

2018 PROGRESS REPORT

The Progress Committee's mission is to keep in touch with developments in the art and science of lighting throughout the world and prepare a yearly report of achievements for the Society. Acceptance is based on an impartial judging process used by the committee to evaluate each submission on its uniqueness, innovation and significance to the lighting industry. There were 195 submittals in 2018; 105 were accepted into the report.

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LED REPLACEMENT LAMPS



From **ETC**, ArcLamp is a family of retrofit LED lamps specifically designed for auditoriums, theaters, ballrooms and other applications using fade-to-warm dimming. These low-voltage lamps are installed in existing candelabra and medium-base sockets, connected to remote power supplies and controlled by DMX protocol for reliable dimming down to 0.1%.



Green Creative's 19.5-W PAR30 lamps are a triple threat, featuring the industry's highest efficacy at 92 lumens per watt, highest output at 1,900 lumens and a CRI of 90. In addition to these primary attributes, the lamps can operate from 120 through 277 volts, and are suitable for enclosed fixtures, making them a retrofit option for ceramic metal halide lamps.



Also from **Green Creative** are 30-W PAR38 lamps with equally impressive performance specifications of 92 lumens per watt, 2,800 lumens, universal voltage and life rating of 50,000 hours. These lamps, and the previously noted PAR30 lamps, are available in 3000K and 4000K with 25-deg narrow flood and 40-deg flood beam angles.



LEDVANCE's LEDlescent ballast-free LED T8 lamps are the industry's first UL Type B, ballast bypass, TLEDs to use a patented built-in automatic safety circuit that prevents current from flowing through the lamp when only one end is engaged in the socket. This feature eliminates the potential shock hazard that may result from electrical arcing between the lamp pins and the lamp holders. The double-ended lamp design is wired end-to-end, preventing non-passive failure of a fluorescent lamp should it be inadvertently installed in the fixture.



Current, powered by GE introduces the LumenChoice Type C LED tube and driver system. The system incorporates dip switches on the driver that facilitate selectable wattage and light output. The drivers can be toggled to either 9, 12 or 16 watts, allowing for lumen adjustments at the point of installation. They are available in 2-, 3- and 4-ft lengths, with plastic or glass tubes, and a variety of CCTs.

LED CHIPS AND MODULES



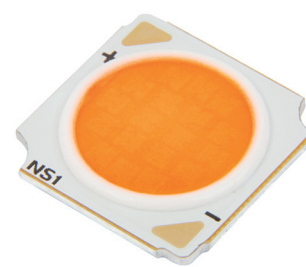
The LaserLight MicroSpot from **SLD Laser** claims to be the world's first spot light module, coupling the LaserLight SMD from the 2017 Progress Report with a compact 35-millimeter diameter collimating optic that delivers 1 million candela at less than a 2-deg beam angle, opening up new possibilities for search and rescue, security and portable lighting applications.



Optosolis mid-power LEDs from **Nichia** are the first to deliver the closest spectral match to standard illuminants, including sunlight, without damaging ultraviolet radiation. They use a blue chip that enhances the light emission of the phosphor while resulting in an R_a and R_g of 99 and an R_t of 96, per TM-30 specifications.

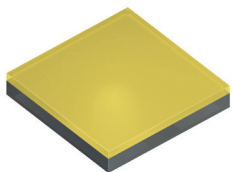


Also new, from **Nichia**, are the industry's first discrete color chip scale packages. Available in 1 watt, red, green, royal blue and amber, the E17A phosphor-converted LEDs have the same forward voltage and height, therefore simplifying electrical and optical design, and the red is less susceptible to thermal droop.

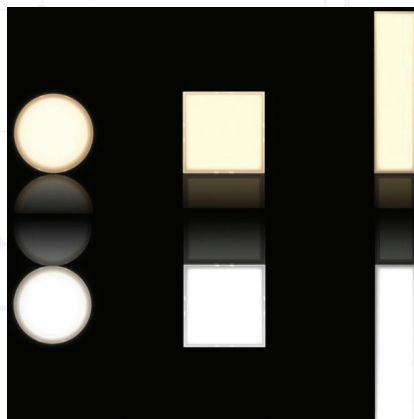


Seoul Semiconductor's SunLike LEDs are the first to achieve a broad visible light spectrum by employing a purple LED pump and using red, green and blue phosphors, resulting in a light source that closely matches the illumination effects of the sun. With a reduced blue peak at 455 nanometers and supplemental light at 480 nanometers, the manufacturer claims reduced eye damage and improved circadian stimulation, respectively. Additional benefits include high CRI, R_t and R_g .

