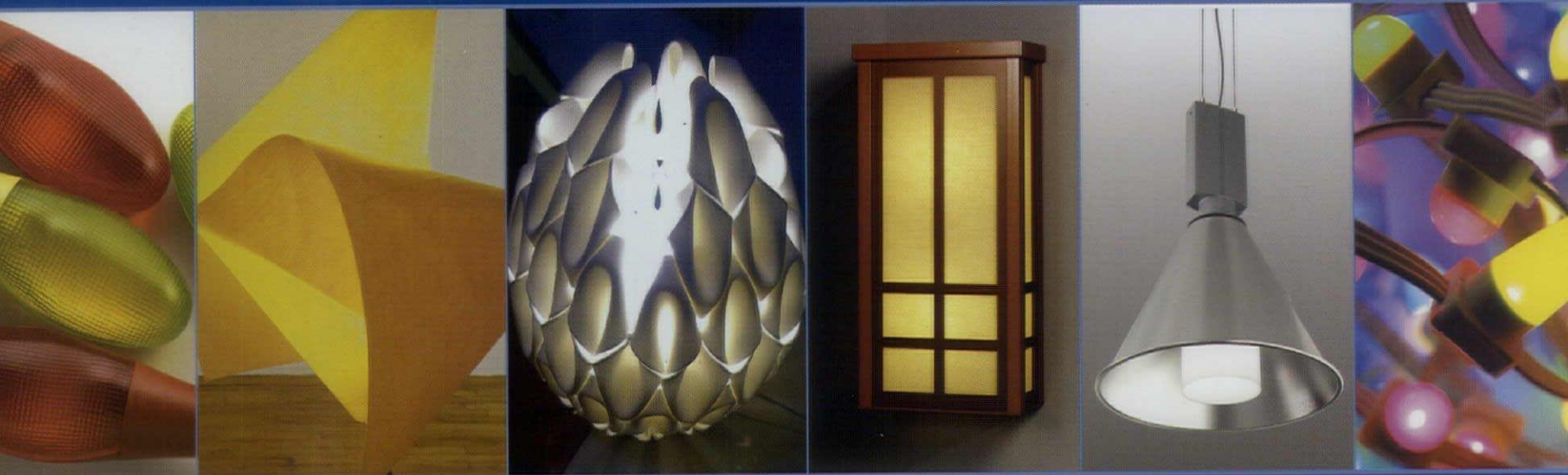


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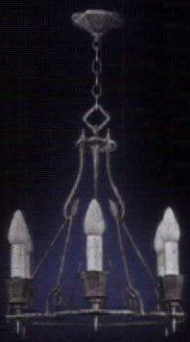
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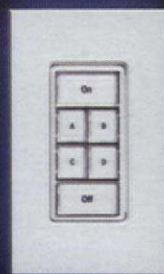
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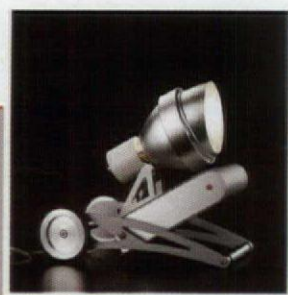
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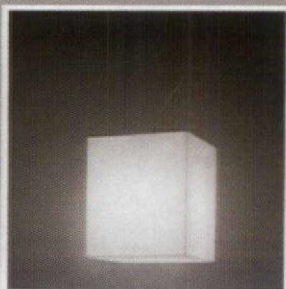
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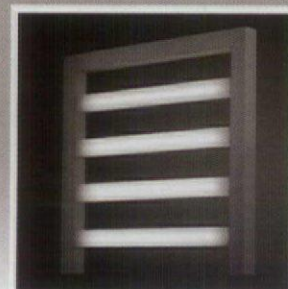
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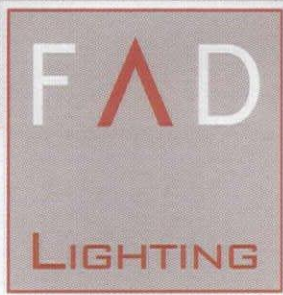
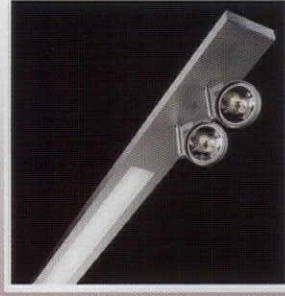


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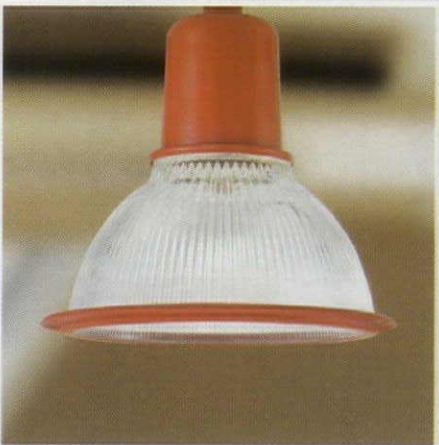
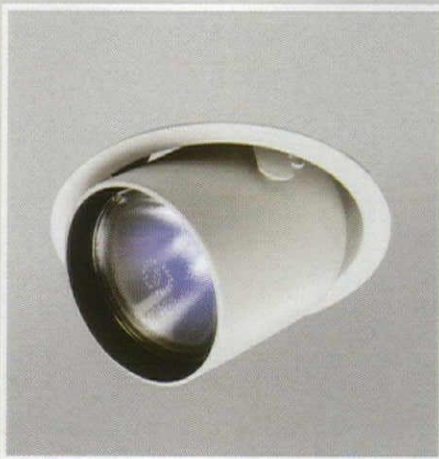
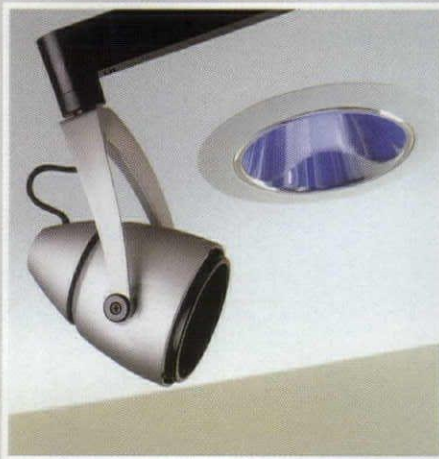
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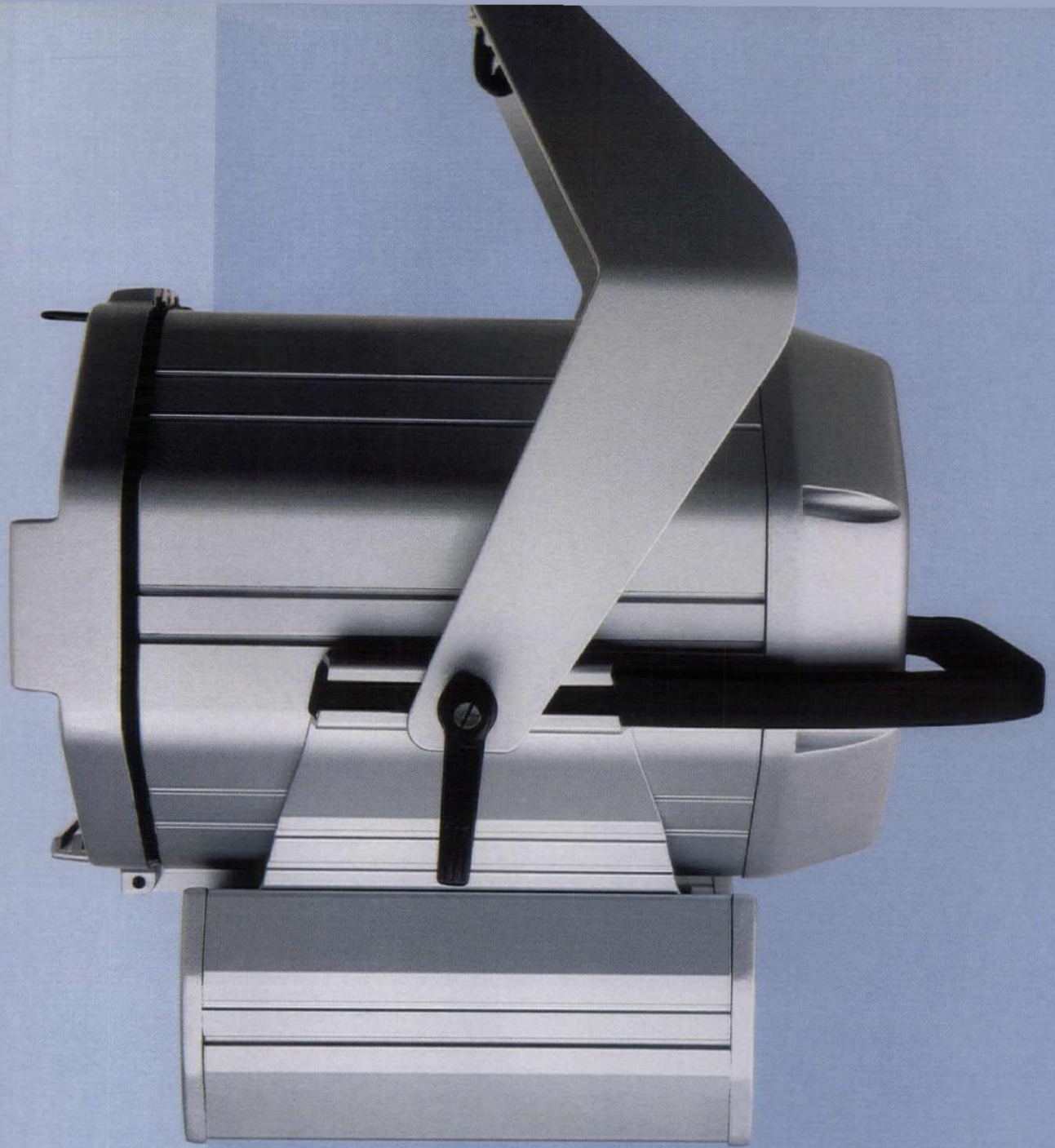
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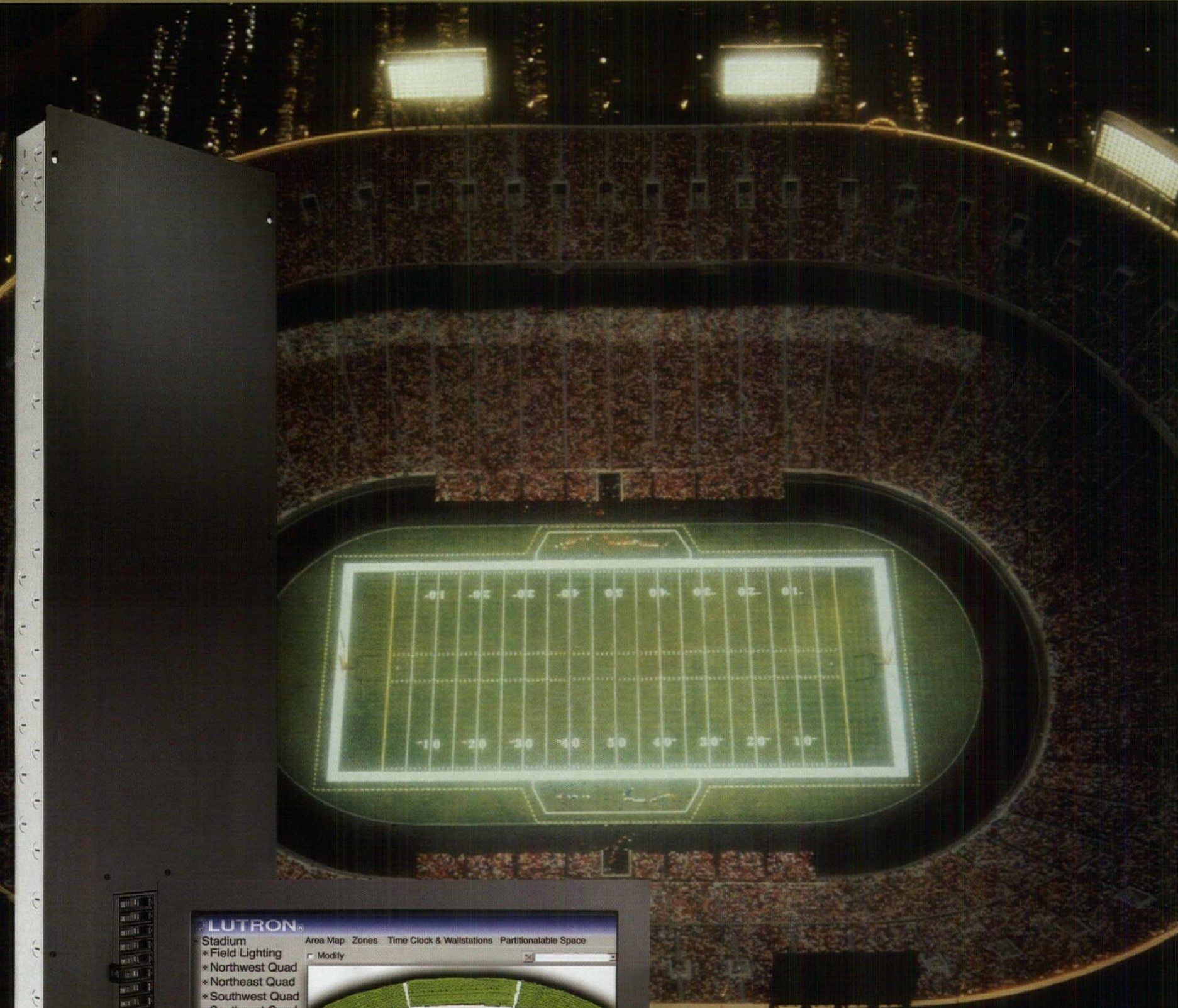
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## Daylighting for the 21st Century

JAMES BENYA

**DAYLIGHTING IS ONE OF THE OLDEST AND MOST TREASURED ASPECTS OF** architectural design. Perhaps its history is why designers treat it more like fine art than building technology. In the title of his quintessential book, legendary lighting designer and educator William Lam describes daylight in profound terms, calling it a "formgiver" to architecture (*Perception and Lighting as Formgivers for Architecture*, 1977). Indeed, for us mere lighting designers, it is hard to compete with the Almighty—or for that matter, with Aalto or Foster.

But here, in the twenty-first century, design professionals are increasingly expected to create buildings that perform significantly better than buildings ever have before. At first, this awareness was driven by a surging interest in energy efficiency, rising fuel costs, and the environmental movement, but that only had a modest effect on design and on public expectations for it. The real impetus has come from the US Green Buildings Council's LEED system, launched in 1998; this program has finally raised building science and engineering to its rightful level of importance in the design behind a "green" building. Daylighting—especially if it provides energy efficiency and reaches most interior spaces—is the potential star of the sustainability show.

The problem is the modern architect is generally ill equipped to

of daylight that they don't know how to think about it usefully," says Lisa Hescong, architect and principal of the Hescong Mahone Group, a Sacramento-area firm specializing in building science research. The group has researched daylighting equipment and practices for 15 years, with a focus on California.

In order to truly expand the application of informed daylighting design practices, certain issues must be addressed. Today, the problems with this design approach include:

**A SMALL BODY OF KNOWLEDGE.** Most literature in the field is artistic, conceptual, or trend and fashion. Worse, some current architectural textbooks provide inaccurate information, extorting the artistic virtues of famous daylighting designs that are technically so bad they would cause a building to fail to qualify for LEED at all.

**LIMITED EDUCATIONAL OPPORTUNITIES.** Few colleges of architecture have faculty with genuine daylighting expertise; and even fewer have artificial skies, helidons, and other systems for scale modeling and measuring daylighting performance. There is a tenuous acceptance of computer analysis and an unfortunate scale-modeling-versus-computer-modeling controversy brewing.

**NO ESTABLISHED STANDARDS OF PRACTICE.** Exceptional architects have learned to identify and employ daylighting consultants in a consistent

**The primary issues that have plagued daylighting design will be resolved in this century—and many of the tools of the future will come from the field of architectural lighting.**



Daylighting is an integral component of many projects recently published by *Architectural Lighting*. Left to right: A laylight complements track lighting at the Racine Art Museum (September/October 2003). The High Museum's atrium skylight originally allowed too much sunlight into the galleries; window films and shades solved the problem (January/February 2004). An industrial U-glass provides daylight to the interior of Erco's warehouse and an interesting texture to the exterior (September/October 2003). Photographers, left to right: Chris Barrett/Hedrich Blessing; Jonathan Hillyer; Jörg Hempel Photodesign.

evaluate the performance of daylighting design. Crucial decisions concerning daylighting are made in the schematic design phase, but most architects have no tools, other than common sense and experience, to measure the final effect. During early schematics, for example, it is hard—or even impossible—to thoroughly compare the ultimate performance of alternative fenestration proposals. Yet this very aspect is often the difference between one LEED level and another, with up to 12 precious LEED points at stake.

"Mainstream practitioners think they are doing daylighting, just because their building has windows. They have such a simple view

manner, but for most architects, each project is a new experience where daylighting is concerned. Many design decisions are based on the architect's intuition or artistic sense, rather than on serious analysis. For instance, how many new buildings in this hemisphere have light shelves on the north façade? (Answer: One is probably too many.)

**NO ESTABLISHED STANDARDS FOR "HOW MUCH" DAYLIGHT.** LEED 2.1 took a courageous step in requiring "a daylight factor of 2 percent for 75 percent of all space occupied for crucial visual tasks." Yet "daylight factor," according to the IESNA, is a "low-precision procedure ... generally used with overcast skies ... especially in Europe." It is the

wrong method for assessing daylighting under sunny skies and has only "some application in North America." (Fortunately, LEED's requirement for mechanical analysis ensures climatologic considerations, and the daylight factor requirement is unpopular and slated for change with the next LEED release.)

**LIMITED ACCESS TO THE APPROPRIATE TOOLS.** Architects have little access to daylighting design and analysis tools. For example, there are less than 20 artificial skies in North America.

**NO COMMON LEXICON.** There is no broadly accepted terminology for discussing daylight glare; and no accepted numerical

system for predicting and evaluating it.

**INABILITY OF ARCHITECTURAL REVIEWERS TO JUDGE DAYLIGHTING DESIGNS ON PERFORMANCE.** Some recently published "green" buildings employ exceptional daylighting, but in many it is a fantasy of architectural design and the gullibility of the writer.

Most of these failings are holdovers

from twentieth-century daylighting design, in which glass became a new tool for architectural expression. Like most fellow lighting designers, I am an admirer of architecture and have often been thrilled by buildings using the medium as skin, roof and form. But I have also wondered how an architect could have chosen a particular fenestration treatment given the climatology of the site. Even the most famous "green" architects have designed a solar oven or two.

In twenty-first-century daylighting, we will rapidly resolve these issues and learn to design—and teach—daylighting solutions better. And many of the tools of the future will come from the field of architectural lighting. The most important current advances include:

- Next-generation lighting software that includes ray-tracing and radiosity methods to produce acceptably accurate calculations and compelling visuals with a fast—and comparatively easy—user interface.
- Photometric testing of high-performance skylighting systems to permit direct use of that data in lighting software in order to produce exacting results.
- Ongoing development of a glare metric that can be calculated along with illumination and other quantities.
- A methodology for predicting daylighting energy performance by predicting daylighting illumination performance.

There are, of course, a few good resources and expert practitioners out there, many of whom will be at Lightfair International's inaugural Daylighting Institute in Las Vegas this March. This is the first major North American daylighting program since 1986, and Lightfair organizers hope it will become the premier annual event in its field.

Owing to the Daylighting Institute, LEED, and other initiatives such as California's CHPS (Collaborative for High Performance Schools) and the Wisconsin Daylighting Collaborative, I expect that daylighting design technology will advance very rapidly in the next ten years. But until we get twenty-first-century daylighting, we need to be especially critical of buildings where technical measures are not used to objectively assess the design. Because we are still working with twentieth-century daylighting, there will continue to be buildings whose daylighting design story makes claims that won't stand up to the light of day. ■

*James Benya is a professional lighting designer and principal of Benya Lighting Design, West Linn, Oregon. He serves on the editorial advisory board of A|L.*

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# Managing Mercury: A Progress Report

CRAIG DILOUIE

**ALL FLUORESCENT LAMPS REQUIRE MERCURY TO START AND OPERATE.** Once the lamp is disposed of, however, that mercury can become a hazardous substance in the environment. This problem has resulted in more than a decade of federal and state regulation that can be confusing to owners, architects and lighting professionals alike.

Paul Walitsky, manager of environmental affairs for Philips Lighting North America, puts it simply: "Mercury is an important environmental issue, so it should be a priority for all people who make lighting decisions." But recent developments including California's changes to the state's lamp disposal law—and the increasingly litigious nature of business—make it an especially current topic, particularly for lighting designers.

Responsible for both specifying lamps and advising clients, lighting professionals stand to become a resource on this subject for building owners. As environmental consciousness becomes a

larger part of facilities construction and management, owners may see lamp recycling as an extension of sustainable design practices.

Pamela Horner, environmental marketing manager for Osram Sylvania's General Lighting Division, sees other important reasons for lighting professionals to take notice: "Designers are taking more responsibility for the life performance of the lighting system," she says. "And recycling is the responsible thing to do. In addition, if a designer can become knowledgeable about these issues, it can help that designer get his or her next project."

## REGULATORY LANDSCAPE

Before 1990, owners disposed of spent lamps as ordinary garbage in the local municipal landfill. The U.S. Environmental Protection Agency (EPA) developed the Toxicity Characteristic Leaching Procedure (TCLP) test to determine how toxic materials, including mercury, would leach in a landfill. Many lamps failed this test, resulting in their classification as hazardous waste with associated regulatory burdens under the Resource Conservation and Recovery Act (RCRA). Owners, therefore, could only dispose of the lamps in a hazardous waste landfill, or recycle them using what was then a small, budding lamp recycling industry.

To encourage recycling, in January 2000, the EPA issued a ruling that added mercury-containing lamps to the federal list of "universal wastes," enabling these lamps to be covered under the Universal Waste Rule of 1995. Under this rule, universal wastes are hazardous wastes but with lighter regulatory requirements regarding storage, collection and transportation.

Owing to this update, owners now have the following options in states that have adopted federal rules:

- Manage spent lamps as hazardous waste
- Manage spent lamps as universal waste and recycle
- Use a lamp that is not characteristically hazardous and either recycle it or dispose of it as solid waste in a municipal landfill.

State regulations, however, can be stricter than federal regulations, and the stricter regulations always take precedence. Seven states, for example, have banned all mercury-containing lamps from their municipal landfills, requiring owners to either recycle or dispose of spent lamps as hazardous waste. These states are California, Connecticut, Florida, Maine, Minnesota, Rhode Island and Vermont. Pennsylvania has eliminated the small-quantity exemption for lamps, requiring all mercury-containing lamps to be disposed of according to prevailing regulations. The regulatory landscape is likely to continue shifting, says Peter Bleasby, director of industry relations and standards for Osram Sylvania.

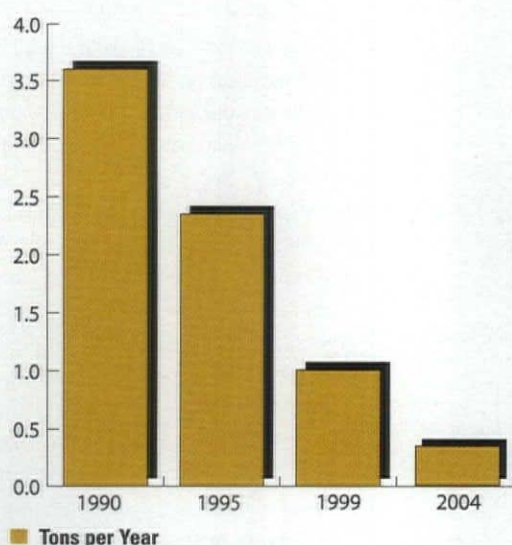
## MERCURY USE DECLINING

Many lamps today are no longer considered characteristically hazardous according to the EPA test. Not long after the introduction of TCLP, lamp manufacturers reduced the amount of mercury in their lamps and used other means to pass the TCLP test.

