

Environmental Management and Pollution Control poses a major concern to all. There is a need for EFFICIENT POLLUTION CONTROL methods.

During the past decade, KAVERI has developed advanced technology of executing tailor made Dust Suppression Systems after analyzing the application and behaviour of dust particles.

KAVERI – Dry Fog System controls virtually all types of **breathable** and **fugitive** dust ranging from 1 to 800 microns in size. The system **utilizes a dual fluid**, water and air nozzle that produces an ultra fine droplet size **fog** that **achieves dust suppression** through agglomeration. No chemical is required in this system and **water retention** to the process is approx. 0.1% to 0.5% of material being handled.

PRINCIPLE OF OPERATION

The KAVERI system agglomerates the airborne dust particle to water droplet so that the particle becomes heavy enough to be returned to the product stream by the force of gravity.

To achieve agglomeration at the dust source point two conditions need to exist –

- 1) Enough water droplets of the same size as the dust particles have to be generated at the same rate as the dust particles,
- 2) Both dust particles and water droplets have to be contained in the same area so that agglomeration can occur.

Consider a water droplet about to impinge on a dust particle, or what is aerodynamically equivalent, a dust particle about to impinge on a water droplet, as shown in the drawing. If the droplet diameter is much greater than the dust particle, the dust particle simply follows the air streamlines around a droplet, a little or no contact occurs. In fact, it is difficult to impact micron - size particle on any thing, which is why inertial separators do not work well at these sizes. If, on the other hand, the water droplet is of a size that is comparable to that of the dust particle, contact occurs as the dust particle tries to follow the streamlines.

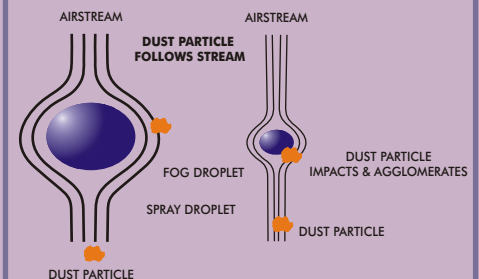


Easy to maintain Foggers



Inside view of transfer Chute at receiving point

HOW DROPLET SIZE AFFECTS AGGLOMERATION



Fog Manifold along Tippler Hopper



Dry Fog in Reclaim Feeder Discharge

FOGGERS

The design of the KAVERI system is based on a unique nozzle that can produce a very dense fog of 1 - 10 micron in size of water droplets that can literally blanket dust source and keep the dust particles from becoming airborne.

The dual flow nozzle is an air driven device for fogging liquids by passing them through a field of high frequency sound waves. This is accomplished by compressing air stream of a specially designed converge section of the nozzle. The result is an air stream that will accelerate past the speed of sound, in the converge section. When it passes the speed of sound, a primary shock wave is generated at the mouth of the nozzle. To enhance the fogging capacity, a resonating chamber in the path of the air stream reflects the air stream back it self to amplify the primary shock wave. Once the shock wave is generated, water is delivered through annular orifices where it is sheared in relatively small droplets. These small droplets are then carried by the primary air stream in to the shock wave and exploded into thousands of micron size fog droplets. The air then escapes around the resonator chamber and carries the droplets downstream in a soft low velocity fog pattern.

SALIENT FEATURES

- Dust Generation is suppressed at source.
- Reduced cost and rugged system.
- Carry over advantages, dust nuisance tendency being minimal at upstream transfer points.
- No adverse effect on product / material handled.
- Moisture addition at the range of 0.1%.
- No expensive equipment and disposal arrangement.
- System could be set to operate on Auto / Manual mode.
- Easy to Instal / Maintain.
- Compatible to operate on plant PLC

APPLICATION

Asphalt Plants
Bauxite Handling Plant
Blast Furnaces
Barge Unloading
Ceramic Plants
Crusher & Screening Plants
Coke Plant
Coal Feeders

Cement Plants
Cargo Handling Plants
Coal Mining
Chemical Plants
Coal / Lignite Handling Plant
Fertilizer Plants
Foundries
Hopper Loading

Lime Stone Handling Plants
Ore Crushing Plants
Plants Foundries
Refined Ore Processing
Rock Crushing Plants
Ship Loading
Transfer Points
Truck Dump Hoppers



WAGON LOADING



DRY FOG IN WAGON LOADING



DUMP HOOPER - START OF DRY FOG



DUMP HOOPER - AFTER
60 SECONDS READY FOR UNLOADING

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