

EnerSys®

Power/Full Solutions

**NEW
PRODUCT
AVAILABLE
TO ORDER !**

PowerSafe® SBS XL



Welcome to the Next Generation of
**Long-Life High-Temperature Batteries by
EnerSys®**

Forward Looking Disclaimer Statement

EnerSys is making this statement in order to satisfy the “Safe Harbor” provision contained in the Private Securities Litigation Reform Act of 1995. Any of the statements contained in this press release that are not statements of historical fact may include forward-looking statements that involve a number of risks and uncertainties. A forward-looking statement predicts, projects, or uses future events as expectations or possibilities. Forward-looking statements may be based on expectations concerning future events and are subject to risks and uncertainties relating to operations and the economic environment, all of which are difficult to predict and many of which are beyond our control. For a discussion of such risks and uncertainties that could cause actual results to differ materially from those matters expressed in or implied by forward-looking statements, please see our risk factors as disclosed in the “Risk Factors” section of our annual report on Form 10-K for the most recently ended fiscal year.

Presentation Content

- Challenging market drivers
- Dedicated response
- Introduction to PowerSafe[®] SBS XL batteries
- Value-Added Solution Bundles
- PowerSafe SBS[®] XL batteries, a tailor-made solution



Challenging Market Drivers



Emerging Trends in Telecom

- Ever-increasing transmission of digital data puts telecom companies under severe pressure
- Their inevitable answer is to add more equipment in already highly utilized floor space
- This leads to extra heat in equipment rooms/enclosures
 - High temperatures significantly reduce battery life
 - At elevated temperatures the typical failure mode of conventional front terminal lead-calcium batteries is positive grid corrosion, which results in much shorter battery service life
- **In turn this extra heat generates additional cooling costs and higher Total Cost of Ownership (TCO)**
 - Maintaining batteries at an optimal temperature 77°F(25°C) can be difficult and expensive (thermal management)

Impact of Elevated Temperatures on Batteries

- Accelerated corrosion of positive grid
- Increased gas generation
- Increased water loss (dry out)
 - Less water results in high acid density → increased rate of grid corrosion and sulfation of active material
- Increased charging current
- Increased stress on container and lid plastic
 - Increased risk of bulging and loss of cell compression
- **The above severely shortens battery service life and degrades battery performance**
 - Puts further risk on telecom site in the event of backup being no longer available



Typical Drawbacks

of Competitors' Long Life High Temperature Batteries (1/2)

- Not specifically designed to provide long float life at elevated temperatures
- “Jack of all trades” approach
 - Not specifically designed for stable grid float applications
 - Sometimes promoted for both reliable and unreliable grid conditions
- So far the common approach in the industry seems to be essentially playing with the float voltage to slow down the rate of positive grid corrosion and therefore claim longer life at elevated temperatures
 - Only considering one end of life failure mechanism
 - May cause undercharge of the negative plate in some applications → loss of capacity and life

Typical Drawbacks of Competitors' Long Life High Temperature Batteries (2/2)

- Usually use lead-calcium or lead-tin-calcium technology with thicker positive grid as an attempt to overcome faster rate of grid corrosion
 - Corrosion at the grain boundaries leads to:
 - Grid corrosion
 - Grid growth
 - Reduction in current carrying capacity
 - Loss of contact between grid and active material
- This puts into question some competitors' claims of true high temperature long life battery design
- **Conclusion: batteries not typically tailor-made to meet the specific challenges of operation at elevated temperatures**



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**The EnerSys
Dedicated Response**

Response

- EnerSys® has responded to these trends and challenges by developing PowerSafe® SBS XL, the next generation of its industry-leading Thin Plate Pure Lead (TPPL) batteries
- PowerSafe SBS XL batteries provide a longer float life at higher operating temperatures
 - In NEW sites/enclosures/equipment rooms this gives operators the freedom to reduce capital costs by investing in cheaper cooling methods (such as free cooling)
 - In EXISTING sites/enclosures/equipment rooms this gives operators the freedom to lower operating costs by raising air conditioning set points
- Resulting reduced battery replacement frequency; lower CAPEX + lower OPEX = industry-leading competitive TCO
- **Lower battery purchase cost does not mean lower TCO**



