fluid communication with the fluid end 104 and adapted to connect to a fluid outlet 508 associated with a wellhead assembly or a wellhead associated assembly. The process fluid inlet connector 106 may be adapted to connect with the fluid outlet 508 to support the submersible well fluid system 100. For example, the process fluid inlet connector 106 is adapted to connect with the fluid outlet 508 to support the submersible well fluid system 100 off of the floor of the body of water. Fluid outlet 508 may be the same or similar to fluid outlet 108.

~~[0119] A number of embodiments have been described. Nevertheless, it will be understood that various modifications may be made. Accordingly, other embodiments are within the scope of the following claims.~~

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

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; and

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

Aspect 2. The submersible well fluid system of aspect 1, where the second housing is in fluid communication with the first housing.

Aspect 3. The submersible well fluid system of aspect 2, including a conduit between the first and second housings providing fluid communication between the first and second housings.

Aspect 4. The submersible well fluid system of aspect 2, where the fluid at specified conditions includes substantially gas.

Aspect 5. The submersible well fluid system of aspect 2, where the fluid at specified conditions is substantially at atmospheric pressure.

Aspect 6. The submersible well fluid system of aspect 2, where the fluid at specified conditions includes substantially liquid.

Aspect 7. The submersible well fluid system of aspect 2, 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.

Aspect 8. The submersible well fluid system of aspect 1, where the first housing is affixed to the second housing.

Aspect 9. The submersible well fluid system of aspect 1, where the first housing and the second housing are a single integrated housing.

Aspect 10. The submersible well fluid system of aspect 1, comprising a frame carrying the electric machine, the fluid end, and the adjustable speed drive.

Aspect 11. The submersible well fluid system of aspect 10, where the frame surrounds the electric machine, fluid end, and adjustable speed drive.

Aspect 12. The submersible well fluid system of aspect 10, where the frame is adapted to couple to a wellhead assembly or an associated assembly to support the submersible well fluid system.

Aspect 13. The submersible well fluid system of aspect 12, where the frame is adapted to support the submersible well fluid system off the floor of the body of water.

Aspect 14. The submersible well fluid system of aspect 12, including 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.

Aspect 15. The submersible well fluid system of aspect 14, where the process fluid inlet connector is adapted to connect with the fluid outlet to support the submersible well fluid system.

Aspect 16. The submersible well fluid system of aspect 15, 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.

Aspect 17. The submersible well fluid system of aspect 1, including 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.

Aspect 18. The submersible well fluid system of aspect 17, 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.

Aspect 19. The submersible well fluid system of aspect 10, including:

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.

Aspect 20. The submersible well fluid system of aspect 19, including:

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.

Aspect 21. The submersible well fluid system of aspect 20, including a recirculation fluid path coupled to the gas/liquid separator and to the fluid path from the process fluid inlet to the f, 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.

Aspect 22. The submersible well fluid system of aspect 21, where one or both of the buffer tank and gas/liquid separator are affixed to the first housing.

Aspect 23. The submersible well fluid system of aspect 1, including:

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.

Aspect 24. The submersible well fluid system of aspect 23, including:

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.

Aspect 25. The submersible well fluid system of aspect 1, where the electric machine includes a synchronous permanent magnet machine.

Aspect 26. The submersible well fluid system of aspect 1, where the adjustable speed drive includes active power factor correcting front end.

Aspect 27. The submersible well fluid system of aspect 25, where the active power factor correcting front end includes:

an input power line filter; and

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

Aspect 28. The submersible well fluid system of aspect 25, where the adjustable speed drive is provided without an input transformer.

Aspect 29. The submersible well fluid system of aspect 25, where the active power factor correcting front end comprises an inverter configured to receive alternating current and output direct current.

Aspect 30. The submersible well fluid system of aspect 1, where the adjustable speed drive is cooled only by passive cooling.

Aspect 31. The submersible well fluid system of aspect 29, 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.

Aspect 32. The submersible well fluid system of aspect 29, where the adjustable speed drive includes electrical components in contact with the interior of the housing assembly.

Aspect 33. The submersible well fluid system of aspect 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 includes 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.

Aspect 34. The submersible well fluid system of aspect 8, including a power conductor in the conduit, the power conductor electrically coupled to the electric machine and the adjustable speed drive.

Aspect 35. The submersible well fluid system of aspect 8, including a control communication line in the conduit.

Aspect 36. The submersible well fluid system of aspect 1, including:

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.

Aspect 37. The submersible well fluid system of aspect 36, where the chemical distribution system includes 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.

Aspect 38. The submersible well fluid system of aspect 36, including a frame carrying the electric machine, the fluid end, and the chemical distribution system.

Aspect 39. The submersible well fluid system of aspect 38, 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.

Aspect 40. The submersible well fluid system of aspect 36, where the chemical storage tank is submerged in the body of water.

Aspect 41. The submersible well fluid system of aspect 36, where the treatment chemicals include one or more of a hydrate inhibitor, a wax inhibitor, a scale inhibitor, a foam inhibitor, or a corrosion inhibitor.

Aspect 42. The submersible well fluid system of aspect 36, including a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

Aspect 43. The submersible well fluid system of aspect 1, including a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

Aspect 44. The submersible well fluid system of aspect 43, where the fluid end includes a fluid film bearing and where the barrier fluid supply system is adapted to supply a barrier fluid to the fluid film bearing.

Aspect 45. The submersible well fluid system of aspect 43, including a submerged barrier fluid supply tank.

Aspect 46. The submersible well fluid system of aspect 43, where the barrier fluid supply system includes:

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.

Aspect 47. The submersible well fluid system of aspect 43, including a frame carrying the electric machine, the fluid end and the barrier fluid supply system.

Aspect 48. The submersible well fluid system of aspect 47, 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.

Aspect 49. The submersible well fluid system of aspect 43, where the barrier fluid supply system is integrated with the submersible well fluid system.

Aspect 50. A submersible well fluid system for operating submerged in a body of water, including:

a frame adapted to couple to a wellhead assembly;

an electric machine comprising a rotor and a stator;

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

an adjustable speed drive for the electric machine carried on the frame.

Aspect 51. The submersible well fluid system of aspect 50, where the electric machine and fluid end are carried on the frame.

Aspect 52. The submersible well fluid system of aspect 50, where the frame is adapted to support the adjustable speed drive off the floor of the body of water.

Aspect 53. The submersible well fluid system of aspect 50, including a first housing containing the electric machine and a second housing affixed to the first housing and containing the adjustable speed drive.

Aspect 54. The submersible well fluid system of aspect 50, including 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.

Aspect 55. The submersible well fluid system of aspect 54, where the process fluid inlet connector is adapted to connect with the fluid outlet to support the submersible well fluid system.

Aspect 56. The submersible well fluid system of aspect 55, 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.

Aspect 57. The submersible well fluid system of aspect 50, where the frame surrounds the adjustable speed drive.

Aspect 58. The submersible well fluid system of aspect 51, where the frame surrounds the electric machine, fluid end and adjustable speed drive.

Aspect 59. The submersible well fluid system of aspect 50, including a housing and where the electric machine resides in the housing; and

where the adjustable speed drive is affixed to the housing.

Aspect 60. The submersible well fluid system of aspect 50, including:

a process fluid inlet coupled to a fluid path to the fluid end; 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.

Aspect 61. The submersible well fluid system of aspect 60, including:

a process fluid outlet coupled to a fluid path from the fluid end; 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.

Aspect 62. The submersible well fluid system of aspect 61, including a housing containing the electric machine and where one or both of the buffer tank and gas/liquid separator are affixed to the housing.

Aspect 63. The submersible well fluid system of aspect 61, including 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.

Aspect 64. The submersible well fluid system of aspect 63, including a bypass fluid path coupled to the process fluid inlet and the process fluid outlet to bypass the fluid end.

Aspect 65. The submersible well fluid system of aspect 64, where the bypass fluid path is a tube carried by the frame.

Aspect 66. The submersible well fluid system of aspect 50, where the electric machine includes a synchronous permanent magnet machine.

Aspect 67. The submersible well fluid system of aspect 50, where the adjustable speed drive includes an active power factor correcting front end.

Aspect 68. The submersible well fluid system of aspect 66, where the active power factor correcting front end includes an inverter configured to receive alternating current and output direct current.

