

Solar LED Lighting Solutions



Carmanah

SABIK
SHOWS THE WAY



RIGEL™ Solar Powered Bollards

Carmanah EverGEN™ Solar LED Lighting Solutions

Runway, taxiway, windsock and obstruction lighting

ORION SOLAR Pty Ltd

RUUD
LIGHTING

The Best Lights Under the Sun

Company Overview

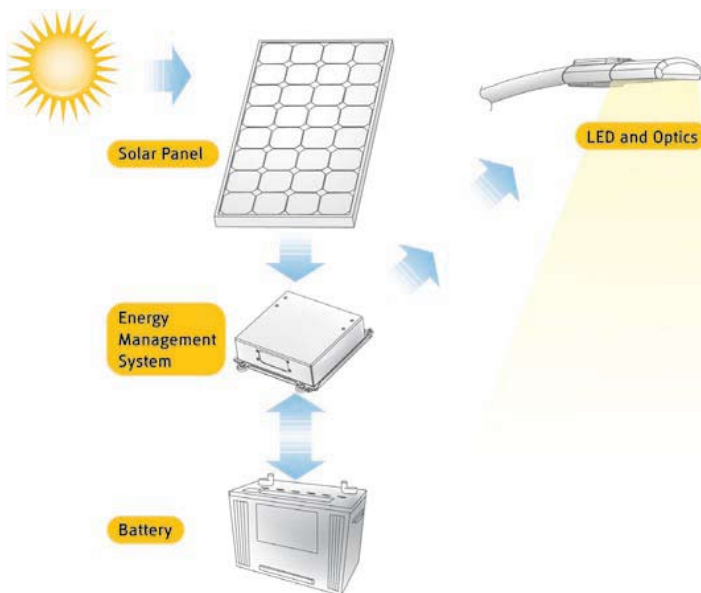
Orion Solar has been supplying and supporting solar powered lighting solutions throughout Australia for more than 6 years. We source the best available solar power technology, along with the best in LED luminaires to provide Australia's most advanced solution in solar powered area lighting. In addition to having some of the best suppliers in the world we have developed some enhancements of our own to offer solar powered public area lighting solutions for every need.

In 2004 Orion became the Australian distributor for Carmanah Technologies Inc of Canada, the market leaders in the manufacture of solar powered LED lighting for the marine and aviation industries. We more recently took on the regional distributorship for Sabik marine navigation lights. Our solar powered obstruction and hazard warning lights have also been widely accepted by mining companies in many remote parts of Australia and our solar powered

area lighting is a major enhancement to many aspects of mine safety.

Carmanah and Orion have responded to an increased demand for solar powered public area lighting with illumination levels that will meet Australian standards. With the addition of LED luminaires from Ruud Lighting in the USA, the combination is now ideal for pathways, parking lots and residential streets. Many Councils are now turning to Orion to meet public area lighting needs where grid connection is expensive or difficult to provide. The result is an easier installation, a lower cost to implement, lower energy and maintenance costs and a recognition that the Council is doing the right thing to help the environment.

Orion has developed our own RIGEL™ solar light controller for custom LED applications.



How Solar Works

All solar LED lighting systems move energy through a series of conversion steps that turn it from sunshine into LED illumination. Each step of the process counts. At Carmanah, we don't just integrate components, we engineer the movement of energy through the system to ensure our solutions offer superior performance.

We also incorporate intelligent energy management technology that enables us to produce light output levels equivalent to AC powered lighting while remaining completely off the grid. Our energy management technology also allows for intelligent operating profiles, motion sensing capabilities that produce adaptable, reliable lighting solutions that operate all year round in all conditions.



LED Obstruction lights

SELF CONTAINED SOLAR POWERED LED LIGHTS FROM CARMANAH.

Carmanah's solar LED beacons are widely used in aviation, marine, mining and railway applications. Easy to install, low maintenance and with no running costs, Carmanah's lights are the best choice for rapid deployment, temporary and permanent obstruction lighting.



LOW AND MEDIUM INTENSITY LED OBSTRUCTION LIGHTS FOR EASY RETROFIT TO EXISTING FIXTURES.

Also available in a low voltage version for use with our solar engine.



RIGEL™ - ORION'S OWN RANGE OF SOLAR POWERED LED LIGHTING.

Our attractive solar powered LED bollards are ideal as wayfaring markers for unlit pathways.

With the AUTEV LED luminaire we can custom design LED lighting solutions to meet almost any requirement.



Lighting up the Mining Industry

Solar LED lighting has numerous applications in the mining industry. "We started operations seven years ago by supplying other mission-critical industries like marine and aviation for navigation and landing aids. Just as in mining, those industries use our lights in situations where safety is foremost," said Orion's General Manager, Richard Holliday. "Our first success in mining resulted from the supply of safety warning lights to show the edges of a road or an open cut mine and we have gone on to supply such lights to the operations of Origin Energy, BHP Billiton, Rio Tinto and Intercoil."

