

SUMMARY

Auburn's Bag Leak Detectors saved this South Carolina Aluminum Reduction Facility \$200,000 annually by replacing optical technology.

Problem

Before installing the Auburn system, this aluminum reduction facility relied on optical technology and a team of seven maintenance technicians to visually search for bag leaks by sweeping dust from cell plates. With 18,000 filter bags in service, manually searching for bag leaks was a tedious process. Tears were often not detected until they were several inches in diameter and the floor was covered with inches of dust. Cleanup took hours, interrupting process operations and requiring special clothing and respirators. Labor costs were excessive, permit compliance was at risk, and technicians were not available for more critical needs.

The Search for a Solution

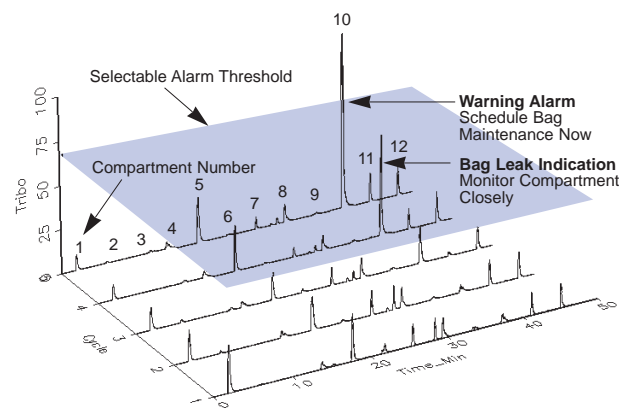
The facility began evaluating Auburn's triboelectric technology as well as an optical device. The criteria was to determine which technology was more reliable, detecting bag leaks sooner and helping to locate bag leaks more quickly, saving labor time. The optical device and Auburn's remote sensors were installed in a 17' diameter stack. After installing both technologies, a controlled test was conducted by punching a 1/4" diameter hole in one of the 3600 filter bags. The pot-line air pollution control system consists of a 12 compartment shaker baghouse with 300 bags (8" dia x 22 ft) in each compartment, covering over 165,000 sq ft of cloth area. Each cleaning cycle takes approximately 50 minutes to shake all 12 compartments. The Auburn bag leak detector was able to detect the minute amount of dust coming through the 1/4" hole of the 17' stack within the first cleaning cycle, and the Tribo.trac Leak Locator was able to isolate the location of the leak to compartment ten. With a minimum detection range of 0.005 mg/m³, the Auburn bag leak detector was able to

detect the leak well in advance of visible emissions, minimizing cleanup time. The Tribo.trac Leak Locator allowed the maintenance team to search only 300 bags rather than 3600 bags, reducing the leak locating time to minutes. The optical device did not detect the leak for two days and only after the 1/4" diameter hole had enlarged to an 8" tear. By that time, the amount of dust from the bag leak was over 60 cu ft and took 10 man hours to clean up compared to the 2.6 cu ft of dust accumulated with the Auburn system.

Test Results		
	Triboelectric System	Optical Sensor
Estimated Time to:		
Detect Leak	Less than 1 Hour	2 Days
Locate Leak	Less than 1 Minute	2-3 Man Hours
Clean Up Leak	Less than 1 Man Hour	8-10 Man Hours
Estimated Size of:		
Hole Detected	1/4"	8"
Dust Cleanup	2.6 cubic feet	60 cubic feet
Cleanup Tool	Shop Vacuum	Shovels

The Solution

The impressive results prompted the Aluminum Reduction Facility to install Auburn systems on all four potlines as well as the bake oven process. In addition to maintenance savings and benefits, the facility will use the Auburn system to comply with future MACT standards and Title V CAM Rule.