Aspect 69. The submersible well fluid system of aspect 66, where the active power factor correcting front end includes:

an input power line filter; and

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

Aspect 70. The submersible well fluid system of aspect 67, where the adjustable speed drive is provided without an input transformer electrically coupled to a rectifier of the adjustable speed drive.

Aspect 71. The submersible well fluid system of aspect 50, where the adjustable speed drive is cooled only by passive cooling.

Aspect 72. The submersible well fluid system of aspect 50, including:

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 submerged treatment chemical storage tank and to provide a treatment chemical from the tank to the process fluid upstream of the process fluid outlet.

Aspect 73. The submersible well fluid system of aspect 72, where chemical distribution system is carried by the frame.

Aspect 74. The submersible well fluid system of aspect 73, including:

a first housing containing the electric machine; and

wherein the chemical distribution system is integrated to the first housing.

Aspect 75. The submersible well fluid system of aspect 72, where the treatment chemicals include one or more of a hydrate inhibitor, a wax inhibitor, a scale inhibitor, a foam inhibitor, or a corrosion inhibitor.

Aspect 76. The submersible well fluid system of aspect 72, including a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

Aspect 77. The submersible well fluid system of aspect 50, including a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

Aspect 78. The submersible well fluid system of aspect 77, including a submerged barrier fluid supply tank.

Aspect 79. The submersible well fluid system of aspect 77, wherein the barrier fluid includes unfiltered water.

Aspect 80. The submersible well fluid system of aspect 77, where the barrier fluid supply system includes:

a water treatment system including 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.

Aspect 81. The submersible well fluid system of aspect 77, where the barrier fluid supply system is carried by the frame.

Aspect 82. The submersible well fluid system of aspect 81, including:

a first housing containing the electric machine; and

a second housing containing the barrier fluid supply system, the second housing affixed to the first housing.

Aspect 83. A submersible well fluid system for operating submerged in a body of water, including:

an electric machine including a rotor and a stator;

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

a barrier fluid supply system adapted to supply a barrier fluid from a submerged source to the fluid end.

Aspect 84. The submersible well fluid system of aspect 83, where the fluid end includes a fluid film bearing and where the barrier fluid supply system is adapted to supply a barrier fluid to the fluid film bearing.

Aspect 85. The submersible well fluid system of aspect 83, where the submerged source includes a barrier fluid supply tank.

Aspect 86. The submersible well fluid system of aspect, where the barrier fluid includes unfiltered water.

Aspect 87. The submersible well fluid system of aspect 83, where the submerged source includes water from the body of water and the barrier fluid supply system includes:

a water treatment system including 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.

Aspect 88. The submersible well fluid system of aspect 83, including a frame carrying the electric machine, the fluid end, and the barrier fluid supply system.

Aspect 89. The submersible well fluid system of aspect 88, including:

a first housing containing the electric machine; and

a second housing containing the barrier fluid supply system, the second housing coupled to the first housing the submersible well fluid system.

Aspect 90. The submersible well fluid system of aspect 88, 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.

Aspect 91. The submersible well fluid system of aspect 83, including an adjustable speed drive for the electric machine.

Aspect 92. The submersible well fluid system of aspect 83, including:

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 submerged treatment chemical storage tank and provide a treatment chemical from the tank to the process fluid upstream of the process fluid outlet.

Aspect 93. The submersible well fluid system of aspect 92, including a frame configured to carrying the electric machine, the fluid end, the barrier fluid supply system and the chemical distribution system.

Aspect 94. The submersible well fluid system of aspect 92, where the treatment chemicals include one or more of a hydrate inhibitor, a wax inhibitor, a scale inhibitor, a foam inhibitor, or a corrosion inhibitor.

Aspect 95. The submersible well fluid system of aspect 92, including an adjustable speed drive for the electric machine.

Aspect 96. The submersible well fluid system of aspect 95, including a frame configured to carrying the electric machine, the fluid end, the barrier fluid supply system and the chemical distribution system.

Aspect 97. A submersible well fluid system for operating submerged in a body of water, including:

an electric machine including a rotor and a stator;

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

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 submerged treatment chemical storage tank and provide a treatment chemical to one or more locations of the submersible well fluid system.

Aspect 98. The submersible well fluid system of aspect 97, including a frame configured to carry the electric machine and the chemical distribution system.

Aspect 99. The submersible well fluid system of aspect 98, including:

a first housing containing the electric machine; and

where the chemical distribution system is integrated with the first housing.

Aspect 100. The submersible well fluid system of aspect 97, where the treatment chemicals include one or more of a hydrate inhibitor, a wax inhibitor, a scale inhibitor, a foam inhibitor, or a corrosion inhibitor.

Aspect 101. The submersible well fluid system of aspect 97, where the chemical distribution system includes a manifold configured to receive a chemical from the

submerged treatment chemical storage tank and distribute the chemical to the one or more locations of the submersible well fluid system.

Aspect 102. The submersible well fluid system of aspect 97, where the one or more locations of the submersible well fluid system includes the fluid end, a pressure management system, or at a location of the submersible well fluid system upstream of the process fluid outlet.

Aspect 103. A submersible barrier fluid supply system for a submersible well fluid system for operating submerged in a body of water, including:

an inlet adapted to intake a barrier fluid;

a filter in communication with the inlet adapted to filter the barrier fluid;

a barrier fluid outlet in communication with the filter adapted to couple to a barrier fluid inlet of the submersible fluid system and to supply the filtered barrier fluid to the barrier fluid inlet of the submersible fluid system.

Aspect 104. The submersible barrier fluid supply system of aspect 103, including a submerged barrier fluid supply tank coupled to the inlet and including a barrier fluid.

Aspect 105. The submersible barrier fluid supply system of aspect 103, where the inlet includes a water inlet adapted to intake water from the surrounding body of water.

Aspect 106. The submersible barrier fluid supply system of aspect 105, including a housing internally defining a solids settling chamber exterior to and around the water inlet, the housing including a water inlet adapted to intake water from the surrounding body of water into the solids settling chamber.

Aspect 107. The submersible barrier fluid supply system of aspect 106, where the housing is adapted to cause water in the solids settling chamber to be more substantially quiescent than the surrounding body of water.

Aspect 108. The submersible barrier fluid supply system of aspect 106, where the sidewalls of the housing are solid and unapertured.

Aspect 109. The submersible barrier fluid supply system of aspect 103, where the filter includes a multi-stage filter.

Aspect 110. The submersible barrier fluid supply system of aspect 109, where the multi-stage filter includes a reverse osmosis membrane filter downstream from a coarse filter.

Aspect 111. The submersible barrier fluid supply system of aspect 103, further including a pump configured to move fluid from the inlet to the barrier fluid outlet and across the filter.

Aspect 112. The submersible barrier fluid supply system of aspect 103, further including a membrane downstream of the filter, the membrane configured to further filter the barrier fluid.

Aspect 113. The submersible barrier fluid supply system of aspect 112, further including a pump downstream of the membrane and configured to move fluid that has passed through the membrane to the barrier fluid outlet.

Aspect 114. The submersible barrier fluid supply system of aspect 112, further including a reject passage fluidically coupled to an upstream side of the membrane and configured to direct fluid that has not passed through the membrane to a solids settling chamber.

Aspect 115. The submersible barrier fluid supply system of aspect 110, further including a return passage downstream of the membrane and configured to direct fluid that passes through the membrane to the body of water.

Aspect 116. The submersible barrier fluid supply system of aspect 103, including:

a first fluid circuit including the first mentioned filter;

a second fluid circuit, in fluidic parallel to the first fluid circuit, and including a second filter.

Aspect 117. The submersible barrier fluid supply system of aspect 116, including a crossover passage fluidically coupling the first fluid circuit and the second fluid circuit.

Aspect 118. The submersible barrier fluid supply system of aspect 117, further including membrane, where the crossover passage is located downstream of the membrane and configured to allow filtered fluid to flow from the first fluid circuit to the second fluid circuit.

Aspect 119. The submersible barrier fluid supply system of aspect 117, where the crossover passage is adapted to communicate fluid in the first fluid circuit to the second filter to be filtered by the second filter.

Aspect 120. The submersible barrier fluid supply system of aspect 117 including:

a first pump in the first fluid circuit; and

where the crossover passage is adapted to communicate fluid in the first fluid circuit to the second fluid circuit.

