CLAIMS

We claim:

1. A fluid flow system (300), comprising:

a pipeline (301);

a first fluid switch (309) located within the pipeline (301) and determining one or more fluid conditions within the pipeline (301);

a vibrating meter (5) including:

a sensor assembly (10) located within the pipeline (301) proximate to and in fluid communication with the first fluid switch (309); and

a meter electronics (20) in electrical communication with the sensor assembly (10) to receive one or more sensor signals (210) and measure one or more flow characteristics;

a system controller (317) in electrical communication with the first fluid switch (309) and in electrical communication with the meter electronics (20) and configured to:

receive the one or more measured flow characteristics from the meter electronics (20);

receive a first fluid switch signal (214) indicating the one or more fluid conditions within the pipeline (301) from the first fluid switch (309); and

correct the measured flow characteristics if a fluid condition of the one or more fluid conditions is outside a threshold value or band.

2. The fluid flow system (300) of claim 1, wherein the first fluid switch (309) is located upstream from the sensor assembly (10).

3. The fluid flow system (300) of claim 2, further comprising at least a second fluid switch (310) located proximate to and downstream from the sensor assembly (10).

4. The fluid flow system (300) of claim 1, wherein the first fluid switch (309) comprises a fluid level switch and wherein the first fluid switch signal (214) indicates that a fluid level within the pipeline (301) is outside a threshold value or band.

5. The fluid flow system (300) of claim 1, wherein the first fluid switch (309) comprises a fluid flow switch and wherein the first fluid switch signal (214) indicates that a fluid flow rate through the pipeline (301) is outside a threshold value or band.

6. The fluid flow system (300) of claim 1, wherein the vibrating meter (5) comprises a Coriolis mass flow meter and a flow characteristic of the one or more flow characteristics comprises a mass flow rate.

7. The fluid flow system (300) of claim 1, wherein the correction of the measured flow characteristics comprises determining the flow characteristics are false.

8. A method for operating a vibrating meter including a meter electronics and a sensor assembly located within a pipeline and in fluid communication with one or more fluid switches, comprising steps of:

measuring one or more flow characteristics of a fluid flowing through the sensor assembly;

measuring one or more fluid conditions with the one or more fluid switches; and

correcting the one or more flow characteristics of the fluid flowing through the sensor assembly if a fluid condition of the one or more fluid conditions is outside a threshold value or band.

9. The method of claim 8, wherein a fluid switch of the one or more fluid switches comprises a fluid level switch.

10. The method of claim 9, wherein a fluid condition of the one or more fluid conditions comprises a fluid level within the pipeline.

11. The method of claim 8, wherein a fluid switch of the one or more fluid switches comprises a fluid flow switch.

12. The method of claim 11, wherein a fluid condition of the one or more fluid conditions comprises a flow rate within the pipeline.

13. The method of claim 8, wherein the step of correcting comprises determining the flow characteristics are false.

14. The method of claim 13, further comprising a step of totalizing the one or more flow characteristics after a fluid condition of the one or more fluid conditions falls outside the threshold value or band.

15. The method of claim 8, wherein the vibrating meter comprises a Coriolis flow meter.

16. The method of claim 15, wherein a flow characteristic of the one or more flow characteristics comprises a mass flow rate.

17. A meter electronics (20) for a vibrating meter (5) with a sensor assembly located within a pipeline (301) and in fluid communication with one or more fluid switches (309), the meter electronics (20) configured to:

measure one or more flow characteristics of a fluid flowing through the sensor assembly (10);

receive a first fluid switch signal (214) indicating a fluid condition within the pipeline (301) from a first fluid switch (309) of the one or more fluid switches; and

correct the one or more flow characteristics if the fluid condition is outside a threshold value or band.

18. The meter electronics (20) of claim 17, wherein the fluid condition comprises a fluid level within the pipeline.

19. The meter electronics (20) of claim 17, wherein the fluid condition comprises a flow rate within the pipeline.

20. The meter electronics (20) of claim 17, wherein the correction of the measured flow characteristics comprises determining the flow characteristics are false.

21. The meter electronics (20) of claim 20, further configured to totalize the one or more flow characteristics after the one or more fluid conditions falls outside the threshold value or band.

