

EFFBE: New silencer for wind turbines uses proven solutions from automotive sector

Noise reduction is one of the main issues facing wind turbine manufacturers. EFFBE, a company of the Woco Group, meets this challenge in close cooperation with the OEMs. This is achieved by transferring knowledge and experience of noise reduction experience from Woco's Automotive division to the wind turbine industry.

EFFBE has designed a polyurethane foam mat system for the exhaust duct of the nacelle vent. The new silencer will be presented at the WindEnergy in Hamburg.

During normal operation of a wind turbine, the sound levels were analysed. An average sound pressure level of 94 dB(A) at 1kHz was measured at the exhaust air duct. The silencer prototypes developed by the OEM achieved a reduction of 10 dB, which was the result of the reduction of the effective cross section in the exhaust duct by approximately 40%. Tests showed that heat accumulation problems due to the cross section reduction are not expected.

One focus of the Woco Group is the development, testing and production of Noise Vibration and Harshness (NVH) solutions for the automotive industry and the transfer of this expertise into industrial applications. In this case, EFFBE uses the know-how and production equipment for acoustically effective foams.

The silencer is exposed to temperature variations, humidity, dust and vibration. Therefore, after analysis of the critical frequencies, a special polyurethane foam system was selected, whose density and material properties are tuned to the requirements of the application.

Figure 1 shows the operating principle: While passing through the silencer, the majority of the sound waves hit the PU foam mats. In each of these mats, some of the energy in the sound waves is converted into thermal energy. When the quietened sound waves hit a sound-deadening wall, they bounce off and cross to the PU foam mat again where they are quietened a second time and so on. With this design, the noise emitted into the environment is greatly reduced.

Dirt and dust reduce the effect of any foam mat. The mats from EFFBE can easily be cleaned with compressed air, which means that they can be used many times. The design of the silencer enables exchange of the foam mats in a few minutes without any tools. As part of annual maintenance, optimal effectiveness is guaranteed.

figure 1

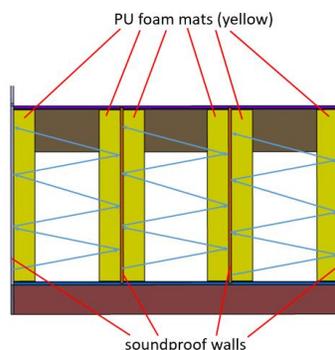


figure 2

