From:	WESTERSUND Joe
To:	FELDON Leah; DAVIS George; JOHNSON Keith; GRUNOW Greg; KAUTH Dave; PALERMO Jaclyn
Cc:	GARRAHAN Paul; artglass2016
Subject:	FYI re baghouse leak detection systems
Date:	Thursday, August 04, 2016 3:23:18 PM
Attachments:	Auburn Systems - Bag Leak Detection System Discussion.msg

Hi All,

FYI- I had a phone call with Earl Parker of Auburn Systems, a manufacturer of baghouse leak detection systems (BLDS). I reached out to his company to try to learn more about this type of system. A copy of his followup email with his contact info is attached. Here's what I learned:

- There are two types of baghouse leak detection systems- triboelectric and optical. According to Earl, triboelectric systems are less expensive, more sensitive, and require less maintenance so are a more likely choice for this application.
- The simplest systems just trip an alarm (a 'relay contact') if they sense a leak, with no data logging. Others have continuous data output that can be monitored and recorded on a PC.
- The cost for a 'continuous data output' type system is about $2,500 per sensor. If they don't already have a data logging system for other parts of their factory, it could be an additional $5,000 to set up a PC and get that connected to the leak detector. A baghouse might have 1 or 2 sensors, so the **total installed cost of a system is likely $2,500 to $10,000 per facility**.
- EPA has language requiring a BLDS in the NESHAP 6S regulation (pasted in below). **I suggest we consider using the BLDS language from NESHAP 6S verbatim**, perhaps taking out the ESP section because no current sources are going that direction.

Your comments welcome. I'll also forward this to Katie McClintock to get her thoughts.

-Joe

Joe Westersund
Oregon Department of Environmental Quality
811 SW 6th Avenue, Portland, OR 97204
(503) 229-6240 office
westersund.joe@deq.state.or.us
Usual Schedule: 8am - 5pm, M-F

NESHAP Subpart SSSSSS—National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources
40 CFR §63.11453

(c) For each new affected furnace that is subject to the emission limit specified in Table 1 to this subpart and is **controlled with a fabric filter**, you must install, operate, and maintain a bag leak detection system according to paragraphs (c)(1) through (3) of this section.

(1) Each bag leak detection system must meet the specifications and requirements in paragraphs (c)(1)(i) through (viii) of this section.

(i) The bag leak detection system must be certified by the manufacturer to be

capable of detecting PM emissions at concentrations of 1 milligram per dry standard cubic meter (0.00044 grains per actual cubic foot) or less.

(ii) The bag leak detection system sensor must provide output of relative PM loadings. The owner or operator shall continuously record the output from the bag leak detection system using electronic or other means (e.g., using a strip chart recorder or a data logger).

(iii) The bag leak detection system must be equipped with an alarm system that will sound when the system detects an increase in relative particulate loading over the alarm set point established according to paragraph (c)(1)(iv) of this section, and the alarm must be located such that it can be heard by the appropriate plant personnel.

(iv) In the initial adjustment of the bag leak detection system, you must establish, at a minimum, the baseline output by adjusting the sensitivity (range) and the averaging period of the device, the alarm set points, and the alarm delay time.

(v) Following initial adjustment, you shall not adjust the averaging period, alarm set point, or alarm delay time without approval from the Administrator or delegated authority except as provided in paragraph (c)(1)(vi) of this section.

(vi) Once per quarter, you may adjust the sensitivity of the bag leak detection system to account for seasonal effects, including temperature and humidity, according to the procedures identified in the site-specific monitoring plan required by paragraph (c)(2) of this section.

(vii) You must install the bag leak detection sensor downstream of the fabric filter.

(viii) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(2) You must develop and submit to the Administrator or delegated authority for approval a site-specific monitoring plan for each bag leak detection system. You must operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. Each monitoring plan must describe the items in paragraphs (c)(2)(i) through (vi) of this section.

(i) Installation of the bag leak detection system;

(ii) Initial and periodic adjustment of the bag leak detection system, including how the alarm set-point will be established;

(iii) Operation of the bag leak detection system, including quality assurance procedures;

(iv) How the bag leak detection system will be maintained, including a routine maintenance schedule and spare parts inventory list;

(v) How the bag leak detection system output will be recorded and stored; and

(vi) Corrective action procedures as specified in paragraph (c)(3) of this section. In approving the site-specific monitoring plan, the Administrator or delegated authority may allow owners and operators more than 3 hours to alleviate a specific condition that causes an alarm if the owner or operator identifies in the monitoring plan this specific condition as one that could lead to an alarm, adequately explains why it is not feasible to alleviate this condition within 3 hours of the time the alarm occurs, and demonstrates that the requested time will ensure alleviation of this condition as expeditiously as practicable.

