has been correlated with increasing sales and creating the impression of a cleaner and more expansive space.



Tubular skylights and daylight harvesting controls are adding a little "green" to a Stater Bros. Market in Chino Hill, CA. Part of a retail chain selected by *Progressive Grocer Magazine* as the 2001 Supermarket Retailer of the Year, this 43,235-sq.-ft. space features a total of 164 21-in. Solatube units that are installed throughout the store area and stock room to introduce natural light and conserve energy. When the skylights are at optimal output, which is approximately between 8 am and 6 pm during the summer, the daylight harvesting controls turn off the electric lights, resulting in a decrease in energy consumption for lighting and a reduction in cooling costs that can be attributed to the removal of heat generated by electric lighting systems. An added benefit is the color rendering properties of natural light, which helps the visibility of the store's products and makes them more attractive to customers. Mike McCasland, property development manager for Stater Bros. Markets, projects that energy savings resulting from the tubular skylights will cut annual lighting energy costs by nearly half. He added, "In addition to saving energy, the skylights will keep the store lighted in the event of a black-out situation, which is a real plus."

Last year, a Whole Foods Market store in Berkeley, CA became the first major food retailer in the nation to introduce solar energy as its primary lighting power source. Whole Foods, an Austin, TX-based natural and organic supermarket chain, enlisted the help of Princeton Energy Systems, which specializes in on-site renewable energy projects; PowerLight Corp., which produces commercial-scale solar electric products and services; and solar-assisted lighting systems manufacturer Nextek Power Systems in creating the 33kW solar electric system that powers the fluorescent lighting at the 26,000-sq.-ft. Berkeley location. This system features a solar array of PowerLight's PowerGuard tiles, which cover 2,860 sq. ft. on the roof and turn the sun's energy into usable power while increasing building thermal insulation and extending the life of the roof. The photovoltaic tiles are electrically interconnected to Nextek power modules, which then feed high-quality DC power directly to the store's advanced DC lighting system. This solar electric and lighting system maximizes the usable solar energy produced by photovoltaic panels and increases the efficiency of power conversion, providing what Whole Foods anticipates will be significant economic and environmental benefits. The system is expected to produce and save more than one million kW hours over 25 years and result in over 1,060 tons of CO₂ emissions avoided, the equivalent of removing 285 cars from roadways. ■



Talking shop...



David Apfel
David Apfel Lighting Design

What are some tips for lighting a retail space?

Conceptualize a lighting design:

- ✓ Study the relationship of the store design to the building architecture.
- ✓ Is the store design in harmony with the building architecture?

- ✓ Does the store or building design drive the lighting layout?
- ✓ Look for the bones of the building.

Select lighting equipment:

✓ Let the building geometry drive the general layout. The light levels can be adjusted later with the selection of lighting equipment and lamps.

✓ Let the products for sale drive the color temperature and color rendering of the light sources.

✓ Let the mounting height of the luminaires determine the wattage and beam spread of the accentlights.

✓ Let the design and finishes of the store drive the selections of the lighting equipment.

Also keep in mind:

✓ In dealing with suspended ceiling grids, use a 2x2 non-directional tile rather than 2x4 tile. Always locate a full tile in the center of a small store and a full tile in the center of a column bay in a large store.

✓ Provide an accessible ventilated space within the fixture work to house ballasts and transformers.

Watch out for pitfalls:

✓ The lighting equipment is in perfect harmony with the architecture but does not address merchandise.

✓ Try to avoid using the latest, trendy product unless it is appropriate for the project.



Chip Israel
Lighting Design Alliance

What are the hottest trends in retail lighting?

“Architectural integration” is one of the strongest retail trends, followed by efficiency (maximum brightness for the least amount of energy). Over the past decades, there have been

trends like video monitors and interactive or intelligent lighting added to spaces to try and attract customers. Many times, this was effective, but if not done correctly, it could actually be distracting to the customers.

In the past, rows of track seemed adequate. Now the trend seems to conceal all of the lighting so that you notice the effects of the lighting, not the hardware. Once again, the merchandise is becoming the focal point not the store’s interior design or lighting system. Rear-illuminated glass panels have replaced wall sconces. Recessed multi-headed accent fixtures have replaced track, and

indirect lighting coves have replaced the 2x4. Consistently, the lighting is becoming more integrated.

In regards to energy efficiency, the newer lamp technologies are truly becoming affordable. T5/HO lamps are small and powerful and readily available. Likewise, the lower costs of small, electronic ballasts, combined with the improvements achieved with ceramic metal halide lamps, have allowed HID lamps to be integrated into retail accent lighting systems.

Of course, design themes and images are important, but ultimately, it is the presentation of the merchandise that counts!



Bernard Bauer
Integrated Lighting Concepts

What is the most promising technology for retail lighting?

Currently, one of the most exciting technologies is the new low-watt (20W) ceramic metal halide lamp from GE, but it won’t be too long

before the other lamp manufacturers offer something similar. Ceramic metal halide has been around for several years, but the smallest lamp available now—the 35W or 39W, depending on whom you talk to—is way too powerful for little boutiques or spaces where you don’t need so much power but a lot of little points of light.

In the incandescent arena, the workhorse lamp in retail lighting has been the 90W PAR lamp, which then became the 60W HIR PAR lamp—same basic function of punch and focus for the lamp in any given fixture, but with more energy. Now, several severe energy codes will be coming on line and the California Energy Commission will be introducing the next level of Title 24, which in their eyes, is going to be 24-30-percent more restrictive than what they are allowing now. What this means for some stores is that the most efficient incandescent packages available today will no longer be appropriate to satisfy energy code issues.

This 20W ceramic metal halide lamp, which is available in a limited edition, would be a good fit for the current 60W HIR, but in a 20W lamp package; there would be a 60-percent reduction in the accentlighting, which, in small boutiques and specialty stores, can be a big percentage of the total wattage. Hopefully, this lamp will come on line in the next 18 months to 2 years in a very strong way.

Further out there, in never-never land, is the use of the LED lamps. Unlike fiber optics, which I’ve used successfully on projects, but in my mind, never really became mainstream, diode lighting has merit because it’s a much simpler system to install and maintain and has the potential for extremely long life. It will provide many of the benefits offered by fiber optics but at, eventually, a lower cost. We’ve used it in limited fashion for visual effects, for example, and it does a pretty good job. It has a long way to go to be a primary light source, but technology is improving and at some point in the future, it could be what replaces the standard light bulb as we know it today. ■



Remember when this was all you had to know about color consistency?

