



Q&A DOCUMENT

SOLAR AVIATION TECHNOLOGY

Applications & Advancements

Q1. What is the difference between compliant and certified?

ANSWER: Products that are compliant have been successfully tested by the manufacturer but not tested and certified by an independent third party testing laboratory. Without independent testing a product is only deemed compliant in the eyes of the manufacturer, not certified. End users should always request certification to insure the product purchased has been objectively tested to the applicable standard.

Q2. Why don't the current FAA Advisory Circulars allow for permanent runway and taxiway lighting certification of solar technology?

ANSWER: The FAA Advisory Circular, AC 150/5345-46D Specifications for Runway and Taxiway Fixtures, specifies that all runway and taxiway lighting fixtures are required to have a very specific input power, either a constant current 6.6A (Mode 1) or constant

voltage 120/240VAC (Mode 2). Solar airfield lighting fixtures are supplied by a rechargeable battery with a low voltage DC output. The rechargeable batteries are replenished by the sun's energy. The DC voltage is less than 30VDC making it safe to work with and easy to install/maintain. Since the Advisory Circular is specific and does not allow for other power sources, solar airfield lighting can only be certified as compliant to specific paragraphs in the Advisory Circular like photometric output, chromaticity, environmental requirements, etc. Without full certification, solar airfield lighting products can only be listed as L-863 AC 150/5345-50B Specification for Portable Runway and Taxiway Lights, therefore no permanent application certification is currently achievable.

Q3. What is EB76 and can a manufacturer certify to this advisory circular?

ANSWER: FAA Engineering Brief No. 76, Using Solar Power for Airport Obstruction Lighting, outlines the guidelines for solar power supply design for use with obstruction lighting. Since this is only a guideline, certification and listing are not available.

Q4. What are the advantages of solar over hardwired LED lighting?

ANSWER: Solar powered lighting requires no infrastructure such as constant current regulators, cable, transformers, base cans, ductwork or conduit. There are also no reoccurring power costs, since the sun provides the renewable energy to recharge the battery. The lights can be installed in hours, require minimal maintenance and are easy to troubleshoot. Unlike, hardwired systems, which can have several to many lights fail at a time (CCR Failure, Cable Cut, Mains Power Failure), each solar light is independent and no single light failure affects the remaining lighting.

Q5. What is the lifetime of solar lighting?

ANSWER: Life expectancy of solar products will vary between manufacturers, but typically the product life cycle is 12+ years. With long life, very little maintenance and no upfront infrastructure costs, solar aviation lighting provides for significant cost savings with no compromise in reliability.

Q6. How often do the batteries need to be replaced?

ANSWER: There are a number of factors that will influence the battery life, including environmental factors, depth of discharge, storage conditions and amount of use. If well maintained and treated as per manufacturer's instructions, the typical life cycle would be approximately -5 years for Nickel-Metal Hydride (Ni-MH) and 5-7 years for sealed lead acid (SLA).

Q7. When mixing hardwired LED lighting and solar LED lighting are there any concerns?

ANSWER: Solar is ideal, as an addition or back-up to hardwired systems. Solar airfield lighting can easily interface with existing airfield lighting control systems and be used in new or updated areas of the airfield. In addition, solar airfield lighting can be placed on the airfield when hardwired lighting has failed or permanently installed as a back-up to hardwired lighting. Again, this solar lighting is interfaced to existing control systems for transparent control by ATC operators.

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