



New Energy-saving Solution for Cylindrical Cell/Pouch Cell/Aluminum Shell Cell Cycle Tests

——IT-M3400 regenerative bidirectional DC power supply

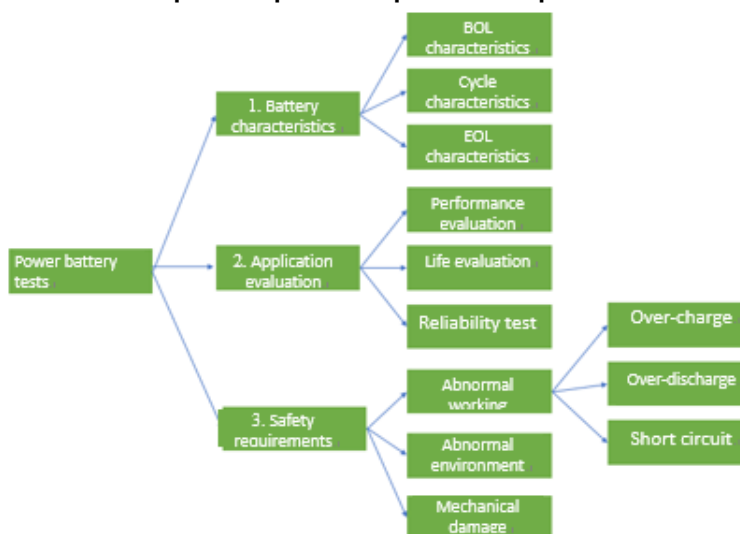
Background

As a key part in electric vehicle, power battery directly affects such important indexes as full vehicle range, power performance, and security. Despite of evolving battery technology development, its current performance has not reached the level desired by the automotive industry.

From the cell R&D to whole package and vehicle testing, it is required to constantly test the power battery characteristics and the testing focuses vary in different enterprises. Battery manufacturers focus on battery capacity grading and consistency screening in cell portions, while battery enterprises need to perform a series of tests to obtain battery characteristics, such as rated capacity, nominal voltage, discharge current, internal resistance and other parameters to improve the production process or ratio and assemble battery module.

Original equipment manufacturer (OEM), as the user of power battery, needs to evaluate and test whether the selected power battery can meet performance requirements throughout the product's whole life cycle. Taking the road operating condition test as the testing focus, OEM can simulate road operation conditions on a test bench, or directly carry out special tests for

the entire vehicle's power battery performance. Many battery manufacturers have conducted deep cooperation with vehicle brands to speed up R&D speed and provide users with more suitable customized products.



Battery manufacturers focusing on R&D put forward many requirements on the battery charge and discharge test equipment, such as high speed, high accuracy, seamless switching of DC charge and discharge ability, professional battery charge and discharge mode, perfect protection function, as well as professional battery parameter measurement, data acquisition ability, etc. In addition, battery manufacturers also seek for updating solutions that can flexibly adapt to different usage requirements and reduce the test power consumption. However, this is not an easy task.

Case study

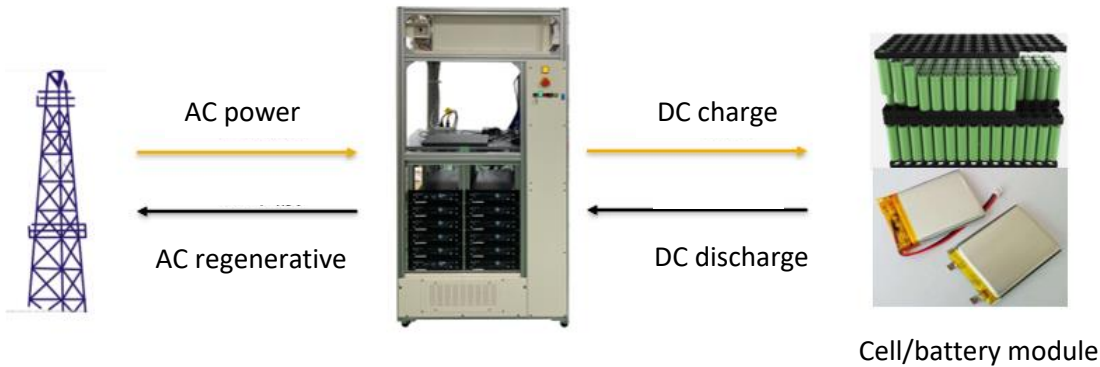
One customer purchases the ITECH IT-M3422 regenerative bidirectional DC power supply to build a cell test system.