According to a 2000 National Electrical Manufacturers Association (NEMA) survey, lamp manufacturers reduced the total amount of mercury used in lamps from 24 tons in 440 million disposed lamps in 1990, to 17 tons in 620 million disposed lamps in 1999, a 29 percent decrease. NEMA projected that this trend would continue into 2004, forecasting a decrease to 13 tons of mercury contained in some 680 million disposed lamps. (Industry sources believe the forecast was off, that the amount of mercury is down to nine tons.)

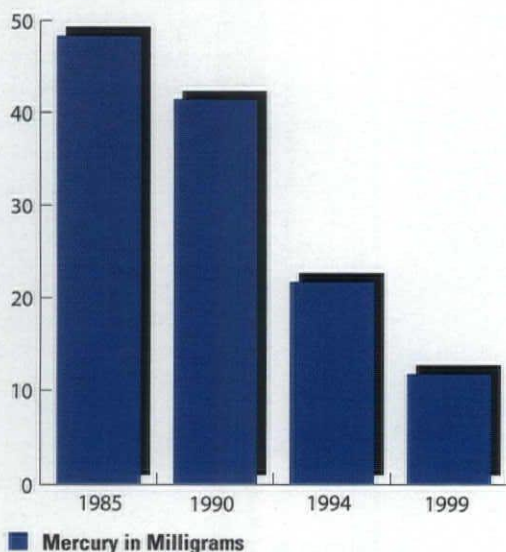
**Lamp manufacturers and industry groups know what to do with mercury: reduce, reuse, recycle.**

Figure 1 Mercury released from lamp disposal in the U.S. between 1990 and 1999, with a forecast for 2004.



Source: NEMA, Environmental Impact Analysis: Spent Mercury-Containing Lamps, Fourth Edition, January 2000.

Figure 2 Average 4-foot fluorescent lamp's mercury content, between 1985 and 1999, with a forecast for 2004.



Source: NEMA, Environmental Impact Analysis: Spent Mercury-Containing Lamps, Fourth Edition, January 2000.

Lamp manufacturers were actually ahead of the EPA's TCLP mandate. They began reducing mercury content in lamps in 1985, to respond to Occupational Safety & Health Administration (OSHA) regulations limiting the amount of mercury in the workplace. According to NEMA, between 1985 and 1999, the

average amount of mercury in a 4-foot lamp decreased from 48.2 milligrams to 11.6 milligrams. (See figure 2, page 23)

"It's interesting that mercury use has declined while lamp life and efficacy have improved," says Horner. She points out that it now takes the recycling of 50,000 4-foot fluorescent

lamps, or 150,000 compact fluorescent lamps, to recover one pound of mercury. Today, she says, all lamp manufacturers use recycled mercury.

While manufacturers have continued to reduce the mercury content in their lamps, Horner believes that they are approaching the limit of what is practi-

cal. "There is an intricate relationship between light output, life and mercury," she says. "You can go too low."

The net effect of the lighting manufacturers enabling their lamps to be classified as non-hazardous waste under federal rules, however, is that many of these lamps still end up in landfills in many states, along with their much reduced but still existent mercury.

**RECYCLING BENEFITS**

Major lamp manufacturers have united within NEMA's Lamp Section to promote recycling across the country. "Everyone has a responsibility to be good environmental stewards," says Walitsky. "Despite the decreased amount of mercury in many fluorescent lamps, failing to recycle these lamps could potentially expose some mercury to the ecosystem."

According to NEMA, about 2 percent of all disposed lamps in 1990 were recycled, less than 9 million lamps. By 1999, NEMA estimated that this had increased to 15 percent, or 93 million lamps. NEMA forecasted that 2004 would see 25 percent recycled, or 170 million lamps.

Paul Abernathy, executive director for the Association of Lighting and Mercury Recyclers (ALMR), believes that owners do not have enough information about their liabilities, regulatory responsibilities and options. "Nationally, the recycling rate is about 20 percent," he says. "Our industry has worked hard to inform lamp users of their recycling options. However, almost 80 percent of the mercury lamps are still disposed of into municipal garbage. Information about proper lamp management isn't getting to most people."

The main problem is that lamp recycling is not in and of itself profitable; therefore, the generator of the waste must pay for it. Tony Amaro, vice president of business development for EPSI, a recycling firm, says that the cost of recycling a 4-foot fluorescent lamp ranges from \$0.35 to \$1.50, depending on total quantity to be recycled and the other services provided. Amaro estimates that recycling represents about 3 to 4 percent of the total cost of a lighting retrofit. Osram Sylvania's Bleasby puts it another way: the cost of recycling is only 1 percent of the total cost of ownership of a lamp, adding that costs are coming down as the lamp recycling industry grows.

**RISK MANAGEMENT**

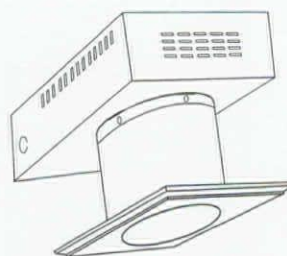
Many will see enough value in recycling to overcome the cost barrier. Owners that dispose of spent lamps as universal waste (CONTINUED ON PAGE 26)

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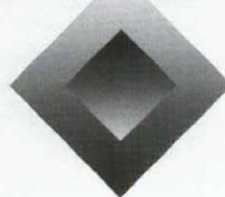


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**LEVITON**<sup>®</sup>  
Building a Connected World

bound for recycling benefit by avoiding the regulatory hassles of treating the lamps as hazardous waste, and the uncertainty of putting them into a municipal landfill. In addition to keeping mercury out of the disposal stream and meeting regulations, owners who recycle can limit potential Superfund liability. The regulatory land-

scape at the state and local level is shifting. The most recent example of this is occurring in California, which had relied on the Total Threshold Limit Concentration (TTLC) test, a variant of the TCLP, until it ruled that no mercury-containing lamps from businesses can be allowed into the state's landfills after February 2004.

"The lesson is simply this, that just because it is legal today is no guarantee it will be so tomorrow," says Amaro. "If the rules change and become more stringent in your state, will the company be liable for a clean-up?"

Amaro says that if a facility puts out spent lamps, it is a potential generator of

hazardous waste, and federal law states that the generator is responsible for it regardless of where it goes. If it ends up in the environment after its disposal in a landfill, the generator may face Superfund liability. "The waste owner will say, 'The lamps we disposed of were non-hazardous,'" says Amaro. "The EPA will say, 'Prove it.' The owner would have little or no documentation to support their plea of innocence. So a decision to recycle is also about risk avoidance."

When lamps are recycled by a qualified recycling firm, the owner receives a "Certificate of Recycling" that certifies that the lamps have been de-manufactured and that the resulting products have been returned to the economy for safe reuse. This certificate, along with shipping documents, demonstrates the chain of custody of the waste, virtually eliminating, says Amaro, the possibility of being cited for wrongdoing.

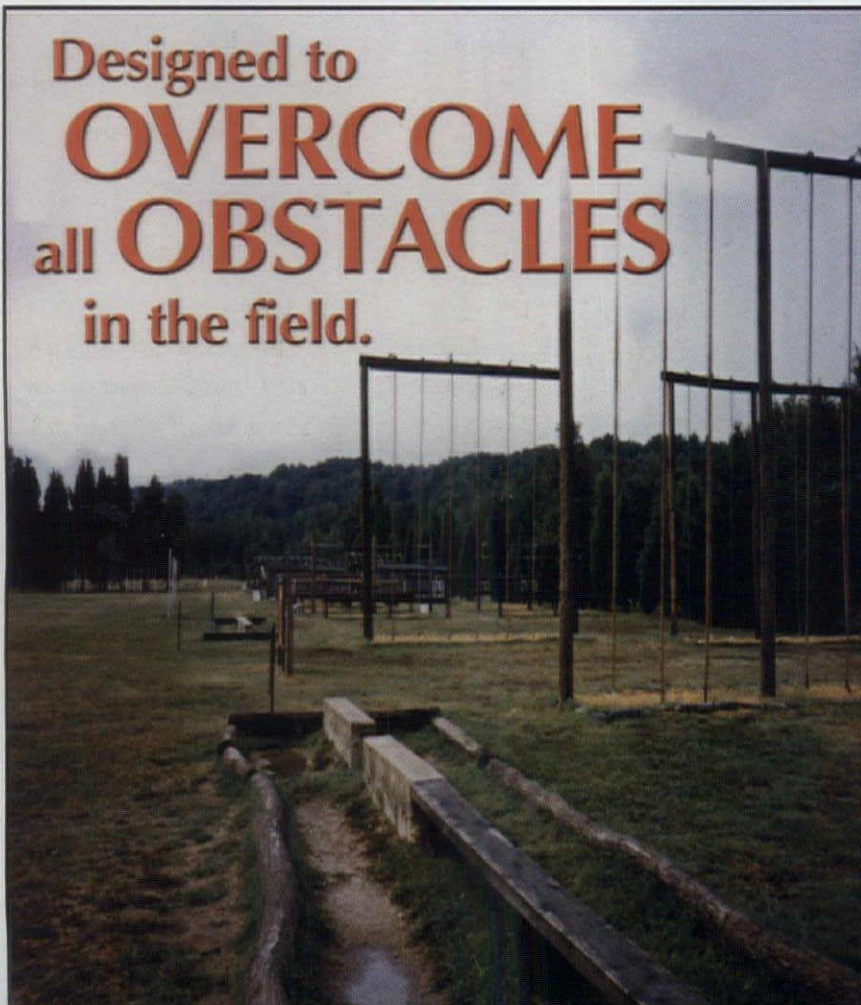
#### PROMOTING RECYCLING

In January 2003, NEMA announced that the members of its lamp section—EYE Lighting, GE Lighting, Osram Sylvania, Panasonic Lighting, Philips Lighting, Ushio America, Venture Lighting and Westinghouse—had adopted a nationwide program to label fluorescent and HID lamps that contain mercury, as well as their packaging, with the international symbol for mercury (Hg), and the statement, "Manage in accordance with disposal laws." The package label refers the owner to NEMA's [www.lamprecycle.org](http://www.lamprecycle.org), which offers state-specific disposal information, the names of companies that provide lamp recycling services, and a number for more information.

A big boost to lamp recycling education also came from the EPA, which recently allocated \$2 million to promote the effort, with an \$815,000 grant going to ALMR in partnership with NEMA and the Solid Waste Association of North America (SWANA). These organizations have developed the Lamp Recycle Outreach Program, which produces a CD that provides information on local disposal regulations, educational materials, and stringency comparisons of states to the Universal Waste Rule. ALMR has also launched a website with relevant information: [www.almr.org](http://www.almr.org). ■

*Craig DiLouie is principal of ZING Communications, a marketing communications and consulting firm specializing in the lighting and electrical industries. A former publisher of Architectural Lighting, he is the author of many books and articles on lighting and electrical engineering.*

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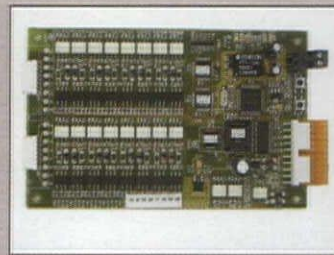
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**ARCHITECTURAL ENERGY CORPORATION | WWW.ARCHENERGY.COM**

**Product: LightLouver Daylighting System**

The LightLouver daylighting system provides daylighting and solar control in one product. Using a patented passive optical design, the system redirects daylight deep into a space while eliminating all direct sunlight on work surfaces. LightLouver units provide uniform, shadow-free ambient lighting of 25-30 footcandles, while reducing lighting and cooling energy costs by allowing electric lights to be switched off during the day. The system integrates as easily as mini-blinds, and takes less space than light shelves. **CIRCLE 101**



**GENTEC | WWW.GENTEC.CA**

**Product: Kameleon K8 Series**

Gentec presents Kameleon K8 Series version two. This lighting control system offers switching and dimming functionalities to optimize energy savings. Extended dimming controls include analog and digital interfaces for fluorescent, HID and incandescent lighting. The product controls light levels according to daylighting, scheduled load levels and occupancy. **CIRCLE 104**

**DUO-GARD | WWW.DUO-GARD.COM**

**Product: Series 3000 Daylighting System**

Duo-Gard Industries introduces Series 3000, a double-glazed, nonmechanical daylight manipulation system with the ability to bend, shade and diffuse rays. Efficient, economical 8mm and 16mm translucent polycarbonates transmit light to 50 percent, with U-values of 0.197. The system can integrate photovoltaics. **CIRCLE 102**



**AXIS TECHNOLOGIES | WWW.AXISTECHNOLOGYINC.COM**

**Product: Daylight-Harvesting Ballast**

Axis Technologies has developed a dimming/daylight-harvesting electronic fluorescent T8 ballast that enables each individual fixture to become a highly energy-efficient system, which can reduce lighting energy usage by up to 70 percent. It does this in two ways: a dipswitch integral to each ballast allows individual fixtures to have fixed-level dimming in 10 percent increments, from 100 percent output down to 40 percent of full output. Further, each ballast has an attached photosensor that dims the fixture as much as 80 percent to compensate for available sunlight (daylight harvesting), while maintaining the pre-set light level. This is totally automatic, and does not require a separate control system or the corresponding wiring of each fixture to this control system. The installed cost is under half that of ballasts that require a separate control system. In addition, the room will have a more even light, as the fixtures near windows will dim more than fixtures away from windows. **CIRCLE 105**



**NATURAL LIGHTING | WWW.DAYLIGHTING.COM**

**Product: Active and Passive Daylighting Systems**

The Natural Lighting Company manufactures both active and passive daylighting systems. The passive system is built around a high-tensile-strength, leak-proof skylight frame and retainer. It utilizes direct and ambient sunlight striking an impact-resistant acrylic dome. A reflective lightwell transmits sunlight onto an interior diffusing lens that spreads light evenly over the space below. The active system applies a sun-tracking mirror assembly to the passive system to introduce greater amounts of sunlight at low sun angles. The mirrors redirect sunlight in the morning, afternoon and all day during the winter months. Automatic light controls can be used in conjunction with either system. **CIRCLE 103**



**LIGHTING ANALYSTS | WWW.LIGHTINGANALYSTS.COM**

**Product: AGI32 1.6 Daylighting Software**

The 1.6 daylighting upgrade allows lighting designers to calculate and produce color renderings detailing the impact of daylight on their interior and exterior designs. AGI32 1.6 can now import AutoCAD's native dwg-format CAD files, eliminating the need to recreate them using AGI32 tools. The software includes daylight study capabilities for time of day and year, as well as daylight study viewer, which enables the rendered images to be played back in sequence for clients. **CIRCLE 106**

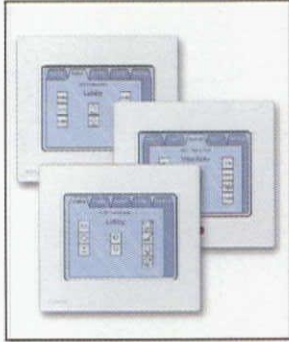


DAYLIGHTING

**HUNT DIMMING | WWW.HUNTDIMMING.COM**

Product: **Custom LCD Touchscreens**

Hunt Dimming makes daylighting easy with custom LCD touchscreens. Offered in several foreign languages, with international symbols or utilizing customer AutoCAD drawings, Hunt's LCD touchscreens aid communication between multiple users, and simplify systems integration and LEED's commissioning. According to the company, the 12-circuit digital dimming panels are the industry's smallest, lightest-weight convection-cooled dimming panels. Each circuit is rated at 20A and is multi-rated to control incandescent, fluorescent (phase-control), low-voltage (electronic or magnetic), neon, cold-cathode, fan-speed and non-dim (or switched) sources. Panels are available in either 120V or 277V ratings, and are UL and CUL listed. **CIRCLE 107**



**NATURAL LIGHT TUBULAR SKYLIGHTS | WWW.NATURAL-LIGHT-SKYLIGHTS.COM**

Product: **Natural Light Tubular Skylights**

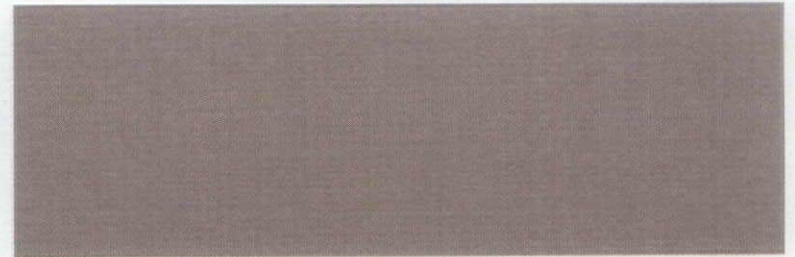
These skylights feature a high-impact acrylic dome, a condensation release system, a bug- and dust-proof sealing system, seamless aluminum flashing, and UV protection. The skylight is constructed from a silver-coated, 95 percent-reflective lightpipe, with a trim ring and stress collar for easy installation. **CIRCLE 108**



**SPORTLITE | WWW.SPORTLITE.COM**

Product: **LX800 Series**

The LX800 high-bay series with 42W compact fluorescent lamps provides an alternative to high-energy-consuming standard HID-style high-bay fixtures. The LX800 series supplies 25,600 lumens and 85 percent lumen maintenance for between 25 percent to 40 percent energy savings, compared to 400W HID fixtures. These high-CRI (82-84) lamps produce a more natural lighting effect, providing even light and a larger light spread with minimal shadowing, hot spots and color shifts. The LX800 series complements photocells and skylights to provide an energy-efficient lighting design. Its modular construction featuring AMP snap-lock electrical connectors and "spring-clip" secured ballasts allows easy installation and maintenance with minimal tools. There is an "instant-on" feature and four-levels of stepped dimming. The LX800 series offers a wide variety of lamp color temperatures and features four designer styles: Pearlescent Upliter, Starlitter, Solid White Dome and Aluminum Dome. **CIRCLE 109**



Brought to Light.

The trend toward sustainable design and daylighting has opened new opportunities for the architect and designer. It has also brought to light new challenges, notably the impact of the solar ray to the designed environment.

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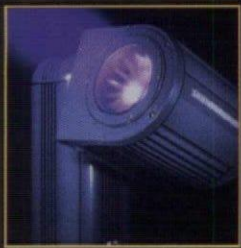
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Kohn Pedersen Fox Associates - Architects  
Gensler - Interiors



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Millennium Bridge, Gateshead, England. Lighting design, Jonathan Speirs and Associates. Photo credit, Graeme Peacock.



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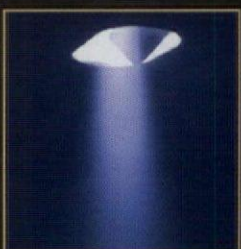
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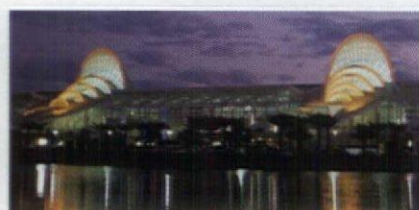
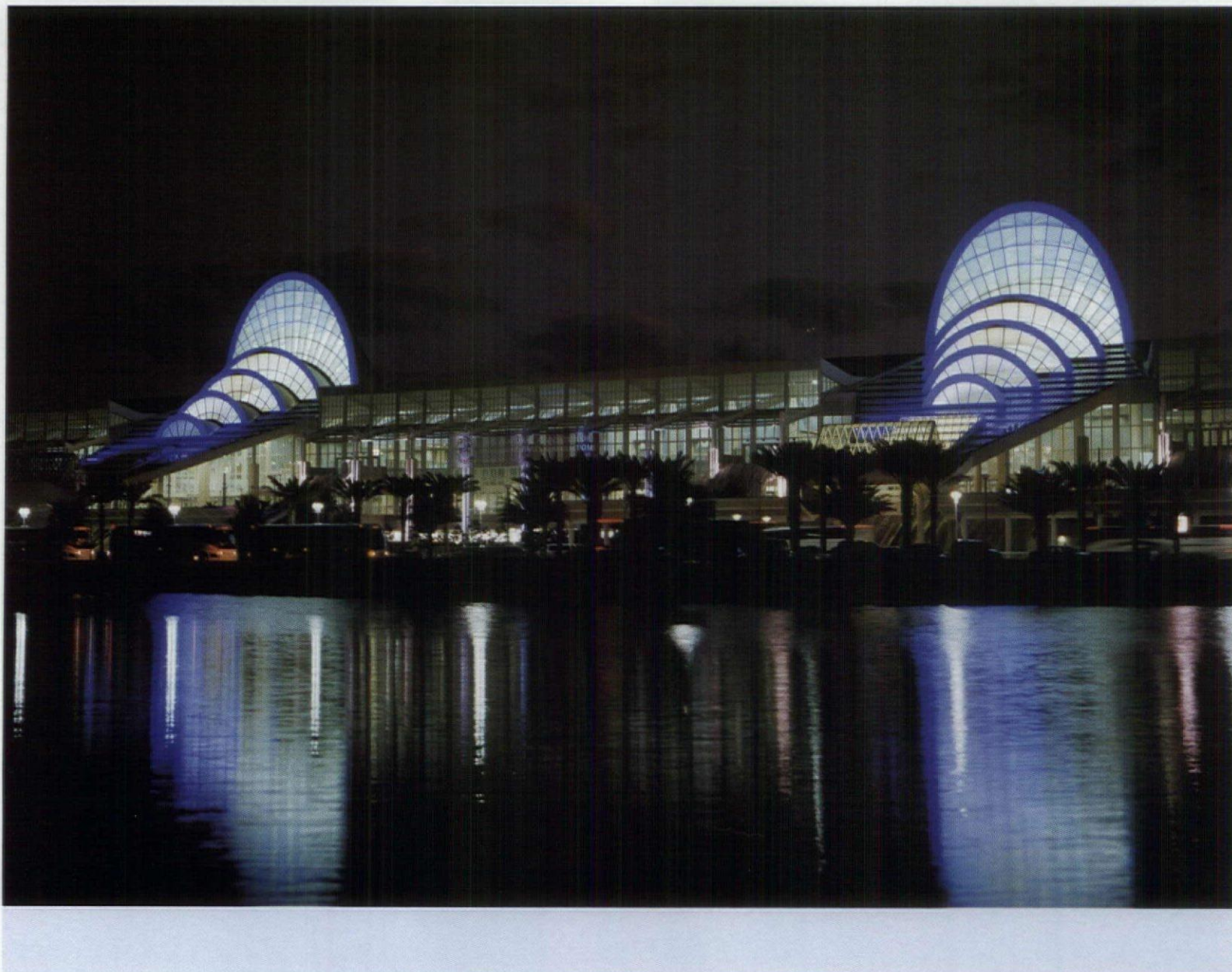
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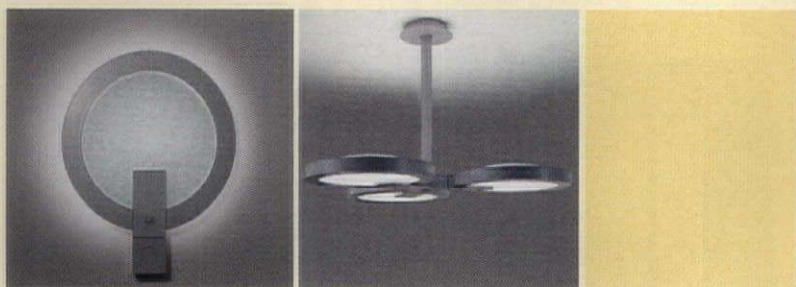
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Products: Exteriors 600 and 200

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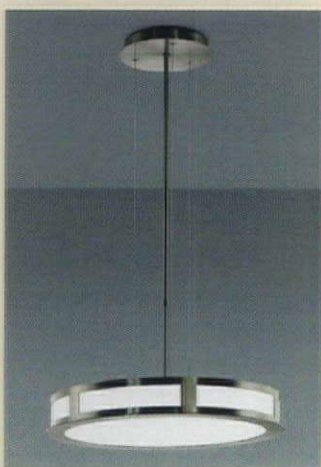
Tel. 954.858.1800



**ENERGIE | WWW.ENERGIELIGHTING.COM**

**Product: Opus**

Opus features the T5 circline lamp for an ultra slim profile. The acrylic diffuser with optical silk-screened rings ensures a comfortable diffuse light. The product is available as a pendant with a single, double or triple source, or as an ADA-compliant wall sconce. Red, blue and green filters are also optional for the sconce, creating a colored glow at the center of the fixture and white light against the wall. **CIRCLE 110**



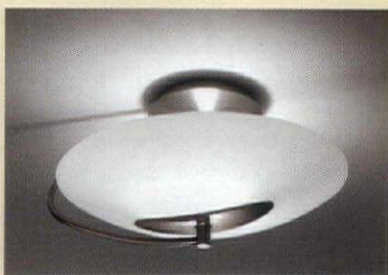
**ESTILUZ | WWW.ESTILUZ.COM**

**Product: T-2259**

With a 20-inch diameter, this pendant light source projects diffuse light through its opal glass shade. The fixture is suspended by three aircraft cables; their length is adjustable by means of a mechanism positioned on the canopy that locks the cables into place. Height is variable from 21 inches to almost 42 inches. The luminaire takes a halogen light source.

