CLAIMS

1. An energy storage device for an electric vehicle comprising:

a housing defining an interior volume;

a plurality power cells, arranged in the interior volume of the housing, each power cell having a first terminal at one end and a second terminal at another end, wherein each of the plurality of power cells extending in a substantially parallel configuration with intervening spaces being provided between adjacent power cells;

a resin sheet encapsulating at least one of the first terminal at the one end and the second terminal at the another end of each of the plurality of power cells and holding the plurality of power cells in a rigid configuration; and

a heat absorbing fluid within the housing, circulating through the intervening spaces contacting an exterior of at least one of the plurality of power cells,

the resin sheet being positioned to isolate the heat absorbing fluid from the at least one of the first terminal at the one end and the second terminal at the another end of each of the plurality of power cells and retain the heat absorbing fluid in contact with the exterior of the at least one of the plurality of power cells.

2. The energy storage device of claim 1, wherein each of the plurality of power cells has a generally cylindrical shape with the first terminal being located at one end of the cylindrical shape, and the second terminal being located at another end of the cylindrical shape; and

wherein the plurality of power cells are arranged in matrix having a plurality of rows and columns.

3. The energy storage device of claim 2, wherein at least one cell of the plurality of cells in a first row is oriented with a first terminal extending in a direction opposite a direction of a first terminal of at least one cell of the plurality of cells in a second row adjacent the first row.

4. The energy storage device of claim 1, wherein the resin sheet comprises:

a first resin sheet encapsulating a first end of each of the plurality of cells; and

a second resin sheet encapsulating a second, opposite end of each of the plurality cells,

wherein a fluid circulation space is defined in a longitudinal area between the first resin sheet and second resin sheet.

5. The energy storage device of claim 4, wherein at least one of the first resin sheet and the second resin sheet comprises a electrical contact connecting a terminal of at least one cell of the plurality of cells to a terminal of at least one other cell of the plurality of cells.

6. The energy storage device of claim 1, further comprising an integrated battery management system having a microcontroller monitoring at least one state of at least one cell.