

# FANTASTICS

A Quarterly Industrial Ventilation Newsletter

Third Quarter 2014

## Company News

- **HARTZELL AIR MOVEMENT** introduces their 2014 Stock Shipment bulletin. Many fans and blowers are crated for immediate shipment and others available in 5 working days. This bulletin is available at <http://www.hartzellairmovement.com/literature.html>.
- **VENTILATION SPECIALISTS, INC.** sales continue to grow in all of Latin America.
- **AMERICAN COOLAIR CORP.** announces the introduction of vaneaxial blowers for high pressure axial systems.
- **CINCINNATI FAN COMPANY** now offers as many as five motor manufacturers to select from in their standard 10 day shipment program.
- **IAP, INC.** designs and builds high pressure axial and centrifugal blowers for standard and customer custom requirements.
- Fan & blower price increases seem to have stabilized after the first quarter of 2014 price increases.

## Technical Tidbit

Often high temperature air must be diluted with ambient air so that the blower and dust fume collection equipment can properly operate.

First, it must be determined what the upwards airflow of the process source. This can be determined by the face area of the high temperature airflow times the upwards velocity of high temperature air flow. The range up upwards velocity is normally 350-1500 FPM.

$$FA_H(V_s) = CFM_H \quad (FA_H = 7.06 \text{ Ft}^2)$$

Next, one must determine the face area of the capture hood and its capture velocity. The range of the capture velocity is normally 200-500 FPM.

$$FA_C(V_c) = CFM_C \quad (FA_C = 6.5 \text{ Ft}^2)$$

Once these air flows are calculated, a Pc ratio of these CFM's can be determined.

$$P_c = \frac{CFM_C}{CFM_C + CFM_H} \quad (P_c = .786)$$

Lastly, the following air mixture formula can be solved to determine the air flow mix temperature. The Tc is the capture hood temperature in degrees Fahrenheit plus 460. The Tm is the mix temperature in degrees Fahrenheit plus 460.

$$\frac{1}{T_m} = \frac{1}{T_h} + P_c \left[ \frac{1}{T_c} - \frac{1}{T_h} \right]$$

Let's assume the following:

Vs = 1250 FPM  
Vc = 500 FPM  
CFMc = 32,500 cold air  
CFMH = 8836 hot air  
Tc = 100°F  
Th = 800°F  
Tm = 635°R mix temperature  
Tf = 175°F mix temperature

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INDUSTRIAL VENTILATION, DUST COLLECTION, FUME EXHAUST  
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CORROSIVE AND EXPLOSIVE APPLICATIONS

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