

Proactive tips to help you save money on your baghouse

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Baghouses and filter bags can be very costly to a company's bottom line — especially when the unexpected occurs. This article discusses some simple proactive ways to minimize emergency baghouse-related problems and expenses.

Companies spend unnecessary money on their baghouses every year because of unexpected process problems and poor preventive maintenance planning. A plant might decide to prioritize current operations over preventive maintenance planning, lack resources and workers to properly maintain and manage equipment, or not know how.

The fact is, however, that simple preventive measures and planning can actually save money, improve safety, and reduce worker stress levels at your plant. Companies with no plan in place, faced with an emergency, need-it-now situation, might say, "Money is no object because we have to have it." But no company has that kind of money or flexibility. You'll likely pay 20 to 50 percent more in an emergency situation than if you'd planned ahead. To avoid this kind of emergency situation:

Plan for outages. Many companies don't properly plan for outages (or scheduled plant downtime). Typically, outage times vary by industry. Cement and lime plants tend to schedule outages from January to April, steel plants from June to July or November to December, and chemical plants before the summer months since baghouse work is labor-intensive and cooler temps provide better working conditions. Generally, though,

outage times are fall to winter and winter to spring, so demand for filter bags, cages, accessories, parts, related equipment, and service personnel is high during those periods. Cut expenses by buying ahead so products are made ahead of your outage and service personnel are scheduled well in advance.

Use a checklist. Use a checklist so you don't forget anything. List all your baghouse equipment on a spreadsheet with specific details — number of filter bags, number of compartments, bag descriptions, baghouse location and process, vendor part numbers, plant designation SKU, and typical filter bag life.

Utilize an inventory support plan. One challenge companies face is that they aren't allowed to keep the required inventory on hand to maintain their baghouses. If that's the case for you, work with your supplier to develop a "make and hold" plan. This is where the supplier agrees to make and hold a specific quantity of filter bags until the customer releases the order for delivery. Reliable suppliers should be willing to keep your spare and outage parts on the shelf until you need them. An inventory support plan typically has a time limit of 6 to 12 months. Since the manufacturing lead time for a filter bag is mainly due to waiting on the raw materials, the inventory support plan also can be a blanket agreement for the supplier to keep raw materials on hand, further minimizing customer wait time. This is called a "release and make" program.

Use the dye test. Test filter bags before startup — even if you think they're problem-free. Companies make the mistake of ignoring the baghouse during an outage if there are no plans to remove old filter bags and install new ones. Any time an outage occurs, you should plan on inspecting the baghouse to confirm that the equipment, structure, and filter bags are in good condition. Sending fluorescent dye powder through the baghouse via the induced-draft fan is

one way to confirm that existing bags are in good condition and that the tubesheets (or plate into which the filter bags are seated), walls, and other metal-to-metal contact points are free of holes or small cracks. Dye powder travels through the system as dust would. If there's a breach, the fluorescent powder goes through it and enters the clean side of the baghouse (above the tubesheet). Inspecting with a black light under dark conditions will show you exactly where the leak occurred, and taking this simple step will ensure that baghouse startup will go smoothly once the outage is complete.

Adopt startup best practices. Startup procedures are critical to baghouse and filter bag performance and service life. Startup is unique to each application, but generally you should:

- Visually inspect to ensure all parts are properly installed and ready.
- Make sure differential pressure gauges and other monitoring devices are operational.
- Take steps to not exceed baghouse design airflow or velocities.
- Preheat the baghouse prior to startup with clean, hot air before introducing dust into the baghouse.
- Season filter bags by letting a dust cake build up prior to the initial cleaning.

Precoat filter bags. Precoat new filter bags during the startup process for protection and durability. Several types of precoat material exist, but the most effective is a perlite-based powder that provides consistent surface coverage. Precoating a new filter bag will minimize dust impingement of fine particles into the filter media, allowing bags to operate at an optimum level after initial startup. Other precoat benefits include protection against excessive moisture that could be introduced during startup and protection against hydrocarbon buildup, which is oily



Taking proactive steps to maintain your pulse-jet baghouse can help you save money.

and hard to remove and can quickly blind filter bag material.

Test and test again. Test installed filter bags prior to your outage to determine remaining service life and prior to startup to ensure proper installation. Utilize your supplier's testing facility or another lab that can perform comparative data tests of used versus new filter bags to determine if in-use bags will last until your next outage. If not, consider replacing them. A lab can also perform "autopsies" on filter bags that have failed prematurely to help determine the cause of the problem and potential solutions.

Leave installation to the experts. Filter bags must be handled and installed carefully. A simple mistake can lead to costly lost production time. That's why hiring professionals to install new filter bags is a good idea. I compare professional filter bag installers to professional pit-stop crews. Professional baghouse installers are proficient and can install filter bags in hot, dirty, possibly unsafe environments and ensure that the quality of the install meets all requirements.

Train your workers. Thoroughly train your plant personnel in properly maintaining baghouse equipment. Ask your supplier about dedicated training. Some suppliers provide training at their facility, but I recommend onsite training at your facility to reach as many of your workers as possible and to keep sessions focused. Onsite training also allows for more thorough coverage and tailoring of the training to cover your plant's system components, ventilation system, and system operation and optimization. Training should also cover proper filter bag installation, along with filter media options and the strengths and weaknesses of each type.

Stay current on new technologies. Stay up-to-date on the latest technology that can help you maintain equipment and spend less on labor and energy. For example, pulse-jet diagnostic control systems improve filtration efficiency, decrease energy use, and prevent unnecessary downtime. These systems analyze high-speed digital signals to detect and locate leaks weeks before emissions are visible, detect and locate failed solenoids that can lead to plugged filters, and instantly detect and locate ruptured or frozen pulse-jet valve diaphragms. One undetected rupture can waste \$1,000 of compressed air per week, making energy savings alone a compelling enough reason to invest. Typically, control system costs are low enough to realize a 1-year return on investment.

Summary

The key to saving money and properly monitoring your baghouse equipment is advanced planning and working with a filter bag supplier that can support your inventory

requirements and provide services to make your outage go smoothly. Planning ahead and adopting the latest technology can help you reduce your overall maintenance and operation costs. **PBE**

For further reading

Find more information on baghouse care and maintenance in articles listed under “Dust collection and dust control” in *Powder and Bulk Engineering’s* article index in the December 2014 issue or the Article Archive on *PBE’s* website, www.powderbulk.com. (All articles listed in the archive are available for free download to registered users.)

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