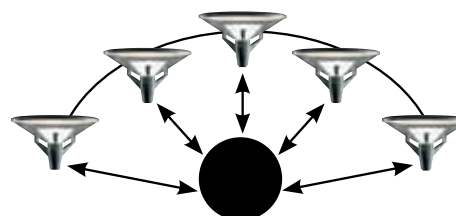


LEVELS OF LIGHTING CONTROLS

- THERE ARE THREE LEVELS OF CONTROLS



1. Luminaire control. Locally sets the right amount of light at the right place at the right time. Also called stand-alone controls, they are integrated into each luminaire. Presently, there are several on the market, including: photocells, dimming ballast/drivers, motion sensors, timers and programmed dimming control (Dynadimmer™).

2. Group control. A cabinet-based control system. This classification provides monitoring and control of groups of luminaires. This setup provides more accurate control over the entire system while connecting all users of building electricity.

3. Network control. The most advanced system. Wireless connectivity provides luminaire-level control using a mesh of networks, enabling unlimited remote programming and monitoring. It is the system that fully controls the amount of light at the right place at the right time and provides monitoring of individual luminaires. The system communicates from pole to pole and can communicate with multiple poles. A typical system includes: photo controls and dimming ballasts, gateway, network operating center and a customer portal. This system boasts many advantages and strengths; the only weak parameter being the basic investment. However, this system allows control over the smallest details while providing feedback from the system. In the long run, network control reduces maintenance downtime and its related costs.

LIGHT SOURCES - THE KEY TO ATMOSPHERE

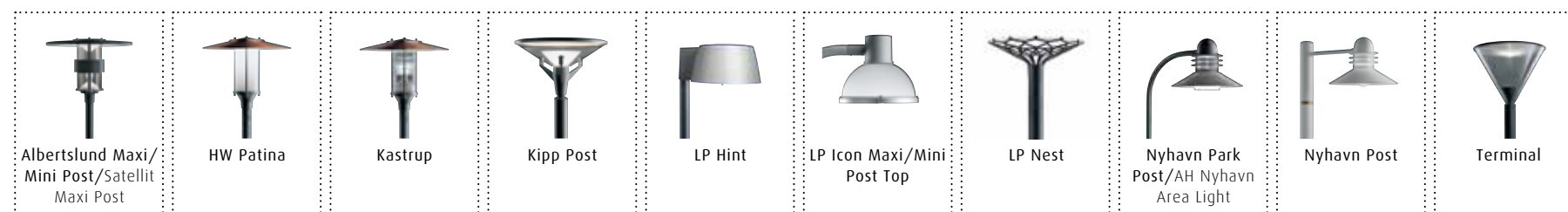
LIGHT SOURCE	FLUORESCENT	HID	SMART HID	LED
STRENGTH	<ul style="list-style-type: none"> • LOW ENERGY CONSUMPTION • LOW INITIAL COST • INSTANT ON, DIMMABLE • IDEAL FOR EXTERIOR EMERGENCY CODE • CAN BE BATTERY OPERATED 	<ul style="list-style-type: none"> • HIGHEST EFFICACY COMPARED WITH INITIAL COST • BI-LEVEL SYSTEM MAY BE DRIVEN AT 100% OR 60% OUTPUT (WITH THE USE OF A RELAY) 	<ul style="list-style-type: none"> • HIGH EFFICACY (110-140 LUMEN PER WATT) • ENERGY SAVINGS OF UP TO 75% BY REPLACING OTHER LAMP SOURCES • HIGH QUALITY WARM WHITE (2800K>80CRI) • DIMMABLE (60% ENERGY CONSUMPTION) 	<ul style="list-style-type: none"> • LONG OPERATING LIFE • INSTANT-ON FUNCTION • DIMMABLE (10% ENERGY CONSUMPTION)
WEAKNESSES	<ul style="list-style-type: none"> • REPEATED ON/OFF ACTION REDUCES LIFE AND OUTPUT • LINEAR SOURCES CAN BE HARD TO USE DIRECTIONALLY • AMBIENT TEMPERATURE LIMITATIONS 	<ul style="list-style-type: none"> • NO INSTANT-ON FUNCTION • POWER CANNOT BE REDUCED BELOW 60% 	<ul style="list-style-type: none"> • NO INSTANT-ON FUNCTION 	<ul style="list-style-type: none"> • HIGHER DESIGN CHALLENGES DUE TO THERMAL MANAGEMENT CONTROL • AMBIENT TEMPERATURE LIMITATIONS

