



Acoustic impact study of wind farm.

The French legislation used in the case of wind turbines is the neighbour noise regulation law. This restrictive legislation bases on noise emergence above the background level and considers no absolute noise limit. No rule of minimal distance from wind turbines can be set.

EMA carries out the modelization and forecasts of the acoustic impact of wind park projects with the following methodological stages :

- location and cartography of the houses close to the future wind turbines and/or exposed to dominant winds
- initial acoustic state : measurements of ambient noise level in various points corresponding to most exposed houses, with differentiation between day and night and evaluation of specific impact of week-ends and/or impact of the seasons, according to the regional requirements
- correlation study between wind speed and initial background noise level (without wind turbines)
- estimation of noise disturbance from wind turbines by calculation of emergence

The measurement of the initial acoustic state is complex, because it should integrate many factors such as wind speed, wind direction, and landscape roughness. It requires significant human and technical means, in order to minimize the margin of uncertainty and to offer a good long-term assessment of background noise levels. The forecast of the noise due to the wind turbines is based on the one hand, on acoustic power of wind generators and on the other hand, on mathematical models of sound propagation. The acoustic diagnosis gives the tendencies of emergence according to wind speed (4 to 10m/s, that is operating conditions of wind turbines) and wind direction.

Our assets :

- **Independence :** **EMA** is an independent acoustic consultancy, as recommended by the french reference guide ("Guide méthodologique de l'étude d'impact des nuisances sonores")
- **Expertise :** According to the guide of the wind impact study, "modelization, its assumptions and its limits, should be mastered by the acoustic consultancy." ; **EMA** is one of the rare acoustic consultants observing this requirement.
- Many years experience as acoustic consultant, specialist in acoustic impact study of wind farm (80% of our activity) - many Planning Permissions obtained.
- **Reputation :** **EMA** is a member of the C.I.C.F. ("Chambre de l'Ingénierie et du Conseil de France") and of the GIAC ("Groupement de l'Ingénierie Acoustique").
- Permanent updating of models, in relation with the evolution of scientific knowledge.
- Flexibility.

Equipment :

- Standards
- Significant bibliography
- Numerical and symbolic computation software - Mathcad V12.1
- Data processing software
- 4 sound level meters of class 1 (01dB Trademark)
- Anemometer with 10 meter mast and weather station with storage capacity

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