These days, your lighting has to deliver consistent color for retail displays and other color-critical applications. The SYLVANIA TRU-COLOR® line features METALARC CERAMIC® metal halide lamps, CAPSYLITE® halogen PAR lamps and TRU-AIM® halogen MR16 lamps, all of which provide excellent color rendering and stable, reliable color properties over their full service life.



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design focus report

Shopping for a source...

Holophane's new Illuminaire series features five prismatic glass shapes: Egg, Crest, Tri-Egg, Tri-Crest (shown) and Quad, which will debut in May. All fixtures except Quad are offered in 16-in. and 10½-in. diameters. Quad is 20 in. in diameter. Fixtures may be specified with plain optics or various enhancements, including decorative claws and caps and mounting configuration options. Egg, Crest, Tri-Egg and Tri-Crest offer photometric distributions of 75/25- and 60/40-percent downlight/uplight. Quad offers 10/90-, 50/50- and 70/30-percent downlight/uplight distributions. Illuminaire uses metal halide, compact fluorescent and incandescent lamps. UL-listed. **Circle No. 100**



From **Lighting Services Inc.**, the 238 Series Spotlight is a specification-grade unit designed to accept all PAR38 lamps up to 250W. The fixture features an internal accessory cartridge that holds up to three accessories, a rotational front end for lens rotation and positive front rotation lock and two-tone paint for light spill control. The 238 Series is offered in 100V, 120V and 230V as well as a variety of finishes, including platinum, graphite, black, white and silver. CE- and C/UL-listed. **Circle No. 101**



Lightolier has added two metal halide fixtures, ED-17 Lytespots and ED-17 Metallics (shown), to its retail track lighting line. Both feature integral reflectors that enable multiple light distributions to be achieved. Reflectors can be interchanged without tools to facilitate changes in retail displays.

New lamps are not necessary when modifying scenes, thus preventing incorrect beam spreads caused by improper lamping. Equipped with an accessory holder that accepts two accessories, Metallics is available in Dome Shade or Barn Door shade styles. The ED-17 Lytespots' swing door accessory cartridge allows relamping without upsetting the accessory setup. **Circle No. 102**

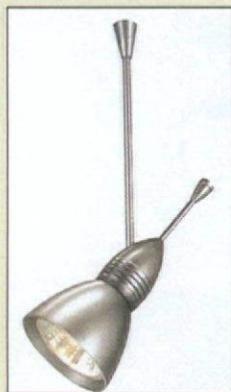
Philips Lighting has added a smaller T4 lamp to its MasterColor line of ceramic metal halide lamps. The T4 lamp is designed to work within enclosed fixtures such as track lighting and with electronic ballasts. As with all MasterColor lamps, the T4 lamp provides color stability over the life of the product ($\pm 200K$), as opposed to $\pm 600K$ for standard metal halide lamps. **Circle No. 103**



Mounting nearly flush against ceiling surfaces, **Targett North America's** VIT low-voltage downlights sport a curved translucent or colored borosilicate glass bezel and 4¾-in.-diameter trim ring. The bezel provides 50 degrees of pull-down vertical angle adjustment for precise aiming. A removable snap ring around the lens facilitates relamping. VIT accepts up to a 50W 12V halogen lamp with integral dichroic reflector. Housings are 22-gauge steel with a white baked enamel finish and may be specified for both accessible and non-accessible ceilings in insulated and non-insulated ceilings. **Circle No. 104**



Offering 150 new fixtures including trackheads and pendants, the Low-Voltage Monorail System from **W.A.C. Lighting** features a single-circuit, two-conductor rail that is available in 4- or 8-ft. lengths and may be specified with mounting options such as suspended and aircraft cable suspension. The rail is also field cuttable for custom lengths and offers both remote and decorative surface-mount transformers. Fixtures are designed with stems, aiming wands and lamp shields, all of which are available in chrome, platinum and satin brass finishes. **Circle No. 105**

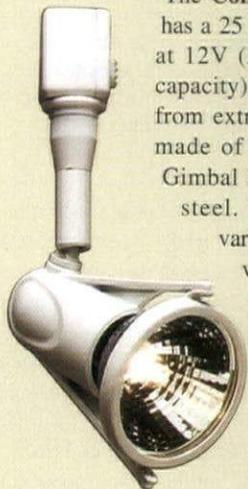


design focus report

New from **Zumtobel Staff Lighting**, LightTools Modular Lighting System allows maximum flexibility for retail and display lighting. The LightTools "channel" can be installed



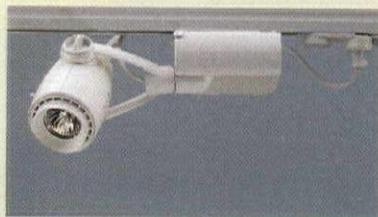
early in the construction process with linear fluorescent, wallwasher or spotlight modules added as the layout evolves. **Circle No. 106**



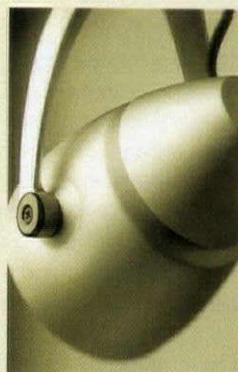
The **Con-Tech Symphony MiniTrack** line has a 25 Amp capacity and is rated for use at 12V (300W capacity) or 24V (600W capacity). Symphony track is constructed from extruded aluminum and fixtures are made of die-cast aluminum, except the Gimbal Ring series, which is formed of steel. The Symphony series offers a variety of fixtures and track lengths as well as accessories, transformers and installation accessories. Lamping options include MR11, MR16, AR111 and T4 or wedge-base Xelogen. **Circle No. 108**



technology to provide improved color consistency, high efficacy and a CRI of 94 for high-wattage HID applications. The entire Metalarc Powerball Ceramic family of lamps incorporates Metalarc Pro-Tech technology where a protective shroud around the arc tube allows the lamps to be used in open fixtures. **Circle No. 110**



Exclusively offered by **Énergie**, the Arch family of track fixtures by Trol offers a choice of nine track heads, each designed with a low-profile ballast chamber and a variety of lamping options. Arch features the VariFocus system, which allows the lamp to slide toward or away from the front of the housing for fine-tuning of the beam spread. Construction is cast aluminum finished in black, white or gray. Accessories include barn doors, filters, lenses and diffusers. **Circle No. 107**