THE LIGHTING CONTROL OFFERED BY LOUIS POULSEN

Louis Poulsen focuses on the following lighting controls:

1. Dimming HID. HID lamps create challenges for dimming, new ballasts reduce the lumen output without the accompanying flickering or deterioration of the lamp.
2. Dimming LED. LED sources are dimmable up to 10%, using various methods, without flickering. Louis Poulsen has chosen a 0-10V interface as standard method.
3. Photo Control. Photocell available for both HID and LED. Turns the fixture on/off when it reaches minimum foot-candle levels on the ground.
4. Surge protector: Device designed to protect electrical components from voltage spikes.
5. Dynadimmer™. Stand-alone dimming control produces different light levels without the need of additional switch connections.

PRODUCTS READY FOR CONTROLS



C ontrols

Dear Reader,

Over the past ten years, Control has been an important consideration when designing interior lighting. The proper lighting controls can create a particular ambience and reduce energy consumption. These two benefits combine to produce a more comfortable atmosphere, resulting in increased employee efficiency.

Numerous industry surveys have proven that light has a direct and profound influence on both the health and the feel-good factor of its subjects. Louis Poulsen has consistently recommended using dimming features for interior lighting. Dimming controls allow for improved levels of energy consumption and is compatible with our philosophy of "constantly striving to create the best interior surroundings and working conditions for human beings".

Outdoors, we often measure lighting's effect by how comfortable it makes us feel or by the safety it provides. During discussions regarding the Dark Sky concept, Louis Poulsen raised the banner that the distribution of soft light and the soft area between luminaires should provide humans a zone of safety. The famous architect, Le Corbusier, divided a house into two distinct lighting zones, the outside - or outer space lighting, and the indoors - inner space lighting. He proposed that we respect the idea of "good" lighting for both indoor and outdoor applications. And, this very idea was Poul Henningsen's aim for his designs.

Everybody talks about saving energy. And since such a focus has been placed on this subject, the amount of energy that we consume with lighting has been brought to the forefront. Cities are responsible for 75% of total global energy consumption. Even though street lighting accounts for "only" 15% of lighting electricity consumption, it is still an area where we can realize significant savings. Instead of reducing energy consumption by turning off street lighting, employing energy-saving controls will continue to offer comfort and safety to those who depend on it as well as reduce the crime levels by continuously and economically illuminating our pathways and thoroughfares.



Yours truly,

Kent Stilling Pedersen
President

**louis
poulsen**

www.louis Poulsen.com

Santa Monica Beach Promenade,
Santa Monica, CA.
Architect: Wallace, Roberts & Todd, Inc.
Lighting Designer: Horton Lees Brogden, Inc.
Photo: Henry Cabal Photography

A CASE STORY

CRAFTON HILLS COMMUNITY COLLEGE

Crafton Hills Community College, Yucaipa, CA. Architect: Steinberg Architects. Lighting Designer: Lighting Design Alliance. Engineer: P2S Engineering. Photo: Tim Griffith



ABOUT CRAFTON

Serenely nestled in the mountains above Yucaipa, California, Crafton Hills Community College provides a rural setting which contrasts sharply to the metropolis of Los Angeles located just 80 miles west of the campus. For over 40 years, this progressive institution has pro-

vided its 5,000 students with a variety of educational programs focused on liberal arts, the sciences and performing arts. In addition, Crafton offers a state-of-the-art Respiratory Care program and is also the site of the California State Fire Training Academy.

DESIGN CHALLENGES FOR CAMPUS-WIDE RELIGHTING

The campus recently implemented a construction program aimed at updating its facilities. While developing the campus-wide facilities upgrade plan, Crafton's administrators saw the need for a **modern lighting system** which would provide several needed benefits including: **enhanced illumination** and safety for its many evening students and faculty members, a complement to the updated campus appearance, and **the use of modern lighting fixtures and lamp sources to reduce energy consumption** and therefore minimize the campus' carbon footprint.

Campus administrators asked Steinberg Architects to suggest a system which would satisfy these requirements. He reached out to Andy Powell of Lighting Design Alliance and Prabu Shankar of P2S Engineering. They were asked to analyze the campus' needs and **recommend an integrated lighting system** which would provide the necessary solution. Such a system would require the thoughtfully designed combination of **sophisticated optical design, aesthetic appearance and innovative light source technology**. In addition, they would need to develop a control system

that would integrate the lighting system and place its control firmly in the hands of the campus' facilities management.

