

CLAIMS:

We claim:

1. A method, comprising:
 - selecting a predefined task to be completed using a Coriolis flow meter;
 - 5 displaying a sequence of steps for using the Coriolis flow meter to complete the predefined task;
 - receiving user response to the sequence of steps;
 - operating the Coriolis flow meter in accordance to the user response to complete the predefined task.
- 10 2. The method of claim 1 where selecting the predefined task is done by starting a guru module that corresponds to the predefined tasks.
3. The method of claim 1 where selecting the predefined task is done by selecting a predefined task from a plurality of predefined tasks in a guru module.
- 15 4. The method of claim 1 where the selected predefined task is the verification of the flow calibration factor for the Coriolis flow meter.
- 20 5. The method of claim 4 further comprising:
 - prompting a user to select a material with a known density (302);
 - prompting the user to select a required accuracy for a Coriolis flow meter (304);
 - determining a density deviation from the known density that corresponds to the required accuracy (306);
 - 25 directing the user to introduce the material into the Coriolis flow meter (308);
 - measuring the density of the material using the Coriolis flow meter (310);
 - comparing the measured density with the known density;
 - when the measured density is different than the known density by more than the density deviation, alerting the user that an error condition exists.
- 30 6. The method of claim 5 where the density of the material is measured for at least 5 minutes.

7. The method of claim 5 where the user is prompted to select a material with a known density from a plurality of displayed materials.
8. The method of claim 7 where water is one of the plurality of displayed materials.
9. The method of claim 5 where the relationship between the required accuracy (RC) and the density deviation (DD) is $DD\text{ g/cc} = \pm \left(\frac{0.001\text{ g/cc} * RC}{0.06\%} \right)$.
10. The method of claim 5 where the measured density is stored using a non-volatile medium.
11. The method of claim 10 further comprising:
repeating the density measurement of the material of a known density on a periodic bases and comparing the newly measured results with the stored density measurement.
12. The method of claim 5 further comprising:
measuring the stability, over a given time period, of at least one parameter used by the Coriolis flow meter before starting the density measurement of the material with the known density.
13. The method of claim 12 where the at least one parameter is selected from the group: density, live zero, temperature, drive gain, and flow.
14. The method of claim 1 where the predefined task is proving the Coriolis flow meter using a prover.
15. The method of claim 14 further comprising the steps:
prompting the user to enter the proving run information (402);
configuring the Coriolis flow meter for the proving run using the entered proving run information (404).

16. The method of claim 15 further comprising:
coordinating the operation of the Coriolis flow meter during the proving run (406).
17. The method of claim 14 where the proving run information comprises the flow rate,
5 the proving volume, the pre-run volume, and flow rate units.
18. The method of claim 14 where the Coriolis flow meter parameters configure
comprise: the frequency output, the damping rate, and the signal processing speed.
- 10 19. The method of claim 1 where the predefined task is the linearization of the Coriolis
flow meter using information from two proving runs at two different flow rates.
20. The method of claim 19 further comprising the steps:
prompting the user to enter the data from the two proving runs;
15 calculating a new Coriolis flow calibration (CFC) and a new zero offset using the
data from the two proving runs;
updating the Coriolis flow meter CFC and zero offset.
21. The method of claim 19 further comprising the steps:
20 coordinating the proving of the meter using a prover at the two different flow rates;
calculating a new Coriolis flow calibration (CFC) and a new zero offset using the
data from the two proving runs;
updating the Coriolis flow meter CFC and zero offset.
- 25 22. A system, comprising:
a Coriolis flow meter (204);
a computer system, including a display, connected to the Coriolis flow meter;
a Coriolis control module (202), running on the computer system, where the Coriolis
control module is configured to control the Coriolis flow meter;
30 a Coriolis guru module (208), running on the computer system, configured to
communicate with the Coriolis control module;
the Coriolis guru module configured to display a sequence of steps that directs a user
through a process for using the Coriolis flow meter to complete a predefined task.

