CLAIMS

The invention claimed is:

1. A pressure sensor for measuring gas or liquid pressure comprising:

a chamber having an inlet that receives the gas or liquid;

a flexible diaphragm within the chamber that has a surface that is exposed to the gas or liquid after it flows through the inlet;

a pressure sensor system that senses changes in the flexible diaphragm caused by changes in the pressure of the gas or liquid;

a pressure-insensitive sensor system that senses changes in the flexible diaphragm not caused by changes in the pressure of the gas or liquid and that is insensitive to changes in the flexible diaphragm caused by changes in the pressure of the gas or liquid, wherein the pressure-insensitive sensor system comprises a local sensor at a pressure-insensitive location on or within the flexible diaphragm that experiences changes, but not in response to changes in the pressure of the gas or liquid; and

a life measurement system that provides information indicative of a projected remaining life of the pressure sensor system based on changes to the flexible diaphragm sensed by the pressure-insensitive sensor system.

2. The pressure sensor of claim 1, wherein the pressure-insensitive sensor system includes a local sensor on a surface of the flexible diaphragm that is exposed to the gas or liquid.

3. The pressure sensor of claim 1, wherein the pressure-insensitive sensor system includes a local sensor on a surface the flexible diaphragm that is not exposed to the gas or liquid.

4. The pressure sensor of claim 1, wherein the pressure-insensitive sensor system includes a local sensor embedded within the flexible diaphragm.

5. The pressure sensor of claim 1 wherein:

the pressure sensor system includes a variable capacitor that has a capacitance that changes in response to changes in the pressure of the gas or liquid; and

the flexible diaphragm is made of electrically-conductive material and is part of the variable capacitor.

6. The pressure sensor of claim 1, wherein the pressure-insensitive sensor system includes a strain gauge that has a resistance that changes in response to changes in the flexible diaphragm.

7. The pressure sensor of claim 1, wherein the pressure-insensitive sensor system includes a piezoelectric sensor that has a voltage that changes in response to changes in the flexible diaphragm.

8. The pressure sensor of claim 1, further comprising a compensation system that compensates for errors in measurements made by the pressure sensor system because of changes in the flexible diaphragm not caused by changes in the pressure of the gas or liquid based on changes to the flexible diaphragm sensed by the pressure-insensitive sensor system.

9. The pressure sensor of claim 1, wherein the life measurement system includes a warning system that issues a warning when the projected remaining life of the pressure sensor system equals or exceeds a threshold.