

Your Battery is a Black Box

If you want to manage a battery properly, it's essential to have accurate information about the state of the cells.

You can view the battery as a series of boxes (the cells in the battery) that store something of value (electrical energy). You need to know the size of each box and how full it is. To make this tricky, each box is slowly shrinking and every box is shrinking at a different and unknown rate. To make this even trickier, the amount of energy in each box is constantly rising and falling, and at a different rate in each box. And your job is to keep all boxes filled to the same level. That's what the BMS must do.

Today's BMS'es have only one piece of information to try to estimate the size and state of each of those boxes: cell voltage. So they measure voltage frequently and as precisely as possible, then apply a lot of math to those measurements to try to surmise how much each box has shrunk and how full it is at any given moment.

Imagine that you have a series of boxes for storing gold. All of them are shrinking at a different rate. The amount of gold in each box is rising and falling at a different rate. You need to keep track the size of each box, how full each box is, and you must keep all the boxes filled to the same level. And you can only measure one dimension of each box. That's the challenge that today's balancing systems face.

True Balancing Unlocks the Box

True Balancing measures real-time data for voltage and current of each cell, and then calculates impedance on a cell-by-cell basis. This is the key that unlocks an unprecedented level of control over the battery and a provides whole new dimension of information about the condition of the battery.

It's as if you suddenly had the ability to measure two of the dimensions* of the box and weigh it. No other BMS can do this.

This is a simple one-page explanation, but it gives an idea of the limitations of present BMS technology and the value of a technology that overcomes those limitations. For in-depth details on the benefits of True Balancing, please go to www.truebalancing.com.

* True Balancing doesn't know *everything* about the cells, but it knows a lot more than existing balancing systems..

