

FEV Signature Solutions

Thermal propagation control hardware for battery



Our solution allows thermal propagation control in BEV's

FEV offers

- ▶ a unique battery solution which
 - stops of thermal runaway
 - meets legal requirements for thermal runaway (ECER100)
 - operates at all states of charge
 - is suitable for all types of cells, including pouch cells
 - is available on all levels from module to cell pack

Why FEV

- ▶ Applicable for existing battery packs and new development
- ▶ Verified features from module to pack in real life tests and simulation
- ▶ Extensive experience in module design, venting, conducting of gas and use of different materials
- ▶ Simulation services by experienced simulation team including wide temperature and force variations



Reference projects

POUCH CELL – STOP THERMAL RUNAWAY
BATTERY CONCEPT FOR GERMAN OEM

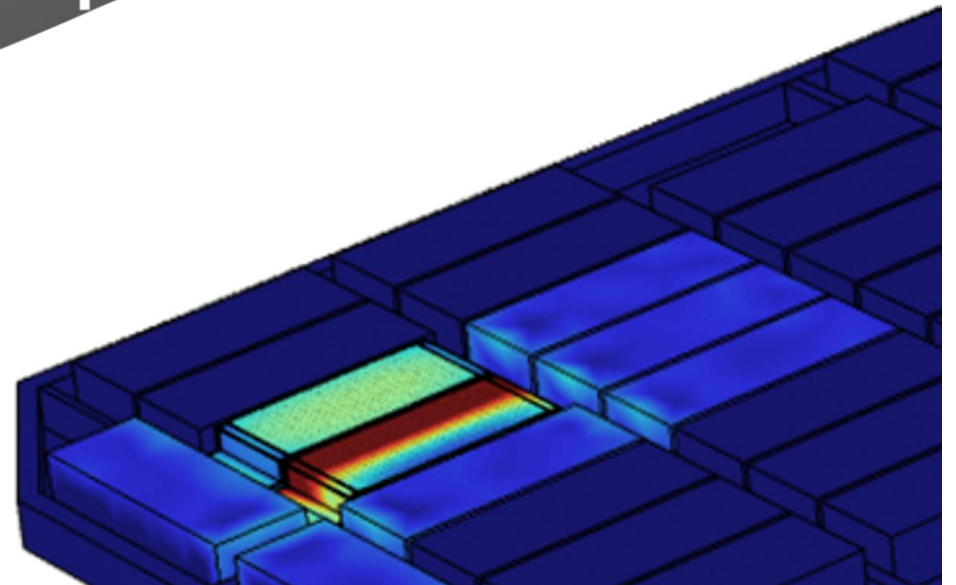


Battery module with a housing

SCHEVER; QUAST
DE102021133919A1
(patent application)



- ▶ NMC HV Battery
- ▶ Limited energy reduction
- ▶ Valid for full pack all modules 95% charged
- ▶ Stable limitation of short circuit to exactly one cell (no thermal runaway)
- ▶ Stop thermal runaway stable with consideration of all tolerances during installation
- ▶ FEV key solution patent application pending (license available for FEV customers)

