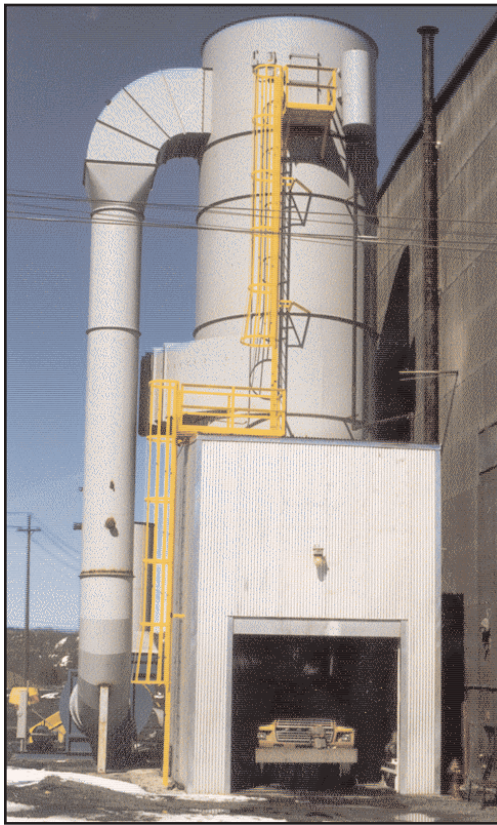




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676AC dust filter with discharge directly into truck. Discharge hopper and truck are in a closed and heated area.

Taconite (Iron) Mining

Air Cure Dust Control equipment at a *Taconite (Iron)* mining operation.

Application.

Taconite dust is a challenging application, especially outdoors in northern Minnesota, where besides the renowned abrasiveness and very fine particulate of taconite, the equipment must withstand very cold temperatures. Therefore, when the engineers at the mine in Babbitt, Minnesota decided to upgrade their dust collection equipment at the primary crusher facility, they selected a unit with a proven record in difficult applications, the Air-Cure AC Filter.

The mine required 60,000 ACFM to provide dust control on the truck dump pit, secondary crushers, and the primary gyratory crusher, the largest in North America. Substantial quantities of fine dust are generated during this operation so the goal was to reduce the fugitive dust emissions to the atmosphere and improve the air quality within the building without exceeding EPA emission standards. Complicating this application is the fact the building is heated and moisture from the mined ore is drawn with the heated air to the filter located outdoors.

Solution.

The installation required the filter outdoors because dust removal is via a truck loadout. The 676AC Filter provides reliable pulse cleaning using low-pressure air (7 ½ psi) without the use of a

high-pressure compressor and air drier. This eliminates cold weather freeze up from moisture in the cleaning system. Secondly, the AC cleaning system provides the performance to maintain bag porosity with high moisture, ice, and fine dust, using a simple mechanism. This all equates to reliability which was a necessity for their efficient mine operation. Air-Cure engineers recommended the addition of a heated enclosure as a special feature, to eliminate ice build-up on the hopper walls. This improves flow of the collected dust and promotes initial cyclonic separation to minimize the dust load to the filter bags. It also insured consistent operation in loadout of dust to the truck during winter operation.



70 degree secondary hopper to improve dust discharge.

Results.

The immediate benefits were improved ambient air quality inside the building; and upon completion of EPA testing by an independent laboratory, the 676AC produced outlet emissions substantially below the project targets and EPA standards.

Also, since the start-up was during the winter, there were no dust freeze-ups in the hopper, even though 2-3 inches of ice was noticed in other areas of the collector housing.

As a result of the improved collection efficiency, the dust loadout to the disposal truck increased 50%.

Although the pulse cleaning system experienced no freeze-ups due to moisture, problems occurred due to the very fine taconite particulate passing the rotary air pump intake filter. A finer filter was installed and enhanced the system reliability.

A hopper baffle modification was implemented to optimize the bag life, due to the extreme abrasiveness of the dust. The majority of the original bags have exceeded two years of operation.

