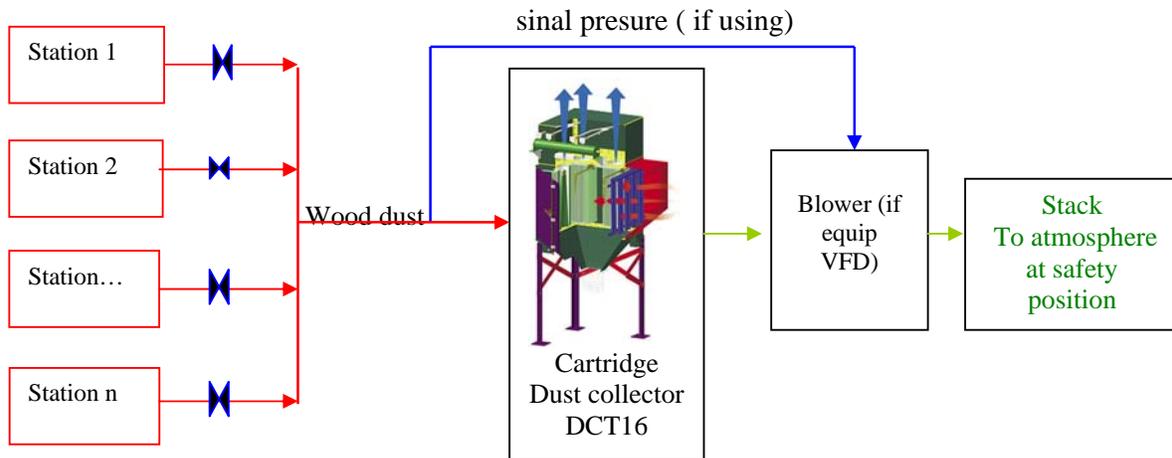


**DESCRIPTION SYSTEM FOR DUST COLLECTOR SYSTEM  
“WOOD DUST”  
(THUYẾT MINH MÁY HÚT BỤI TRUNG TÂM)**

**1. GENERAL SYSTEM OPERATION:**

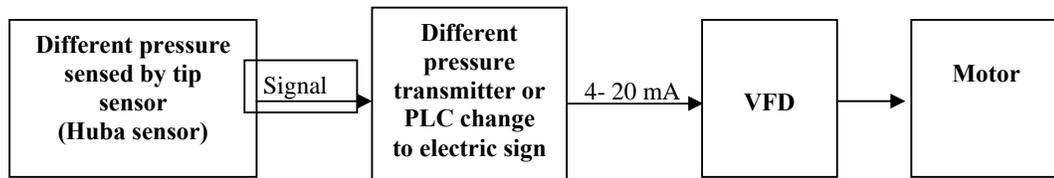


Incoming dust-laden air enters the inlet plenum where a baffle forces large or heavy particles to drop out of the air stream and fall into the hopper. The clean air passes through the filter medium from the outside to the inside of the filter cartridge and exits through the open top of each cartridge filter. The air then flows from the filters into the clean-air plenum, where it enters the fan inlet and is exhausted. The dust is captured on the outside surface of the filter media.

As above general system operation, dust-laden air enters the Dust Collector and to be filtrated 99.99% on 0.5 micron by cartridge filter (MERV 11 on Standard ASHRAE). The air then flows from the filters into the clean-air plenum, where it enters the fan inlet and is exhausted to atmosphere at safety position.

- ✓ **DCT dust collector** can be equip [explosion vents click here](#) (meet Class St1, < 200 bar \*m/s) and all equipment must be connected to the ground, as well as bonding them. (To meet NFPA regulations now strictly enforced by OSHA)

**Controller The Blower (if using the VFD- [saving energy by constant pressure system](#))**



Lots of hoods are used for sucking dust contaminated air to a dust collector. However, all of them are not necessary to be used at one time if working condition is considered

