What is claimed is:

1. Meter electronics (20) for obtaining a flow fluid viscosity at a predetermined reference temperature, with the meter electronics (20) comprising:

an interface (201) configured to exchange communications;

a storage system (204) configured to store a predetermined reference temperature (211), a measured fluid viscosity (214), a measured fluid temperature (215), and a temperature-viscosity relational data (218) that relates temperature to viscosity over a predetermined range of flow fluid temperatures; and

a processing system (203) coupled to the interface (201) and to the storage system (204), with the processing system (203) configured to obtain the measured fluid temperature (215), obtain the measured fluid viscosity (214), and generate a reference temperature viscosity (227) using the measured fluid viscosity (214) and the temperature-viscosity relational data (218), with the generated reference temperature viscosity (227) corresponding to the predetermined reference temperature (211).

2. The meter electronics (20) of claim 1, wherein the temperature-viscosity relational data (218) relates temperature to viscosity for two or more flow fluids over a predetermined range of flow fluid temperatures.

3. The meter electronics (20) of claim 1, wherein one or both of the measured fluid viscosity (214) and the measured fluid temperature (215) are obtained using a vibratory sensor (5).

4. The meter electronics (20) of claim 1, with the temperature-viscosity relational data (218) comprising a polynomial equation.

5. The meter electronics (20) of claim 1, with the temperature-viscosity relational data (218) comprising a polynomial equation of a predetermined polynomial order (223).

6. The meter electronics (20) of claim 1, wherein the temperature-viscosity relational data (218) comprises a relational expression stored as a mathematical equation.

7. The meter electronics (20) of claim 1, wherein the temperature-viscosity relational data (218) comprises a relational expression stored as a data structure.

8. The meter electronics (20) of claim 1, with the storage system (204) storing two or more reference flow fluid curves (221) and a predetermined polynomial order (223), with the processing system (203) being configured to obtain the predetermined polynomial order (223) and create the temperature-viscosity relational data (218) from the two or more reference flow fluid curves (221), the measured fluid temperature (215), the predetermined reference temperature (211), and the predetermined polynomial order (223).

9. A method of obtaining a flow fluid viscosity at a predetermined reference temperature, the method comprising:

obtaining a measured fluid temperature;

obtaining a measured fluid viscosity; and

generating a reference temperature viscosity using the measured fluid viscosity and a temperature-viscosity relational data that relates temperature to viscosity over a predetermined range of flow fluid temperatures, with the generated reference temperature viscosity corresponding to the predetermined reference temperature.

10. The method of claim 9, wherein the temperature-viscosity relational data relates temperature to viscosity for two or more flow fluids over a predetermined range of flow fluid temperatures.

11. The method of claim 9, wherein one or both of the measured fluid viscosity and the measured fluid temperature are obtained using a vibratory sensor.

12. The method of claim 9, with the temperature-viscosity relational data comprising a polynomial equation.

13. The method of claim 9, with the temperature-viscosity relational data comprising a polynomial equation of a predetermined polynomial order.

14. The method of claim 9, wherein the temperature-viscosity relational data comprises a relational expression stored as a mathematical equation.

15. The method of claim 9, wherein the temperature-viscosity relational data comprises a relational expression stored as a data structure.

16. The method of claim 9, wherein the temperature-viscosity relational data is generated from two or more reference flow fluid curves using curve fitting.

17. The method of claim 9, further comprising the preliminary steps of:
obtaining a predetermined polynomial order to be used; and
creating the temperature-viscosity relational data from two or more reference flow fluid curves, the measured fluid temperature, the predetermined reference temperature, and the predetermined polynomial order.

18. The method of claim 9, further comprising the preliminary steps of:
measuring viscosity of a particular flow fluid at two or more temperatures to create two or more temperature-viscosity data points for the particular flow fluid;
processing two or more flow fluids and accumulating a plurality of temperature-viscosity data points for the two or more flow fluids to create two or more flow fluid curves;
obtaining a predetermined polynomial order to be used; and
creating the temperature-viscosity relational data from the two or more reference flow fluid curves, the measured fluid temperature, the predetermined reference temperature, and the predetermined polynomial order.

