Claims:

1. A method for correcting a flow variable (509) based on an inner pressure inside a Coriolis flow meter (202), the method comprising:

receiving a first outside pressure (503) measured with a first pressure sensor (204) located in a first process conduit (208a) positioned on a first end (212a) of the Coriolis flow meter (202);

determining a second outside pressure (505) in a second process conduit (208b) positioned on a second end (212b) opposing the first end (212a) of the Coriolis flow meter (202);

determining an estimated inner flow meter pressure (507) based on the first outside pressure (503) and the second outside pressure (505);

receiving the flow variable (509); and

generating a corrected flow variable (512) based on the estimated inner flow meter pressure (507), a pressure compensation factor (510), and the flow variable (509), wherein the pressure compensation factor (510) is correlated to a pressure inside the Coriolis flow meter (202).

2. A method as claimed in claim 1, wherein determining the second outside pressure (505) is based on a pressure loss coefficient, a fluid velocity, a fluid viscosity, and a density.

3. The method as claimed in claim 1, wherein determining the second outside pressure (505) further comprises receiving a second outside pressure measurement from a second pressure sensor (206) located in the second process conduit (208b).

4. A method as claimed in any one of the preceding claims, wherein determining the estimated inner flow meter pressure (507) based on the first outside pressure (503) and the second outside pressure (505) further comprises averaging the first outside pressure (503) and the second outside pressure (505).

5. A method as claimed in any one of the preceding claims, wherein determining the estimated inner pressure is further based on a cross-sectional area of a process

conduit, a diameter of the process conduit, a cross-sectional area of a flow tube of the Coriolis flow meter (202), a measured density ρ, and a measured flow rate M.

6. A method as claimed in any one of the preceding claims, wherein the flow variable (509) is at least one of: a mass flow, a volume flow, or a density.

7. A method as claimed in any one of the preceding claims, wherein determining the estimated inner flow meter pressure (507) is further based on a flow meter direction.

8. An electronics for correcting a flow variable (509) based on an inner pressure inside a Coriolis flow meter (202), the electronics comprising an interface for receiving a first outside pressure (503) from a first pressure sensor (204), and a processing system in communication with the interface, with the processing system configured to:

receive a first outside pressure (503) measured with a first pressure sensor (204) located in a first process conduit (208a) positioned on a first end (212a) of the Coriolis flow meter (202);

determine a second outside pressure (505) in a second process conduit (208b) positioned on a second end (212b) opposing the first end (212a) of the Coriolis flow meter (202);

determine an estimated inner flow meter pressure (507) based on the first outside pressure (503) and the second outside pressure (505);

receive the flow variable (509); and

generate a corrected flow variable (512) based on the estimated inner flow meter pressure (507), a pressure compensation factor (510), and the flow variable (509), wherein the pressure compensation factor (510) is correlated to a pressure insided the Coriolis flow meter (202).

9. An electronics as claimed in claim 8, wherein the processing system is further configured to determine the second outside pressure (505) based on a pressure loss coefficient, a fluid velocity, a fluid viscosity, and a density.

10. An electronics as claimed in any one of claims 8 to 9, wherein the processing system is further configured to determine the second outside pressure (505) by receiving a second outside pressure measurement from a second pressure sensor (206) located in the second process conduit (208b).

11. An electronics as claimed in any one of claims 8 to 10, wherein the processing system is further configured to determine the estimated inner flow meter pressure (507) based on the first outside pressure (503) and the second outside pressure (505) by averaging the first outside pressure (503) and the second outside pressure (505).

12. An electronics as claimed in any one of claims 8 to 11, wherein the processing system is further configured to determine the estimated inner pressure based on a cross-sectional area of a process conduit, a diameter of the process conduit, a cross-sectional area of a flow tube of the Coriolis flow meter (202), a measured density ρ, and a measured flow rate M.

13. An electronics as claimed in any one of claims 8 to 12, wherein the flow variable (509) is at least one of: a mass flow, a volume flow, or a density.

14. An electronics as claimed in any one of claims 8 to 13, wherein determining the estimated inner flow meter pressure (507) is further based on a flow meter direction.

15. A flow meter correction system configured to correct a flow variable (509) based on an inner pressure inside a Coriolis flow meter (202), the system comprising:

a first pressure receiving module configured to receive a first outside pressure (503) from a first pressure sensor (204) located in a first process conduit (208a) positioned on a first end (212a) of the Coriolis flow meter (202);

a second pressure receiving module for determining a second outside pressure (505) in a second process conduit (208b) positioned on a second end (212b) opposing the first end (212a) of the Coriolis flow meter (202);

an inner flow meter pressure estimation module configured to determine an estimated inner flow meter pressure (507) based on the first outside pressure (503) and the second outside pressure (505);

a flow variable receiving module configured to receive a flow variable (509); and

a flow variable correction module configured to generate a corrected flow variable (512) based on the estimated inner flow meter pressure (507), a pressure compensation factor (510), and the flow variable (509), wherein the pressure compensation factor (510) is correlated to a pressure inside the Coriolis flow meter (202).

16. A flow meter correction system as claimed in claim 15, wherein the second pressure receiving module is further configured to determine the second outside pressure (505) based on a pressure loss coefficient, a fluid velocity, a fluid viscosity, and a density.

17. A flow meter correction system as claimed in any one of claims 15 to 16, wherein the second pressure receiving module is further configured to receive a second outside pressure measurement from a second pressure sensor (206) located in the second process conduit (208b).

18. A flow meter correction system as claimed in any one of claims 15 to 17, wherein the inner flow meter pressure estimation module is further configured to average the first outside pressure (503) and the second outside pressure (505).

19. A flow meter correction system as claimed in any one of claims 15 to 18, wherein the inner flow meter pressure estimation module is further configured to determine the estimated inner pressure based on a cross-sectional area of a process conduit, a diameter of the process conduit, a cross-sectional area of a flow tube of the Coriolis flow meter (202), a measured density ρ, and a measured flow rate M.

20. A flow meter correction system as claimed in any one of claims 15 to 19, wherein the flow variable (509) is at least one of: a mass flow, a volume flow, or a density.

21. A flow meter correction system as claimed in any one of claims 15 to 20, wherein the inner flow meter pressure estimation module is further configured to determine the estimated inner flow meter pressure (507) based on a flow meter direction.