**Product: T-2317**

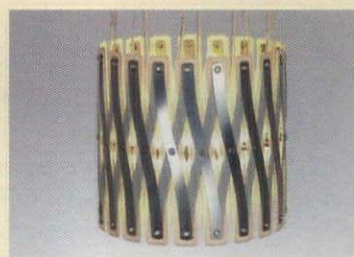
This sleek and elliptical semi-flush ceiling-mounted fixture features an opal glass shade, with a depth of up to 9 inches. The curvilinear arm holding the glass shade is available plated in nickel or gold, or painted in silver gray. **CIRCLE 111**



**ILLUMINATING EXPERIENCES | 732.745.5858**

**Product: Dorado**

Dorado is a new addition to the Illuminating Experiences' family of products manufactured by Nemo Italianaluce. These products have been designed in such a way as to highlight their architectural features and optimize the visual and psychological comfort of both domestic and working environments. **CIRCLE 112**



**SERIEN LIGHTING | WWW.SERIEN-LIGHTING.DE**

**Product: Zoom**

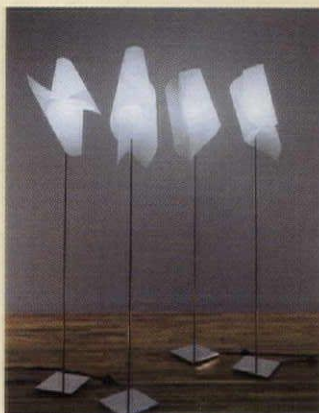
An interpretation of the classical chandelier, Zoom's flexible stainless-steel lattice design enables the fixture's diameter to change from large to small. As the shape of the fixture changes, so does the light from the 20 low-voltage halogen light sources. Closed, the fixture becomes a cylindrical direct/indirect luminaire; open, it appears more like a chandelier. Designed by Floyd Paxton. **CIRCLE 113**



**LURALINE | WWW.LURALINE.COM**

**Product: Helos**

The Helos family of lighting fixtures features a classic industrial design in a coordinated collection of pendant, ceiling, wall and post-mounted configurations—all suitable to interior and exterior applications. The product is offered with a choice of incandescent, compact fluorescent or HID, and a palette of painted and metallic finishes, as well as custom colors. **CIRCLE 114**



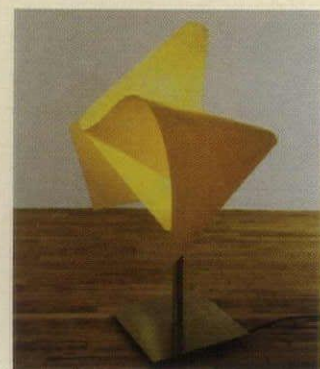
**BRAVE DESIGN | WWW.BRAVEDESIGN.CA**

**Product: FLX Series**

A series of sculptural light fixtures, FLX table, floor and pendant luminaires allow the user to choose the shape of the shade. Illuminated, overlapping curves from a diffuse white sheet create subtle plays of light depending on the shade shape. Several shade sizes are available; the pendant can also be suspended with a cord or rigid stem.

**Product: FLO 400**

A large, dramatic light sculpture, the twisted translucent shade of FLO 400 is made from a 19-foot-long wood veneer strip. Four fluorescent lamps on the center emit a warm illumination. The luminaire is appropriate for hotel lobbies and restaurants. **CIRCLE 115**



DECORATIVE



**LEUCOS USA | WWW.LEUCOS.COM**

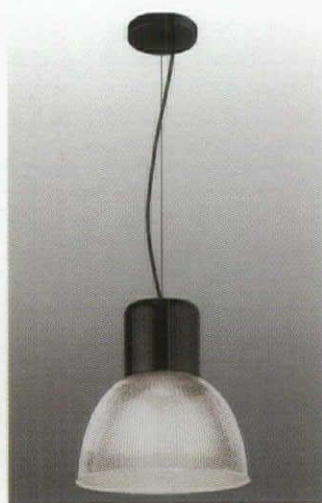
**Product: Nastro**

The Nastro by Afra and Tobia Scarpa is Andromeda's masterpiece of manufactured glass for lighting. It embodies the company's signature characteristics: irregularity of ribbons, exclusive design, attention to detail and well-crafted finishing touches. The luminaire is available in pendant, wall, floor and ceiling configurations, with many custom capabilities. Andromeda International is exclusively distributed by Leucos USA. CIRCLE 116

**ORIGINAL CAST LIGHTING | WWW.THEOCL.COM**

**Product: Odyssey**

This industrial-looking pendant incorporates energy-efficient fluorescent lamping and a lightweight prismatic acrylic dome. The Odyssey is available in a variety of powder-coated paint colors. CIRCLE 117



**LBL LIGHTING | WWW.LBLLIGHTING.COM**

**Product: Stingray**

The Stingray wall fixture features luminous faceplates in heavy-gauge formed and powder-coated aluminum. Soft flowing curves or square-shaped faces mount interchangeably to the company's all-aluminum powder-coated backplate. Custom metal face designs such as logos are available. CIRCLE 118



**NUF DESIGN | WWW.NUFDESIGN.COM**

**Product: Ori**

The Ori collection utilizes EVA foam to create organic sculptures reminiscent of pods or otherworldly coral reefs. The foam material provides diffuse light, resulting in intricate patterns of shadows and illumination. Available in white, the collection includes floor, table and pendant luminaires. CIRCLE 119



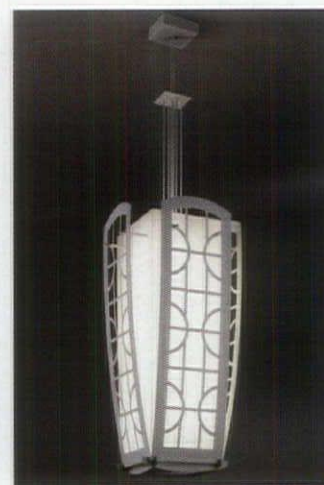
**MANNING LIGHTING | WWW.MANNINGLTG.COM**

**Product: Greene Series**

Classic Mission-style architectural cues characterize this family of products. Available as a pendant (in three sizes), wall sconce and ceiling mounted, the product features an extruded frame and a variety of diffuser options. Multiple lamping options including compact fluorescent are available. Compact fluorescent pendants include aluminum fins on their wire body, which acts as a heat sink, drawing heat away from the interior components and lamps, for longer life and heat-sensitive dimming.

**Product: Milan Pendant**

Gently curved outer panels impart a delicate appearance to the Milan pendant. The aluminum panels that surround an acrylic diffuser are available in five standard designs, but are also customizable. The laser-cut panel element creates a variety of effects depending on the design, which can be further enhanced with a selection of suspension options: aircraft cable, angled rods and standard single stems. Several lamping options are available; the compact fluorescent pendants have an interior assembly that dissipates heat thus increasing component life. CIRCLE 120



**NEW WEST FURNITURE | WWW.NEWWEST.COM**

**Product: Teepee and Pinecone**

Featuring intricately cut steel bodies with mica lenses, these chandeliers depict scenes that come to life when illuminated. CIRCLE 121



**TERRA FURNITURE | WWW.TERRAFURNITURE.COM**

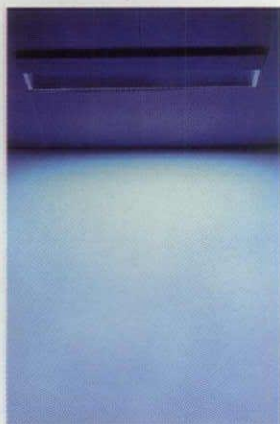
**Product: Rainforest** (shown left)

Designed to mimic the ferns and fronds of nature, the Rainforest collection is weather resistant and rust free, and is available with 100 percent acrylic Sunbrella fabrics.

**Product: Teak** (not shown)

Intended for patio, deck or poolside entertainment areas, the smooth teak floor lamp has a 14-inch-square shelf for placing refreshments. The teak is offered in natural, oiled and pickled finishes. The shade is 100 percent brass. CIRCLE 122





**MARTIN ARCHITECTURAL | WWW.MARTIN.COM**

**Product: Cyclo 04 DMX Wallwasher**

This recessed fluorescent wallwasher with RGB color mixing generates both white and colored light. It features extended color control, and the full gamut of color is achieved by combining four dimmable T5 fluorescents—the primary colors red, green and blue, and an additional neutral white tube of 4000K. Optical technology and reflectors enable premium color distribution. It can be controlled with an external DMX controller or with built-in programming capability. A decorative diffuser front lens is also available. **CIRCLE 123**



**LIGHTOLIER | WWW.LIGHTOLIER.COM**

**Product: Soli**

Soli is a linear statement that accents interior elements through light and silhouette. Designed to evoke the illusion of floating, the optical diffuser is offered in etched glass or translucent white acrylic. The Soli series of luminaires is available as a sconce, or as a 2-, 3- or 4-foot T5 scale fixture. Options include dimming, emergency and DALI protocol compatibility. **CIRCLE 124**



**TECH LIGHTING | WWW.TECHLIGHTING.COM**

**Product: Tigris Mirror**

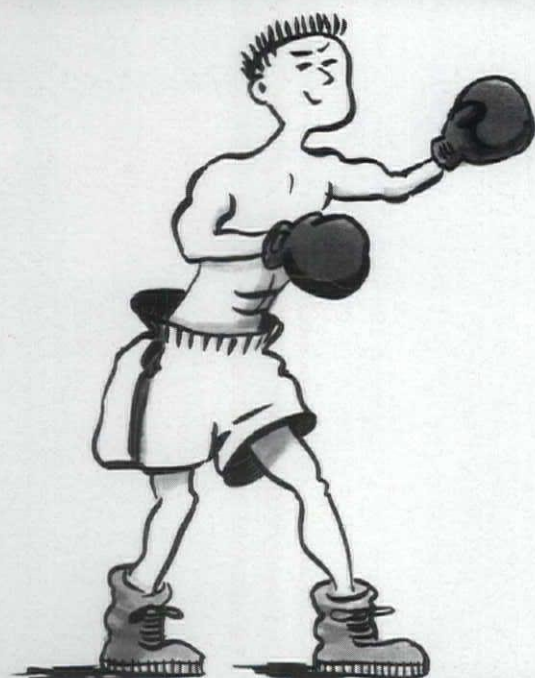
The company has expanded its Tigris mirror line to include rectangular and oval variations. All versions are ADA compliant and feature a mirror surface surrounded by a cove that delivers shadow free task and ambient light. The mirror can be either recessed or surface mounted.



**Product: Vino Pendant**

Tech Lighting has introduced eight new fixtures to its line of pendants, including Fab, Firebird, Gem, Mini Melrose, Mini Ovation, Pleat, Waffle and Vino (shown). Vino has a textured murano glass shade that comes in multiple colors. **CIRCLE 125**

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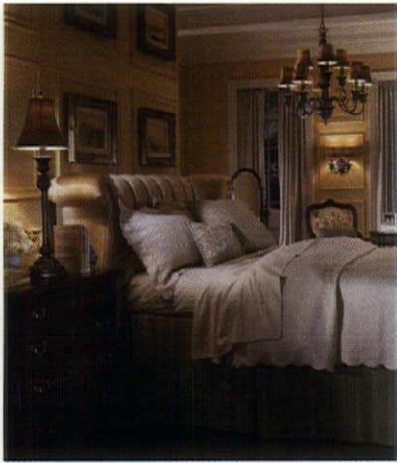
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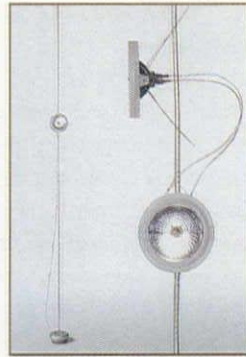
**PROGRESS LIGHTING |**  
**WWW.PROGRESSLIGHTING.COM**

Product: **Thomasville Line**  
A joint venture between Thomasville Furniture and Progress Lighting, Thomasville Lighting fixtures feature 11 families of chandeliers, sconces, pendants, task lights, and bath and vanity fixtures. LaSerena (shown) combines a distressed finish with fabric shades. The forged iron arms are accented with gold acanthus leaf details. Available with nine or six lights, or as a sconce, foyer fixture and console lamp. **CIRCLE 126**



**ECLIPSE LIGHTING | WWW.ECLIPSELIGHTING.COM**

Product: **Galileo Series**  
The Galileo series is now available in ADA-compliant X-large versions: 18 inches, 21 inches, or 30 inches long. The Gravura custom engraving option (shown), also recently added, provides distinctive illuminated identification options for the Galileo family of fixtures, including logos, directional signals, and corporate or retail color schemes. Galileo luminaires are constructed for both indoor and outdoor use, with compact fluorescent, HID and induction light sources. **CIRCLE 127**

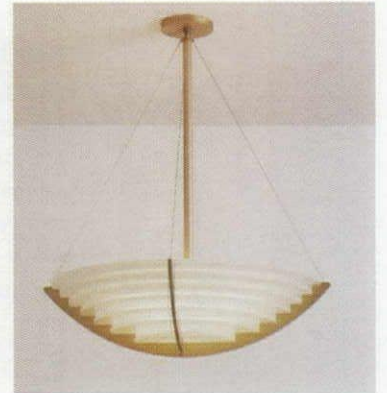


**FABBIAN | WWW.FABBIAN.COM**

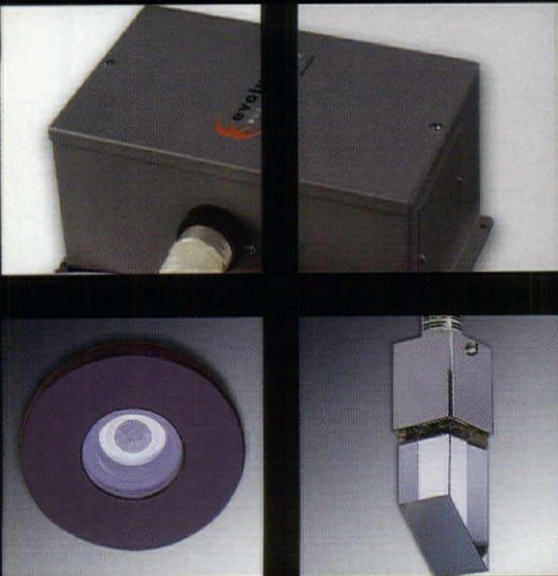
Product: **Bungee**  
The Bungee is a taut, transparent ceiling-mounted cable with sliding, rotating lights. Halogen light sources provide a narrow beam for concentrated light. The fixture has a foot-operated on/off switch. **CIRCLE 128**

**BOYD | WWW.BOYDLIGHTING.COM**

Product: **Rings Pendant**  
Designed by Doyle Crosby, Rings is 32 1/2 inches in diameter, with a bowl depth of 8 inches. Height options vary from 30 inches to 48 inches. The brass arms that contain the etched white opal acrylic are available in brass, gold, nickel or antique finishes. Lamping options include both incandescent and fluorescent. **CIRCLE 129**



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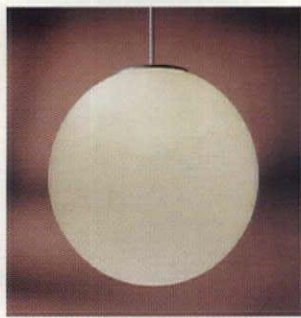
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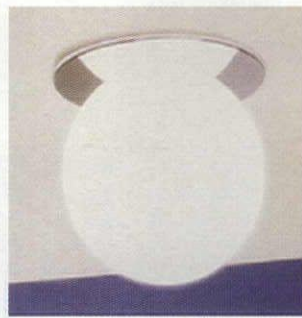
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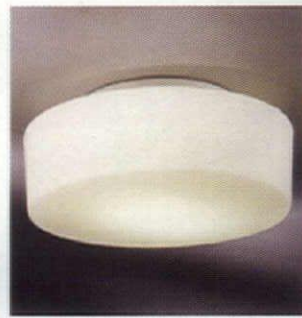
ASIA WALL



ASTEROID PENDANT



ASTEROID



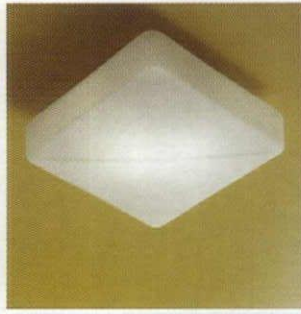
LIDO



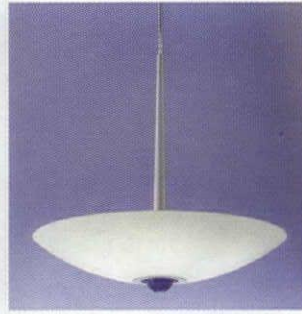
JESOLO



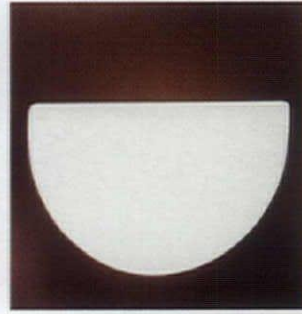
MAGA PENDANT



MARX



PERLA PENDANT



QUARTO

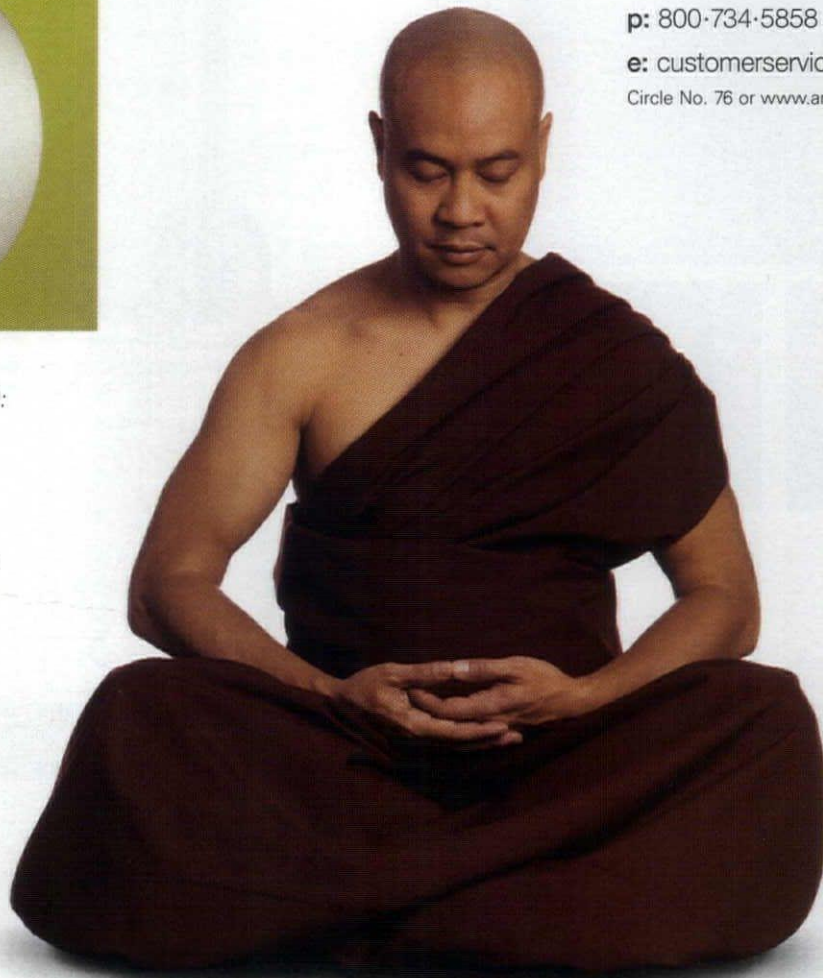


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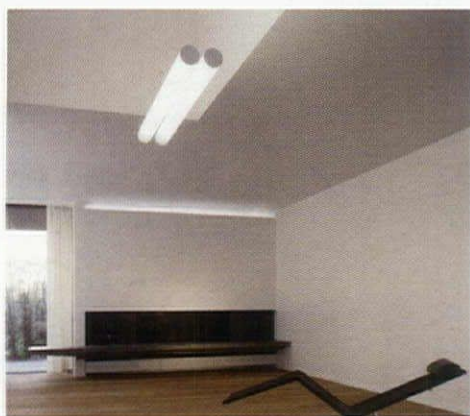
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DECORATIVE

**BOYD | WWW.BOYDLIGHTING.COM**

Product: **Library Collection**

Including two sconces, a table lamp and floor lamp, the Library collection combines the clean aesthetic of metal with the warmth of leather—the signature material of designer Eric Brand. Now bringing his skill to Boyd, Brand has developed interior retail concepts for Chanel, Coach, Giorgio Armani, and Isaac Mizrahi, as well as furniture brands for Donna Karan, Alfred Dunhill of London and others. The fixture is available in brass or nickel, and tan, brown, red or black leather. **CIRCLE 130**



**DELTA LIGHT | WWW.FADLIGHTING.COM**

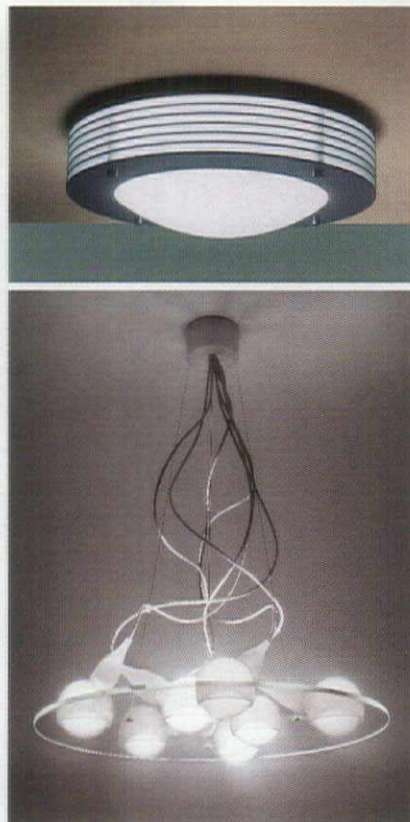
Product: **Be Cool Collection**

The Be Cool pendants and sconces feature twin opal optical-grade polycarbonate tubes that provide diffuse light from T5 lamps. The collection recently won an iF Design Award. **CIRCLE 131**

**ARTEMIDE | WWW.ARTEMIDE.COM**

Product: **Lyra Disc (top)**

Available as a ceiling- or wall-mounted luminaire, the Lyra Disc features an opal glass diffuser. Anodized aluminum and stainless-steel fittings for rust-free construction make the fixture applicable to exterior and interior applications. The luminaire is available in two sizes and for either an incandescent or fluorescent light source.



