

## Value-Added Services

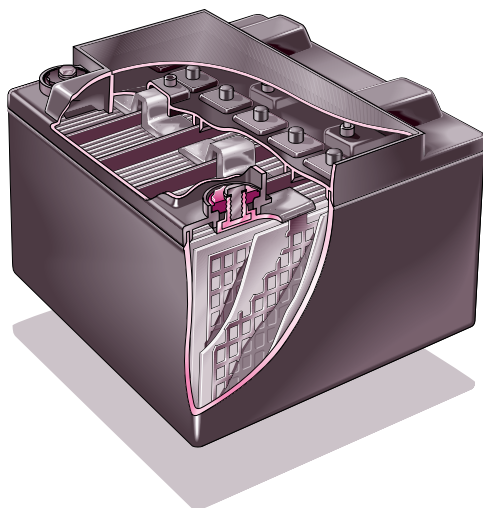
In addition to our manufacturing capability, EnerSys® is proud to provide its customers with the following services:

- customised manufacturing design
- battery recycling
- on-line Internet technical information
- charging support
- product testing
- on-site technical seminars
- battery samples
- application engineering
- technical documentation

## Applications

Batteries from EnerSys' "pure lead-tin" family are used in a wide variety of standby and portable/cyclic applications including those in:

- telecommunications
- electronics
- uninterruptible power supplies
- defence installations
- computer back-up
- electric vehicles
- medical equipment
- solar power
- lawn and garden equipment



## Features and Benefits

Sealed pure-lead cells were invented by a predecessor company of EnerSys® in 1973. The purity of the materials used is key to supporting the GENESIS® battery's performance benefits. A longer service life, meaning fewer replacements and the cost associated with it, combined with higher reliability and fewer system failures, result in a lower long-term cost of ownership to the end user or equipment owner.

What are the advantages of EnerSys technology?

- 1. Power density** - Per unit weight, the power provided by pure lead-tin products offers the greatest high-rate power density for your energy dollar. GENESIS' greater volumetric power allows engineers to consider more energy-supporting features or design smaller, lighter packages.

At high-rate and pulse discharges, EnerSys' GENESIS products offer the best performance value when compared with competitive product in applications at less than 100 minutes of discharge.

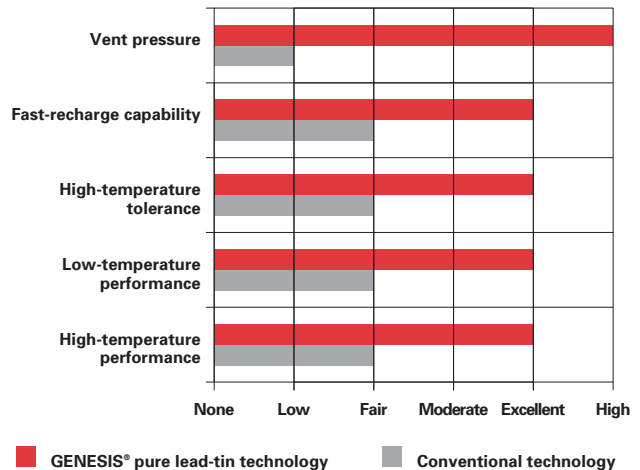
- 2. Cycle life** - Compared to competitive lead products (offering up to 200 full cycles), pure lead-tin batteries provide 50% to 200% greater full cycle capability. GENESIS product will deliver up to 400 cycles (80% DOD, C/5). And, because GENESIS incorporates a high vent-pressure design, EnerSys' products experience no "dry out" failure mode from repeated recharges.
- 3. Float life** - Conventional sealed-lead batteries vary greatly in specified standby life: from three to six years at 20°C, C/20. GENESIS, however, offer a ten-year design life at 25°C, C/5, to 80% of rated capacity. At 20°C, GENESIS Single Cells offer a fifteen-year design life.
- 4. High stable voltage delivery** - The high stable voltage delivery of a pure lead-tin battery results from its low internal resistance. The flat discharge voltage profile of our batteries, similar to nickel cadmium, combined with our products' low internal resistance, means our batteries are able to discharge and recharge their power more quickly and efficiently and offer greater application flexibility. The pure lead-tin construction also gives more watts-per-unit weight at high discharge rates.
- 5. Widest temperature range** - Due to the product's strong construction and high vent pressures, these batteries will maintain their performance and physical parameters in extreme conditions. At high temperatures, the chemical reaction in a battery that causes aging is accelerated. Pure lead-tin technology resists that chemical reaction more effectively than alloyed lead, thus allowing a battery to have a longer service life. At high temperatures, when conventional

lead batteries experience internal moisture loss from venting and case side wall distention, the GENESIS, with its steel can (metal jacket) and high venting pressure, does not experience these life-robbing conditions. GENESIS has twice the delivered capacity of conventional sealed-lead batteries at temperatures below -20°C, offering unparalleled low-temperature performance.

GENESIS electrodes are thinner, allowing more electrodes per cell, and therefore greater electrode surface area than conventional sealed-lead, thick electrode batteries. As a result, our batteries can reach a high state of charge in fast-charging applications in one-fourth the time of conventional, sealed-lead, thick-plate batteries. This is 50% to 100% overall better performance for your energy dollar.

- 6. Rugged construction** - Due to their strong external packaging and internal pure lead-tin composition, EnerSys' products can withstand not only extreme temperatures but also harsh usage.

### The pure lead-tin advantage



GENESIS external case for the EP product is constructed from UL 94V-0 rated non-halogenated flame-retardant materials. GENESIS products are shock and vibration resistant, designed to offer higher tolerance levels to meet demanding applications, including those in commercial and outdoor applications. The company's focus on battery-case integrity and high vent pressure, coupled with pure lead-tin's low grid-corrosion rate, means GENESIS provide the longest service life possible.