Avlite

CASE STUDY

Carbon Emissions Reduced at International Airport with Solar LED Airfield Lighting

Mazatlán, Mexico

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Project Overview

Application
Carbon Emissions Reduced with Solar Airfield and Obstruction Lighting

Product
- Solar LED Taxiway Lights: AV-70 (FAA and DGAC [AFAC] certified)
- Solar LED Obstruction Lights: AV-OL-60
- Universal Airfield Lighting Controller

Location
Category 1 International Airport
Mazatlán, Mexico

Date
April 2020

Background

General Rafael Buelna International Airport in Mazátlan, Mexico is one of the west coast's busiest airports. With CAT I capabilities, the airport services 16 airlines and moved 1.1 million passengers in 2019.

The Mazátlan airport works hard to maintain customer and industry satisfaction. It won the Airport Service Quality (ASQ) Award in 2017 for the best passenger experience in Latin America and the Caribbean. It can absorb more than 24 operations per hour, on a runway of 2702m (1.6 miles) long and 60 m (.03miles) wide.

Regional tourism was expected to grow more than 10% annually. Airport expansion and renovation were necessary to safely and efficiently meet the demand for increased flight operations and passengers. Updated airfield lighting was an important component of the airport and its renovation.

All of Avlite's airfield and obstruction lights can be wirelessly controlled from anywhere on the airfield with a remote RF controller.

Challenge

Replacement of the taxiway lighting was critical for the Mazatlan airport but several challenges arose around the replacement lighting project:

1. New lighting had to satisfy strict environmental standards to reduce the airports' carbon footprint
2. It had to work seamlessly with the existing airfield lighting that utilized power-hungry, incandescent bulbs
3. The identified lighting solution had to be quickly delivered to satisfy a tight construction deadline
4. The installation had to be done in no more than 2 weeks

Fossil fuel provided the electricity for the existing airfield lighting. The new taxiway lighting had to use an alternative power source that complied with the governments' environmental standards. That lighting would have to exclude electricity as the power source.

The airport management group of the General Rafael Buelna International Airport wished to do more than simply replace taxiway lighting. They wanted their replacement project to create greater and more meaningful value for their industry partners, staff, shareholders, and passengers. They required that the new lighting follow guidelines of two, industry-recognized, global agencies to improve the airports' environmental impact:

- ICAO (International Civilian Aviation Organization) and its global carbon reduction scheme (CORSIA)
- ACI (Airport Council International) and its tool to help improve environmental performance (ACERT)

To successfully comply with the government and industry requirements, solar airfield lighting was identified as the optimal lighting solution for the new taxiway lighting project.

Solution

Avlite's partner in Mexico, Advanced Technologies Xen SA de CV (ATX) of Mexico, installed an innovative lighting solution that included the AV-70 Solar LED Taxiway Lights and Universal Controller.

The AV-70 LED Taxiway Lights feature an integrated solar/battery system. Dual, angled, high-performance solar modules maximize solar collection and it is made from long-lasting polycarbonate. The waterproof AV-70 is easy to deploy, eliminating the need to dig trenches and run electrical cables associated with traditional, hardwired airfield lighting. Automatic dusk-to-dawn operation is achieved with an integrated photodiode - no programming is required to operate.

Optional Infra-red LEDs can be installed in the AV-70 for NVG mode. This allows taxiways to be used during covert operations by military aircraft.

An optional external charge port allows the AV-70 Taxiway Lights to charge when in storage for temporary or emergency lighting applications. Optional RF control provides wireless ON/OFF function, light intensity, or Visual and IR modes.

Avlite's Universal Controller was a critical part of the airfield lighting solution provided by ATX. The Universal Controller allows the AV-70s to integrate with the existing hardwired runway and approach lighting. Air traffic controllers can conveniently, safely, and flexibly control all of the airfield lighting from anywhere on the field.

ATX also installed Avlite's AV-OL-60 Solar LED Obstruction Lights on the CREI (firefighting) building. The compact, low-intensity lights identified the building as an aviation hazard for enhanced aircraft safety. The AV-OL-60s are also available with Avlite's Infra-red LEDs for covert tactical military operations.

The taxiway and obstruction lighting solutions were quickly delivered to meet the customers' rigid delivery schedule. Installation and staff training was completed by ATX within one week, with no disruption in aircraft movements.

Avlite's AV-70 LED Taxiway Light (shown on frangible mount) is made from durable, long lasting, and UV stabilized polycarbonate.

Outcome

Today, more than 264 airports in 70+ countries participate in programs to address direct carbon emissions, according to the ACI. General Rafael Buelna International Airport has seen significant savings through the use of solar, energy-efficient LED airfield lighting, and discontinuing reliance on mains powered systems. The airport has successfully worked towards ICAO's CORSIA and ACI's ACERT initiatives to reduce carbon emissions, which delivers value, pride, and social responsibility to all stakeholders.

Lighting performance, cost savings, and carbon reduction have been so successful that five more airports have been upgraded to similar solar LED lighting solutions. Complementary Avlite solar LED lighting products included signs and PAPIs (Precision Approach Path Indicators), with ATX providing the installation, training, and support at all airports.

"General Rafael Buelna International Airport is impressed with the whole job. Avlite met the airport's tight delivery schedule, ATX provided a seamless solar/hardwired airfield lighting system, and carbon emissions have been eliminated (for the taxiway lighting). We're proud to have partnered with Avlite to provide this important lighting project."

– Managing Director of ATX Soluciones

- Experienced & Trained Personnel
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