



**GS Yuasa's Space Use Lithium-ion Batteries Installed in
Epsilon-3 Launch Vehicle and
Advanced Small-size Radar Satellite ASNARO-2**

GS Yuasa Corporation (Tokyo Stock Exchange: 6674; "GS Yuasa") announced that the lithium-ion batteries manufactured by group company GS Yuasa Technology Ltd. ("GYT") have been installed in the Epsilon-3 Launch Vehicle, scheduled to be launched from the Uchinoura Space Center by Japan Aerospace Exploration Agency ("JAXA") on January 17, 2018, and the advanced small-size radar satellite ASNARO-2^{*1} carried by the rocket.

Epsilon-3 is installed with the common lithium-ion batteries for launch vehicles, developed by GYT under a contract with IHI Aerospace Co., Ltd. based on JAXA's request. The batteries supply electricity to the rocket control equipment.

ASNARO-2 carries space use lithium-ion battery JMG050 (50Ah) made by GYT. Ever since their space feasibility experiment on trajectory in early 2000s, GYT's space use lithium-ion batteries have been installed in spacecraft both in Japan and abroad. This track record has been highly rated and following advanced small optical satellite ASNARO-1 they were adopted for ASNARO-2 and the batteries supply electricity to the satellite when it goes into the shadow of the earth.^{*2}

GYT develops, manufactures and distributes batteries and power sources for special applications and has been supplying high-performance, high-quality batteries for special environments of sea, land and air (from depths of 6,500 meters below the ocean surface to 36,000 kilometers high in space).

The GS Yuasa Group will continue to contribute to space development projects through the development and manufacturing of high performance lithium-ion batteries going forward.

^{*1} It is a radar satellite, developed in the ASNARO (Advanced Satellite with New system Architecture for Observation) project driven forward by the Ministry of Economy, Trade and Industry, for earth observation. It has high performance, is small sized with low cost and is delivered in a short period of time to strengthen the competitiveness of the spacecraft industry and to expand the user industries.

^{*2} The artificial satellite operates on electricity supplied by solar cells but there are periods when it does not receive sunlight as it goes behind the earth while orbiting. During this period, the lithium-ion batteries supply the electricity necessary for operation of the satellite.

[Specifications of the lithium-ion batteries installed in ASNARO-2]

Component code	JMG050 ^{*3}
Nominal voltage (V)	3.7
Capacity (Ah)	50
Dimensions (mm) ^{*4}	W130×D(52)×H131
Mass (g)	1,510

^{*3} A registered JAXA component registered in the JAXA database and disclosed.
<http://www.ard.jaxa.jp/database/db-compindex.html>

^{*4} Height (H) excludes stud bolts.

[Images]

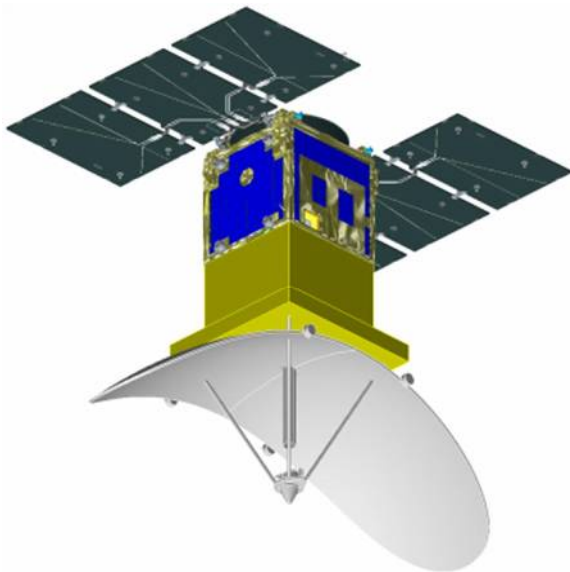
1. Epsilon Launch Vehicle (© JAXA)



2. Common lithium-ion battery for launch vehicles



3. Advanced small-size radar satellite
ASNARO-2
(© Ministry of Economy, Trade and Industry)



4. Lithium-ion battery JMG050 installed in
ASNARO