Reasons to Choose SBS XL

- A true long life battery at elevated temperatures
- Specifically designed for stable grid float applications
- Pure lead technology for longer life at elevated temperatures
- Ideal for low TCO via reduced CAPEX, reduced OPEX and longer replacement intervals
- Wide operating temperature range
- Outstanding storage life for maximum flexibility in project deployment
- Eurobat's "very long life" classification
- Front terminal design for ease of installation and maintenance
- Greater than 95% recyclable
- Safe and reliable operation at elevated temperatures
- **Latest commitment by EnerSys® to provide customers with high performance, reliable application-specific products to satisfy the expanding scope of the reserve power marketplace**





Introduction to PowerSafe® SBS XL Batteries

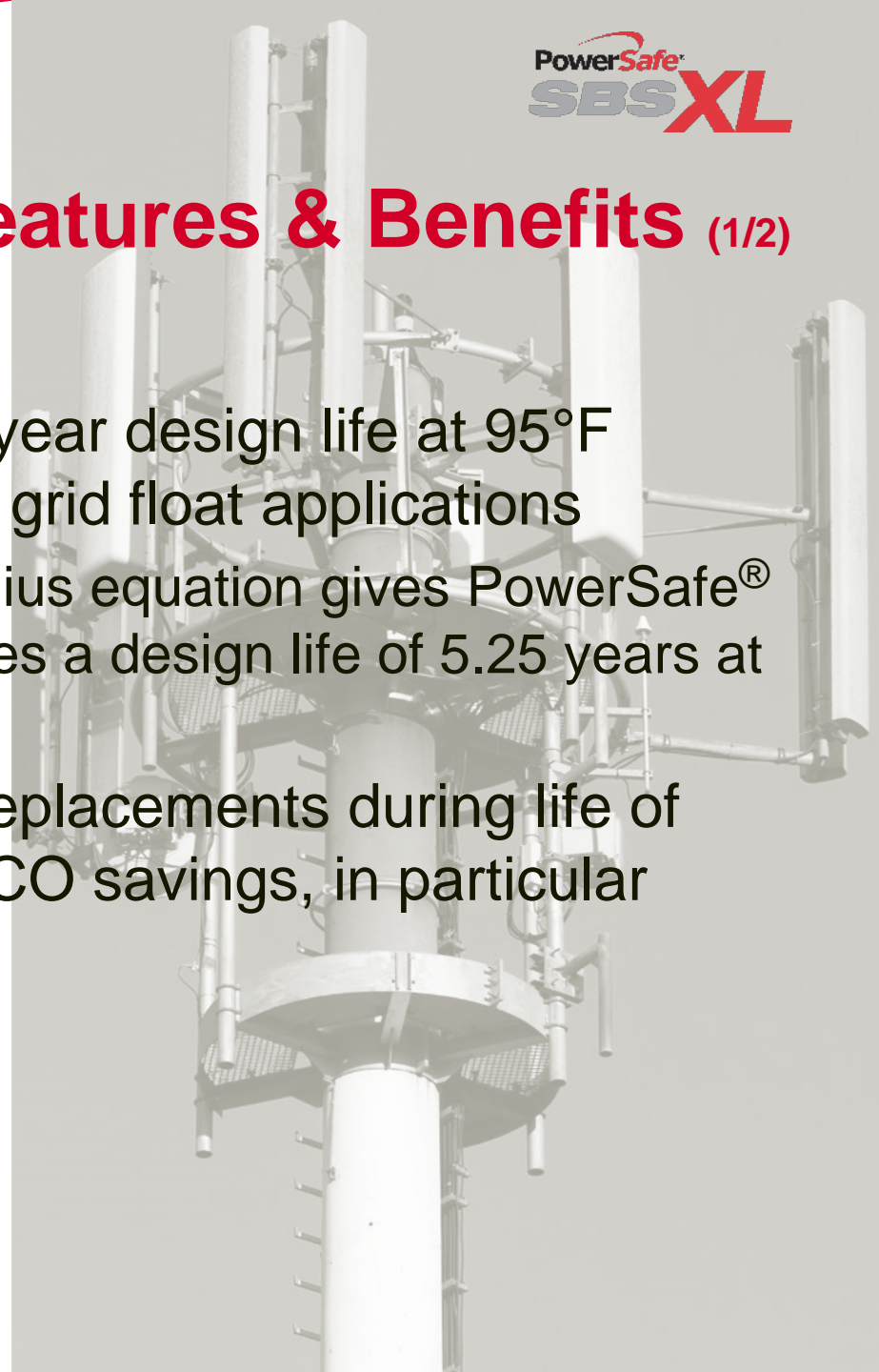
Overview of PowerSafe® SBS XL Batteries

- Brand new product range of VRLA AGM front terminal blocs
- Designed on the successful foundations of PowerSafe® SBS EON and SBS TPPL technology
- Specifically developed to provide an extremely long life at high operating temperatures in float mode
- Exclusively for use in reliable (stable) grid applications