Aspect 121. The submersible barrier fluid supply system of aspect 116, where the first fluid circuit includes a first pump and the second fluid circuit includes a second pump; and

where the submersible barrier fluid supply system includes a first crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first and second pumps, between the pumps and the first mentioned filter and second filter.

Aspect 122. The submersible barrier fluid supply system of aspect 116, where the first fluid circuit includes a first pump and the second fluid circuit includes a second pump; and

where the submersible barrier fluid supply system includes:

a first crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first and second pumps, between the pumps and the first mentioned filter and second filter;

a second crossover passage fluidically coupling the first fluid circuit and the second fluid circuit at a location downstream of the first mentioned filter and the second filter.

Aspect 123. The submersible barrier fluid supply system of aspect 116 including a clean-out circuit including:

a bypass crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first mentioned filter and the second filter, the bypass crossover passage configured to supply a back flush flow of fluid to the second filter; and

a reject passage fluidically coupled to a passage between the inlet and the second filter to receive the back flush flow of fluid from the second filter.

Aspect 124. The submersible barrier fluid supply system of aspect 123, wherein the reject passage is configured to direct the back flush flow to the body of water.

Aspect 125. The submersible barrier fluid supply system of aspect 117, where the crossover passage is a first crossover passage fluidically coupling the first fluid circuit and the second fluid circuit upstream of the first mentioned filter and the second filter, the submersible barrier fluid supply system further including:

a second crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first mentioned filter and the second filter; and

a redirect passage fluidically coupling the first crossover passage and the second crossover passage, the redirect passage configured to enable fluid to flow between the second crossover passage and the first crossover passage.

Aspect 126. The submersible barrier fluid supply system of aspect 116, where the first circuit includes a low pressure pump upstream of the first mentioned filter and a high pressure pump downstream of the first mentioned filter.

Aspect 127. The submersible barrier fluid supply system of aspect 116, where the second circuit includes a low pressure pump upstream of the second filter and a high pressure pump downstream of the second filter.

Aspect 128. The submersible barrier fluid supply system of aspect 103 further including a reject passage fluidically coupled to a passage between the inlet and the first mentioned filter to receive the back flush flow of fluid from the first mentioned filter.

Aspect 129. The submersible barrier fluid supply system of aspect 103, further including a reject passage fluidically coupled to a passage between the inlet and the first mentioned filter to receive fluid from the inlet and direct it to the body of water.

Aspect 130. The submersible barrier fluid supply system of aspect 103, where the submersible barrier fluid supply system is configured to supply barrier fluid to one or more seals of a fluid end of the submersible well fluid system.

Aspect 131. The submersible barrier fluid supply system of aspect 130, where the barrier fluid is maintained at a pressure higher than the process fluid at a process fluid inlet of the fluid end.

Aspect 132. The submersible barrier fluid supply system of aspect 103, including a clean-out circuit including:

a bypass fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first mentioned filter and the second filter, the bypass crossover configured to supply a back flush flow of fluid to one or both of the first mentioned filter and the second filter; and

a reject passage fluidically coupled to a passage between the inlet and the second filter to receive the back flush flow of fluid from the second filter.

Aspect 133. The submersible barrier fluid supply system of aspect 103, where the barrier fluid outlet is in fluid communication with a bellows chamber, the bellows chamber including a bellows, and where the submersible barrier fluid supply system is configured to supply barrier fluid to the bellows chamber upon expansion of the bellows.

Aspect 134. The submersible barrier fluid supply system of aspect 133, including a bias spring configured to bias the bellows to expand.

Aspect 135. A submersible barrier fluid supply system for a submersible fluid system for operating submerged in a body of water, including:

an inlet adapted to intake a barrier fluid from the body of water;

a barrier fluid outlet in communication with a barrier fluid inlet of the submersible fluid system and to supply the barrier fluid to the barrier fluid inlet of the submersible fluid system.

Aspect 136. The submersible barrier fluid supply system of aspect 135, including a filter downstream of the inlet and configured to filter the barrier fluid.

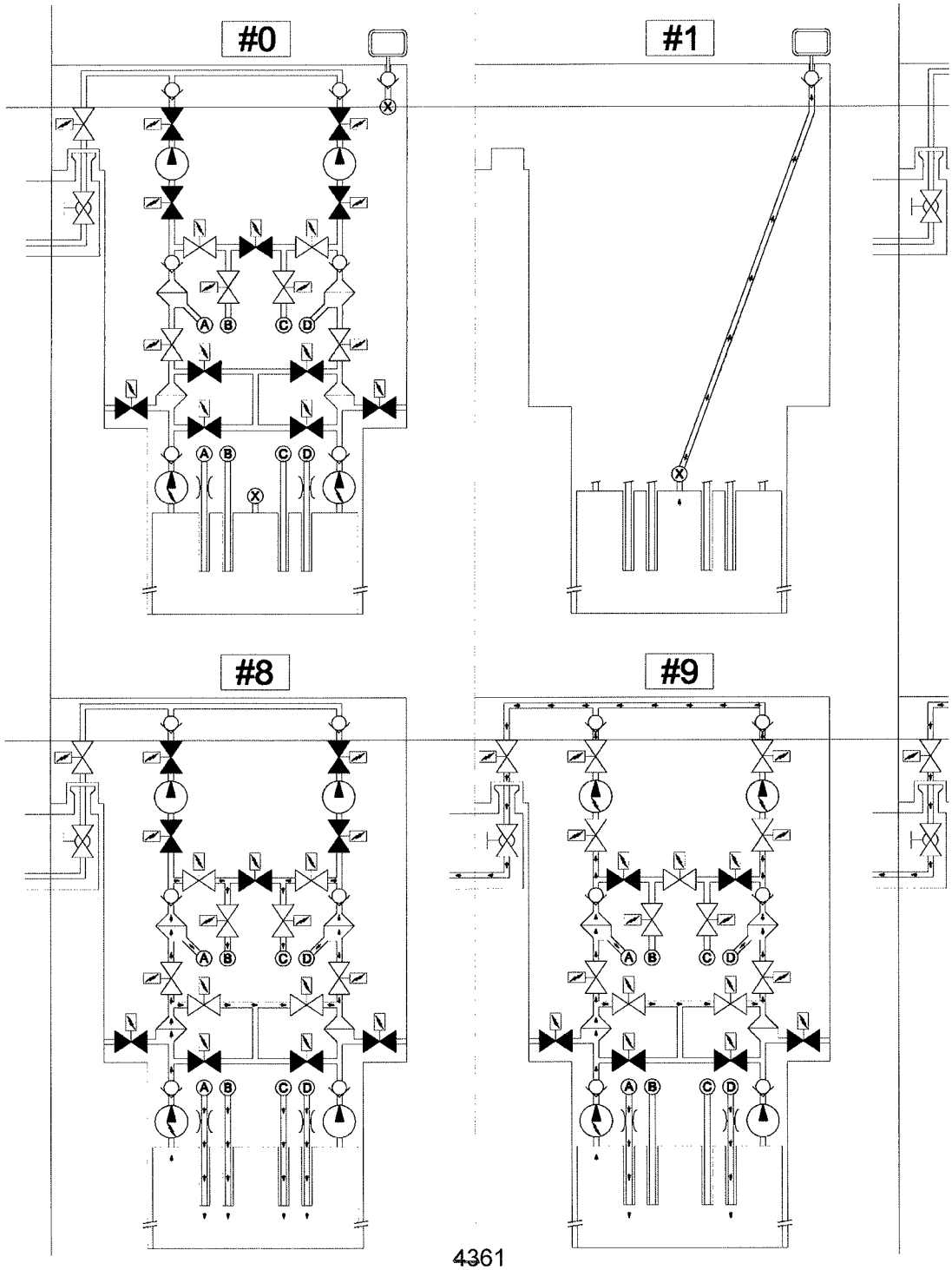
A number of embodiments have been described. Nevertheless, it will be understood that various modifications may be made. Accordingly, other embodiments are within the scope of the following claims.

Appendix A

Table 1.