The OSOLON Pure 1010, from **OSRAM Opto Semiconductors**, is the industry's smallest chip scale package



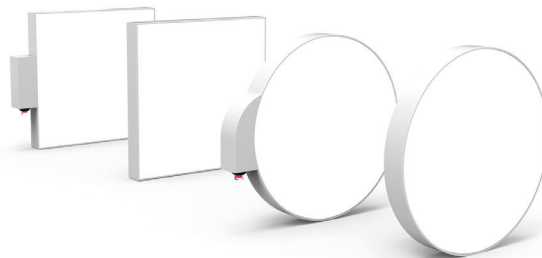
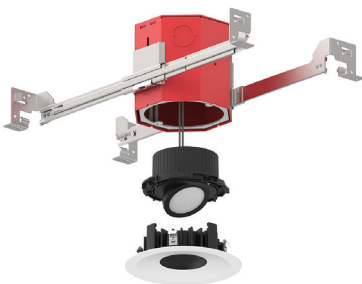
LED on the market today at 1 sq millimeter. Achieving 100 lumens per sq millimeter, the high luminance reduces optical complexity on narrow beams, enables tight clustering of the LEDs in an array and lends to smaller luminaire designs with tight beam angles not previously possible.



At up to 85 lumens per watt, **OLEDWorks** 3rd generation brite panels are among the industry's highest efficacy OLED panels that also feature an impressive 100,000-hour L70 life rating. They are available in round, square and rectangular form factors with lumen output ranging from 200 to 300 lumens.

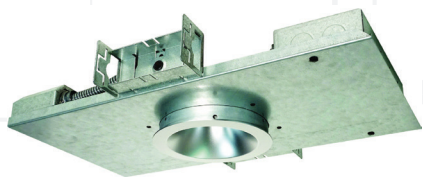
LUMINAIRES - DOWNLIGHTS

DMF Lighting continues to expand their fire-rated line of recessed downlights with the DRD4M, which is the first fire-rated adjustable accent luminaire. The luminaire has a 4-in. diameter LED module that fits into a fire and sound rated box. Available in 650 and 800 lumens with spot, narrow and flood optics, it features 360-deg rotation and a 45-deg tilt.

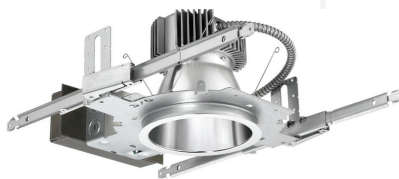


Also new from **DMF Lighting** this year, the DRD5S is a 4-in. diameter LED surface mount downlight with fire rated junction box, and a 1,000 lumen output, outperforming similar products on the market.

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Acuity Brands, Indy Lighting introduces the Low Profile Hyperbolic Downlight. This 4-in. aperture fixed downlight provides a quiet ceiling aesthetic with a hyperbolic reflector in depths as low as 2 and 3 in. depending on lumen package. The downlight also features an efficacy of up to 123 lumens per watt.

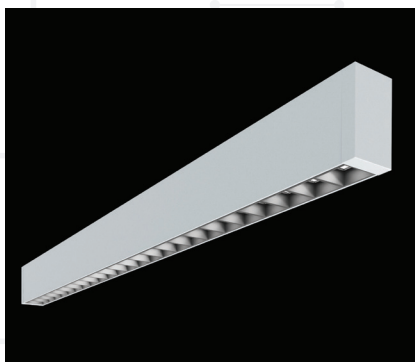


Gotham Lighting from **Acuity Brands** introduces the EVO Tunable White Downlight. This LED downlight has the highest output of a 6-in. aperture fixture. It has a range of 2700K to 6500K, and is available in 10 different outputs from 750 to 5,000 lumens.

The Atria 10 from **Meteor Lighting** was accepted as the most powerful 10-in. diameter cylinder downlight on the market. The luminaire is available in four lumen packages ranging from just over 10,000 lumens up to 25,000 lumens. The Atria 10 is intended to replace 400 to 500-W metal halide luminaires and comes with standard beam angles of 30, 45 and 50 deg.

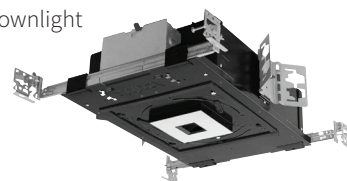


The REV 8 Prime, also from **Meteor Lighting**, was accepted as the highest lumen output 8-in. diameter aperture fixed downlight. It is available in two lumen packages from 21,000 to 25,000 lumens with four different beam angles.



New from **Axis Lighting** is the Sculpt linear downlight luminaire available in recessed, surface or pendant versions. This micro-cell luminaire features static white as well as tunable white color temperatures from 2700K to 6500K utilizing a cluster of four LEDs, two on each diagonal, for pure color mixing and no color over angle effects in the space. The luminaire employs DMX drivers for color tuning applications.

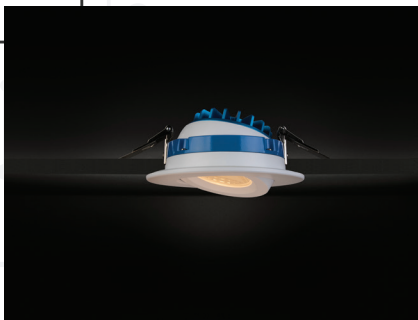
Acuity Brands, Aculux 3-in. aperture recessed adjustable downlight was accepted into the Report as the smallest housing and aperture featuring the highest lumen output on the market. The luminaire is available in up to 3,000 lumens with a maximum center beam candlepower of 31,000.



The Museum series recessed lighting from **ModuleX** lighting features a combination of unique and tiered reflector contours that results in a 30-deg cutoff and extremely uniform distribution. They are available in downlight, adjustable accent and wall-wash configurations.



