

Wind Turbines & Aviation Safety

airsight services



Wind Turbines' Impact on Air Operations

The growth of wind energy leads to more and more turbines being constructed near aerodromes. With a height of 150 m or more wind turbines can represent a serious obstacle for aircraft. In addition, in the vicinity of smaller airports where flight operations are conducted under visual flight rules, wind plants may represent a serious hazard to airport operations. Turbines can further have adverse effects on radar signals (e.g. reflection, distortion) which affect the safety of flight operations.

Therefore, when wind turbines are placed nearby airfields, it is necessary to consider all possible impacts on the safety of flight operations during planning and approval procedures.

airsight and its partners assist project developers planning new wind farms or single wind turbines in considering all aeronautical related aspects and in obtaining required authorisations.

International aviation regulations state that: „objects which extend to a height of 150 m or more above ground elevation shall be regarded as obstacles, unless an aeronautical study indicates that they do not constitute a hazard to aeroplanes.“

ICAO Annex 14

Services

airsight can offer aeronautical studies including the following expert services:

- Assistance to project developers in assessing the impact of turbines on aviation
- Determination of possible constructible areas, and optimisation of the positioning of wind turbines
- Compliance verification of proposed facilities against applicable aviation regulations
- Obstacle clearance examination for approach and departure procedures for instrument, as well as visual flight conditions
- Compatibility assessments with aviation Communication, Navigation and Surveillance equipment (e.g. radars, VORs, DMEs)
- Hazard and risk analyses and development of a Safety Case
- Development of mitigation measures (e.g. adaptation of existing flight procedures)
- Assisting in obtaining required authorisations from authorities
- Liaising with Aviation Authorities and Air Navigation Service Providers



Wind Turbines and Aerodrome Operations

Wind turbines represent a physical obstacle to air operations. To minimise the risk of collision, the International Civil Aviation Organisation (ICAO) developed a set of regulations related to obstacles in the vicinity of aerodromes. These requirements are very complex, and represent a major restriction to new constructions of wind farms.

airsight's core competence is to deliver specialised expertise in the assessment of potential aeronautical obstacles. As demonstrated in numerous projects, airsight can assist project developers in defining the possible constructible area at an early project stage, as well as to evaluate and mitigate the impact of wind turbines on air operations - while taking into account diverging external stakeholders' interests (aerodromes, aviation/military authorities, air navigation service providers).

Why airsight?

- Detailed knowledge of national and international regulations through many years of experiences in aviation projects, consulting and teaching activities
- Dedicated and highly qualified team of experts with extensive references on safety assessments, flight operations/procedures as well as obstacle assessments
- Worldwide experience in dealing with National Aviation Authorities (incl. military) as well as projects involving stakeholders with diverging interests (airports, airlines, air navigation service providers, project developers)
- Highly efficient evaluations of specific areas (e.g. assessment of obstacles) through the use of specialized software solutions

Wind Turbines and CNS Compability

Wind turbines may cause interferences on Communication Navigation Surveillance (CNS) equipment (radar, Instrument Landing System etc.) and consequently can affect the safety of air operations. Therefore, project developers must either comply with very restrictive requirements, or demonstrate that proposed developments do not interfere with CNS equipment.

airsight assist project developers in the planning phase in minimising interference issues with CNS equipment while avoiding costly measures (design revisions, relocation, or reorientation) as well as in obtaining the relevant approvals from authorities (aerodromes, aviation authorities, air navigation service providers).

airsight and its partners conduct site specific assessments supported by numerical simulations to verify the availability or quality of CNS signals, and demonstrate to the authorities the feasibility of the proposed project.

Selected Experience

- Stadtlohn: 15 turbines, 200 metres above ground, ca. 3.5 km from aerodrome
- Bottenhorn: 1 turbine, 149 metres above ground, ca. 2.5 km from aerodrome
- Marburg-Schönstadt: 2 turbines, 199.5 metres above ground, ca. 4.7 km from aerodrome
- Mengerlinghausen: 12 turbines, 199.5 metres above ground, ca. 2.5km from aerodrome
- Riedelbach/Taunus: 7 turbines, 200 metres above ground, ca. 1.5 km from aerodrome