Water Treatment Package Key Components Status for Various Operating Scenarios

Operating	Circuit A				Crossover			Circuit B			
Scenario #	LP Pump	Filter	Membrane	HP Pump	1st	2nd	3rd	LP Pump	Filter	Membrane	HP Pump
1	Subject Figure illustrates Quiescent Chamber air-venting facility.										
2	Subject Figure shows a simplified circuit.										
3	Subject Figure shows a simplified circuit.										
4	Active	Active	Active	Idle	Idle	Idle	Idle	Active	Active	Active	Idle
5	Active	Active	Active	Active	Idle	Idle	Idle	Active	Active	Active	Active
6	Active	Active	Active	Idle	Active	Idle	Idle	Idle	Active	Active	Idle
7	Active	Active	Active	Active	Active	Idle	Idle	Idle	Active	Active	Active
8	Active	Active	Active	Idle	Idle	Active	Idle	Idle	Idle	Active	Idle
9	Active	Active	Active	Active	Idle	Active	Idle	Idle	Idle	Active	Active
10	Active	Active	Active	Active	Idle	Idle	Active	Idle	Idle	Idle	Active
11	Active	Active	Active	Idle	Idle	Idle	Idle	Idle	Idle	Idle	Idle
12	Active	Active	Active	Active	Idle	Idle	Idle	Idle	Idle	Idle	Idle
13	Active	Active	Active	Idle	Idle	Active	Idle	Idle	BACKFLOW	Idle	Idle
14	Active	Idle	Idle	Idle	Idle	Idle	Idle	Active	Active	Active	Idle
15	Active	Active	Idle	Idle	Idle	Active	Idle	Idle	Idle	Active	Idle
16	Active	Active	Idle	Idle	Idle	Active	Idle	Idle	Idle	Active	Active
17	Active	Idle	Idle	Idle	Active	Idle	Idle	Idle	Active	Active	Idle
18	Active	Idle	Idle	Idle	Active	Idle	Idle	Idle	Active	Active	Active
19	Active	Active	Idle	Idle	Active	Active	Idle	Idle	Active	Active	Idle
20	Active	Active	Idle	Idle	Active	Active	Idle	Idle	Active	Active	Active
21	Active	Idle	Idle	Idle	Active	Active	Idle	Idle	Idle	Active	Idle
