



aviationrenewables

PROJECT REPORT



LOCATION The Bahamas

EQUIPMENT Solar LED Airfield Lighting System

DATE July 2015

APPLICATION Permanent Solar LED Airfield Lighting System for day and night operations

CLIENT South Bimini Intl. Airport

SYNOPSIS

Aviation Renewables designed and oversaw the installation of a solar LED airfield lighting system at South Bimini International Airport in The Bahamas. The system features Solar Series LED airfield lighting solutions. With an urgent need to be operational, the first phase of the system was installed and operational in less than 3 weeks time at a fraction of the cost compared to a conventional system. As part of a longer term expansion project, three phases of the project have been successfully completed, with Aviation Renewables leading the design and installation of this, the most complete solar LED airfield lighting system worldwide.



CHALLENGE

A resort developer adjacent to the South Bimini International Airport required a new airfield lighting system in order to accommodate night landings. This project was in conjunction with a large resort expansion, and the developer needed to enable 24-hour access to and from the island. Due to local regulations, the lights needed to be controlled by a ground-based controller, so only known aircraft would be able to utilize the system. With limited access to electricity, solar powered LED airfield lighting was the ideal solution. The developer enlisted Aviation Renewables to design, train and commission a complete turnkey solar LED airfield lighting system to accomplish these goals. Working through several phases of expansion to the airport, Aviation Renewables has returned multiple times to lend assistance and expertise in the relocation of the Solar Series LED PAPI system and other solar airfield lighting equipment.

solarseries™

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SOLUTION

The need for a simple yet complete solution was showcased in this project. Working with several suppliers, Aviation Renewables was able to ensure that the entire airfield lighting system could be controlled from a single handheld controller; and simply activated with the touch of one button. The system features fully self-contained solar airfield lighting runway edge, threshold, taxiway, turnbay, approach and apron lighting. Each of these lights is controlled by a common 2.4Ghz radio control system from a single handheld radio controller. As each light is standalone, the installation process is extremely quick, with the entire airfield operational in a matter of days. When airport expansion required

the lights to be relocated, the lights were unbolted, moved and installed without the need for cabling or trenching. Each light being self-contained ensures redundancy and reliability of operations according to ICAO standards.

In order to provide visual approach slope guidance, a Solar Series LED PAPI is installed at both ends of the runway. The Solar Series PAPI is the most efficient LED PAPI on the market that meets both ICAO and FAA photometrics. The PAPI is powered by a frangible MAPPS Solar Power system, resulting in a completely off-grid, fully controllable 4 box LED PAPI system. With proper use, there is zero maintenance required for this system for up to 5 years, at which point a simple and cost-effective battery replacement will keep the system healthy for another 5 years. This is ideal for this particular customer, as the remote location makes finding skilled labor extremely difficult.

During the second phase of the project, Aviation Renewables worked with onsite staff and officials from the civil aviation authority to relocate the LED PAPI system within three days. In order to minimize any down time during airport operations, assistance was provided with the design and fabrication of the concrete pads, connecting conduit and siting of the systems. The Solar Series LED Precision Approach Path Indicator powered by the Solar Series MAPPSS power system supports 24/7 operations in order to necessitate the correct glide slope for approaching pilots during day and nighttime operations.





SOLUTION

With such a remote location and no electrical infrastructure installed at the airport, the Solar Series LED PAPI solution has provided significant up front, operational and maintenance savings over the last two years. Aviation Renewables completed installation of the Solar Series LED PAPI and MAPPS power system in less than three days time. After commissioning of the LED PAPI system, airport operators were trained on the radio control functionality of the LED PAPI system along with suggested maintenance or trouble shooting options in the rare event of a faulty signal at either end of the runway. With proper use, the Solar Series LED PAPIs require almost zero maintenance for up to 5 years, at which point a simple and cost-effective battery replacement will keep the system healthy for another 5 years. The Solar Series LED Windcones are installed at both ends of the runway, to give wind direction indication to pilots. The Solar Series LED Windcone is completely self-contained and uses solar power to internally illuminate the wind sock. The radio control system is incorporated into the windcone, ensuring that it will operate in unison with the other lights on the airfield. The Solar Series LED Windcone is designed, fielded and tested as the most rugged product of its kind; operating reliably on every continent for more than 50 years.

Solar Series LED Apron Lights are installed to enable aircraft handling and passenger movement. Using radio control, the LED apron lights can be turned on or off during day or nighttime operations with a minimum autonomy of 5 days operation should continuous lighting be required. Designed for hurricane conditions, the Solar Series LED apron lights are the first in the industry, providing a complete off grid solar solution for civilian aircraft operations.

An AWOS with a VHF broadcast and present weather is installed at the airport in order to support non-precision IFR approaches and flight planning. The Solar Series AWOS system features ICAO compliant sensors and reporting systems, is designed and installed to be completely autonomous. Wireless signal transmission from the sensor site to the host computer in the terminal building simplified the installation and allows pilots and flight planners to access web-based real time local weather conditions.

