Paving the way for Aircraft Detection Lighting Systems’ use internationally, using German and US precedents

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Abstract

ADLS, or radar-activated aviation lighting, increases windpark acceptance by allowing skies to remain dark whenever aircraft is not present in the neighboring civil airspace. The FAA, Transport Canada and BMVBS (US, CA and DE civil aviation authorities, respectively) have set the new standard in the technology’s acceptance by integrating it into standard civil aviation law. Previously, provisions for approval by exemption from standard markings were written into regulations by Norway’s Luftfartstilsynet, while Sweden’s Transportstyrelsen and Finland’s TRAFI have issued single approvals without explicit provisions in their regulations. Given that visual impact is also a deal-breaker for windparks in countries like the UK, Switzerland, Austria, and the Netherlands, the technology has the potential to open up sites previously disqualified for turbine planning. The growing body of evidence displaying the technology’s safety level can be used in discussions with national civil aviation authorities (CAAs) to encourage approval of the systems and thus facilitate larger-scale transition to renewable energy economies.

Objectives

- Provisions for ADLS in standard CAA regulations
- Provisions for ADLS as an exemption to standard CAA regulation
- Precedent/provision exists for approving ADLS use as exemptions
- Promising interactions with CAA indicate potential for prompt ADLS use

This presentation gives advice on beginning the dialog with CAAs in countries with no previous experience with or regulations governing ADLS use. While it is advisable to embark on such engagement with the cooperation of an ADLS manufacturer, it is also essential that CAAs receive requests for concrete projects from developers.

1. Familiarize the reader with successful experiences in the US, CA, DE, NO, SE, FI
2. Provide guidance on the first steps in opening up new countries to ADLS
3. Warn of pitfalls to be avoided in the process
4. Motivate developers with concrete project opportunities to get into dialog with ADLS suppliers to initiate the regulatory process.

Methods

1. Engagement with national CAA to explain technology, outline application process for exemption from regular marking*, and identify stakeholders**

* Generally all national CAA regulations contain text detailing exceptions from standard requirements

** Can determine a country’s openness for active/passive radar or transponder ADLS, as well as acceptable radar bandwidth (X-Band?, L-Band?) for military, marine, and CAA cooperation

2. Submit documents for desktop study

   Standard documentation for CAA:
   - Approval process described in other aviation standards (US, DE, NO, CA) as guidance
   - System description
   - Risk assessments (General + site-specific)
   - Safety/quality certifications of components (eg. CE, UL)
   - Site specification
   - Flight test patterns, plus results/reports from other sites
   - Technical specifications – rather for frequency authorities

3. Set up a technology demonstration test for a limited time for CAA inspection

4. Propose a standard procedure for exemption applications to CAA***

5. Lobby ministry via national working groups to include a standardized 2-step approval process (technology, then location approval) in regulations, including stakeholder coordination procedures (CAA, military, radio communications commission, HSE authorities)

***Even in the absence of a full regulation, an official 2-step process for exemption-based approvals is preferable in order to reduce uncertainty of investment on all post-pilot installations. Recognition of the basic technology in the regulations encourages consistency in evaluation by the CAA across a country and over time.

Conclusions

Review of documentation and attendance of flight tests has resulted in determination that use of the radar systems maintains the present level of safety in American and German airspace. Given the success of Vestas Intellilight in this process in both the US and in Germany, Vestas believes the time is ripe for civil aviation authorities in other countries to consider approving the technology for wider-spread use. Considerable documentation on testing and operation is available for such discussions. This has the benefit of opening up previously unacceptable sites for renewable energy development without causing nocturnal visual impact.

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