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ICE-FREE WINDSHIELD

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ICE-FREE WINDSHIELD

Technical task:

Windshield removal of ice and snow.

Initial situation:

If a vehicle remains outside for a longer period of time at temperatures below freezing, melted snow or condensed humidity freezes as ice on the windscreen, especially overnight. Before driving, the ice must now be removed with great effort, e.g. mechanically by an ice scraper or by chemical ice solvers. Mechanical ice scrapers often damage and scratch the windscreen. Chemical de-icers are expensive and have a manageable effect. A parking heater must be set correctly to the planned departure time. Heated windscreens are very rarely installed in vehicles and if only available as optional equipment.

Solution:

Modern windscreens are laminated glass. One idea is to insert a plastic core between an inner and outer glass pane. This intermediate layer is made of a material that acts as a latent heat accumulator.

Advantages:

During vehicle operation, the latent heat storage layer of the windscreen is enriched with energy, e.g. heat from the vehicle interior. When the vehicle is subsequently parked, the latent heat accumulator continuously releases energy to the windscreen, keeping it "warm". After appropriate design, it is thus possible to guarantee an ice-free windscreen for classic vehicle parking overnight until the next journey.

Possible application:

The intermediate layer of the windscreen consists of phase change materials. If energy is supplied to this material (usually by means of heat), a certain aggregate state A is reached. If energy is subsequently withdrawn from the material (usually by heat loss), a phase transition to state of aggregation B takes place. During this change of state, energy is continuously released. This energy is used to keep the windshield by temperatures above freezing point.