Green Creative has also introduced a surface mounted LED downlight called the ThinFit EXT 277V. It is the first universal voltage surface mount downlight accepted into the Report. The 6-in. diameter luminaire features best in class output up to 1,800 lumens, and the driver box is sized per NEC to allow daisy-chain installations.



Liteline's Luna downlight was accepted into the Report as the first 3-in. adjustable gimbal downlight with a wet location listing in a shallow housing. Featuring warm-dimming, it provides a 360-deg rotation and up to a 30-deg tilt.



The 4-in. surface mounted downlight, Click, by **Green Creative** is the first in its class to offer an integrated PIR sensor. The luminaire features a 30 second time-out and meets code requirements for closet lighting.

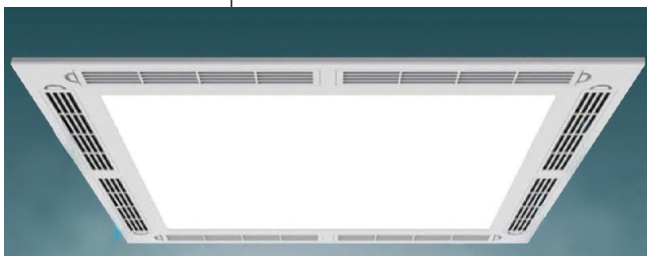


The UltraLED RT5/6 from Sylvania / **LEDVANCE** has introduced the first recessed downlight to offer field selectable CCT and lumen output. With an output range of 700, 900, or 1,500 lumens and color temperature of 3000K, 3500K and 4000K, this LED downlight offers increased flexibility in the field through the use of toggle switches on the back of the product.



The final luminaire in the downlight category is the Gravity 2-in. downlight from **Intense Lighting**. The product is claimed to have the highest maximum candela in a 2-in. aperture. It's available with a 7-deg TIR optic and can produce up to 29,000 center beam candlepower.

TROFFERS



Aleddra LED Lighting has submitted the industry's first Anti-Viral LED Panel Light to incorporate airflow. It features air circulation with the antiviral coating on the surface of the panel lens, and offers replaceable air filters. It can effectively remove airborne viruses, bacteria, fungus and volatile organic compounds by using a regular LED light source.



Stencil Surface Luminaire by **Axis Lighting** is the first surface mount line voltage linear system that follows and hides the grid in any pattern and any length with no visible hardware and no visible power feed, thereby changing the grid from a utilitarian structure to an expansive architectural design opportunity.

LINEAR LUMINAIRES



From **Lumenwerx** comes the Inwalo high efficiency linear in-wall luminaire. It features the highest efficacy of any asymmetric mud-in fixture of its type at 131 lumens per watt. The housing requires just 5/8-in. of mounting depth, the thickness of common drywall, so it mounts on top of the wall studs.

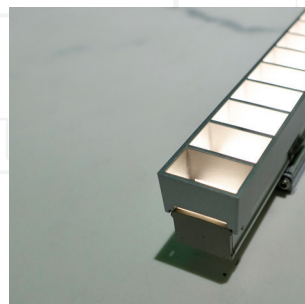
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From **Finelite, Inc.**, the HO4 open aperture LED linear luminaire family delivers the highest efficacy at 135 lumens per watt, with an industry leading asymmetric efficacy of 123 lumens per watt. The HO4 is the first and only open aperture luminaire that is tailorable in fixture section lengths from 2 ft to 12 ft in 1-ft increments, is available in three distributions with optional top glow, and has an integral driver design and polymer reflector ideal for continuous long runs that minimize installation labor time.



Selux introduces high efficacy, compact, linear LED luminaires. At 105 lumens per watt, Piix MRC is among the industry's highest efficacy, micro louvered fixtures also featuring direct, indirect light distributions, several beam spreads, lens accessories and 90 CRI.



The KendoM series from **Luminii** is the industry's lowest profile LED linear system. Featuring a height of ½ in., the system is capable of delivering over 400 lumens per ft, is available in several CCTs with 90-plus CRI and can be combined with options such as graze optics, louvers, glare shields and adjustable mounting brackets.

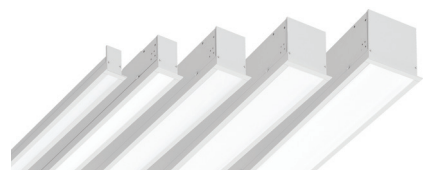
And for exterior applications that demand the same low profile requirements, **Luminii** also introduces the



KendoM Wet linear LED system, which is UL wet listed. Fixtures can be made to order in lengths up to 116 in. and linked up to 35 ft.



Latitude linear luminaires from **Visa Lighting** are the first of this form factor to combine violet pump LEDs with phosphors for white light that's safe for people and effective for continuous bacterial disinfection. These are the most compact direct/indirect surface-mounted luminaires to include surface or grid mounting configurations and to incorporate unique edges that create concave planes providing batwing light distribution.



The Neo-Ray Define Gen 2 series of slot fixtures by **Eaton** claim the highest efficacy of comparable slot products in the market, available in nominal widths including from 1-in. to 4-in. with lumens per watt ranging from 114 to 140, respectively. These luminaires also incorporate an under lens diffuser that eliminates light leaks traditionally seen at the ends of slot luminaires.

