

Structural Cooling for a New Kind of Battery Architecture



the problem

"Batteries are like humans.
If they're too hot or too cold, they die."

the problem

Electrification enters its **high-power era**.

Heat generation becomes the bottleneck scaling with the square of the current ($Q \propto I^2R$).

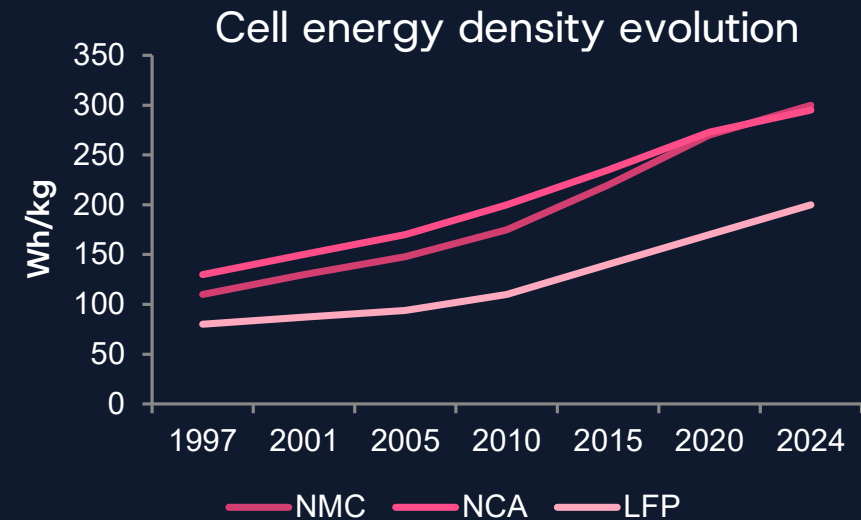
System-level consequences:

> Charging power is capped to manage heat

> High cell temperatures decrease lifetime

> Hotspots can trigger catastrophic failure

> No unlocking of full next-gen cell potential



the solution

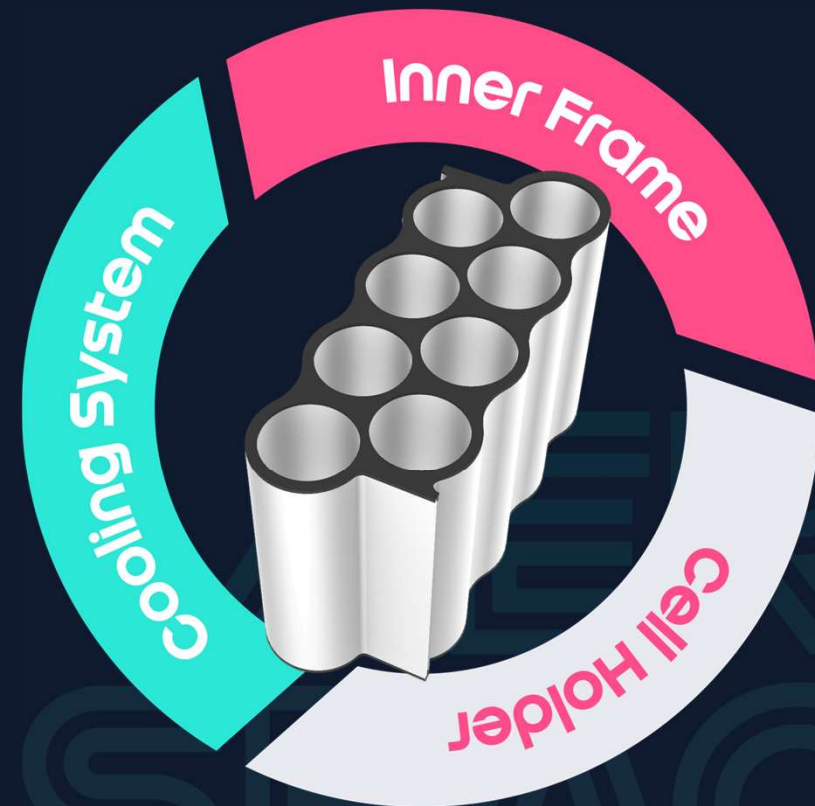
leitspalt introduces Aerospace Engineering principles
of **multifunctionality** into terrestrial battery systems.

the solution

Our multifunctional cooling structure integrates **three core battery functions** into one component.

