Claims

1. Flow field plate adapted for use in a solid-state compressor cell for compressing a gas, the flow field plate comprising:

- an essentially flat body,
  - having two opposite surfaces and an edge;
  - provided with a channel plan for gas distribution, that extends from multiple locations at a border of the field plate to multiple locations at the surface of the essentially flat body;

wherein

- the essentially flat body is provided with recesses at both sides, the recesses at each side comprising a first set of parallel lanes, crossing a second set of parallel lanes.

2. Flow field plate according to claim 1, wherein the flat body comprises through holes, extending from the first surface to the second surface.

3. Flow field plate according to any of the preceding claims, wherein the essentially flat body has a maximum thickness, defined as the length of a straight line from the one surface to the other surface, wherein less than 50 % of the essentially flat body has the maximum thickness.

4. Flow field plate according to any of the preceding claims, formed out of multiple parts.

5. Flow field plate according to claim 4, wherein two parts of the essentially flat body besides a recess are separate parts.

6. Flow field plate according to claim 2, wherein the through holes have a size between 1 and 200 micron.

7. Flow field plate according to any of the preceding claims, comprising holes in the direction of the plane, having a size between 10 and 240 micron.

8. Flow field plate according to any of the preceding claims, wherein the flow field plate is at least partially elastic.

9. Solid state compressor cell, comprising:

- two cell plates, enclosing a channel structure, formed by a number of recesses provided on a surface of one of the cell plates, used for the transport of a coolant and connecting a fluid feed on one end thereof and to a fluid discharge on another end thereof; and comprising a number of recesses provided on the outer surfaces of the cell plates facing away from the other cell plate;
- at least two flow field plates according to any of the preceding claims, positioned on the recessed outer surfaces of the cell plates to form further channel structures for supplying a working fluid to, respectively diverting a working fluid away from, a proton exchange membrane;
- said proton exchange membrane.

10. Solid State compressor cell according to claim 9, wherein the field plates are clamped between the cell plates together with the membrane.

11. Solid State compressor cell according to claim 9, wherein the field plates are diffusion-bonded with the cell plates.

12. Solid State compressor cell according to any one of claims 9 to 11, wherein the field, the cell plates and the membrane are sealed in a fluid-tight manner.