The IT-M3400 series programmable bidirectional power supply can complete battery charge and discharge with a single unit. Its compact (half 1U) unit can provide up to 800W power output and has the following advantages in professional battery tests:

- ◆ Up to 88% regenerative efficiency, automatic detection of power grid state to realize realizable grid connection
- ◆ Battery charge/discharge test functions, power level display, power level and voltage time off conditions
- ◆ Battery simulation function capable of setting initial capacity and internal resistance value
- ◆ Independent/synchronous control of a single channel and multiple channels/, parallel running of up to 16 sets with only one communication interface required
- ◆ High speed measurement, and 10 times/ S updating rate with 16 single units connected
- ◆ Standard temperature measurement function, measurement off DUT temperature with optional accessories, and OTP
- ◆ Multiple protection functions: Various protection such as OCP/UCP/OVP/over heat protection/OPP/UVP, grid fault protection and fault storage, foldback, power-off protection, and sense abnormal protection
- ◆ Anti-reverse protection function through optional accessories
- ◆ Multiple control modes such as RS232, CAN, LAN, GPIB, USB_TMC, USB_VCP, RS485, external analog, and IO

By using the regenerative structure, IT-M3400 saves power consumption during battery charge and discharge tests with the regenerative efficiency up to 88%. For the AC-end tests, this helps calculate the power consumption of this test and cumulative power consumption that was previously regenerated to the grid to display energy saving effect in a more intuitive manner.

Low-power and bidirectional AC/DC structure and mini size occupy less space and ensure lower heat dissipation simpler system structure.

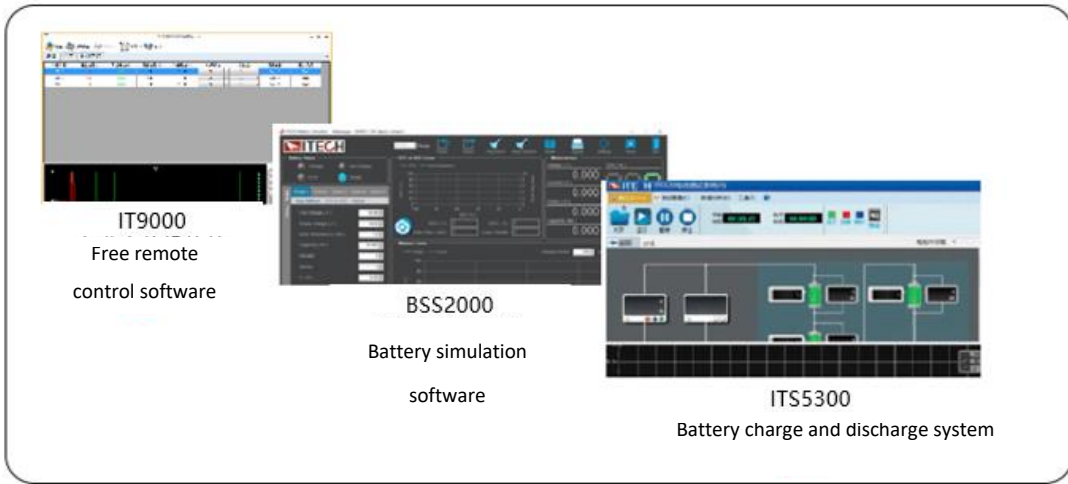


The stand-alone unit has the charge and discharge power-off conditions and AH power level calculation function. The temperature monitoring interface can be used for the battery OTP control and only one communication interface is required for 16 channels. This reduces the workload of writing and maintaining the control and protection functions when the user builds a system and achieves faster hardware protection speed.



Apart from professional battery charge and discharge tests, when the user has BMS and other part testing requirements, IT-M3400 can completely work as a stand-alone high-performance programmable power supply for usage. The free IT9000 host computer software can complete the control for a single unit and up to 16 channels, thus reducing testing costs in small-batch tests.





IT-M34/3600
1/2U@800W

IT-M3900B/C
1U@6kW, 2U@12kW

IT6000B/C
3U@18kW

Having a power range of 200W-1152kW, the ITECH IT-M3400/3600, IT-M3900B/C, IT6000B/C series can be used with BSS2000 battery simulation software or constitute the ITS5300 battery charge and discharge test systems to complete the complete set of battery tests and simulation. They can be widely applied in batteries, electric drive motors, electric tools, charging piles and chargers, microgrids, energy storage systems and so on.

ITS5300 battery charge and discharge system

BSS2000 battery simulation software



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