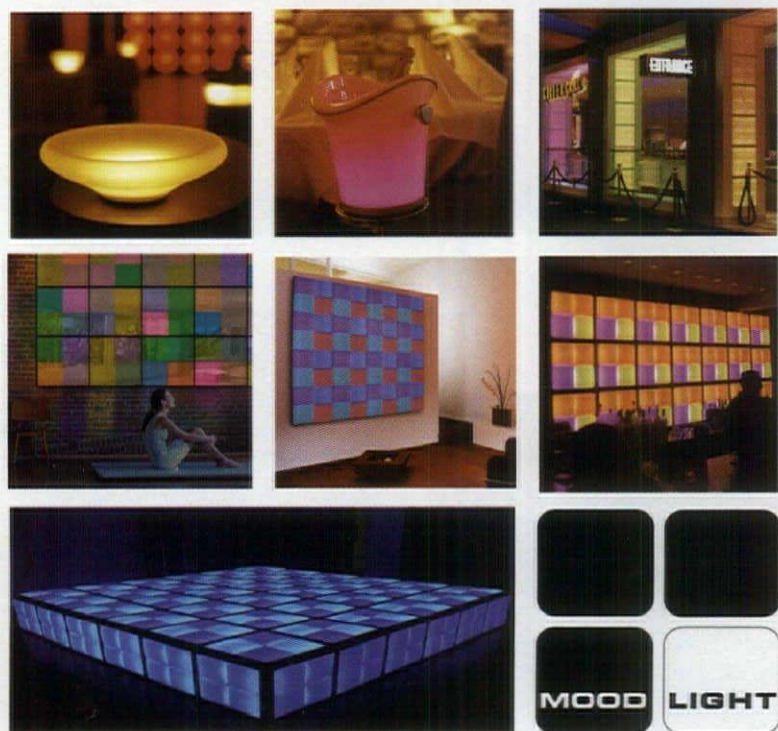
Product: **T(h)rou(gh)**

Designed by Andrea Anastasio, this pendant incorporates seven luminous spheres partially inserted through a round glass plate. A silicone cap protects the rear part of lamps. Three steel cables suspend the fixture from the ceiling, while the sinuous wires from the light sources gracefully intertwine. **CIRCLE 132**

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## ELIGIBILITY

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

2. Any project that has previously appeared in a national design publication is NOT eligible and will be disqualified if submitted.

3. Projects must have been completed after July 2002.

## SUBMISSION REQUIREMENTS

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

5. Each project submission must be accompanied by a **signed entry form and a check** covering the entry fee (\$110 for the first entry; \$80 for subsequent entries). The entry form may be photocopied. Both the entry form and check should be included in the project envelope.

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

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

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

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

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

## CATEGORIES

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

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

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

11. Appropriate submissions may also be considered for any of the four A|L Virtuous Achievement (ALVA) Awards. Entrants must indicate that a project should be considered

for these awards on the entry form and on the project fact sheet. These awards will require the following additional information:

### Best Lighting Design on a Budget

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

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

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

### Best Incorporation of Daylight

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

### Best Use of Color

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

## JUDGING

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

13. Judging will take place in June 2004. Winning entrants will be notified in late June 2004, and their projects will appear in the July/August 2004 issue of A|L.

## PUBLICATION

14. Winners of the A|L Design Awards grant A|L first publication rights for their winning projects, which will appear in the July/August 2004 issue.

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

16. If the submission wins, the entrant agrees to make available further information and publication-worthy graphic materials as needed by A|L.

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

## ENTRY FEES

18. Each project submission must be accompanied by a signed entry form and a check covering the entry fee (\$110 for the first entry; \$80 for subsequent entries). Make check payable to *Architectural Lighting*. (Canadian and Mexican entrants must send drafts in U.S. dollars.)

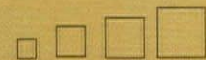
## DEADLINE

19. All entries must be received by May 31, 2004. To insure, timely receipt, A|L recommends using a carrier that guarantees delivery time.

## RETURN OF ENTRIES

20. A|L will ONLY return entries accompanied by a self-addressed stamped envelope. A|L shall not have liability for damaged or misplaced entries.

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



# A|L LIGHT & ARCHITECTURE DESIGN AWARDS

Architectural Lighting presents the A|L LIGHT & ARCHITECTURE DESIGN AWARDS honoring previously unpublished projects in the field of architectural lighting. Unlike other programs, the A|L DESIGN AWARDS first recognize and reward excellent designs within the unique criteria of a specific category. Then, for exceptional accomplishments, A|L will award the A|L VIRTUOUS ACHIEVEMENT (ALVA) AWARDS to acknowledge projects that achieve the best lighting design on a budget; the best design in a LEED-rated building; the best incorporation of daylight; and the best use of color. A|L believes these final four categories are increasingly important considerations for its readers, and therefore hopes to identify and showcase successful examples. All winning projects will be published in the July/August 2004 issue of A|L.

## Deadline: Monday, May 31, 2004

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

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

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

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

Send entries to:  
**A|L Light & Architecture Design Awards**  
770 Broadway, 4<sup>th</sup> Floor  
New York, NY 10003

Entrant

Contact Name

Address

City, State, Zip

Phone Number

E-mail

Project Location

Client

Fee \$110 (first entry) \$

\$80 (subsequent entries) \$

Total \$

(Make checks payable to Architectural Lighting.)

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

Signature

Name

Date

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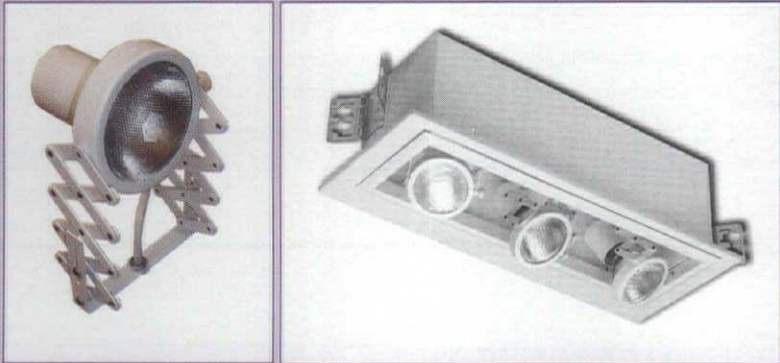
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DOWNLIGHTS

**BARTCO LIGHTING | WWW.BARTCOLIGHTING.COM**

**Product: Adjusta-Lock**

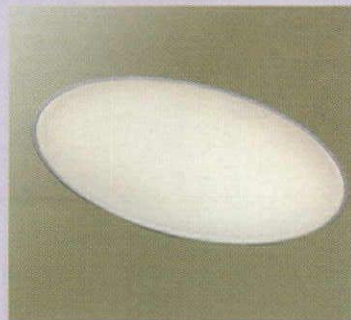
The Adjusta-Lock is a multi-head recessed luminaire, available in one- to four-lamp configurations. The lamp head's rotation and tilt angles can be locked into place. A scissor-mechanism inside the fixture also enables the lamp to be either tucked up into the housing or extended below the ceiling line, which provides up to 90-degree focus flexibility. Lamp options include: PAR20 and PAR30 line voltage, PAR20 and PAR30 HID and MR16. **CIRCLE 141**



**MARK ARCHITECTURAL LIGHTING | WWW.MARKLIGHTING.COM**

**Product: Magellan**

Magellan is a translucent concave dome encircled with a narrow trim. The downlight is suitable for both sheetrock and lay-in ceilings, and comes in 12-inch, 48-inch, 36-inch and 48-inch diameters. Lamp options are T5, T8 and compact fluorescent. **CIRCLE 142**



**DELRAY LIGHTING | WWW.DELRAYLIGHTING.COM**

**Product: Big Lights**

Big Lights collection is designed for the PLH high-lumen compact fluorescent with a 20,000-hour lamp life. Four optical packages provide distinctly different beam spreads, from narrow to wide. Its large scale makes this luminaire appropriate for high-ceiling or atrium applications. **CIRCLE 143**



**LIGHTOLIER | WWW.LIGHTOLIER.COM**

**Product: Aleron**

The Aleron series of linear luminaires uses a single T5HO lamp to obtain efficiencies greater than 92 percent. The design includes an extruded aluminum housing and frosted acrylic lens. Aleron also has an optional Lytespan track feature, so accent lighting can be integrated into the system. **CIRCLE 144**



**ENGINEERED LIGHTING PRODUCTS | WWW.ELPLIGHTING.COM**

**Product: DL Series**

The trimless option for the DL series downlights allows the ceiling finish to end at the edge of the lighted opening for a pristine construction appearance. The fixtures do not require a trim to finish the ceiling opening. A set back flange is provided around the perimeter of the fixtures to allow for 5/8-inch gypsum board construction to butt against the fixture. DL series downlights are also available in standard configurations for T-Bar and flanged hard-ceiling installations. The rectangular units utilize linear and compact fluorescent lamps and are provided with a frosted lens or parallel blade louver. **CIRCLE 145**



**BRUCK LIGHTING SYSTEMS | WWW.BRUCKLIGHTING.COM**

**Product: Symphony**

A recessed housing with adjustable lamp holders, Symphony is designed for MR16, AR70, AR111 and PAR20 lamps. Available in single, dual- and triple-lamp models, the luminaire provides discreet accent lighting. **CIRCLE 146**



**ENERGIE | WWW.ENERGIELIGHTING.COM**

**Product: Hyperplate**

From Belgian company Wever & Ducre and available in the United States through Énergie, Hyperplate is a small-scale ceiling-mounted spotlight featuring two or four adjustable heads. The product is available with a natural aluminum finish. **CIRCLE 147**



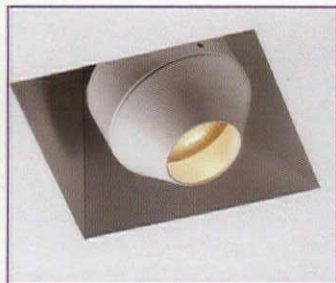
**LIGHTOLIER | WWW.LIGHTOLIER.COM**

**Product: Perimeter Trough System**

The product is a recessed linear system that accommodates T5 as well as T8 linear fluorescent lamps to achieve a continuous and uniform illumination along a wall. The trough system has a small aperture and uses adjustable sections to create the continuous look. Shielding options include a parabolic or straight blade louver, prismatic lenses or open aperture. **CIRCLE 148**



**DOWNLIGHTS**



**SPECIALTY LIGHTING |**  
**WWW.SPECIALTYLIGHTINGINDUSTRIES.COM**  
 Product: **1005**

A linear recessed system, with adjustable angling and multiple lamp options, the 1005 features aluminum-extruded side panels covered with heat-radiating fins and can be plastered into the ceiling without risk of expansion. The product is appropriate for use in standard sheet rock ceilings for a flush finish. A conical snout prevents stray light from reflecting off the inside of the trough. **CIRCLE 149**

**ARTEMIDE |**  
**WWW.ARTEMIDE.COM**

Product: **Andromeda**  
 These recessed downlights come in a variety of configurations: four-lamp square, four-lamp rectangle, one-lamp and two-lamp. They provide flood and accent lighting. Thin dimensions enable the fixture to be installed in false ceilings. Emergency versions available. **CIRCLE 150**

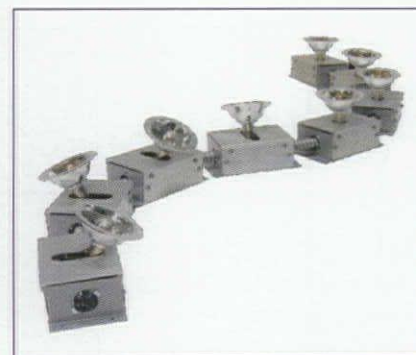


**PRUDENTIAL | WWW.PRULITE.COM**  
 Product: **Super Cove**

This low-profile lighting system for T5HO or T8 lamps suits small office, conference room, and retail and lobby applications. Formed, 95 percent-reflective specular aluminum throws light at low angles. A galvanized-steel bottom reflector directs and diffuses light on the ceiling to eliminate striations while limiting uplight. A white backlight reflector fills the cove cavity with light, limiting socket shadows. Super Cove is available in a variety of lengths from 2 to 8 feet. **CIRCLE 151**

**ELECTRIX | WWW.ELECTRIX.COM**  
 Product: **HX Series**

The HX Series from Electrix includes linear modules with 60-degree adjustable or fixed position lamps, as well as a field-curveable module with adjustable and fixed lamps. Lamp spacing can be customized. They are through-wired to ease installation. **CIRCLE 152**



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**LUCIFER | WWW.LUCIFERLIGHTING.COM**

Product: **DL5ZP Wallwasher**

This virtually invisible fixed downlight provides an even ceiling-to-floor wallwash. Under four-inches in diameter, the low-voltage luminaire can hold UV or color-correcting lenses. Standard finishes are matte white and black or polished chrome. **CIRCLE 153**



**BROWNLEE LIGHTING | WWW.BROWNLEE.COM**

Product: **Hard Hat**

Hard Hat is constructed of polycarbonate composite materials; hence, the 6-inch-aperture downlight is compact, corrosion resistant and lightweight, and suited to corrosive applications such as seashores. The patent-pending twist on/off Spinner Trim is also constructed of polycarbonate material; lamps lower for safe relamping when trim is removed. **CIRCLE 154**





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**Product: Splendore**  
Splendore is an industry first: a state-of-the-art architectural emergency light based on high-output white LEDs. Nickel metal hydride batteries and a diagnostic charger enhance its reliability and performance. Developed to rigorous optical design criteria, Splendore is capable of lighting up to 50 linear feet to one footcandle average. The product is available in multiple colors. **CIRCLE 162**

**DAY-BRITE LIGHTING |** [WWW.DAYBRITELIGHTING.COM](http://WWW.DAYBRITELIGHTING.COM)

**Product: Stairwell Luminaire**  
The Stairwell Luminaire provides both energy savings and safety. Designed with an ultrasonic occupancy sensor and an electronic dimming ballast, it allows a fluorescent T8 lamp to operate at a 5 percent light level during times of no traffic, and full output when motion is detected. Available in wall- or ceiling-mounted models in 2-, 3- and 4-foot lengths with a choice of white opal or clear prismatic lenses. Wire guard and tamper-resistant options are also available. **CIRCLE 163**

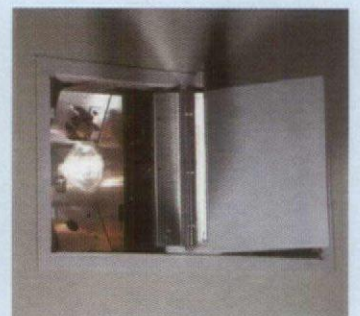


**HUMANSCALE SAFETY PRODUCTS |**  
[WWW.HUMANSCALESAFETY.COM](http://WWW.HUMANSCALESAFETY.COM)

**Product: Photo-Luminescent Products**  
Humanscale's photo-luminescent products are designed to mark evacuation routes and help individuals safely navigate buildings in blackout conditions. The nontoxic and nonradioactive photo-luminescent signage and tape glow in total darkness for up to 24 hours after exposure to normal ambient fluorescent light. These products are nonelectric and have no internal lights, providing a low-cost, maintenance-free, reliable and easy-to-install solution for hallway and stairwell illumination. **CIRCLE 164**

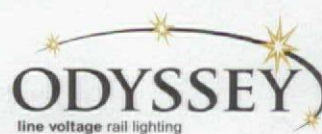
**EVENLITE |** [WWW.EVENLITE.COM](http://WWW.EVENLITE.COM)

**Product: Mirrorlite**  
The second-generation Mirrorlite is available as a recessed wall or ceiling version with flush mirror panels. The product incorporates enhanced photometric performance and a full self-diagnostic system as standard features. Master/remote versions of the Mirrorlite allow one high-capacity unit to power several remotes. **CIRCLE 165**



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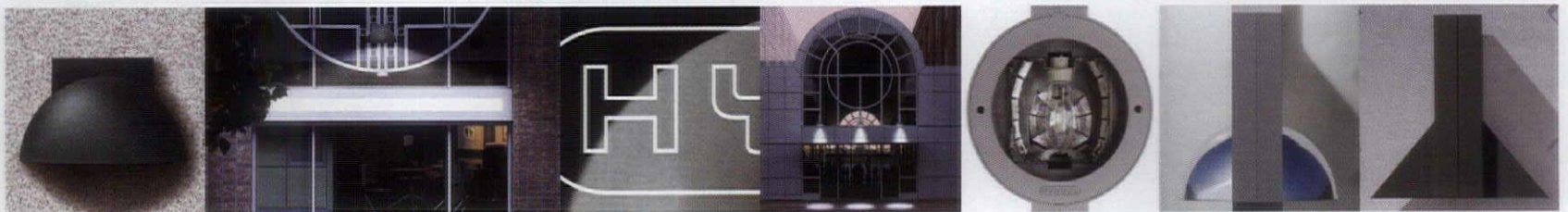
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**SUPER VISION | WWW.SVISION.COM**

**Product: Evolution Series Illuminator**

Super Vision announces a major technological advancement in fiber optic lighting with Evolution high lumen output illuminators. The evo150 model features a patented dual-reflector design with a quartz light pipe that produces an efficient, clean, bright light, allowing the use of smaller-diameter fibers. **CIRCLE 166**



**NOUVIR | WEBSITE: WWW.NOUVIR.COM**

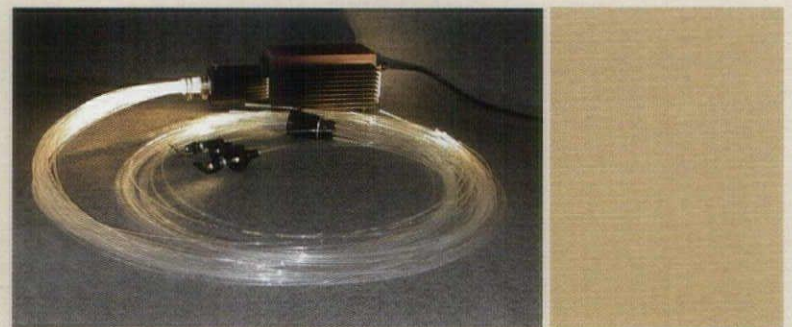
**Product: Nouvir Cold-Nose Projector and Fiber**

This fiber optic projector powers 32 individual 3-mm fibers, or 300 individual 1-mm fibers. All equipment is contained in a black anodized housing measuring 4 1/4 inches high by 5 inches wide and 12 inches long. A separate power supply lowers operating temperatures, and the patented cold-nose removes all infrared energy before it hits the fiber. A snap-in drawer allows access to the electrical components. The projector meets standards for both recessed and portable lamps and is UL rated. The fiber is easily cut and polished in the field, and there is no PVC jacketing to strip away. Light output is 3200K with accurate color-balance and color-rendition. Spectral power distribution is within 10 percent of sunlight, but with zero UV and zero IR. Monolithic fiber and patented optics allow for precise focus (down to 5 degrees) in adjustable beams with no spill, scatter, halos or aberrations, and incredible throws. Luminaires mount flush on brackets or in any of five track and banister systems. **CIRCLE 168**

**FIBERSTARS | WWW.FIBERSTARS.COM**

**Product: EFO Adjustable Accent Light**

The 68W EFO high-intensity lamp, coupled with patented non-imaging optics and proprietary fiber, delivers light through new adjustable accent light fixtures, replacing up to eight 50W halogen lamps—without the heat, UV or voltage. The EFO provides energy-efficient downlighting with the focused luminance and directional optics of MR series lamps. **CIRCLE 167**



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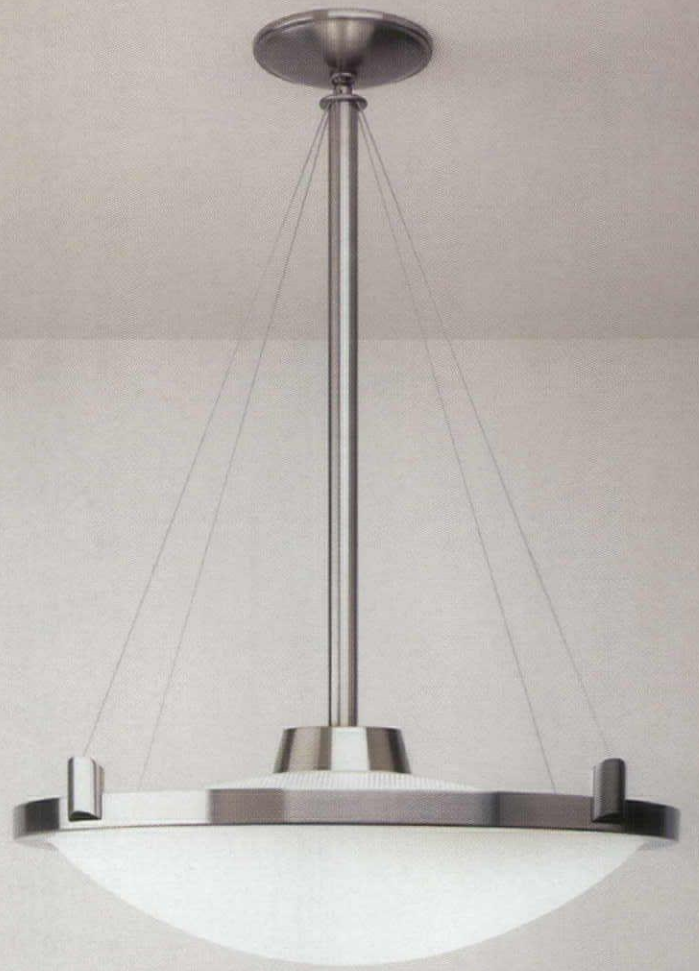
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a twist.

