



**GS Yuasa's Large-scale Lithium-ion Storage Battery System Installed at Cochrane Coal-fired Power Plant in Chile**

GS Yuasa Corporation (Tokyo Stock Exchange: 6674; "GS Yuasa") announced today that its lithium-ion storage battery system was delivered to the Cochrane coal-fired power plant<sup>\*1</sup> in Chile and its installation was completed in January 2017.

The lithium-ion storage battery system uses lithium-ion battery cells made by Lithium Energy Japan<sup>\*2</sup> (President: Ryoichi Okuyama; Head office: Ritto city, Shiga; "LEJ") and has a maximum output of 20MW. It was installed as a spinning reserve<sup>\*3</sup> to output a certain amount of the plant's power generation capacity instantaneously and supports the power plant.

This is the first project in which lithium-ion batteries made in Japan were adopted for the world's largest storage battery system on a commercial basis.

The role of large-scale lithium-ion batteries is expected to grow further in the future to provide standby power at power plants and as a measure to stabilize power system amid increasing use of renewable energy. GS Yuasa will combine its technological capabilities built on years of experience with the mass production technology of LEJ to support the global shift towards clean energy.

- \*1 A power plant with power generation capacity of net 472,000 kW and gross 532,000 kW built by AES Gener (President: Javier Giorgio; Head office: Santiago, Chile), Chile's second largest power supplier in terms of power generation capacity, and Mitsubishi Corporation in the suburb of Mejillones, Region II of the northern Chile.
- \*2 A company which develops, manufactures and sales large-scale lithium-ion batteries, which is jointly operated by GS Yuasa and Mitsubishi Corporation (President: Takehiko Kakiuchi; Head office: Chiyoda-ku, Tokyo;).
- \*3 Spinning Reserve: In some regions of Republic of Chile, power producers are required to set aside a certain amount of generation capacity as spinning reserve.

[Features of lithium-ion storage battery system]

- 1) Compatible with high-voltage DC (900 V level) PCS (power conditioner).
- 2) Installed with an integrated battery management unit (BMU) that manages multiple banks (15 in parallel, 3,600 cells).
- 3) Voltage and storage battery capacity can be easily customized by combining multiple modules in series or parallel and can be built into a large scale storage battery system.
- 4) Container-based independent control enables maintenance work without stopping the entire system.
- 5) Remote monitoring system continuously monitors the condition of lithium-ion batteries.

[Outline of lithium-ion storage battery system]

Module format	LIM50EN-12 (12 cell module)
Number of batteries (cells)	36,000 (20 module in series × 15 in parallel × 10 containers)
Capacity (kWh)	6,750 <sup>*4</sup> (675 × 10 containers)
Nominal voltage (V)	900

\*4 Product of nominal capacity (Ah) and nominal voltage (V).

[Background]

GS Yuasa received the order from Parker Hannifin Corporation (President: Thomas L. Williams; Head office: Ohio, the U.S.; “Parker”), which has been given the contract for the entire storage battery system of the power plant, through Mitsubishi Corporation, the main contractor.

LEJ manufactured the lithium-ion battery cells, GS Yuasa constructed the module and storage battery control system and Parker developed the overall lithium-ion storage battery system. They were put into ten 40 ft. containers and finally installed in the plot adjacent to the power plant.

[Images]

1) The full-view of the lithium-ion storage battery system



2) The LIM50EN series industrial-use lithium-ion battery module



### 3) Location of the Cochrane coal-fired power plant

