

## Driverless LED for AGL – Arctic performance test report

January 2025

To whom it may concern,

The ELLEGO AGL solution has been tested at the Enontekiö Arctic Airport (IATA: ENF, ICAO: EFET) in collaboration between the Airport and ELLEGO Powertec Oy.

### Test description

The purpose of the test is to confirm the operation of a bulb based driverless LED solution for AGL in an authentic arctic environment. Of special interest is the real world performance of the low current LED AGL solution in an environment highly susceptible to snow, frost, rime, and exceptionally cold weather.

The test was initiated in November 2023 and will be continued for an unspecified time.

The test includes two separate installations:

- An operational low intensity installation consisting of taxiway edge and apron lighting, a low intensity approach lighting setup, and turn pad lights. This installation included altogether 77 ELLED bulbs (ELLEDPKM6V4) installed into various existing AGL fixtures.
- A separate test installation of high intensity lights consisting of 4 runway edge and two high intensity approach light fixtures. The fixtures represent various models and were all equipped with high intensity LED bulbs (ELLEDPKDH12V4).

Both installations are low current AGL solutions with maximum primary currents of 1.5 Arms for the low intensity installation and 3.0 Arms for the high intensity installation. The operational low intensity installation is operated according to airport's normal AGL operation. The separate test installation is controlled independently according to the test plan, which aimed for emphasizing worst case scenarios.

### The results after one year of testing:

Both test installations have provided similar results and have performed according to expectations without failures or errors. The residual heat from the LED bulbs has proven to be adequate for keeping the fixture optics clear from ice and snow with normal operational use in most instances, and with possibly slightly increased on-times before operational use in exceptional conditions.

Further observations include improved functionality compared to filament bulb based fixtures due to LED's much lower ice-forming properties. An LED bulb based fixture will remain cooler and therefore avoid many of the ice formation issues experienced with filament bulb based (halogen) fixtures.

In condition where the residual heat is not adequate for fully defrosting the fixture, the cooler LED-based fixture has been found to be easier to manually clear compared to filament based fixtures, which are prone to excess heat based ice formation.



Jussi Sorsa  
CEO, Chief of the Arctic Airport