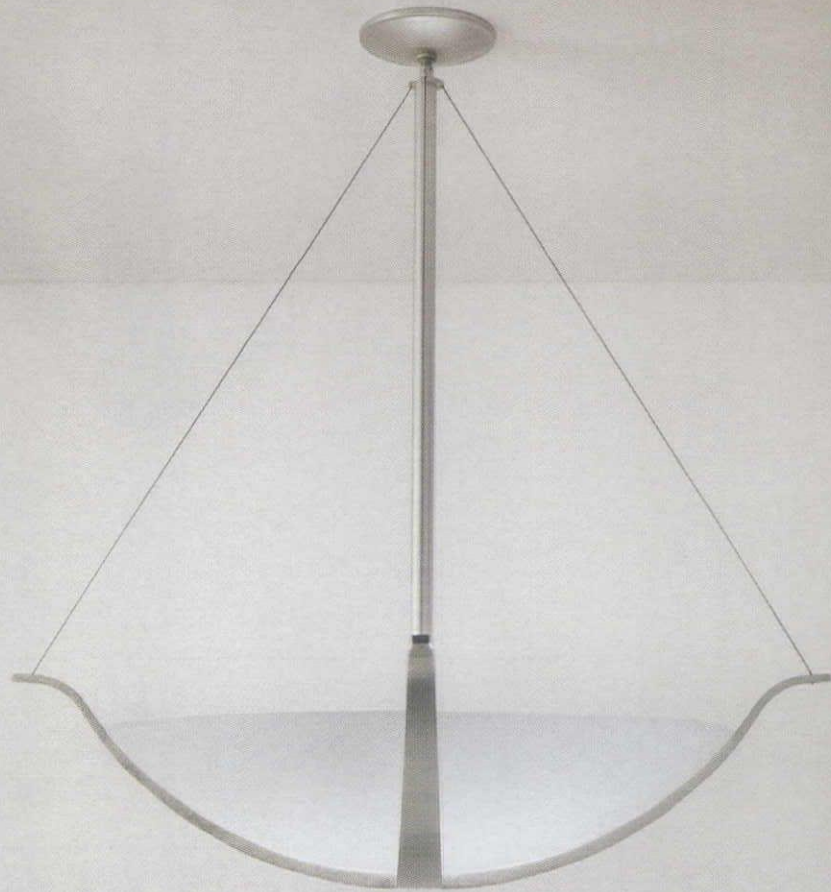


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**ARTEMIDE | WWW.ARTEMIDE.COM**

**Product: Tallo Suspension Catamaran**

Designed by Neil Poulton, the Tallo system from Artemide is fabricated using an extruded aluminum body and die-cast aluminum endcaps; colors include white or gray. The Tallo Catamaran (shown), which houses two T16 light sources, is available in 36-inch and 48-inch versions. The line also includes wall-mounted and single-lamp variations. **CIRCLE 169**



**METALUMEN | WWW.METALUMEN.COM**

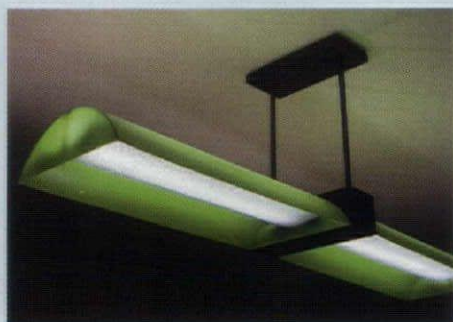
**Product: Fraim**

The Fraim series showcases an ultra-thin profile ( $\frac{5}{8}$  inch) that houses a unique optical control system. The company's patented L3 Linear Light Lense integrates and wraps around the T5 lamps. Fraim is available in one-, two- or three-lamp pendants and a one-lamp wall-mounted version. **CIRCLE 170**

**EXCELITE | WWW.EXCELITELIGHTING.COM**

**Product: Lunos Perf**

The Lunos Perf direct/indirect pendant couples translucent acrylic or faux alabaster diffusers with perforated metal lamp shields. The fixture's center mounting (by two stems of aircraft cable), and the use of single-ended twin-tube fluorescent lamps, creates luminous diffuser ends without socket shadow or mounting obstructions. The fixture provides 30 percent uplight and 70 percent downlight. **CIRCLE 171**



**FOCAL POINT | WWW.FOCALPOINTLIGHTS.COM**

**Product: Twelve**

The Twelve family of luminaires addresses the need for direct/indirect fixtures in spaces with lower ceiling heights. Equipped with the company's Ceiling Uniformity Filter and a 115-degree low-beam optic, Twelve hangs just 12 inches from the ceiling; rows can be positioned 12 feet to 14 feet apart. The product is available in 4-foot and 8-foot lengths, with T5 and T5HO lamps, and may be joined in continuous rows. **CIRCLE 172**



**ENERGIE | WWW.ENERGIELIGHTING.COM**

**Product: T200 Tubular System**

Developed by Germany-based Trilux and available in the United States through Énergie, the T200 Tubular System includes modules of linear fluorescent fixtures and spotlights, which can be grouped and joined with tube connectors to form one system. Designers can create straight runs or patterns, in a configuration that offers ambient and accent lighting. Fluorescent linear fixtures are available as a direct/indirect T5 or T5HO style; as a cylindrical T5 with a diffuser; or as an aimable T5 version. Spotlights are available with PAR or metal halide lamps.



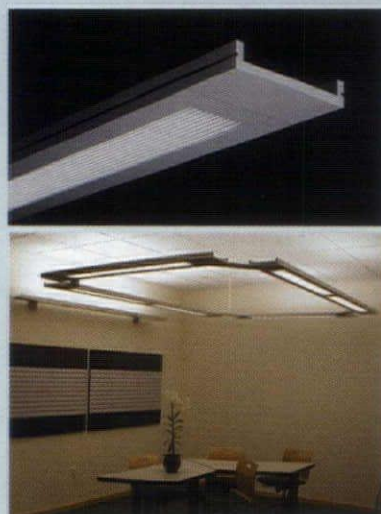
**Product: Tool**

A simple combination of a square form (a 1-inch extruded aluminum channel) and a circle (a T8 fluorescent lamp), Tool can be mounted as a ceiling or wall fixture, hung as a pendant, or fitted with a baffle or an asymmetric reflector—satisfying a number of application situations. From Swiss manufacturer Regent, the product is available here through Énergie. **CIRCLE 173**

**H.E. WILLIAMS | WWW.HEW.COM**

**Product: DDI**

DDI is a direct/indirect surface-mounted luminaire for spaces where a pendant will not work and parabolics would be too dark. (However, the fixture is also available as a pendant.) DDI's arched wings reflect light horizontally across the ceiling. The diffuser can be fitted with radial louvers, while a perforated reflector provides 5 percent uplight in suspended applications. The fixture is made of heavy-gauge steel, which is die-formed, welded and powder-coated. **CIRCLE 174**



**PEERLESS | WWW.PEERLESS-LIGHTING.COM**

**Product: Lightedge Rectangular**

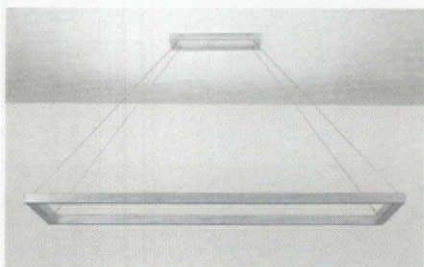
Lightedge Rectangular is a direct/indirect fixture featuring a low profile (1  $\frac{1}{2}$  inches) and a narrow width (8  $\frac{1}{8}$  inches). The product also includes Peerless' exclusive GrateOptic technology, which captures and distributes the direct light component to cast a pattern across the diffuser surface, complementing Lightedge's linear form while softening the light source for visual comfort below. The luminaire is also available as an indirect or a wall-mounted source. **CIRCLE 175**

**DIRECT | INDIRECT**

**LIGHTSPACE |  
WWW.BOYDLIGHTING.COM**

**Product: Cartesian**

Lightspace, a new division of Boyd Lighting, features a line of slim indirect luminaires. Its Cartesian pendants celebrate the principle of 90-degree angles with their geometric shape. The slender design (1 1/2 inches wide by 1 1/4 inches high) makes the luminaire appropriate for low-ceiling spaces or for areas where sightline is important. The luminaire utilizes two 54W T5 lamps, and is available in a 52-inch and a 99-inch length. **CIRCLE 176**



**DERUNGS MEDICAL LIGHTING |  
WWW.WALDMANNLIGHTING.COM**

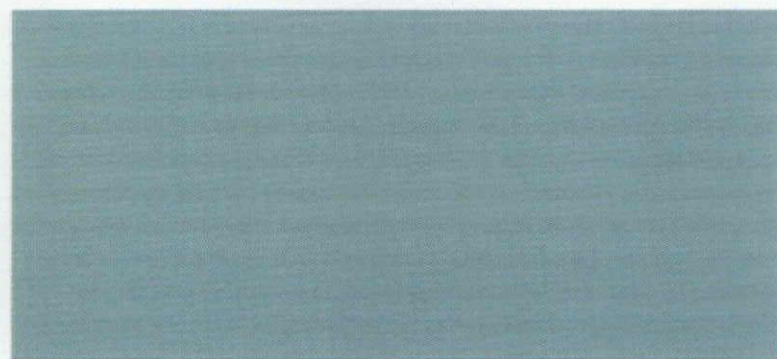
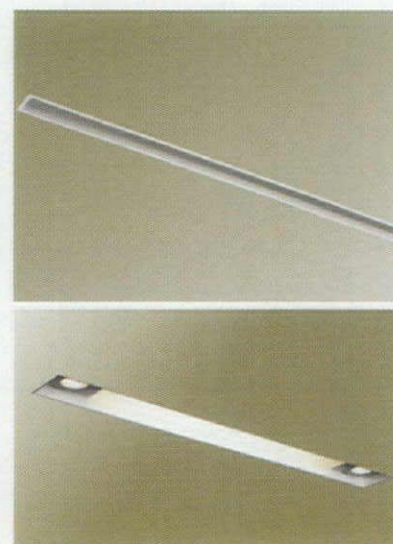
**Product: Amadea**

Derungs Medical Lighting, a division of Waldmann Lighting, has introduced the Amadea line of modular wall fixtures for hospital beds, featuring several light distribution options to meet both patient and staff needs, including direct/indirect, direct, and a night light. Available in two lengths (36 and 48 inches) and with a variety of lamp options, the fixture can be managed with a remote control, which can also be connected to the nursing call system. **CIRCLE 177**

**MARK ARCHITECTURAL LIGHTING |  
WWW.MARKLIGHTING.COM**

**Product: Slot 6, Slot 2**

The Slot 6 (bottom) is a 6-inch-wide unit with recessed panels. It can be arranged in a continuous row, and is available with T8 or T5 lamps and MR16 downlights. A narrower version, the Slot 2 (top) has a 2-inch-wide slot. Its white shielding element can be either recessed or flush mounted. The fixture takes T5 or T5HO lamps, which can be maintained using the company's patent-pending "pull-down" relamping system. **CIRCLE 178**



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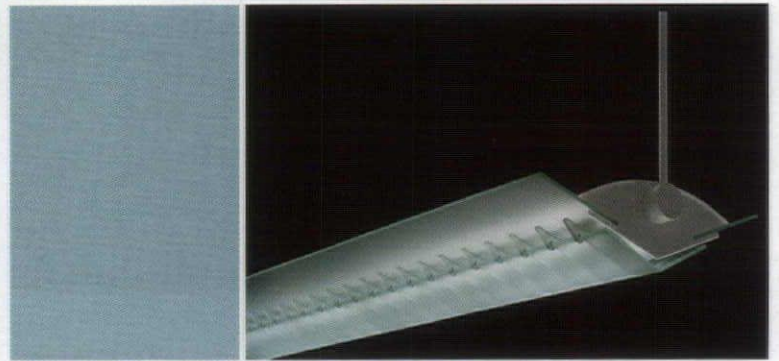
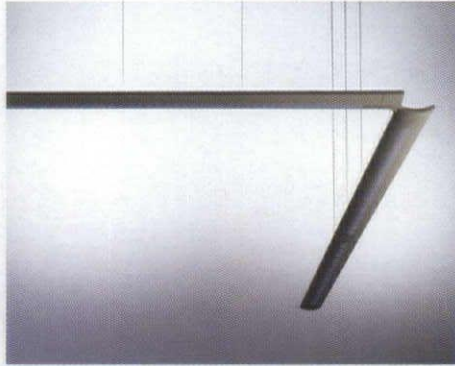


**DAY-BRITE LIGHTING |**  
**WWW.DAYBRITELIGHTING.COM**

**Product: NiteBrites**  
NiteBrites direct/indirect wall lights feature a fully adjustable optical system, enabling precise control and calibrated aiming. Appropriate for both indoor and outdoor applications, the fixture is available in a variety of wattages, lamp sources and finishes. **CIRCLE 179**

**ARTEMIDE |**  
**WWW.ARTEMIDE.COM**

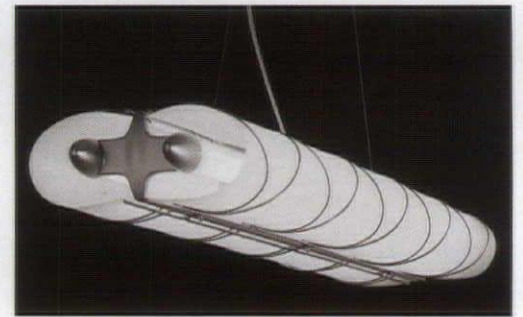
**Product: Mini Surf**  
Designed by Neil Poulton, the Mini Surf suspension system combines indirect lighting with a perforated base for diffuse direct lighting. The perforated component can be accented with frosted white, blue and orange filters. In a continuous linear installation, modules join without connectors; "L" connectors, however, accommodate 90-degree angles. The luminaire is available in 47-, 59- and 70-inch-long versions, and utilizes a T16 fluorescent; the line also includes a wall version for both indirect and direct/indirect lighting applications. **CIRCLE 180**



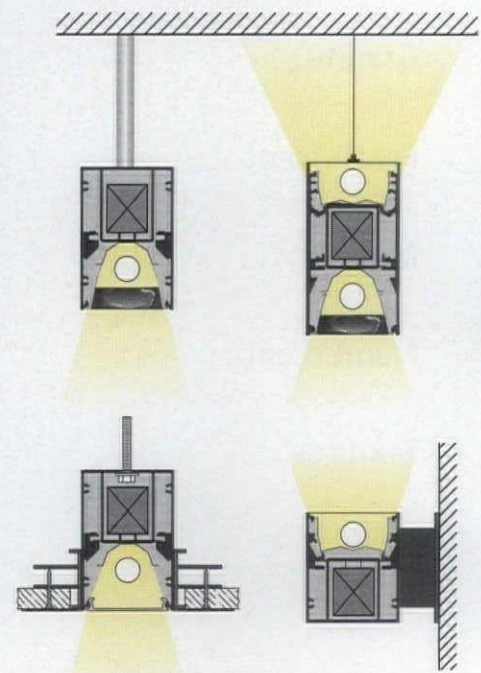
**METALUMEN | WWW.METALUMEN.COM**

**Product: Allure**  
Allure's allure is created by frosted emerald-green acrylic panels supported by delicate ribs. The luminaire is available in 4-, 8- and 12-foot lengths, and has a matching one-lamp wall-mounted version.

**Product: Weblight**  
The delicate wire frame of Weblight from Metalumen wraps around an opal polycarbonate diffuser that encloses two T8 lamps. The effect is a warm glow from a space-age fixture. **CIRCLE 181**



**M60 Extruded Aluminum  
T5/T5HO Architectural Lighting**

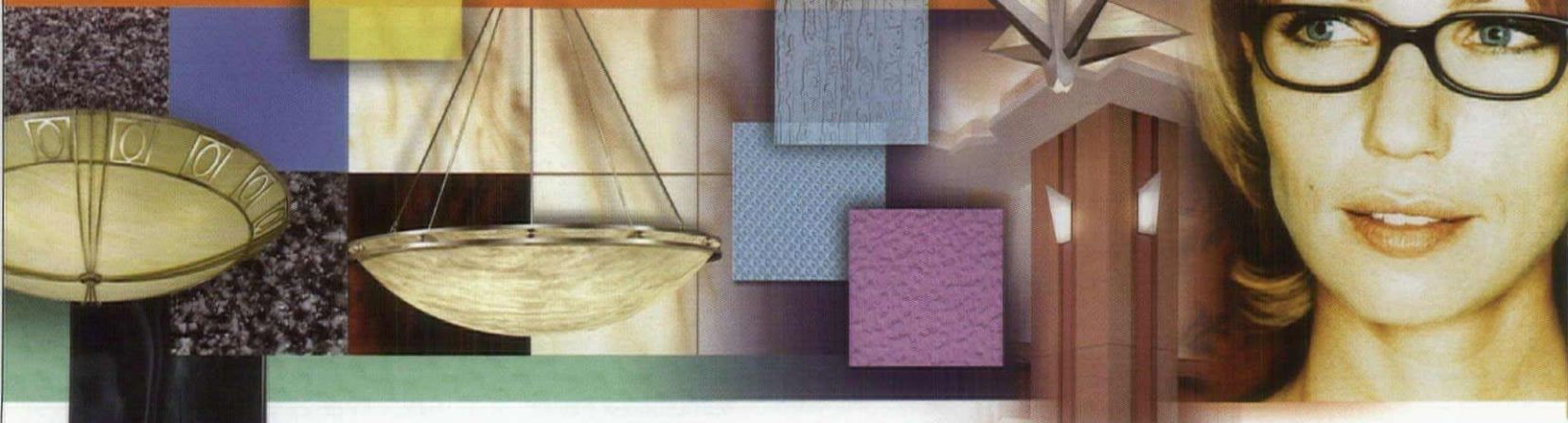


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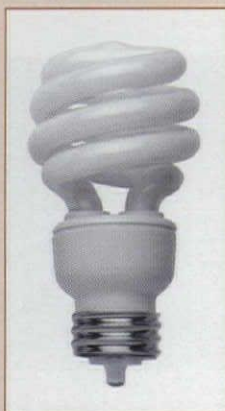
Marble

Granite

Frosted

Textured

LAMPS | BALLASTS | CONTROLS



**TECHNICAL CONSUMER PRODUCTS | WWW.TCPI.COM**

**Product: 3-Way CFL**

This three-way compact fluorescent lamp provides three distinct light levels—low (50W), medium (100W), and high (150)—as an energy-efficient option to the three-way incandescent. The lamp is available in 32W SpringLamp, 33W T6 circline and 40W T6 circline versions, and has an average rated performance life of 10,000 hours.



**Product: 289 Series**

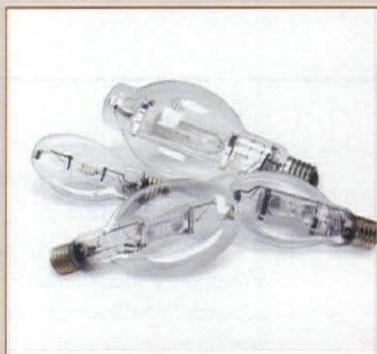
According to the company, this is the smallest compact fluorescent on the market—breaking the size barrier that has kept compact fluorescents trailing incandescents in the consumer marketplace. A self-balancing amalgam allows the lamp to run up faster and provide consistent performance. Available in 2W to 42W versions, which translates into 15W to 150W incandescent equivalents.

CIRCLE 182

**PHILIPS LIGHTING | WWW.PHILIPS.COM**

**Product: MasterColor**

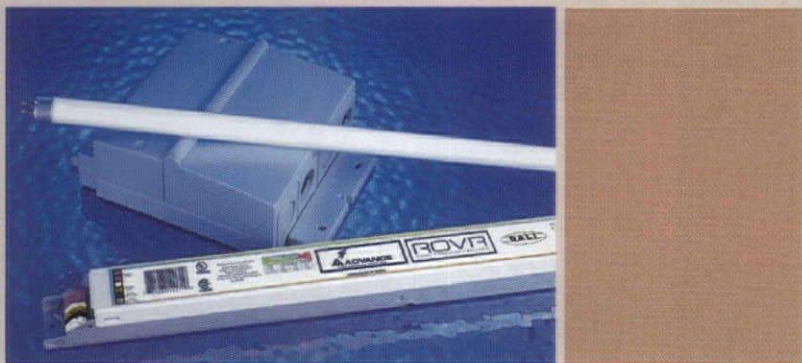
The 320W MasterColor pulse-start ceramic metal halide lamp is designed to provide superior color performance and improved lumen maintenance compared to standard switch-start metal halide lamps. It operates with a 90 CRI rating, 80 percent lumen maintenance and 15,000-hour rated life. CIRCLE 183



**ADVANCE TRANSFORMER | WWW.ADVANCETRANSFORMER.COM**

**Product: ROVR**

ROVR, a series of fluorescent lamp ballasts, is fully compatible with the industry protocol DALI. Using DALI-compliant ballasts, lighting systems can remember and execute programmed commands. The ROVR ballast utilizes the proprietary IntelliVolt multiple-voltage technology and is currently available for compact fluorescent, T5HO and four-lamp T8 fluorescents. CIRCLE 184



**GE LIGHTING |**

**WWW.GECONSUMERPRODUCTS.COM**

**Product: CMH PAR Lamp**

The CMH 20W PAR20 and PAR30 are designed for retail accent lighting. Spot and flood versions, when evaluated against halogen, provide almost twice the light output, up to three times the rated life, and as little as half the energy consumption. Performance characteristics include 1,200 lumens, 7,500-hour rated life and 80+ CRI. CIRCLE 185



**THHC LIGHTING | WWW.XELOGEN.COM**

**Product: S.C. Bayonet Lamp**

Intended for landscape lighting applications, the S.C. Bayonet lamp is available with the same specification as THHC's Xelogen T5 Wedge Base. Both lamps are available in 12V/4W (7W, 11W, 13W and 18W). Xelogen lamps provide longer lamp life, higher color temperature, lower heat and safer handling. CIRCLE 186

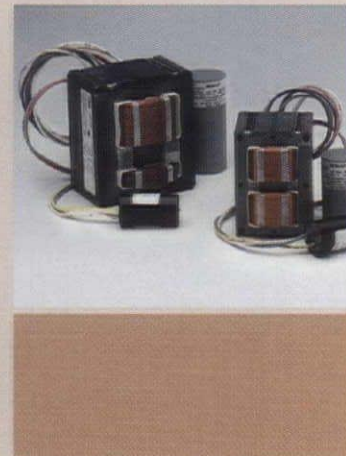


**VENTURE LIGHTING |**

**WWW.VENTURELIGHTING.COM**

**Product: Quint-Volt**

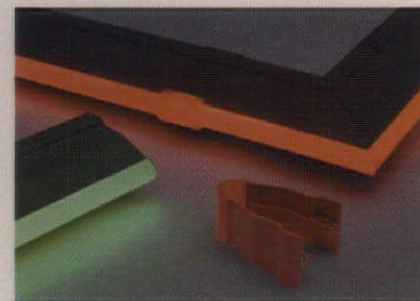
The Opti-Wave Quint-Volt ballast optimizes performance of Venture Lighting's line of the Uni-Form pulse-start metal halide lamps. The ballast offers improved lumen maintenance, efficiency and color uniformity, and up to 105 lumens per watt over the course of the lamp's rated life. It features five taps for input voltages, and its frame size is the same as the quad-tap CWA ballast. CIRCLE 187



**GELCORE | WWW.GELCORE.COM**

**Product: GE Tetra BT**

The GE Tetra BT is an energy-efficient LED border tube system designed to replace neon in interior and exterior border lighting applications, offering 80 percent energy savings compared to neon. Made of weather-, impact- and UV-resistant material, the product's modular quick-snap design features pre-manufactured corners and easy-to-cut 8-foot sections. Depending on color, this low-voltage system uses only six 1.0-watt or 1.5-watt LED modules per foot of Tetra Strip. Installation requires no gluing or soldering. CIRCLE 188



## SAVE ENERGY with Lighting Controls

Visit the Lighting Controls Association's web site to access free educational guides about lighting control/ballast products, technologies and applications – from dimming to automatic switching to integrated lighting control.

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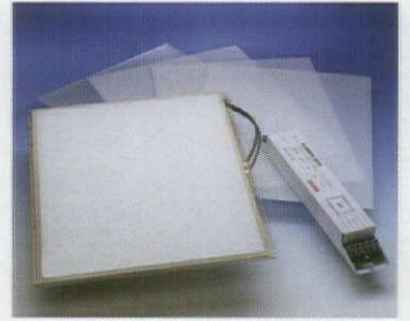
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- Universal Lighting Technologies
- The Watt Stopper

## PRODUCTS LAMPS | BALLASTS | CONTROLS

### OSRAM SYLVANIA | [WWW.SYLVANIA.COM](http://WWW.SYLVANIA.COM)

#### Product: Planon

Using the principle of pulsed excimer discharge, the Planon family addresses the need for a range of "flat panel" applications now seen in many projects. Originally used as backlighting for LCD-TV and medical monitors, the flat-panel lamp (which is less than 10 millimeters thick) offers uniform brightness and a long life of up to 100,000 hours, and provides a replacement solution for cold cathode fluorescent lamps.



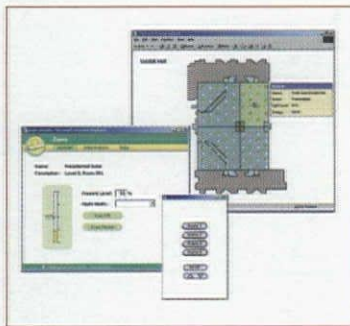
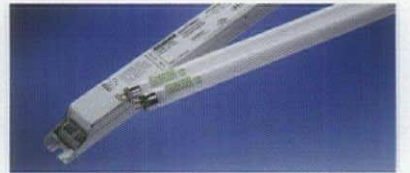
#### Product: Icetron

The Icetron electrodeless lamp/ballast system has an average rated lamp life of up to 100,000 hours for standard colors owing to its usage of magnetic-induction technology instead of electrodes at each end of the lamp tube. The system is now available in blacklight and 5000K versions. The Icetron lamps have also been designated TCLP compliant, classifying them as nonhazardous waste for easier disposal.