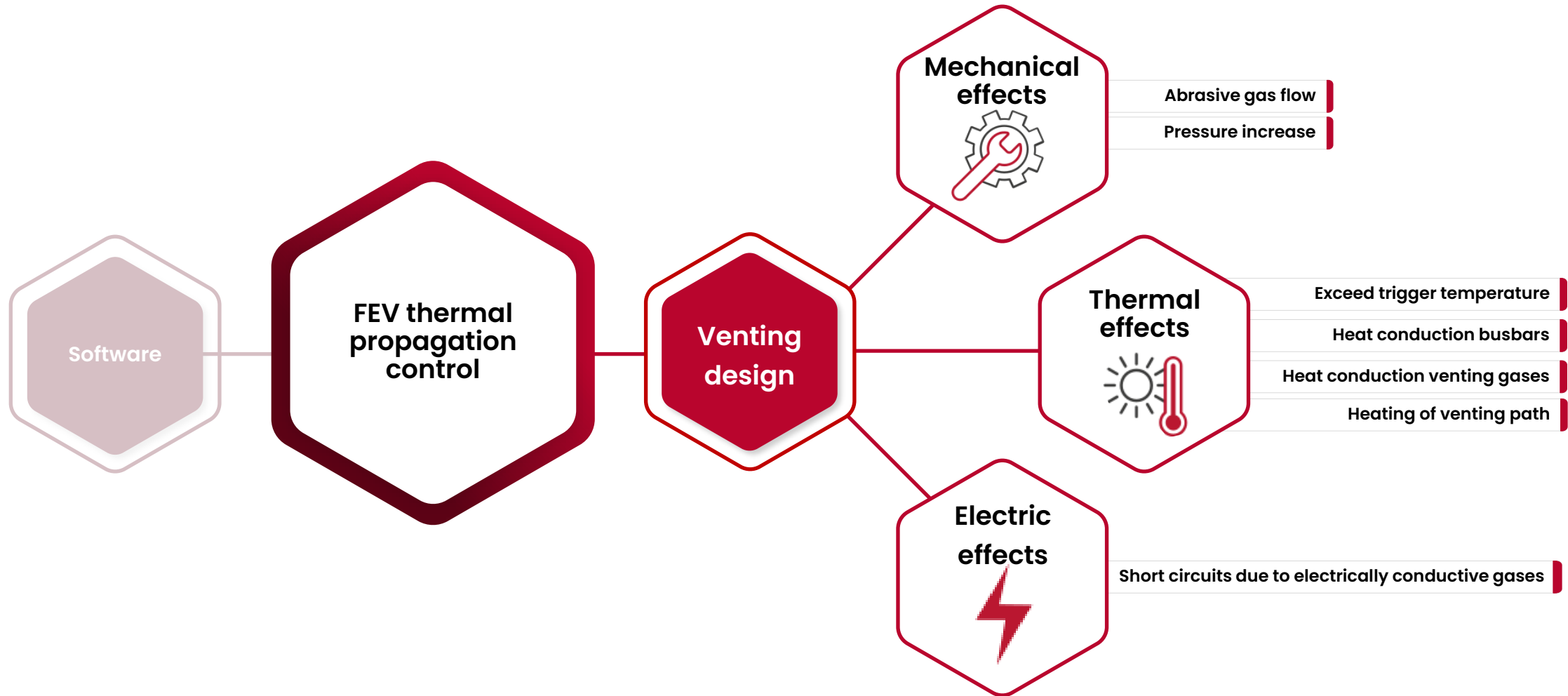


*NMC (lithium Nickel Manganese Cobalt Oxide Batteries)

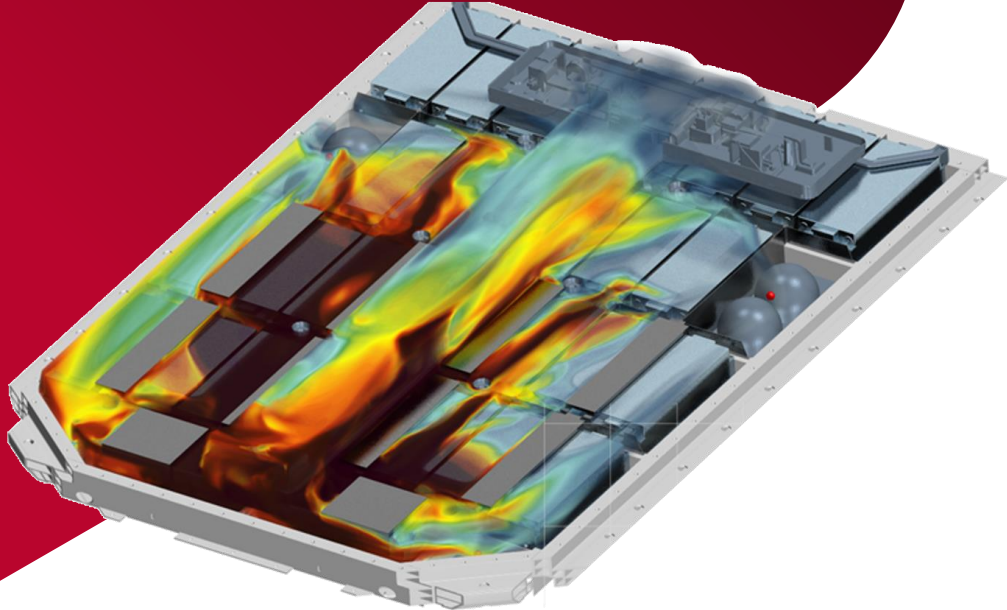
FEV considers all effects during a thermal propagation event in battery packs



