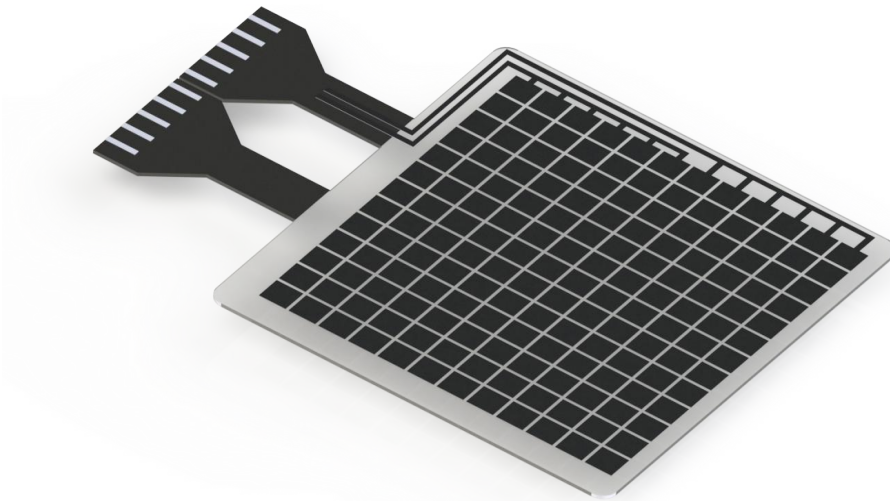
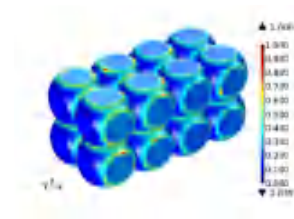
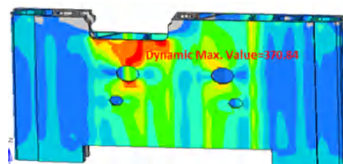
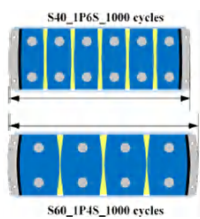


