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BRAKE RECUPERATION / INCREASE IN BRAKING

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BRAKE RECUPERATION / INCREASE IN BRAKING POWER DUE TO THERMAL STORAGE

Technical task:

The task of the technical innovation is to be able to store electrical energy at maximum charged traction battery and a heated cooling circuit to further recuperate and relieve the brake system can.

Initial situation:

In electric vehicles, no internal combustion engine is available whose drag torque when driving downhill in addition to the brake system of the vehicle can act. In electric vehicles, the Reku moment of electric motors is used in generator mode to relieve the brake system and recover energy. However, if the traction battery is maximally charged, the electrical energy must be dissipated in another way. Here, the high-voltage heater installed in the vehicle is used, which converts the electrical energy into heat and delivers it to the cooling circuit.

Solution:

Fig. 9a:

In the cooling water circuit, a thermal storage is installed in front of or behind the high-voltage water heater in which the energy generated by the PTC is stored.

Fig. 9b:

Instead of integrating the HV-PTC in a cooling water circuit, thermal storage systems operating at a higher temperature level ($> 120\text{ °C}$) than the coolant used in the vehicle allow the HV-PTC to be integrated directly into the storage material.

Fig. 9c:

The thermal storage is integrated directly into the cooling circuit and is available as a heat source for the heat pump function of the cooling circuit.

Advantages:

- The energy generated by the regenerative operation of the electric motors is not released to the environment, but is available in the heat storage for a further and also staggered use in the vehicle in the thermal storage. For example, for heating the interior, the battery or any other sink.

Possible application:

- Vehicles with electric drive.

