



Solar Powered Bus Shelter Lighting

The Isle of Man is a small island in the Irish Sea, with a population of about 80,000. The island has been experiencing an increase in tourism over the last 10 years, and more people are visiting the island each year. To accommodate this growing number of visitors, the Isle of Man government decided to build bus shelters around the island.

However, they soon realized that there was a problem with these bus shelters: they were not lit at night or during bad weather. This made them unsafe for passengers waiting at night and in bad weather.



The government approached Marlec, a company that specialises in designing and manufacturing renewable systems to power lighting, CCTV, telecomms, enviromental monitoring and more for remote applications worldwide. Marlec agreed to help out by designing a reliable and durable solar powered bus shelter that can be easily rolled out across the island.

Customers Requirements

- The system needs to achive up to 100 lux from the LED within the shelter.
- The LED light also needs to be evenly spread across the shelter (no black spots).
- Ability to sensor activity so LED can illuminate from dimmed when someone enters.

Challenges Faced

- The kit needs to be plug and play technology so the installation team can quickly fit on site on all shelter designs.
- It needs to be designed and developed to be robust so it requires little to no maintenance.
- The system will use the latest state of the art technology to perform as efficient as possible.
- The LED light needs to be fully programmable paramiters so the installer can adjust the light timings to suit the shelter .

Solution

The solution Marlec put forward was their solar shelter kit, an easy to install, plug and play solar powered lighting system. The design includes Marlec's own brand of solar panel (SpectralLiteS) mounted on top of the bus stop shelter with wiring running down the frame from the panel and LED into the battery box which contains the intelligent LCI01 lighting controller and batteries. The high performance batteries will store the power that's generated by the panels during daylight hours, then provide the electricity for the LED light during dark hours.



The latest version of the Marlec shelter kit will incorporate the in-house manufactured LCI01 lighting controller that uses state of the art technology to maximise the power generated from the solar panel, as well as giving full control to the customer for programming all the light parameters.

Marlec designed this solution with durability in mind, the system will use the highest quality components such as IP65 rated cables and vandal proof LED, battery and controller housing. This gives the customer the ease of mind that the system can be installed and left for years without the need for maintenance visits.

The system will also incorporate a PIR sensor built into the light unit. This allows the customer to dim the shelter light (using the LCI01 Controller) to either fully off or a percentage of the full brightness level. Once the PIR is triggered the light will increase to 100% brightness and stay at that level while the customer is in the shelter. When the customer exits the shelter the light will then dim back down to the level set.

Results & Comments

When fully illuminated the shelter achieves high lux levels that are required. The light is very evenly spread throughout the shelter with no shadowing in any area of a 3 bay shelter.

Marlec will be rolling out solar shelter kits for all of the shelters on the Island. There will also be more application on the island that will need to be solar powered such as bus stop flag poles and railway stops.

"We have used the Marlec Bus Shelter kit for many installs. The quality of the panels used has complimented the system to charge very efficiently even in the most difficult of weather. They are the toughest panels we have ever used for these applications to date. The LED light fitting supplied is the strongest and most rugged fitting we have witnessed over the years and the motion PIR sensor is much more resistant to knocks. The Light output of these units is very impressive delivering 320lux. Combined with the controller you have full control of all the parameters to suit the application making your installation as efficient as it possibly can be for the client.

We will be continuing our rollouts with this kit from now on. It is the best and easiest option to install that's out there."

- Isle of Man Installer

About Marlec

Marlec Engineering are a UK manufacturer and developer of wind and solar solutions for the Railways, Highways, Utilities, Telecoms and Land & Marine Leisure sectors. Since being founded in 1978, Marlec has become the UK's longest established renewable energy company with thousands of systems providing a sustainable source of power at remote sites worldwide, paving the way for a greener future. Marlec's diverse portfolio of renewable products enables our experienced team to advise, design and build reliable off-grid power systems for various applications and power requirements, allowing them to achieve a reliable and sustainable power solution all year round.

