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THERMO ACOUSTIC ENCLOSURE FOR ELECTRIFIED VEHICLE DRIVES

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THERMO ACOUSTIC ENCLOSURE FOR ELECTRIFIED VEHICLE DRIVES

Technical task:

In electrified vehicle drives, the electric motor and transmission (1 or 2 stages) are mechanically coupled to one another and have a relatively large free surface area through which heat can be released to the environment.

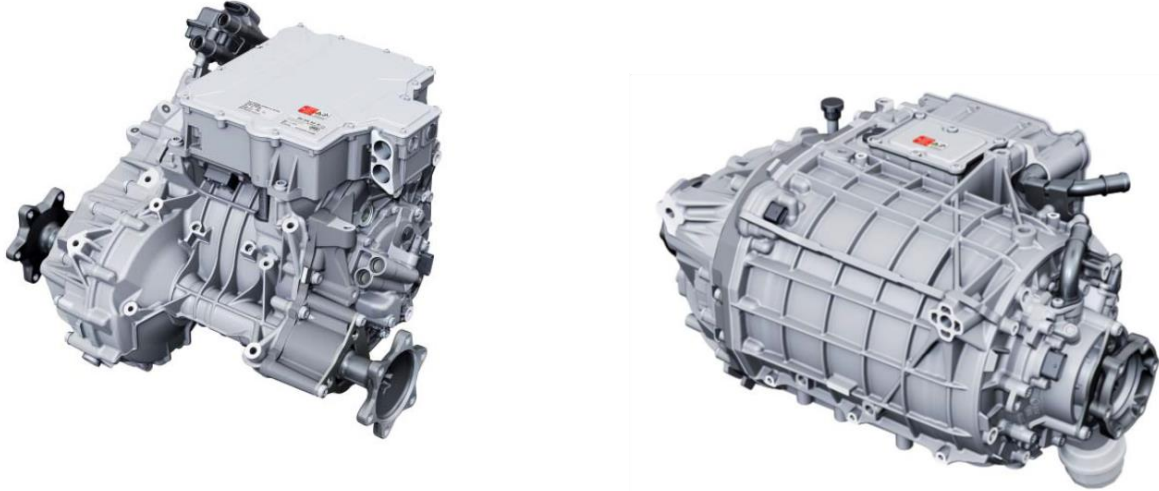


Figure 1: Front axle and rear axle (from left to right)

Initial situation:

This heat dissipation requires that the transmission can not be operated at the optimum operating point (range losses). In addition, e-machines generate high-frequency vibrations due to the rotor, the magnetic field and the noise of the running gear, which are acoustically disturbing.

Solution:

The content of this invention disclosure is a thermal-acoustic encapsulation of the electric machine and the gearbox. Here, the encapsulation structure is combined by an external thermally insulating and internal acoustically effective "heavy layer" (mat / absorption layer).

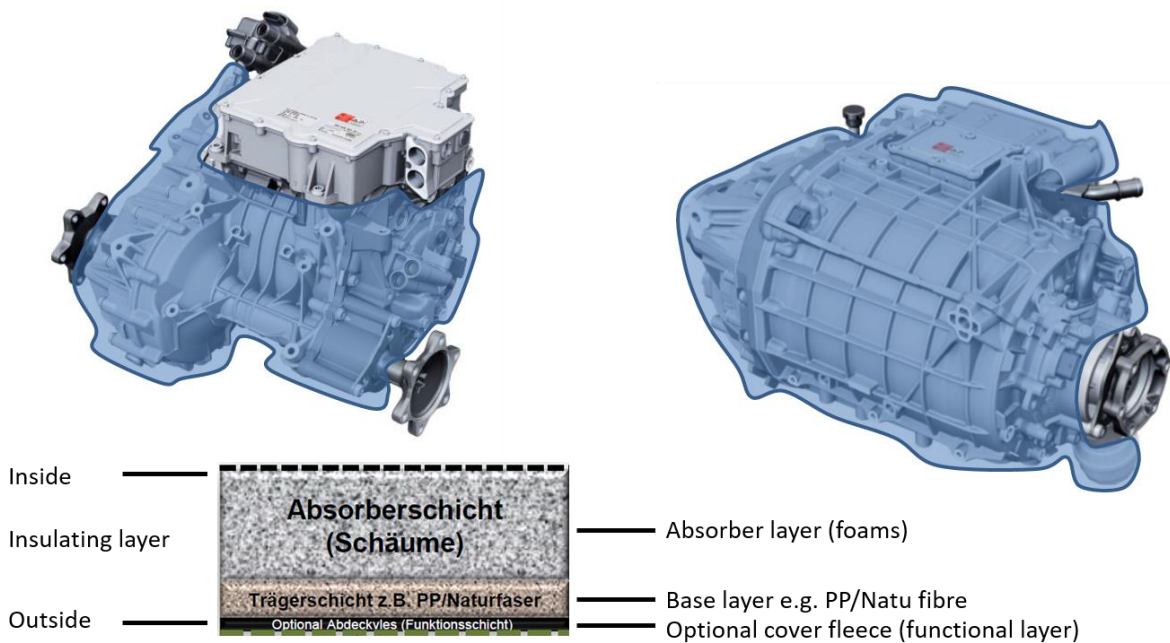


Figure 2: Front and rear axle with thermal-acoustic encapsulation

As visualised in Figure 2, the combined insulation shell of open-pored absorption foam with a closed, dimensionally stable carrier layer on the outer shell forms a functional and insulating insulation layer for the unit.

Advantages:

A significant added value is the reduction of the noise level. The insulation of the engine and gearbox prevents the occurrence of high-frequency vibrations.