Claims

1. An odor removal system, comprising:

an exhaust hood configured to capture fumes from a cooking appliance;

the exhaust hood conveying fumes to a particulate removal stage which conveys the fumes to an odor removal stage; and

a single volatile organic compound (VOC) sensor with a sampling device having a first sampling port and a second sampling port configured to convey samples of fumes from upstream and downstream of the odor removal stage, respectively, to the VOC sensor.

2. The system of claim 1, wherein the odor removal stage includes a carbon filter.

3. The system of claim 2, wherein the odor removal stage also includes an ultraviolet light source.

4. The system of claim 1 wherein the particulate removal stage includes a pocket filter.

5. The system of claim 1 wherein the particulate removal stage includes an electrostatic precipitator filter.

6. The system of claim 2, further comprising:

a controller that receives signals from the single VOC sensor and uses the signals to generate data indicative of a remaining life of the carbon filter.

7. The system of claim 1, wherein the sampling device conveys the samples of fumes intermittently to the single VOC sensor in order to obtain signals from different locations from the single VOC sensor.

8. A method of estimating a remaining life of a filter in a flow path, comprising:

providing a first sensing location along the flow path upstream of the filter;

providing a second sensing location along the flow path downstream of the filter;

providing a single volatile organic compound sensor in fluid communication with the first sensing location through a first sampling port and in fluid communication with the second sensing location through a second sampling port;

detecting a quality of air at the first sensing location, using the single volatile organic compound sensor;

detecting the quality of air at the second sensing location, using the single volatile organic compound sensor;

comparing the detected quality of air from the first sensing location with the detected quality of air from the second sensing location; and

outputting a measure of the remaining life of the filter based on a result of the comparing.

9. The method of claim 8, wherein

the detecting the quality of air at the first sensing location includes outputting a first signal from the single volatile organic compound sensor, and

the detecting the quality of air at the second sensing location includes outputting a second signal from the single volatile organic compound sensor.

10. The method of claim 9, wherein

the comparing the detected quality of air includes providing the first signal and the second signal to a device.

11. The method of claim 10, wherein

the device is one of a full adder, a half adder, a full subtractor, a half subtractor, and an analog circuit that includes an operational amplifier.

12. The method of claim 10, wherein

the device is a digital controller.

13. The method of claim 11, wherein

the device outputs an output signal that represents the remaining life of the filter.

14. The method of claim 13, wherein

a voltage level of the output signal represents the remaining life of the filter.

15. The method of claim 13, wherein

the output signal represents the remaining life of the filter as a digital signal.

16. The system of claim 1, further comprising a flow switch and an air pump configured to alternately convey air from tubes upstream of the odor removal stage and downstream of the odor removal stage, respectively, to the single VOC sensor.