#### Product: Quicktronic DALI

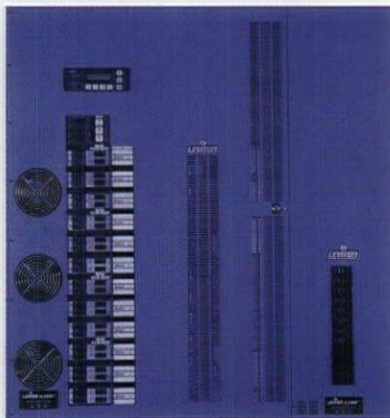
Osram Sylvania has added Quicktronic DALI to its family of controllable fluorescent lighting systems. The system works with the company's Octron T8, Pentron T5 and Pentron T5HO, from a 1.0 ballast factor to a .01 ballast factor. CIRCLE 192



### LUTRON | [WWW.LUTRON.COM](http://WWW.LUTRON.COM)

#### Product: GRAFIK 7000

This centralized lighting control system brings integration, control, and energy management advantages to any size project. It offers advanced hardware capabilities and customizable user interfaces for flexible integration of dimming, switching, motorized draperies and shades, and daylighting. Building operations are streamlined with energy monitoring and management features. Floor-plan-based software and a graphic user interface provide central, local and personal control options with customizable access privileges. CIRCLE 193



### LEVITON | [WWW.LEVITON.COM](http://WWW.LEVITON.COM)

#### Product: LVT 301

The a-2000-24 modular dimming cabinet provides the performance and reliability of high-end theatrical dimming systems—for architectural applications. Easy to install and service, the a-2000-24 cabinets include up to 24 dimmer channels, rated at 2400W per channel, and are stackable to provide up to 48 dimmers with a single power feed. Its 4-inch-deep, ADA-compliant profile fits between two stud widths. The microprocessor-based control circuitry is compatible with a wide variety of non-fluorescent and fluorescent lighting loads. CIRCLE 194

# All Fiber Optics Are Not The Same!

What fiber optics work where, what to look for and what to avoid.

In what has become a "Lightfair" tradition, Ruth Ellen Miller, President and co-founder of NoUVIR Research, Delaware Business Person of the Year 2000, and a Magna Cum Laude graduate with a college teaching credential in Art and Design, tells us what is going on in one of the newest technologies in lighting. Here she deals with the pitfalls of specifying fiber optic lighting. Featured on PBS Small Business School, Ruth Ellen also teaches, lectures and is a published author on lighting. — Matthew Scott



MS: People use "fiber optic lighting" as a generic term. Is it?  
REM: Only the way "electric lighting" is. There are so many variations in materials, technology and performance that the words "fiber optic" alone doesn't give a designer or a customer much usable information.

MS: Let's start with the differences in materials.

REM: There are three basic materials used for optical fiber: glass, pmma acrylic and softened polymer plastics called "solid core." You can also separate optical fiber as stranded or monolithic. Basically, each light guide can be one fiber or a bundle of smaller fibers and they can be made of three possible materials. Each type, stranded or monolithic, and each material, glass, acrylic or polymer, has different characteristics and different performance. Know the material and type, and you'll have a good idea of what will or won't work for your application.

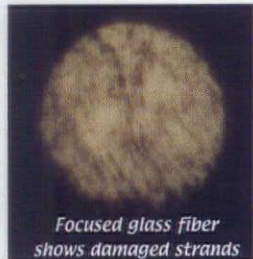
MS: Tell me first about material. Start with glass fiber.

REM: Glass fiber came out of the communications industry. Almost all communication fiber right now is glass. That's because glass transmits infrared very, very well and communications systems are based on IR sources. People took this existing technology and started lighting with it.

The best glass fiber has a transmission loss of a little over 2% a foot. Glass is always a stranded fiber made up of .002" glass threads bundled together. It's fairly flexible. But the individual threads are fragile, so you don't want to stress this fiber. You need to support it carefully.

Glass fiber ends are potted in epoxy and then cut and polished. This has to be done at the factory. That effects design cost and lead time. It also limits flexibility both during and after an installation.

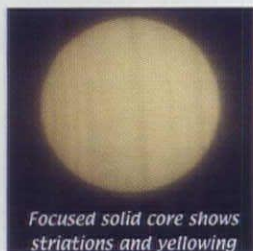
Glass is expensive: \$10.00 or more a foot isn't unusual. And because it's stranded, you can't focus it tightly. If you do, you'll see an image of the ends of the strands with all the dark spaces where the epoxy holds the fiber together.



Focused glass fiber shows damaged strands

You'll also see all of the damaged and broken strands. Poor focus means heads need to be close to the objects illuminated. That means more fiber, and more cost.

MS: What about solid core optical fiber?



Focused solid core shows striations and yellowing

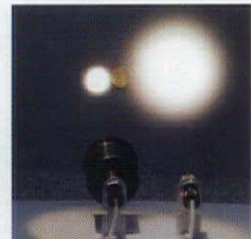
REM: You find solid core as a neon replacement for effects lighting in pools and ponds. I don't recommend it for end lighting. It's too soft to polish and has very high transmission losses - 5% or more a foot. What is worse, everything I have tested has been very photosensitive. It yellows rapidly under high intensity use. If you use solid core fiber, make sure you get a really solid warranty. And even then, design things so that the fiber can be easily replaced every couple of years.

MS: That leaves acrylic fiber. Is that what NoUVIR uses?  
REM: Yes. Pmma, polymethyl methacrylate fiber is the most efficient transmitter of visible light for the industry. But grade is important. Cheaper fiber will have inclusions that lower efficiency, The aerospace grade we use has a loss of only 0.7% a foot. That means 30 or 40 feet runs are no problem. Glass fibers can't do that.

We use solid 1/8-inch (3-mm) fiber. This is the acrylic used for jet fighter canopies. It's really durable.

It's cross section gives you a lot more light carrying capability than stranded fiber. There are no inefficient gaps between the strands. And retail, even aerospace-grade solid acrylic fiber is less expensive than stranded acrylic. NoUVIR fiber is \$1.00 a foot. The last 1/8-inch stranded acrylic I bought was \$1.60 a foot. Part of the lower cost is because solid acrylic fiber does not need to be jacketed.

On a side note, acrylic is inert. It's a safe material to use in museums and inside cases. Internal case lighting is a great fiber optic application. But the PVC jacketing on most stranded fiber outgasses chlorine compounds. A good museum won't knowingly allow PVCs in exhibit spaces.



5" to 50" Pin, 15" to 50" Spot  
True focus - Real control

Best of all, solid acrylic can be cut and polished in seconds in the field. And, unlike stranded fiber, it focuses. Couple it with a fiber optic reflector and the right optics, patented of course, and you get awesome adjustable beams with no spill or scatter.

These light sources can give you pure-white, even 5° beams that zoom with all of the light inside the beam. This type of control is revolutionary in lighting.

MS: Now you have moved into technology.

REM: I guess I have. Acrylic is the most efficient optical material. It transmits visible light wonderfully. But it's opaque to infrared and ultraviolet. So an acrylic fiber system is IR and UV free. This is great; full spectrum visible light with no garbage. But it makes technology very important.

Since acrylic absorbs infrared energy, you can burn it. Get it too hot and it melts and turns brown. By the way, solid core and the epoxy in glass fiber will melt and turn brown too. So, you need to take out all of the heat at the projector before it gets to the fiber or the fiber won't last.

A few months ago I bought a new stranded-acrylic system for testing. The factory sales rep told me, "Leave a five-foot service loop" so that when the "fiber caramelizes" I could "cut off the damaged portion and reinsert it." It's even in their manual! The word "caramelize" made me chuckle, but adding five extra feet to burn isn't sweet, it's terrible. And what do you do when the five feet is gone?

NoUVIR gives a ten-year warranty against any yellowing or loss of transmission. We can do that, because we take out all of the heat, all the IR, at the projector. That's technology, not clever marketing terms! That's 10-years of research and 23 U. S. Patents in operation. MS: You're talking performance and quality. How do you measure fiber optic performance?

REM: At the end of the fiber, where you use the light. The most powerful projector in the world doesn't mean you'll have bright fiber. It might just cook things faster. Many companies deal with heat by defocusing their beams or using area sources. An in-focus \$12.00 halogen projection lamp is brighter than an out-of-focus \$200.00 HID, even in a custom reflector.

You have to be able to take out the heat. We do.

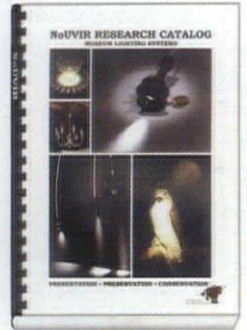
MS: Ruth Ellen, bottom line, how does an architect or lighting designer determine performance before they specify or install something that doesn't work well?

REM: Get full data on their products; mechanical specs, spectral distributions, and complete photometry. If you can't easily determine how much light each fiber will provide over how much area or exactly how bright a given luminaire will be at a given distance on a given length of fiber, somebody is trying to cheat you. It's the same with prices. They should be up front, uniform and easy to find. All these things ought to be in a catalog in your hand.

Compare job costs, not individual hardware items. Saving on a piece of hardware doesn't mean a thing if you have to buy three times the hardware to do a project. A good supplier will put all the information you need into your hands before you specify.

Look at warranties, especially fiber warranties. Companies know how good their products are. Protect your reputation. Don't spec a looser.

Simplest of all, call me at NoUVIR Research. I'll send you our 130-page catalog. It has all of the information you could possibly need, including design information, full specifications, photometry, prices and our 10-year warranty. Side by side, nothing beats NoUVIR!



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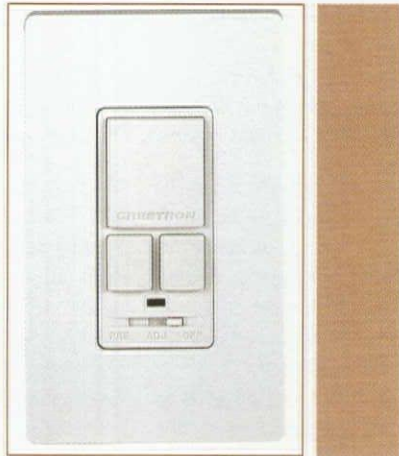
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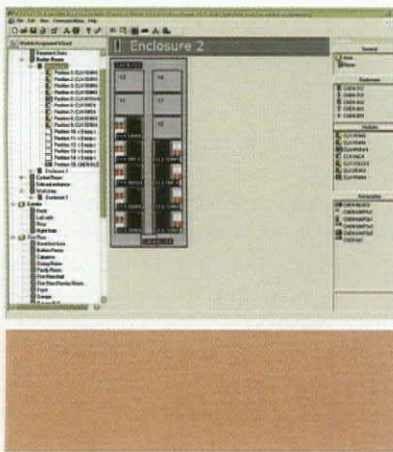
**CRESTRON |**  
**WWW.CRESTRON.COM**

Product: **CLW DIMS**  
The CLW DIMS is a standalone wall box dimmer that can be an extension of the Crestron home control, since each includes an isolated two-wire nonpolarized Cresnet port. Dimmers will operate on their own when Cresnet data is not available. The system's automatic back-up insures a zero-failure rate, according to the company.

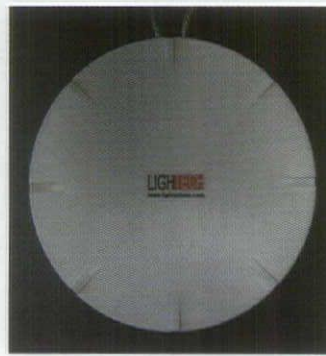


**WATT STOPPER |**  
**WWW.WATTSTOPPER.COM**

Product: **DT-300**  
The DT-300 series dual technology occupancy sensor offers 360 degrees of coverage. Ultrasonic sensing technology offers an evenly distributed signal and, thus, detection of all levels of motion. DT-300 accommodates occupancy usage patterns with SmartSet technology. CIRCLE 160



Product: **D3 Pro**  
The D3 Pro lighting, HVAC and security programming software allows designers to enter lighting load schedules, and then specify equipment and programs keypads and touchpanels. The product features an astronomical clock and the ability to link touchpanels, keypads, wireless remote and the Internet to lighting and climate control modules. Other systems, such as HVAC and security systems, can also be integrated. CIRCLE 189

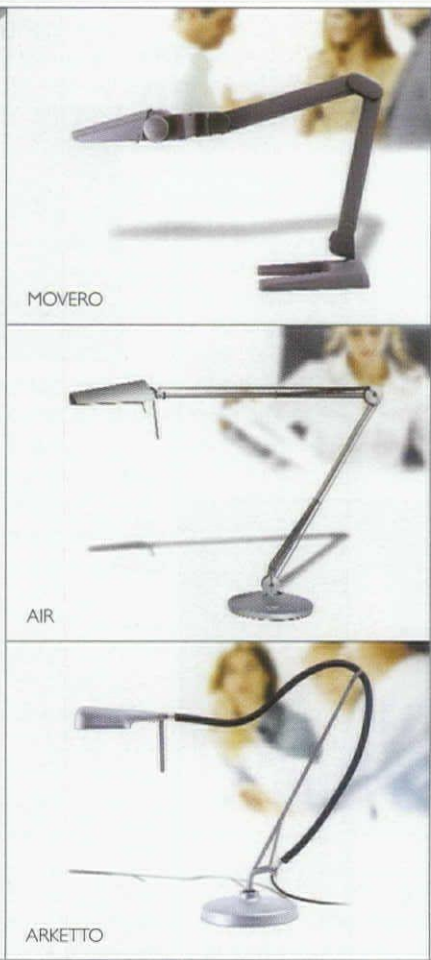


**LIGHTECH | WWW.LIGHTECH.CO.IL**  
Product: **LVT 301**  
The LVT 301 is a 300W DC electronic transformer designed for open conductor systems. Utilizing a micro controller, the unit allows cable or rail systems to meet the new UL 2108 open-conductor standard. This transformer works silently with halogen systems, using both incandescent and electronic low-voltage dimmers. CIRCLE 191



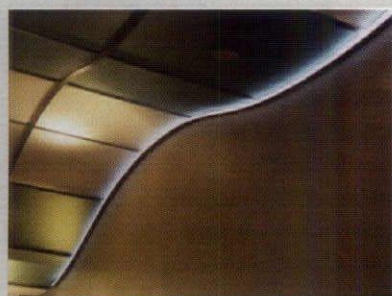
# THE NEW LUXO MAY SURPRISE YOU.

Luxo's award-winning designs span beyond task lights. The new Onda is a stunning example of Luxo's inspiring new line of interior luminaires. Whether you're specifying a decorative pendant, direct/indirect wall sconce, or simply a freestanding luminaire, Luxo now offers the perfect complement to any commercial interior, as well as any office task. Ask about our new collection of asymmetrical task lights. Attend one of our Ergonomics of Lighting seminars. See why everyone's talking about Luxo.



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**ILIGHT TECHNOLOGIES |**  
**WWW.ILIGHT-TECH.COM**

**Product: White Plexineon LED**

iLight Technologies introduces a white Plexineon LED that comes in three different Kelvin temperatures (one cool and two warm), and can also be custom ordered to a specific Kelvin temperature. The product uses blue LEDs and a patent-pending

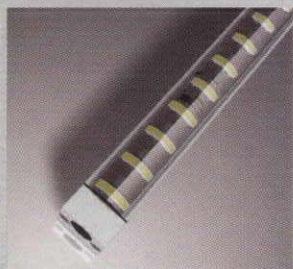
light conversion system that produces various white color temperatures across the color spectrum with a five-plus-year life span. The light is available in standard straight lengths of 2 to 8 feet, and custom lengths and slight curves are available. The housing is fabricated from a UV- and impact-resistant acrylic diffuser and a UV-resistant plastic channel in various colors. **CIRCLE 203**



**IO LIGHTING | WWW.IOLIGHTING.COM**

**Product: Line Linear Luminaire**

Line is an exterior LED-based linear luminaire with superior beam performance and fixture efficiency. Four optic configurations (10, 30, 60 and asymmetrical) offer focused beam control for a variety of exterior and interior applications. Color options include red, green, blue, amber and cool and warm white light. LINE is an excellent solution for applications where light pollution and light trespass are an issue.



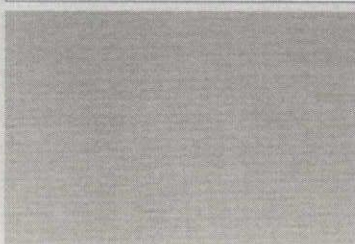
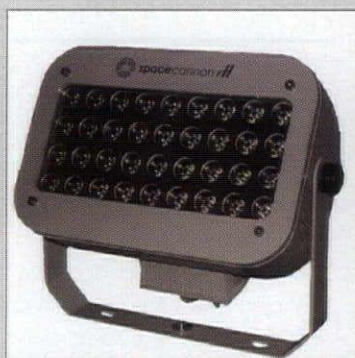
**Product: Stick Exterior Luminaire**

Stick is a low-profile LED-based exterior luminaire for spatially limited applications. Stick can be integrated into handrails, architectural niches and coves. Precise optics (10, 30, 60 and asymmetrical) enable the efficient utilization of lumens in confined areas. Color options include static red, green, blue, amber, and cool and warm white light. **CIRCLE 204**

**SPACE CANNON vH, LIGHT BY LUXEON |**  
**WWW.SPACECANNON.COM**

**Product: Metamorphosis DUO Projector**

A joint venture between Space Cannon vH and Luxeon Technology, the Metamorphosis DUO is a projector suitable to both interior and exterior applications. The housing is fabricated from noncorrosive aluminum in a gray finish. It meets CE, UL and CSA safety standards. The powered light source Luxeon has a life span of 100,000 hours and is fully dimmable. Blue, red and green LEDs enable a range of colors. The beam control has both an electronic dimmer and a strobe, and a variable color temperature from 3000K to 6500K. Features include a built-in power supply, symmetric and asymmetric beam shaping, and delay and DMX control. **CIRCLE 205**



**TRAXON USA |**  
**WWW.TRAXON-USA.COM**

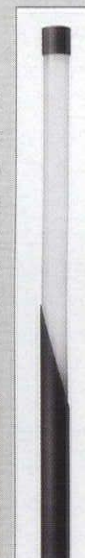
**Product: Mood Light Reflector**

Building on the Mood Light line, the Mood Light Reflector is a mirror-finished, color-changing LED panel. An energy-efficient light source, the reflector is 19 1/2 inches square and 2 3/4 inches thick, and incorporates ultra-bright LEDs with millions of RGB colors of variable intensity; the source has a life expectancy of about 50,000 hours. The reflector is available in RF remote-controlled or DMX-compatible models. A modular panel, the remote-controlled Reflector panel can be connected with additional panels to form multiple compositions. It can be wall mounted, ceiling suspended, or built into furniture, floors and walls. Signage options can also be incorporated. **CIRCLE 206**

**HESSAMERICA | WWW.HESSAMERICA.COM**

**Product: Sierra Light Column**

HessAmerica has incorporated LEDs into its Sierra light column and bollard. Virtually maintenance free, the lighted section of the fixture can be illuminated with red, green, blue or amber LEDs. The Sierra is ideal for entrances and pathway delineation. Fabricated from a heavy-duty aluminum extrusion, it is also available with an easily accessible T6 metal halide lamp. A specially frosted lens uniformly diffuses light along the entire column. Standard finish options are matte silver-gray metallic, graphite gray metallic, or black. Special colors are also available. **CIRCLE 207**



**OPTILED | WWW.OPTILED.BIZ**

**Product: LED Linear Light**

OptiLED's LED linear light combines optical technology and advanced LEDs creating extremely focused beams of light, that save 85 percent more energy than conventional bulbs, remain cool to the touch and can be installed near flammable materials. The fixture operates on any existing voltage system and has a standard base so it can easily be retrofitted, rotating up to 180 degrees. Built-in micro-diffusers direct light at various beam angles in elliptical or spherical patterns with lower loss of light, and a built-in power supply improves data transmission. An LPI-tailored optical system is used for color mixing. A protective lens cover resists UV damage, scratching and condensation. **CIRCLE 208**

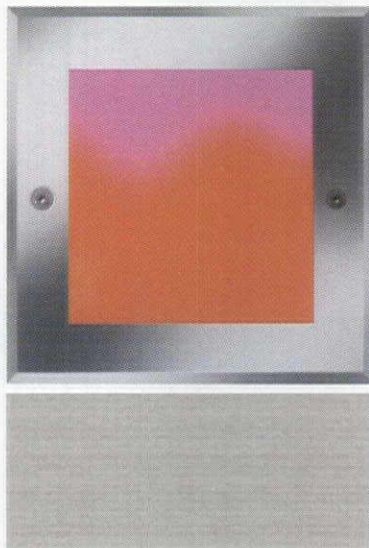


LED S

ZUMTOBEL STAFF LIGHTING | WWW.ZUMTOBELSTAFFUSA.COM

Product: **Ledos Luminaire**

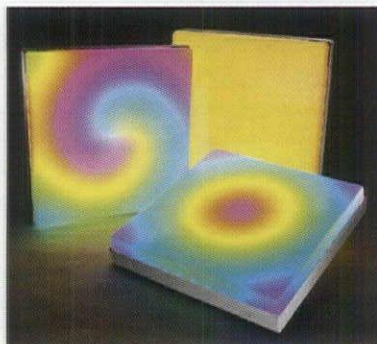
Zumtobel Staff Lighting has added two models—color changing and outdoor—to its line of Ledos LED luminaires. The RGB integrated control technology allows color-changing effects. The advanced diffuser provides even color distribution from red, blue and green LEDs. These options are available in a round or square style and can be installed in floors, ceilings and walls. Die-cast aluminum housings are available with stainless-steel or powder-coated titanium faceplates. The fixtures use Color Kinetics patented Chromacore technology. CIRCLE 209



COLOR KINETICS | WWW.COLORKINETICS.COM

Product: **iColor Tile FX**

A tile-like system that applies proprietary Chromasic technology to individually control 144 tricolor LED nodes for decorative wall and ceiling effects. The fine-grained control makes it possible to create images with light—from morphing color waves to animated objects, logos and customized patterns.



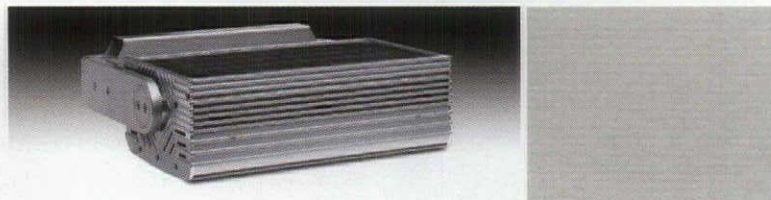
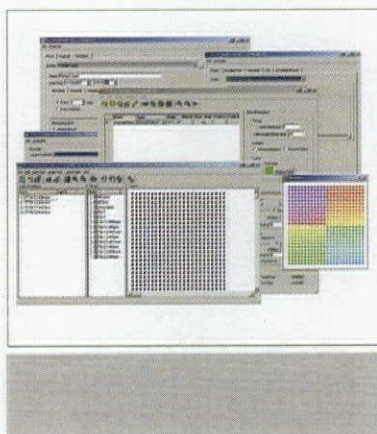
Product: **iColor Flex SL**

A multipurpose LED-based strand that applies Chromasic technology to generate effects that can span thousands of controllable light nodes without the constraints of fixture size, shape or space. The product is available as an independent system, a building block for large multisystem installations, or as a component for custom fixtures.



Product: **Light System Manager**

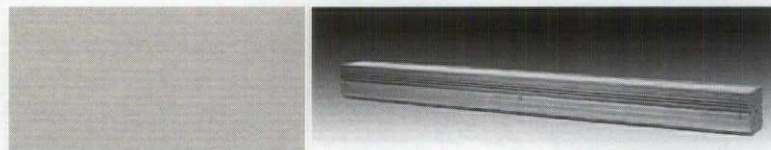
An integrated software/hardware solution engineered to enable large-scale and intricately designed installations that exceed the limitations of today's lighting programming and network protocols. From the stage and themed environments to architectural applications, this software facilitates the management, authoring and control of show effects that span multiple DMX universes and scale to tens of thousands of individually controlled LED-based nodes. CIRCLE 210



TIR | WWW.TIRSYS.COM

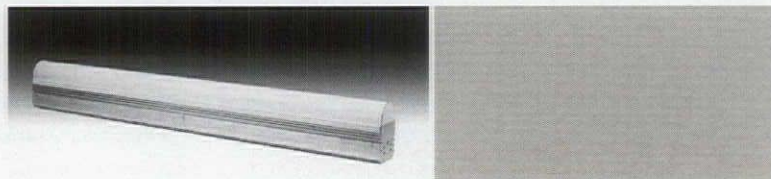
Product: **Destiny CG**

The Destiny Series provides specialized tools for using color and color-changing light to model and accentuate architectural forms. The Destiny CG is a luminaire that provides a surface-graze function, offering a smooth gradient of dynamic color-changing light to accentuate both the architectural element and the surface texture. This luminaire, with its integral power supply, offers asymmetric projection for lighting effects.



