WHAT IS CLAIMED IS:

1. A method for determining the amount of corrosion which has occurred on an interior surface of a process unit due to a corrosive fluid comprising:

(a) providing a corrosion sensor that is located within the process unit; wherein the corrosion sensor is a metal loss sensor, an electronical resistance sensor, or a linear polarization sensor;

(b) exposing the corrosion sensor to a corrosive fluid within the process unit;

(c) determining the corrosion that has occurred on the corrosion sensor, and

(d) relating the corrosion of the corrosion sensor to the amount of corrosion which has occurred on at least one point on a surface of the process unit; wherein the at least one point on a surface of the process unit is at a point other than where the corrosion sensor is located and wherein the at least one point on a surface of the process unit is an interior wall of a pressure containment boundary; wherein the relating of the corrosion on the corrosion sensor to the corrosion on the process unit comprises:

(i) determining a corrosion rate of the corrosion sensor;

(ii) determining a corrosion rate at the at least one point on a surface of the process unit; wherein the determining the rate of corrosion at the at least one point on a surface of the process unit comprises determining the rate of corrosion as a function of shear stress at the at least one point; and

(iii) calculating a ratio of the corrosion rate of the corrosion sensor to the corrosion rate at the at least one point on a surface of the process unit.

2. The method of claim 1 wherein said one point is an interior wall of a pipe.

3. The method of claim 1 wherein said corrosion sensor is a mechanical oscillator.

4. The method of claim 3 wherein said corrosion sensor is a tuning fork having a resonance frequency.

5. The method of claim 1 wherein said corrosion sensor outputs an electrical signal.

6. The method of claim 1 wherein the method is corrected for scale forming on the corrosion sensor.

7. The method of claim 1, wherein the determining the corrosion that has occurred on the corrosion sensor includes comparing the metal loss on the corrosion sensor to a non-corroding reference probe.