BPD1000



BATTERY PRESSURE DISTRIBUTION MEASURE SYSTEM

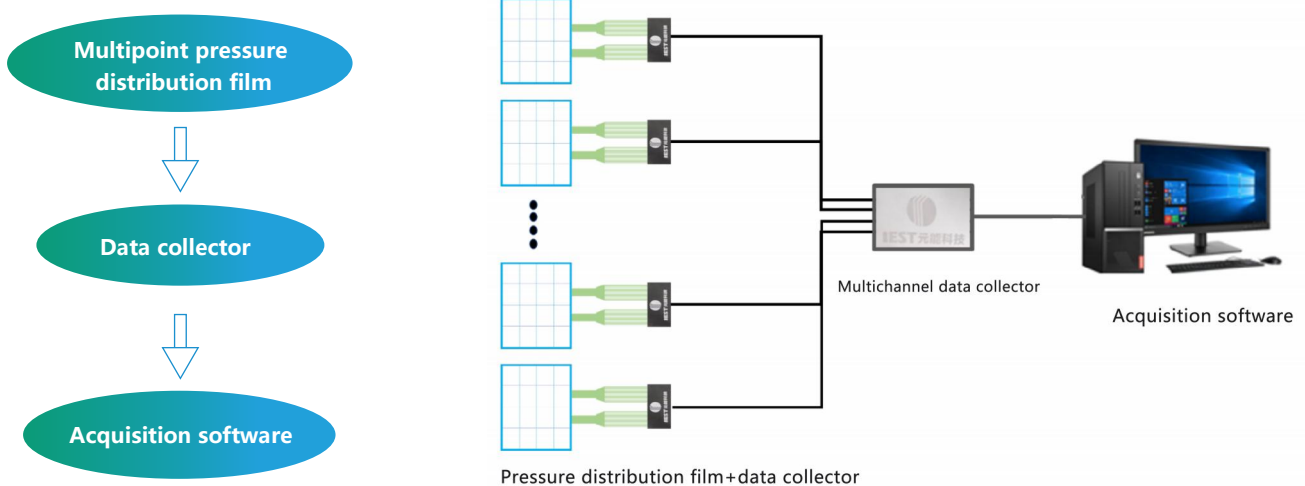


1. Background

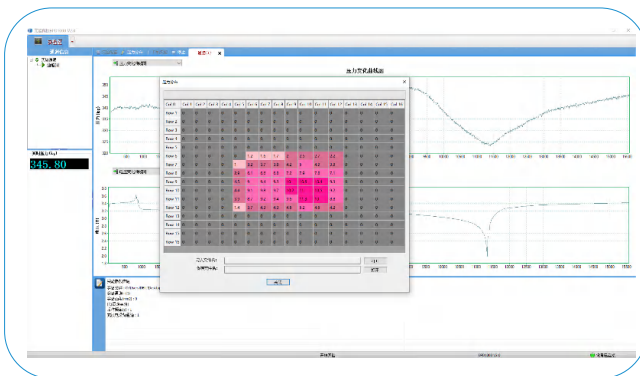
As a common electric energy storage device, lithium-ion battery (LIB) has the advantages of high energy density, high specific power, high output voltage, small self-discharge, long service life, etc. which is widely used in electric vehicles, electronic products and other fields. On the one hand, during the manufacturing process of the LIB, the internal stress distribution or the surface thickness distribution will be uneven because the process environment cannot be completely consistent; On the other hand, in the electrochemical cycle process, intercalation and deintercalation of Li-ions will lead to the volume expansion and contraction. However, the uneven current density or temperature distribution inside the LIB, will lead to the uneven distribution of the stress during the expansion of the LIB. Thus, the quantitative characterization of the stress distribution on the surface of LIB can provide a deeper perspective for the battery stress analysis, assist technicians to analyze the battery stress distribution, explore the causes of the failure of the LIB, and develop a safer and more reliable LIB.

2. Introduction of Pressure Distribution Measure System

Structural composition:



Software interface:



Characteristic:

1. Display the resultant force curve of each detection unit in real time;
2. Select the pressure distribution diagram according to the user's actual used area;
3. Synchronize the charging and discharging data in real time;
4. One-click to export the data report;
5. Real-time calibration of pressure (combined with in-situ expansion equipment).

3. Applications

With the expansion force test fixture or in-situ expansion test equipment, the stress distribution at different positions on the surface of the cell during the cycling process is characterized

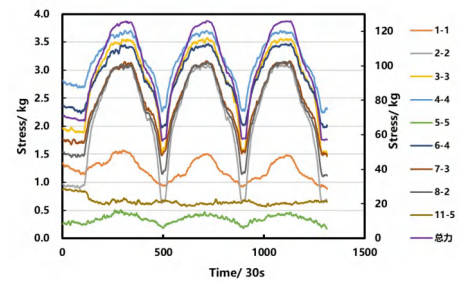
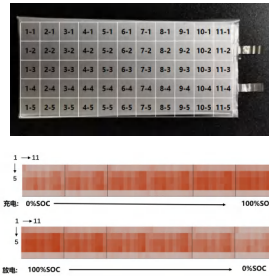


Quickly and quantitatively evaluate the surface flatness of the cell

Application 1: Test of stress distribution on the surface of the cell during the cycle

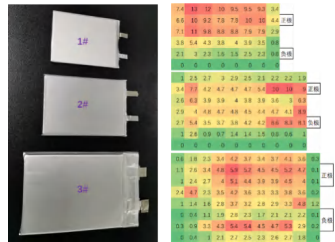
▶ Test information: NCM-Graphite system, 3~4.3V, 0.5C, 50kg preload;

▶ Result analysis: It can quantitatively characterize the difference of stress distribution on the surface of the cell, provide a deeper perspective for the stress analysis of the cell, and help technicians analyze the stress distribution in the cell, explore the causes of failure of the cell, and develop a safer and more reliable cell.



Application 2: Surface flatness test of fresh cell

▶ Result analysis: there is a certain correlation between the cell process design and the cell pressure distribution (flatness). Technicians can develop appropriate distribution standards through the pressure distribution system to monitor the batch stability of the delivered cells.



Information of cell			
	Cell1	Cell2	Cell3
Cathode	NCM	LCO	LFP
Anode	Graphite		
Capacity	2000mAh	4800mAh	3000mAh
Model	345877	456494	5778125
SOC	50%		

4. Model and Specification

Sensor film size	160*160mm(Can be customized according to customer needs)
Pressure range of sensing unit	0~30kg(0~5MPa)
Pressure accuracy of sensing unit	±10% FS
Sensing unit size	7.5*7.5mm
Sensor thickness	< 0.3mm
Number of sensors	16X16 array layout, 256 sensors in total
Data collector	1 (sampling frequency < 10Hz), size about 20 * 80 * 120mm
Software	1 set

Note: IEST is committed to continuous improvement of products. IEST reserves the right to alter the specifications of its products without notice.



BPD202302

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