



GS Yuasa Lithium Power Announces First Delivery of the Generation 4 Lithium-ion Cells for Space to North American Client

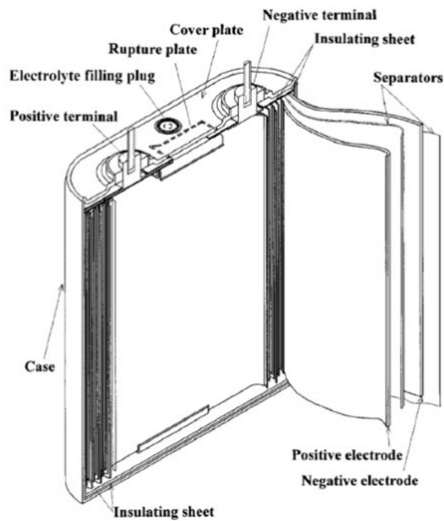
December 14, 2022

Roswell, GA - GS Yuasa Lithium Power (GYLP) announced today the first delivery of the Generation 4 LSE Lithium-ion Cells for Space to a North American client. The LSE60 (60Ah, 3.75V, 225Wh) will be entered into a competitive technical evaluation for suitability in the client's advanced spacecraft platform under development.

GS Yuasa introduced the "LSE" family of lithium-ion cells specifically designed and qualified for space applications in 1998. The first-generation LSE cells utilized a lithium cobalt dioxide cathode opposed by a graphite anode (LCO/Graphite). Over the next two-decade period there have been only 4 major revisions, or generations, of the LCO/Graphite cell chemistry foundation. The generation changes are only released after completion of an exhaustive qualification process to ensure the targeted optimizations proposed lead to measurable improvement of the various key performance metrics while maintaining the accumulated heritage of the LSE cell family.

Investigation of the Generation 4 chemistry started as early as 2014. GS Yuasa recognized improvements to the critical raw active materials driven primarily by improved manufacturing techniques allowing for tighter control of the material specifications. Comprehensive analysis of numerous improved candidate active materials took place over the next several years. Adjacent to the performance metrics of each material, GS Yuasa actively studied the supplier's ability to provide the material over the next decade or longer. This is a critical consideration of any prospective material to be used in a GS Yuasa cell.

The physical construction of the Generation 4 cells remains unchanged relative to previous generations. This continuity is critical and allows GS Yuasa to maintain all of the heritage accumulated with the LSE family of cells. Like the Generation 3 cells, the Generation 4 cells will be available in either an energy optimized electrode (standard) or power optimized electrode. The only difference between the two electrodes is coating thickness.



Energy Type Cells

Generation 4	Nameplate Capacity	Width (mm)	Height (mm)*	Thickness (mm)	Status
LSE60	60Ah, 225Wh	130	123	50	Qual Pending
LSE122**	122Ah, 458Wh	130	208	50	Development
LSE160	160Ah, 440Wh	130	263	50	Qualified
LSE205	205Ah, 769Wh	165	263	50	Qualified

*Not including terminals

**Estimated

Power Type Cells

Generation 4	Nameplate Capacity	Width (mm)	Height (mm)*	Thickness (mm)	Status
LSE56**	56Ah, 210Wh	130	123	50	Development
LSE112	112Ah, 420Wh	130	208	50	Qualified
LSE147	147Ah, 551Wh	130	263	50	Qual Pending
LSE193**	193Ah, 724Wh	165	263	50	Development

*Not including terminals

**Estimated

The Generation 4 cell line-up consists of the heritage case form factors as identified in the tables above. Each of the 4 possible case sizes have been built and qualified. The possible Generation 4 cells all exist at some level of development. Some configurations are still being studied and others have fully completed flight qualification and are ready for market.

With volumes of life and performance data available and a solid connection between industry leading spaceflight heritage without failure and the Li-ion cells offered today, GS Yuasa's value proposition is stronger now than ever.

To learn more about GS Yuasa's LSE family of Li-ion cells for space, please contact GS Yuasa Lithium Power, Inc.

About GS Yuasa Corporation

GS Yuasa Corporation was established in 2004 by the merger of Japan Storage Battery Co., Ltd and YUASA Battery. GS Yuasa develops and manufactures batteries and power supply systems for a wide range of special applications. The company's high-performance, high-quality batteries are installed in sea, land, and aerospace environments, from depths of 6,500 meters below the ocean surface to 36,000 kilometers in space.

<http://www.gs-yuasa.com/jp/> (Japanese)

<https://www.gs-yuasa.com/en/> (English)

About GS Yuasa Technology, LTD (GYT)

GS Yuasa Technology is a subsidiary of GS Yuasa Corporation located in Kyoto, Japan. GYT designs and manufactures large format lithium ion cells for aerospace and specialty applications.

1-37 Osadano-cho Fukuchiyama-shi

Kyoto pref. 620-0853, Japan

Phone: 81-773-20-2630

About GS Yuasa Lithium Power (GYLP)

GS Yuasa Lithium Power, Inc. is the United States subsidiary of GS Yuasa focused on large format lithium-ion battery system manufacturing for US customers. Primary products are lithium-ion battery systems for aerospace, undersea, and defense applications. <http://gsyuasa-lp.com/>

###

For additional Information, please contact:

Tom Pusateri

GS Yuasa Lithium Power, Inc.

1150 Northmeadow PKWY Suite 118

Roswell, GA 30076 USA

888.GSYUASA (888.479.8272)

678.892.7501 (Fax)

media@gsyauasa-lp.com

<http://www.gsyuasa-lp.com>

