What is claimed is:

1. A curved tube vibrating flow meter (5), comprising:

a flow tube temperature sensor T_T (190) affixed to one or more curved flow tubes (131, 131') of the curved tube vibrating flow meter (5), with the flow tube temperature sensor T_T (190) generating a flow tube temperature signal;

a plurality of case temperature sensors T_C (303) affixed to one or more case locations of a case (300) of the curved tube vibrating flow meter (5) and generating a case temperature signal, wherein a plurality of case temperature sensor resistances at the one or more case locations form a combined case resistance related to thermal importances of the one or more case locations; and

meter electronics (20) configured to receive the flow tube temperature signal, receive the case temperature signal, and compensate the curved tube vibrating flow meter (5) for thermal stress using the flow tube temperature signal and the case temperature signal.

2. The curved tube vibrating flow meter (5) of claim 1, further comprising a single curved tube vibrating flow meter (5).

3. The curved tube vibrating flow meter (5) of claim 1, further comprising a dual curved tube vibrating flow meter (5).

4. The curved tube vibrating flow meter (5) of claim 1, wherein the plurality of case temperature sensors T_C (303) generate a representative case temperature signal.

5. The curved tube vibrating flow meter (5) of claim 1, with the one or more case locations comprising two or more case locations, wherein the plurality of case temperature sensors T_C (303) form a predetermined case resistance ratio related to thermal importances of each case location of the two or more case locations.

6. The curved tube vibrating flow meter (5) of claim 1, with the meter electronics (20) being further configured to compensate the curved tube vibrating flow meter (5) for a change in curved tube bending stress with a change in temperature, with the compensating using the flow tube temperature signal and the case temperature signal.

7. The curved tube vibrating flow meter (5) of claim 1, wherein the curved tube vibrating flow meter (5) includes a manifold (150 or 150') and a first case temperature sensor T_C (303) is located on the case (300) substantially at the manifold (150 or 150').

8. The curved tube vibrating flow meter (5) of claim 1, wherein a second case temperature sensor T_C (303B) is located substantially on the case (300) between tube ends.

9. A curved tube vibrating flow meter (5), comprising:

a flow tube temperature sensor T_T (190) affixed to one or more curved flow tubes (131, 131') of the curved tube vibrating flow meter (5), with the flow tube temperature sensor T_T (190) generating a flow tube temperature signal;

a plurality of case temperature sensors T_C (303) affixed to two or more case locations of a case (300) of the curved tube vibrating flow meter (5) and generating a case temperature signal, wherein a plurality of case temperature sensor resistances at the two or more case locations form a predetermined case resistance related to thermal importances of the two or more case locations,

meter electronics (20) configured to receive the flow tube temperature signal, receive the case temperature signal, and compensate the curved tube vibrating flow meter (5) for thermal stress using the flow tube temperature signal and the case temperature signal.

10. The curved tube vibrating flow meter (5) of claim 9, further comprising a single curved tube vibrating flow meter (5).

11. The curved tube vibrating flow meter (5) of claim 9, further comprising a dual curved tube vibrating flow meter (5).

12. The curved tube vibrating flow meter (5) of claim 9, wherein the plurality of case temperature sensors T_C (303) generate a representative case temperature signal.

13. The curved tube vibrating flow meter (5) of claim 9, with the meter electronics (20) being further configured to compensate the curved tube vibrating flow meter (5) for a change in curved tube bending stress with a change in temperature, with the compensating using the flow tube temperature signal and the case temperature signal.

14. The curved tube vibrating flow meter (5) of claim 9, wherein the curved tube vibrating flow meter (5) includes a manifold (150 or 150') and a first case temperature sensor T_C (303) is located on the case (300) substantially at the manifold (150 or 150').

15. The curved tube vibrating flow meter (5) of claim 9, wherein a second case temperature sensor T_C (303B) is located substantially on the case (300) between tube ends.

16. A thermal stress compensation method in a curved tube vibrating flow meter, the method comprising:

measuring a flow tube temperature of a curved flow tube of the curved tube vibrating flow meter and generating a flow tube temperature signal;

measuring a case temperature using a plurality of case temperature sensors affixed to one or more case locations of a case of the curved tube vibrating flow meter and generating a case temperature signal, wherein a plurality of case temperature sensor resistances at the one or more case locations form a combined case resistance related to thermal importances of the one or more case locations; and

compensating the curved tube vibrating flow meter for thermal stress using the flow tube temperature signal and the case temperature signal.

17. The method of claim 16, with the curved tube vibrating flow meter comprising a single curved tube vibrating flow meter.

18. The method of claim 16, with the curved tube vibrating flow meter comprising a dual curved tube vibrating flow meter.

19. The method of claim 16, wherein the plurality of case temperature sensors generate a representative case temperature signal.

20. The method of claim 16, with the one or more case locations comprising two or more case locations, wherein the two or more case temperature sensors form a predetermined case resistance ratio related to thermal importances of each case location of the two or more case locations.

21. The method of claim 16, further comprising compensating the curved tube vibrating flow meter for a change in bending stress with a change in temperature, with the compensating using the flow tube temperature signal and the case temperature signal.

