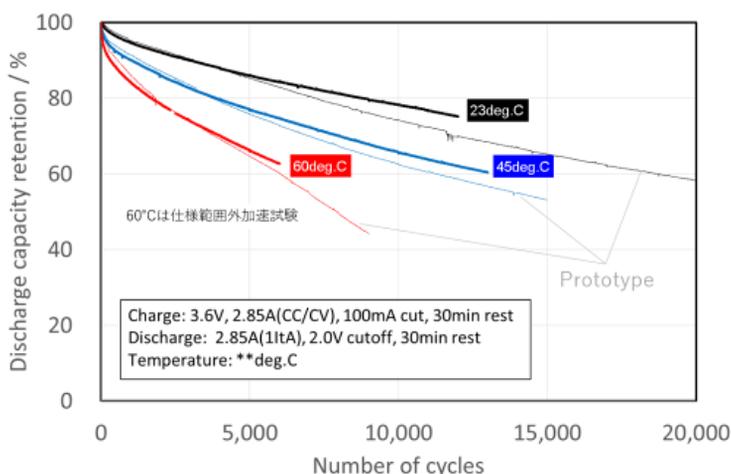




## The Long-lasting Lithium-ion Battery 'FORTELION'

With a cathode composed of olivine-type iron phosphate, Murata's 'FORTELION' is a lithium-ion rechargeable battery with an expected life of 15 years\*<sup>2</sup> and an exceptionally high level of safety.



## Large-Scale ESS : Container Solution



## ESS Large-Scale Applications example



\* The Sony Group's battery business has been transferred to the Murata Group in September 2017.



## Keywords to understanding Tohoku Murata

### Keyword 01 1991



In 1991 Sony\* was the first in the world to commercialize a lithium-ion rechargeable battery, forever changing the history of mobile devices.

1991 was the year Sony\* lithium-ion rechargeable batteries were first used in mobile phones. By dramatically increasing the energy density from that of conventional rechargeable batteries, Sony\* was

able to solve issues such as the inability to use devices outdoors and the short operational life of dry cell batteries. This year, in turn, served as a turning point completely redefining the history of mobile devices.

### keyword02 Olivine



The origin of the name for olivine-type lithium iron phosphate comes from the beautiful color of olives.

While by nature a difficult material to apply to batteries, through our original know-how we were able to harness its full potential.

Olivine-type lithium iron phosphate is a beautiful olive-colored crystal. With a strong and solid structure, this crystal emits little oxygen and is extremely difficult to set afire. When used in batteries, it dramatically extends the operational life but due to its low electrical conductivity, is difficult to apply as is. At Tohoku Murata we took on this challenging substance, and matching an original battery structure with our know-how for material processing, we succeeded in developing a rechargeable battery that is both safe and long-lasting. Carrying a cathode composed of this material, the rechargeable lithium-ion battery 'FORTELION' can last 15 years at least when charged only once a day at room temperature and is suitable for use in applications requiring a large current of energy to be released at once.

**\* The Sony Group's battery business has been transferred to the Murata Group in September 2017.**