(3) For each bag leak detection system, you must initiate procedures to determine the cause of every alarm within 1 hour of the alarm. Except as provided in paragraph (c)(2)(vi) of this section, you must alleviate the cause of the alarm within 3 hours of the alarm by taking whatever corrective

action(s) are necessary. Corrective actions may include, but are not limited to the following:

(i) Inspecting the fabric filter for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in PM emissions;

(ii) Sealing off defective bags or filter media;

(iii) Replacing defective bags or filter media or otherwise repairing the control device;

(iv) Sealing off a defective fabric filter compartment;

(v) Cleaning the bag leak detection system probe or otherwise repairing the bag leak detection system; or

(vi) Shutting down the process producing the PM emissions.

(d) For each new affected furnace that is subject to the emission limit specified in Table 1 to this subpart and is **controlled with an ESP**, you must install, operate, and maintain according to the manufacturer's specifications, one or more continuous parameter monitoring systems (CPMS) for measuring and recording the secondary voltage and secondary electrical current to each field of the ESP according to paragraphs (d)(1) through (13) of this section.

(1) The CPMS must have an accuracy of 1 percent of the secondary voltage and secondary electrical current, or better.

(2) Your CPMS must be capable of measuring the secondary voltage and secondary electrical current over a range that extends from a value that is at least 20 percent less than the lowest value that you expect your CPMS to measure, to a value that is at least 20 percent greater than the highest value that you expect your CPMS to measure.

(3) The signal conditioner, wiring, power supply, and data acquisition and recording system of your CPMS must be compatible with the output signal of the sensors used in your CPMS.

(4) The data acquisition and recording system of your CPMS must be able to record values over the entire range specified in paragraph (d)(2) of this section.

(5) The data recording system associated with your CPMS must have a resolution of one-half of the required overall accuracy of your CPMS, as specified in paragraph (d)(1) of this section, or better.

(6) Your CPMS must be equipped with an alarm system that will sound when the system detects a decrease in secondary voltage or secondary electrical current below the alarm set point established according to paragraph (d)(7) of this section, and the alarm must be located such that it can be heard by the appropriate plant personnel.

(7) In the initial adjustment of the CPMS, you must establish, at a minimum, the baseline output by adjusting the sensitivity (range) and the averaging period of the device, the alarm set points, and the alarm delay time.

(8) You must install each sensor of the CPMS in a location that provides representative measurement of the appropriate parameter over all operating conditions, taking into account the manufacturer's guidelines.

(9) You must perform an initial calibration of your CPMS based on the procedures specified in the manufacturer's owner's manual.

(10) Your CPMS must be designed to complete a minimum of one cycle of operation for each successive 15-minute period. To have a valid hour of data, you must have at least three of four equally-spaced data values (or at least 75 percent of the total number of values if you collect more than four data values per hour) for that hour (not including startup, shutdown, malfunction, or out of control periods).

(11) You must record valid data from at least 90 percent of the hours during which the affected source or process operates.

(12) You must record the results of each inspection, calibration, initial validation, and accuracy audit.

(13) At all times, you must maintain your CPMS including, but not limited to, maintaining necessary parts for routine repairs of the CPMS.

(e) For each new affected furnace that is subject to the emission limit specified in Table 1 to this subpart and is **controlled by a device other than a fabric filter or an ESP**, you must prepare and submit a monitoring plan to EPA or the delegated authority for approval. Each plan must contain the information in paragraphs (e)(1) through (5) of this section.

(1) A description of the device;

(2) Test results collected in accordance with §63.11452 verifying the performance of the device for reducing PM or metal HAP to the levels required by this subpart;

(3) Operation and maintenance plan for the control device (including a preventative maintenance schedule consistent with the manufacturer's instructions for routine and long-term maintenance) and continuous monitoring system;

(4) A list of operating parameters that will be monitored to maintain continuous compliance with the applicable emission limits; and

(5) Operating parameter limits based on monitoring data collected during the performance test.