

Recommendations for obstruction marking and lighting wind turbines

As of: 10/2013

Based on the German “General Administrative Regulation for the Marking and Lighting of Obstacles to Air Navigation” (AVV from April 2007), the Aviation Obstruction Markers working group from the German Wind Energy Association (BWE) recommends that the following aspects should be observed in regard to wind turbines:

1. Replacement of obstruction lighting systems

Irrespective of provisions made for safeguarding lighting systems installed on the basis of the older regulation (exemptions), it is recommended that the lighting systems should be adapted to accord with the requirements of the current AVV administrative regulation. In order to ensure a high level of safety, only the lamps and the electrical operating devices should be replaced in the case of Xenon dual flashing systems installed after 1 July 2008. Should the control system or other essential components fail (e.g. housing), the dual flashing systems should be replaced with “Beacon W, red ES” obstruction lights (*Feuer W, rot ES* specification – see item 2).

2. Use of “Beacon W, red ES” obstruction lights und luminous intensity reduction

With new wind turbines, it is generally recommended that “Beacon W, red ES” obstruction lighting is used with a reduction of the luminous intensity (AVV, 17.4) through visual range measurements (AVV, Appendix 4) (www.fvt.wsv.de/fachinformationen/li_technik/Windenergieanlagen/TS_FeuerWrotES_2009_02_26.pdf). In order to achieve widespread acceptance, this should be included in the German Federal Immission Control Act (BImSchG) permit as an ancillary provision. With the additional use of daytime obstruction lighting, it is urgently recommended that the light intensity is reduced.

3. Synchronisation standard

The cycle time for all obstacle lights should always be synchronised with all wind turbines. The following flash rates are recommended:

– Beacon W, red		in accordance with AVV, Appendix 3
– medium intensity	Type A	20 fpm
– medium intensity	Type B	20 fpm
– high intensity	Type B	40 fpm

The cycle time with “Beacon W, red” obstruction lights and the flash duration with ICAO obstruction lighting should start at 0 seconds as per UTC. System-caused 0-point shifts should amount to a max. +/- 50 ms. The longer flash duration for obstruction lighting with a soft start should be spread as evenly as possible across the flash duration by earlier switching on and later switching off. It is recommended that operators of wind farms with lighting check whether the aforementioned regulation is maintained and, if necessary, adapt it.

4. Dimmer switch

In accordance with AVV, dimmer switches with a switching threshold of 50-150 lux (lx) may be used. The following settings are recommended:

- 50 lx for wind turbines with only night-time lighting
- 150 lx for wind turbines with daytime and night-time lighting

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