From **Juno Lighting**, the Professional Halogen Series of track lighting fixtures offers two lines that operate both standard line-voltage light sources—PAR20, PAR30 and PAR38—and low-voltage MR16, PAR36 and AR111 lamps. The enclosed Conix and the open-back Pro-Gimbal Ring each feature aiming and rotation locks for precise focusing and are designed to hold simultaneously two light control lenses, louvers and/or color filters. Both can operate with all Juno line-voltage track and system accessories, including two-circuit track and monopoint mounting options. The Professional Halogen Series is also compatible with Juno's MH₂ metal halide track series. **Circle No. 109**



GE Lighting has introduced the Diamond Precise Electronic Compact Reflector, a screw-base MR16 featuring built-in electronics that convert from line voltage to 12V. Operating at 12W, Diamond Precise can replace 50W PAR20 and 50W R20 lamps and delivers 13.8 lumens per watt and 5,000 hours of life. Lamps measure 3/16 in. in diameter and are available for spot- and floodlighting. Color temperature is 2950K. **Circle No. 111**

Setting the Standard: 90.1-1999

BY CRAIG DILOUIE, CONTRIBUTING EDITOR

Energy codes are designed to set minimum standards for design and construction and can significantly reduce building system life-cycle costs. ASHRAE/IES 90.1 *Energy Standard for Buildings Except Low-Rise Residential Buildings*, developed in the 1970s in response to that era's energy crisis, today is the basis for building codes and the standard for building design and construction throughout the United States; it also influences building designs worldwide.

What's new: ASHRAE/IES 90.1-1999, with its tough lighting requirements, is set to become the standard energy code nationwide for all new construction within the next two years. The requirements of Standard 90.1-1999 are currently being met or exceeded by only 18 states.

A provision of the Energy Policy Act of 1992, put into effect by the U.S. Department of Energy (DOE), requires that beginning July 15, 2004, all states must certify that they have energy codes in place that are at least as stringent as Standard 90.1-1999 or justify why they cannot comply. For this reason, 90.1-1999 is written in code language that is readily adoptable by the states, and DOE is providing funding to the states to help them incorporate 90.1-1999 into their building codes.

ASHRAE/IES 90.1-1999 is already the current standard for all Federal building construction and was adopted for the 2001 version of the International Energy Conservation Code (ICC). "The inclusion of Standard 90.1-1999 by the ICC recognizes the incorporation of new technologies, increased energy savings and easier use over the 1989 standard," said James E. Wolf, who was president of ASHRAE in 2000.

As of September 2002, 18 states have energy codes that meet or exceed the requirements of Standard 90.1-1999. Fifteen states meet 90.1-1989. Seventeen states have weaker or no code. See Figure 1 (above) for status as of September 2002, courtesy of the Building Codes Assistance Project, or visit this DOE website for detailed information on a state: http://www.energycodes.gov/implement/state_codes/index.htm. Note that while ASHRAE/IES 90.1-1999 is to become the new standard, it sets *minimum* requirements. Individual state energy codes may be tougher and be in compliance with their obligations under the Energy Policy Act.

According to the DOE ruling published in *The Federal Register* on July 15, 2002, "Analysis shows, nationally, new building efficiency should improve by about six percent, looking at source energy [where energy is produced], and by about four percent, when considering site energy [where energy is used]."

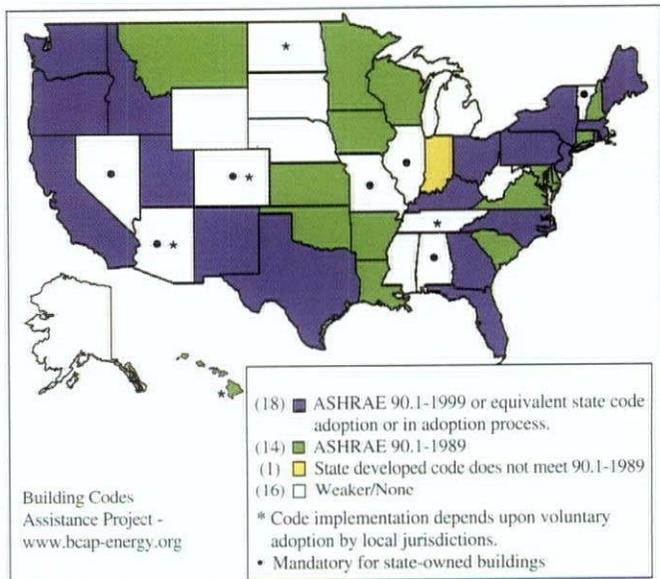


Figure 1. ASHRAE/IES 90.1-1999 or Equivalent Code Adoption, September 2002. Note that this map identifies code adoption for general energy requirements, although requirements for lighting may be stricter in a number of states. Source: Building Codes Assistance Project.

Four-percent load reduction doesn't sound hard overall, but 90.1-1999's lighting requirements are about 50-percent more efficient than the 1989 standard, according to Edward Gray, Director, Energy Policy for the National Electrical Manufacturers Association. In contrast, said Gray, building envelope and HVAC requirements for energy efficiency don't change much.

DIFFERENCES BETWEEN 1989 & 1999

Nine out of 10 commercial buildings were constructed before 1986; in most of these older buildings, lighting accounts for 50 percent of electrical energy use, according to the New Building Institute. In newer buildings that meet ASHRAE/IES 90.1-1999, lighting accounts for only 30 percent of electrical energy use.

To address general differences, Standard 90.1-1999 was designed to be easier to use than 90.1-1989 and is written in clearer, mandatory, enforceable language for both new construction and renovations. The code mandates the calculation procedure for fixture wattage to prevent under-calculation and includes a much broader range of building categories to make the code usable and enforceable. The 1989 code provided single-value whole building lighting power densities for only 11 building types, while 90.1-1999 provides densities for 31 building types. In addition, a number of exemptions in the 1989 version are not present in the 1999 version, such as process facilities; the 1999 version does include a number of narrowly targeted exemptions, such as safety lighting.