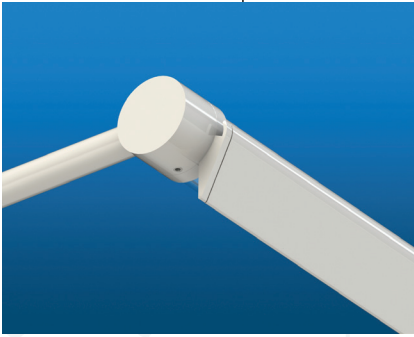
Zenlite tile from **PreciseLED, Incorporated** is the first LED lighting fixture to employ resin that results in an IP68 rated line of light intended for installation into the thickness of floor tile. Available in CCTs ranging from 2700K through 6500K, the product can be combined with other Zenlite products to achieve a seamless line of light across the floor, wall and ceiling.



The Hero Recessed linear luminaire by **Glint Photonics** is claimed to be the first small scale adjustable micro-cell luminaire with motor controlled tilt and pan controls via a joystick. The luminaire has a 40-deg tilt and unlimited pan. It is available in three beam spreads and two different lumen outputs.



WALL-WASH LUMINAIRES



At 110 lumens per watt the Xtra Small Linear LED luminaire by **The Lighting Quotient** is the highest efficacy true asymmetric wall wash in its class. The luminaire profile is 1.5 in. in diameter by 1.81 in. tall but it delivers an impressive 3,184 lumens, or 796 lumens per ft, and is claimed to be the smallest scale batwing pendant available.



Insight Lighting has produced an ultra-compact LED linear wall-wash luminaire named C5X. This 130 lumens per watt small-scale asymmetric wall wash features precision glare control in an architectural housing of only 1.125 by 2.14 in.



The **Axis Lighting** Graze Perfekt is a high performance silicone TIR optic wall graze luminaire. At up to 120 lumens per watt, it offers the highest efficacy of this fixture type. The beam is 10 deg across and 100 deg along for uniformity on 10-ft centers. It is field cuttable and moves in 6-in. increments.

TRACK

The Artima 5 track-head from **Edison Price Lighting** provides a 5-deg very narrow spot beam in a 5-in. diameter track head, with lumen outputs ranging from 1,200 to 2,700 lumens. This is the first high output very narrow spot track head accepted into the Report, and it also features Bluetooth-enabled controls.



The Museum series track light fixtures from **ModuleX** incorporate the same, advanced reflectors as their recessed light fixtures and can be configured with various length hoods to further reduce glare. A truly modular design, all ModuleX museum fixtures come in standardized diameters and have the ability to accept up to three beam shaping lenses or filters uniquely featuring a 30-deg cutoff with tiered reflectors.

SUSPENDED LUMINAIRES

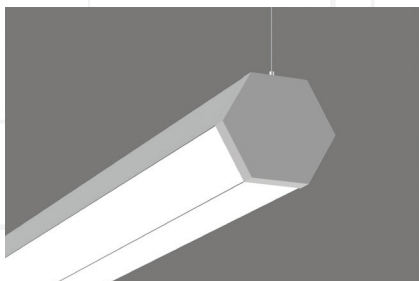


A pendant version of **Vode Lighting's** 2017 Progress product has been released in the Zip Three | Ceiling Cable | 707 luminaire. This direct/indirect luminaire has independent channel control with an efficacy of 130 lumens per watt and an output of 3,154 lumens per ft.

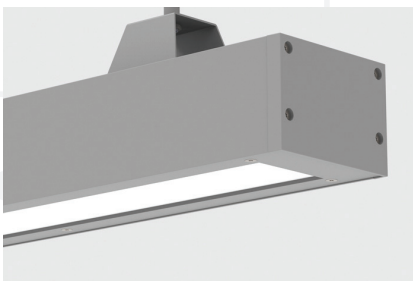


The Ory from **LumenWerx** lays claim to having the best performing widespread indirect optic for a fixture of its size with a wider beam spread than competitors. It is recognized in the Report as being the smallest scale batwing pendant luminaire.

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Hex is a six-sided luminaire from **Lumenwerx**. It is claimed to be the first versatile pendant having eleven lighting distributions. Each cell is illuminated by its own LED array with consistent light output and brightness across all cells.

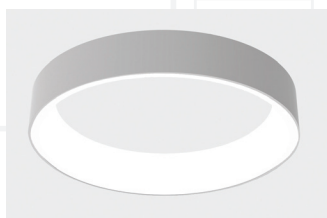


The Via Splash Pendant direct-indirect from **Lumenwerx** is the first bidirectional wet location linear luminaire with an IP66 rating. The 3-½ by 5-in. aluminum housing is available in lengths up to 12 ft for mounting in ceiling, wall or pendant applications.



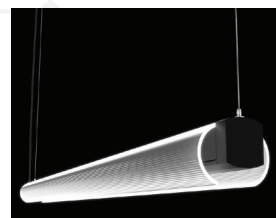
MagneConnect, from **Electrix LLC**, is an integral driver magnetic slot lighting system. It is the first magnetic system with an accessible integral driver with two circuits for either zone control or an emergency circuit.