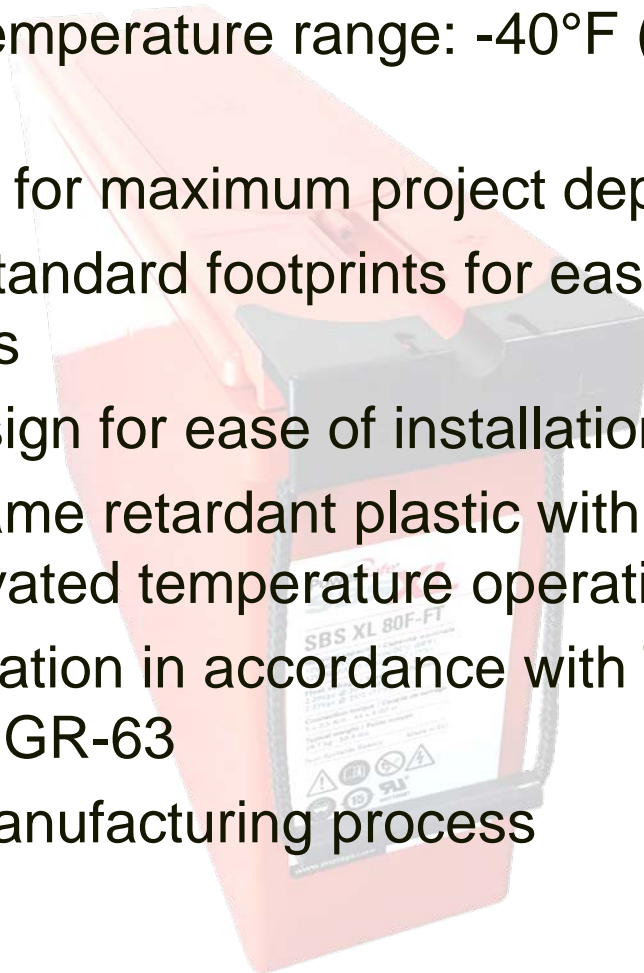
Features & Benefits (1/2)

- Key feature: outstanding 10 year design life at 95°F (35°C) temperature in stable grid float applications
 - As a reference point, Arrhenius equation gives PowerSafe[®] SBS EON and SBS[®] batteries a design life of 5.25 years at the same temperature
- Key benefits: fewer battery replacements during life of network infrastructure and TCO savings, in particular OPEX



Features & Benefits (2/2)

- Large operating temperature range: -40°F (-40°C) to 149°F (65°C)
- 2 year storage life for maximum project deployment flexibility
- Classic industry-standard footprints for easy installation into enclosures/ stands
- Front terminal design for ease of installation and maintenance
- UL94 V-0 rated flame retardant plastic with high heat resistance for elevated temperature operation
- Designed for operation in accordance with Telcordia® GR-4228 Level III, NEBS™ GR-63
- State-of-the-art manufacturing process



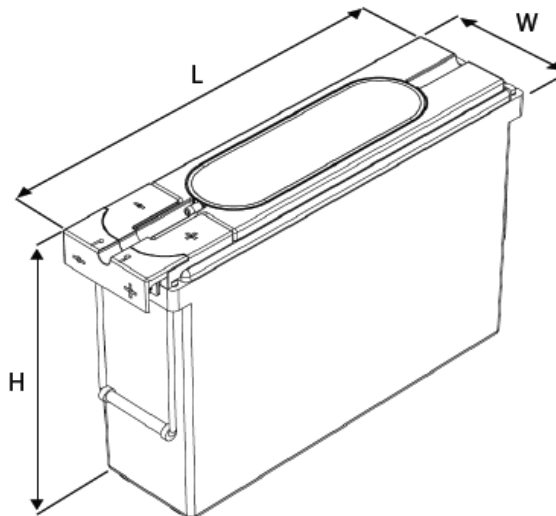
Product Portfolio

- 3 - 12 volt PowerSafe[®] SBS XL battery models: 80F-FT, 150F-FT and 170F-FT
- Same fit and form as existing PowerSafe[®] C11F, 170F and 190F batteries respectively

