... mein Heizsystem

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Acoustic emissions from pellet and woodchip boilers

In normal operation, the air - acoustic emissions from a pellet or a wood chip boiler (20 to 200 kW) are in the range between 40 and 50 dBA with individual peaks of up to 75 dBA (Ignition and vacuum turbine) . In order to limit the air - acoustic emissions the usual measures, which are required for all boiler rooms, are sufficient: the normal boiler room regulations such as the use of fire doors, restricting air intake to the minimum required and sound insulation within the divides to the surrounding rooms are sufficient.

Sound problems with pellet or wood chip boilers are mainly from the body acoustic emissions, where the acoustic energy is introduced into the structure of the building.

The main sources of body acoustic emissions and the required measures are:

- Squeaking and creaking from the fuel conveyors, whose volume can vary, depending on the type of fuel being used. Although this sound source is negligible at 90 % of the plants, without measures against structure-borne noise transmission at 10% of the plants, the limit of 30 dBA (for domestic installations) in the adjacent residential areas can be exceeded.

Measures to be taken: Include wrapping around the screw within the wall passage with rock wool, to prevent the introduction of sound in the wall. The creation of a floating floor in the storage room will help to acoustically decouple the equipment from the building.

- Rotation of the spring arms of the agitator (wood chip).

Measures to be taken: Install agitators horizontally. To allow for this the boiler needs to be installed 72cm lower than the storage room. Use only agitators up to 4m in residential buildings.

- Noises in the chimney from the induced draft fan.

Measures to be taken: Where the exhaust pipe from the boiler connects into the chimney a softer connection (using ceramic rope) will help to reduce resonance from the draught fan into the chimney.

- Noise in the chimney when the natural resonance frequency of a chimney equals the frequency emitted from the boiler (organ pipe effect).

Measures to be taken: Insulating and sealing the cleaning openings in masonry chimneys. Additional wall brackets for metal chimneys.

- Noise from the automatic heat exchanger cleaning and ash removal.

Measures to be taken: Lock these operations during the night, this can be done via the boiler controls. A floating floor in the boiler room and also standing the boiler on acoustic protection mats will help to reduce sound emissions. (e.g. MAFUND M ply 25mm), the strips should be 5cm wide and placed under the boiler down both sides.

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