DIRECT COOLING OF BATTERY CELLS

Verena Blunder

Bertrandt Ingenieurbüro GmbH
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Technical task:
Direct cooling of battery cells.

Initial situation:
Currently, the battery connections are being cooled. However, these connections are only designed for electrical currents and not for cooling. If the contact is not cooled by the device, sometimes a single (third) terminal is required for cooling.

Solution:
The battery cells can be designed with contacts optimized for cooling, e.g. along the long side. These cells can be attached to a cooling structure with electrically insulated heat sinks. As an option, additional cell connections can be used to separate the "power supply" and "cooling" functions.

Figure 1

Figure 2

Coolant in-/ return flow

cooling tubes
- good thermal conductivity
- they conduct the coolant
- To be electrically isolated from each other

Connecting elements (electrical insulator)
“Pillow”: presses the cooling contacts to the cooling tube
The cooling tube can also be welded together with the cooling contact.

Figure 3

Figure 4
By heating, aluminium and copper (anode, cathode) also extract heat from the cell. These connections are cooled outside the cell.

**Figure 5**

**Advantages:**
- Better cooling
- Lower temperature difference in the cells
- Longer service life
- Better driving experience (higher continuous power through better cooling possible)