Breaking through the traditional power battery test thinking - IT6000C bidirectional programmable DC power supply

With the globalization of the green travel concept, the sales of new energy vehicles will increase year by year. By 2025, global new energy vehicle sales will increase to 11 million, and will continue to climb to 30 million in 2030. As the core part of new energy vehicles, power battery is directly related to the development of new energy vehicles. Therefore, the testing of power batteries is crucial. In the power battery testing industry, such as "high-power resistor discharge" or "DC power + DC electronic load" solutions, then these solutions will certainly meet today's power battery testing needs? The answer must be say no.
As a professional instrument manufacturer, ITECH has launched the latest power battery charge and discharge test solution, which not only breaks through the traditional thinking from the hardware architecture solution, helps users to save high power consumption costs, but also increase the communication interaction of the BMS in terms of software functions.

Breakthrough 1: IT6000C bidirectional programmable DC power supply - energy feedback, green energy saving

With the development of the battery, from the original 1.5V dry battery to the power battery up to 800V/50KW, the solution has the following three types: DC power supply + high power resistance box, DC power supply + energy-consuming electronic load or DC power supply + regenerative Load. But ITECH is not the solution of the above, but a new Bi-directional programmable DC power supply IT6000C that combines bipolar power supply and regenerative e-load functions in one.

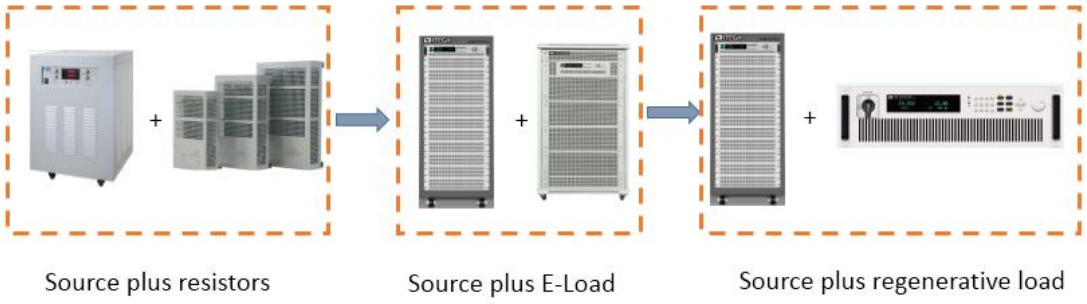

Figure 1. Evolution of the traditional solution

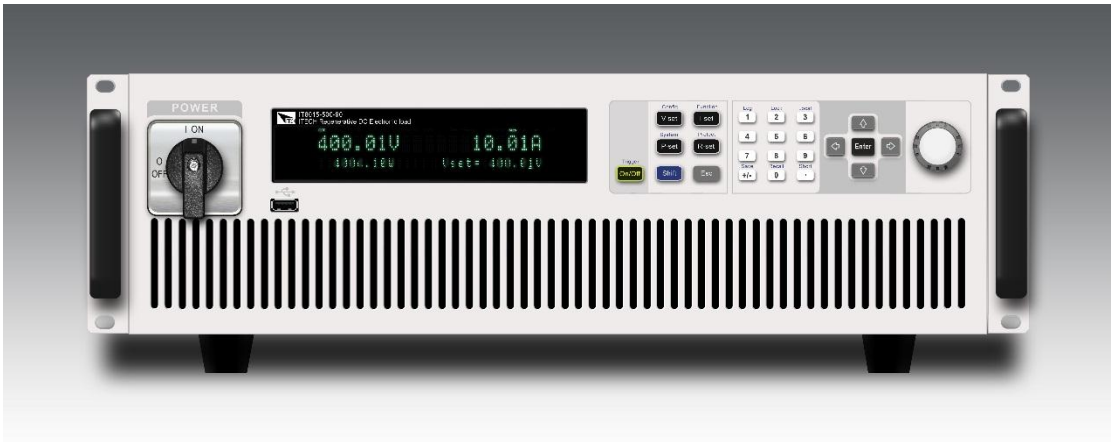

Figure2. ITECH new solution

(1) Compared with the source-load separation solution, what are the benefits to power battery test by using bi-directional DC power supply?

The power battery is the source of power for the car. Of course, there is a complete braking energy recovery system in the car. When the car is running, the battery is discharged externally, when the car brakes, the recovered energy reverses the charge of the battery. Imagine the situation of daily driving out, starting and braking frequently switching, the actual power battery curve is as shown below—source and sink. So in case of battery test, the battery is charged and discharged quickly.

At this point, the IT6000C solution shows great advantages and enables fast current switching. However, if the solution is source + electronic load, it is necessary to control two devices. It takes time to control the switching, which will affect the speed of current switching, so it cannot be considered as the optimal power battery testing solution.

