CLAIMS

1. A brake for a rotating member, said brake used with a liquid coolant, comprising:

a housing for containing said liquid;

a stationary element disposed in said housing;

a wear plate disposed on said stationary element;

a friction element coupled to said rotating member for contacting said wear plate; and

a removable heat transfer insert disposed adjacent said wear plate and in fluid communication with said liquid, said removable heat transfer insert consisting of a ~~non-galvanic~~ material not susceptible to galvanic corrosion.

2. The brake of Claim 1; wherein said removable heat transfer insert consists of a non-metallic material.

3. The brake of Claim 1; wherein said removable heat transfer insert consists of a carbon fiber/phenolic epoxy composite material.

4. The brake of Claim 1; wherein said removable heat transfer insert consists of a composite material comprising about 30% carbon fiber and about 70% phenolic epoxy.

5. The brake of Claim 1; wherein said removable heat transfer insert consists of a composite material comprising at least about 20% but less than about 40% carbon fiber and at least about 60% but less than about 80% phenolic epoxy.

6. The brake of Claim 1; wherein said removable heat transfer insert is an annular member.

7. The brake of Claim 6; wherein said removable heat transfer insert has a surface in fluid communication with said liquid; and further comprising a plurality of nubs disposed about said surface.

8. The brake of Claim 7; wherein said nubs are disposed in concentric circles about said surface of said removable heat transfer insert.

9. The brake of Claim 8; and further comprising ridges disposed on said surface of said removable heat transfer insert for channeling said liquid through said nubs.

10. The brake of Claim 1; and further comprising:

a plurality of friction elements;

a plurality of stationary elements;

a plurality of wear plates disposed on said plurality of stationary elements, said wear plates associated with said plurality of friction elements; and

a plurality of removable heat transfer inserts disposed adjacent said wear plates.

11. The brake of Claim 10; and further comprising a pressure plate; and a piston for supplying axial force to said pressure plate.

12. A liquid-cooled brake for a rotating member comprising:

a housing for containing the liquid;

a mounting flange for said housing;

first and second mounting elements disposed in said housing;

a pressure plate disposed in said housing;

a wear plate disposed on each of said mounting elements;

a plurality of friction elements coupled to said rotating member for contacting said wear plates;

a removable composite heat transfer insert disposed adjacent each of said wear plates and in fluid communication with said liquid, said removable composite heat transfer inserts consisting of a carbon fiber/phenolic epoxy composite material; and

a piston for axial movement of said pressure plate and said first and second mounting elements.

13. The brake of Claim 12; wherein said removable composite heat transfer insert consists of composite material comprising about 30% carbon fiber and about 70% phenolic epoxy.

14. The brake of Claim 13; wherein said removable composite heat transfer insert consists of a composite material comprising at least about 20% but less than about 40% carbon fiber and at least about 60% but less than about 80% phenolic epoxy.

15. The brake of Claim 12; wherein each of said removable composite heat transfer inserts is of a generally annular shape.

16. The brake of Claim 15; wherein each of said removable composite heat transfer inserts has an obverse face for contacting said wear plate and a reverse face; and further comprising a plurality of nubs disposed on said reverse face, said nubs having a generally uniform diameter and height, said nubs arranged in a field of generally concentric circles.

17. The brake of Claim 16; and further comprising a plurality of ridges on said reverse face of said removable composite heat transfer insert aligned in a generally diametric direction for channeling said liquid across said reverse face of said removable composite heat transfer insert.

18. A removable heat transfer insert for a brake for a rotating member, said brake used with a liquid coolant and having a housing for containing said liquid, a stationary element disposed in said housing, a wear plate disposed on said stationary element, and a friction element coupled to said rotating member for contacting said wear plate;

the removable heat transfer insert disposed adjacent said wear plate and in fluid communication with said liquid;

said removable heat transfer insert consisting of a ~~non-galvanic~~ material not susceptible to galvanic corrosion.

19. The removable heat transfer insert of Claim 18; wherein said removable heat transfer insert consists of a non-metallic material.

20. The removable heat transfer insert of Claim 18; wherein said removable heat transfer insert consists of a carbon fiber/phenolic epoxy composite material.

21. The removable heat transfer insert of Claim 18; wherein said removable heat transfer insert consists of composite material comprising about 30% carbon fiber and about 70% phenolic epoxy.

22. The removable heat transfer insert of Claim 18; wherein said removable heat transfer insert consists of a composite material comprising at least about 20% but less than about 40% carbon fiber and at least about 60% but less than about 80% phenolic epoxy.