22	Active	Idle	Idle	Idle	Active	Active	Idle	Idle	Idle	Active	Active
23	Active	Idle	Active	Idle	Active	Active	Idle	Idle	Idle	Idle	Idle
24	Active	Idle	Idle	Active	Active	Idle	Active	Idle	Active	Active	Idle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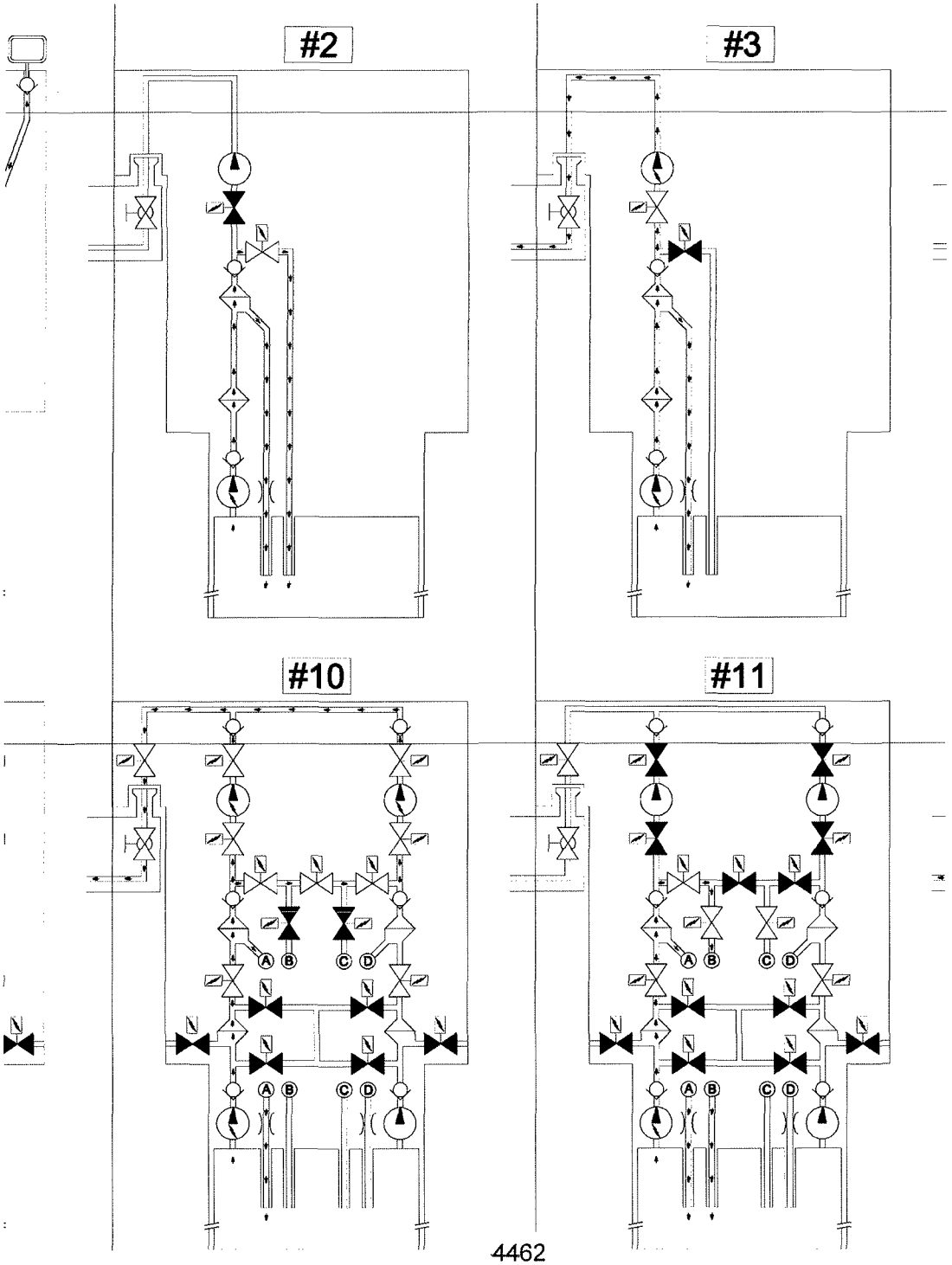
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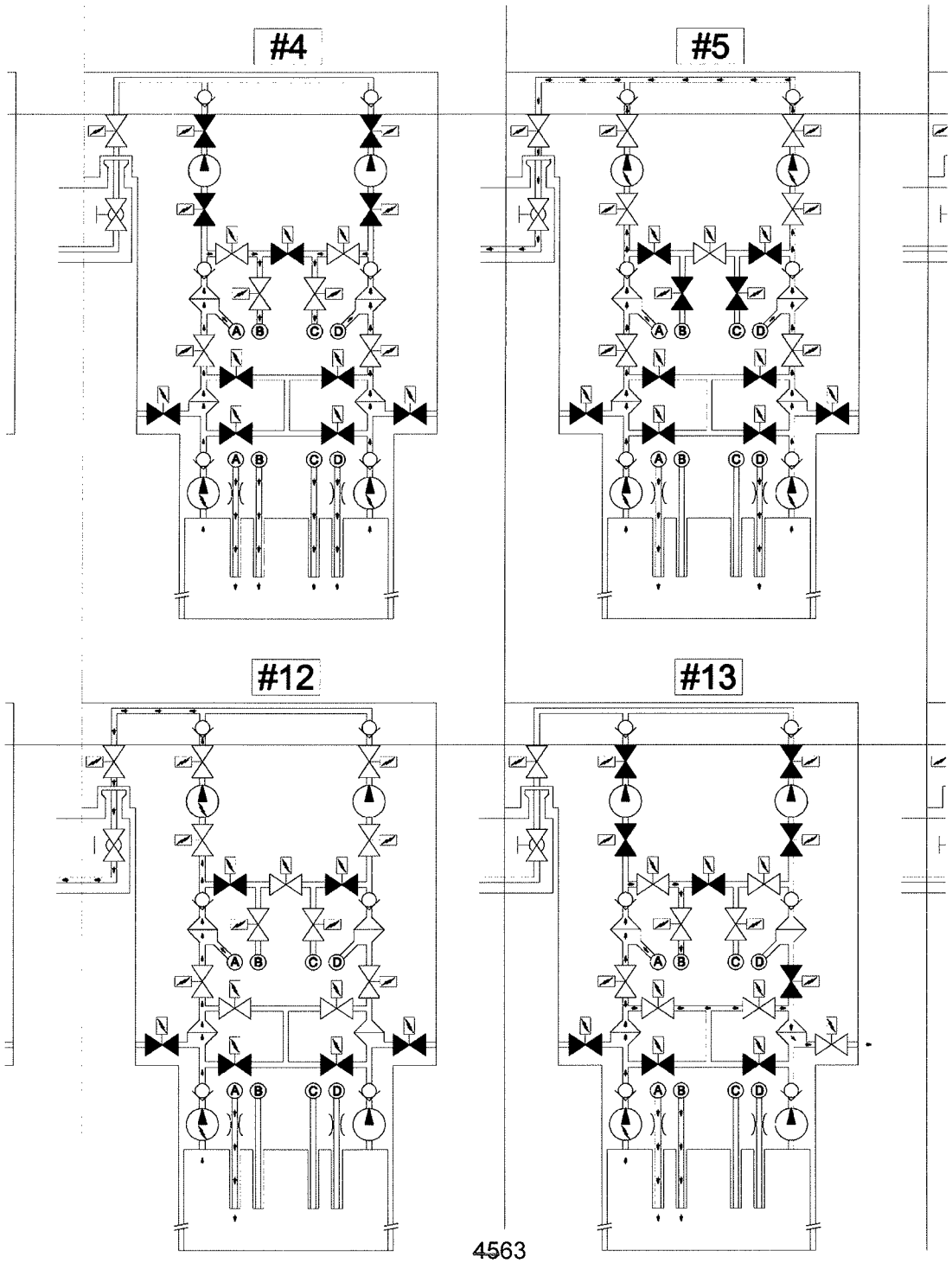
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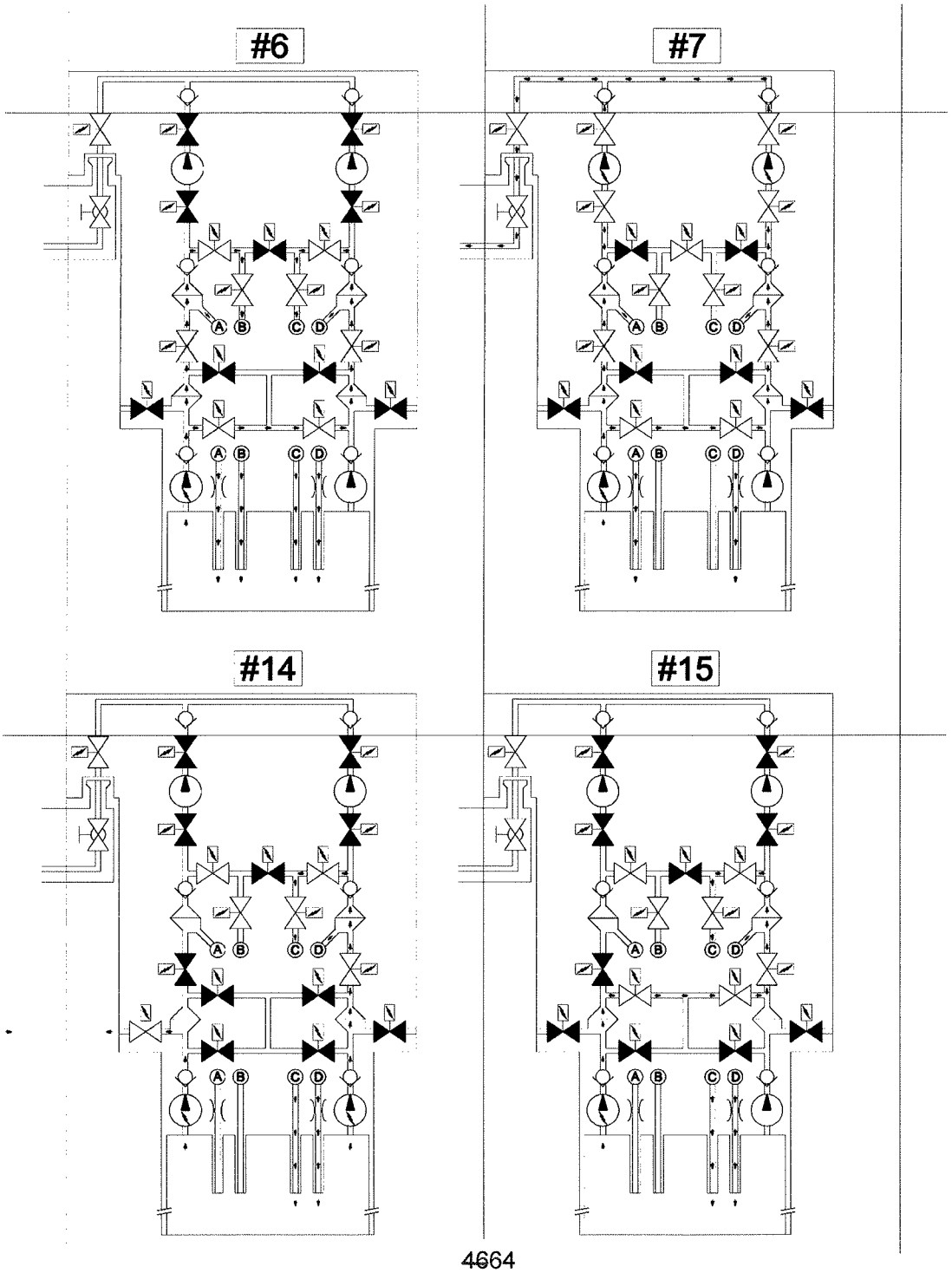
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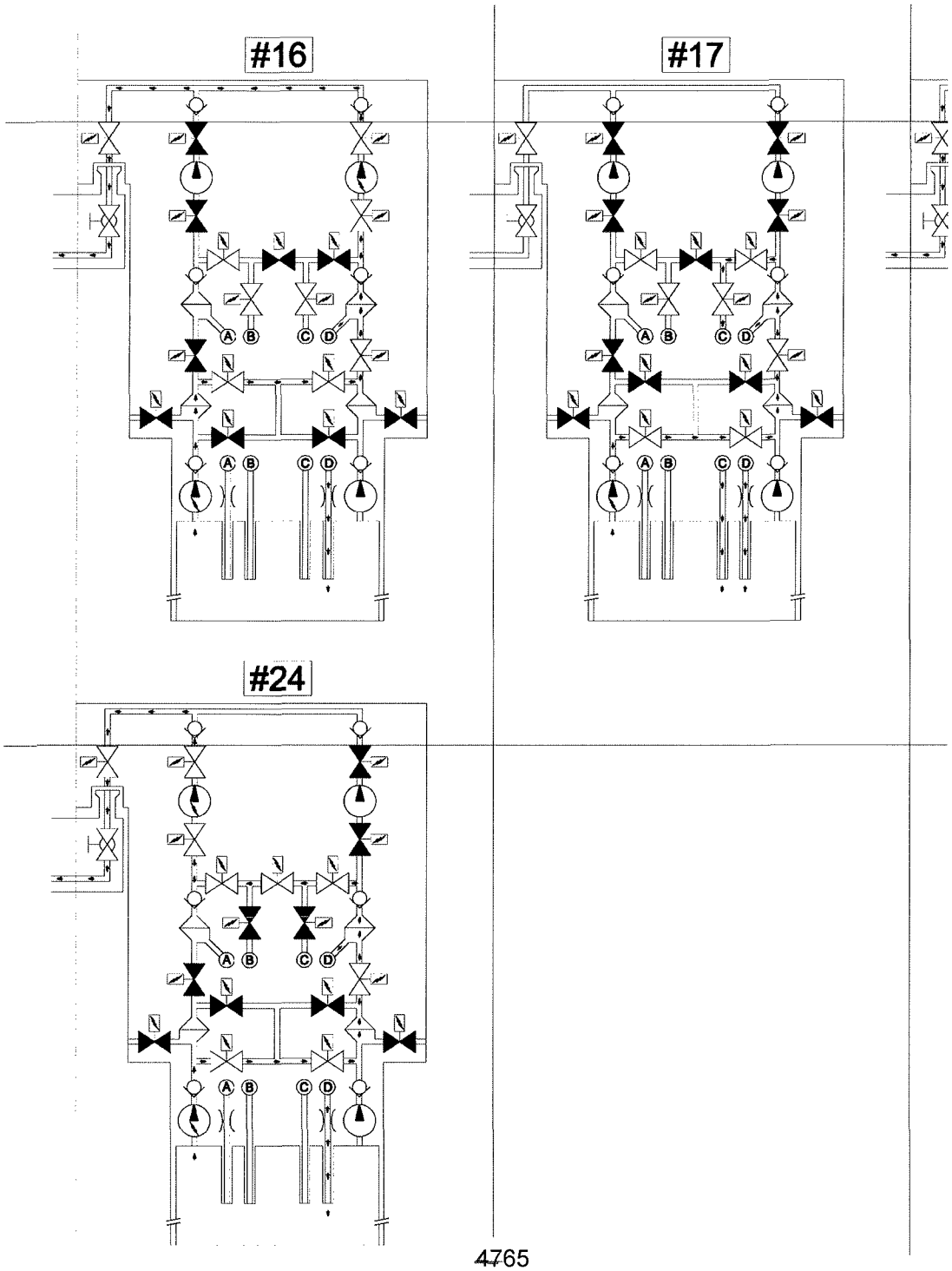
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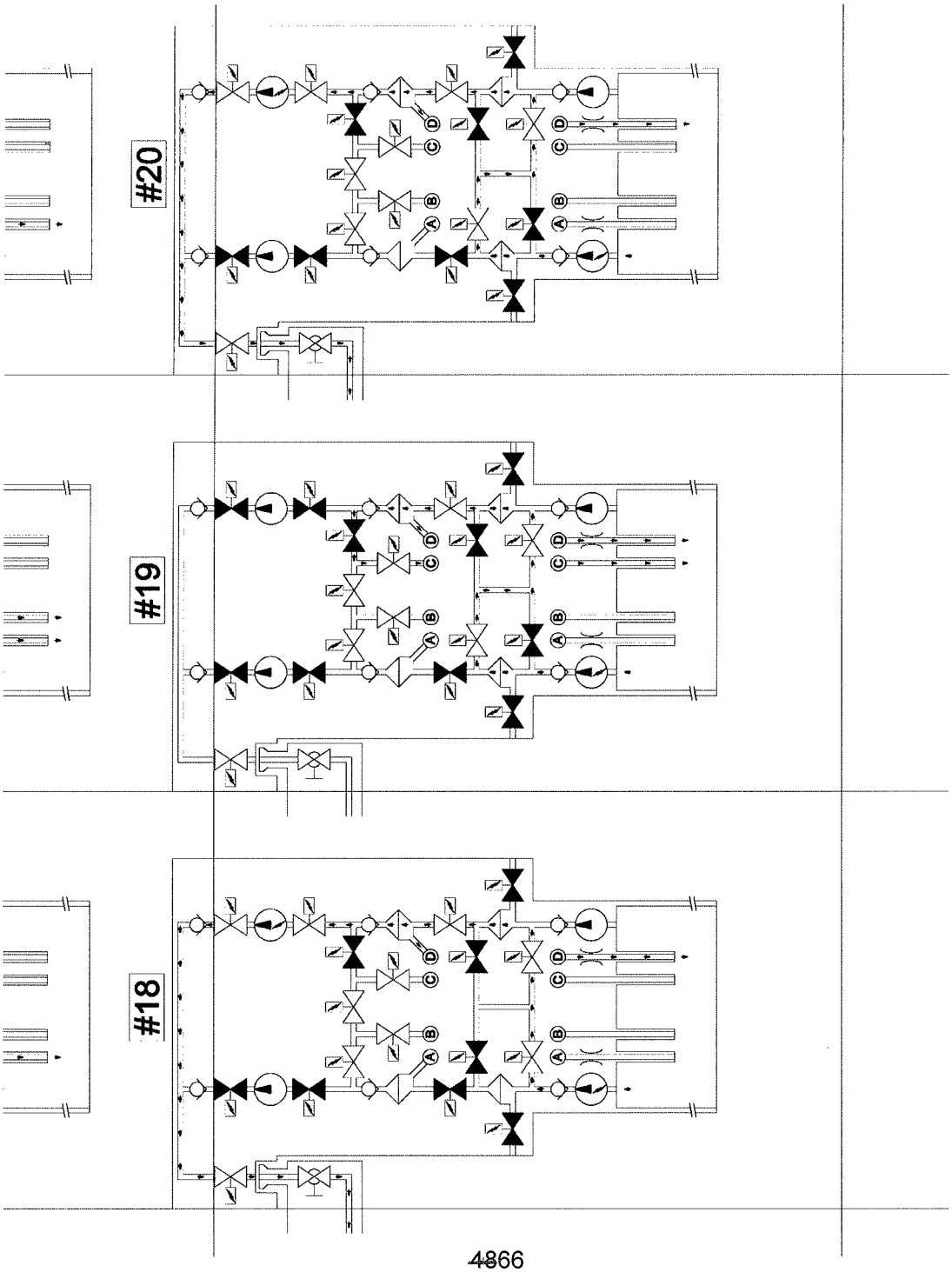
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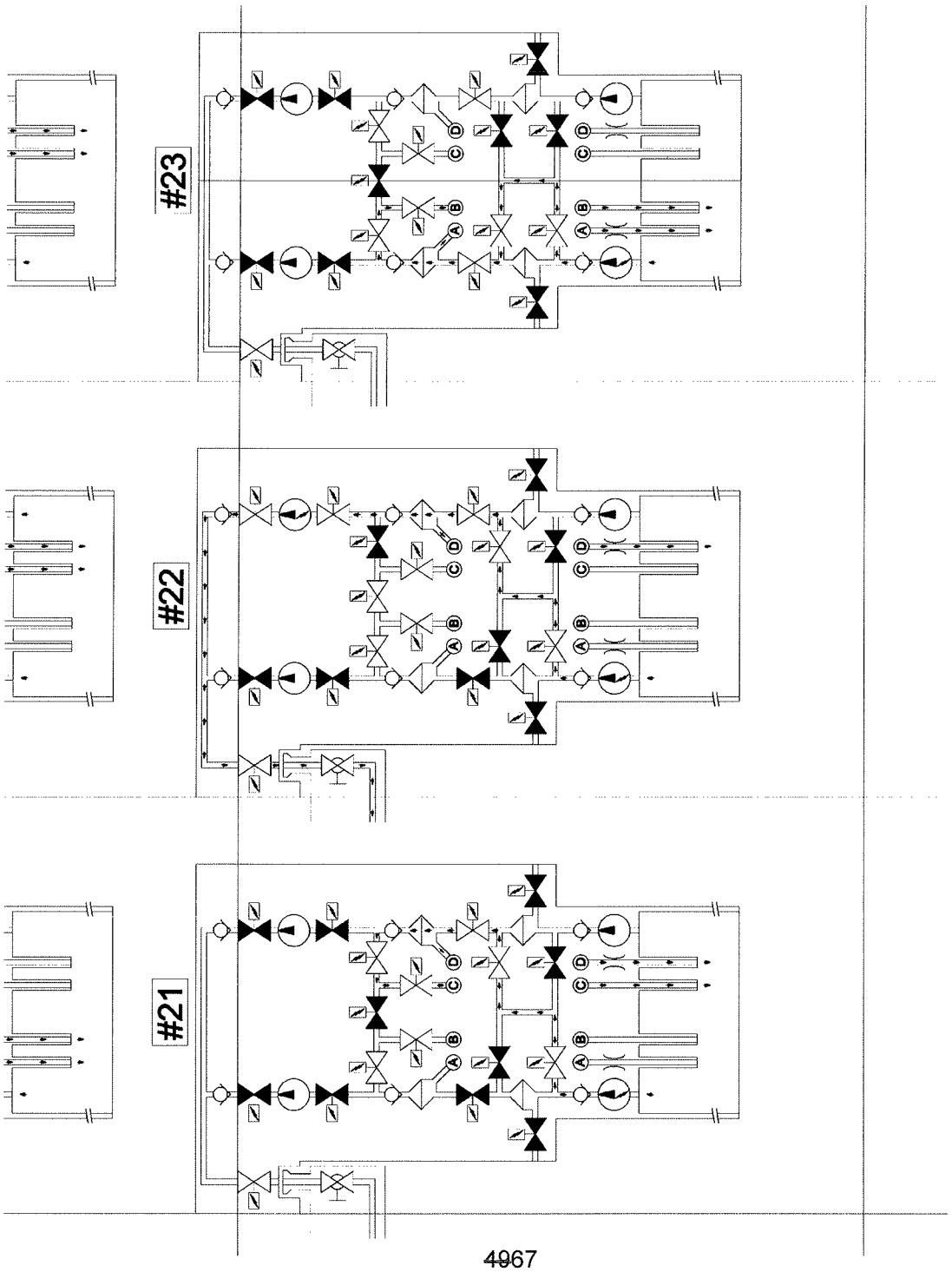
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What is claimed is:

