

**TF9:Chinese Presentation about “BMS  
standards and test”**

# Standards related to BMS in China

QC/T 897-2011 Technical specification of Battery Management System for Electric vehicles.

the test items include:

- insulation resistance,
- dielectric voltage,
- parameter accuracy,
- SOC estimation
- malfunction diagnosis
- EMC
- other environmental reliability test.

➤ conducted three type:

SOC  $\geq 80\%$ ,  $80\% < \text{SOC} < 30\%$ , and SOC  $\leq 30\%$ .

The precision of SOC should not exceed 10%.

• Test items divided into basic items and extendable ones.

• **The basic items** include overhigh temperature, overflow temperature, cell(module) voltage overhigh, cell(module) voltage overflow, excessive consistence deviation, overhigh charge current(power), and overhigh discharge current(power)

• **The extendable items** include weak insulation resistance, overhigh SOC, overflow SOC, overhigh total voltage, overflow total voltage, malfunction with external or internal communication interface, over large temperature difference, malfunction with internal communication net, and battery connection looseness.

# BMS test

- All the samples tested have basic malfunction diagnosis,
- some have some items of the extendable ones: some BMS have two-stage alarm, at stage one, it just gives alarms to inform the driver; at stage two, it will open the relay to cut off the power to protect the safety of battery system.
- All the samples tested can give out alerting signals, and show them on the screen.
- All the samples tested have a more accurate precision of parameter, such as total voltage, current, cell(module) voltage, and temperature.

# Standards related to BMS in China

GB/T \*\*\*\*-2015 Lithium-ion traction battery pack and system for Electric vehicles—Part 3: Safety requirements and test methods

the test items include:

- Short circuit protection  
if there occurs short circuit, the BMS or the fuse should be active to protect the system
- Overcharge protection  
if there is overcharge, the BMS should be in action, and the system can be protected.
- Overdischarge protection  
if there is overcharge, the BMS should be in action, and the system can be protected.
- Overtemperature protection  
if there is overcharge, the BMS should be in action, and the system can be protected.

# Standards related to BMS in China

GB/T 27930-2010 Communication protocols between off-board conductive charger and battery management system for electric vehicle

The message is divided into different phase:

- Charge handshaking phase
- Parameter configuration phase
- Charge phase
- End of charge phase

In summary, if the BMS can not receive or monitor the message from the off-board conductive charger, such as output voltage, current, or the BMS detects that the current is over high, or the voltage is abnormal, or other errors occur, it will take some action or send the message of stopping charging to make the charger stop charge.

Thanks !