Standard 90.1-1999 is largely prescriptive, setting lighting power allowances for interior and exterior applications, with interior applications addressed using either the whole building method or space-by-space method. It provides power limits for exit signs. To address special lighting needs, the code also sets limits for decorative, merchandise, display and accent lighting, and lighting used to reduce glare on computer screen glare in certain spaces. For exterior applications, power allowances are prescribed for building entrances, exits and highlighting. Mandatory tandem wiring requirements are provided to reduce the use of single-lamp ballasts. The lighting power allowances are generally stricter, based on advancements in commercially available lighting technologies over the last 10 years.

Regarding the whole building method, for example, office W/sq.ft. is reduced from 2.1-3.3 to 1.3; retail W/sq.ft. is reduced from 2.1-3.3 to 1.9; and school W/sq.ft. is reduced from 1.5-2.4 to 1.5. Regarding the space-by-space method, below are several examples of changes in lighting power allowances:

Lighting Power Allowances (W/Sq.Ft.)

Space	90.1-1989	90.1-1999
Office Enclosed	1.8	1.5
Office Open	1.9	1.3
Conference	1.8	1.5
Training	2.0	1.6
Lobby	1.9	1.8
Lounge/Dining	2.5	1.4
Food Prep	1.4	2.2
Corridor	0.8	0.7
Restroom	0.8	1.0
Active Storage	1.0	1.1

It is assumed that light levels in these spaces will be maintained at IESNA-recommended values, which were used in the development of the power allowances in Standard 90.1-1999. Compliance will require more efficient technology, mostly more efficient lamps and ballasts. The code provides a table that identifies equipment options (lamps, ballasts, fixtures) with associated percentages of lighting density reductions. For more sophisticated or alternative approaches, engineers can use the energy cost budget method (computer calculations) to demonstrate load reduction within code limits.

ASHRAE/IES 90.1-1999 & LIGHTING CONTROLS

Standard 90.1-1999 includes broad mandatory provisions in regards to lighting controls. The 1989 code required minimum controls and covered their accessibility. Automatic controls were addressed in the form of credits for higher power allowances if occupancy sensors, lumen maintenance controls or daylight controls were included in the design.

Facilitywide Lighting Shut-Off

Standard 90.1-1999 mandates that either scheduling or occupancy-sensing automatic shut-off strategies be used for buildings larger than 5,000 sq. ft., the only exemption being lighting operated 24 hours a day. The control device can be:

- A programmable time scheduling control system for shut-off based on time of day when spaces are predictably unoccupied. An independent program schedule is to be provided for areas less than or equal to 25,000 sq. ft., but not more than one program per floor of the building.

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- An occupancy sensor that turns the lights off within 30 minutes after the space is vacated.
- An unoccupied/shut-off control signal from another control or alarm system.

Shut-Off in Individual Spaces

In addition, each space that is enclosed by ceiling-high partitions must have at least one control device that independently controls the general lighting in the space. Each control device is activated either by an automatic motion sensor or manually by an occupant.

- For spaces equal to or less than 10,000 sq. ft., each control device is limited in coverage area to a maximum of 2,500 sq. ft.
- For spaces greater than 10,000 sq.ft., each control device is limited in coverage area to 10,000 sq. ft.
- Each control device cannot override the time-scheduled automatic shut-off for more than four hours.
- Each control device must be readily accessible and located so that the occupant can see lights from the controlling switch, with an exemption for controls located remotely for safety or security purposes.

Exterior Lighting

Exterior lighting not exempted in the Standard must be controlled by a photocell or astronomical timeclock.

Tandem Wiring

Light fixtures that are in the same space and on the same control device, using one or three linear fluorescent lamps greater

than 30W each, must use two-lamp, tandem-wired ballasts in place of single-lamp ballasts.

Other Controls Required

- Display/accent lighting
- Display case lighting
- Hotel and motel guest room lighting
- Task lighting
- Non visual lighting (such as for plant growth)
- Demonstration areas

The Watt Stopper provides a helpful illustrative guide in Figure 2 (below left).

California's Title 24 energy code also mandates bi-level switching to achieve 50-percent energy savings, with exceptions being corridors, storerooms, restrooms, public lobbies, guestrooms, areas with only one fixture and spaces where occupancy sensors are used.

Building-wide dimming is not addressed by Standard 90.1-1999, although it can be incorporated into computer calculations under the energy cost budget method to demonstrate load reduction.

"The Lighting Controls Association supports nationwide adoption of the ASHRAE/IES 90.1-1999 energy code," said A.J. Glaser, president of the Lighting Controls Association and HUNT Dimming, a manufacturer of dimming controls. "According to the New Buildings Institute, which developed the 2001 *Advanced Lighting Guidelines*, lighting controls can reduce lighting energy consumption by 50 percent in existing buildings and at least 35 percent in new construction. What Standard 90.1-1999 does is acknowledge that while energy savings vary by application, the positive economic impact of advanced controls is certain. And a broad range of commercially available products and technologies are available from controls manufacturers to address all code requirements and specific opportunities."

THE FUTURE

Standard 90.1-2001 is now on the stage. It is expected to be referenced in the 2003 International Energy Conservation Code, and ASHRAE recently signed a partnering agreement with the National Fire Protection Association (NFPA) to incorporate 90.1-2001 as the energy code portion of the ANSI-approved NFPA consensus code set, which will be published in April 2003. Regarding lighting, addendum "g" revises lighting power allowances downward even further, possibly by as much as 29 percent, to address new research on light loss factors for fluorescent fixtures and commercial construction space characteristics. The new research on light loss factors was completed by the interNational Association of Lighting Management Companies (NALMCO) and determined that luminaire dirt depreciation (LDD) has traditionally been overestimated, which can result in 8-10-percent fewer fixtures in new buildings (the results are being incorporated into an upcoming IESNA Recommended Practice on maintenance).

Said ASHRAE President Donald Colliver, PhD, PE, "ASHRAE currently is working on the 2004 standard with a goal of increasing the stringency to achieve a significant reduction in energy consumption over the 1999 standard."

GETTING HELP

Visit www.ashrae.org to purchase Standard 90.1-1999 through its online bookstore. Compliance and training tools can be found at www.energycodes.gov.