22. The meter electronics (20) of claim 17, wherein the first fluid switch (309) is located upstream of the sensor assembly (10) and wherein the meter electronics (20) is further configured to receive a second fluid switch signal (215) from a second fluid switch (310) located downstream of the sensor assembly (10).

CLAIMS

We claim:

1. A fluid flow system (300), comprising:

a pipeline (301);

a first fluid switch (309) located within the pipeline (301) and determining one or more fluid conditions within the pipeline (301);

a vibrating meter (5) including:

a sensor assembly (10) located within the pipeline (301) proximate to and in fluid communication with the first fluid switch (309); and

a meter electronics (20) in electrical communication with the sensor assembly (10) to receive one or more sensor signals (210) and measure one or more flow characteristics;

a system controller (317) in electrical communication with the first fluid switch (309) and in electrical communication with the meter electronics (20) and configured to:

receive the one or more measured flow characteristics from the meter electronics (20);

receive a first fluid switch signal (214) indicating the one or more fluid conditions within the pipeline (301) from the first fluid switch (309) , wherein the first fluid switch (309) comprises one of:

a fluid level switch and wherein the first fluid switch signal (214) indicates that a fluid level within the pipeline (301) is outside a threshold value or band; and

a fluid flow switch and wherein the first fluid switch signal (214) indicates that a fluid flow rate through the pipeline (301) is outside the threshold value or band; and

correct the measured flow characteristics if a fluid condition of the one or more fluid conditions is outside the threshold value or band.

2. The fluid flow system (300) of claim 1, wherein the first fluid switch (309) is located upstream from the sensor assembly (10).

3. The fluid flow system (300) of claim 2, further comprising at least a second fluid switch (310) located proximate to and downstream from the sensor assembly (10).

4. The fluid flow system (300) of claim 1, wherein the vibrating meter (5) comprises a Coriolis mass flow meter and a flow characteristic of the one or more flow characteristics comprises a mass flow rate.

5. The fluid flow system (300) of claim 1, wherein the correction of the measured flow characteristics comprises determining the flow characteristics are false.

6. A method for operating a vibrating meter including a meter electronics and a sensor assembly located within a pipeline and in fluid communication with one or more fluid switches, comprising steps of:

measuring one or more flow characteristics of a fluid flowing through the sensor assembly;

measuring one or more fluid conditions with the one or more fluid switches, wherein a fluid switch of the one or more fluid switches comprises one of a fluid level switch and a fluid flow switch; and

correcting the one or more flow characteristics of the fluid flowing through the sensor assembly if a fluid condition of the one or more fluid conditions is outside a threshold value or band.

7. The method of claim 6, wherein a fluid condition of the one or more fluid conditions comprises a fluid level within the pipeline.

8. The method of claim 6, wherein a fluid condition of the one or more fluid conditions comprises a flow rate within the pipeline.

9. The method of claim 6, wherein the step of correcting comprises determining the flow characteristics are false.

10. The method of claim 9, further comprising a step of totalizing the one or more flow characteristics after a fluid condition of the one or more fluid conditions falls outside the threshold value or band.

11. The method of claim 6, wherein the vibrating meter comprises a Coriolis flow meter.

12. The method of claim 11, wherein a flow characteristic of the one or more flow characteristics comprises a mass flow rate.

13. A meter electronics (20) for a vibrating meter (5) with a sensor assembly located within a pipeline (301) and in fluid communication with one or more fluid switches (309), the meter electronics (20) configured to:

measure one or more flow characteristics of a fluid flowing through the sensor assembly (10);

receive a first fluid switch signal (214) indicating a fluid condition within the pipeline (301) from a first fluid switch (309) of the one or more fluid switches, wherein the fluid condition comprises one of a fluid level within the pipeline (301) and a flow rate within the pipeline (301); and

correct the one or more flow characteristics if the fluid condition is outside a threshold value or band.

14. The meter electronics (20) of claim 13, wherein the correction of the measured flow characteristics comprises determining the flow characteristics are false.

15. The meter electronics (20) of claim 14, further configured to totalize the one or more flow characteristics after the one or more fluid conditions falls outside the threshold value or band.

16. The meter electronics (20) of claim 13, wherein the first fluid switch (309) is located upstream of the sensor assembly (10) and wherein the meter electronics (20) is further configured to receive a second fluid switch signal (215) from a second fluid switch (310) located downstream of the sensor assembly (10).