

# Process ventilation solutions for dust control

When it comes to dust control from mining operations, the need for a safe, effective and robust ventilation system cannot be overstated. With the meticulous planning and design experience provided by **Finn Equipment Sales**, Engart Global's extractors prove to be a versatile and rugged option that won't let the dust settle.

**P**rocess ventilation involves using airflow to control dust generated in operations such as crushing, screening, conveying, loading, unloading and other material handling processes. Exhaust hoods are used to contain and capture the dust. Ducting then conveys it to an air-cleaning device that removes the dust from the air. One such device that has proven highly effective for the control of combustible dust, as well as dust in moisture-laden or high-temperature air, is the Engart wet-dust extractor manufactured by Engart Global.

According to process ventilation engineer Joe Finn, owner of Finn Equipment Sales, Engart Global Dust Extraction Technology is a simple, compact and rugged alternative for mining and processing operations of all types. Finn says that Engart Global offers turnkey design, supply and installation of process ventilation systems for coal and non-coal mines.

## System view

Engart extractors operate at mining and processing sites controlling dust-generation for gold, silver, limestone, potash, gypsum, coal and many other materials. Applications range from crusher buildings to conveyor transfers, screening plants, railcar unloading, tripper rooms and underground auxiliary ventilation.

Airflow and water combine at an integral impellor to capture extremely fine particles with high efficiency. The dirty water and air pass through a bifurcated chamber to the extraction box, where the dirty water is flushed out to a sump drain. Clean air then exits through an exhaust elbow and silencer.

A general knowledge of process ventilation design practice will prove helpful to mining engineers and operators charged with developing dust-control solutions for their operations. When designing an exhaust ventilation dust-control system, Finn follows guidelines detailed in *Industrial Ventilation: A Manual of Recommended Practice* published by ACGIH. These guidelines are as follows:

- **Identify emission sources and hood designs:** each dust source must be located and evaluated for proper hood design. Service access needs should be considered.
- **Define control air volume at each source:** control air volume is determined by considering the displaced, induced and in-draft volume required to capture and contain the dust.



This Finn-designed system uses three Engart dust extractors operating in parallel to deliver 100,000ft<sup>3</sup>/minute of exhaust ventilation.

- **Provide plan and elevation views:** developing layout drawings of the hood locations is necessary in order to begin the design process of detailing drawings for fabrication and installation.
- **Determine equipment locations:** Engart extractors are extremely compact, permitting installation close to source locations and thus shortening ducting length.
- **Develop line sketches of duct routing:** detailed duct-routing concept sketches showing equipment locations, and elevation and plan views are required so that system design calculations can be prepared.
- **Size ductwork diameter and lengths:** to prevent accumulation and plugging, duct size is dependent on design velocity needs. Combustible dust systems are now designed for a minimum velocity of 4,500ft/min.
- **Calculate ductwork pressure losses:** ducting's static pressure is determined by considering hood loss factors, duct friction losses and equipment static loss factors.
- **Select equipment:** selection of safe and effective dust-control equipment is critical to successful dust system success. Effective maintained airflow, along with filtration effectiveness, and consideration of material and operational factors, are also important.
- **Develop a detailed system design:** detailed system drawings need to be prepared showing elevation and plan views along with clearances to avoid obstacles such as equipment, piping and electrical conduits. ■

## Further information

Finn Equipment Sales  
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