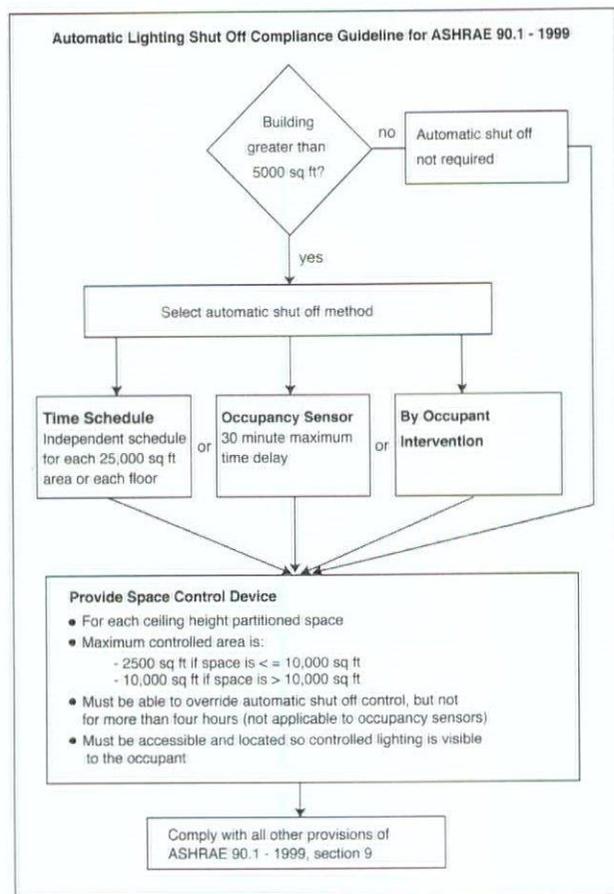


Figure 2. Controls and ASHRAE/IES 90.1-1999. Courtesy of The Watt Stopper.

FIXTURES TO DIODE FOR

BY CRAIG DILOUIE, CONTRIBUTING EDITOR

With all the industry buzz last year about the extraordinary future prospects of white LEDs, a quiet explosion in the LED illumination market arrived in the form of new lighting fixtures using color LEDs. Here's a look at what's being offered.

THE PIONEER

Perhaps no company defined the architectural LED illumination market more than Boston-based **Color Kinetics Incorporated**, whose founders, George Mueller and Ihor Lys, realized that clusters of LEDs could not only generate light intense enough for lighting applications, but that by combining different levels of output from red, green and blue (which at the time was new) LEDs, it was possible to generate over 16 million color combinations—and use digital control to easily render color-changing effects. Intelligently controlled, LED color-changing lighting based on the resulting Chromacore technology became the foundation of the company's product line, which started in theatrical lighting but quickly crossed over into architectural applications. Founded in 1997, today the company holds 13 U.S. and European patents and over 90 patent filings. The company's product line includes cove lights, MR16 replacements, accent fixtures, wallwashers, floods and spotlights, all sold in a systems approach integrating fixtures with power/data supplies, accessories, software and controllers.

Color Kinetics recently introduced several products that opened new markets, including the iColor Accent, an indoor/outdoor direct view product designed to replace neon; and new ColorBlast and ColorBurst products that increased the lumen package from compact designs. "Color Kinetics is developing technologies that broaden the use of its products both at the low end and at the high end," said Kathy Pattison, VP of marketing. "At one end of the spectrum, we are developing 'push-of-a-button' simplicity in control devices, while at the same time, we have projects underway focusing on the design and implementation of extremely large-scale lighting projects. These complex networks can encompass tens of thousands of individually controlled lighting nodes through the use of advanced network protocols and architectures." According to Pattison, besides developing new

products, Color Kinetics is also focusing its business on signing licensing agreements and OEM partnership deals with a range of manufacturers, such as Zumtobel Staff, Targetti and Intermatic, to help them incorporate LED technology into their own products.

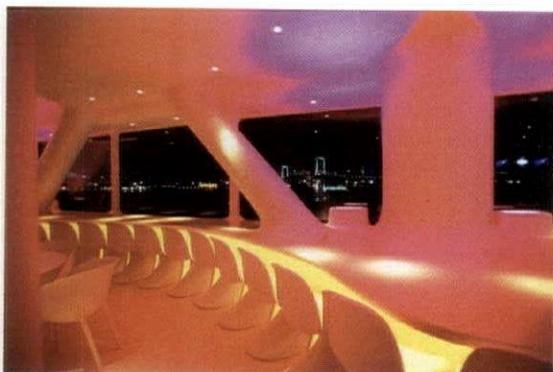
In addition, Color Kinetics has introduced significant price reductions on all of its products. "Today the company is delivering products that offer five times the light output at half the price of its comparable products of five years ago," said Pattison. "Color Kinetics' market prominence, extensive product lines and large, worldwide customer base enable the volume purchasing power that results in bold pricing moves—breaking through the LED price/performance barriers well ahead of the predictions of industry analysts."

RETHINKING THE LIGHT FIXTURE

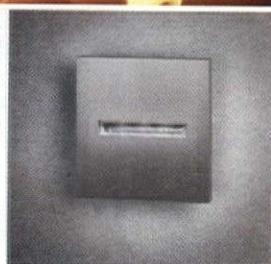
Skokie, IL-based **io Lighting** launched in September 2002 as the brainchild of Ann Reo, now the company's president, who saw "industrial design opportunities driven by the miniature nature of LEDs enabling a new paradigm in light fixture design." Said Reo, "Flat printed circuit-boards versus bulbous point sources or tubular linear sources open up a whole new world of design possibilities. This opportunity to redefine the architecture of light fixtures as we know them is what inspired the creation of io. It's now our design mantra—to think 'inside out.'" The company currently

offers two product lines, Tile and Plane, with five more product designs on the boards, according to Reo.

Plane, a 120/277V fixture series used as exterior marker lights, steplights and signage, is a 1.9-in.-deep, 6-in.-square fixture that mounts directly to a 4-in.-octagonal junction box. The fixture is environmentally sealed, enclosed and constructed of corrosion-resistant zinc casting (stainless steel available) painted black, bronze, satin aluminum or white, or plated in satin nickel, chrome or satin brass. Linear LED strips within a clear polycarbonate backplate are mounted behind the fixture, resulting in a perimeter edge glow effect in 360-degree and up/down configurations. Colors include white, red, green, blue and amber; these can be specified as white up/white down, red up/white down, green



Above: Café Odaiba in Tokyo, designed by Katsunori Suzuki and Ryoko Yamashita, Fantastic Design Works using 35 C-75 and four ColorBlast fixtures from Color Kinetics.



Right: Plane from io Lighting, steplight model.

