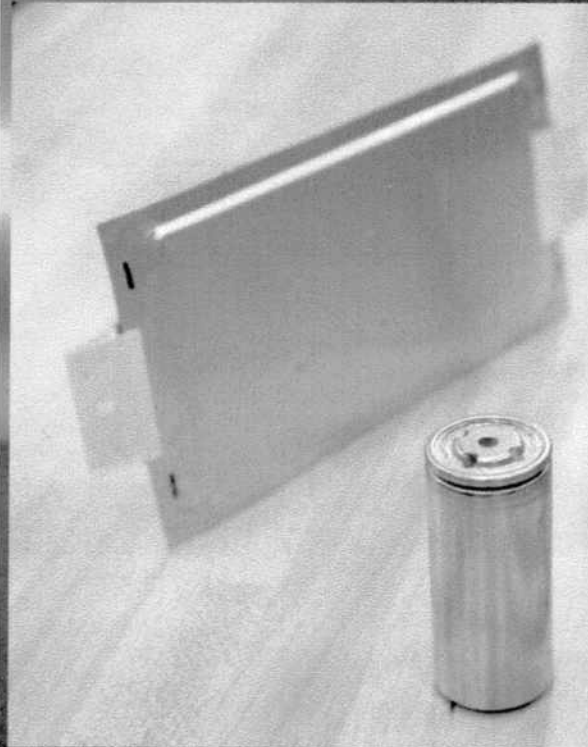




*Michigan Economic Growth Opportunity
Through Electrified Transportation*

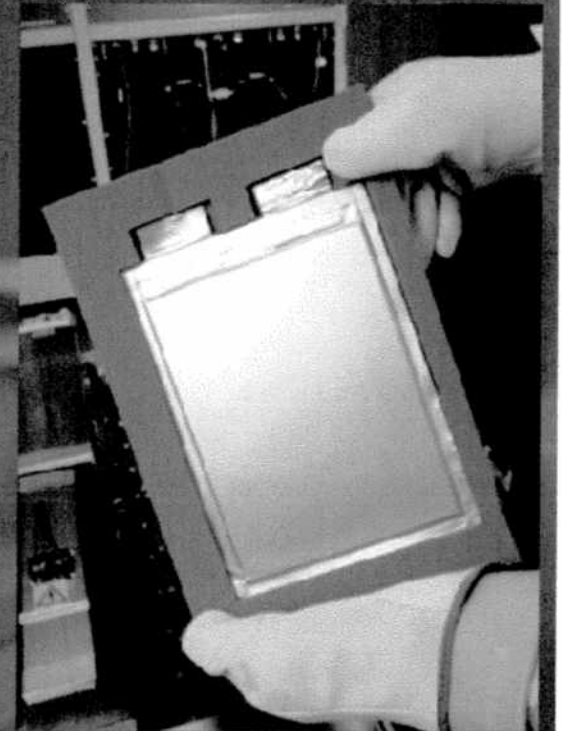
HEV to EREV Battery Cell Comparison



More than 25 Lithium ion technologies available

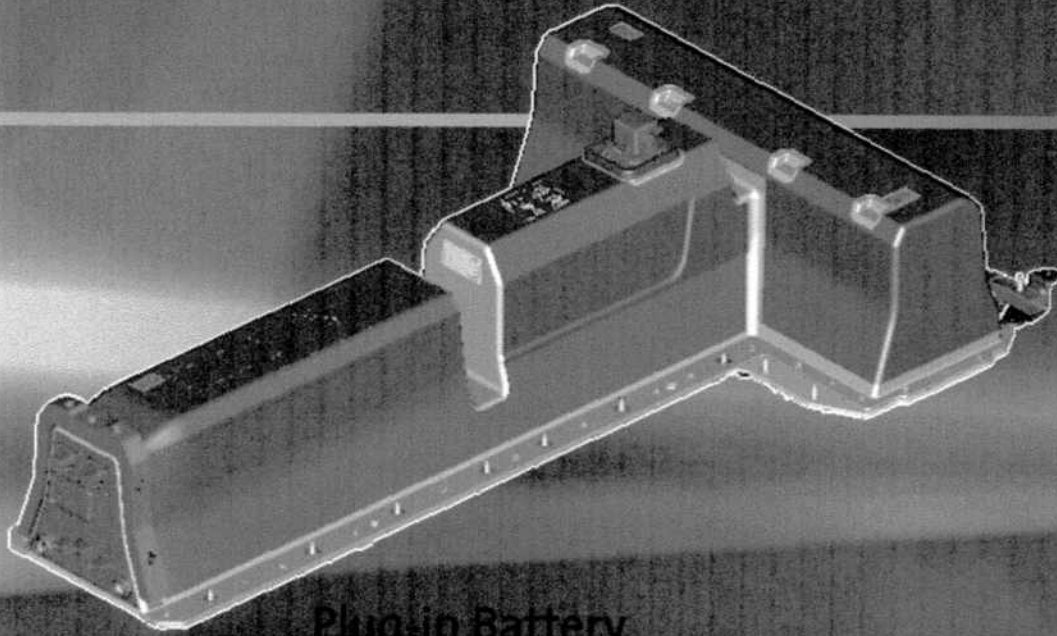
Available in prismatic or cylindrical

Cell chemistry differs

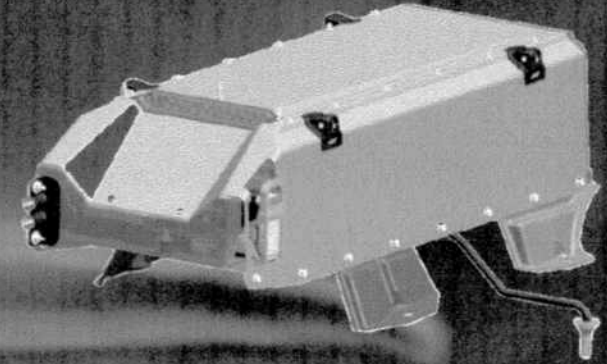


**EREV Cells
(Plug in)**

Plug-in and HEV Li-Ion Battery Pack Comparison



Plug-in Battery



HEV Battery

HEV Battery Pack Characteristics

1.5 – 4.0 kWh (Application Dependent)

25% of Plug-in Battery Mass

35% of Plug-in Battery Size

HEV Battery Pack Production Benefits to Michigan

- ❖ GM is considering the development of up to 5 HEV vehicle architectures in addition to its 5 existing models, starting production in calendar year 2013
- ❖ GM Considering HEV battery related investment of \$250-\$450M in Michigan
 - ❖ Includes Engineering, Development, Testing, Manufacturing, Components, and Research.
- ❖ Over 600 new Michigan jobs potentially created with HEV battery pack engineering, development, and production.
 - ❖ Includes Component Suppliers, Cell manufacturing, Battery Manufacturing, GM Engineering, Supplier Engineering, and

Summary

- ❖ HEV cell technology is driving separate manufacturing and engineering investment
- ❖ HEV technology is economically suited for high volume vehicle applications
- ❖ HEV battery packs are more economically shipped due to smaller size and weight
 - Non-domestic pack and cell manufacturers can actively compete on this basis
 - Locating HEV pack manufacturing with vehicle the assembly plants is not essential.
 - Battery packs can be made economically feasible to export out of the U.S.