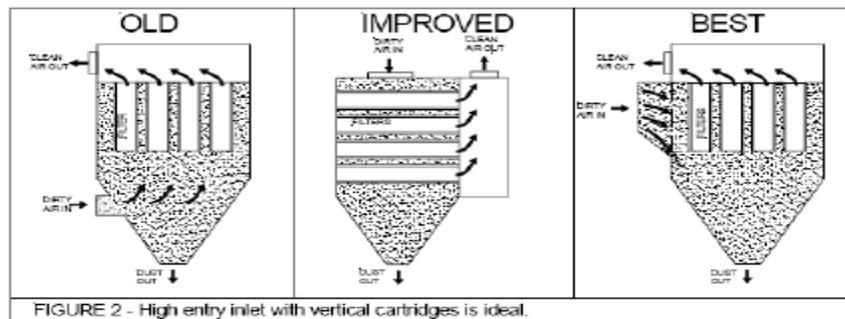
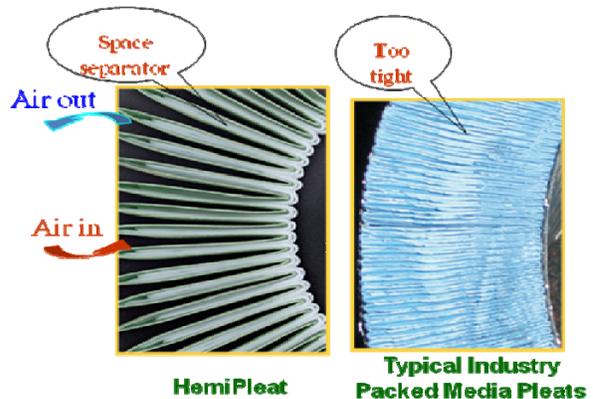
- ✓ Hood gates will open (close) when requirement by automatic blast gates, programmed PLC to send signal to VFD. VFD will change frequency to control requirement speed fan that controlling capacity and saving electrical energy. If all gates closing the fan will be **turned off automatically** and any gate is open VFD will be turned on against.
- ✓ At the time all gates have closed completely, different pressure transmitter will send signal to VFD. The VFD controls the fan speed to saving energy.

## 2. DESCRIPTION SYSTEM (more information)

### TECHNICAL SPECIFICATION:

#### 2.1 Module:

- Modular design dust collector provides optimum field flexibility and short manufacturing lead time - have it your way fast!
- Heavy duty carbon steel construction for long life - Dust collector module constructed of 4.5 mm carbon steel. Door, hopper, inlet and panels are all 3 mm steel.
- Baked on, durable green powder coat paint - All carbon steel components are acid washed prior to powder coating for maximum paint adhesion. Dust collector is painted inside and outside for unsurpassed weather and corrosion resistance.
- Vertical design of the Farr filter cartridges provides more efficient pulsing of dust, thus eliminating uneven dust loading associated with horizontally mounted cartridges.
- HemiPleat Advantage:
  - Lower pressure drop through open pleat spacing improves cleaning efficiency, which will reduce energy costs through less compressed air consumption during cleaning in many applications.
  - More media is available for filtration, for improved performance and longer life.
  - The separation beads, not the media pleats, contact the inner cage, protecting the media from frictional damage.
- High entry cross flow inlet eliminates upward can velocities associated with traditional hopper inlets in industrial dust collectors. The channel baffles installed in the inlet protect the filters from incoming dust and separate the larger particles directly into the hopper, reducing the load on the filters.



The best model design to clear filter ([more detail](#))

The DCT dust collector utilizes Gold Cone® cartridge technology to deliver clean air and long life while utilizing the smallest floor space of any dust collector available today.

- Multiple filter media and pleat spacing options are available to best suit your specific application and dust.

Meeting airflow requirements with a 25% smaller housing allows the DCT dust collector to deliver premium performance at a competitive price and take up less factory floor space. The service benefits are numerous offering faster, trouble-free change-out of cartridges.

### Easy Maintenance



#### **Easy Access Door**

No knobs to lose or drop  
No threads to bind  
Mechanically attached seal  
Heavy 10 gauge construction



#### **Easy Change-out**

Gold Cone cartridge with patented cambar action that positively seals the cartridges without using threads or knobs

## **2.2 Cartridge Filter**

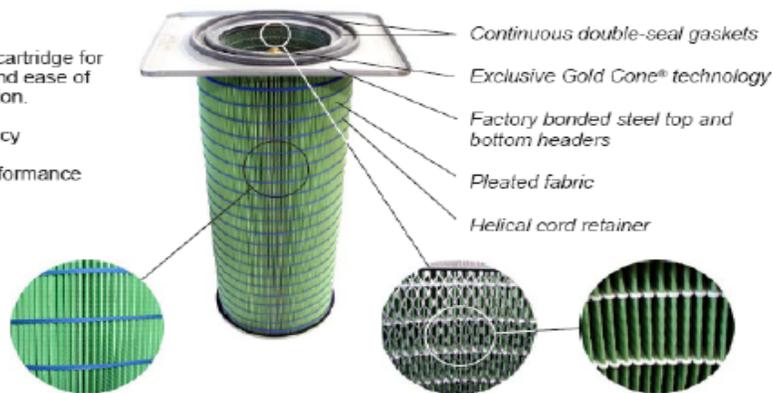
HemiPleat Gold Cone Cartridge filter: HMPTS-325 – PolyTech Standard (color Green) MERV 11