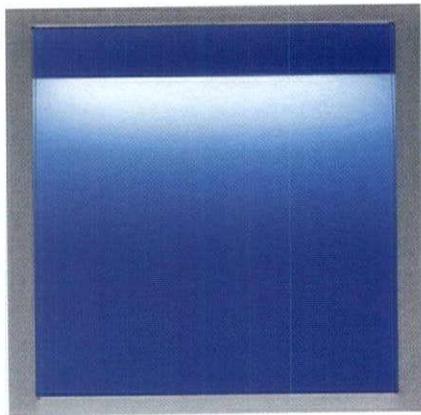
technology

up/white down, blue up/white down and amber up/white down. Plane can be specified with a solid face or with an embedded luminous cube, luminous pyramid or steplight optic. It can also be used to edge-light custom signage.

Tile, designed to provide visual cues or enhance the aesthetics of interior spaces, is an anodized aluminum frame, less than 0.75 in. deep, that houses LED linear strips, which in turn edge glow two types of optical wave-guide acrylic and result in a uniform glow of colored light across the panel. Colors include red, green, amber, frost blue and frost green. Tile can be surface-mounted, recessed into walls and ceilings and pendant-mounted with a variety of suspension options. The fixture is available in 5-x-5, 5-x-10-, 5-x-14-, and 5-x-18-in. nominal sizes drawing 8, 9, 11 and 12W respectively for 120/277V systems.

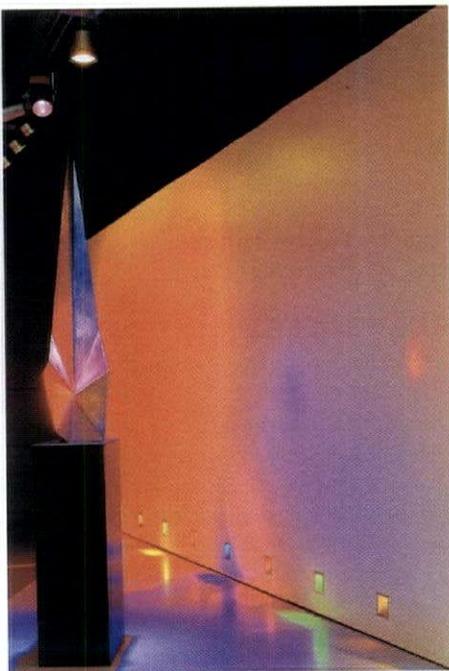
"Our challenge is to find the applications where LEDs are suitable, then work backwards to develop the fixture with all the mounting hardware and shielding media that designers expect," said Reo.

She added that io's customers expect "an LED-based commercial lighting manufacturer to tell them the truth about



From Zumtobel Staff Lighting, Ledos low-voltage LED fixtures can function as highlights, pathway and beacon lights. The series includes Ledos Kava wall/ceiling asymmetric fixtures.

expected lamp life." She said, "I believe the design community is ready for the 'reality' of this technology. The reality is a good thing, but you have to change the light bulb." According to Reo, LEDs last 3-11 years operating 24/7. For this reason, io, which uses surface-mount LEDs supplied by Osram Sylvania, Lumileds, Nichia and Cree, sells replacement LED modules for its products.

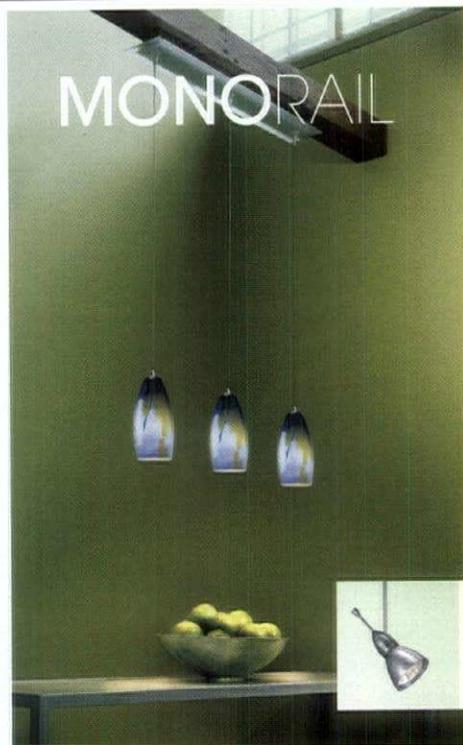


EVOLUTION

LEDs have not only attracted newcomers, but established players as well, such as Highland, NY-based **Zumtobel Staff Lighting**, which offers Ledos, a family of recessed and surface-mounted low-voltage (24V DC) LED fixtures for indoor applications requiring upscale accents, such as retail stores, restaurants, hotels and theaters. Mounting at the ceiling, wall or floor, Ledos fixtures can serve as highlights, pathway and beacon lights. The Ledos family includes square die-cast aluminum and stainless-steel fixtures as well as wall/ceiling asymmetric fixtures (Ledos Kava) and miniature fixtures with convex cover, circular or semi-circular shape, openings and flat cover ring.

"The technology of the LED lamp has progressed sufficiently to make LED luminaires a practical solution to specific lighting design application problems," said John Nadon, manager, point source products. "Zumtobel Staff is committed to the 'active light' concept, which is controlling color within the built environment from practical luminaires—rather from merely specialty fixtures or theatrical-type luminaires, which are not relevant to most contemporary architectural interior design. Our 'active light' products, like all of our lighting products, are designed to fit seamlessly into contemporary architectural design, adding value to the space as fixtures and as lighting elements."

Each Ledos fixture can be specified with up to five colors (red, yellow, green, blue, white), and through a partnership agreement with Color Kinetics, Ledos



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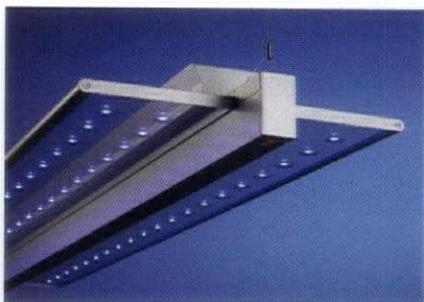
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incorporates color-changing capability. "We have parking lots using red and green for path-marking," said Nadon. "In some locations, we have employed color-changing for its pure visual interest, while in others, color is being used for marking purposes, allowing one fixture to be red for some events/times and blue, for instance, for others. For example, in a hotel or on a cruise ship, a white or blue luminaire lighting a walkway can be changed to red during an emergency."