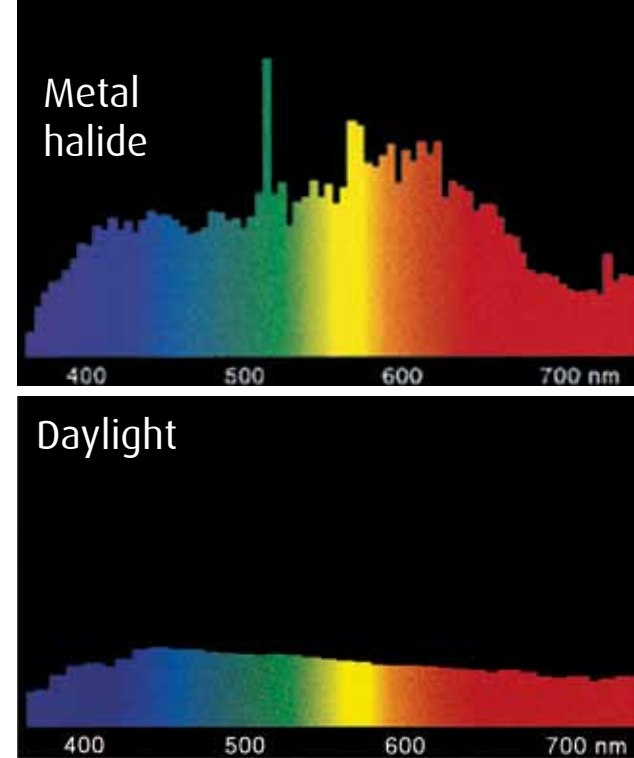
In conclusion an exterior lighting control system from Exergy Controls, LLC was specified. The project has been a great collaboration between Louis Poulsen, Exergy and Philips, orchestrated by the design team.

LAMPS

Andy Powell commented, "Lamp selection was one decision that required a considerable amount of review. As the major project goals were **safety** and **energy reduction**, lamp selection played a substantial role in project success."

He evaluated the highly efficient Philips Cosmo and Elite family of metal halide light sources and found that their matched lamp and ballast system provides

standard features which include **long lamp life**, **consistent lamp color**, and an unexpected added benefit – **50% lamp dimming**. As an added feature, these small lamp sources minimize the visibility of the illumination source, allowing manufacturers to design smaller and more efficient lighting fixtures that clearly illuminate a **wider footprint** with warm, comfortable lighting.



LIGHTING INSTRUMENT

Creating a safe and inviting exterior environment was the primary goal of the campus lighting redesign project. The design team set out to develop an **integrated lighting system** that would provide a **comfortable, glare-free environment** for both pedestrians and motorists. Bright and uniformly lit roadways were needed to provide clear visibility for cars in transit; the same level of illumination was needed for navigating the campus parking lots. **Pedestrian environments** were to be **made more inviting** by employing soft and gentle illumination of pathways and surrounding landscape, thereby **encouraging students to remain on campus into the evening hours**.