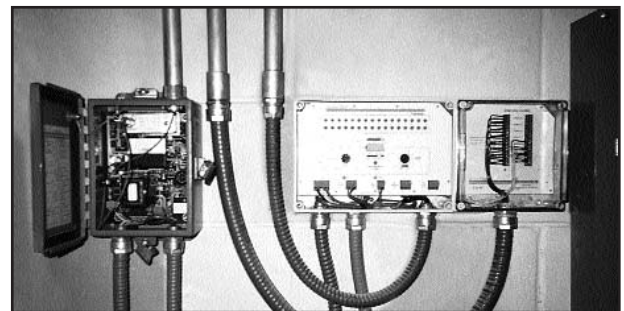
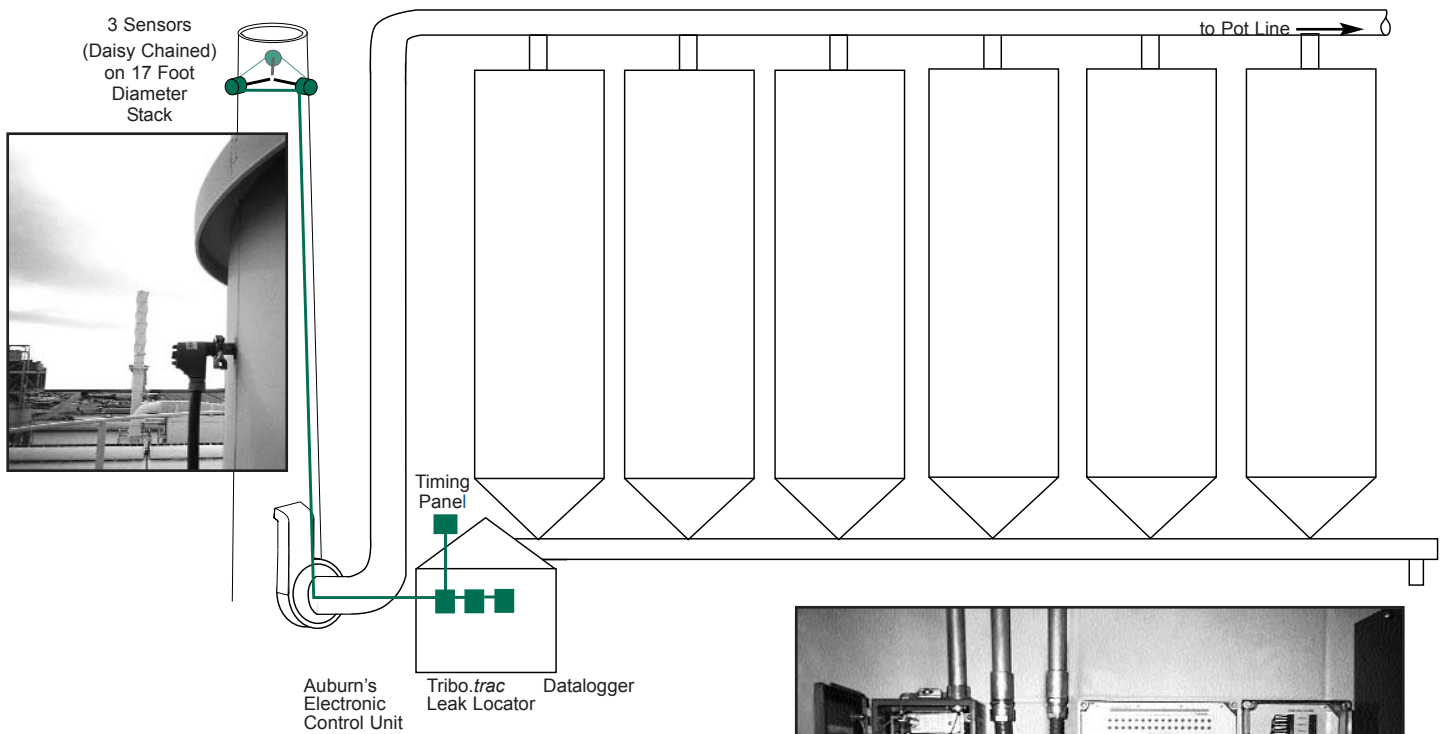
Emissions recorded at the baghouse. Small spikes represent elevated emissions from a normal cleaning cycle and large spikes indicate leaks from torn bags. Auburn equipment located a pencil-sized hole in seconds while the optical sensor was unable to detect a leak until a 8" tear was made.



Auburn's installation at the Aluminum Reduction Facility answers the immediate needs for the company and provides a foundation for growth as the company expands. Additional Auburn triboelectric sensors, product features and networked systems can be

added to the existing equipment as the facility adds dust collectors or other instrumentation. Auburn's triboelectric products are US EPA tested and recognized for compliance with the future MACT standard and Title V CAM Rule.

**Auburn's Solution at
the Aluminum Reduction Facility**



The above diagram shows the aluminum reduction facility's shaker baghouse with six compartments per side, twelve compartments total. Auburn equipment is indicated in green. Inset photos: (Top) A bag leak detector in the stack and (Right) the Control Unit, Tribo.trac Leak Locator and Datalogger.