Zumtobel is currently planning to launch other new LED products such as Ledos E, Phaos Tiles, Phaos Tubes, Phaos Xenos Projectors and Ledos CK color-changing products. "We have a large number of oncoming LED product," said Nadon. "Importantly, we are developing things that have an absolute pragmatic reason for existing; things that will solve lighting problems that otherwise could not be solved. We do not have plans to release LED products as novelties merely for short-term sales. We expect the products we will offer will be leading-edge at introduction, but growing a mainstream market segment."

MIXING OLD AND NEW

Orgatech+Omegalux has taken a different approach to LEDs by integrating them into traditional fixtures. The Lightstar LED linear, suspended, indirect fixture, measuring 13.875 in. wide and 3.625 in. high, incorporates two dimmable 54W T5/HO lamps for primary illumination and 80 LEDs as a decorative accent. The 120/240V fixture's construction features a sculptured body of extruded aluminum sandwiching laminated clear tempered glass panels whose edges are protected by aluminum trims. The LEDs, which can be blue or white, are placed in these panels, powered by an invisible low-voltage power supply and controlled from an inset rocker switch and standard dimming ballast.



Orgatech+Omegalux' Lightstar LED incorporates LEDs as a decorative accent.

According to Laurence St. Ives, president of the Azusa, CA-based company, LEDs "present a wonderful opportunity to introduce art into lighting fixtures. Even seasoned engineers, who are probably the most difficult to persuade that art is valid as a part of functional lighting, are literally awed by the appearance of floating LEDs without visible power."

NEW ALTERNATIVE TO NEON

Evanston, IL-based **iLight Technologies**, founded by Mark Cleaver, president, in

May 2002 with George Hulse, an optical scientist and Eric Eriksson, an architect, is the result of a conversation in which "we saw that LEDs would be the future of lighting," said Cleaver. "After some research, we concluded that if we could make something that would look like traditional neon with LEDs, we would have a winner." The result is Plexineon, released to the market in the spring of 2002.

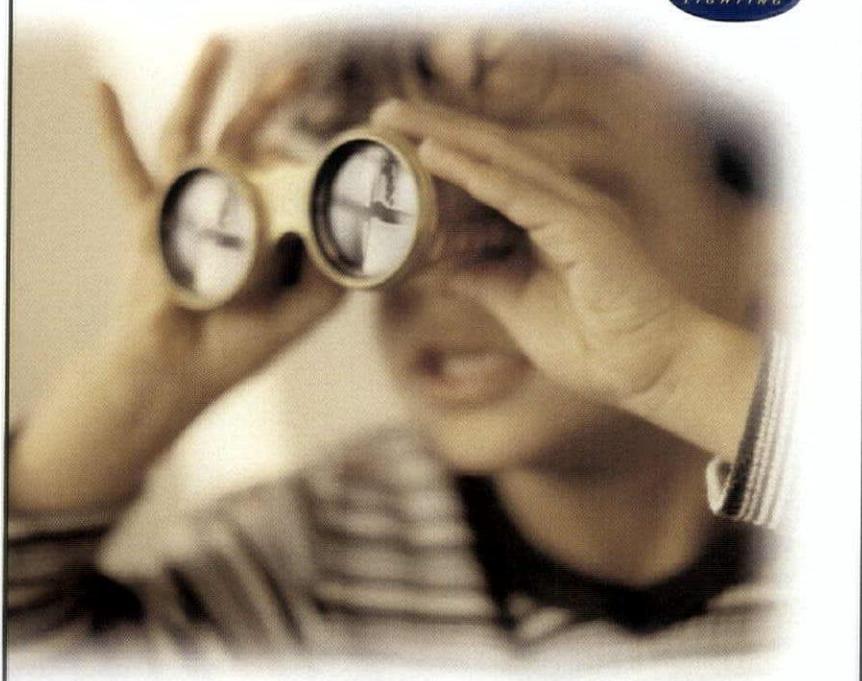
"Most lighting specifiers have seen LED products and think we are another LED tube light, but they are surprised when they

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the known limits of his world, Magellan offers a variety of exciting fixtures

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Wendy's restaurant with iLight Technologies' Plexineon architectural detailing.

see Plexineon because of its design, brightness and the fact that it really looks like neon," said Cleaver. "Plexineon glows like neon, curves like neon and draws attention the same way neon does."

Plexineon can be specified for traditional neon applications such as indoor and outdoor trim, cove-lighting, signage, open-face channel letters and accent lighting. (Neon is generally

better, however, for artwork where a 360-degree field of view is needed, and for closed-face channel letters.) According to Cleaver, the product can also be shaved flat and embedded in a floor or wall, placed directly next to other materials, placed on a prefabricated building and shipped, come into user contact, cold-bent in the field into gentle waves or arcs, and be used in almost any weather condition without breakage.

"Plexineon is low-voltage DC and can be safer, more durable and easier to install than glass neon, use 70-percent less energy, and pose lower maintenance requirements," said Cleaver, at a cost equal to or a little higher than traditional neon. According to Cleaver, compared to fiber-optics, Plexineon's cost is lower, can go longer distances with no reduction in light output and outperforms in maintenance, brightness, ease of installation and energy consumption. iLight has filed for 14 patents, and is currently focusing its R&D efforts on new colors and integration with DMX controllers to enable color-mixing control.

FRESH FROM THE BOARDS

Honeywell's Teterboro, NJ facility is now offering for license to the lighting industry non-imaging optics technology (patents issued and others pending) originally developed for backlighting liquid crystal displays used in military avionics applications. This technology collimates the light from a diverging source such as LEDs and fiber optics and comprises a cross-sectional profile that enables stacking in one-, two- or three-dimensional arrays.