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; and

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

2. The submersible well fluid system of claim 1, where the second housing is in fluid communication with the first housing.

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

4. The submersible well fluid system of claim 2, where the fluid at specified conditions comprises substantially gas.

5. The submersible well fluid system of claim 2, where the fluid at specified conditions is substantially at atmospheric pressure.

6. The submersible well fluid system of claim 2, where the fluid at specified conditions comprises substantially liquid.

7. The submersible well fluid system of claim 2, 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.

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

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

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

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

12. The submersible well fluid system of claim 10, where the frame is adapted to couple to a wellhead assembly or an associated assembly to support the submersible well fluid system.

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

14. The submersible well fluid system of claim 12, 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.

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.

16. The submersible well fluid system of claim 15, 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.

17. The submersible well fluid system of claim 1, comprising 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.

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

19. The submersible well fluid system of claim 10, 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.

20. The submersible well fluid system of claim 19, 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.

21. The submersible well fluid system of claim 20, comprising a recirculation fluid path coupled to the gas/liquid separator and to the fluid path from the process fluid inlet to the f, 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.

22. The submersible well fluid system of claim 21, where one or both of the buffer tank and gas/liquid separator are affixed to the first housing.

23. 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.

24. The submersible well fluid system of claim 23, 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.

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

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

27. The submersible well fluid system of claim 25, 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.

28. The submersible well fluid system of claim 25, where the adjustable speed drive is provided without an input transformer.

29. The submersible well fluid system of claim 25, where the active power factor correcting front end comprises an inverter configured to receive alternating current and output direct current.

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

31. The submersible well fluid system of claim 29, 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.

32. The submersible well fluid system of claim 29, where the adjustable speed drive comprises electrical components in contact with the interior of the housing assembly.

33. 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.

34. The submersible well fluid system of claim 8, comprising a power conductor in the conduit, the power conductor electrically coupled to the electric machine and the adjustable speed drive.

35. The submersible well fluid system of claim 8, comprising a control communication line in the conduit.

36. 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.

37. The submersible well fluid system of claim 36, 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.

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

39. The submersible well fluid system of claim 38, 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.

40. The submersible well fluid system of claim 36, where the chemical storage tank is submerged in the body of water.

41. The submersible well fluid system of claim 36, 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.

42. The submersible well fluid system of claim 36, comprising a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

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

44. The submersible well fluid system of claim 43, 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.

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

46. The submersible well fluid system of claim 43, 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.

47. The submersible well fluid system of claim 43, comprising a frame carrying the electric machine, the fluid end and the barrier fluid supply system.

48. The submersible well fluid system of claim 47, 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.

49. The submersible well fluid system of claim 43, where the barrier fluid supply system is integrated with the submersible well fluid system.

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

a frame adapted to couple to a wellhead assembly;

an electric machine comprising a rotor and a stator;

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

an adjustable speed drive for the electric machine carried on the frame.

51. The submersible well fluid system of claim 50, where the electric machine and fluid end are carried on the frame.

52. The submersible well fluid system of claim 50, where the frame is adapted to support the adjustable speed drive off the floor of the body of water.

53. The submersible well fluid system of claim 50, comprising a first housing containing the electric machine and a second housing affixed to the first housing and containing the adjustable speed drive.

54. The submersible well fluid system of claim 50, 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.

55. The submersible well fluid system of claim 54, where the process fluid inlet connector is adapted to connect with the fluid outlet to support the submersible well fluid system.

56. The submersible well fluid system of claim 55, 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.

57. The submersible well fluid system of claim 50, where the frame surrounds the adjustable speed drive.

58. The submersible well fluid system of claim 51, where the frame surrounds the electric machine, fluid end and adjustable speed drive.

59. The submersible well fluid system of claim 50, comprising a housing and where the electric machine resides in the housing; and

where the adjustable speed drive is affixed to the housing.

60. The submersible well fluid system of claim 50, comprising:

a process fluid inlet coupled to a fluid path to the fluid end; 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.

61. The submersible well fluid system of claim 60, comprising:

a process fluid outlet coupled to a fluid path from the fluid end; 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.

62. The submersible well fluid system of claim 61, comprising a housing containing the electric machine and where one or both of the buffer tank and gas/liquid separator are affixed to the housing.

63. The submersible well fluid system of claim 61, 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.

64. The submersible well fluid system of claim 63, comprising a bypass fluid path coupled to the process fluid inlet and the process fluid outlet to bypass the fluid end.

65. The submersible well fluid system of claim 64, where the bypass fluid path is a tube carried by the frame.

66. The submersible well fluid system of claim 50, where the electric machine comprises a synchronous permanent magnet machine.

67. The submersible well fluid system of claim 50, where the adjustable speed drive comprises an active power factor correcting front end.

68. The submersible well fluid system of claim 66, where the active power factor correcting front end comprises an inverter configured to receive alternating current and output direct current.

69. The submersible well fluid system of claim 66, 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.

70. The submersible well fluid system of claim 67, where the adjustable speed drive is provided without an input transformer electrically coupled to a rectifier of the adjustable speed drive.

71. The submersible well fluid system of claim 50, where the adjustable speed drive is cooled only by passive cooling.

72. The submersible well fluid system of claim 50, 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 submerged treatment chemical storage tank and to provide a treatment chemical from the tank to the process fluid upstream of the process fluid outlet.

73. The submersible well fluid system of claim 72, where chemical distribution system is carried by the frame.

74. The submersible well fluid system of claim 73, comprising:

a first housing containing the electric machine; and

wherein the chemical distribution system is integrated to the first housing.

75. The submersible well fluid system of claim 72, 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.

76. The submersible well fluid system of claim 72, comprising a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

77. The submersible well fluid system of claim 50, comprising a barrier fluid supply system adapted to supply a barrier fluid to the fluid end.

78. The submersible well fluid system of claim 77, comprising a submerged barrier fluid supply tank.

79. The submersible well fluid system of claim 77, wherein the barrier fluid comprises unfiltered water.

80. The submersible well fluid system of claim 77, 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.

81. The submersible well fluid system of claim 77, where the barrier fluid supply system is carried by the frame.

82. The submersible well fluid system of claim 81, comprising:

a first housing containing the electric machine; and

a second housing containing the barrier fluid supply system, the second housing affixed to the first housing.

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

an electric machine comprising a rotor and a stator;

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

a barrier fluid supply system adapted to supply a barrier fluid from a submerged source to the fluid end.

84. The submersible well fluid system of claim 83, 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.

85. The submersible well fluid system of claim 83, where the submerged source comprises a barrier fluid supply tank.

86. The submersible well fluid system of claim 83, where the barrier fluid comprises unfiltered water.

87. The submersible well fluid system of claim 83, where the submerged source comprises water from the body of water and 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.

88. The submersible well fluid system of claim 83, comprising a frame carrying the electric machine, the fluid end, and the barrier fluid supply system.

89. The submersible well fluid system of claim 88, comprising:

a first housing containing the electric machine; and

a second housing containing the barrier fluid supply system, the second housing coupled to the first housing the submersible well fluid system.

90. The submersible well fluid system of claim 88, 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.

91. The submersible well fluid system of claim 83, comprising an adjustable speed drive for the electric machine.

92. The submersible well fluid system of claim 83, 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 submerged treatment chemical storage tank and provide a treatment chemical from the tank to the process fluid upstream of the process fluid outlet.

