## CLAIMS

1. A Coriolis flow sensor comprising:

a flow tube constructed from a material with Young's modulus of at least 50 GPa; and

an enclosure that encloses the flow tube, the enclosure constructed at least partially from a gamma transparent material, wherein the gamma transparent material and the flow tube are thin enough to permit sterilization of an interior of the flow tube by gamma irradiation of the flow tube through the gamma transparent material; and

the enclosure shaped to facilitate locking and unlocking the Coriolis flow sensor in place on a mounting structure.

2. The Coriolis flow sensor of claim 1 wherein the flow tube is a metal flow tube.

3. The Coriolis flow sensor of claim 2 wherein the metal flow tube is constructed from a stainless steel.

4. The Coriolis flow sensor of claim 2 wherein the metal flow tube is constructed from Hastelloy, monel, nickel, titanium, or tantalum.

5. The Coriolis flow sensor of claim 2 wherein the metal flow tube is constructed from a non-magnetic metal.

6. The Coriolis flow sensor of claim 2 wherein the metal flow tube has a wall thickness not greater than the wall thickness shown in the following table:

| Outer diameter of flow tube (inches) | Maximum wall thickness (inches) |
|---|---|
| 1/4" | 0.040 |
| 3/8" | 0.056 |
| 1/2" | 0.070 |
| 3/4" | 0.070 |
| 1" | 0.094 |
| 2" | 0.130 |

7. The Coriolis flow sensor of claim 1 wherein the flow tube is constructed from zirconium.

8. The Coriolis flow sensor of claim 1 wherein the gamma transparent material is plastic or polycarbonate.

9. The Coriolis flow sensor of claim 1 further comprising a gamma stable memory that stores calibration data for the Coriolis flow sensor.

10. The Coriolis flow sensor of claim 1 wherein the Coriolis flow sensor has an accuracy of +/-1% of a flow rate over an operating range that has a turndown ratio of maximum flow rate to minimum flow rate of at least 200.

11. The Coriolis flow sensor of claim 1 wherein the Coriolis flow sensor is sterilizable by at least one of a clean-in-place process, a steam-in-place process, ethylene oxide cleaning, sodium hydroxide cleaning and x-ray sterilization.

12. The Coriolis flow sensor of claim 1 wherein the Coriolis flow sensor is a disposable, single-use flow sensor.

13. The Coriolis flow sensor of claim 1 wherein the Coriolis flow sensor is suitable for use in single-use applications, in multi-use applications and in continuous use applications.

14. A flow process system comprising:

a skid for supporting equipment used in an environment that includes a flow of fluid;

a Coriolis flow sensor for measuring a flow rate of fluid flow, the Coriolis flow sensor comprising:

a flow tube constructed from a material with Young's modulus of at least 50 GPa; and

an enclosure that encloses the flow tube, the enclosure constructed at least partially from a gamma transparent material, wherein the gamma transparent material and the flow tube are thin enough to permit sterilization of an interior of the flow tube by gamma irradiation of the flow tube through the gamma transparent material;

a cradle attached to the skid, the cradle having a mounting structure for the Coriolis flow sensor, wherein the cradle has a mass of at least ten (10) times a mass of the Coriolis flow sensor and the enclosure is shaped to facilitate locking and unlocking the Coriolis flow sensor in place on the mounting structure;

a locking mechanism that locks the Coriolis flow sensor in place on the mounting structure, wherein the locking mechanism produces sufficient locking force that the Coriolis flow sensor and cradle vibrate as a unitary body but the locking mechanism is also unlockable to release the Coriolis flow sensor.

15. The flow process system of claim 14 wherein:

the cradle comprises a rectangular collar that includes most of the mass of the cradle; and

the mounting structure comprises a rectangular annular lip against which the Coriolis flow sensor is mounted, the locking mechanism applying force to the Coriolis flow sensor against the lip.

16. The flow process system of claim 14 wherein the Coriolis flow sensor has a zero drift of not more than 2.5 g/min.

17. The flow process system of claim 14 wherein the Coriolis flow sensor has a zero drift of not more than 1% of a minimum flow rate measured by the Coriolis flow sensor.

18. A flow process system comprising:

a skid for supporting equipment used in an environment that includes a flow of fluid;

a mixing manifold mounted on the skid;

a first flow path connected to the mixing manifold, and a first pump and a first Coriolis flow sensor positioned along the first flow path and mounted on the skid, wherein a first fluid flows through the first pump and the first Coriolis flow sensor and into the mixing manifold;

a second flow path connected to the mixing manifold, and a second pump and a second Coriolis flow sensor positioned along the second flow path and mounted on the skid, wherein a second fluid flows through the second pump and the second Coriolis flow sensor and into the mixing manifold; and

a third flow path connected to the mixing manifold, wherein a third fluid flows out of the mixing manifold, the third fluid comprising a mixture of the first and second fluids;

wherein each of the Coriolis flow sensors comprises:

a flow tube constructed from a material with Young's modulus of at least 50 GPa; and

an enclosure that encloses the flow tube, the enclosure constructed at least partially from a gamma transparent material, wherein the gamma transparent material and the flow tube are thin enough to permit sterilization of an interior of the flow tube by gamma irradiation of the flow tube through the gamma transparent material.

19. The flow process system of claim 18 wherein each of the Coriolis flow sensors is disposable and/or single-use.

20. The flow process system of claim 18 wherein each of the Coriolis flow sensors includes a manually operable locking mechanism that permits removal and replacement of the Coriolis flow sensor in one minute or less.