- ✓ Proprietary blend of cellulosic fibers and polyester fibers with a moisture resistant silicone treatment for optimum dust release characteristics yielding long service life at high filtration efficiencies. (long service life approximate two year)
- ✓ It is grounding trap (prevent static electric)
- ✓ Providing: 325 sq. feet (30.2 sq. meters) per cartridge
- ✓ Efficiency: **99.99% on 0.5 micron** and larger particles by weight. Cartridge filters shall be **installed vertically** for better dust release

#### **Key Benefits:**

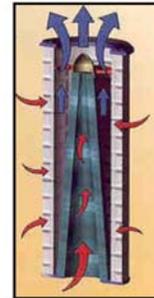
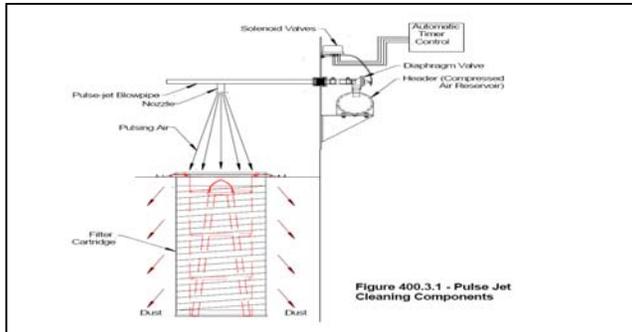
- Vertically integrated cartridge for better dust release and ease of removal and installation.
- High filtration efficiency
- Excellent energy performance
- Long element life

*Internal HemiPleat separator bead ensures uniform pleat spacing externally.*



- ✓ Cartridges will have twin gaskets on top of the cartridge. The gaskets are of a continuous design; strip and glued gaskets are not acceptable.
- ✓ Internal to the cartridge shall be an internal media cone, which provides additional media and enhances reverse cleaning. The top of the internal media cone shall have an injection molded piece for structural support and reverse airflow cleaning enhancement.

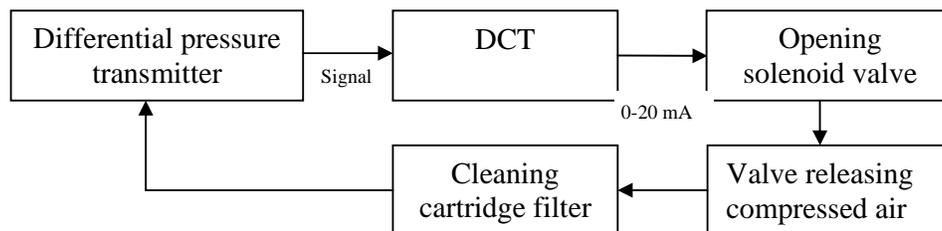
(Note: According to OSHA regulation: Recycling of dust collector exhaust to buildings shall be permitted if the system is designed to prevent both return of dust with an efficiency of 99.9 percent at 10 microns and transmission of energy from a fire or explosion to the building. The air coming out of a Gold Series dust collector with **HemiPleat filters** has been tested to exceed the air quality required in most hospital operating rooms).



### 2.3 Dust Collector Timer Controller (DCT)

Cleaning cartridge filter can be controlled by DTC (FDC's Camfil Farr, **DCT1000 Dwyer**, Smart control Goyen,...)

- ✓ The DCT was designed for on-demand or continuous cleaning applications. Continuous cleaning applications do not require external inputs and can be used for time based "on-demand" cleaning through use of the cycle delay feature. For on-demand applications, the plug-in pressure module can be used to take full advantage of all the DCT features.
- ✓ Lockable Enclosure (safety for dust/raining environments).
- ✓ Both display digital and analog, setting program easily.



Dwyer DCT1000 Controller's flexible design allows it to be adapted to many dust collector configurations. The Timer Control Module will sequentially pulse up to ten outputs in "On-Demand" mode, based upon the Pressure Switch closure on the Pressure Differential Meter. If more output capability is needed, up to 980 additional outputs can be controlled with multiple Expander Modules connected to the controller. Furthermore, the controller features a current sensing capability, which allows electrical fault monitoring for up to three solenoids per output. This capability makes it possible to control and monitor up to 2,970 individual solenoids from one Control Module, and has the added convenience of providing an Auto Configuration option for ease in initial setup.