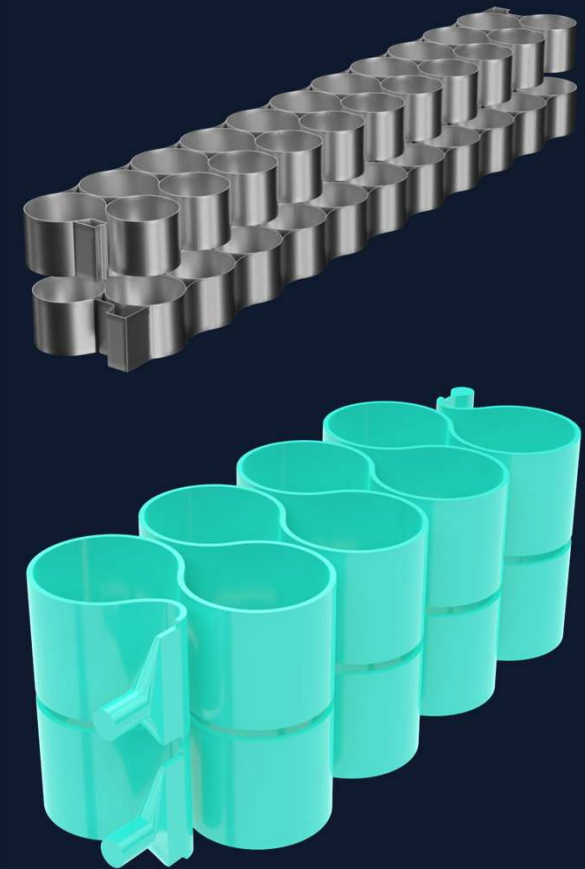
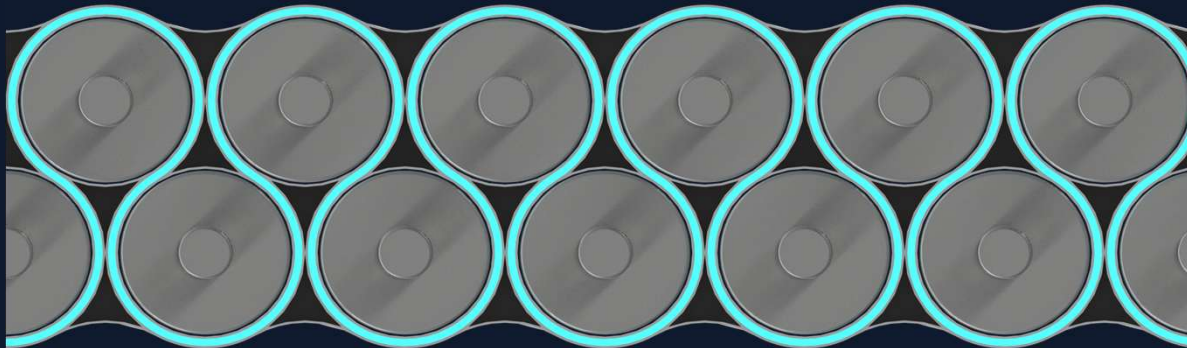
Protected by two patents:

- DE102022111769B4 (granted; national phase)
- PCT/EP2024/081155 (pending; public)



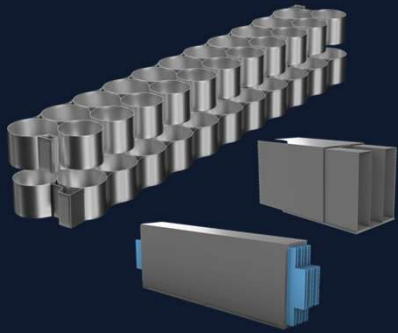
the solution

Two interlocking profiles form our cooling channel, enhancing cooling performance by 4x.