The ambient air quality inside the building far exceeds the expectations of the operating personnel.

Special Features.

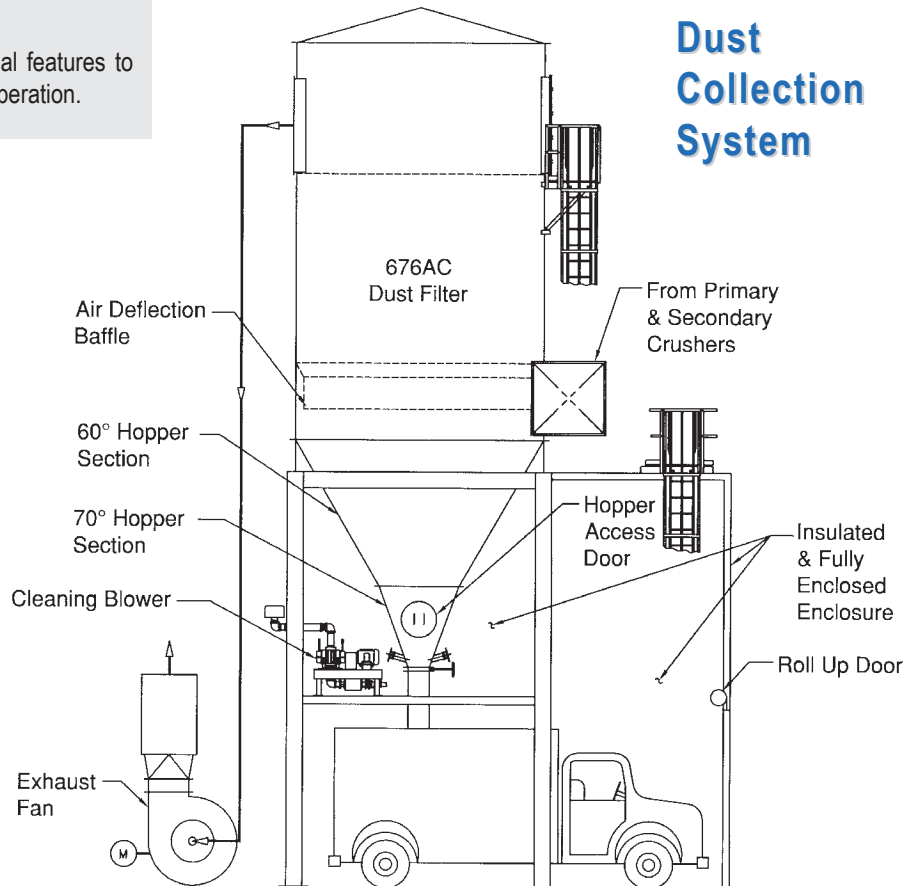
The Air-Cure dust collector was designed with special features to minimize maintenance and to give long trouble free operation.

- The air inlet is specially designed and further field modified to prevent wear on the bottom of the bags.
- The 70° secondary hopper prevents bridging in the hopper with the storage of the dust.
- Heating of the complete area surrounding the hopper and the discharge chute to prevent build up of product on the hopper walls.
- Air-Cure employs a low-pressure high volume reverse jet cleaning system of the filter bags. The system uses a positive displacement blower that produces clean air with no moisture condensation, eliminating freezing problems with the bag cleaning system during wintertime operations.
- The Air-Cure dust collector features a completely enclosed walk-in section at the top of the dust collector that allows removal and changing of the filter bags inside a weather protected area. The diaphragm valve and bag cleaning mechanism are also located inside this enclosed area.
- The round design and outside scroll inlet create a cyclone design on the bottom portion of the dust collector and a great majority of the inlet dust load is removed in this section before the air passes into the bag area. This was rubber lined for wear resistance.

Air-Cure, Inc. supplied the dust filter, *Energy and Air* of Superior, Wisconsin supplied the ductwork and installed all the equipment.



This view shows the air inlet, air outlet, and fan.



Dust Collection System