# CLAIMS

1. A measurement system, comprising:

an accumulator including an element movable within an internal volume of the accumulator, wherein the movable element surface area includes conductive material;

two conductive strips disposed along the length of the interior of the accumulator in the direction of movement of the element, each offset from an axis of the accumulator, each conductive strip capable of contacting the conductive material of the movable element surface area; and

a sensor to measure an electrical characteristic of the circuit determined by the position of the element within the accumulator.

2. The measurement system of claim 1, wherein the electrical characteristic includes at least one of voltage, current, and resistance.

3. The measurement system of claim 1, further comprising:

two rubbing strips disposed along the length of the interior of the accumulator; and

wherein at least one conductive strip is disposed along a rubbing strip.

4. The measurement system of claim 3, wherein the rubbing strips include a non-metallic material.

5. The measurement system of claim 3, wherein the two conductive strips are disposed along the length of each of the at least two rubbing strips.

6. The measurement system of claim 1, wherein the movable element includes a piston movable within an internal volume of the accumulator.

7. The measurement system of claim 1, wherein the accumulator is a hydraulic fluid accumulator.

8. The measurement system of claim 7, wherein the hydraulic fluid accumulator is capable of providing hydraulic fluid to operate a blowout preventer.

9. The measurement system of claim 1, wherein the accumulator comprises an outer layer and an inner layer.

10. The measurement system of claim 9, wherein the outer layer includes at least one of a metal, metal alloy, and composite material.

11. A measurement system for measuring the fluid volume in a subsea hydraulic accumulator capable of providing hydraulic fluid to power a blowout preventer, including:

an element movable within an internal volume of the accumulator, wherein the movable element surface area is at least partially composed of conductive material;

rubbing strips disposed along the interior of the accumulator, the movable element movable along the rubbing strips;

conductive strips disposed along the length of at least one rubbing strip, the conductive strips capable of contacting the movable element; and

a sensor to measure an electrical characteristic of the circuit determined by the position of the movable element within the accumulator.

12. The measurement system of claim 11, wherein the electrical characteristic includes at least one of voltage, current, and resistance.

13. The measurement system of claim 11, wherein each conductive strip is disposed along one of the rubbing strips.

14. The measurement system of claim 11, wherein the movable element includes a piston movable within an internal volume of the accumulator.

15. The measurement system of claim 11, wherein the accumulator is a hydraulic fluid accumulator.

16. The measurement system of claim 11, wherein the accumulator includes an outer layer including at least one of metal, metal alloy, and composite material.

17. The measurement system of claim 11, wherein the rubbing strips include a non-metallic material.

18. The measurement system of claim 11, wherein two conductive strips are disposed along the length of each of the two or more rubbing strips.