

Battery Materials Production and Evaluation Facilities

Background

The application of lithium-ion batteries has recently expanded from mobile-use to electric vehicles, residential, and leveling on grid use in line with the increased capacity and improved life performance of these batteries. When we apply lithium-ion batteries to the grid, a precise evaluation technology of battery performance is required for the proper operation period and the introduction of the next generation batteries. The determination of the degradation factors of the large format batteries is quite important in estimating the proper operation period, so that

the post analysis and re-assembling technique of the large format batteries is important to judge the degradation mechanism of the battery. In addition, model cell production and its precise evaluation are also required to understand the reaction mechanism of advanced batteries with the novel materials. To accomplish the above, battery materials production and evaluation facilities were installed in Yokosuka area. Some of the existing equipment in Komae area was also relocated to the Yokosuka area.

Outline

The majority of the battery components are sensitive to high humidity so we installed a dry room with ultimate dry air conditions and directly connected glove boxes with inert Ar gas atmosphere. This system deals with the disassembly of the various small-sized batteries and 50 Wh class large format batteries. We can also analyze component chemistry and

reassembly of the batteries in the glove box to understand each electrode performance of the dissembled batteries. In addition, advanced material production system, electrode synthesis equipment, and cell production system are prepared to correspond to the proper analysis of the advanced materials in the large format batteries.

Specifications

- Dry Room: 100 m², Dew point of the blow off gas: <-70°C (<3 ppm H₂O)
- Vacuum Glove Box: Direct connection to Dry Room, Dew point of the blow off gas: <-100°C (<0.01 ppm H₂O)
- Ultra dry production system: Dew point of the blow off gas: <-90°C (<0.1 ppm H₂O)
- Battery material synthesis equipment: Furnace temperature >1,000°C. Various gas (O₂, Ar, N₂) purge supply system are connected the furnace.

[Location and date of installation]

Yokosuka area / March, 2015



Photo 1: External view of the battery materials production and evaluation facilities