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USE OF SHAPE MEMORY POLYMER AS CW BLINDCOVER

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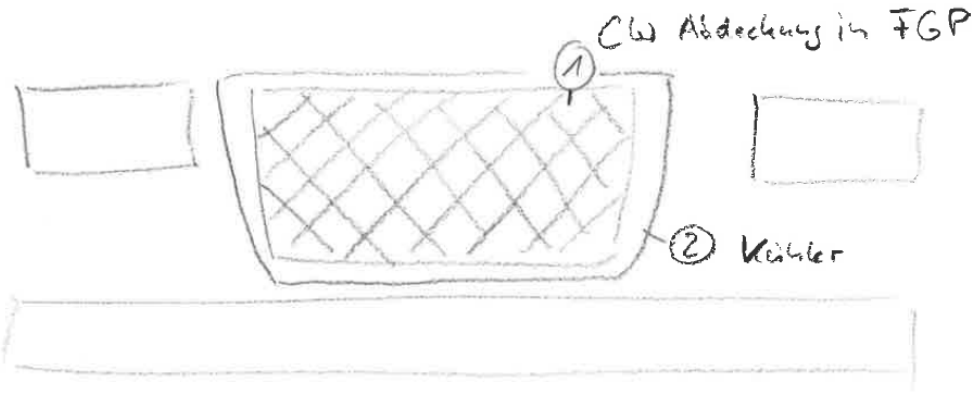
USE OF SHAPE MEMORY POLYMER (FGP) AS CW BLIND/COVER

Technical task:
Louver modules are used in the area of the cooler to reduce air resistance. Depending on the cooling air requirement of the unit, the louvre is opened (high air supply possible, but poor CW value) or closed (low air supply possible, low CW value). Researchers at Texas A&M University use an envelope made of FGP in building services engineering to open the envelope when hot and close it when cold. It is conceivable to use FGP as CW blinds or CW covers.

Initial situation:
The blind modules are electrically controlled and thus opened and closed. This results in a high component weight and high costs. In addition, the electrical control requires a certain amount of time. The costs for a necessary repair, for example after an accident (hull classification), are also relatively high.

Solution:
When using FGP, the CW cover is located behind the radiator cover and in front of the engine cooling system. The CW louvre/cover is designed to open at high temperatures (and thus necessary cooling air demand of the unit) and close at low temperatures, thus allowing a low CW value. The FGP is "programmed" by transforming it in the heated state and then cooling it down. If necessary, the cooling grille itself can also be made of FGP.

Advantages:
With a CW louvre/cover with FGP, a mechanical opening/closing process is not necessary, as the component changes its geometry depending on the temperature in such a way that air supply is either possible (with a poor CW value) or not possible (with a good CW value). This allows a short switching time. Also an electrical control of the component is not necessary.



1) CW coverage in FGP
2) Radiator cover