

AIR-CURE WASHDOWN SYSTEMS

Advantages to Automatic Washdown Systems

- Guaranteed thorough automatic cleaning
- Eliminates dust on horizontal surfaces in hard-to-reach areas
- Provides automatic dust disposal through drainage pumps
- Significantly improves operational safety
- Reduces labor costs - Self-operating, cleaning & draining
- Simple operation & maintenance

DON'T GET HOSED ON WASHDOWN

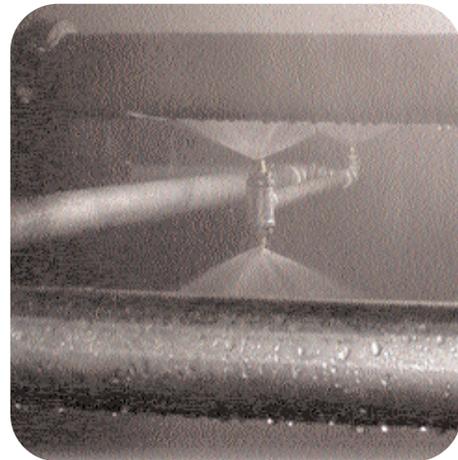
Accumulated dust from coal handling in conveyor areas is a significant safety concern and is usually removed by periodic hose washdown. It is especially dangerous in the event the accumulated dust becomes airborne from areas above the floor. Manual hose washdown must be carefully and consistently monitored to insure a quality job of removal. This in-turn involves substantial labor and management.

SYSTEM OPERATION

Air-Cure has spent many hours on "No Hose Cleaning." It is not a sprinkler system. The system must remove the dust from the horizontal surfaces above the floor and push the dust on the floor to the drain system for disposal. The washdown system consists of three components:

- **Water Supply**
- **Washdown Spray**
- **Drainage / Disposal**

A washdown system is a canopy (grid) of piping that is near the ceiling, walls, floor, and coal handling equipment. Spray nozzles are appropriately spaced along the complete length of the piping. The piping system is supported from the ceiling, walls, and from the equipment. The system is divided into general areas and zones in each coal handling plant. Normally only one zone is operated at one time. This depends on the design of the water supply system and drainage system.



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Water supply system. Each area of each plant will have varying specifications for water supply. The GPM and pressure at each supply point for each area will influence the design. Many times a booster pump will have to be installed or supply piping will have to run. Another factor to be considered is if the water supply piping passes through a freezing area. The water supply must be clean water or particulate filters are employed.

Washdown Spraying System. The coal handling is divided up into general areas such as the crusher house or the tripper area, etc. Each general area is broken up into many zones. The operator opens the main valve to the general area and then he opens the valve to each particular zone in that area. Upon actuation of the zone valve, water comes out of the spray nozzles in that zone. On conveyors the spray nozzles are directed at the space between the top belt and the return belt. Other nozzles are directed on top of the belt and some are directed under the belt conveyor. Other nozzles are directed at the ceiling beams to wash off the horizontal areas. Nozzles are directed at the walls, to provide complete cleaning. The nozzles near the floor give direction to the water flow to the closest drain. Specific pieces of equipment are washed by carefully aimed nozzles, to avoid water entrance into the electrical components. No nozzles are directly aimed at motors.



Transfer area.



Conveyor Gallery.



Roof Beams.

The water piping for each completed zone begins self-draining after the zone valve is closed to prevent freezing, and all zones are drained at the completion of each washdown sequence. The manual zone valve actuation can be automated for further labor cost savings.

Drainage / Disposal Systems. The design of the drainage system depends on many factors and each area of each plant may have unique considerations. First and foremost is the capacity and condition of the existing drainage system. Sometimes the existing system will be sufficient for the new washdown system. Other times a completely new or partially new drainage system will have to be supplied. The main factor in the design of the drainage system is the amount of water coming from each zone and the approximate length of time each zone is in operation. The coal dust is disposed of at a collection basin for dewatering.

Sealing is applied to upper floors or elevated areas of washdown systems to prevent leakage of water and dust to adjacent areas.

PERFORMANCE

The washdown system will provide 100% coverage of the area in that particular zone. 95% of the accumulated dust that is 1/8" or smaller will be removed from all surfaces.

Washdown systems are applied to coal handling areas as follows: car dumpers, conveyor galleries, crusher houses, reclaim areas, transfer towers, top of bunkers and silos. They are also applied to coal handling areas in PRB coal mines.



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