CLAIMS

1. An open cathode fuel cell stack assembly comprising:

a plurality of fuel cells in an open cathode fuel cell stack, the stack defining two opposing parallel end faces and including open air flow faces providing an air inlet face and an air outlet face of the stack, the stack further including fluid flow paths between the air inlet face and the air outlet face ;

an end plate at each opposing end face of the stack, each end plate defining a compression surface adjacent to and in compressive relationship with a respective one of the two opposing parallel end faces; and

a coupling mechanism attached to the end plates to thereby maintain the fuel cells in the stack under compression;

wherein at least one of the end plates comprises a preformed element defining the compression surface, the preformed element being configured with a predetermined curvature such that the compression surface is a convex surface when the preformed element is not under load whereas, under the application of the load to maintain the fuel cells under compression, flexure of the preformed element between elements of the coupling mechanism causes the compression surface to become a substantially planar surface.

2. The open cathode fuel cell stack assembly of claim 1 in which the coupling mechanism comprises a pair of clips, each clip including an engagement member configured to engage with one of a pair of opposing edges of the preformed element, each clip configured to extend along the respective edge of the preformed element.

3. The open cathode fuel cell stack assembly of claim 2 in which each clip extends along a substantial proportion of the respective edge of the preformed element.

4. The open cathode fuel cell stack assembly of claim 2 in which the preformed element has a recess in the surface adjacent to each of the pair of opposing edges for engagement with and retention of a respective one of the clips.

5. The open cathode fuel cell stack assembly of claim 4 in which each clip comprises a C-shaped clip.

6. The open cathode fuel cell stack assembly of claim 2 in which the compression surface of the preformed element is convex along a line extending between said pair of opposing edges and is planar along a line extending parallel with said pair of opposing edges.

7. The open cathode fuel cell stack assembly of claim 2 in which each clip ~~is~~ exhibits elastic behaviour sufficient to enable a snap fit of the clip onto a respective recessed edge of the preformed element.

8. The open cathode fuel cell stack assembly of claim 7 in which each clip extends in a plane orthogonal to the parallel end faces of the stack and each clip is configured to exhibit said elastic behaviour to flex out of said plane.

9. The open cathode fuel cell stack assembly of claim 7 in which each clip extends along a longitudinal axis between planes defined by the parallel end faces of the stack, and each clip is configured to exhibit said elastic behaviour to stretch along the longitudinal axis.

10. The open cathode fuel cell stack assembly of claim 9 in which each clip comprises a meander structure along the longitudinal axis configured to provide elasticity along the longitudinal axis.

11. The open cathode fuel cell stack assembly of claim 1 in which both of said end plates comprise a preformed element as defined in any preceding claim.

12. A method of assembling an open cathode fuel cell stack assembly comprising:

layering a plurality of fuel cells in an open cathode fuel cell stack, the stack defining two opposing parallel end faces and including open air flow faces providing an air inlet face and an air outlet face of the stack, the stack further including fluid flow paths between the air inlet face and the air outlet face;

disposing an end plate at each opposing end face of the stack, each end plate defining a compression surface adjacent to a respective one of the two opposing parallel end faces, in which at least one of the end plates is a preformed element with a predetermined curvature such that the compression surface is a convex surface when the preformed element is not under load; and

attaching a coupling mechanism to the end plates to thereby bring the end plate compression surfaces into compressive relationship with the opposing parallel end faces of the stack and thereby maintain the fuel cells in the stack under compression, the application of the load causing flexure of the at least one preformed element causing the

compression surface to become a substantially planar surface under the load of the assembled stack assembly.

13. A fuel cell stack assembly of claim 1~~comprising:~~

~~a plurality of fuel cells in a stack, the stack defining two opposing parallel end faces;~~

~~an end plate assembly at each opposing end face of the stack, each end plate assembly defining a compression surface adjacent to and in compressive relationship with a respective one of the two opposing parallel end faces;~~

~~a coupling mechanism attached to the end plates to thereby maintain the fuel cells in the stack under compression~~, wherein the coupling mechanism comprises one or more clips, each~~a~~ clip extending along a longitudinal axis between planes defined by the parallel end faces of the stack, and each clip is configured to exhibit said elastic behaviour to stretch along the longitudinal axis.

14. The fuel cell stack assembly of claim 13 in which each clip comprises a meander structure along the longitudinal axis configured to provide elasticity along the longitudinal axis.

15. The open cathode fuel cell stack assembly of claim 1, wherein the convex surface has convexity in two dimensions.

16. The open cathode fuel cell stack assembly of claim 13, wherein the two dimensions are orthogonal to one another.

17. The open cathode fuel cell stack assembly of claim 1, in which the fuel cell stack assembly is an air cooled open cathode fuel cell stack assembly.