Claims

1. A battery pack, including a pair of spaced apart end plates, a plurality of cells interposed therebetween, and, a plurality of cell links;

each end plate including:

a first portion, of plate-like configuration having first and second surfaces, including:

an arrangement of cell receiving cutouts formed therein in spaced apart relationship; and,

an arrangement of fluid flow apertures provided intermediate said cell receiving cutouts;

a bus plate, of laminar configuration and formed of conductive material, overlaying said first surface of said first portion, including:

an arrangement of cell connection holes formed therein in spaced apart relationship and in alignment with said cell receiving cutouts of said first portion; and,

an arrangement of fluid flow orifices formed therein and which align with said fluid flow apertures of said first portion;

each cell including a first end and a second end, the first end being operatively engaged in a cell receiving cutout of a first of said end plates, and, a second end being operatively engaged in a cell receiving cutout of a second of said end plates; and,

each cell link conductively connecting an electrode at a respective end portion of each said cell to the bus plate of its respective end plate;

wherein, each cell receiving cutout is shaped such that only a peripheral rim of each cell is engaged within a respective cell receiving cutout of each end plate to thereby retain said cells in said end plates.

2. The battery pack as claimed in claim 1, wherein each cell receiving cutout is shaped such that, in use, the ingress of a cell received via the second surface of said first portion is restricted, such that the respective end portion of the cell is spaced apart from the first surface of said first portion.

3. The battery pack as claimed in claim 1 or 2, wherein at least a portion of a side wall of the cell receiving cutout includes any one or combination of:

a shoulder;

a lip;
a step; or,
an incline.

4. The battery pack as claimed in any one of claims 1 to 3, wherein said first portion includes a pair of insulated panels positioned back to back, wherein, in a first insulated panel, each cell receiving cutout is dimensioned so that an end portion of a cell can fit therein, and in a second insulated panel, each cell receiving cutout is dimensioned so that the respective end portion of the cell is impeded from fitting therein to abut a peripheral rim of the end of the cell.

5. The battery pack as claimed in any one of claims 1 to 4, wherein the cell receiving cutouts are shaped to receive a cell therein.

6. The battery pack as claimed in claim 5, wherein the cell receiving cutouts are circular, square or rectangular shaped, in cross-section.

7. The battery pack as claimed in any one of claims 1 to 6, wherein each fluid flow orifice and each fluid flow aperture are shaped to align together to form part of a fluid flow channel.

8. The battery pack as claimed in any one of claims 1 to 7, wherein said first portion is at least partly formed of non-conductive material.

9. The battery pack as claimed in claim 8, wherein the non-conductive material is able to resist temperatures over 60°C and has low flammability.

10. The battery pack as claimed in claim 8 or 9, wherein the non-conductive material includes any one or combination of polycarbonate, polyaramid 6/6 glass-fibre reinforced, PTFE or PEEK.

11. The battery pack as claimed in any one of claims 1 to 10, wherein said bus plate is formed of highly conductive material, including any one or combination of metal material or non-metallic conductive material.

12. The battery pack as claimed in claim 11, wherein the metal material includes any one or combination of copper, aluminium or nickel.

13. The battery pack as claimed in claim 11 or 12, wherein the non-metallic conductive material includes any one of combination of graphene, a conductive polymer or ceramic material.

14. The battery pack as claimed in any one of claims 1 to 13, wherein the electrode of the cell is on a plane offset to a surface of the bus plate adjacent to the first surface and in a direction of the second surface of the first portion of the respective end plate when the end of the cell is operatively engaged in the cell receiving cutout.

15. A battery assembly, including a plurality of battery packs as claimed in any one of claims 1 to 14, connected in series and/or parallel.

16. The battery assembly as claimed in claim 15, including a link plate connecting the bus plates of adjacently positioned battery packs.

17. A method for forming the battery pack as claimed in any one of claims 1 to 14, including interposing a plurality of battery cells between a pair of end plates.

18. The method for forming the battery pack as claimed in claim 17, further including attaching a cell link to connect each cell to a bus plate of each end plate.

19. The method of forming a battery assembly as claimed in claim 15 or 16, including linking two or more battery packs using a link member.

20. An end plate for the battery pack as claimed in any one of claims 1 to 14.