What is claimed is:

1. Meter electronics (20) for obtaining a flow fluid viscosity at a predetermined reference temperature, with the meter electronics (20) comprising:

an interface (201) configured to receive sensor signals from a meter assembly (10);

a storage system (204) configured to store a predetermined reference temperature (211), a measured fluid viscosity (214), a measured fluid temperature (215), and a temperature-viscosity relational data (218) that relates temperature to viscosity over a predetermined range of flow fluid temperatures; and

a processing system (203) coupled to the interface (201) and to the storage system (204), with the processing system (203) configured to obtain the measured fluid temperature (215), obtain the measured fluid viscosity (214) using a vibratory sensor, and generate a reference temperature viscosity (227) using the measured fluid viscosity (214) and the temperature-viscosity relational data (218), with the generated reference temperature viscosity (227) corresponding to the predetermined reference temperature (211); and

wherein the processing system (203) is configured to create the temperature-viscosity relational data (218) from the two or more flow fluid curves (221), the measured fluid temperature (215), the predetermined reference temperature (211), wherein the flow fluid curves (221) reflect temperature-viscosity relationships for two or more reference flow fluids.

2. The meter electronics (20) of claim 1, wherein the temperature-viscosity relational data (218) relates temperature to viscosity for two or more flow fluids over a predetermined range of flow fluid temperatures.

3. The meter electronics (20) of claim 1, wherein the measured fluid temperature (215) is obtained using a vibratory sensor (5).

4. The meter electronics (20) of claim 1, with the temperature-viscosity relational data (218) comprising a polynomial equation.

5. The meter electronics (20) of claim 1, with the temperature-viscosity relational data (218) comprising a polynomial equation of a predetermined polynomial order (223).

6. The meter electronics (20) of claim 1, wherein the temperature-viscosity relational data (218) comprises a relational expression stored as a mathematical equation.

7. The meter electronics (20) of claim 1, wherein the temperature-viscosity relational data (218) comprises a relational expression stored as a data structure.

8. The meter electronics (20) of claim 1, with the storage system (204) storing two or more reference flow fluid curves (221) and a predetermined polynomial order (223), with the processing system (203) being configured to obtain the predetermined polynomial order (223) and create the temperature-viscosity relational data (218) from the two or more reference flow fluid curves (221), the measured fluid temperature (215), the predetermined reference temperature (211), and the predetermined polynomial order (223).

9. A method of obtaining a flow fluid viscosity at a predetermined reference temperature, the method comprising:

obtaining a measured fluid temperature;

obtaining a measured fluid viscosity; and

generating a reference temperature viscosity using the fluid viscosity measured by a vibratory sensor and a temperature-viscosity relational data that relates temperature to viscosity over a predetermined range of flow fluid temperatures, with the generated reference temperature viscosity corresponding to the predetermined reference temperature; and

wherein the temperature-viscosity relational data is created from two or more flow fluid curves, the measured fluid temperature, and the predetermined reference temperature, wherein the flow fluid curves reflect a temperature-viscosity relationship for two or more reference flow fluids.

10. The method of claim 9, wherein the temperature-viscosity relational data relates temperature to viscosity for two or more flow fluids over a predetermined range of flow fluid temperatures.

11. The method of claim 9, wherein the measured fluid temperature is obtained using a vibratory sensor.

12. The method of claim 9, with the temperature-viscosity relational data comprising a polynomial equation.

13. The method of claim 9, with the temperature-viscosity relational data comprising a polynomial equation of a predetermined polynomial order.

14. The method of claim 9, wherein the temperature-viscosity relational data comprises a relational expression stored as a mathematical equation.

15. The method of claim 9, wherein the temperature-viscosity relational data comprises a relational expression stored as a data structure.

16. The method of claim 9, wherein the temperature-viscosity relational data is generated from two or more reference flow fluid curves using curve fitting.

17. The method of claim 9, further comprising the preliminary steps of:
obtaining a predetermined polynomial order to be used; and
creating the temperature-viscosity relational data from the predetermined polynomial order.

18. The method of claim 9, further comprising the preliminary steps of:

measuring viscosity of a particular flow fluid at two or more temperatures to create two or more temperature-viscosity data points for the particular flow fluid; and

processing two or more flow fluids and accumulating a plurality of temperature-viscosity data points for the two or more flow fluids to create two or more flow fluid curves.

19. The method of claim 9, further comprising a quality factor (Q) defined as a measure of the rate at which a vibrating tine dissipates energy and is a function of the dampening of the tine imposed by the viscosity of the measured fluid, which is used to calculate the measured fluid viscosity.