Claims:

1. A method of testing liquids at an elevated test pressure, the method comprising the steps of:

placing a first fluid in a first chamber of a test system;

bringing the first fluid to a test pressure different from atmospheric pressure;

calculating a volume of a second fluid to inject into the first chamber from a second chamber of the test system via a first portion connecting the first chamber and the second chamber, wherein the first portion comprises a fluid interface between the first fluid and the second fluid located in the first portion;

injecting the volume of the second fluid into the first chamber, wherein injecting the volume of the second fluid into the first chamber displaces an equivalent volume of fluid into a third chamber of the test system via a second portion connecting the first chamber and the third chamber in fluid communication with each other;

mixing the volume of the second fluid in the first chamber and a remaining volume of the first fluid in the first chamber to create a combination fluid; and

testing the combination fluid.

2. The method according to Claim 1, wherein calculating the volume of the second fluid to inject into the first chamber from the second chamber comprises:

subtracting an initial percentage of the second fluid in the first chamber from a goal percentage of the second fluid in the first chamber to create a first preliminary result;

subtracting the initial percentage of the second fluid in the first chamber from ~~1.0~~ to create a second preliminary result;

dividing the first preliminary result by the second preliminary result to create the third preliminary result; and

multiplying the third preliminary result by a fluid volume capacity of the first chamber to calculate the volume of the second fluid to inject into the first chamber from the second chamber.

3. The method according to Claim 1, wherein at least one of the first fluid comprises a first particle laden fluid and the second fluid comprises a second particle laden fluid.

4. The method according to Claim 1, wherein testing the combination fluid comprises determining at least one of an apparent viscosity, consistency and rheology of the combination fluid at the test pressure.

5. The method according to Claim 1, wherein testing the combination fluid comprises determining at least one of the electrical, physical chemical, and electrochemical properties of the combination fluid at test pressure.

6. The method according to Claim 1, wherein testing the combination fluid comprises determining ~~the~~ reaction solid materials of the combination fluid at test pressure.

7. The method according to Claim 4, wherein determining relative viscosity of the combination fluid at the test pressure comprises determining relative viscosity of the combination fluid at the test pressure while maintaining the fluid interface in the first portion.

8. The method according to Claim 1, additionally comprising the step of heating the first fluid to a test temperature.

9. The method according to Claim 8, wherein the testing step is performed at the test temperature.

10. A fluid testing apparatus, comprising:

a first chamber comprising test means that tests a first fluid in the first chamber;

a second chamber comprising injection means that injects a second fluid in the second chamber into the first chamber;

a third chamber;

pressurizing means that brings the first fluid in the first chamber to a test pressure;

15. The apparatus according to Claim 10, wherein the injection means comprise a piston that separates the second chamber from the third chamber.

16. The apparatus according to Claim 10, wherein at least one of the first and second fluids comprises a particle laden fluid.

17. The apparatus according to Claim 10, wherein the calculation means calculating the volume of the second fluid to inject into the first chamber from the second chamber comprises:

subtracting an initial percentage of the second fluid in the first chamber from a goal percentage of the second fluid in the first chamber to create a first preliminary result;

subtracting an initial percentage of the second fluid in the first chamber from ~~1.0~~ to create a second preliminary result;

dividing the first preliminary result by the second preliminary result to create the third preliminary result; and

multiplying the third preliminary result by a fluid volume capacity of the first chamber to calculate the volume of the second fluid to inject into the first chamber from the second chamber

18. The apparatus according to Claim 10, wherein the third chamber comprises a piston that enables regulation of pressure in the first chamber, the second chamber, and the third chamber.

19. The apparatus according to Claim 10, wherein the mixing means comprise an axially rotating shaft actuated by at least one of a motor and a magnetic stirrer.

20. The apparatus according to Claim 10, additionally comprising heating means that heats the first fluid in the first chamber.

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1. A method of testing liquids at an elevated test pressure, the method comprising the steps of:

placing a first fluid in a first chamber of a test system;

bringing the first fluid to a test pressure different from atmospheric pressure;

calculating a volume of a second fluid to inject into the first chamber from a second chamber of the test system via a first portion connecting the first chamber and the second chamber, wherein the first portion comprises a fluid interface between the first fluid and the second fluid located in the first portion;

injecting the volume of the second fluid into the first chamber, wherein injecting the volume of the second fluid into the first chamber displaces an equivalent volume of fluid into a third chamber of the test system via a second portion connecting the first chamber and the third chamber in fluid communication with each other;

mixing the volume of the second fluid in the first chamber and a remaining volume of the first fluid in the first chamber to create a combination fluid; and

testing the combination fluid.

2. The method according to Claim 1, wherein calculating the volume of the second fluid to inject into the first chamber from the second chamber comprises:

subtracting an initial percentage of the second fluid in the first chamber from a goal percentage of the second fluid in the first chamber to create a first preliminary result;

subtracting the initial percentage of the second fluid in the first chamber from 100% to create a second preliminary result;

dividing the first preliminary result by the second preliminary result to create the third preliminary result; and

multiplying the third preliminary result by a fluid volume capacity of the first chamber to calculate the volume of the second fluid to inject into the first chamber from the second chamber.

3. The method according to Claim 1, wherein at least one of the first fluid comprises a first particle laden fluid and the second fluid comprises a second particle laden fluid.

4. The method according to Claim 1, wherein testing the combination fluid comprises determining at least one of an apparent viscosity, consistency and rheology of the combination fluid at the test pressure.

5. The method according to Claim 1, wherein testing the combination fluid comprises determining at least one of the electrical, physical, chemical, and electrochemical properties of the combination fluid at test pressure.

6. The method according to Claim 1, wherein testing the combination fluid comprises determining reaction solid materials of the combination fluid at test pressure.

7. The method according to Claim 4, wherein determining relative viscosity of the combination fluid at the test pressure comprises determining relative viscosity of the combination fluid at the test pressure while maintaining the fluid interface in the first portion.

8. The method according to Claim 1, additionally comprising the step of heating the first fluid to a test temperature.

9. The method according to Claim 8, wherein the testing step is performed at the test temperature.

10. A fluid testing apparatus, comprising:

a first chamber comprising test means that tests a first fluid in the first chamber;

a second chamber comprising injection means that injects a second fluid in the second chamber into the first chamber;

a third chamber;

pressurizing means that brings the first fluid in the first chamber to a test pressure;

15. The apparatus according to Claim 10, wherein the injection means comprise a piston that separates the second chamber from the third chamber.

16. The apparatus according to Claim 10, wherein at least one of the first and second fluids comprises a particle laden fluid.

17. The apparatus according to Claim 10, wherein the calculation means calculating the volume of the second fluid to inject into the first chamber from the second chamber comprises:

subtracting an initial percentage of the second fluid in the first chamber from a goal percentage of the second fluid in the first chamber to create a first preliminary result;

subtracting an initial percentage of the second fluid in the first chamber from 100% to create a second preliminary result;

dividing the first preliminary result by the second preliminary result to create the third preliminary result; and

multiplying the third preliminary result by a fluid volume capacity of the first chamber to calculate the volume of the second fluid to inject into the first chamber from the second chamber

18. The apparatus according to Claim 10, wherein the third chamber comprises a piston that enables regulation of pressure in the first chamber, the second chamber, and the third chamber.

19. The apparatus according to Claim 10, wherein the mixing means comprise an axially rotating shaft actuated by at least one of a motor and a magnetic stirrer.

20. The apparatus according to Claim 10, additionally comprising heating means that heats the first fluid in the first chamber.