

WP Groen (NL) ADLS Case Study



Location

Windplan Groen is a wind farm cluster in Flevoland (Netherlands), covering the municipalities of Dronten and Lelystad. It contains 90 wind turbines from manufacturers like Vestas, Nordex & GE, providing approximately 500 MW of capacity and generating around 1800 GWh annually.

Problem

Residents near the Windplan Groen wind farms have expressed frustration over the constant red lights on wind turbines during the evening and night, which disrupt the natural landscape and contribute to light pollution.

Solution

Aircraft Detection Lighting System (ADLS), offered by Light:Guard in cooperation with the local partner Topwind, allows wind turbines to keep their obstruction lights off at night, only activating them when an aircraft is detected nearby. In particular, ADLS uses transponder signals from aircraft, and multilateration (MLAT) technology to precisely identify their location. Seven Light:Guard Receivers (LGRs) and eleven Light Control Units (LCUs) have been installed as ADLS infrastructure. This innovative solution minimizes light pollution and improves local acceptance of wind farms, while still ensuring air traffic safety.

Results

Analysing the results of the lights-on/off times, the system showed excellent and consistent outcomes across the eleven wind farms that make up the Windplan Groen. During August 2024, first month of activation, the lights-off time was on average 97%, despite fairly intense aircraft activity. The share of "lights on" and "errors" were minimal, thus confirming the high quality of the system. As an example, Table 1 shows the results for Wind Farm Olsterwind, part of Groen.

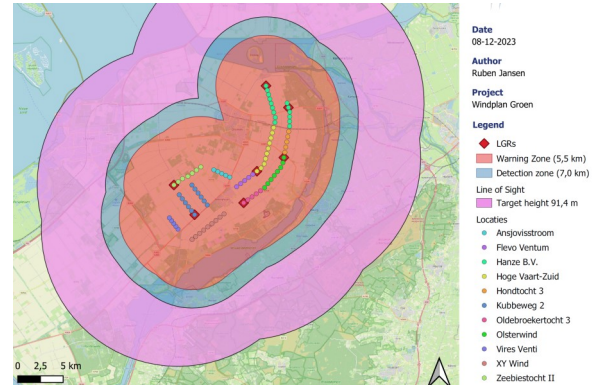


Figure 1: ADLS configuration of Windplan Groen

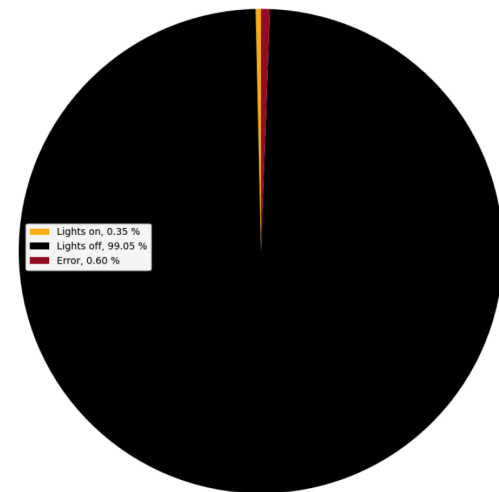


Figure 2: Percentages of lighting status (Wind Farm Olsterwind, August 2024)

Wind Farm Olsterwind (Windplan Groen)		
Time frame: August 2-31, 2024		
	Without ADLS	With ADLS (2142 Detections)
Lights on (detection)	239h 23min (100%)	0h 50min (0,35%)
Lights on (error)	0h (0%)	1h 26min (0,60%)
Lights off	0h (0%)	237h 07min (99,05%)

Table 1: Data on ADLS system and obstruction lights, Hanze (WP Groen)

“ We heard from local residents of Windplan Groen that they were annoyed by the red lights of our turbines. That is why we are so happy with the light:guard system, which ensures that the red lights are hardly ever on. ”

– Allard van der Steege, Chairman of Windplan Groen