



GS Yuasa Completes Qualification of the LSE12x Cell for Space Applications

February 15, 2022

Roswell, GA - GS Yuasa Lithium Power (GYLP) announced today that GS Yuasa Technology LTD (GYT) has successfully completed qualification testing of the new LSE12x lithium-ion (Li-ion) cell. The LSE12x cell (12Ah, 3.75V, 45Wh) is the smallest space qualified Li-ion cell manufactured by GS Yuasa and is intended to align with the market's expansion toward smaller spacecraft, including those with high power requirements, as well as human rated missions.

The LSE12x cell form factor is inspired by GS Yuasa's mature commercial aviation and automotive cell designs. From this heritage foundation, the cell's structure was enhanced to tolerate launch and space environments enabling the LSE12x cell to meet strict performance, reliability and cost objectives.

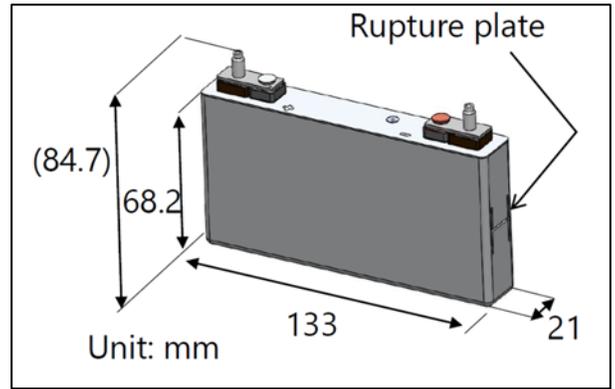
GS Yuasa's leadership position in Li-ion on a total spacecraft energy storage capacity basis was won through addressing a variety of use cases and power classes. Still, much of that success has been in support of medium to large satellites. By combining GYT's space qualified Generation IV lithium cobalt dioxide chemistry in a smaller form factor, the LSE12x will now allow manufacturers of launch vehicles and small to medium power class spacecraft access to this industry leading Li-ion chemistry for space applications.

Attributes existing customers have grown to expect from GS Yuasa's solutions remain intact including ultra-high reliability, competitive value, outstanding capacity retention through time and cycling, extremely low internal resistance and low resistance growth throughout life. The Generation IV life and performance modeling capability and the 12Ah nominal capacity allow users to configure and optimize battery systems tailored to unique mission profile and requirements.

The LSE12x helps to address a gap in the aerospace energy storage market. At present, many manufacturers of smaller spacecraft source mass produced Li-ion cells intended for commercial terrestrial applications. These commercial cells are relatively inexpensive; however, certification of these cells for space applications requires significant testing expense. This expense is compounded due to the risk that commercial cell manufacturers are not obligated to hold design configurations or disclose changes to parts, material or processes. Certification testing must be repeated again and again for each unique cell lot procured to verify cell performance has not changed.

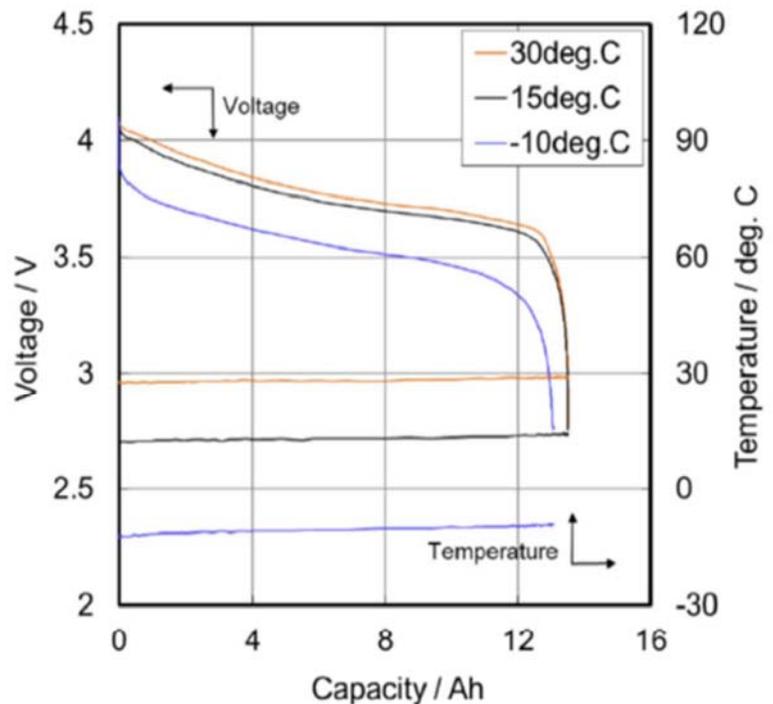
The LSE12x mitigates this significant program risk by offering a small form factor cell that maintains full configuration control and is built to AS9100 Aerospace quality standards with an auditable manufacturing and change record.

Battery: GYLP is currently engaged in the design of a scalable battery based on the LSE12x cell building block. Battery configurations will offer capacities ranging from 360Wh to 4320Wh. The design has just completed its Preliminary Design Review and full battery qualification is anticipated to be complete by Q2 2023.



Item	Spec	
BOL Capacity	4.1V-2.75V	13.6 Ah
	*4.2V-2.75V	15.0 Ah
Nameplate Capacity	12 Ah	
Nominal Discharge Voltage	3.75 V	
Mass	0.390 kg	
DCR	<8 mΩ	
Pulse Discharge Rate	120+A	

*Special use case



Charge: 0.1 CA, 4.1 V, CC/CV, 15 h
 Discharge: 1.0 CA to 2.75 V
 Temperature: -10°C

Charge: 0.2 CA, 4.1 V, CC/CV, 8 h
 Discharge: 1.0 CA to 2.75 V
 Temperature: 15 and 30°C

About LSE Cells

First introduced in 1998 the “LSE” Li-ion cells were specifically designed for the unique environments and demanding duty cycles of aerospace applications. For more than 20 years, GS Yuasa space cells have earned a reputation for delivering exceptional performance and value in critical commercial communication, remote sensing, scientific, defense and human rated applications. 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/us/> (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.

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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, defense, commercial, and industrial applications. <http://gsyuasa-lp.com/>

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