Safer Dust Control

Coal dust is generated in the mine during the mining process by continuous mining machines, and longwall mining systems. It is also generated on the surface by coal handling operations such as coal preparation plants, conveyor transfer stations, and crushing, screening and processing operations. The coal dust explosion hazard, known in the early 1800s, was first given serious attention following a tragic mine explosion at the Courrieres les Lens Colliery in 1906, that killed over a thousand miners. Coal dust is also a health hazard to coal miners. The mine operator must constantly be aware of changing climatic conditions within the mine that may affect dust generated inside the mine.

Methods for control of the coal dust hazard underground include rock dusting, water sprays, fog sprays, and exhaust ventilation techniques. Exhaust ventilation is the use of fans with collection hoods that capture and remove fugitive dust particulates out of the air. An extremely versatile and effective means of capturing airborne respirable dust in an underground air stream is the Engart Dust Extractor system. A portable Engart unit can be used in various locations in the mine to clean and ventilate large volumes of air. Its compact and highly mobile design makes it an effective ventilation device to dilute methane and remove dust out of the air stream. It can also be mounted on mobile equipment, or be used as a stand alone portable dust "Scrubber" system.

In a portable system, the ventilated air is recirculated by an integrated fan with a self contained filter device. Auxiliary ventilation with a portable Engart Dust Extractor can provide substantial removal of dust particles by air change recirculation in a general area. A typical installation at an underground limestone mine cleared up dust and blasting odors within minutes following blasting of the rock face. Other Engart Extractors are operating at underground silver mines using flexible ducting extending to the mine face to draw away dust from the cutting heads, thus providing improved visibility and clean air on the exhaust side of the unit.

Engart 36,000 cfm skid mounted portable dust extractor unit

Underground face ventilation

Engart Dust Extractors are widely accepted worldwide as underground scrubber systems mounted on mobile equipment. These units are integrated on the mining machine and provide an effective means of cleaning up the air before it discharges in the return air ways.

Another significant approach to dust control is called minimization, which means to reduce dust generated by redesign of the material handling itself. An example of this would be passive transfer chutes that keep coal from tumbling excessively to lower the dust generated during conveying operations. Passive transfer chutes combined with fog sprays and Engart Dust Extractors have been used to achieve significant reductions of dust at coal handling conveyors. The Engart Dust Extractor is suited to handle wetted dust particles with no detrimental effect on its high collection efficiency.

Engart 19,000 cfm on Joy 14cm45 continuous miner

Surface operations pose a different dust management challenge which has led Engart Dust Extraction Systems to be installed at many coal handling facilities to replace existing baghouse dust collectors. This provides a safer installation since it removes the threat of related coal dust fires, eliminates the dry filter explosion risk, and also has the benefit of reduced maintenance associated with blinding or plugging of filter bags because of dampness in the coal.

Engart Unit replacing dry bag house collector

Engart Extractors use a combination of the energy at the fan and water to remove dust particles from the air with extremely high efficiency and trap them into finely atomized water droplets. This high dust collection efficiency greatly reduces the respirable dust generated by the plant or mining process and thus improves the environmental operating conditions. Through the Engart process of mist elimination, the dust laden water is then discharged by the Engart sump and directed to a waste pond or other location. Using water means the coal dust explosion hazard is eliminated as soon as the coal becomes wet. This is a much safer approach than using dry bag-houses which require explosion vents due to their inherent risk.

Engart has completed a number of turnkey dust control projects including engineering, equipment and materials for bunker rooms, transfer stations and crushing stations, coal preparation plants and mining operations. Portable Engart Dust Extractors can be used as mobile exhausters at tunneling operations and civil construction sites to provide ventilation and clean the air.

Engart equipment was recently installed at the high speed coal belts on a truck dump at a large surface coal mine. Dust generated at the discharge of two crushers to this belt created a severe dust problem. With installation of properly designed ductwork and an Engart Dust Extractor, the problem has been contained and the client is very satisfied with the equipment and the installation. Another system is installed on a limestone handling belt conveyor at a coal preparation plant. A system installed on conveyor belts at a coal handling facility recently was awarded BACT approval, Best Available Control Technology.

Engart Dust Extraction Technology™ means a safer and more flexible dust control system. Reducing the risk of a coal dust safety hazard by using innovative new technology for Dust Management at your mining or processing facility is of utmost importance. Engart Dust Extraction Technology™ provides effective, safe and proven exhaust ventilation solutions for dust control problems at surface and underground mining operations around the world.

For more information call (304) 253-0777 or visit www.engartinc.com