REPORT · BATTERY THERMAL MANAGEMENT

Battery Thermal Management for xEVs

Cold Plate Technologies

Technology landscape · supplier benchmark · innovation outlook

A structured study of how battery packs in electric and hybrid vehicles are cooled — covering cooling technologies, cold-plate architectures, future cell chemistries and the suppliers shaping the market.

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WHAT'S INSIDE

Cooling technologies — *side by side.*

A structured comparison of how xEV battery packs are cooled — the competing cooling technologies, the cold-plate architectures that dominate today's vehicles, the thermal design targets they must hit and the OEM pain points they exist to solve.

01

Cooling Technologies

Air, liquid cold plates, evaporative/boiling and immersion cooling compared on heat-flux density, cost and integration complexity — with the typical C-rate capability and use case of each.

02

Cold-Plate Architectures

Stamped, extruded, serpentine-tube, microchannel and hybrid (PCM) plate designs — manufacturing routes, cell-to-pack & cell-to-chassis integration and the cost-versus-performance trade-offs.

03

Targets & Pain Points

Thermal design targets — 20–35 °C cell window, ≤5 °C cell-to-cell ΔT at fast charge — and the OEM pain points cold plates must solve: ultra-fast charging, safety, durability and cost.

4 cooling methods · 5 plate architectures · 12 key suppliers

INSIDE THE FULL REPORT

The *technical depth* in detail.

Beyond today's mainstream plates, the report dives into high-performance cooling and where the technology is heading. A selection of what the full report details:

01

Immersion & Emerging

Deep dive into single- and two-phase immersion cooling — heat flux >30 W/cm², ΔT below 2 °C — against its sealing, coolant-cost and serviceability hurdles; heat-pipe and vapor-chamber concepts.

02

Future Chemistries

Solid-state, high-nickel and silicon-rich cells and what they demand of cooling: tighter ΔT (<3 °C), higher localised heat flux, heating for ionic conductivity, and the impact on plate design.

03

Innovation & Modularity

Structural / cell-to-chassis batteries turning the plate into a load-bearing, multifunctional part; the modular battery-module kit and what standardisation means for cold-plate suppliers.

- Liquid cold plates are the mainstream interface — ~10–30 W/cm² at medium cost.
- Immersion reaches >30 W/cm² and <2 °C ΔT — at a cost & sealing premium.

Technology, suppliers *and outlook.*

WHAT YOU RECEIVE

— Full PDF report — technologies, benchmark & innovation

— Cooling-technology & plate-architecture comparison matrices

— Supplier landscape & thermal design-target reference

— Q&A session with an MDSG battery thermal-management expert

GET THE FULL REPORT

Purchase the report — *talk to an expert.*

The full report covers the complete cooling-technology landscape, cold-plate architectures and benchmark, future battery chemistries and the innovation outlook — plus a Q&A session with one of our battery thermal-management experts.

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