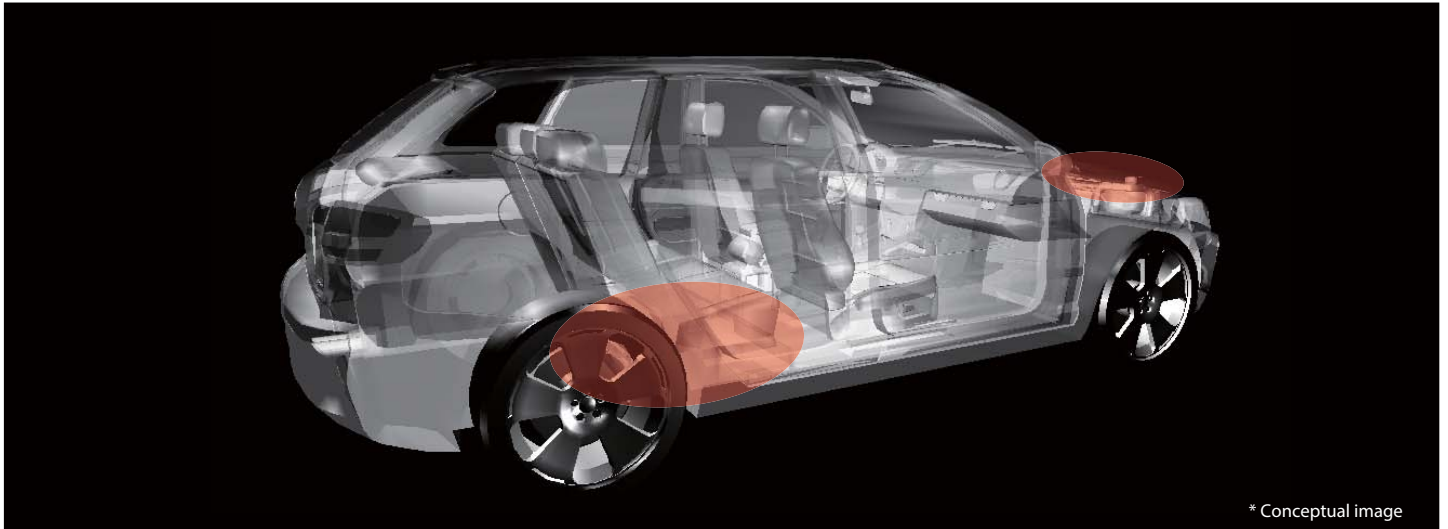


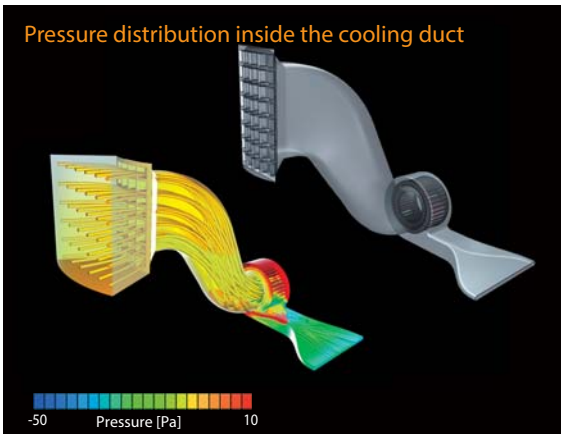
Analysis of Cooling Systems for Hybrid and Electric Vehicles (HEV/EV)



* Conceptual image

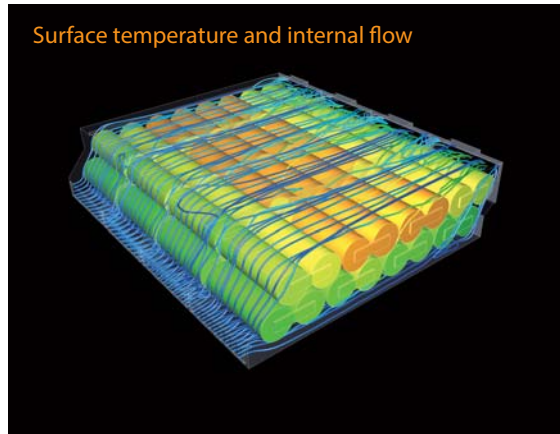
Battery Cooling Fan Module

Pressure distribution inside the cooling duct



Battery Packs

Surface temperature and internal flow



Direct Liquid Cooled IGBT Module



The IGBT (Insulated Gate Bipolar Transistors) plays an essential role in activating the inverter within the PCU (Power Control Unit), the main HEV/EV control module, to generate three-phase electric power.

The IGBT output must be adjusted depending on the vehicle size class. With a larger output, more heat will be generated from the IGBT, which makes cooling performance a crucial factor when designing IGBT modules. Simulation enables engineers to visually evaluate the impact of heat sink shape, observe the effect of heat dissipation, the difference in heat distribution, and other temperature critical patterns. This helps engineers to understand the thermal contributions from each component and determine the optimal design.

Comparison of heat sink designs that reduce device temperature

