

W-Red lights adapt to visibility

German law now allows for the luminous intensity of the nighttime navigation lights atop WECS (these alert airplanes to the obstacle in their way) to be adapted to visibility conditions. In April, Germany's Federal Council passed the necessary amendments to the administrative regulation on the marking of aviation obstacles (Bundesanzeiger, no. 81/2007). With visibility above 5 km, lights must now only burn at 30 % of their original intensity; when visibility is above 10 km, even 10 % is sufficient. On 90 out of 100 days, the weather in Germany is clear enough to afford this kind of visibility.

"In our experience, from a 5 km distance on the ground, the reduced hazard lights will hardly be noticeable", says Andreas Düser from ENERCON's Ense sales office. "Our company has contributed a lot to these recent improvements by being a very active member of the working group that prepared the amendment of the legal regulation." This panel also included the German Air Traffic Control autho-



W-Red light on an E-82 at Schweringhausen, Lower Saxony.

riety, the Federal Ministries of Transportation and the Environment, the German Wind Energy Association, and other companies from the wind energy sector.

Furthermore, the daytime signal lights that flash white and are very noticeable especially at dusk can be turned off sooner, and the W-Red lights are turned on instead. The W-Red lights will also stay on longer in the mornings. Twilight switches control toggling of the lights. These switches are triggered by an ambient brightness of 50 to 150 Lux, rather than 50±2

Lux as before. "With an optimal configuration, periods of white hazard light use can thus be reduced by an average of 40 minutes per day", explains Düser.

The new light reduction feature requires wind turbines to be equipped with visibility sensors. To keep the irritation caused by light signals to a minimum, ENERCON plans to equip all new wind farms with E-70 or E-82 turbines in Germany with visibility sensors. "For most wind farms, one or two sensors will be enough, since one device may be used to reduce the lights of turbines within a 1.5-km radius", says Stephan Harms, manager of the special components team at Elektrik Schaltanlagenfertigung GmbH in Aurich.

"ENERCON has worked out a comprehensive strategy to optimise turbine lighting according to the new legal provisions", reports Harms. For E-70 and E-82 models that have been installed since mid-2006, all that is needed is to install the visibility sensors. The existing data bus already supports the required controls and switches. For older wind farms, ENERCON has developed a retrofitting procedure: Each tower receives an additional data cable. In both cases, the navigation management system runs on the central wind farm computer that also runs the SCADA remote monitoring and control system. The upgrade for new turbines will cost 10,500 euros per sensor. The cost for retrofitting older turbines is yet to be established.

Field testing of transponder-controlled hazard lights near Hamburg

As part of the HiWUS project – developing a strategy to minimise light emissions from wind farms and wind turbines – ENERCON will start a field test this year in cooperation with the German Federal Police and the companies Filser Electronic (Waal) and Lanthan (Bremen). Goal of this test will be to utilise the transponder signals from helicopters to control the light systems in the Wiemersdorf wind farm near Hamburg.

"We want to demonstrate that it is possible to control wind turbine signal lights via transpon-