23. The system of claim 22 where the sequence of steps comprise:
prompting a user to enter proving run information;
configuring the Coriolis flow meter for a proving run using the entered proving run
information;
5 coordinating the operation of the Coriolis flow meter during the proving run.
24. The system of claim 22 where the sequence of steps comprise:
prompting a user to enter data from two proving runs where the two proving runs
used different flow rates;
10 calculating a new Coriolis flow calibration (CFC) and a new zero offset using the
data from the two proving runs;
updating the Coriolis flow meter CFC and zero offset.
25. The system of claim 22 where the sequence of steps comprise:
15 prompting a user to select a material with a known density;
directing the user to flow the material through the Coriolis flow meter;
measuring the density of the material using the Coriolis flow meter;
comparing the measured density with the known density;
when the measured density is different than the known density by more than a
20 predetermined amount, alerting the user that an error condition exists.
26. The system of claim 25 further comprising:
prompting the user to select a required accuracy for the Coriolis flow meter;
determining a density deviation from the known density that corresponds to the
25 required accuracy;
setting the predetermined amount equal to the density deviation.
27. The system of claim 26 where the relationship between the required accuracy (RC)
and the density deviation (DD) is $DD \text{ g/cc} = \pm \left(\frac{0.001 \text{ g/cc} * RC}{0.06\%} \right)$.

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28. The system of claim 25 further comprising:
measuring the stability, over a given time period, of at least one parameter used by the Coriolis flow meter before starting the density measurement of the material with the known density.
29. The system of claim 28 where the at least one parameter is selected from the group: density, live zero, temperature, drive gain, and flow.
30. A computer product, comprising:
computer code stored on a computer readable medium that when executed by a computer, will perform a sequence of steps, the steps comprising:
prompting a user to select a predefined task to be completed using a Coriolis flow meter;
displaying a sequence of steps that directs the user through a process for using the Coriolis flow meter to complete the predefined task;
operating the Coriolis flow meter in response to the sequence of steps to complete the predefined task.
31. The computer product of claim 30 where the selected predefined task is the verification of the flow calibration factor for the Coriolis flow meter.
32. The computer product of claim 30 where the selected predefined task is proving the Coriolis flow meter using a prover.
33. The computer product of claim 30 where the selected predefined task is the linearization of the Coriolis flow meter using information from two proving runs at two different flow rates.
34. A Coriolis flow meter system, comprising:
a Coriolis flow meter;
a computer system, including a display, connected to the Coriolis flow meter;
a Coriolis control module, running on the computer system, where the Coriolis control module is configured to control the Coriolis flow meter;

a means for directing a user through a sequences of steps that directs a user through a process for using the Coriolis flow meter to complete a predefined task.

CLAIMS:

We claim:

1. A method, comprising:
selecting a predefined task to be completed using a Coriolis flow meter;
5 displaying a sequence of steps for using the Coriolis flow meter to complete the predefined task;
receiving a user response to the sequence of steps;
operating the Coriolis flow meter in accordance to the user response to complete the predefined task, the method further characterized by:
10 prompting the user to select the predefined task to be completed using the Coriolis flow meter.
2. The method of claim 1 where selecting the predefined task is done by starting a module (208) that corresponds to the predefined tasks.
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3. The method of claim 1 where selecting the predefined task is done by selecting a predefined task from a plurality of predefined tasks in a module (208).
4. The method of claim 1 where the selected predefined task is the verification of the
20 flow calibration factor for the Coriolis flow meter.
5. The method of claim 4 further comprising:
prompting a user to select a material with a known density (302);
prompting the user to select a required accuracy for a Coriolis flow meter (304);
25 determining a density deviation from the known density that corresponds to the required accuracy (306);
directing the user to introduce the material into the Coriolis flow meter (308);
measuring the density of the material using the Coriolis flow meter (310);
comparing the measured density with the known density;
30 when the measured density is different than the known density by more than the density deviation, alerting the user that an error condition exists.
6. The method of claim 5 where the density of the material is measured for at least 5 minutes.