"These optics eliminate the dark gaps visible between LEDs arranged in arrays and when used in conjunction with engineered diffusers, provide a bright, controlled and uniform beam," said Robert Saccomanno, manager of licensing and intellectual property for Honeywell. "This technology is ideally suited for direct illumination applications such as signage and task lighting. Refractive versions have been injection-molded, and hollow versions can be easily fabricated with sheet metal reflector materials. Designs for large-area light guides, which spread the collimated light over a large area in a uniform fashion, and hollow-cavity light guides, are also available." ■

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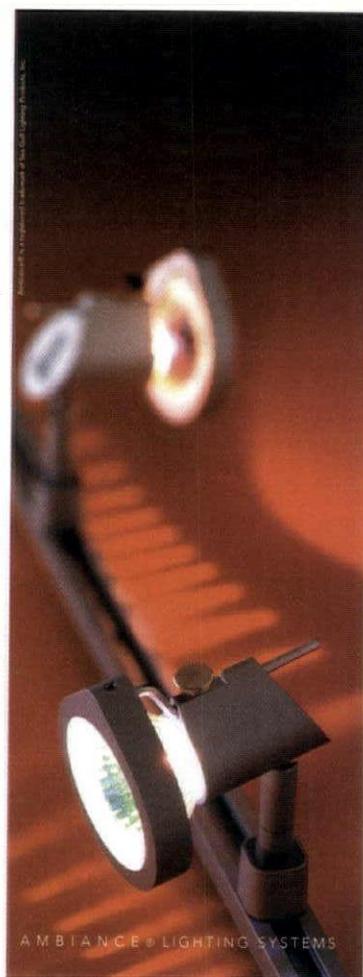


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Have You Hugged Your Custom Manufacturer Today?

BY RICHARD AGRISS

Custom lighting fixtures—both modifications to standards and “dead specials”—have always been an essential tool for sophisticated lighting specifiers. Often the catalogued product won’t integrate into a complex architectural detail. Other times, no suitable fixture has yet been developed for a promising new lamp. And sometimes the designer is simply inspired—he or she really has thought of a better mousetrap.

Yet an unmistakable trend has developed over the past decade: The number of manufacturers willing to build customs has continually decreased. Historically, these companies have tended to be “independents.” And it seems that every year more and more of them have either gone out of business, been purchased by larger companies interested only in their “off-the-shelf” products, or made strategic decisions to either limit or eliminate custom capabilities.

The sophisticated specifier should, obviously, view this accelerating trend with concern, even alarm. If nothing but standard, generic products are available, their ability to effect creative lighting design itself will eventually suffer. Yet my experience as a manufacturer’s rep involved in hundreds of custom jobs has taught me that designers can help alleviate the problems that compel so many manufacturers to abandon this sort of work.

Given the general industry acceptance that custom fixtures cost more money, the issue isn’t that they aren’t profitable; they can be, but *only* when the complicated process of designing and fabricating them goes smoothly. When it doesn’t, these jobs can cause major disruptions to a manufacturer’s operations, foster ugly conflicts (with contractors, distributors, reps and the specifiers themselves), and ultimately result in financial losses. And as a businessperson, how often are you eager to get involved in a project that will wind up as a loss?

I’d like, therefore, to try and explain some of the issues that can cause a custom project to “go south,” and offer some concrete suggestions for how a designer can help prevent them from doing so. Due to space limitations, some of my arguments might seem oversimplified. Hopefully, though, you’ll be able to catch my drift.

Be aware of the realities of modern manufacturing. Until the late 1980s, most lighting fixtures in the U.S.—even standards—were for all intents and purposes built by hand, one at a time. Customizing the product, therefore, wasn’t that big a deal. Since then, however, things have drastically changed. Manufacturing now utilizes intricate computer programs, extremely costly tooling, out-sourcing for certain components and extensive CAD drawings for both fabrication and assembly. When creating a custom fixture, obviously, some or all of these must be created from scratch. This leads to the single biggest impediment to getting a custom fixture on a job: lengthy lead times—a factor a specifier *must* educate the owner and all other parties involved about. It also comes to play when approaching a manufacturer about a custom fixture. I’ve had many designers tell me: “It’s a *simple* modification. Why should it take so long to get a price, a drawing, etc.?” The fact is that given these realities there is *no such thing* as a “simple” modification. Getting it right takes time.

Always inform a manufacturer when you’re specifying them for a custom fixture. Let me give you an example of what can happen when you fail to do this. The manufacturer

receives a frantic call from a rep or distributor saying that “the sealed bid goes in tomorrow at nine,” and the caller “must have the price by the end of today—or else!” Since putting together a correct price takes time (assuming a copy of the specification and details are immediately available), the manufacturer is faced with two choices. He can decline to bid, thus provoking the ugly conflicts I alluded to earlier, or he can push other projects to the side to concentrate on this one (leading to conflicts with those involved in the delayed projects). Not what I call a “win-win” situation—and one easily prevented by a simple phone call, fax or e-mail from the designer when the specification is issued.

Try to help the manufacturer get critical information needed to complete custom projects. Custom fixtures usually require specific information delivered through “channels”—field dimensions, ceiling thicknesses, structural details, etc. Frequently this information is difficult or impossible to come by. Time passes and a fixture that *legitimately* takes six to eight weeks to design and build suddenly *must* be on the job within *days* because “the ceiling is closing,” “the store is opening” or “the gala reception is Saturday night and the Governor *himself* (or *herself*) is going to be there.” So the next time a manufacturer or rep calls you to ask for help in getting this information, you might want to keep this in mind: Your not having the time to get involved might ultimately contribute to you losing yet another valuable custom source.

Try and specify a “willing-to-do custom” manufacturer’s standard products. This one may be a little controversial, but... The truth is that there are very few pure “custom houses” left. Most companies who build customs usually break down as such: 75 percent standard, 25 percent custom. This means that the standard business supports the more expensive custom operation and that custom tends to be thought of as a means of earning specifier loyalty for standard product. I may get in trouble for saying this, but when manufacturers decide whose custom projects to say yes to, this “loyalty” is a *major* factor. So when you’re evaluating two competitors’ standard offerings (assuming they’re relatively equal in quality), you may want to add the issue of which one is willing to build customs into the equation.

I realize that some specifiers might disagree with some of my arguments, and may even find a few of them derogatory. But let me make one fact *perfectly* clear: I have participated in *numerous* conversations with manufacturers who were considering limiting or eliminating customs, and the difficulties I outlined above were *always* the major factors in their having reached that point. My hope is that sophisticated specifiers will take what I have said to heart and, even if they don’t entirely agree with me, that they’ll at least try to meet me half-way.

After all, like everybody else, I’m always on the lookout for a better mousetrap. ■

A sales representative for high-end architectural lighting manufacturers for 15 years, the last 10 with Enterprise Lighting Sales in NYC, Richard Agriss has worked with lighting consultants on an extensive and eclectic list of custom projects, including The Getty Center in Los Angeles and Prada Soho in NYC.