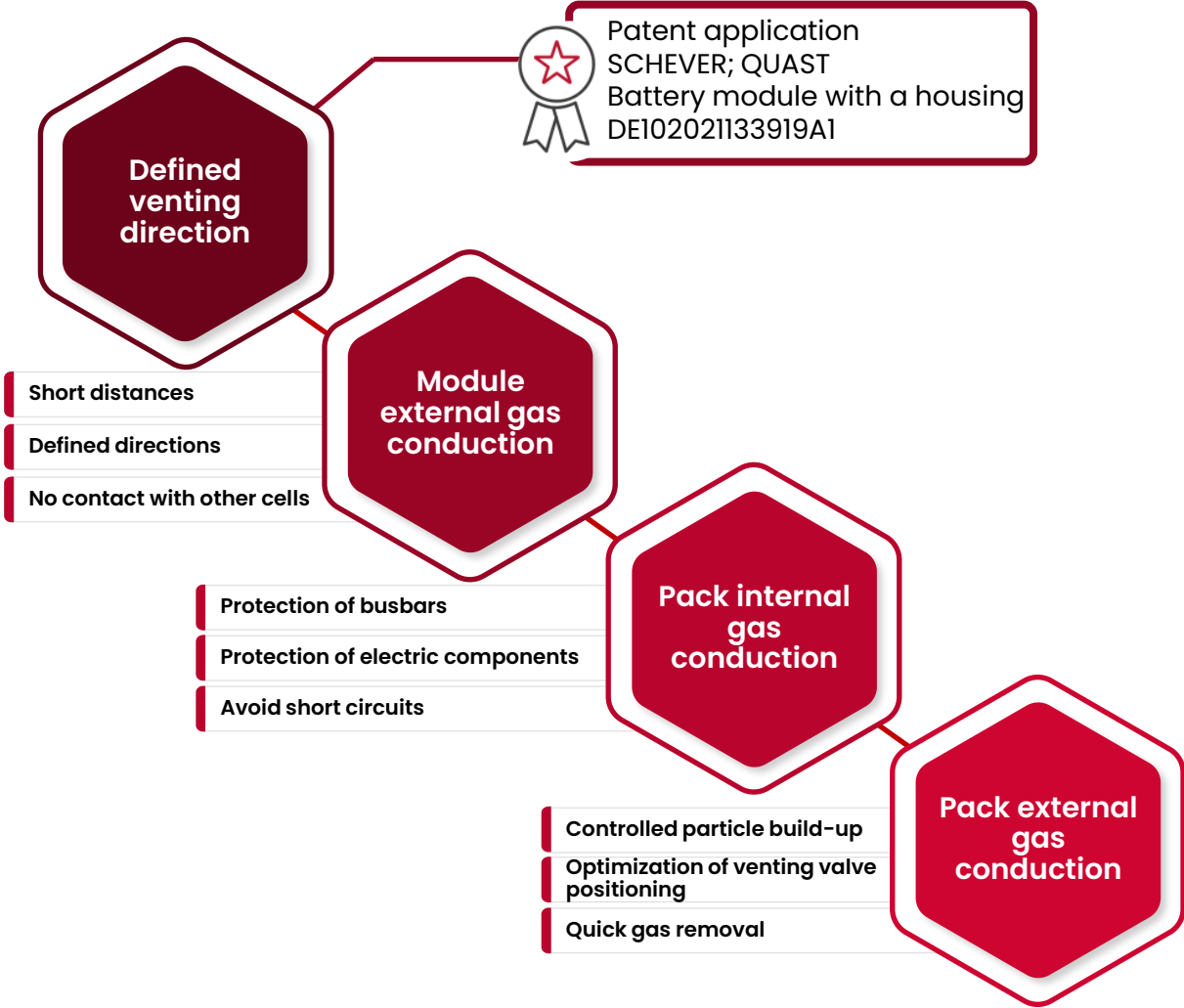
CELL VENTING HARDWARE AS PART OF FEV'S THERMAL PROPAGATION CONTROL



Four steps of successful thermal propagation control



FEV simulation of battery pack cell venting



Get in touch with us for further information



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signature-solutions](http://www.fev.com/en/signature-solutions)