CLAIMS

1. A system, comprising:

a composite piston, comprising:

a piston body made of a composite material, wherein the composite material comprises a reinforcing material distributed in a matrix material; and

a piston ring carrier coupled to the piston body,

wherein the piston body comprises a plurality of piston body portions separate from one another, each made of the composite material, wherein the piston ring carrier is axially captured between respective outer lips of first and second body portions of the plurality of piston body portions, the respective outer lips extend in an axial direction relative to a central axis of the composite piston, the piston ring carrier axially abuts respective axial end faces of the respective outer lips of the first and second body portions of the plurality of piston body portions, a portion of each of the respective outer lips is disposed radially outward of a portion of the piston ring carrier relative to the central axis, the first body portion of the plurality of piston body portions comprises a first inner hub, the second body portion of the plurality of piston body portions comprises a second inner hub, and the first and second inner hubs axially abut one another.

2. The system of claim 1, wherein the piston body has a hollow interior, and the piston ring carrier partially defines and directly interfaces with the hollow interior.

3. The system of claim 2, wherein the piston body comprises at least one stiffening rib along the hollow interior.

4. The system of claim 1, wherein the reinforcing material comprises a plurality of particles.

5. The system of claim 1, wherein the reinforcing material is different than the matrix material.

6. The system of claim 1, wherein the matrix material comprises a plastic, polymer, polyester, epoxy, polyimide, or polypropylene, and the reinforcing material comprises a carbon, glass, or ceramic.

7. The system of claim 1, wherein the piston ring carrier is formed made of a metal.

8. A system, comprising:

a composite piston, comprising:

a first body portion made of a first composite material;

a second body portion made of a second composite material, wherein the first body portion and the second body portion are separate from one another, the first and second body portions each include respective outer lips, and the respective outer lips extend in an axial direction relative to a central axis of the composite piston; and

a piston ring carrier axially captured between the respective outer lips of the first and second body portions, wherein the piston ring carrier axially abuts respective axial end faces of the respective outer lips of the first and second body portions, a portion of each of the respective outer lips is disposed radially outward of a portion of the piston ring carrier relative to the central axis, the first body portion comprises a first inner hub, the second body comprises a second inner hub, and the first and second inner hubs axially abut one another.

9. The piston of claim 8, wherein first and second composite materials each comprise a plurality of reinforcing particles distributed in a matrix material.

10. The piston of claim 9, wherein the matrix material comprises a plastic, polymer, polyester, epoxy, polyimide, or polypropylene.

11. The piston of claim 9, wherein the plurality of reinforcing particles comprises a carbon, glass, or ceramic.

12. The piston of claim 8, wherein the first and second composite materials are the same as one another.

13. The piston of claim 8, comprising a piston rod made of a third composite material.

14. The piston of claim 8, wherein the piston ring carrier made of a metal.

15. The system of claim 8, wherein the first body portion comprises a first annular cavity, the second body portion comprises a second annular cavity, and the first and second annular cavities cooperatively form a hollow portion of the composite piston.

16. The system of claim 15, wherein the respective outer lips and the piston ring carrier partially define and directly interface with the hollow portion of the composite piston.

17. A system, comprising:

a composite piston, comprising:

a hollow piston body made of a first material, wherein the hollow piston body comprises a first body portion and a second body portion, wherein the first and second body portions are separate pieces, wherein the first body portion comprises a first inner hub, the second body comprises a second inner hub, and the first and second inner hubs axially abut one another, and wherein the first and second body portions each include respective outer lips, and the respective outer lips extend in an axial direction relative to a central axis of the composite piston; and

a piston ring carrier made of a second material different from the first material, wherein the piston ring carrier is axially captured between the respective outer lips of the first and second body portions of the hollow piston body, the piston ring carrier axially abuts respective axial end faces of the respective lips of the first and second body portions of the hollow piston body, a portion of each of the respective outer lips is disposed radially outward of a portion of the piston ring carrier relative to the central axis, and wherein the first material comprises a first composite material; and

a composite piston rod made of a third material.

18. The system of claim 17, wherein the first composite material comprises a plurality of reinforcing particles distributed in a matrix material.

19. The system of claim 17, wherein the third material comprises a second composite material having a plurality of reinforcing particles distributed in a matrix material.

20. The system of claim 17, wherein the first body portion comprises a first annular cavity, the second body portion comprises a second annular cavity, and the first and second annular cavities cooperatively form a hollow portion of the hollow piston body, and wherein the piston ring carrier partially defines and directly interfaces with the hollow portion.