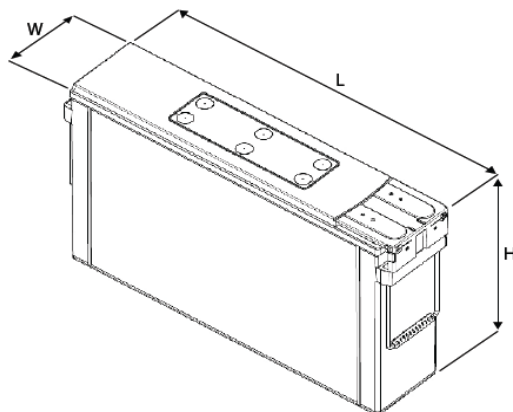
| Bloc Type | Voltage (V) | Nominal Capacity (C ₈ /1.75Vpc/77°F) | Nominal Capacity (C ₁₀ /1.75Vpc/95°F) | Length (in) | Width (in) | Height (in) | Typical Weight (lbs) | Terminal Details |
|-----------------------------|-------------|---|--|-------------|------------|-------------|----------------------|------------------|
| SBS [®] XL 80F-FT | 12 | 80 | 83 | 16.4 | 4.1 | 10.1 | 58.8 | M6 male |
| SBS [®] XL 150F-FT | 12 | 150 | 156 | 22.1 | 4.9 | 11.1 | 50.7 | M6 male |
| SBS [®] XL 170F-FT | 12 | 170 | 177 | 22.1 | 4.9 | 12.4 | 58.0 | M6 male |

Classic Industry Footprints

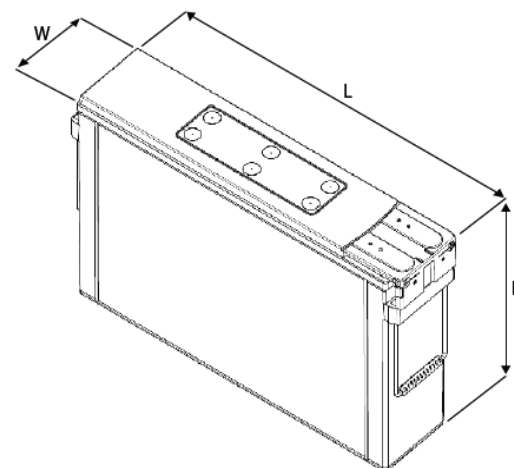
SBS® XL 80F-FT Battery



SBS® XL 150F-FT Battery



SBS® XL 170F-FT Battery

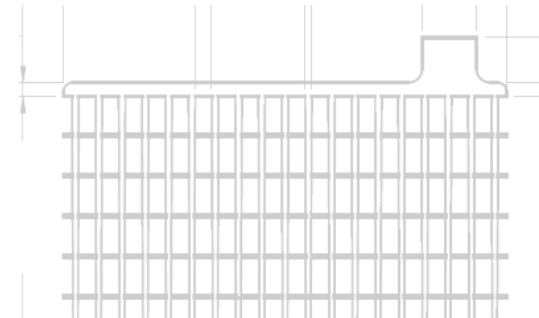
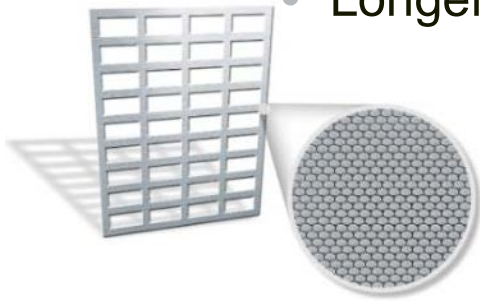


Solid & Successful Foundations (1/3)

- EnerSys® has successfully utilized its established TPPL technology in a wide range of batteries across many segments such as aerospace, military, telecom, UPS, and Traction
 - Circa 40 years' experience in TPPL design and manufacture
 - Unlike traditional lead-calcium battery manufacture, TPPL batteries require special, advanced engineering methods and manufacturing processes
- PowerSafe® SBS XL is the EnerSys latest addition to its TPPL family of batteries
 - Truly tailored-made TPPL range specifically designed to provide a long life at elevated temperatures in stable grid float applications
 - Over 2 years of engineering development

Solid & Successful Foundations (2/3)

