

Potato packing facility

Beat the dust

Fog reduces exposure to dust related litigation. Renby provides an insight into how it works



There is a constant battle against airborne dust in any bulk solid material processing or packing plant. Whether the process is handling vegetables, pellets, fertiliser, or powders of any sort; at the very least, the dust created makes for an unpleasant working atmosphere.

Dust can, and will, often severely affect machinery, increasing maintenance and running costs and reducing plant efficiency. Malfunctioning machinery increases operation costs and can lead to safety issues.

But it can be more serious than that. Dust causes major respiratory problems such as COPD and silicosis. This can expose companies to expensive future litigation.

The HSE is keen to reduce dust in working environments and are actively taking action against companies that do not mitigate the risks caused by dust.

Fog visibly enhances the working area by eliminating dust, and in some instances, has removed the need for respiratory PPE.

HOW DOES FOG REDUCE DUST?

With fog, respirable airborne dust is attracted to microscopic water droplets and rapidly falls out of the air. MicronFog produces a high concentration of 10 micron fog droplets. This size of droplet provides optimum performance for attracting and suppressing PM10 and smaller particles.

The droplets are so fine, they do not wet the product and the air clarifies within minutes.

MicronFog uses pressurised water to create the fine fog. This approach is very efficient. Some systems use compressed air to produce the fog and result in large running costs. Fog systems using high pressure water are thus significantly cheaper and more efficient to operate.

Fog is truly effective for eliminating dust and many new users find that the results exceed their expectations.

WILL FOG WET THE PROCESS?

Some materials are inherently sensitive to moisture and it is essential that they are not wetted by the dust suppression system.

A MicronFog system addresses the dust >>>

Fog from chrome nozzle



Fog nozzles





Black hose with fog nozzle

Figure 1: Poorly Drilled nozzle

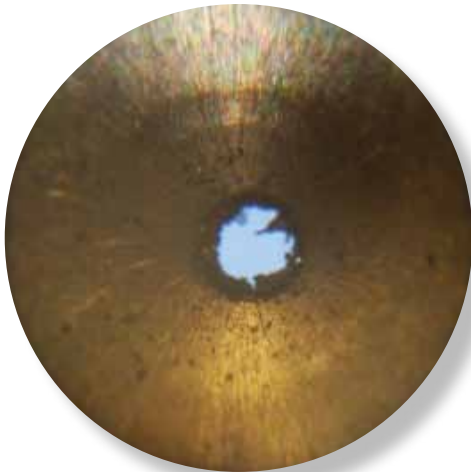


Figure 2: Rube Laser Drilled nozzle



issue without creating a secondary issue of wet floors or processes. Unlike mist or spray systems, in a true fogging system, the droplets are very small, typically less than 20 microns. This is small enough to ensure that dust is suppressed whilst avoiding wetting the processing area or personnel.

IS A SPECIAL WATER SUPPLY NEEDED?

Mains chlorinated water is used, so no special water supply is required. However, water based systems can be prone to waterborne pathogens such as Legionella or Cryptosporidium. As fog is respirable, when Renby installs a fogging system, the company insists on protecting against waterborne diseases by treating the water supply with pathogen prevention systems. A MicronFog system comes complete with filtration, disinfection and water conditioning.

The benefits of reduced dust such as removing exposure to future litigation and lower machine down time are fairly obvious, but the softer benefits of a cooler, a more pleasant working environment coupled with faster clean-up times have had a great impact on morale and productivity.

PRECISION ENGINEERED NOZZLES

One of the secrets to any effective product is the quality of components used. One poor quality component part can devalue the whole system.

In fogging systems this is especially true of the type of nozzles used. Some low cost misting and fogging systems are let

down by sub-standard nozzles creating an inconsistent larger droplet size and an irregular spray pattern.

Inside each nozzle is a tiny impeller that spins and generates the fog. The nozzles also have non-return valves to shut the nozzle when the fog stops.

Laser drilled ruby nozzles are used in MicronFog systems to create the fine droplets and due to the perfectly circular nozzle, (see Fig 2), the spray pattern is a uniform cone shape, making a consistent fog pattern.

USES FOR FOG

Fog suppresses dust in a wide variety of industries. It is used in compost, coal, grain, vegetable packing facilities, quarries and minerals processing. It is of great use in biofuel handling, recycling and waste processing, as well as energy from waste sites.

Fog works outdoors as well as indoors, and does more than simply reduce dust. With the addition of an odour neutralising additive, it can be used to eliminate odours associated with solid waste treatment and microbial waste decomposition. Other industrial uses include humidification and cooling.

TYPICAL APPLICATION

The packing and grading facility pictured below suffered from airborne dust.

A MicronFog system was installed to suppress dust at the key dust sources.

A series of low flow nozzles were installed above the loading section and transfer points of the sorting line. A row of nozzles were also fitted under the sorting line to suppress dust falling from the return strands of conveyor belts.

The engineering manager is delighted. He said: "Our new dust suppression system does exactly what it says on the tin".

CONCLUSION

Fog is a very powerful tool for industry to comply with the workplace dust limits. It is economical to run and offers significant cost savings when compared to other technologies. ■

For more information visit www.micronfog.com