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(54) Titre : SEPARATEUR METALLIQUE POUR PILE A COMBUSTIBLE
(54) Title: FUEL CELL METALLIC SEPARATOR

(57) Abrégé/Abstract:
The invention provides a fuel cell metallic separator, wherein the metallic plate's edges include a resin portion comprising the communication ports. The resin portion around the communication ports is shaped so as to be capable of interlocking with a fuel cell stack component adjacently located in a fuel cell system. The invention also provides a resin portion capable of press fitting or thermal bonding with adjacent a fuel cell stack components.

ABSTRACT

The invention provides a fuel cell metallic separator, wherein the metallic plate's edges include a resin portion comprising the communication ports. The resin portion around the communication ports is shaped so as to be capable of interlocking with a fuel cell stack component adjacently located in a fuel cell system. The invention also provides a resin portion capable of press fitting or thermal bonding with adjacent a fuel cell stack components.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A fuel cell metallic separator, comprising:

a metallic plate; and

a resin portion made of a resin integrally formed on said metallic plate in such a manner as to overlap part of edge portions of the metallic plate and as to comprise one communication port;

wherein the resin portion around the communication port is shaped so as to be capable of interlocking with a resin portion of a fuel cell stack component adjacently located in a fuel cell system.

2. The fuel cell metallic separator of claim 1, wherein the shape of the resin portion around the communication port comprises a projection on one side of the metallic separator and a mating recess on the opposite side of the metallic separator, wherein the projection and the recess provides an interlocking connection between fuel cell stack components adjacently located in a fuel cell system.

3. The fuel cell metallic separator of claim 1, wherein the resin portion is adapted so as to be capable of thermally bonding with a fuel cell stack component adjacently located in a fuel cell system.

4. The fuel cell metallic separator of claim 2, wherein the resin portion is adapted so as to be capable of thermally bonding with a fuel cell stack component adjacently located in a fuel cell system.

5. The fuel cell metallic separator of claim 1, wherein the resin portion is adapted so as to be capable of press fitting with a fuel cell stack component adjacently located in a fuel cell system.

6. The fuel cell metallic separator of claim 2, wherein the resin portion is adapted so as to be capable of press fitting with a fuel cell stack component adjacently located in a fuel cell system.

7. The fuel cell metallic separator of claim 1, wherein the resin portion is made of materials that are essentially free of silicon.

8. The fuel cell metallic separator of claim 2, wherein the resin portion is made of materials that are essentially free of silicon.

9. The fuel cell metallic separator of claim 3, wherein the resin portion is made of material from the group of materials consisting of thermoplastic resin and thermosetting epoxies.

10. The fuel cell metallic separator of claim 4, wherein the resin portion is made of material from the group of materials consisting of thermoplastic resin and thermosetting epoxies.

11. The fuel cell metallic separator of claim 5, wherein the resin portion is made of solid rubber.

12. The fuel cell metallic separator of claim 6, wherein the resin portion is made of solid rubber.

13. A fuel cell stack component, comprising:

a unit cell component from the group of components consisting of membrane electrode assemblies and flow field plates; and

a resin portion made of a resin integrally formed on said unit cell component in such a manner as to overlap part of edge portions of the unit cell component and as to comprise one communication port;

wherein the resin portion around the communication port is shaped so as to be capable of interlocking with a resin portion of a fuel cell stack component adjacently located in a fuel cell system.

14. The fuel cell stack component of claim 13, wherein the shape of the resin portion around the communication port comprises a projection on one side of the unit cell component and a mating recess on the opposite side of the unit cell component, wherein the projection and the recess provides an interlocking connection between fuel cell stack components adjacently located in a fuel cell system.

15. The fuel cell stack component of claim 13, wherein the flow field plates are made essentially of materials from the group of materials consisting of metal and grafoil.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A fuel cell metallic separator, comprising:

a metallic plate; and

a resin portion made of a resin integrally formed on said metallic plate in such a manner as to overlap part of edge portions of the metallic plate and as to comprise one communication port;

wherein the resin portion around the communication port is shaped so as to be capable of interlocking with a resin portion of a fuel cell stack component adjacently located in a fuel cell system.

2. The fuel cell metallic separator of claim 1, wherein the shape of the resin portion around the communication port comprises a projection on one side of the metallic separator and a mating recess on the opposite side of the metallic separator, wherein the projection and the recess provides an interlocking connection between fuel cell stack components adjacently located in a fuel cell system.

3. The fuel cell metallic separator of claim 1, wherein the resin portion is adapted so as to be capable of thermally bonding with a fuel cell stack component adjacently located in a fuel cell system.

4. The fuel cell metallic separator of claim 2, wherein the resin portion is adapted so as to be capable of thermally bonding with a fuel cell stack component adjacently located in a fuel cell system.

5. The fuel cell metallic separator of claim 1, wherein the resin portion is adapted so as to be capable of press fitting with a fuel cell stack component adjacently located in a fuel cell system.

6. The fuel cell metallic separator of claim 2, wherein the resin portion is adapted so as to be capable of press fitting with a fuel cell stack component adjacently located in a fuel cell system.

7. The fuel cell metallic separator of claim 1, wherein the resin portion is made of materials that are essentially free of silicon.

8. The fuel cell metallic separator of claim 2, wherein the resin portion is made of materials that are essentially free of silicon.

9. The fuel cell metallic separator of claim 3, wherein the resin portion is made of material from the group of materials consisting of thermoplastic resin and thermosetting epoxies.

10. The fuel cell metallic separator of claim 4, wherein the resin portion is made of material from the group of materials consisting of thermoplastic resin and thermosetting epoxies.

11. The fuel cell metallic separator of claim 5, wherein the resin portion is made of solid rubber.

12. The fuel cell metallic separator of claim 6, wherein the resin portion is made of solid rubber.

13. A fuel cell stack component, comprising:

a unit cell component from the group of components consisting of membrane electrode assemblies and flow field plates; and

a resin portion made of a resin integrally formed on said unit cell component in such a manner as to overlap part of edge portions of the unit cell component and as to comprise one communication port;

wherein the resin portion around the communication port is shaped so as to be capable of interlocking with a resin portion of a fuel cell stack component adjacently located in a fuel cell system.

14. The fuel cell stack component of claim 13, wherein the shape of the resin portion around the communication port comprises a projection on one side of the unit cell component and a mating recess on the opposite side of the unit cell component, wherein the projection and the recess provides an interlocking connection between fuel cell stack components adjacently located in a fuel cell system.

15. The fuel cell stack component of claim 13, wherein the flow field plates are made essentially of materials from the group of materials consisting of metal and grafoil.

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Figures: 4

Pages: 1105

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