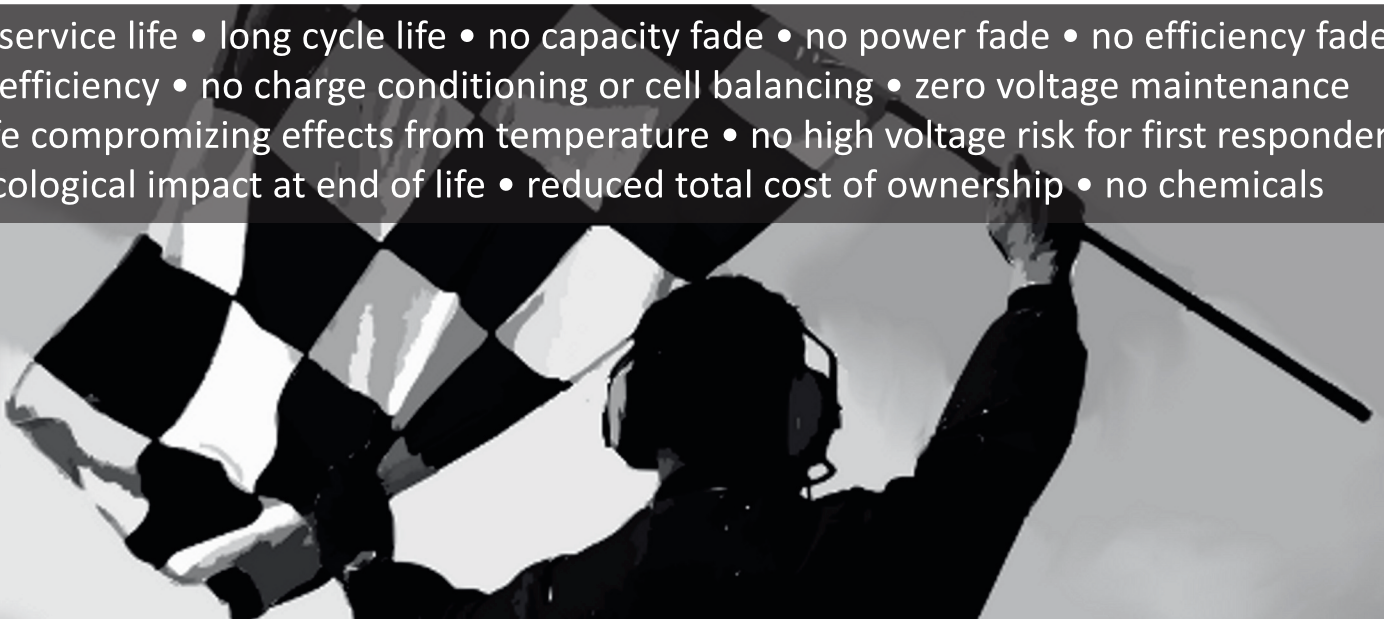




Performance solutions for performance applications

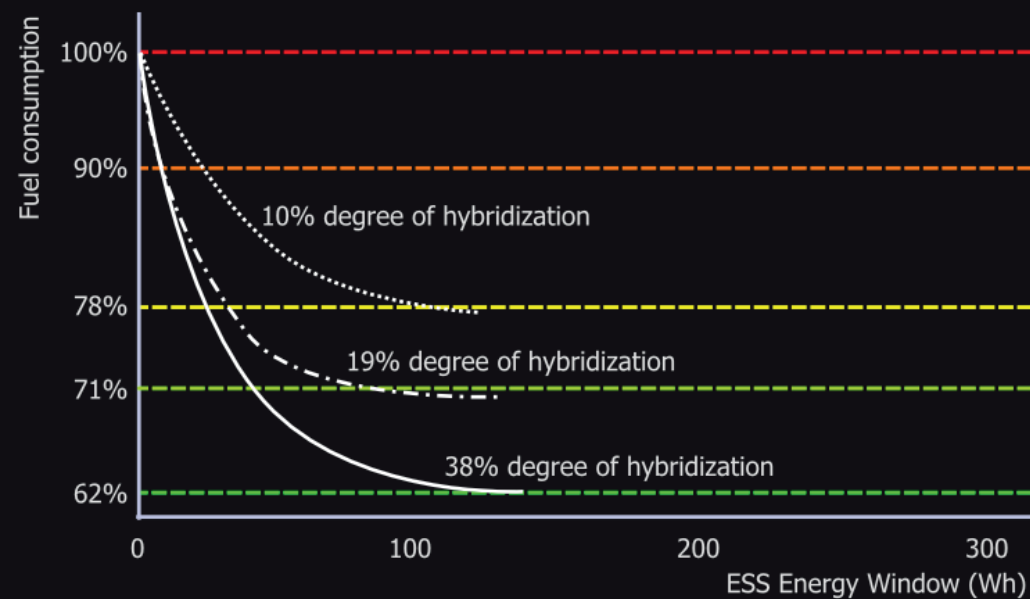
Understanding that motorsports are a proving ground for advanced vehicle technologies, Blueprint Energy is committed to working with the industry to develop charge sustaining hybrids with a high degree of hybridization to improve performance.

- long service life • long cycle life • no capacity fade • no power fade • no efficiency fade
- high efficiency • no charge conditioning or cell balancing • zero voltage maintenance
- no life compromising effects from temperature • no high voltage risk for first responders
- no ecological impact at end of life • reduced total cost of ownership • no chemicals



Advanced flywheel energy storage solutions

Degree of hybridization (DOH) = storage power / (storage power + engine power)



- Fuel savings increase with higher DOH
- Fuel savings taper with larger energy window
- Significant benefit out to 50 Wh
- Additional benefit out to 150 Wh

Source: J. Gonder et al., "Lower-Energy Requirements for Power-Assist HEV Energy Storage Systems—Analysis and Rationale," NREL, PR-540-47682, 2010.

The opportunity for using hybrid architectures in motorsports is dependent on the type of racing. Formula 1 KERS systems to date have been relatively mild (only 60 kW for 6.67 seconds, one use per lap) and therefore the fuel economy benefit has been minimal. However for endurance and other forms of racing the improvement in fuel economy directly relates to fewer pit stops for re-fueling leading to more time on the track and therefore a significant competitive advantage.

A flywheel ESS is able to provide a high degree of hybridization without compromising vehicle performance.