Togo from **Lumenwerx** is a high efficacy direct/indirect ring pendant. While offering multiple dimming protocols, this inner lit circular luminaire achieves 122 lumens per watt efficacy. The galvanized conductive aircraft cable has a dielectric polymer coating that eliminates bulky power conductors.



A high performance light engine and 3-D light guide called Aerial has been developed by **a-light Architectural Lighting**. It was accepted as the

highest power light guide to integrate a central structure that acts as a system rail while offering enough space to house drivers, EM battery packs, sensors and other electronics.



The Aramis AR170 LED pendant from **Luminis** delivers a unique 18,000 lumens. This is the highest output in a DMX protocol controlled 6-in. cylinder allowing for a seamless dim to dark. Efficacy is up to 121 lumens per watt.



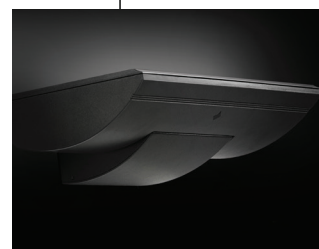
The **LF Illumination** GlowSTX linear and accent luminaire system is the smallest suspended system of its type. It is comprised of configurable linear elements, connectors and accents. Hidden integral multi-circuit switches allow for separated control zones.



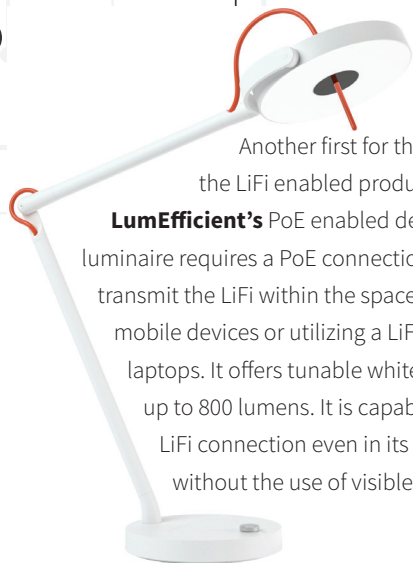
The Peerless Venue from **Acuity Brands** is a large format luminaire for open ceiling applications. It offers the highest output in a suspended luminaire at up to 45,000 lumens with an efficacy of over 100 lumens per watt.

SCONCES

Kim Lighting by **Hubbell** has introduced the Wall Director 2.0 architectural wall sconce luminaire. The 136 lumen-per-watt efficacy is the highest for an asymmetric wallpack. It is also the only product in its class that offers a minus 5 to plus 10 deg lockable tilt.



PORTABLE LUMINAIRES



Another first for the Committee is the LiFi enabled product with **LumEfficient's** PoE enabled desk lamp. The luminaire requires a PoE connection and can transmit the LiFi within the space for use with mobile devices or utilizing a LiFi dongle for laptops. It offers tunable white illumination up to 800 lumens. It is capable of providing LiFi connection even in its OFF state without the use of visible light.



The Sol by **GE Lighting** is the industry's first LED table lamp with built-in Alexa voice service. The table lamp is a stand-alone unit with no additional Amazon Echo units required, but provides all the same functions within the base of the lamp. The LED source offers up to 350 lumens and is color tunable.

HIGH-BAY LUMINAIRES

OTHER INDOOR



Meteor Lighting's Tetriss + RGB is a high-bay modular fixture combining white and RGB LEDs. It is the highest output RGBW luminaire delivering 50,985 lumens. Beam options range from 15 to 60 deg, utilizing an aiming system that allows each of the three modules to rotate 60 deg and tilt 180 deg for easy and precise aiming.



Hubbell submitted the Remedi Bed Light, which is the first bed light to meet the 5 to 1 max to min uniformity guideline for examination lighting. Remedi is an optical performance leader for illumination and uniformity with the combination of ambient, reading and exam functions.



LED Barrel Standoff Signs from **Louvers International** are the first edgelit barrel standoffs for signage and are the first to be approved for UL48. The LEDs are hidden inside the barrel standoffs, which gives the sign a clean, border-free look.



Acuity has introduced its FlexConnect with MicroOptix as the first IP67 flexible tape system with integrated micro-optics that are capable of producing controlled symmetric and asymmetric distributions. The product is field cuttable and can be reconnected in the field while retaining its IP67 wet location rating.

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OUTDOOR - AREA LUMINAIRES



From **Hubbell**, the Ouro area light offers the highest output at 37,000 lumens and the highest efficacy in its class, coming in at 137 lumens per watt. It has an EPA of 0.5. With the high lumens and lumens per watt, clients are able to specify fewer luminaires and poles.



PureForm area luminaires from **Signify** offer the highest efficacy at 157 lumens per watt with performance-driven precision optics, and 97 lumens per watt with glare-reducing comfort optics. Comfort optics are ideal for pedestrian applications, while performance optics provide maximum spacing, uniformity and shielding.



Also from **Signify**, the PureForm is the first post-top with an integral emergency battery option. PureForm's comfort optics feature edge-lit technology ideal for pedestrian applications, establishing a great balance between low glare and performance.



From **Eaton**, the Celesteon LED high mast is the industry's most efficient high mast with 167 lumens per watt. Eaton claims that Celesteon is the first high mast to reach over 100,000 lumens with a single luminaire and offers an EPA rating of 1.13.

