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3D-WHEEL HOUSING-ISOLATION FROM 2D-FLEECE-PART

Technical Task:

In certain production vehicles, for example AU37X or AU276, 3D thermoformed foam parts are installed as wheel housing-insulation.

Initial Situation:

These components are manufactured in a thermoforming process. Here, changes are very cost-intensive.

Solution:

The technical innovation is to use 2D-fleece-parts that are pre-stamped along defined folding axes. These can be adapted easily by the worker to vehicle conditions and finally adopt a 3D geometry in the vehicle.

In addition, perforations along defined edges are conceivable and usable. With area stamping lines or patterns, the material can be applied locally thin, thus also constricting bottlenecks (see Figure 1) and optimally placed in the 3D geometry inside the vehicle (see Figure 2).

In the manufacturing process, the material used is 100% PET microfibre fleece (color anthracite) with a one-sided hardened outer layer („rind“) with a thickness of 15 mm (+ / + 3 mm). It should be noted that no PP meltblown nonwovens, mixed fiber fleeces or multi-layer constructions with membrane covers or cover fleece absorbers are permitted. The attachment is made by a fixation on entanglement, jamming, hole formation and cable strands.

Advantages:

- Very low tooling costs and very short tooling times
- Immediate availability of components
- Avoidance of prototype parts and series tools as cross-country parts
- Low costs for changes
- Almost unlimited possibilities for creative implementation
- Minimization of logistics costs by flat stacked delivery of the 2D tile
- Improved acoustical efficiency over thermoformed parts
- Low weights and part prices

Figure 1: Flat embossed pattern

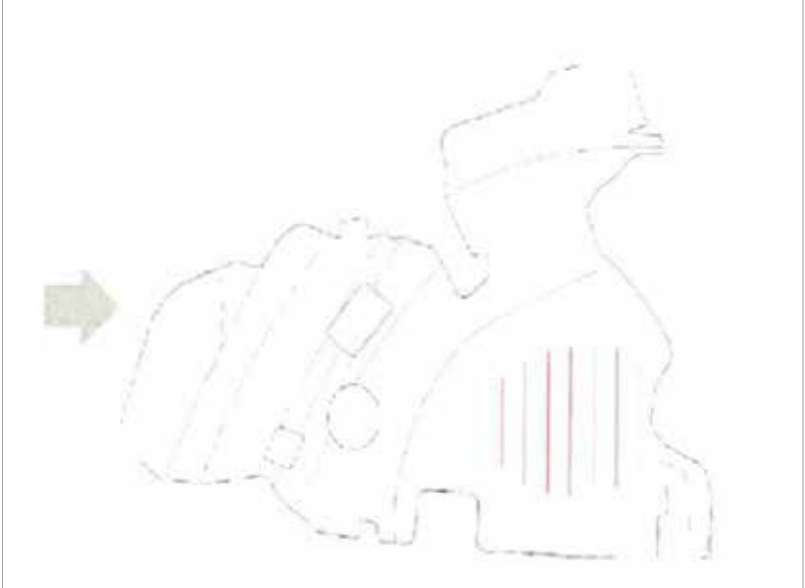


Figure 2: Adaption of 2D-fleece component in 3D-geometry inside the vehicle



Technical innovation

Thermally embossed lines, either single-sided or double sided possible, whereby a continuous closed component is still remaining (no perforation, no needling, no punching).

The attachment points are locally thermally embossed (with hot iron) and thereby fastened so well that at this point the component can be attached to a shell bolt or the like. For this, a small hole for performing the bolt is sufficient. The hard-embossed environment digs into the bolt (similar to the principle of a metal clamping disc, which can be found on heat protection plates on the motor vehicle)



Parts of pieces of fleece, which must be made thinner due to space frames, can be thermally embossed by this method, which is impossible in a stamping process.