## 2.4 Diaphragm valve (USA)

High performance diaphragm valve with dresser nut ports. Available with integral pilot or as remotely piloted valve. Outlet at 90° to inlet.

**Suitable for** Dust collector applications, in particular for reverse pulse jet filter cleaning and its variations including bag filters, cartridge filters, envelope filters, ceramic filters, and sintered metal fibre filters.



DD Series

## 3. MORE INFORMATION FOR DESIGN SYSTEM

### 3.1 Explosion Vent

High Performance Explosion Vent for Industrial Dust Collectors.

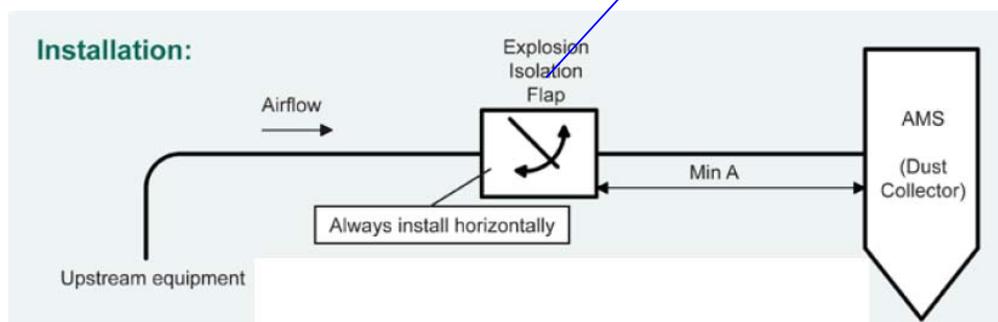
- ✓ Prevent and safeguard against potentially lethal factory dust explosions with the DCT dust collector, equipped with "X-vent", newly designed dust collector explosion vent.
- ✓ Explosion vents compliance with NFPA 68, ATEX and CE certification.

(More reference at National Fire Protection Association Standar)



### 3.2 Ducting Routes

- ✓ Due to dust particle having maximum  $K_{st} < 200 \text{ Bar} \cdot \text{m/s}$  (**Class St1\_ weak explosion**). The main duct should will be equip an Explosion Isolation Flap Damper to a void destroy workplace when dust explosion present at outside. (**Option device**, detail in catalogue).

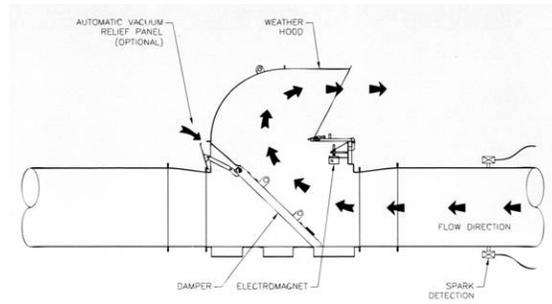


- ✓ A ducting network comprised from galvanized steel sheets, round or spiral duct and **connected to the ground and bonding together**. Flanges connecting (or quick connection) for section joins in order that maintenance purpose duct system, all must be meeting SMACNA and DW/144 for high pressure duct.

### **Abort gate:**

Abort Gates are designed to divert sparks and hazardous conditions out of neumatic conveying systems. They are typically located prior to dust collection equipment or on filtered air ducts re-entering buildings. The unit has a blade, which during normal operation

is held up by a DC Magnet. The absence of power to the abort gate will cause the magnet to release and the blade to drop, sealing off the air stream, and diverting the flow to atmosphere through the top of the unit. In addition to gravity, the abort blade is assisted by shaft mounted springs providing for high speed closure. Abort gate actuates in approximately 500 milliseconds with loaded torsion spring and gravity assist



### **3.4 Selecting filter media:**

Cartridge filters are HemiPleat + Gold Cone type, is the modest now. They can filter particle with below 0.5 micron of size. Their best property is: pressure drop low extremely and cleaning easier.

Dirty airflow requirement max = 12 000 CFM. (Main duct  $\phi 600$ , conveying velocity from 18- 20 meter per second).

Air to cloth ratio (fpm) = 2.5: 1 (cfm per  $1\text{ft}^2$  filter medium or FPM) (base on characteristic wood dust, It is the best ratio for Pleat-cartridge operating performance);

A cartridge has  $325\text{ft}^2$ , so that airflow can filter  $2.5 * 325 = 812.5\text{cfm}$ .

Quantity cartridge:  $12000 / 812.5 = 14.8\text{ pcs}$ . Choose 16 pcs for 4 modules. AC ratio actually: 2.3:1

**27MEC Co., Ltd**