BOLLARDS



From **Heper USA LLC** comes the Drago bollard which, at 6 to 1, is the highest spacing in the industry for a full cutoff bollard. It can be spaced up to 30 ft apart, with two optical options, including forward or side throw. The manufacturer claims there is no glare or eye contact with the light source.



The Pavilion bollard from Kim Lighting, a division of **Hubbell Lighting**, delivers an industry-leading 107 lumens per watt and is the first capable of producing all IES distribution types with zero up-light. The Pavilion features 168 different standard configurations and is the industry's first bollard to offer an RGBW luminous element controlled via a Bluetooth mobile app or DMX.



The PORTAL illuminating column from **Hess America** is the first outdoor-rated illuminating column with a unique optical system that combines the principles of edge lighting, refraction, and reflection to produce general illumination on both the path and the landscape.

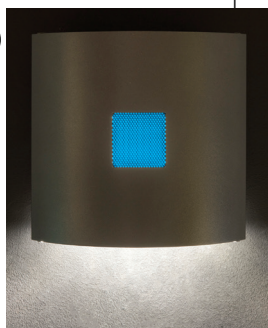


At up to 109 lumens per watt the ELO 6-in. bollard family from the **Selux Corporation** is claimed to be the highest efficacy 6-in. architectural bollard. The manufacturer claims the onboard Tritec LED refractor system is the first scalable refractor system family for in-line bollards and columns with the possibility of combinations from one to four stacks and delivering from 2,600 to 10,000 lumens for the column models.

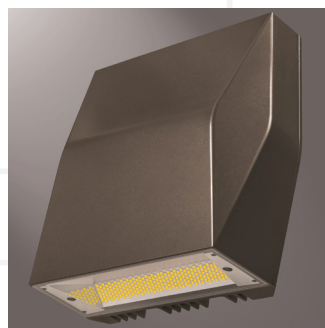
The **Signify** Gardco PureForm LED Bollard delivers the highest lumen output in the market at 4,200 lumens. The PureForm is offered in three heights, features a high performance optical system that results in an efficacy of up to 100 lumens per watt, and is available with multiple control options.



OUTDOOR - WALL LUMINAIRES



Cypher offered by Architectural Area Lighting, a division of **Hubbell Lighting**, is the only indoor and outdoor wall sconce that is capable of delivering all true IES distributions in all four directions. It is the first sconce to feature an optional RGBW luminous front controlled via Bluetooth or DMX.



From **Eaton**, the Axcnt Large LED wall mount wall pack luminaire has been optimized to deliver an industry-leading efficacy of 135 lumens per watt. This medium profile outdoor wall pack delivers 9,696 lumens.

OUTDOOR ACCENT LUMINAIRES

The Lumiere Lantera Outdoor rated LED accents and cylinder family from AURORA, a division of **Eaton**, delivers an industry leading 97 CRI and is compatible with TRIAC leading edge dimming, ELV trailing edge dimming, and 0-10-V dimming from 100 to 1%. The Latera 4-in. cylinder has an industry-high 127 lumens per watt, whereas the 2 ½-in. model delivers an industry-best 101.5 lumens per watt.



ROADWAY LUMINAIRES

Introduced by **Acuity Brands / Holophane**, the Tunnel-Pass LED Medium offers the highest efficacy tunnel light at 142 lumens per watt, with 20KV, 10KA surge protection. The luminaire is designed to minimize installation and maintenance costs while meeting IES RP22 criteria.



FLOODLIGHTS



New from **Ecosense Lighting** is the Rise floodlight. The floodlight can be specified in two different sizes, each available in three different lumen outputs ranging from 300 up to 2,800 lumens. An extensive offering of optics includes 11 different beam angles per head. The individual heads are then configurable into single spotlight units or clusters of varying output and sizes.



The Lycksele outdoor assembly from **Ligman Lighting** is the first complete pole assembly that offers multiple LED adjustable heads with the option for varied outputs, with optics in both static white and RGBW. The adjustable heads can accept lens and shielding accessories, and the pole can also accommodate speakers and cameras.



RAB Lighting introduced an exterior floodlight this year, the FXLED 500. This was accepted into the Report as the highest output LED floodlight. This ultra-high output flood is available with five different NEMA distributions, three color temperatures and, at 500 watts, can produce up to 53,000 lumens.

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SPORTS LUMAIRES

Eaton's Ephesus Lighting Lumadapt

8 brings smart features to sports lighting. It is the first to offer real time fixture health and status through a user interface, and to provide the ability to use near field communication for programming via a smart app that can set CCT, beam angles, color tuning and dimming level.



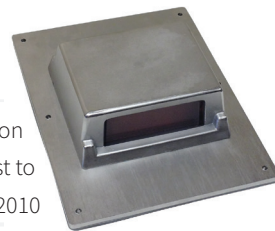
OTHER OUTDOOR



The C4X Exterior Architectural Linear Luminaire from **Tempo** offers high performance in a low profile, wet location, low voltage linear fixture. It is IP67 rated, and produces over 100 lumens per watt with rigid, serpentine and 100-deg rotation mounting options.