7. The method of claim 5 where the user is prompted to select a material with a known density from a plurality of displayed materials.
- 5 8. The method of claim 7 where water is one of the plurality of displayed materials.
9. The method of claim 5 where the relationship between the required accuracy (RC) and the density deviation (DD) is $DD \text{ g/cc} = \pm \left(\frac{0.001 \text{ g/cc} * RC}{0.06\%} \right)$.
- 10 10. The method of claim 5 where the measured density is stored using a non-volatile medium.
11. The method of claim 10 further comprising:
repeating the density measurement of the material of a known density on a periodic
15 bases and comparing the newly measured results with the stored density measurement.
12. The method of claim 5 further comprising:
measuring the stability, over a given time period, of at least one parameter used by
the Coriolis flow meter before starting the density measurement of the material with the
20 known density.
13. The method of claim 12 where the at least one parameter is selected from the group:
density, live zero, temperature, drive gain, and flow.
- 25 14. The method of claim 1 where the predefined task is proving the Coriolis flow meter using a prover.
15. The method of claim 14 further comprising the steps:
prompting the user to enter the proving run information (402);
30 configuring the Coriolis flow meter for the proving run using the entered proving run information (404).

16. The method of claim 15 further comprising:
coordinating the operation of the Coriolis flow meter during the proving run (406).
17. The method of claim 14 where the proving run information comprises the flow rate,
5 the proving volume, the pre-run volume, and flow rate units.
18. The method of claim 14 where the Coriolis flow meter parameters configure
comprise: the frequency output, the damping rate, and the signal processing speed.
- 10 19. The method of claim 1 where the predefined task is the linearization of the Coriolis
flow meter using information from two proving runs at two different flow rates.
20. The method of claim 19 further comprising the steps:
prompting the user to enter the data from the two proving runs;
15 calculating a new Coriolis flow calibration (CFC) and a new zero offset using the
data from the two proving runs;
updating the Coriolis flow meter CFC and zero offset.
21. The method of claim 19 further comprising the steps:
20 coordinating the proving of the meter using a prover at the two different flow rates;
calculating a new Coriolis flow calibration (CFC) and a new zero offset using the
data from the two proving runs;
updating the Coriolis flow meter CFC and zero offset.
- 25 22. A computer product, comprising:
computer code stored on a computer readable medium that when executed by a
computer, will perform a sequence of steps, the steps comprising:
displaying a sequence of steps that directs the user through a process for using the
Coriolis flow meter to complete the predefined task;
30 operating the Coriolis flow meter in response to the sequence of steps to complete
the predefined task, the steps further characterized by:
prompting a user to select a predefined task to be completed using a Coriolis flow
meter.

23. The computer product of claim 22 where the sequence of steps comprise:
prompting a user to enter proving run information;
configuring the Coriolis flow meter for a proving run using the entered proving run
information;
5 coordinating the operation of the Coriolis flow meter during the proving run.
24. The computer product of claim 22 where the sequence of steps comprise:
prompting a user to enter data from two proving runs where the two proving runs
used different flow rates;
10 calculating a new Coriolis flow calibration (CFC) and a new zero offset using the
data from the two proving runs;
updating the Coriolis flow meter CFC and zero offset.
25. The computer product of claim 22 wherein the sequence of steps comprise:
15 prompting a user to select a material with a known density;
directing the user to flow the material through the Coriolis flow meter;
measuring the density of the material using the Coriolis flow meter;
comparing the measured density with the known density;
when the measured density is different than the known density by more than a
20 predetermined amount, alerting the user that an error condition exists.
26. The computer product of claim 25, wherein the steps further comprise:
prompting the user to select a required accuracy for the Coriolis flow meter;
determining a density deviation from the known density that corresponds to the
25 required accuracy;
setting the predetermined amount equal to the density deviation.
27. The computer product of claim 26 where the relationship between the required
accuracy (RC) and the density deviation (DD) is $DD\text{ g/cc} = \pm \left(\frac{0.001\text{g/cc} * RC}{0.06\%} \right)$.
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28. The computer product of claim 25 further comprising:
measuring the stability, over a given time period, of at least one parameter used by
the Coriolis flow meter before starting the density measurement of the material with the
known density.

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29. The computer product of claim 28 where the at least one parameter is selected from
the group: density, live zero, temperature, drive gain, and flow.

30. The computer product of claim 22 where the selected predefined task is the
10 verification of the flow calibration factor for the Coriolis flow meter.

31. The computer product of claim 22 where the selected predefined task is proving the
Coriolis flow meter using a prover.

15 32. The computer product of claim 22 where the selected predefined task is the
linearization of the Coriolis flow meter using information from two proving runs at two
different flow rates.