Automotive Batteries and their competitors

Report Background

This brand new report examines market for and technology used for various energy storage technologies used in Micro, Mild, Full, Plug-In Hybrids and Extended Range and all Electric Vehicles.

Leading industry analysts expect rapid growth in the market for these technologies, which will see them quickly become one of the highest value sectors of the automotive industry supply chain. For many applications the technology is disruptive, and will drive new technology investments, attract new companies into the supply chain and force vehicle manufacturers and their suppliers to collaborate or make acquisitions to stay competitive in the future.

So called ‘green’ vehicle technologies will all require advanced energy storage systems, ranging from improved SLI (starting, lighting, and ignition) batteries for micro hybrids with stop-start and regenerative braking, to larger traction batteries for electric vehicles and hybrids, as well as ultra-capacitors, hydraulic hybrids or flywheel systems. The report concentrates on the advanced energy storage for hybrid and electric vehicles and their variants, comparing the requirements for the alternative drivelines to the power requirements of conventional vehicles.

Written in association with Knibb Gormezano and Partners, the 190 page report, focuses on advanced battery systems, but also looks at ultra-capacitors, hydraulic and flywheel energy storage systems.

The report includes market penetration forecasts out to 2015 and 36 company profiles of major players in the sector.

Report sample

put in place, where the vehicle manufacturer or its appointed agent takes the battery back and recycles them into new battery packs either for automotive or non-automotive use.

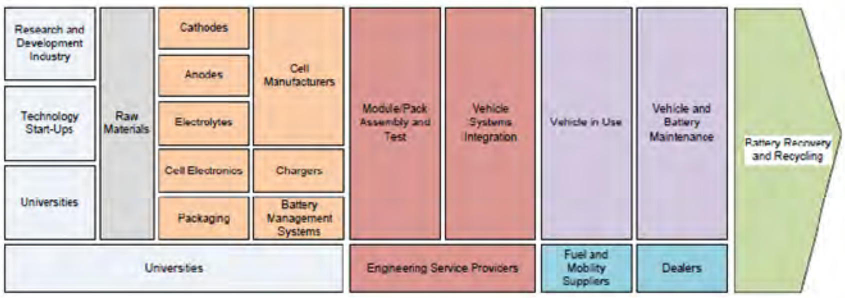
Safety

Safety is a critical consideration when rolling out advanced power storage devices is the safety aspect. Vehicles with higher voltages and advanced batteries need to be engineered to fail or crash safe and maintenance and repair procedures will need to be reviewed to ensure customers and mechanics do not accidentally electrocute themselves. Lithium ion batteries, as used in laptop PCs and mobile phones could be considered unsafe in larger applications hence the development of alternative chemistries that are inherently more safety.

The Value Chain

The value chain in the automotive industry will change as there is a move toward more electric vehicles. This would mean dealers will have to develop a capability to service electric vehicles and hybrids, which is likely to require different skills and investment than current conventional powertrains. The fuel sector will also change, with new models for delivery of electricity through a network of charging points, which may or may not be based at current gas/petrol stations. It is difficult to put a value on the complete value chain that will be generated by advanced energy storage, as many of the investments and technologies will find their way into non-automotive applications. However it is certain that a cross-fertilisation of R&D from the automotive to non-automotive 'green' energy sectors will be beneficial to the global economy.

Figure 71: Value chain



Rationalisation and Consolidation

With such a large potential market there is room for a number of players but investment levels, potential consolidation of the customer base, and other market forces leaves significant potential for rationalisation and consolidation in a number of areas. Though not covered explicitly there is potential for vehicle manufacturers to strengthen their ownership of battery suppliers and integrate downwards, through some of the component systems in their desire to protect their intellectual properly, value chain and supply base. Examples to date include Cobasys which has been acquired by SB LiMotive, Avestor by Bollore and Sanyo which is being acquired by Panasonic. Alliances will also be required to share technology and reduce investment levels. A number of examples are covered in Figure 67.

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Packaging

Lithium Chemistries
Lithium Nickel Cobalt Aluminium - Li(NiCoAl)O2 - NCA
Lithium Cobalt Oxide (LCO) – LiCoO2
Lithium Iron Phosphate (LFP) – LiFePO4
Lithium Magnesium Iron Phosphate (LFMP)
Lithium Manganese Spinel (LMO/LMS)- LiMn2O4
Lithium Nickel Cobalt Manganese (NCM)- Li(NiCoMn)O2
Lithium Iron Sulphide (LFS) – LiFeS
Lithium Polymer (Li-Po)
Lithium Nickel LiNiO2
Lithium Titanate Oxide (LTO) - Li4Ti5O12
Lithium Metal Polymer (LMP)
Lithium Vanadium Phosphate (LVP) – Li3V2(PO4)3
Lithium Sulphur
Lithium Manganese Titanium (MNS)

Other battery chemistries
Zinc-Nickel
Nickel Sodium
Others
Zinc-Air
Lithium-Air (Li-Air)

Major Advanced Battery Suppliers
A123
AESC
Bollore-Batscap
BYD
Evonik
Hitachi EV
Johnson Controls-Saft
LG Chem
GS Yuasa
Panasonic EV Energy (PEVE)
Sanyo
SB Limotive
Valence
Others

Ultra-Capacitors
Major Ultra-Capacitor Suppliers
Maxwell
Others

Flywheel energy storage
Hydraulic energy storage
Targets for ESS performance

Market Drivers

Future vehicle power requirements
Conventional Vehicles
Micro Hybrids
Mild Hybrids
Full hybrids
Plug-in Range Hybrids
Extended Range Electric Vehicles (EREV)
Electric Vehicles (EV)

Energy Management Strategies
Market Development Issues
The OEMs' position
BMW
Chrysler
Daimler
FHI
Fiat
Ford
General Motors
Honda
Hyundai
Mitsubishi
PSA Peugeot Citroen
Renault-Nissan
Toyota
Volkswagen Group
Other manufacturers

The System Suppliers position
The Cost – Benefit Relationship
Range
Taxes and incentives

Evonik
Exide Technologies
Fiamm
GS Yuasa
Hitachi
JEOL
Johnson Controls
LG Chem
Lithium Technology Corporation
LS Corporation
Maxwell Technologies
MOLL
NEC-Tokin
NessCap
Nichicon
Nippon Chemi-Con
Panasonic
Saft
Sanyo
SK Energy
TDK
Valence

List of figures