Sentry

Electric has submitted the SEVL evacuation light as the first to meet CIE 192:2010 for emergency lighting in road tunnels. It is also the lowest profile luminaire of its kind that is specifically designed for way-finding and evacuation of pedestrians in tunnel roads, extending only 2 in. above the mounted surface.



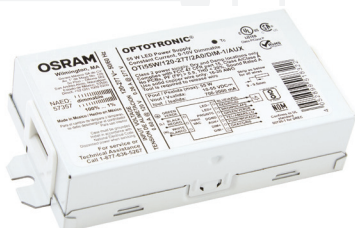
POWER SUPPLIES AND DRIVERS



Inventronics has introduced the EFD-1K2SxxxDT/DV series driver, which is the industry's first 1,200-W standalone low-voltage driver with constant power at a wide level of current ranges. It has an input voltage range of 180-528 volts AC.



Bosch Building Grid Technology has submitted the first high output DC LED driver that works directly from a solar panel DC bus up to 600 volts DC. It includes advanced controls with the integration of a power line communication module in the driver that sends data over the power wires, and offers 96% efficiency.



OSRAM's new Compact Programmable Driver offers the highest voltage output with a range of 10 to 55 volts. Additional features include dim to off and the capability of dimming down to 1.5 milliamps. The CPD drivers are also the first to be compliant to UL STD 60730-1.



Current, powered by GE introduced the UltraMax Connected LED driver as the only driver that is Visible Light Communication ready, with GPS positioning and deep dimming to 1%. Additional features include digital bus communication and auxiliary power for sensors.

Also from **Current, powered by GE**, is the UltraMax Programmable Outdoor Dimming LED driver. It is the industry's first outdoor driver to operate with DALI and 0-10 volt, and with integral 10,000-V, 5,000-amp surge protection, which eliminates the need for an external surge protection device. It is available in 100 and 150-W models.



CONTROLS - SENSORS



Wireless sensor advancements this year include the **Wattstopper Legrand** FDP-300 series of low-voltage DALI outdoor photo/PIR motion sensors. This is the first indoor and outdoor low voltage bidirectional IP65-rated vacancy sensor to employ DALI 2.0, which allows the sensor to be compatible with intelligent drivers or 0-10-V dim-to-off drivers. The manufacturer claims this enables the host fixture to participate in future advancements in the internet of things, and that connecting to an intelligent driver means the FDP sensor does not need a power supply.

CONTROLLERS



In the category of network controllers, the **Wattstopper Legrand** Wireless Digital Lighting Management platform or DLM is the first wireless lighting management system that includes secure commission technology using AES128 symmetric key encryption. All DLM components including wireless sensors, wireless network bridges, and wireless IPV6 mesh border routers must be authenticated via a trusted hardware chip key before joining the network. The cryptographic microchip is factory activated with digital certificates and installed in each wireless DLM device.

The PacWave Smart Sensor control platform by **McWong International, Inc.** encompasses

a complete range of sensors, wall switches, dimming power packs, fixture controllers, and mobile device applications for both Android and iOS to remotely configure and control sensor and dimming settings. This flexible platform design allows the integration of Bluetooth and Beacons wireless protocols into a comprehensive range of form factors, voltages, and detection technologies that the manufacturer claims enables the cost effective and flexible implementation of smart wireless room level lighting controls.



WIRELESS CONTROLS



Continuing with advancements in wireless control technology, the Atrius ready luminaire wireless communication module from **eldoLED**, an Acuity Brands company, enables the first Bluetooth low energy LEDcode BLE radio antenna communication with luminaires. It unlocks location-based IoT applications such as indoor positioning, wayfinding, geo-spatial analytics, and point to point communication for wireless dimming. Through the driver connection, the module supports over-the-air updates while eliminating the need for auxiliary power to run the module.



Fulham has introduced the first Bluetooth mesh 0-10-V controller with power metering and color tuning capabilities. This Bluetooth control device can be used for loads up to 600 watts for either new or existing 0-10-V luminaires that need to be controlled by a mesh network, and the device carries an IP66 rating.

2018 PROGRESS REPORT

CONTROLS - OTHER

The Smart City Sensor Enabled Outdoor Lighting Controller Platform from **LED Roadway Lighting** is the first outdoor wireless controller which is mechanically and electrically provisioned to accept sensors after installation. It includes a main controller housing that twist-locks into a 7-pin receptacle, and is outfitted with a secondary receptacle on the top-side of the module to provide adaptability for future sensor technology. It can also accept their directional microwave sensor for vehicle and pedestrian detection.



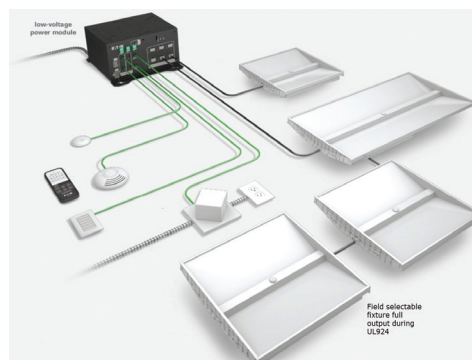
The Unison Foundry Power Series from **ETC** is the smallest distributed power control bridge that can take DMX input. The series includes options for a mini control panel, as well as junction-box mounting options for DMX controlled 0-10-V dimming, a 20 amp relay, and DMX-controlled forward or reverse phase-controlled dimming of up to 600 watts.

