

WHITE PAPER

Construction Phase Turbine Marking Obstruction Lighting Solutions



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Avlite Systems is an international designer & manufacturer of complete aviation lighting systems; airfield, heli & obstruction

We believe technology improves navigation™

White Paper Overview

Topic:

Temporary Obstruction Lighting - Turbine Marking

Product Focus:

FAA Solar L-810

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Construction Phase Turbine Marking – Meeting the FAA Requirements of Solar L-810 Temporary Turbine Lighting

Background

The Federal Aviation Administration (FAA) serves a historically important role in the mitigation of hazards to air navigation in the United States. Thus, it was no surprise when the FAA addressed safety issues which arose from the construction of wind turbines. In their latest update to Advisory Circular No: 70/7460-1L (2015), the FAA specifically identified the height at which a turbine became an obstruction, and ultimately a hazard to safe air navigation, during construction and when permanently installed.

Night time conspicuity of a turbine under-construction becomes more complicated with the changes in requirements.

Benefits

- FAA compliant
- Cost effective, energy efficient obstruction solution
- User-replaceable battery in weatherproof housing
- Alarm contact for remote monitoring
- Single or dual light fixture
- Angle of the solar module can be adjusted to maximise solar collection
- Light sensor for day/night operation
- Available in a larger model AV-C410 for use in areas with lower sunlight
- Available with optional GSM monitoring

Solution

While a turbine is under construction, temporary lighting is a basic and mandatory minimum requirement once a height of 200 feet (61m) is reached.

AC 70/7460-1L guidelines allow the use of an FAA-compliant L-810, self-contained, solar-powered, LED, steady-burning red light. This temporary solar option must meet the photometric requirements of an FAA certified L-810 light. FAA certification (of an L-810 light) is not required by the FAA, but the solar powered light must be compliant with the photometric requirements of the FAA's AC 150/5345-43/H for certified lighting.

These specifications are designed to provide a universal functionality amongst manufacturers, and to insure minimum vital performance indicators are met, including those for minimum vertical beam spread (10°), minimum intensity (32.5 cd), Lux transition levels, and autonomy (7 days).

Because a turbine's lighting requirements change over its height during construction (as it evolves from temporary, during construction, to permanent, upon completion), lighting selection is a vitally important consideration when evaluating compliance issues.

Temporary, L-810 solar LED lighting has been available from some companies, while other companies satisfy the permanent requirements of an L-864 light. Single-source lighting suppliers (offering both L-810 temporary and L-864 permanent lighting) offer significant financial and safety advantages over those companies who cannot satisfy the combined temporary-to-permanent lighting requirements.



Universal mounting brackets and hardware from a single source lighting supplier directly translate into a more cost effective purchase as redundant-but-different mounting equipment is eliminated.

An unintended benefit of universal mounts from a single source lighting supplier is the possibility of increased safety for erectors and climbers. Crews can ascend with no duplication of mounting hardware and fewer tools. That translates into less time aloft for crews when changing, adding, or maintaining FAA lighting. No matter how competent a climber, eliminating excess equipment weight and unnecessary time aloft helps to reduce the potential for injury. With an estimated 100,000 turbines needed to help satisfy demand for electricity by 2033 (according to the American Wind Energy Association), the benefits of sourcing FAA compliant and certified lighting from a single manufacturer are obvious.

Avlite Systems Solar Powered FAA L-810 Low Intensity Obstruction Lights are built to be the answer to the FAA AC70/7460/1L temporary lighting requirements. Available in three power supply sizes to fit the solar profiles of almost any turbine installation location, their polycarbonate aviation lenses house a single LED for extremely efficient operation, as well as an integrated photo cell. The light head is easily interchangeable between units for effortless maintenance, and optional services can be added to tailor the Avlite L-810 to most any application or installation. For example, GSM cell phone monitoring provides the ability to remotely monitor the lights' operational status with text and email message alerts.

The L-810 and Avlite's permanent obstruction light, the L-864, use the same mounting plate. This universal mount allows an unencumbered transition between permanent and temporary lighting for the rigger, with minimal time and minimal equipment aloft.

For maximum light intensity, the L-864 utilizes multiple LEDs, and features an integrated photo cell with GPS synchronization and GSM monitoring. The L-864 from Avlite Systems is available in two configurations, universal DC (12-48VDC) or universal AC (110-240VAC).

Choosing turbine lighting from one manufacturer has many merits, but even then, the differences between manufacturers and specifications are significant enough to warrant close examination of all facets of FAA light requirements. Installation and mounting options, operation and synchronization, and performance and battery consumption, are all areas where careful scrutiny can yield long-term rewards for turbine owners, engineers, constructors, and climbers alike.



All Avlite Systems products are manufactured to exacting standards under strict quality control procedures. Avlite's commitment to research and development, investing in modern equipment and advanced manufacturing procedures has made us an industry leader in solar aviation lighting.

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