

What is claimed is:

1. A method of detecting impurities in a refrigerant utilizing a refrigerant analyzer, wherein the refrigerant analyzer includes an electrochemical sensor operably coupled to a control device, the electrochemical sensor including a counter electrode disposed within an atmospheric regulated chamber and a sensing electrode disposed within a sensing chamber, the method comprising the steps:

(a) circulating air through the sensing chamber for an initialization duration of time to obtain an initial output value;

(b) determining whether the initial output value is stabilized below a pre-determined initial limit;

(c) circulating a refrigerant through the sensing chamber for a sensing duration of time;

(d) operating the control device to measure a sensed output value; and

(e) operating the control device to determine a measured concentration of at least one contaminant within the refrigerant based on the sensed output value.

2. The method of claim 1, further comprising, after step (b) and prior to step (c), circulating a first medium through the sensing chamber for a baseline duration of time to obtain a baseline value.

3. The method of claim 2, further comprising:

determining whether the baseline value is less than or equal to the initial output value;
and

determining whether the baseline value is increasing, if the baseline value is greater than the initial output value.

4. The method of claim 1, wherein step (e) further comprises operating the control device to produce a signal indicative of the presence of contaminant(s) within the refrigerant.
5. The method of claim 1, wherein the initialization duration of time is greater than or equal to approximately 5 minutes.
6. The method of claim 4, wherein the contaminant(s) comprises methyl chloride.
7. The method of claim 4, wherein the signal is selected from a group consisting of an audio and a visual signal.
8. The method of claim 2, wherein the baseline duration of time is less than or equal to approximately 3 minutes.
9. The method of claim 2, wherein the first medium comprises a dry gas.
10. The method of claim 1, wherein the sensing duration of time is less than or equal to approximately 3 minutes.
11. The method of claim 2, wherein the measured concentration comprises the difference between the sensed output value and the baseline value.
12. The method of claim 1, wherein the measured concentration comprises the difference between the sensed output value and the initial output value.
13. A refrigerant analyzer to detect impurities in a refrigerant comprising:
 - a pump, wherein the pump is configured to circulate air;
 - a filtering device operably coupled to the pump;
 - an electrochemical sensor, wherein the electrochemical sensor is configured to allow a refrigerant to flow therethrough to establish a sensed output value;
 - a control device operably coupled to the electrochemical sensor, wherein the control device is configured to measure the initial output value of air, measure the sensed output value of

the refrigerant, and determine a measured concentration of at least one contaminant within the refrigerant based on the sensed output value; and

a humidity regulator operably coupled to the electrochemical sensor and the filtering device, wherein the humidity regulator is configured to regulate a humidity value.

14. The refrigerant analyzer of claim 13, wherein the electrochemical sensor is further configured to allow a first medium to flow therethrough to establish a baseline value.

15. The refrigerant analyzer of claim 13, where the measured concentration comprises the difference between the sensed value and the initial output value.

16. The refrigerant analyzer of claim 14, wherein the measured concentration comprises the difference between the sensed output value and the baseline value.

17. The refrigerant analyzer of claim 14, wherein the control device is further configured to determine whether the baseline value is less than or equal to the initial output value.

18. The refrigerant analyzer of claim 13, wherein the control device is further configured to produce a signal indicative of the presence of the at least one contaminant within refrigerant.

19. The refrigerant analyzer of claim 18, wherein the at least one contaminant comprises methyl chloride.

20. The refrigerant analyzer of claim 13, wherein the humidity value is less than or equal to approximately 60 percent relative humidity.

21. The refrigerant analyzer of claim 13, wherein the first medium comprises a dry gas.