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# PROJECT REPORT

SOLAR RUNWAY LIGHTING AND REFLECTIVE SIGNAGE INSTALLED AT BRITISH COLUMBIA AIRPORT



**LOCATION** North America, City of Castlegar

**DATE** 2022

**CLIENT** West Kootenay Regional Airport (YCG)

**EQUIPMENT** Solar LED Runway Lighting  
Solar LED Threshold Lighting  
Solar LED Taxiway Lighting  
iSeries Reflective Airfield Signs  
iSeries Snow Plow Markers

**APPLICATION** Solar Runway Lighting  
Reflective Airfield Signs

## SYNOPSIS

Aviation Renewables was awarded a contract to design, deliver, install and commission a complete off-grid, solar airfield lighting system with iSeries retro reflective airfield signs at West Kootenay Regional Airport. After careful consultation with the airport management team, the solar led runway lighting system and reflective airfield signs were installed and operational within two weeks time at a fraction of the cost compared to a conventional LED runway lighting system. The LED runway lighting system and reflective airfield signs are TP312 and ICAO compliant, consisting of solar LED runway, threshold, and taxiway lights with mandatory instruction and informational airfield signs which greatly enhance the airport's operations.



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## CHALLENGE

West Kootenay Regional Airport, in the interior mountains of British Columbia, has a challenging approach due to surrounding terrain. The airport can experience long periods of low cloud, which historically has impacted flight reliability. As a result, airport management has generated strategic initiatives to improve the approach minimums and conspicuity of the runway. As part of these initiatives, the addition of runway lighting was deemed essential to augment the existing approach lighting. In addition, the airport required a signage update in order to comply with new TP312 5th edition standards.



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## SOLUTION

The airport released a competitive tender in the Spring of 2022, for supply and installation of runway edge lighting, threshold lighting, turnpad lighting and retro-reflective signage. Aviation Renewables was subsequently awarded the contract, and work commenced immediately on the detail design and product selection.

Safety of operations is paramount in any construction activity, particularly construction activities that take place around active runways. For this reason, Aviation Renewables spent a great deal of time integrating the Site Safety Plan with the Plan of Construction Operations (PCO) that was created for the airport.

This integration ensures that there is a clear understanding of the roles for all responsible persons involved in this project. During the PCO development, a determination was made that night work would be the safest option, enabling unfettered access to the runway edge. The separation of construction traffic and aircraft was accomplished by doing a full runway closure during night hours.

Aviation Renewables trained all personnel and subcontractors involved in the construction on the unique challenges and procedures involved in airport work. These include site access, escort requirements, FOD control and grading specifications.



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## SOLUTION

As Castlegar is located in a mountain valley, the selection of a solar lighting product that would operate through the dark winter months was essential. Using data from NASA databases, detailed modelling of charge states throughout the year was created and used to select the AV426 runway edge light as the best performing light capable of Medium Intensity MIRLs lighting levels. The AV426 uses 4x 5-watt panels to charge a 288Wh battery. The light is modeled to support a minimum daily use of 6 hours throughout the year.

The AV426 is radio controlled, so the ATC staff can quickly and easily turn the lights on and off as needed. The lights meet Medium Intensity photometric standards and are therefore able to support non-precision instrument approaches. The lights are self-contained, with no external wiring, which eliminates the risk of damage from wildlife. Mounted on frangible couplings at up to 3m from the runway edge, the lights can be quickly installed at any airport, whether or not the airport has existing electrical infrastructure.

In addition to the lighting, the airport needed additional signage to comply with the new TP312 5th edition standards. Aviation Renewables manufactured and installed 17 new retro-reflective signs mounted on frangible couplings at various points throughout the airport. The new signs comply with the ASTM Type IV reflective standards and are sized to meet the TP312 signage requirements.



As the airport has a single runway, it was imperative to maintain normal operations during the construction activity. The work was conducted during the overnight hours when the runway is normally closed. In addition, careful planning ensured that the work undertaken each night did not create hazards for the next day's operations. These measures included: ensuring all open excavations were appropriately filled, graded and compacted each night; full FOD sweeps at the conclusion of each shift; and strict limits on vehicle traffic to ensure no mud or debris was tracked on runway and taxiway areas.

The installation was conducted in two phases, on a total of 8 nights, including a layout survey and as-built survey.