Similarly, such a set of equipment can be used not only as a power battery test equipment, but also as an analog power battery device to test other energy management systems for vehicles.

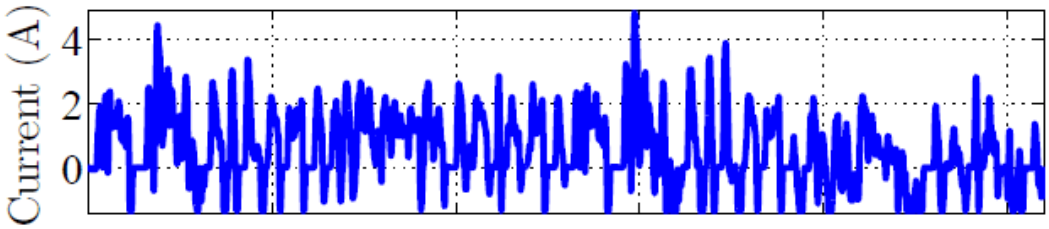

Figure 3. Working condition simulation

（2）Energy feedback efficiency is up to 95%, saving electricity costs

In the general battery discharge test, energy is dissipated as heat by the electronic load or the resistance box, which causes waste of resources. If this part of energy is converted into electric energy for use by other devices, it can help the user to save a considerable amount of money. IT6000C, The energy feedback efficiency is as high as 95%, and the energy saving also avoids the fan noise caused by the heat dissipation of the conventional solution.

Breakthrough 2: high power and small volume, saving lab space

The power battery is usually 40 to 50kW. According to traditional solution one set of charge and discharge devices will occupy 3*37U cabinets. However if choose IT6000 series equipment, taking 18kW as an example, the volume can be reduced to 3U which greatly save the laboratory space.

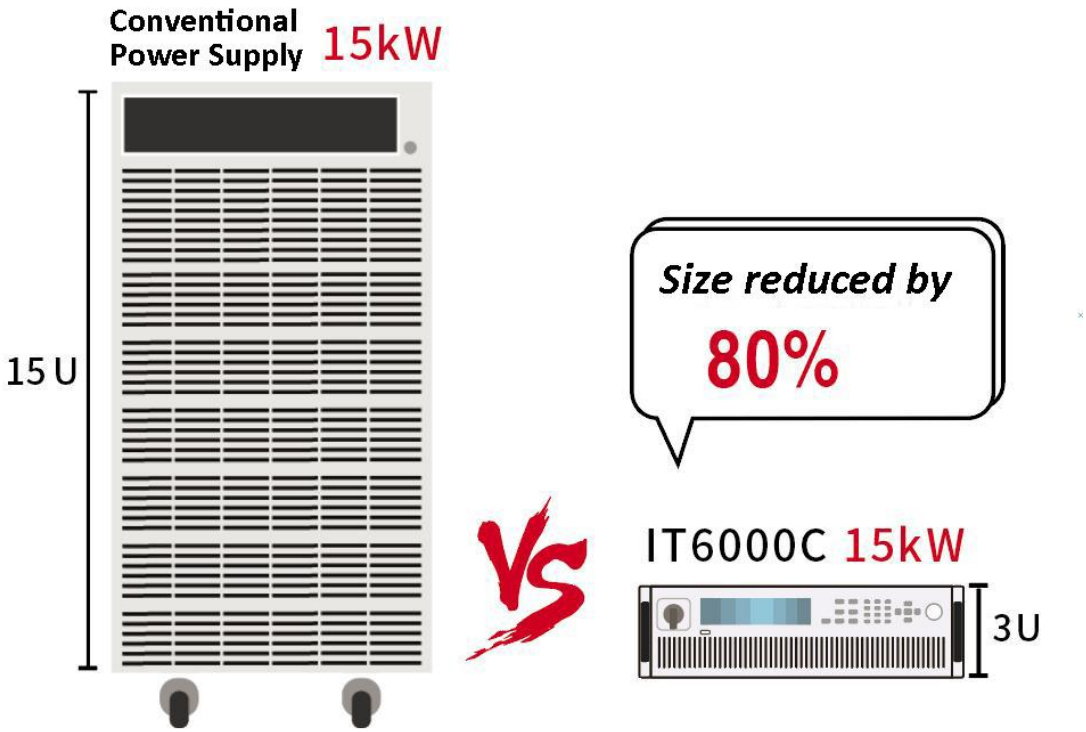

Figure 4. Traditional solution **VS** IT6000C

With its comprehensive functions, excellent performance and rich software capabilities, ITECH IT6000C series bi-directional programmable DC power supply successfully breaks through the test thinking of traditional power batteries, and greatly reduces test space, saves electricity costs and greatly improves the reliability and security of the overall system.