Product: **Destiny CV**

Destiny CV provides an even surface glow and paint-with-color function, offering an asymmetric throw from a concealed linear source. It provides a farther throw of light than today's conventional cove luminaires, and a continuous sheet of light. Destiny CV controls over-brightness at the mounting point, inches away from the target surface.



Product: **Destiny DL**

Destiny DL provides a direct view function, offering a level of brightness while maintaining the uniformity of a continuous linear element of color. Dynamic color-change effects with a resolution of 12 inches are contained in a luminaire designed to delineate architectural structures. CIRCLE 211

ECLIPSE | WWW.ECLIPSELIGHTINGINC.COM

Product: **Galileo Sconces**

The Galileo family of sconces now includes color-changing LEDs among its lamping options. Galileo sconces come in a variety of styles, range in size from 9 inches to 54 inches tall, and are available in round, triangular and rectangular shapes. Built for outdoor or indoor use, the fixture is available with a choice of LED color-changing lamps and energy-efficient compact fluorescent, HID and induction lighting sources. Additional options include up/down wallwashing and the company's Perfix perforated brightness-control panels. CIRCLE 212

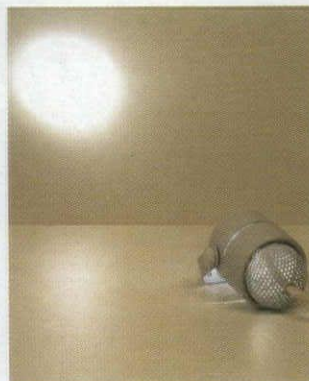
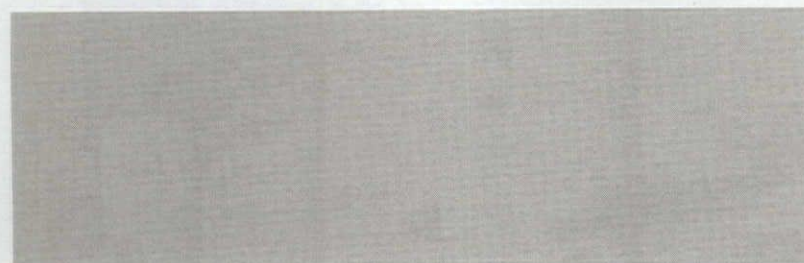




BRIDGESTONE |  
WWW.LUXAURA.COM

Product: **Luxaura Light Guide**

Luxaura Light Guide is a rigid, co-extruded three-part structure composed of the outer cladding, an acrylic polymer core and a specially designed reflector strip that radiates light. It enables designers to choose the diameter, length, shape and color of the optical rod illuminated by LED light source. The clear, UV-resistant solid-core rod can be shaped, once heated. It is available in 6.5mm, 10mm and 14mm diameter sizes. Easily cut with conventional tools, it is designed to provide uniform illumination for a rod length up to 6 feet, and operate on 12V to 14V of direct current available either through batteries or household current with the use of an AC/DC adapter. CIRCLE 213



DUO-GARD | WWW.DUO-GARD.COM

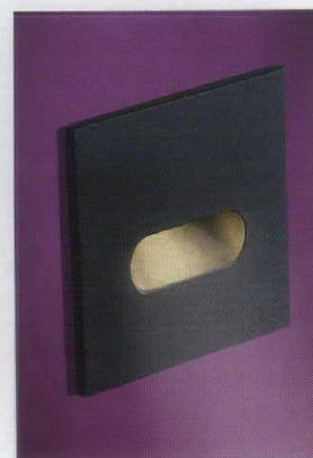
Product: **Opti-LED Spotlight**

Opti-Spot is a solid-state, low-voltage, high-power adjustable LED spotlight. The product incorporates silicon and other optical spheres, along with optical coatings. Color-change capabilities create design versatility in this powerful, long-distance projection. Opti-Spot is available in a variety of housing shapes and materials, and can be custom configured. The product can integrate solar technology as its power supply. CIRCLE 214

LUCIFER LIGHTING |  
WWW.LUCIFERLIGHTING.COM

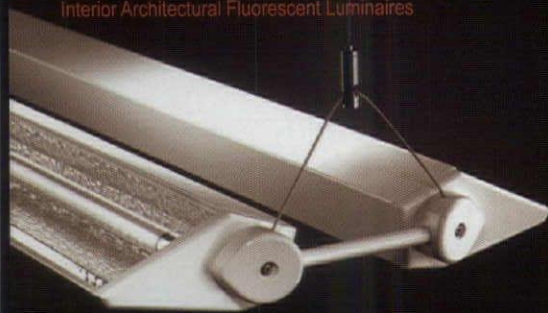
Product: **Stealth Step Light**

The Stealth step and path light is designed for use with LED, Xenon or fiber optic sources. The compact 2 3/4-inch-square fixture casts an elongated beam and is made of solid bronze for outdoor conditions. A single 1W LED or a single 3W Xenon source will power the fixture. The fiber optic version requires a remote illuminator with a 100W metal halide lamp, which will transmit light for up to 50 Stealth fixtures. CIRCLE 250



## Compact-5

Interior Architectural Fluorescent Luminaires

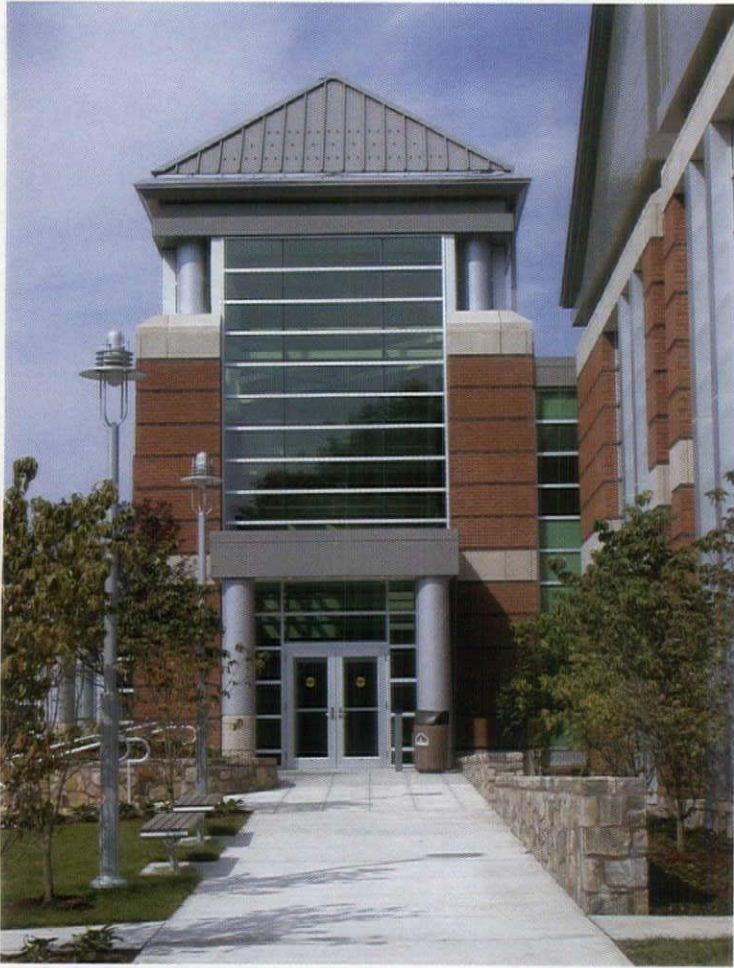


Measuring just 2" X 4", the Compact-5 lends itself, in particular to the T5HO fluorescent lamp. Compact-5's distinct architecture and optical design will enhance any space where innovative looks and lighting performance are a priority. Whether concealed by a miniature cove, wall mounted or ceiling mounted, Compact-5 provides the answer.

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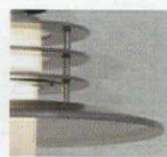
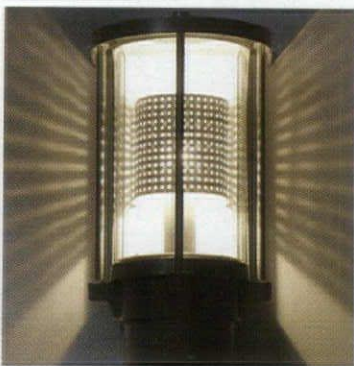


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## Light Fixtures Get Smart

CRAIG DILOUIE

**IN THE 1990s, THE TREND TOWARDS ENERGY EFFICIENCY FOLLOWED A PATTERN** of integration from components to fixtures. The vision was to integrate the most efficient lamps, ballasts and lighting control methods into a single fixture. This later expanded to incorporate both facility-wide and occupant dimming for its effect on savings, flexibility, and worker satisfaction and motivation. This vision has been realized with a generation of "intelligent fixtures" from manufacturers such as Cooper, Lightolier and Ledalite. Each manufacturer has chosen a distinct product strategy to provide real choices in cost and capability.

All intelligent fixtures integrate an intelligent dimming ballast that allows programming and control of individual fixtures, and connects them to a central or local interface, which allows a focus on the fixtures instead of on the control system. Depending on the manufacturer, models are available that integrate sensors for occupancy-based dimming or switching, as well as daylight and lumen-maintenance dimming. Together, these products present an effective way to increase application flexibility and worker satisfaction, while reducing energy costs and demand charges.

### IGEN FROM LIGHTOLIER

In 2001, Lightolier announced its first intelligent fixture, Agili-T, which features plug-and-play installation, integral sensor technology, multiple optics and a control system that uses the existing LAN. At Lightfair 2003, the company unveiled a line of fixtures called iGEN that uses Digital Addressable Lighting Interface (DALI), an open protocol that controls the operation of ballasts.

iGEN is available as an option in most Lightolier brands, including linear, recessed, compact and select decorative fixture types. It represents more than 700 products able to cover most of the lighting in a typical commercial building.

The iGEN system starts with a digital ballast that is compatible with DALI. This enables all of the ballasts in a lighting system to be networked together and to control interfaces, such as networked PCs and wallbox controllers. Each ballast is given a unique address in the network so that it can be individually controlled or ganged in

groups. For example, groups of fixtures can be told to dim to different levels according to the time of day. Occupants can also control local lighting through their workstation PCs, at nearby wallbox interfaces, or with handheld remotes. In addition, iGEN fixtures can talk back, providing energy monitoring capability and maintenance information, such as lamp and ballast failure alerts. Other controls can be integrated into the network, as long as they speak DALI. Many of these fixtures can also be specified with an integrated sensor to switch or dim based on occupancy.

"Using the standard DALI protocol, Lightolier is not inventing another system for the industry to figure out," says Damon Wood, manager of market development for Lightolier iGEN. "And as DALI installations proliferate, addressable lighting will become the norm rather than the exception. With multiple component manufacturers producing DALI-compliant products, concerns about proprietary solutions vanish. DALI is evolving to the point where virtually any degree of lighting control is possible." He also sees DALI as a step toward lighting system integration (via a gateway) with building control systems that use BACnet, LonWorks, EIB and other protocols.

While digital lighting networks are often seen as complex, Wood believes iGEN overcomes this barrier. "By putting the intelligence inside the fixture—using addressable ballasts and integrated sensors—complications regarding component compatibility and complex control wiring have been eliminated," he says. "Because the two-wire iGEN communication circuit is located in the same conduit with the line-voltage conductors, we can use five-wire modular cables to simultaneously connect the iGEN fixture to both power and digital communication circuits." Using these cables, iGEN fixtures and controls can be easily added, removed or relocated.

"Our current data shows over 75 percent of commands are to lower light levels, not raise them," says Wood. "In addition, we are providing a platform for the future so that other energy-saving strategies can be implemented, such as load shedding or daylight harvesting. We want the owner to know that his investment will continue to grow as the technology grows."

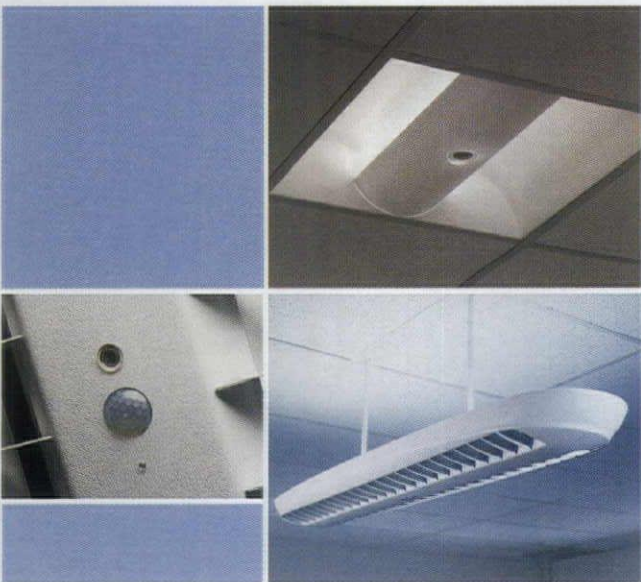
### DLS BY COOPER LIGHTING

DLS stands for Digital Lighting System, an option available across seven Cooper brands that enables the fixtures to be tied together in a multi-scene dimming control system via inclusion of an intelligent dimming ballast. This includes linear and compact fluorescent, incandescent and magnetic low-voltage fixtures.

Cooper's strategy was to introduce intelligence into these brands while keeping the specification process focused on the fixture. The specifier selects a fixture with a DLS ballast, then selects control stations and remotes as needed. "The control intelligence resides in the ballast so the lighting design process and specification remain with the fixture," says William Johnson, marketing manager for Cooper Lighting. "And the system cost with DLS is in the fixture package, so only minimal additional cost is required for the control stations and remotes."

The control system is comprised of the fixture/ballast, the IR receiver/control station and a handheld remote, which provide preset and occupant dimming capabilities. It is designed to work out of the box: each ballast is pre-programmed with five scenes, and is set for Zone 1 so the fixtures dim as a group; this can be modified through the use of a master handheld remote called the "Wizard." "Sorcerer" or "Apprentice" remotes allow occupants personal dimming control.

**Manufacturers are realizing the vision of integrating lighting fixtures with lighting automation. Together, these products increase application flexibility and worker satisfaction, while reducing energy costs.**



Lightolier's Alter IntelligentVision recessed indirect troffer includes an integrated sensor (top right). Ledalite's Ergolight (bottom right) can be centrally controlled by software or locally by an occupant's PC. It also integrates an occupancy sensor and a light sensor for daylight dimming (left).

The fixtures are daisy-chained to wall- or ceiling-mounted control stations using two low-voltage wires. Up to 12 zones and 12 scenes can be programmed, and up to 10 control stations can be used for control of up to 250 ballasts on a single control wire run. Separate zone control (home-run) wiring is not required.

"DLS eliminates the complex wiring schemes normally associated with zone wiring," says Johnson. "Scalability comes into play when additional control stations and zone programming are needed. No special control wiring other than the T-tap daisy-chain is needed to add controls or fixtures up to 250 ballasts."

He says that the elimination of separate zone control wiring makes DLS a good value for spaces where multi-scene dimming is usually considered too costly.

Cooper announced two new additions to the DLS option: an occupancy sensor interface and biaxial dimming ballasts. The interface allows the DLS

system to work with any occupancy sensor and switchpack combination; the relay output of the switchpack is wired to the interface. Light levels during occupancy and non-occupancy can be set at the default mode.

#### ERGOLIGHT BY LEDALITE

Ledalite Architectural Products' contribution to the intelligent fixtures arena is Ergolight, a direct/indirect optical system.

The Ergolight fixture, incorporating task-oriented (direct) and ambient (indirect) light components, was designed to provide 50 footcandles at the work surface while minimizing glare on computer screens. "The standard approach to lighting a space is to bathe the entire space with 50 footcandles from wall to wall," says Wiebe. "This can be overkill, as most egress areas do not require this level of illumination."

Based on the assumption that traditional troffer layouts overlight corridor and egress spaces, Ledalite recommends putting the fixtures over workstations, and allowing the indirect component to provide sufficient illumination for egress spaces and corridors. The result is a reduction in the number of required fixtures (up to 50 percent, according to the company), which can significantly reduce energy costs and overall life-cycle cost—an up to 70 to 80 percent reduction in lighting energy load.

Ergolight can be centrally controlled using software that also generates real-time energy reports for energy management purposes, and locally controlled at the occupant's PC for personal dimming control. Each fixture integrates a light sensor for daylight dimming and an occupancy sensor, which gradually dims before tuning off for unoccupied spaces.

Wiebe says Ergolight uses standard connectors and fits into standard T-bar ceiling grids for simple installation. The company designed software that employs easy-to-navigate icons and on-screen visual tools.

"Ergolight works well in both retrofit and new construction situations and with a client that is progressive in their thinking," says Wiebe. "It's still not a mainstream product, but it is definitely getting closer to that as time goes by." ■

*Craig DiLouie is principal of ZING Communications, a marketing communications and consulting firm specializing in the lighting and electrical industries. A former publisher of Architectural Lighting, he is the author of many books and articles on lighting and electrical engineering.*

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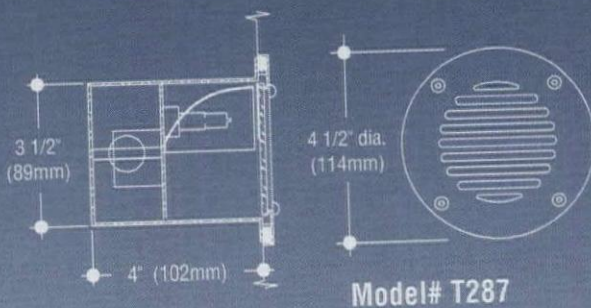
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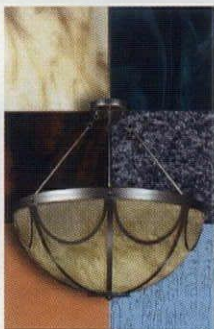
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Acriglas custom acrylic sheets for lighting in faux finishes are designed to emulate the colors and textures of natural stone, patterned and frosted glass, mother of pearl and metal. Easy to fabricate and thermoform, this material is also specially formulated to withstand exterior conditions, UV exposure and impact. **CIRCLE 133**

**Con.Daz**

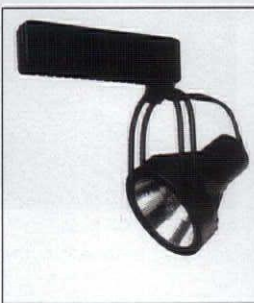
Pelican by Con.Daz is an innovative indirect outdoor lighting system that provides a soft and glare-free illumination. This series features a fully adjustable reflector for total lighting control. Available with a wide range of light sources and constructed of durable materials. For more information, contact us at 954-717-4155, or visit [www.condaz.com](http://www.condaz.com). **CIRCLE 138**

**Alanod**

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**Con-Tech Lighting**

The new mini AroTech CTL8235/TCLB: This cutting-edge track fixture features the best of lighting—energy efficient, small size, and powerful performance. The small size comes from the latest 20W or 39W electronic ballast from Aromat. The power comes from the new T4.5 ceramic metal halide lamp. All of this sitting only 1 7/8 inches off the track. Visit us at Lightfair Booth #1231. **CIRCLE 139**

**Architectural Area Lighting**

The new Providence from AAL offers legendary lighting performance in a traditional form. Optical systems include full-cutoff vertical and horizontal reflectors, as well as a cutoff, indirect version for even, glare-free illumination. Available up to 175W, the Providence can be ordered with T6 metal halide lamps, and electronic and pulse-start ballast options. Visit [www.aal.net/providence](http://www.aal.net/providence) for more information. **CIRCLE 161**

**Cooper Lighting**

ICON Architectural Area Luminaire by INVUE. Part of the new INVUE collection, ICON offers solutions for full cutoff compliance (Dark Sky Compliant), spill light control, and path-of-egress illumination, while merging the latest in high-efficiency lamp technologies. ICON's gentle curves and sleek profile are offered in two unique arm choices combined with structural element options, multiple housing sizes and lamp options, and precision-built segmented optical systems. Visit [www.invuelighting.com](http://www.invuelighting.com). **CIRCLE 140**

**Bartco Lighting**

The high-quality, small-profile MiT5 and MiT8 fixtures are available in several single- and double-lamp configurations, which allow them to be used in a variety of indirect, back-light, utility and creative display applications. Both the MiT5 and MiT8 series include an electronic ballast and are available with optional dimming and emergency battery backup ballasts. The patent number is: US 6,652,119 B1. **CIRCLE 135**

**Electrix**

Electrix manufactures a wide range of performance cove systems to efficiently drive illumination across walls and ceilings. Our AX series was designed around T5 fluorescent lamp technology with an asymmetric extruded aluminum reflector that adjusts 35 degrees. This series has a compact fixture design of 3 inches high by 5 inches wide. Electrix also offers a complete line of field-curveable linear and ramped cove lighting products for architectural applications. **CIRCLE 155**

**Boyd**

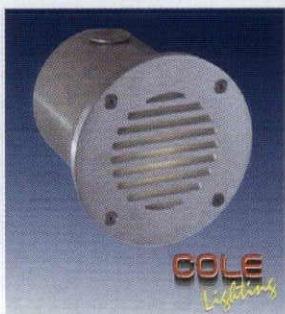
From its solid bronze frame to the fluid beauty of the slumped glass, Boyd's Palio wall sconce adds refined style to residential or commercial spaces. Ergonomically designed to minimize glare and maximize output, the Palio exceeds ADA restrictions. Height: 13 1/4 inches; width: 12 inches; projection: 3 7/8 inches; lamping: fluorescent (1-21W 2D lamp 120V/277V), incandescent (4-40W candelabra B-type); glass: satin white flash; finishes: polished brass, bronze, nickel, satin nickel. **CIRCLE 136**

**Engineered Lighting Products**

ELP expands its line of fiberglass reinforced gypsum castings fixtures. The Hole-In-the-Wall fixtures have a 4-inch-by-5 5/8-inch aperture and fit within a standard stud wall. Once installed, the fixture looks like a custom-formed drywall "light niche." There is no visible metal or trim in the normal viewing angle and a lens protects children from touching the lamp. The integral electrical components are accessible through the fixture opening. LED or low-wattage incandescent lamping is available. **CIRCLE 156**

**C.W. Cole**

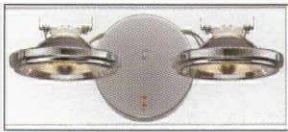
Cole Lighting introduces the T287 stainless-steel step light. The faceplate trim is machined from solid stainless steel, offering a horizontal light cut-off. This product complements Cole Lighting's 280 Series of low-voltage stainless-steel step lights for low-level walkway illumination. **CIRCLE 137**

**ERCO Lighting**

Parscan is ERCO's latest addition to its family of luminaires, perfect for any museum or gallery application. ERCO's Parscan offers a clean, contemporary design combined with highly technical heat-management properties, a patented single-screw locking mechanism for both tilt and rotation, and a fully internal accessory holder. Visit [www.erco.com](http://www.erco.com). **CIRCLE 157**

**Fabbian**

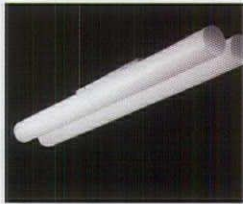
This wall and ceiling lamp has rotating beam light bulbs that revolve on a transparent polymethyl methacrylate plate. The plate rests on a LED-equipped, metallic-gray circular structure. For more information go to [www.fabbian.com](http://www.fabbian.com).