What is claimed is:

1. A curved tube vibrating flow meter (5), comprising:

a flow tube temperature sensor T_T (190) affixed to one or more curved flow tubes (131, 131') of the curved tube vibrating flow meter (5), with the flow tube temperature sensor T_T (190) generating a flow tube temperature signal;

a plurality of case temperature sensors T_C (303) affixed to two or more case locations of a case (300) of the curved tube vibrating flow meter (5) and generating a case temperature signal, wherein each respective case location of the two or more case locations corresponds to a respective thermal importance of thermal stress in the flow tube at that respective case location, and the plurality of case temperature sensor resistances at the two or more case locations form a combined case resistance related to thermal importances of the two or more case locations; and

meter electronics (20) configured to receive the flow tube temperature signal, receive the case temperature signal, and compensate the curved tube vibrating flow meter (5) for thermal stress using the flow tube temperature signal and the case temperature signal.

2. The curved tube vibrating flow meter (5) of claim 1, further comprising a single curved tube vibrating flow meter (5).

3. The curved tube vibrating flow meter (5) of claim 1, further comprising a dual curved tube vibrating flow meter (5).

4. The curved tube vibrating flow meter (5) of claim 1, wherein the plurality of case temperature sensors T_C (303) generate a representative case temperature signal.

5. The curved tube vibrating flow meter (5) of claim 1, wherein the plurality of case temperature sensors T_C (303) form a predetermined case resistance ratio related to thermal importances of each case location of the two or more case locations.

6. The curved tube vibrating flow meter (5) of claim 1, with the meter electronics (20) being further configured to compensate the curved tube vibrating flow meter (5) for a change in curved tube bending stress with a change in temperature, with the compensating using the flow tube temperature signal and the case temperature signal.

7. The curved tube vibrating flow meter (5) of claim 1, wherein the curved tube vibrating flow meter (5) includes a manifold (150 or 150') and a first case temperature sensor T_C (303) is located on the case (300) substantially at the manifold (150 or 150').

8. The curved tube vibrating flow meter (5) of claim 1, wherein a second case temperature sensor T_C (303B) is located substantially on the case (300) between tube ends.

9. A curved tube vibrating flow meter (5), comprising:

a flow tube temperature sensor T_T (190) affixed to one or more curved flow tubes (131, 131') of the curved tube vibrating flow meter (5), with the flow tube temperature sensor T_T (190) generating a flow tube temperature signal;

a plurality of case temperature sensors T_C (303) affixed to two or more case locations of a case (300) of the curved tube vibrating flow meter (5) and generating a case temperature signal, wherein each respective case location of the two or more case locations corresponds to a respective thermal importance of thermal stress in the flow tube at that respective case location, and the plurality of case temperature sensor resistances at the two or more case locations form a predetermined case resistance related to thermal importances of the two or more case locations; and

meter electronics (20) configured to receive the flow tube temperature signal, receive the case temperature signal, and compensate the curved tube vibrating flow meter (5) for thermal stress using the flow tube temperature signal and the case temperature signal.

10. The curved tube vibrating flow meter (5) of claim 9, further comprising a single curved tube vibrating flow meter (5).

11. The curved tube vibrating flow meter (5) of claim 9, further comprising a dual curved tube vibrating flow meter (5).

12. The curved tube vibrating flow meter (5) of claim 9, wherein the plurality of case temperature sensors T_C (303) generate a representative case temperature signal.

13. The curved tube vibrating flow meter (5) of claim 9, with the meter electronics (20) being further configured to compensate the curved tube vibrating flow meter (5) for a change in curved tube bending stress with a change in temperature, with the compensating using the flow tube temperature signal and the case temperature signal.

14. The curved tube vibrating flow meter (5) of claim 9, wherein the curved tube vibrating flow meter (5) includes a manifold (150 or 150') and a first case temperature sensor T_C (303) is located on the case (300) substantially at the manifold (150 or 150').

15. The curved tube vibrating flow meter (5) of claim 9, wherein a second case temperature sensor T_C (303B) is located substantially on the case (300) between tube ends.

16. A thermal stress compensation method in a curved tube vibrating flow meter, the method comprising:

measuring a flow tube temperature of a curved flow tube of the curved tube vibrating flow meter and generating a flow tube temperature signal;

measuring a case temperature using a plurality of case temperature sensors affixed to two or more case locations of a case of the curved tube vibrating flow meter and generating a case temperature signal, wherein each respective case location of the one or more case locations corresponds to a respective thermal importance of thermal stress in the flow tube at that respective case location, and the plurality of case temperature sensor resistances at the two or more case locations form a combined case resistance related to thermal importances of the two or more case locations; and

compensating the curved tube vibrating flow meter for thermal stress using the flow tube temperature signal and the case temperature signal.

17. The method of claim 16, with the curved tube vibrating flow meter comprising a single curved tube vibrating flow meter.

18. The method of claim 16, with the curved tube vibrating flow meter comprising a dual curved tube vibrating flow meter.

19. The method of claim 16, wherein the plurality of case temperature sensors generate a representative case temperature signal.

20. The method of claim 16, wherein the two or more case temperature sensors form a predetermined case resistance ratio related to thermal importances of each case location of the two or more case locations.

21. The method of claim 16, further comprising compensating the curved tube vibrating flow meter for a change in bending stress with a change in temperature, with the compensating using the flow tube temperature signal and the case temperature signal.