CLAIMS

1. A method of localized cathodic protection of a heat exchanger, comprising:

providing at least one fin formed from a first metal alloy;

applying a sacrificial layer of a second metal locally to at least one region in the at least one fin; and

connecting a refrigerant tube to the at least one fin;

wherein the sacrificial layer of the second metal includes a metal from one of a zinc alloy or a magnesium alloy.

2. The method of claim 1, wherein the connecting of the refrigerant tube further comprises connecting the refrigerant tube at a contact area within the at least one region.

3. The method of claim 1, wherein the connecting of the refrigerant tube further comprises connecting the refrigerant tube to a fin collar within the at least one region.

4. The method of any of claims 1-3, wherein the refrigerant tube is at least formed from the first metal alloy comprising aluminum.

5. The method of any of claims 1-4, wherein the first metal alloy is more noble than the second metal such that direct contact between the at least one fin and the refrigerant tube in the presence of an electrolyte would lead to galvanic corrosion of the sacrificial layer.

6. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprising cladding one of a Zinc (Zn), Magnesium (Mg), or Beryllium (Be) based alloy to the at least one fin.

7. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises spraying a melted layer of the second metal to the at least one fin.

8. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises depositing a vaporized form of the second metal to the at least one fin.

9. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises electroplating the second metal to the at least one fin.

10. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises applying a coating composition comprising powder of the second metal to the at least one fin.

11. The method of any of claims 1-10, wherein the applying of the sacrificial layer further comprises forming an aluminum metal alloy comprising a 0.5 to 2.5 percent constituent of the second metal by weight.

12. A heat exchanger exhibiting resistance to galvanic corrosion, comprising:

at least one fin formed from a first metal alloy;

a sacrificial layer of a second metal applied locally to at least one region in the at least one fin; and

a refrigerant tube connected to the at least one fin;

wherein the sacrificial layer of the second metal includes a metal from one of a zinc or magnesium alloy.

13. The heat exchanger of claim 12, wherein the refrigerant tube is connected at a contact area within the at least one region.

14. The heat exchanger of claim 12, wherein the refrigerant tube is connected to a fin collar within the at least one region.

15. The heat exchanger of any of claims 12-14, wherein the refrigerant tube is at least formed from the first metal alloy of aluminum.

16. The heat exchanger of any of claims 12-15, wherein the first metal alloy is substantially more noble than the second metal such that direct contact between the at least one fin and the refrigerant tube in the presence of an electrolyte would lead to galvanic corrosion of the sacrificial layer.

17. The heat exchanger of any of claims 12-16, wherein the sacrificial layer comprises one of a Zinc (Zn), Magnesium (Mg), or Beryllium (Be) based alloy clad to the at least one fin.

18. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises a melted layer of the second metal sprayed onto the at least one fin.

19. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises a vaporized form of the second metal deposited to the at least one fin.

20. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises the second metal electroplated to the at least one fin.

21. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises an aluminum metal alloy formed with a 1 percent constituent of the second metal by weight.

RECTIFIED SHEET (RULE 91) ISA/EP

CLAIMS

1. A method of localized cathodic protection of a heat exchanger, comprising:

providing at least one fin formed from a first metal alloy;

applying a sacrificial layer of a second metal locally to at least one region in the at least one fin; and

connecting a refrigerant tube to the at least one region of the at least one fin bearing the sacrificial layer;

wherein the sacrificial layer of the second metal includes a metal from one of a zinc alloy or a magnesium alloy.

2. The method of claim 1, wherein the connecting of the refrigerant tube further comprises connecting the refrigerant tube at a contact area within the at least one region.

3. The method of claim 1, wherein the connecting of the refrigerant tube further comprises connecting the refrigerant tube to a fin collar within the at least one region.

4. The method of any of claims 1-3, wherein the refrigerant tube is at least formed from the first metal alloy comprising aluminum.

5. The method of any of claims 1-4, wherein the first metal alloy is more noble than the second metal such that direct contact between the at least one fin and the refrigerant tube in the presence of an electrolyte would lead to galvanic corrosion of the sacrificial layer.

6. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprising cladding one of a Zinc (Zn), Magnesium (Mg), or Beryllium (Be) based alloy to the at least one fin.

7. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises spraying a melted layer of the second metal to the at least one fin.

8. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises depositing a vaporized form of the second metal to the at least one fin.

9. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises electroplating the second metal to the at least one fin.

10. The method of any of claims 1-5, wherein the applying of the sacrificial layer further comprises applying a coating composition comprising powder of the second metal to the at least one fin.

11. The method of any of claims 1-10, wherein the applying of the sacrificial layer further comprises forming an aluminum metal alloy comprising a 0.5 to 2.5 percent constituent of the second metal by weight.

12. A heat exchanger exhibiting resistance to galvanic corrosion, comprising:

at least one fin formed from a first metal alloy;

a sacrificial layer of a second metal applied locally to at least one region in the at least one fin; and

a refrigerant tube connected to the at least one region of the at least one fin bearing the sacrificial layer;

wherein the sacrificial layer of the second metal includes a metal from one of a zinc or magnesium alloy.

13. The heat exchanger of claim 12, wherein the refrigerant tube is connected at a contact area within the at least one region.

14. The heat exchanger of claim 12, wherein the refrigerant tube is connected to a fin collar within the at least one region.

15. The heat exchanger of any of claims 12-14, wherein the refrigerant tube is at least formed from the first metal alloy of aluminum.

16. The heat exchanger of any of claims 12-15, wherein the first metal alloy is substantially more noble than the second metal such that direct contact between the at least one fin and the refrigerant tube in the presence of an electrolyte would lead to galvanic corrosion of the sacrificial layer.

17. The heat exchanger of any of claims 12-16, wherein the sacrificial layer comprises one of a Zinc (Zn), Magnesium (Mg), or Beryllium (Be) based alloy clad to the at least one fin.

18. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises a melted layer of the second metal sprayed onto the at least one fin.

19. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises a vaporized form of the second metal deposited to the at least one fin.

20. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises the second metal electroplated to the at least one fin.

21. The heat exchanger of any of claims 12-17, wherein the sacrificial layer comprises an aluminum metal alloy formed with a 1 percent constituent of the second metal by weight.