GEMÜ solutions for battery filling processes

One of the most important steps in the manufacture of battery cells is filling the cell with electrolyte. GEMÜ has developed its own solution to this end, which enables process-reliable and precise filling.

GEMÜ solutions for electrolyte filling

Especially the future technology of e-mobility, but also devices needed daily such as smartphones, tablets and in particular power tools, are operated with mobile batteries. The demand for solutions for storing renewable energies will also increase considerably. Lithium-ion batteries have become especially well established. They combine a comparatively low weight with high charging efficiency factors and a high number of charging cycles.

Filling the cell with electrolyte is an important part of battery manufacture. As the electrolytes are flammable, corrosive and toxic, battery filling places significant demands on the used valves, measurement and control systems. In addition, the continuous circulation of the medium plays an important role in preventing possible crystallization and in terms of filling accuracy.

In addition to the manufacture of special valves for the semiconductor industry, GEMÜ has also specialized in battery market applications in recent years. So GEMÜ is already able to offer optimal solutions for the "Mixing slurry" and "Electrode coating" process steps, or for filling cells with electrolyte. The battery filling functional model demonstrates how the common cell formats can be filled so as to be process-reliable, using subsystems made from a combination of GEMÜ components.

Prismatic cells

Pouch cells

Round cells

GEMÜ components for battery applications

The model shows how filling various cell formats can be designed efficiently and safely using GEMÜ components. GEMÜ does not act merely as a supplier of components here, but also sees itself as a manufacturer of subsystems for support with the flexible and efficient design of complex system configurations.
The subsystems are thereby planned, manufactured and checked according to customer specifications before they are delivered. The parts can be directly integrated into the prefabricated system at the place of use, which allows final installation of the subassemblies to be performed so as to save time and money. GEMÜ offers solutions for prismatic cells, pouch cells and round cells here:

	Prismatic cells	Pouch cells	Round cells
Filling quantity	Adjustable from 20–200 g	Adjustable from 20–65 g	Adjustable from 4–12 g
Filling speed	3.5 seconds (at 100 g)	9 seconds (at 60 g)	e.g. 2 seconds (at 10 g)
Dosing accuracy	±0.4%	±2.3%	±0.1%

Why GEMÜ?

- Established valve solutions from applications in the semiconductor market as well as pharmaceutical and food filling applications could be transferred to the battery market
- Solution for filling the different cell types tested in continuous operation for specific applications and customers
- The necessary filling accuracy is achieved through the use of different cell designs

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