

Application Note

Detection of insulation defects in lithium-ion batteries

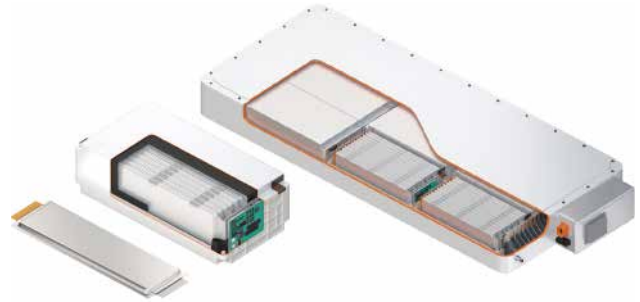
By measuring the insulation resistance of lithium-ion battery cells before the electrolyte is poured, it is possible to detect the presence of metallic foreign matter and damage to the separator at an early stage of the production process.

Target

Lithium-ion battery manufacturing and production line

Market Movements

Lithium-ion batteries used in electric vehicles are used for a long period of time in harsh environments. Therefore, a high level of safety is required for lithium-ion batteries.



Problem

When the insulation of the components, between which must be insulated, is insufficient, the deficiency may cause a lowering in the battery's service life or an accident involving fire. The primary causes of the deficiency of the insulation resistance are contamination with metallic material and separator tears.

Solutions

In order to ensure sufficient insulation resistance, it is essential to perform insulation resistance testing of battery cells before the electrolyte filling. By applying voltage to the battery and measuring the insulation resistance, contamination by metallic foreign matter or damage to the separator can be detected early in the production process.

(Applying a voltage after the battery has been filled with electrolyte can cause damage)



Measurement of insulation resistance between the electrode and the enclosure



Measurement of insulation resistance between electrodes

Equipment used

INSULATION TESTER ST5520 HIOKI Products