93. The submersible well fluid system of claim 92, comprising a frame configured to carrying the electric machine, the fluid end, the barrier fluid supply system and the chemical distribution system.

94. The submersible well fluid system of claim 92, 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.

95. The submersible well fluid system of claim 92, comprising an adjustable speed drive for the electric machine.

96. The submersible well fluid system of claim 95, comprising a frame configured to carrying the electric machine, the fluid end, the barrier fluid supply system and the chemical distribution system.

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

an electric machine comprising a rotor and a stator;

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

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 submerged treatment chemical storage tank and provide a treatment chemical to one or more locations of the submersible well fluid system.

98. The submersible well fluid system of claim 97, comprising a frame configured to carry the electric machine and the chemical distribution system.

99. The submersible well fluid system of claim 98, comprising:

a first housing containing the electric machine; and

where the chemical distribution system is integrated with the first housing.

100. The submersible well fluid system of claim 97, 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.

101. The submersible well fluid system of claim 97, where the chemical distribution system comprises a manifold configured to receive a chemical from the submerged treatment chemical storage tank and distribute the chemical to the one or more locations of the submersible well fluid system.

102. The submersible well fluid system of claim 97, where the one or more locations of the submersible well fluid system includes the fluid end, a pressure management system, or at a location of the submersible well fluid system upstream of the process fluid outlet.

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

an inlet adapted to intake a barrier fluid;

a filter in communication with the inlet adapted to filter the barrier fluid;

a barrier fluid outlet in communication with the filter adapted to couple to a barrier fluid inlet of the submersible fluid system and to supply the filtered barrier fluid to the barrier fluid inlet of the submersible fluid system.

104. The submersible barrier fluid supply system of claim 103, comprising a submerged barrier fluid supply tank coupled to the inlet and comprising a barrier fluid.

105. The submersible barrier fluid supply system of claim 103, where the inlet comprises a water inlet adapted to intake water from the surrounding body of water.

106. The submersible barrier fluid supply system of claim 105, comprising a housing internally defining a solids settling chamber exterior to and around the water inlet, the housing comprising a water inlet adapted to intake water from the surrounding body of water into the solids settling chamber.

107. The submersible barrier fluid supply system of claim 106, where the housing is adapted to cause water in the solids settling chamber to be more substantially quiescent than the surrounding body of water.

108. The submersible barrier fluid supply system of claim 106, where the sidewalls of the housing are solid and unapertured.

109. The submersible barrier fluid supply system of claim 103, where the filter comprises a multi-stage filter.

110. The submersible barrier fluid supply system of claim 109, where the multi-stage filter comprises a reverse osmosis membrane filter downstream from a coarse filter.

111. The submersible barrier fluid supply system of claim 103, further comprising a pump configured to move fluid from the inlet to the barrier fluid outlet and across the filter.

112. The submersible barrier fluid supply system of claim 103, further comprising a membrane downstream of the filter, the membrane configured to further filter the barrier fluid.

113. The submersible barrier fluid supply system of claim 112, further comprising a pump downstream of the membrane and configured to move fluid that has passed through the membrane to the barrier fluid outlet.

114. The submersible barrier fluid supply system of claim 112, further comprising a reject passage fluidically coupled to an upstream side of the membrane and configured to direct fluid that has not passed through the membrane to a solids settling chamber.

115. The submersible barrier fluid supply system of claim 110, further comprising a return passage downstream of the membrane and configured to direct fluid that passes through the membrane to the body of water.

116. The submersible barrier fluid supply system of claim 103, comprising:

a first fluid circuit comprising the first mentioned filter;

a second fluid circuit, in fluidic parallel to the first fluid circuit, and comprising a second filter.

117. The submersible barrier fluid supply system of claim 116, comprising a crossover passage fluidically coupling the first fluid circuit and the second fluid circuit.

118. The submersible barrier fluid supply system of claim 117, further comprising membrane, where the crossover passage is located downstream of the membrane and configured to allow filtered fluid to flow from the first fluid circuit to the second fluid circuit.

119. The submersible barrier fluid supply system of claim 117, where the crossover passage is adapted to communicate fluid in the first fluid circuit to the second filter to be filtered by the second filter.

120. The submersible barrier fluid supply system of claim 117 comprising:

a first pump in the first fluid circuit; and

where the crossover passage is adapted to communicate fluid in the first fluid circuit to the second fluid circuit.

121. The submersible barrier fluid supply system of claim 116, where the first fluid circuit comprises a first pump and the second fluid circuit comprises a second pump; and

where the submersible barrier fluid supply system comprises a first crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first and second pumps, between the pumps and the first mentioned filter and second filter.

122. The submersible barrier fluid supply system of claim 116, where the first fluid circuit comprises a first pump and the second fluid circuit comprises a second pump; and

where the submersible barrier fluid supply system comprises:

a first crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first and second pumps, between the pumps and the first mentioned filter and second filter;

a second crossover passage fluidically coupling the first fluid circuit and the second fluid circuit at a location downstream of the first mentioned filter and the second filter.

123. The submersible barrier fluid supply system of claim 116 comprising a clean-out circuit comprising:

a bypass crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first mentioned filter and the second filter, the

bypass crossover passage configured to supply a back flush flow of fluid to the second filter; and

a reject passage fluidically coupled to a passage between the inlet and the second filter to receive the back flush flow of fluid from the second filter.

124. The submersible barrier fluid supply system of claim 123, wherein the reject passage is configured to direct the back flush flow to the body of water.

125. The submersible barrier fluid supply system of claim 117, where the crossover passage is a first crossover passage fluidically coupling the first fluid circuit and the second fluid circuit upstream of the first mentioned filter and the second filter, the submersible barrier fluid supply system further comprising:

a second crossover passage fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first mentioned filter and the second filter; and

a redirect passage fluidically coupling the first crossover passage and the second crossover passage, the redirect passage configured to enable fluid to flow between the second crossover passage and the first crossover passage.

126. The submersible barrier fluid supply system of claim 116, where the first circuit comprises a low pressure pump upstream of the first mentioned filter and a high pressure pump downstream of the first mentioned filter.

127. The submersible barrier fluid supply system of claim 116, where the second circuit comprises a low pressure pump upstream of the second filter and a high pressure pump downstream of the second filter.

128. The submersible barrier fluid supply system of claim 103 further comprising a reject passage fluidically coupled to a passage between the inlet and the first mentioned filter to receive the back flush flow of fluid from the first mentioned filter.

129. The submersible barrier fluid supply system of claim 103, further comprising a reject passage fluidically coupled to a passage between the inlet and the first mentioned filter to receive fluid from the inlet and direct it to the body of water.

130. The submersible barrier fluid supply system of claim 103, where the submersible barrier fluid supply system is configured to supply barrier fluid to one or more seals of a fluid end of the submersible well fluid system.

131. The submersible barrier fluid supply system of claim 130, where the barrier fluid is maintained at a pressure higher than the process fluid at a process fluid inlet of the fluid end.

132. The submersible barrier fluid supply system of claim 103, comprising a clean-out circuit comprising:

a bypass fluidically coupling the first fluid circuit and the second fluid circuit downstream of the first mentioned filter and the second filter, the bypass crossover configured to supply a back flush flow of fluid to one or both of the first mentioned filter and the second filter; and

a reject passage fluidically coupled to a passage between the inlet and the second filter to receive the back flush flow of fluid from the second filter.

133. The submersible barrier fluid supply system of claim 103, where the barrier fluid outlet is in fluid communication with a bellows chamber, the bellows chamber comprising a bellows, and where the submersible barrier fluid supply system is configured to supply barrier fluid to the bellows chamber upon expansion of the bellows.

134. The submersible barrier fluid supply system of claim 133, comprising a bias spring configured to bias the bellows to expand.

135. A submersible barrier fluid supply system for a submersible fluid system for operating submerged in a body of water, comprising:

an inlet adapted to intake a barrier fluid from the body of water;

a barrier fluid outlet in communication with a barrier fluid inlet of the submersible fluid system and to supply the barrier fluid to the barrier fluid inlet of the submersible fluid system.

136. The submersible barrier fluid supply system of claim 135, comprising a filter downstream of the inlet and configured to filter the barrier fluid.