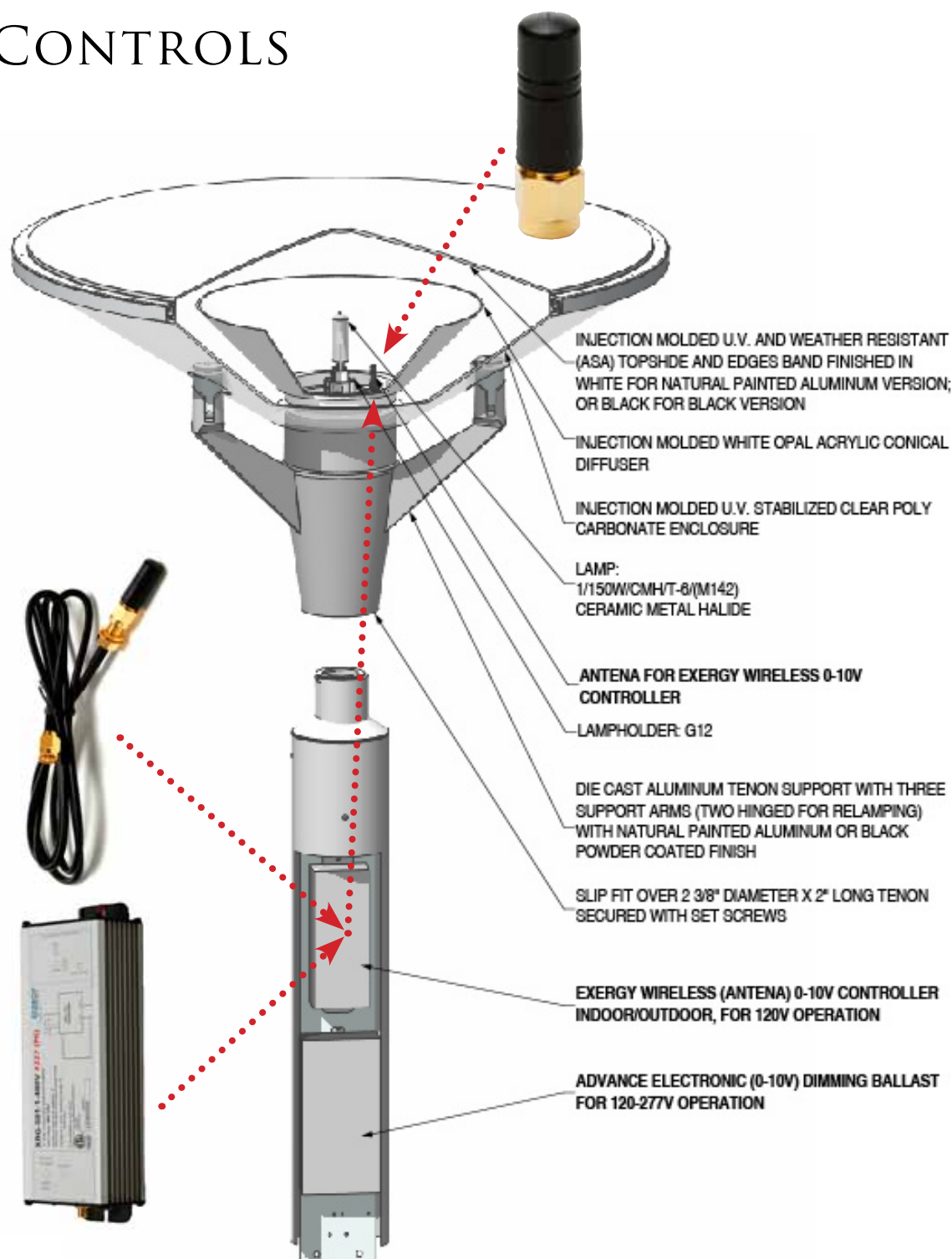
The choice of the proper lighting instruments was critical. Each fixture should be an **aesthetically pleasing luminaire** designed for a **high-efficiency lamp** that **distributes the light evenly with-**

out unwanted glare. The campus and its design team selected Louis Poulsen's **KIPP**, designed by Alfred Homann, for the walkways and Kim's VL series luminaires for the roadways and parking lots. Additionally, the circular design of both fixtures complemented the exterior space which is **gently nestled into** the nearby undulating hillside.

Visibility was significantly improved due to the small-sized lamps and the increased efficiency of the optical control integrated into the lighting fixtures. Louis Poulsen's KIPP fixture consistently provides excellent visibility for all surrounding elements without the glare typically exhibited by similar fixtures. The **KIPP** offers **clear visibility of the surrounding buildings** during the evening hours while providing perfect illumination for pedestrians. Individuals **feel a greater sense of safety and less stress in the improved evening environment**.



CONTROLS



The design team successfully wed **sophisticated lighting instruments** with state-of-the-art lighting sources, accomplishing the main campus goal - to design a lighting system that provides **superior illumination with substantial energy reduction**. The final question was now how to integrate these sophisticated elements into one system that would allow the campus' facilities department to take full advantage of its capabilities.

"The digital wireless control system was one of the great project surprises. It allowed us to orchestrate the lighting system in ways never available to us before," said Andy Powell. Prabu Shankar of P2S Engineering noted that traditional exterior lighting control systems are handcuffed by existing circuitry. "This system allowed for **switching and dimming control** down to an individual fixture, allowing the campus' facilities department to create groups and zones, 26 in all, that transcended standard circuiting control (via relays or breakers)." The result was **additional energy reductions of up to 40%**.

**louis
poulsen**