

Multi-Material Battery Case Concept for BEV

Benefits

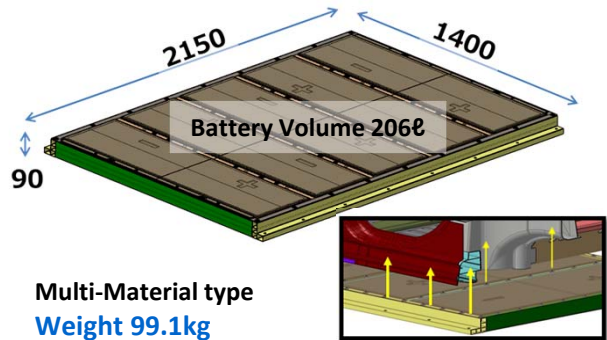
- Ensures light weight and strength (ISO12405-3, GB31467.3)
- Ensures strength and water-tightness using original dissimilar material welding,
- Enables selection of structural materials according to cost/lightweight target

Key Points

Features of the battery pack structure

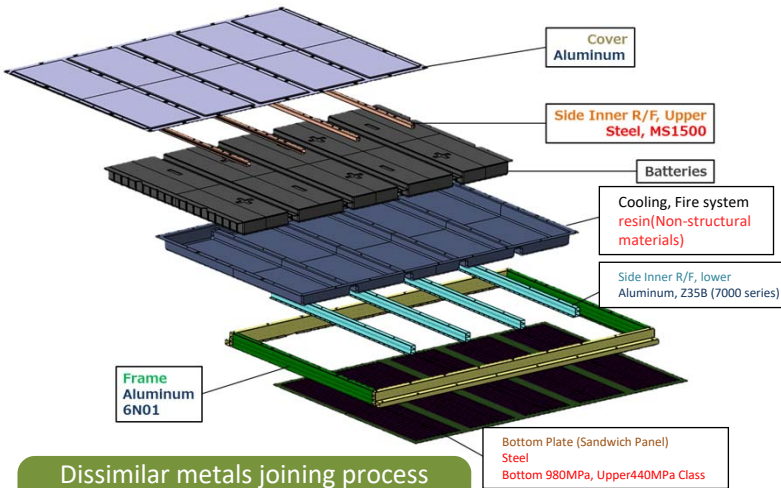
1. A multi-material structure that balances light weight and low cost, based on a welded assembly structure.
2. Material composition
Frame: Aluminum extruded material; **Bottom panel:** Steel; **Inner R/F:** High-strength steel and aluminum.
3. Applicable to lateral and bottom pushing strength.
 Note 1: Pushing side surface by $\Phi 150$ circle, according to (ISO-3 12405 (2014), GB 31467.3 (2015))
 Note 2: 30 square jig pushed from the bottom by the equivalent amount of vehicle weight.

External dimensions and mass performance



Multi-Material type
Weight 99.1kg
Natural frequency 57Hz
(Bolted to BIW)

Inner structure view of multi-material type



Dissimilar metals joining process used in Multi-material type

EASW™ (Element Arc Spot Welding, Original Developed),
 FCW brazing for Steel/Al (Original developed, Option)

Material selection and mass comparison, for same size and strength

	All-Aluminum 83.5kg
	Multi-material Hybrid structure 99.1kg
	All-Steel 126.3kg
vs (Tesla Model S) Same dimensions, strength is different	
Model-S case All-Aluminum 114.6kg	