



Client and Application:

A global leader in industry and manufacturing had three drawing lines which needed a dust collection system for capturing airborne soap/lubricant powdery dust (drawing application). The dust collection systems needed to match the following design criteria:

- Extract the airborne soap at the pulleys (from customer's capture hoods with 4"Ø connection ports)
- Contain, capture and filter the dust, and prevent it from escaping to the facility
- Comply with the Ontario Ministry of Labour, Ontario Fire Code and NFPA

Solution:

The solution was to capture at source from the pulleys on three drawing lines which were equipped with capture/enclosed hoods with 4"Ø suction ports. The hoods were installed by the customer after consultation with AST Engineering (www.astengineering.ca) for the design. Each line has twelve 4"Ø ports (thirty-six in total). All the ports are connected to rigid spiral galvanized ductwork by flexible hoses. The ductwork has been designed based on ACGIH and Fire Code by AST. The collected airborne dust is collected at the source via the above-mentioned hood and ductwork system and transported with proper duct velocity as per ACGIH and Fire Code to the dust collector outside of the building. The dust collector has a dual-hopper and is equipped with an explosion protection system as per the details below. The dust collector airflow is rated up to 12,600 CFM. The dust collector has a full VFD control panel which provides constant airflow regardless of the filter condition. The following are the details of the solution:

- The dust collector is grounded, and the heavy-duty ductwork (between collector and blow back dampers) is electrically bonded to the collector.
- The collector has two mods, two hoppers. Each mod has a top-mounted explosion vent with weather cover and Sealed Drum Kit (SDK) for hopper protection.
- Two 16"Ø NRV's (blow back dampers) are installed on the two inlet ducts as isolation devices.
- A signal from any of the protection equipment will de-energize the fan and create an alarm.
- Transport velocities exceed 3,500 FPM.
- The production line is interlocked to the operation of the dust collector fan.
- The fan is floor mounted and rated for up to 12,600 CFM.
- Clean air is returned to the building through a 2x3 Ultra-Lok (HEPA housing). Note: DFE collector is tested and proven to isolate a deflagration and stop flames or sparks from passing into the clean air plenum.

Equipment:

One (1) DFE 3-24 cartridge filter dust collector with explosion vents and SDKs
One (1) AST-SQBI-200 floor mounted 50HP TEFC backward inclined fan with outlet damper and silencer
One (1) Ultra-Lok 2W x 3H
One (1) AST-CP-VFD-50HP-575V control panel
Two (2) NRV-16 blow back dampers

Installation pictures:



Industry:

Drawing Application in Manufacturing Plant (Lubricant/Soap Powdery Dust)

Contact:

For an update on the performance of the system, please contact:
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