

Contacting Elements for an Energy Storage Cell

Reference No: B74067

CHALLENGE

Conventionally, the energy storage cells in an energy storage system are contacted by resistance welding, laser welding or clamping. These contacting methods have relatively high manufacturing complexity and do not allow for an easy and cheap replacement of the cells. Furthermore, these methods provide only restricted options for cooling the energy storage cells sufficiently. An insufficient or inefficient cooling of the storage energy cells can very negatively influence the performance and the lifetime of the energy storage cells, due to the formation of a temperature gradient within the cells themselves.

INNOVATION

The invention consists of a **releasable mechanical connection**, which presses an energy storage cell against a printed circuit board facing the cell. This construction has the following advantages:

- It provides a simple manufacturing process and allows for **easily replacing a cell** from the storage system;
- The single-sided contacting offers **more degrees of freedom for cooling the energy storage cell**. For instance, the cells can be immersed in a cooling medium of be continuously cooled by an air stream;
- The energy storage cell can be a **standardized round cell**, which simplifies the supplying of the basic construction element of the energy storage system and decreases the material costs;
- **Only one printed circuit board is necessary** for building up the energy storage system, further decreasing the manufacturing costs.

COMMERCIAL OPPORTUNITIES

The invention is relevant for energy storage systems (**batteries**), in particular for the field of **automotive**.

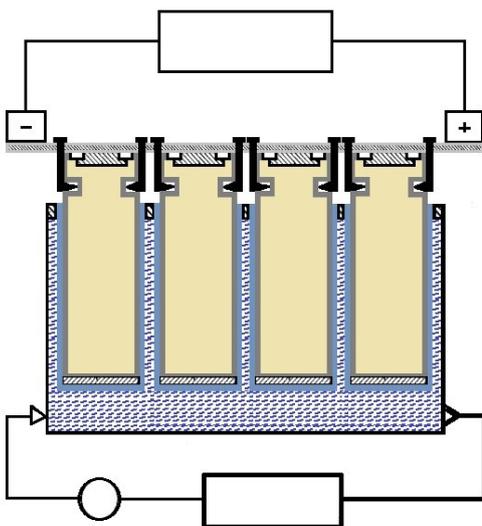


Figure: schematic illustration of a possible realization of the invention¹. All storage cells are connected to a printed single circuit board through a releasable mechanical connection. The circuit board is connected to a load (or equivalently to a charger device) over a positive and a negative pole. The energy storage cells are immersed in cooling liquid having an inlet and outlet valve and a pump.

REFERENCES:

- ① US 10,340,487 B2; EP 3 161 884 A2; WO 2015/197545; DE 10 2014 121243 A1.