From **Signify** comes the EasySense SNH200 Hi-Bay wireless lighting controller with integrated sensor. It is an industry-first IP65 rated high-bay fixture-based network lighting control that doesn't require a central gateway. The device uses a Zigbee mesh wireless protocol and can be provisioned wirelessly with either IR or NFC via field apps using compatible Android smartphones. Lumen output, hold or fade time, vacancy, or daylight controls can be modified during initial or post installation.



LIFE SAFETY

In the life safety category, but moving outdoors, is the **Hess America** Portal EXIT which is the first outdoor UL 924 rated LED exit bollard. Functional illumination is provided by concealed LED light engines projecting through a clear acrylic ringed lens. The 8- or 10-ft columns feature optional marker lights at the base to provide pathway illumination, and come standard with stainless steel hardware.



Back indoors, the Distributed Low Voltage Power Control Centralized Emergency Power System by **Eaton** is the first plug-and-play system that allows the installer to meet the UL924 life safety path of egress requirements with simple switches as opposed to hard wired emergency circuits to each lighting fixture. The manufacturer claims an average 20% reduction in total installed cost using a combination of low voltage power modules, low voltage plug-and-play lighting cables, and compatible lighting fixtures with integrated sensor.

The **IOTA** PoE-CP12 emergency driver is the first emergency LED driver for use in PoE or smart lighting fixtures. It charges and maintains the emergency battery supply from a low voltage Ethernet switch supply to provide emergency lighting per the Life Safety Code without interfering with the transmission of data between the luminaire and system.



The **Signify** ELI-S-10 Emergency Lighting Inverter which, at 1.16 by 2.25 by 15.34 in., is the smallest profile line voltage emergency lighting AC output dimming inverter. This 10-W power inverter features a unique dimming control output of 0 to 10 volts that automatically regulates lighting loads of up to 100 watts down to 10 watts of emergency output power.



ACCESSORIES

United Power Research Technology

has introduced its MK350S Premium Handheld Spectrometer. It has increased its dynamic range from 100,000 to 150,000 lux. Auto dark calibration is embedded to reduce the noise interference from each temperature and lighting environment change.



New from Green Creative,

the SPECFIT retrofit downlight is a family of field-selectable lumen outputs and swappable optics. The SPECFIT also offers specification grade features including 97 CRI, interchangeable lenses and multiple trim finishes.



LIGHTING SYSTEMS



From **Eaton**, the Halo Home is the first Bluetooth enabled full-portfolio home system. The Bluetooth low energy mesh claims excellent response time and solves latency issues common with other wireless networks. Local Bluetooth control provides a secure connected lighting system with quick setup and no need for internet-based control.



SMARTTrack system by **LEDRA Brands** is the first 48-V track system capable of supporting intelligent trackheads. It features Bluetooth control for color tuning, warm dim, SUNlike, iBeacon, scene setting, grouping and dynamic beam shaping.

PUBLICATIONS



This year, the **IES** has published four new Recommended Practices and one Technical Memorandum. RP-2-17 is the *Recommended Practice for Retail Lighting*. It provides an in-depth discussion of the lighting system and the criteria essential to lighting merchandise displays in a variety of retail applications.



RP-7-17 is the *Recommended Practice for Lighting Industrial Facilities*. This ANSI standard has a scope including warehouse and storage areas, outdoor industrial areas, and the performance of industrial tasks with an emphasis on safety.



The Recommended Practice for Lighting for Interior and Exterior Residential Environments is RP-11-17. This ANSI standard is jointly developed by the **American Lighting Association** and the **IES**. It covers residential living spaces and others intended to impart a residential atmosphere and offers for the first-time information on making equipment and solutions more resilient.



RP-38-17 is the *Recommended Practice for Lighting Performance for Small to Medium Sized Videoconferencing Rooms*. It is an ANSI Standard that provides minimum lighting performance requirements for optimum participant viewing.

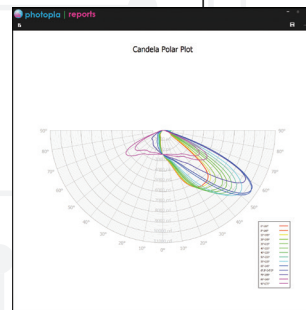


The IES has produced an introduction to *Solid State Lighting Sources and Systems*. TM-16-17 provides a high-level overview of the history and technology of LED sources and systems.



The Advanced Energy Design Guide for K-12 School Buildings Achieving Zero Energy has been published as the first in a new series of guides. This provides design teams with a methodology for achieving aggressive energy savings goals. It is available as a free download or in printed book form, and is a joint effort by the **IES**, **ASHRAE**, **AIA**, **USGBC** and the **DOE**.

DESIGN TOOLS



In the category of design tools, this year the Committee accepted a software program called Photopia Reports from **LTI Optics**. This program allows the user to import IES or LDT files and then directly export them into scalable vector graphics, which allow for direct display on the web or into marketing literature, saving manufacturers and marketing staff time on content creation.