What is claimed is:

1. A submersible well fluid system for operating submerged in a body of water, comprising:

an electric machine comprising a rotor and a stator residing in a first housing at specified conditions;

a fluid end comprising an impeller and coupled to the electric machine;

an adjustable speed drive for the electric machine in a second housing; and

a process fluid inlet connector in fluid communication with the fluid end and adapted to connect to a fluid outlet associated with a wellhead assembly;

wherein the second housing is in fluid communication with the first housing.

2. The submersible well fluid system of claim 1, comprising a conduit between the first and second housings providing fluid communication between the first and second housings.

3. The submersible well fluid system of claim 1, where the fluid at specified conditions comprises substantially gas.

4. The submersible well fluid system of claim 1, where the fluid at specified conditions is substantially at atmospheric pressure.

5. The submersible well fluid system of claim 1, where the fluid at specified conditions comprises substantially liquid.

6. The submersible well fluid system of claim 1, where the submersible well fluid system is for operating at a specified depth in a body of water, and

where the fluid at specified conditions is at ambient pressure when the submersible well fluid system is submerged to the specified depth in the body of water.

7. The submersible well fluid system of claim 1, where the first housing is affixed to the second housing.

8. The submersible well fluid system of claim 1, where the first housing and the second housing are a single integrated housing.

9. The submersible well fluid system of claim 1, comprising a frame carrying the electric machine, the fluid end, and the adjustable speed drive.

10. The submersible well fluid system of claim 9, where the frame surrounds the electric machine, fluid end, and adjustable speed drive.

11. The submersible well fluid system of claim 9, where the frame is adapted to couple to a wellhead assembly or an associated assembly to support the submersible well fluid system.

12. The submersible well fluid system of claim 11, where the frame is adapted to support the submersible well fluid system off the floor of the body of water.

13. The submersible well fluid system of claim 11, comprising a process fluid inlet connector in fluid communication with the fluid end and adapted to connect to a fluid outlet associated with the wellhead assembly.

14. The submersible well fluid system of claim 13, where the process fluid inlet connector is adapted to connect with the fluid outlet to support the submersible well fluid system.

15. The submersible well fluid system of claim 14, where the process fluid inlet connector is adapted to connect with the fluid outlet to support the submersible well fluid system off of the floor of the body of water.

16. The submersible well fluid system of claim 1, where the process fluid inlet connector is adapted to connect with the fluid outlet to support the submersible well fluid system off the floor of the body of water.

17 The submersible well fluid system of claim 9, comprising:

a process fluid inlet coupled to a fluid path to the impeller; and

a buffer tank in the fluid path and adapted to mix uncombined gas and liquid process fluid and to supply the mixed gas and liquid to the impeller; and

where the buffer tank is carried by the frame.

18. The submersible well fluid system of claim 17, comprising:

a process fluid outlet coupled to a fluid path from the impeller; and

a gas/liquid separator in the fluid path and adapted to output to the process fluid outlet; and

where the gas/liquid separator is carried by the frame.

19. The submersible well fluid system of claim 18, comprising a recirculation fluid path coupled to the gas/liquid separator and to the fluid path from the process fluid inlet to the fluid end, the recirculation fluid path carried by the frame; and

where the gas/liquid separator is adapted to output preferentially liquid to the recirculation fluid path.

20. The submersible well fluid system of claim 19, where one or both of the buffer tank and gas/liquid separator are affixed to the first housing.

21. The submersible well fluid system of claim 1, comprising:

a process fluid inlet to the submersible well fluid system; and

a bypass fluid path adapted to allow process fluid to flow from a location proximate the process fluid inlet around the fluid end.

22. The submersible well fluid system of claim 21, comprising:

a process fluid outlet from the submersible well fluid system; and

where the bypass fluid path is a tube between the process fluid inlet and the process fluid outlet.

23. The submersible well fluid system of claim 1, where the electric machine comprises a synchronous permanent magnet machine.

24. The submersible well fluid system of claim 1, where the adjustable speed drive comprises active power factor correcting front end.

25. The submersible well fluid system of claim 24, where the active power factor correcting front end comprises:

an input power line filter; and

an active power factor correcting rectifier configured to switch at a frequency greater than 60 Hertz.

26. The submersible well fluid system of claim 23, where the adjustable speed drive is provided without an input transformer.

27. The submersible well fluid system of claim 24, where the active power factor correcting front end comprises an inverter configured to receive alternating current and output direct current.

28. The submersible well fluid system of claim 1, where the adjustable speed drive is cooled only by passive cooling.

29. The submersible well fluid system of claim 27, where the adjustable speed drive is adapted to transfer the heat generated during operation substantially by conduction through the housing assembly to the body of water.

30. The submersible well fluid system of claim 27, where the adjustable speed drive comprises electrical components in contact with the interior of the housing assembly.

31. The submersible well fluid system of claim 1, where the submersible well fluid system is adapted to operate submerged at a specified depth in the body of water; and

the adjustable speed drive comprises an internal structure that carries electrical components within a drive housing and is adapted to provide necessary support to the drive housing against collapse at the specified depth.

32. The submersible well fluid system of claim 2, comprising a power conductor in the conduit, the power conductor electrically coupled to the electric machine and the adjustable speed drive.

33. The submersible well fluid system of claim 2, comprising a control communication line in the conduit.

34. The submersible well fluid system of claim 1, comprising:

a process fluid outlet adapted to output process fluid from the submersible well fluid system; and

a chemical distribution system adapted to couple to a treatment chemical storage tank and provide a treatment chemical from the tank to the process fluid upstream of the process fluid outlet.

35. The submersible well fluid system of claim 34, where the chemical distribution system comprises a manifold adapted to direct the treatment chemical received from the chemical storage tank to one or more locations upstream of the process fluid outlet.

36. The submersible well fluid system of claim 34, comprising a frame carrying the electric machine, the fluid end, and the chemical distribution system.

37. The submersible well fluid system of claim 36, where the frame is adapted to couple to a wellhead assembly or an associated assembly to support the submersible well fluid system off the floor of the body of water.

38. The submersible well fluid system of claim 34, where the chemical storage tank is submerged in the body of water.

39. The submersible well fluid system of claim 34, where the treatment chemicals comprise one or more of a hydrate inhibitor, a wax inhibitor, a scale inhibitor, a foam inhibitor, or a corrosion inhibitor.

40. The submersible well fluid system of claim 34, comprising a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

41. The submersible well fluid system of claim 1, comprising a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

42. The submersible well fluid system of claim 41, where the fluid end comprises a fluid film bearing and where the barrier fluid supply system is adapted to supply a barrier fluid to the fluid film bearing.

43. The submersible well fluid system of claim 41, comprising a submerged barrier fluid supply tank.

44. The submersible well fluid system of claim 41, where the barrier fluid supply system comprises:

a water treatment system comprising a water inlet adapted to intake water from the body of water; and

a filter coupled to the inlet and adapted to filter the collected water.

45. The submersible well fluid system of claim 41, comprising a frame carrying the electric machine, the fluid end and the barrier fluid supply system.

46. The submersible well fluid system of claim 45, where the frame is adapted to couple to a wellhead assembly or an associated assembly to support the submersible well fluid system off the floor of the body of water.

47. The submersible well fluid system of claim 41, where the barrier fluid supply system is integrated with the submersible well fluid system.