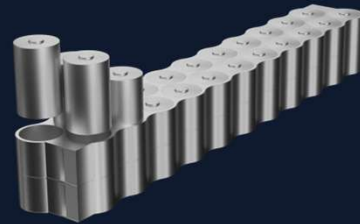


the solution

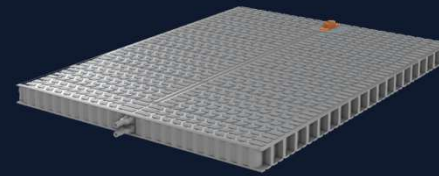
By fusing cooling, structural support, and cell holding into a single system, we drastically **reduce battery pack complexity**.



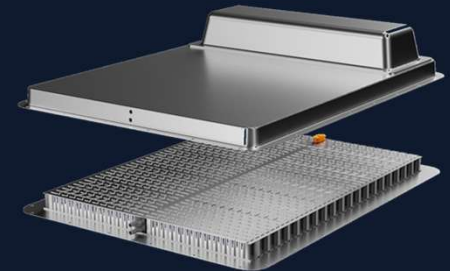
leitspalt structure



Cell integration



Battery core



Structural pack

unique selling proposition

In automotive, our architecture **cuts cost by 20%**, while enabling **ultra-fast charging** and **range improvements**.



20% cost savings¹



Improved safety



<10-minute charging²



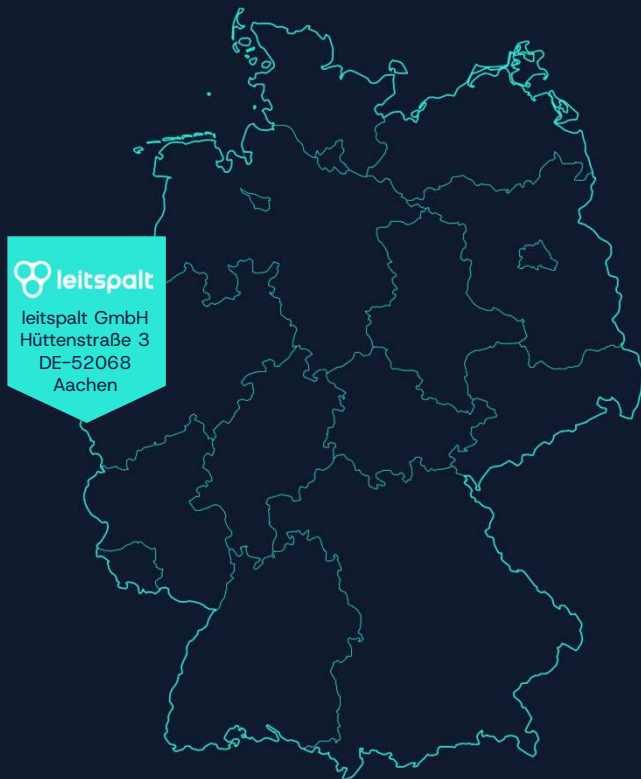
7% range increase³



100% cell recyclability

1. Cost savings of €7/kWh at pack level (excluding cells), equating to €525 in savings per vehicle for a typical 75 kWh battery
2. Charging from 20% to 80% SoC
3. Range increase compared with Tesla Model 3 LR

leitspalt in a nutshell – who we are



- Founded **2024** based on aerospace research at RWTH Aachen University
- **22 employees** (82% engineers)
- Supported by the **European Union** (EIC Accelerator 2025)

leading the road ahead.



European
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Funded by
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Urban Mobility

VDA

Verband der
Automobilindustrie



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