

Global Battery Business Report

Synopsis

Battery market reports often neglect the lead-acid battery in favour of more exotic battery chemistries. However, at approximately US\$22 billion, the lead acid battery market is still the largest rechargeable battery market in terms of value, mainly because of the size of the automotive battery market. This report has been researched and written by industry insiders, and is required reading for all those with an interest in the battery industry, whether manufacturers, suppliers, researchers or battery users. It will review technical challenges and market opportunities, with market forecasts to 2012 in both automotive and industrial applications. Other rechargeable battery technologies will also be reviewed where they impact on the market for lead acid batteries.

Challenges to the lead-acid battery will be reviewed and discussed, including:

- Alternative battery chemistries
- Alternative automotive drive trains (hybrid electric vehicles etc.).
- Fuel cells in automotive applications
- Fuel cells in fork lift truck applications
- Environmental legislation
- Global lead demand and prices

The report will also include a review of alternative battery technologies:

- ◆ VRLA batteries
- ◆ Advanced lead-acid batteries (including bipolar)
- ◆ Hybrid battery/ ultracapacitor
- ◆ Nickel metal hydride
- ◆ Lithium ion (including lithium iron phosphate)
- ◆ Sodium nickel chloride

Key market issues will be discussed:

- ◆ Positive and negative factors influencing the growth of the HEV/PHEV market.
- ◆ Battery cost issues.
- ◆ Alternative options for automotive engine starting.
- ◆ The impact of high fuel prices on the automotive market.
- ◆ The impact of the growth of the alternative vehicle market on the lead-acid battery market.

Report Outline *(subject to change)*

- ◆ Introduction
- ◆ Automotive Market
 - Global vehicle sales summary by region.
 - Global lead-acid battery market to 2012.
 - Industry consolidation
- ◆ Global Automotive Lead-acid Market by Region.
 - North America
 - South America
 - Europe
 - China

- Russia
- India
- Asia/ Pacific
- ◆ Automotive – alternative drive trains
 - Diesel
 - Pure electric vehicles
 - Hybrid Electric Vehicles
 - Automotive Start-Stop/ Micro-hybrid
 - Mild/ Moderate hybrid
 - Strong Hybrid Electric Vehicles
 - Parallel vs. Series hybrid
 - Diesel-Electric hybrids
 - Plug-in Hybrid Electric Vehicles
- ◆ The hybrid electric vehicle market
- ◆ Summary of battery options for hybrid electric vehicles
- ◆ Automotive Fuel cells
- ◆ Growth of the Advanced Vehicle Market (EV/HEV/PHEV) as % of World Production, and its impact on the automotive lead-acid market.
 - Automotive HEV/ PHEV: Market forecast to 2012.
- ◆ Industrial
 - North America
 - Europe
 - Motive Power – Competitive threats
 - Fuel Cell Powered Lift Trucks
- ◆ Technology
 - Battery Options for Automotive HEV/ PHEV:
 - VRLA Batteries
 - Advanced lead-acid batteries
 - Firefly Energy
 - Atraverda
 - Effpower
 - Hybrid battery/ ultracapacitor
 - Axion Power
 - CSIRO Ultrabattery
 - EEStor
 - Nickel Metal Hydride
 - Lithium-ion
 - **Lithium Iron Phosphate**
 - Valence Technology
 - A123 Systems
 - Ener1/ EnerDel
 - Lithium-ion for HEV: general comments
 - Sodium/ nickel chloride (ZEBRA)
- ◆ Positive and negative factors influencing the growth of the HEV/PHEV market.
- ◆ Battery cost issues
 - *Raw materials costs*
- ◆ Alternative options for automotive engine starting
 - Ultracapacitors
- ◆ Environmental issues

Data tables

The data tables & graphs will include the following: *(subject to change)*

- Global new vehicle sales summary.
 - Asia Pacific new vehicle sales by country.
 - Europe new vehicle sales by country.
 - Africa new vehicle sales by country.
 - North America new vehicle sales by country.
 - Middle East new vehicle sales by country.
 - Central/ South America new vehicle sales by country.
 - “Top ten” countries by vehicle sales volume.
 - Top countries by auto market growth & forecast to 2012.
- Lead-Acid Battery Market Forecast 2007 – 2012.
- Lead-Acid SLI market in US\$ split into OE and AM segments (2007 – 2012).
- Large Format (> 25 Ah) Rechargeable Battery Market (2007 – 2012)
- Battery Chemistry: share of large format market.
- Estimate of growth of new Advanced vehicle (AV) market as % of world production.
- Numbers of each vehicle type 2007 – 2012 (AV/ SLI/ Total)
- Value of batteries (US\$) for each vehicle type.
- Hybrid Electric Vehicle Market to 2012.
- Hybrid Electric Vehicle configurations.
- European stop-start model plans.
- Advanced VRLA battery performance compared with USABC targets.
- European Automotive Battery Market 2006 by country.
- European Industrial Battery Market 2006
 - Total standby battery market
 - Application segment EU27.
 - Total standby battery market by region EMEA (Europe, Middle East, Africa)
 - Total Motive battery market EMEA.
- North America industrial battery market & forecast to 2010.
- North America Stationary power market segments.
- Major lead-acid battery manufacturers by region.
- Stationary battery sales by world regions.
- Worldwide industrial battery production.
- Specific Energy & cost of EV batteries.
- USABC targets for batteries for pure EVs.
- USABC targets for power assist HEV.
- USABC goals for plug-in hybrids.
- Major lead-acid battery manufacturers by region.
- Potential market for fuel-cell fork-lift trucks.
- Russian truck market 2005 – 2012.
- European truck market 2005 – 2012.
- USA truck market 2005 – 2012.
- Russia – quick facts.
- Battery cost estimates for PHEV.
- PHEV20 payback period with gasoline price increases.
- Energy density and power density of different energy storage devices.
- Chinese battery market 2007:
 - Production by battery application
 - Estimated sales value 2007.
- Axion Power performance, life & cost comparison data.

- A123 Systems: performance comparison with other battery systems.
- A123 Systems: M1 cell power availability.
- EnerDel cell specifications.