

Custom dust collector replaces worn, non-compliant unit

A resin producer purchases a new dust collector to keep up with safety regulations and reduce filter wear

Case history

Uintaite is a naturally occurring hydrocarbon resin with properties that can enhance product performance in the oil and gas, ink, paint, asphalt, and other industries. For example, the resin can be used to increase the tackiness of inks and paints or to bind and help prevent asphalt from rutting.

The American Gilsonite Company (AGC), Bonanza, UT, is the world's sole supplier of Gilsonite, the trademarked brand name for uintaite.

"There are other suppliers in the world that claim to have a form of uintaite," says AGC plant manager Robert Griffin, "but the characteristics are different and the material performs differently in Gilsonite applications."

Gilsonite is mined in narrow, vertical veins (averaging between 3 and 4 feet wide) using a 10-pound handheld air chipping hammer. The ore is brought to the surface via a 12-inch-diameter vacuum line and hauled to the



AGC needed a replacement for its old, worn dust collector that would be compliant with explosion protection regulations.

processing plant, where the material is crushed, sized, dried, pulverized, packaged, and shipped. The entire production process produces a large amount of explosive dust.

Old dust collection system

AGC had been operating a dust collector as a filter receiver in a vacuum conveying process carrying 20 tons of Gilsonite per hour from an 1,800-ton silo to a 60-ton surge bin 250 feet away. However, the dust collector had a tangential inlet design, and years of service had caused abrasion to the outer wall of the inlet section, which had been patched many times. The inlet was located too close to the filter bags, and the collector lacked an internal cyclone ring, which caused abrasion not only to the housing walls, but also to

adjacent filter bags, leading to premature bag failure. Additionally, the 35-year-old dust collector didn't meet the current design standards for combustible dust and couldn't be reworked to comply.

"The old dust collector was not repairable," Griffin says. "We needed to improve on the explosion protection system."

AGC needed to replace the existing dust collector as quickly as possible to limit plant downtime. The dust collector was several levels up in a tower, surrounded by ductwork and other equipment. Considering the location and tight quarters of the installation area, the new dust collector needed to be a drop-in replacement to allow for easy installation.

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A new solution

AGC contacted Sly, a dust collection equipment supplier based in Strongsville, OH, about a replacement dust collection system. The supplier had replaced a square dust collector with a new model the previous year and AGC had been pleased with the supplier's custom fabrication capabilities. The supplier recommended a CBR TubeJet baghouse dust collector customized with support legs to match the exact physical dimensions of the existing dust collector.

"We looked at a cartridge-style dust collector, but the design wouldn't fit in that location," Griffin says. "Our main concern was keeping the same filter area. Gilsonite is a little sticky and requires extra filter surface area to maintain high airflow through the baghouse."

AGC's new dust collector has a custom bag layout and bag length to mirror the original equipment's design. The abrasion-resistant, cylindrical baghouse receives material through a cyclonic inlet and features an internal cyclone ring to prevent wear to the collector's walls. The system uses a pulse-jet cleaning system with an adjustable solid-state timer to remove material that collects on the filters. Dust is discharged at the bottom through a conical hopper. The cyclonic inlet and hopper were designed as bolt-on components and were constructed of 1/4-inch-thick, abrasion-resistant steel, increasing the lifespan of the baghouse. The new dust collector is MSHA/OSHA-compliant for combustible dust explosion protection, according to NFPA 654, 68, and 69.



The new dust collector has an internal cyclone ring to help prevent wear.

Smooth installation and operation

AGC is pleased with the new installation, especially the efficiency of the new bag filter system. Although the company had scheduled four days for the installation, the process went quickly and the collector was ready for operation in just three days, saving AGC a full day of shutdown and installation costs.

“With the old design, we were changing the filters once a year. With the cyclone ring, we should go at least two years before changing the filters.”

“The supplier assured me that it could build a baghouse that would be a direct replacement and would match directly with our existing equipment,” Griffin says. “The abrasion-resistant plate cyclone ring is a huge benefit in preventing premature wear to the housing of the baghouse and to the filters. With the old design, we were changing the filters once a year. With the cyclone ring, we should go at least two years before changing the filters.”

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