- Several enhancements over PowerSafe® SBS EON Technology battery series
- 2 major enhancements are as follows:
 - Highly robust polymer for containers and lids, specially selected for use in high temperature environments
 - High heat resistance to reduce risk of cracking and lower propensity to bulge
 - Reinforced positive grids for higher resistance to corrosion
 - Very fine grain structure of EnerSys Pure Lead crystallography makes the grid far more resistant to corrosion
 - Longer life at elevated temperatures



Solid & Successful Foundations (3/3)

- Very limited need for float voltage's temperature compensation
- The PowerSafe® SBS XL battery reinforced positive grid design is capable to support more overcharge and thus reduce the risk of undercharge situations
 - 2.27Vpc in operating temperature range of 77°F (25°C) to 149°F (35°C)



High Purity & High Grade Materials (1/2)

The combined materials in PowerSafe® SBS XL batteries make them far superior to standard AGM batteries

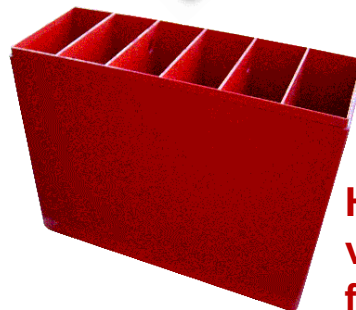
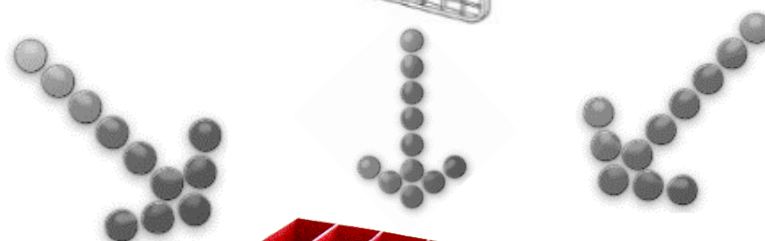
**Pure Lead Oxide
(99.99%)**



**Pure Lead Grid
(no alloy)**



**High Grade Acid
(not commercial grade acid)**



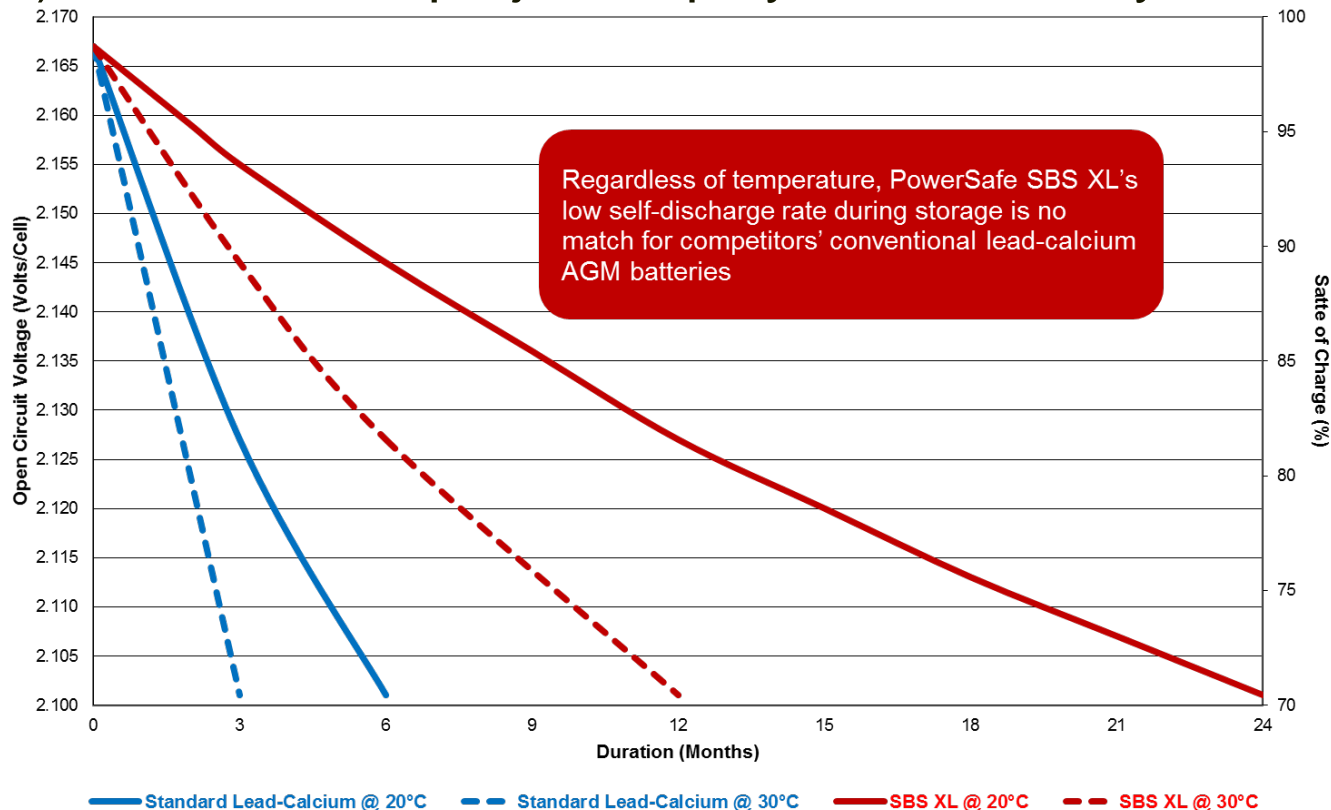
**High heat, shock and
vibration resistant UL94 V-0
flame retardant polymer**