CIRCLE 158

**FAD Lighting**

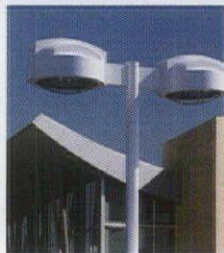
Fluorescent tubes tend to have a negative image, and are associated with boring office lighting; Delta Lights BE COOL shatters this stereotype. Two round tubes create the extravagant look of the BE COOL. These stylish fixtures provide maximum light and are available in various pendant- and surface-mounted versions as detailed in the new Delta Lighting Bible Five literature. CIRCLE 159

**Hadco**

Hadco's new slim design arm includes a 75W potted, electronic 12V transformer, retrofitting low-voltage accent fixtures in 120V applications. With an integral transformer, halogen lamps can be placed almost anywhere, with no voltage drop. The BT5016 (shown) is a 50W MR16 accent fixture, with a rotatable shroud and double. All material is die-cast, marine-grade aluminum with a thermoset powder-coat finish. CIRCLE 160

**Kim Lighting**

Kim Lighting's AC Series offers a progressive design for today's architecture, with performance and flexibility. The fixture is available in two sizes from 150W to 1000W, with vertical or horizontal lamps, flat or convex lenses, and square or asymmetric light distributions. Single or multiple fixture arrangements plus rotatable optics provide tremendous application flexibility. Visit [www.kimlighting.com](http://www.kimlighting.com) for more information. CIRCLE 246

**Leviton**

Leviton Lighting Control Division's new Dimensions D3200 Series offers a sophisticated multi-point dimming and scene control system that is easily accessible to residential and commercial users. With built-in advanced functionality, the D3200 reduces the number of components needed to achieve a scene control network while providing a simplified, cost-effective setup. The D3200 features on-screen wizards to guide users through programming and operation. For more information, call 800-323-8920, or visit [www.leviton.com](http://www.leviton.com). CIRCLE 247

**Leviton**

Leviton's T8 bi-pin fluorescent lampholder, designed expressly for T8 lamps, makes relamping easy with its front push-in wiring ports, snap-in or slide-on mounting options and four-position, positive-stop lamp-lock. Available in non-shunted and shunted (for fluorescent ballasts) versions, its streamlined, low-profile design fits 22- to 25-gauge panels. CIRCLE 248

**Lighting Controls Association**

[www.aboutlightingcontrols.org](http://www.aboutlightingcontrols.org)

The Lighting Controls Association's website provides lighting specifiers with education, products, technologies, applications and tools regarding the full range of advanced lighting control strategies, from dimming to automatic switching to integrated lighting system control. For more information, visit the website listed above.

**Lighting Services Inc**

Lighting Services Inc, the leading manufacturer of track, accent, display and fiber optic lighting systems, has introduced its new recessed track system. Designed as a one-piece track system, it provides value, saving the end user money on parts and labor, as well as on time. Available in both flanged and flangeless versions, LSI's recessed track flush mounts to a ceiling or wall to give an architecturally clean look. For further information, please contact: Lighting Services Inc at 800-999-9574, or visit [www.LightingServicesInc.com](http://www.LightingServicesInc.com). CIRCLE 001

**Lightolier**

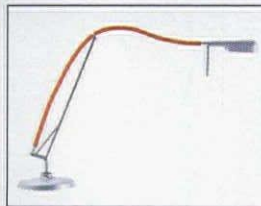
Soli ADA Series is light in equilibrium; a pure linear statement that accents interior elements through light and silhouette. Designed to evoke the illusion of floating, the optional diffuser is offered in etched glass or translucent white acrylic. The Soli series is available as a sconce, or in 2-, 3-, and 4-foot T5 scale. Options include dimming, emergency and DALI. CIRCLE 003

**Luraline**

Luraline presents the Securaline series of wall packs, flood lights and security lighting for architectural spaces. Applications include hospitality, retail, educational, multi-family housing, transportation, sports arenas, parks and recreational areas. The WPE euro-styled polycarbonate hooded wall pack shown here features a bronze die-cast back with clear prismatic polycarbonate diffuser and compact fluorescent lamping. For more information, please call 800-940-6588, or visit [www.luraline.com](http://www.luraline.com). CIRCLE 006

**Lutron**

Sivoia QED Roller 225 Lutron doubles the capacity of its Sivoia QED (Quiet Electronic Drive) window shading system with the new Sivoia QED Roller 225, offering smooth, precise, ultra-quiet control of large shades (up to 225 square feet), plus integration with other Lutron systems. CIRCLE 010

**Luxo**

Luxo proudly introduces Arketto, an innovative 40W halogen task light utilizing a multifunctional "swan-neck" arm upholstered in red, blue, black or gray fabric. Arketto offers maximum flexibility and infinite adjustment for height and reach. Available with edge clamp or base. For more information on Arketto or Luxo's other award-winning task lights or designer luminaires, please call 914-345-0067, or visit [www.luxous.com](http://www.luxous.com). CIRCLE 011

### Martin Architectural

The Cyclo Series is a range of programmable fluorescent color changers with RGB mixing and color correction control. Using standard T5 lamp components and DMX control, the Cyclo provides a simple dynamic lighting solution with white or color washlighting for stores, restaurants, wine bars, hotels, offices and other commercial applications. **CIRCLE 014**



### Semper Fi

Semper Fi Power Supply manufactures UL-listed indoor and outdoor remote transformers that ensure no noise, no maintenance and full light output. Indoor units can be recessed into an insulated wall with up to eight transformers in an enclosure. Outdoor transformers include above-grade stainless or direct burial. **CIRCLE 025**



### MechoShade

AAC SolarTrac™ System Automated shading has grown as a solution for those who wish to provide maximum performance for their building. A number of highly rated LEED projects utilize the AAC SolarTrac™ System, an automated energy-efficient sub-system that maximizes the sustainable benefits of MechoShades by automatically adjusting the position of shades in accordance with: solar year/day profile angles by zone; micro climactic conditions; solar gain (in BTUs/w/m); allowable solar penetration; ambient illumination; and other user-definable options. **CIRCLE 058**



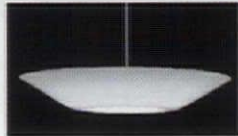
### Sentry Electric

Sentry Electric's SCT-Hartford luminaire is a unique blend of traditional and modern styling creating a luminaire that harmonizes with either classic or contemporary architecture. The SCT-Hartford was designed for illuminating the streets, plazas, walkways and public areas of a multi-use complex developed in the Hartford area adjacent to the Connecticut River. It features a glowing finial and an optional gold dome for added architectural distinction. Sentry Electric is one of the nation's leading makers of fine exterior luminaires, posts, bollards and accessories. **CIRCLE 028**



### Metalumen Manufacturing

Make a Statement Invisibly — the Ring. With its clean contemporary design and superior luminaire functionality, it is ideally suited for a multitude of interior applications—from office to boardroom and beyond. The luminaire provides light distribution and subtle distinctions between light and dark, and with its round shape, offers maximum flexibility to ceiling planning, eliminating the appearance of a suspended grid. For more information, visit [www.metalumen.com](http://www.metalumen.com). **CIRCLE 015**



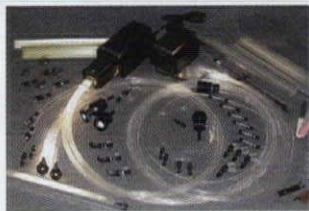
### Super Vision

Super Vision's LED bulb features three interchangeable covers in clear, dimple and frosted A-lamp. Great for marquees, decorative perimeter lighting and signs, the LED lamp has an Edison base and is available in white, blue, green, orange, red, yellow and amber and in either 120VAC or 220VAC. Website: [svision.com](http://svision.com). **CIRCLE 032**



### NoUVIR Research

NoUVIR's fiber optic Experimental Kit includes a high-power projector, a ready-to-use bundle of 32 fibers (6, 10 and 20 feet long), 30 luminaires (pinspots, spots, eyeballs and floods), and 5 tracks. Plan and clearly demonstrate any fiber optic lighting design with this specially priced X-Kit. Demonstrate expertise. Gain clients. Show the best. **CIRCLE 019**



### SYLVANIA

Get the feel of beautiful, natural light with new Daylight™ bulbs from SYLVANIA. Offering a unique patent-pending, sky-blue coating, these incandescent, halogen and compact fluorescent Daylight products will brighten department show rooms, window displays and retail merchandisers. For more information on this or any SYLVANIA product, please visit [www.sylvania.com](http://www.sylvania.com). **CIRCLE 033**



### Prisma

The Opta pendant series from Prisma provides style and individuality to an interior space. The unique Italian-styled faceted glass is available in five standard colors: transparent, frosted white, cobalt blue, yellow (amber), and metallic gray. Custom colors are available to match your architectural design needs. With a variety of lamp sources and three sizes, versatility and choice defines Opta by Prisma. **CIRCLE 021**



### SYLVANIA

The SYLVANIA T8 Supersave Xtreme System offers one of the lowest power T8 lamp and ballast system available, providing optimal starting conditions for the Octron Supersaver lamp to provide up to 50,000 switching cycles and extended lamp life for occupancy sensor and building control system applications. For more information on this or any SYLVANIA product, please visit [www.sylvania.com](http://www.sylvania.com). **CIRCLE 037**



### Se'lux

In conjunction with Sill Lighting from Berlin, well known in Europe for high-end floodlighting technology and design, Se'lux introduces the Sill Parabol O20, available in three sizes with up to 1000W output. Precision designed die-cast aluminum housing, flat clear tempered glass with the option for recessed glass for uplighting situations. Wide or narrow distribution, accessories include colored filters, diffusing and spreader lenses. **CIRCLE 023**



### THHC Lighting

THHC Lighting is the leading manufacturer of low-voltage and line-voltage low-pressure xenon lamps for a variety of general and specialty illumination applications. They include landscape, showcase, decorative and architectural designs. THHC Lighting offers the most complete line of xenon lamps in the industry, including: wedge-base, festoon, rigid loop, cartridge, G4 bi-pin, GY6.35 bi-pin, E11, E12 and BA15D lamps. For more information: [www.xelogen.com](http://www.xelogen.com) or 877-Xelogen. Visit us at Lightfair booth 1043. **CIRCLE 043**



**Traxon USA**

Traxon's Mood-Light—an LED line of programmable, architectural panels and decorative accent objects. The products are capable of producing millions of additive RGB colors with variable intensity. The Mood Light is ideal for commercial design applications in hospitality, entertainment, display and healthcare, as well as residential projects—wherever attractive, exciting or calming lighting is desired. For more information, contact Traxon USA at 212-736-2286, or visit our sites: [www.traxon-usa.com](http://www.traxon-usa.com) and [www.mood-light.com](http://www.mood-light.com). CIRCLE 048

**The Watt Stopper**

TS-400 Digital Time Switch, featuring easy-to-use push-button programming, automatically turns lights off after a preset time-out period. Available in line- and low-voltage models, the switches offer an adjustable time-out from five minutes to 12 hours, terminal style wiring and universal voltage. An LCD indicates time remaining and an optional flash or beep alert warns occupants of impending shut-off. CIRCLE 052

**W.A.C. Lighting**

Integrating function with style, the new Norfolk Series features a family of architecturally styled decorative fixtures designed to light modern commercial interiors. Pendants are available in two styles with diameters from 14" to 48" equipped with either incandescent or compact fluorescent lamps. Matching sconces, ceiling mounts and close-to-ceiling are part of the family, which is available with glass or acrylic diffusers and polished brass or brushed nickel metalwork. Typical applications include retail, hospitality, healthcare, facilities, and churches. Call 800-526-2588, or visit [www.waclighting.com](http://www.waclighting.com) CIRCLE 051



**CORRECTION:** A "Top 20 Manufacturer" focus on Leviton OEM in the 2004 Lighting Source Directory (November/December 2003), page 32, misstated the name of the quality processes implemented at Leviton as "six Stigma." Aiming for perfection, Leviton is committed to "Six Sigma" quality improvement, a process that leads to major and measurable quality enhancements in all phases of manufacturing. The goal of Six Sigma is to achieve a performance standard of 99.997 percent, which is defined as 3.4 defects per 1 million opportunities.

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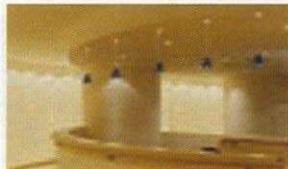
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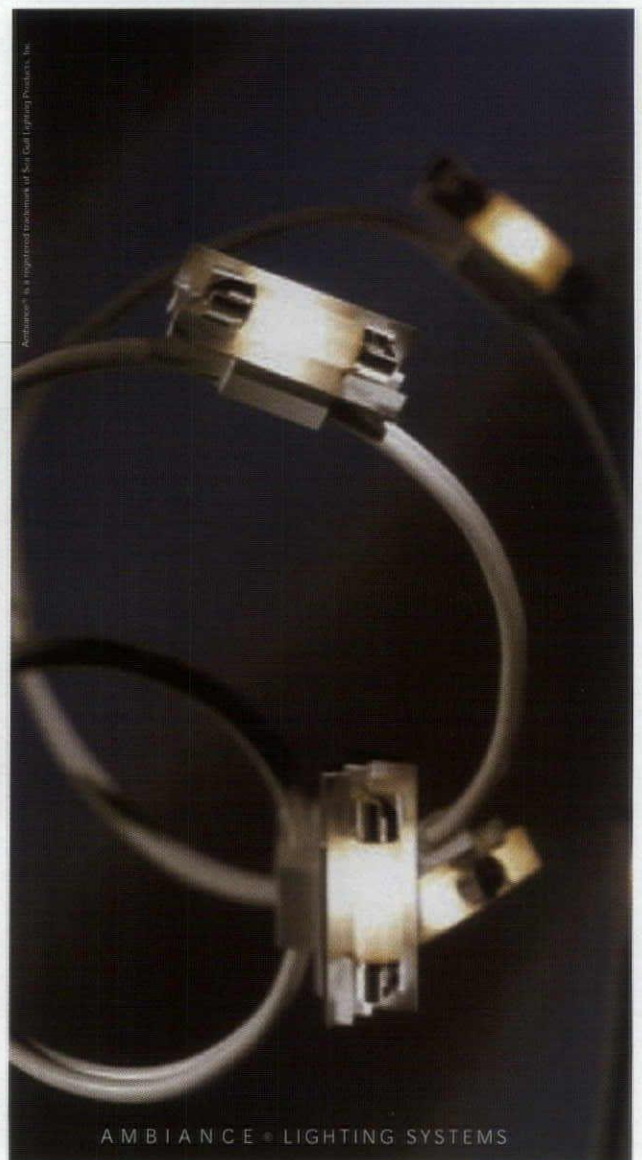


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# What is the future of LEDs?

LEDs remain a hot technology, yet widespread application in more everyday situations (such as homes and offices) has not happened; A|L's question is, will it ever? Do you think the market will overcome the premium price point and technological limitations of LEDs, eventually enabling them to become as common a light source as the incandescent bulb? Or is the industry putting too many of its eggs in the wrong basket?

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

## ANDREW POWELL, SENIOR DESIGNER | LIGHTING DESIGN ALLIANCE

I was lucky enough recently to be invited to be a judge for the 2004 Lightfair New Product Showcase, and I can tell you that LEDs remain the "hot technology," if the number of new LEDs and LED luminaires submitted is any indication.

From what I saw, the output and color characteristics of the LED source continue to improve rather dramatically, and I would anticipate this trend to continue. This should open it up to ever more applications. Fixture manufacturers are just starting to tap into its potential. Will they become as commonplace as the incandescent light bulb? This is still unknown. It wasn't that long ago we were all wondering if fiber optics was the wave of the future. While that technology still holds promise, it didn't take off as some had predicted. The cost of energy and other economic factors will also weigh in greatly to answer this question.

Lastly, as to price point, I am optimistic on that issue as well. When a product truly becomes mainstream, prices fall dramatically. Look at wireless phones, computers, DVD players, etc. We are beginning to see this trend now with HDTVs. I can't wait to see where this little light source takes us.

## KEN DOUGLAS, LIGHTING DESIGNER | ILLUMINATION ARTS

While LEDs, particular color-changing LED products, are hot today—in some cases to the detriment of the projects they are used on—I do believe that they have the potential to become a major force in our industry. In just the last several years, we have seen this technology go from a curiosity to a standard tool in every lighting designer's toolbox. As the technology develops over the next several years, I anticipate that creative minds will find more and more uses for them.

We must keep in mind that LEDs are a highbred of a lighting product and a silicon chip. This combination of worlds brings the mindset and product expectations of the tech sector to a lighting product. It does not seem unreasonable to expect that LEDs will follow their own version of Moore's Law, increasing in brightness and whiteness at a rapid pace.

It is the challenge of a white LED, combined with price, that is keeping them out of general-purpose applications. Once an acceptable white LED is achieved, one of the major barriers holding back LEDs will fall. We have already seen LEDs displacing other light sources in the automotive industry, as well as some niche light sources in the architectural market. This trend will only accelerate once a reliable, stable and consistent white LED is manufactured. As for price, that is an issue that we have already seen begin to resolve itself over the last several years, as the price of some color-changing products has come down by 50 percent over their initial cost. This process should only accelerate as the products improve and demand increases.

Lastly, LEDs have energy efficiency working in their favor. As the cost of producing and delivering energy continues to rise, the push for more energy-efficient technologies will accelerate. With their long life (although not as long as originally advertised) and minimal energy consumption, LEDs have the potential to be integral to a designer's energy-efficient design responsibilities.

It is only a matter of time before LEDs displace more traditional, less energy-efficient and more maintenance-intensive sources.

## MITCHELL B. KOHN, LIGHTING DESIGNER | MITCHELL B. KOHN LIGHTING DESIGN

In an industry that seems none too quick to embrace new technology, every now and then something comes along to perk our fancy. The problem is often technologies are borrowed from other industries, but require refinement and application knowledge to become practical in today's lighting world. As long as the appreciation of lighting remains low on the public agenda, innovation will only stem from the opportunity for lower-cost hardware.

LEDs have been around a long time, yet, so far, the applications are somewhat limited to a costly, rather than a practical, way of introducing artificial light into the built environment.

Will this technology improve? Absolutely! Will it become a practical and affordable common light source? Cost, more than application will drive the answer to that question, and the energy spin may be the determining factor. I have recently seen new products that are actually white, and have controlled optics that have specific application advantages, but at a cost that will limit their use to situations where alternate solutions are not feasible as a result of other constraints. Commonplace and widespread in homes and offices? First we will have to see cost/benefit relationships that are more appealing than those thus far presented, or maybe even dreamed of. Then we have to see significant technology advances. I hope I live long enough, and this isn't just another media fad in an industry that usually has little innovation to get excited about.

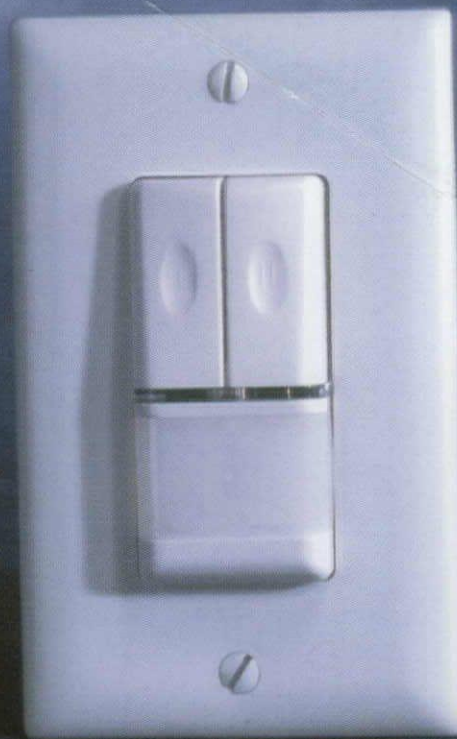
## MARK J. CLEAVER, PRESIDENT | ILIGHT TECHNOLOGIES

LED lighting technology is beginning to break into a whole new realm. If the current trend line continues, the next five to ten years will see a dramatic improvement in brightness and cost reduction. The key to success is going to be when light output intensity is sufficient enough to rival existing common light sources. This will be achieved through a combination of LEDs within application systems that maximize optical output.

A current approach, RGB, will be too expensive and troublesome. Using just white LEDs to replace bulbs will continue to have issues with lifetime, heat and color temperature. The laws of physics dictate white LEDs will have a difficult time overcoming these issues in their current form. Different, unique approaches are needed. iLight Technologies is introducing the next step in the LED lighting evolution—a process that achieves various white color temperatures. Yet the product will have the longer life and lower heat output associated with high-intensity blue LEDs. As these types of newer technologies are adopted by commercial and higher-end clients, they will eventually filter down to everyday home use as the cost drops. It's a typical Moore's law play on cost and performance. The cost of LEDs will decrease and brightness increase as LED die manufacturers continue to aggressively attack quality and cost. The clock is ticking. It's just a matter of time.

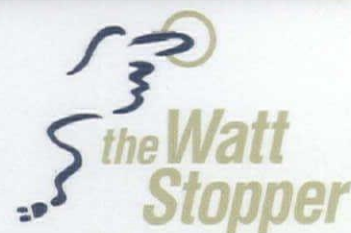
# *Your lights just got smarter . . .*

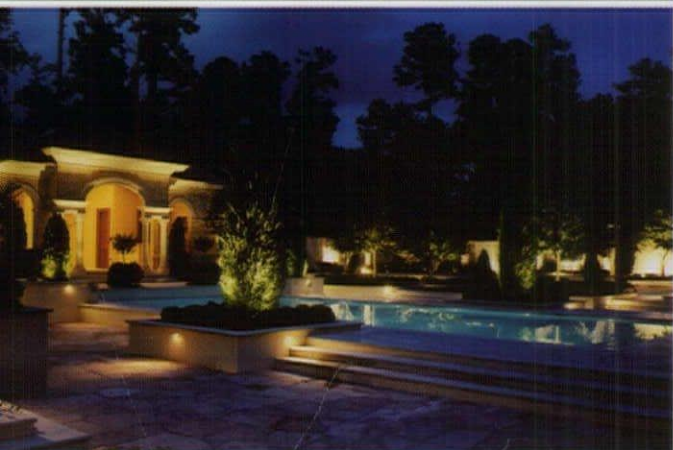
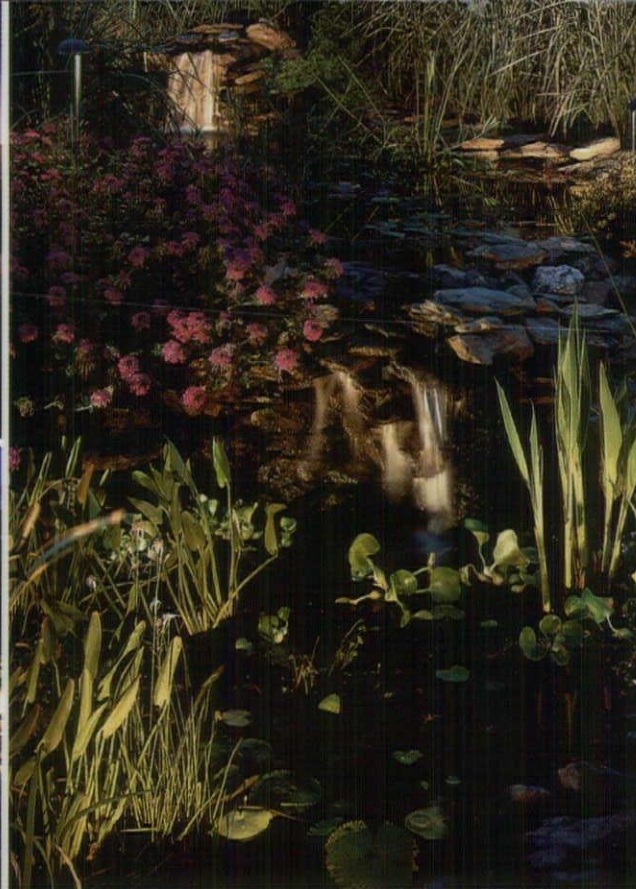
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