



aviationrenewables

# PROJECT REPORT



**LOCATION** Toronto, Canada

**EQUIPMENT** Solar Series LED Hold Position Lights

**DATE** October 2010

**APPLICATION** 24 Hour Solar LED Flashing Beacon for Runway, Taxiway and Airfield Signage

**CLIENT** Toronto Pearson International Airport

## SYNOPSIS

Aviation Renewables consulted in the design of a complete Solar Series LED Hold Position flashing beacon system for Toronto Pearson International Airport (TPIA), Canada's largest international airport. The Solar Series LED Hold Position Light features a 24/7 warning beacon mounted on top of stop signs located throughout the airfield, providing safety operations for both day and night.

## CHALLENGE

Toronto Pearson International Airport required help in finding a solar powered LED warning system in order to reduce electrical and maintenance costs while providing a reliable and safe lighting system for moving vehicles and ground support equipment operating through both winter and summer conditions. Aviation Renewables was tasked with helping in the design of a solar LED flashing beacon system that would operate reliably year round, even in the event of severe weather storms and limited sunshine for months on end.



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## SOLUTION

Toronto Pearson International Airport required a warning device that would illuminate stop signs at runway and taxiway intersections while operating independent of the electrical grid year round. With extreme winters of long cold nights, shortened days with limited sunshine, heavy snowfall and frigid temperatures reaching minus 40 Celsius below, a proven solution was required. At the request of TPIA, Aviation Renewables delivered two Solar Series LED Hold Position Lights with custom mounts to attach the beacons to the existing airfield stop signs for winter testing and analysis. After a successful trial throughout the winter season, airside operators and maintenance staff of Toronto Pearson International Airport were pleased with the performance.

At the conclusion of the first trial, TPIA staff requested further analysis of possible solar conditions in the event of a "worst case" winter season. Careful analysis of solar data, battery and beacon performance lead Toronto Pearson International Airport to decide on the Solar Series LED Hold Position Light with the Northern Model solar engine.

Coupled with a 12" LED signal, the larger solar panels and additional battery capacity provide more than 120 days autonomy meaning the unit can operate 24/7 for four months without sunshine. By using the Solar Series LED Hold Position Beacons, Toronto Pearson Intl. Airport is able to illuminate all stop signs day and night independent of runway and taxiway lighting operations. By allowing for runway and taxiway lights to be turned off when not in use, Toronto Pearson International Airport will save significant energy, maintenance and operating costs throughout the entire year. In addition, the use of a renewable energy source allows Toronto Pearson Intl. Airport to further meet its renewable energy, environmental and cost savings goals. The Solar Series LED Flashing Beacons are designed to operate as a maintenance free lighting solution using sloped solar panels and protective housing to respond to and combat the most demanding environmental conditions. Already installed and operating in some of the most challenging solar and winter locations worldwide, Solar Series solutions continue to be a viable solution for off grid power and lighting applications.