A recent installation of Orion's area lighting illuminates a water truck filling station at Ashton Coal in the Hunter Valley. See below. In the mining industry, where hard wired power is not always available, areas can now be lit which previously were left in the dark. Parking lot area lights can be equipped with motion sensors to automatically switch the brightness of the light when a person or vehicle arrives.



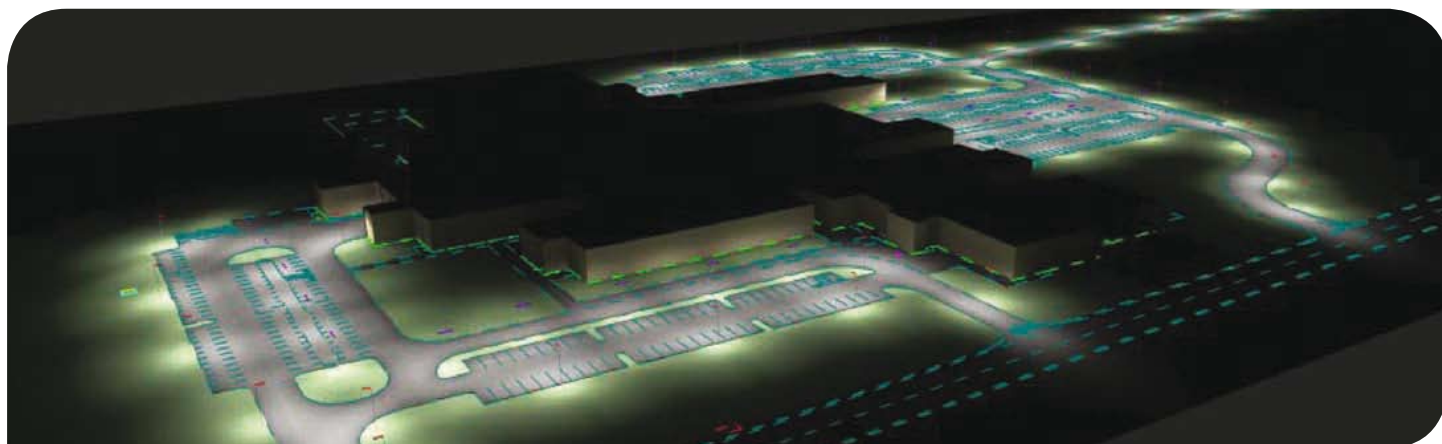
Ramp Safety at Cairns Airport

In order to improve safety on the airside service roads, Cairns International Airport turned to Orion Solar Pty Ltd to provide hazard warning lights which are used when passengers are present. The airline attendant escorting the passengers from the terminal operates the hazard flashers via a switch mounted on each pole, which warns oncoming traffic to give way to pedestrians. Once the passengers have safely crossed the road, the hazard lights are turned off. According to Wayne Nash, Electrical Services Supervisor at Cairns, "The lights have been a complete success and we have



Solar hazard warning light at Cairns

had nothing but positive feedback from airline staff. The only maintenance has been to remove bird droppings from the solar panel and this issue has since been resolved by the addition of bird deterrents"



Parking lot photometric rendering of Carmanah EverGEN 1500 Series Lighting System

Cost Analysis

For locations where grid access proves to be costly or prohibitive due to location or environmental concerns, solar LED lighting can be installed for the same or lower cost than AC powered lighting.

Solar can reduce installation expenses by eliminating the need to trench or cable and by avoiding the need for extensive permits and underground checks.

Long term, solar LED lighting provides freedom from ongoing electrical bills and can cut maintenance costs by eliminating bulb changes and reducing maintenance cycle frequency.



Installation for Toowoomba Regional Council.

Specifying Simplified

The lumen output of a solar LED lighting system varies with the geographical location of the installation. Carmanah offers an advanced system modelling tool that provides a quick and reliable way of determining the right system for a given application and allows for solar LED lighting systems to be specified just like conventional lighting products.

The Carmanah system modelling tool accesses a comprehensive database of localised solar conditions and automatically accounts for challenging environmental conditions, ensuring that the system chosen will be optimised for peak performance based on individual location and application. The tool also ensures that the system chosen delivers the required lumen output year round, in all conditions and protects the batteries from over-discharge.

The Carmanah modelling tool effectively preserves the longevity of the system and its components (including battery) allowing for five years of reliable operation, as backed by Carmanah's warranty.

Renewable Energy Focus

Whether motivated by legislation, funding incentives or internal goals, renewable energy is becoming an important focal point for lighting professionals. Solar LED lighting provides an easily-recognisable, cost-effective and reliable means to be visibly green.

Orion solar technology is an on-site renewable energy resource that can reduce carbon footprint, allowing for its inclusion in renewable energy credit programs.

For more information about Orion or on Carmanah's EverGEN solar LED lighting, call (07) 5559-1666 or visit www.orionsolar.com.au



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