High Purity & High Grade Materials (2/2)

- Low rate of self discharge = shelf life typically 4x longer than conventional AGM battery
- Low float charge current = less energy consumption and reduced OPEX
- Low rate of grid corrosion = longer design life than standard AGM battery
- Low gassing rate = reduced water loss
- **The careful selection of EnerSys® high purity and high grade materials greatly contributes to the manufacture of a high quality, high reliability product**

Outstanding Storage Life

- 12 months storage life at 86°F (30°C) (24 months at 68°F (20°C) for maximum project deployment flexibility



Internationally-Acknowledged Standards

- Designed to be compliant with the requirements of the international standard IEC 60896-21/22
- Designed for operation in accordance with Telcordia® GR-4228 Level III, NEBS™ GR-63
- Classified as “Very Long Life” according to EUROBAT guide
- UL recognized component
- The management systems governing the manufacture of PowerSafe® SBS XL batteries are ISO 9001, ISO 14001 and OHSAS 18001 certified



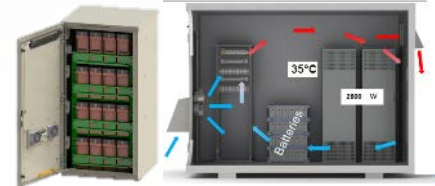
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The background of the slide features a low-angle shot of several hands reaching up to assemble large, interlocking puzzle pieces. The puzzle pieces are in shades of orange and yellow, and the scene is backlit by a bright, warm light, creating a glowing effect. A thick red swoosh curves across the top left corner of the image.

Value-Added Solutions



Advanced Solution > Enclosures & Shelters

- Use of PowerSafe[®] SBS XL batteries in EnerSys free cooling (FC) or heat exchanger (HEX) and active cooling (AC) cabinets and shelters is the perfect combination for a very attractive and competitive TCO
- PowerSafe[®] XL batteries' long life at elevated temperatures is such that in most stable grid float applications active cooling (air conditioning typically) is not required
 - Free cooling (for instance mechanical ventilation) or HEX is sufficient thus generating huge CAPEX (cheaper and fewer climate management components) and OPEX (reduced energy consumption, reduced maintenance, fewer spare parts replacement) savings
 - When used in AC only or AC+FC or HEX applications, SBS XL batteries also delivers significant savings when operating at elevated temperatures
- Wide range of FC or HEX and AC enclosure designs available from EnerSys
- **PowerSafe[®] SBS XL + Purcell enclosures = industry-leading TCO**



PowerSafe® SBS XL Batteries, A Tailor-Made Solution

About EnerSys®

- Global leader in stored energy solutions for industrial applications
- More than 125 years of providing innovative solutions to the way the world uses stored energy
- Extensive range of products and services encompass the full spectrum of Motive Power, Reserve Power, Aerospace and Defense applications



PowerSafe® SBS XL

A must have battery with an outstanding life at elevated operating temperatures in stable grid float applications, for a truly competitive total cost of ownership.

For more information on PowerSafe® SBS XL battery or any other EnerSys® product, please contact your EnerSys Representative

AVAILABLE
TO ORDER
NOW!



thank you
questions?

Contact your locate Strategic Area Manager