

# FANTASTICS

A Quarterly Industrial Ventilation Newsletter

Second Quarter 2013

## Company News

- **HARTZELL AIR MOVEMENT** announces a selective fan and blower price increase ranging up to 7% with motors and drives increasing 10%.
- **CINCINNATI FAN COMPANY** introduces a company video which can be viewed at [www.cincinnati-fan.com](http://www.cincinnati-fan.com).
- **AMERICAN COOLAIR CORPORATION** continues to offer quick shipment for most of their axial fans.
- **BERNER INTERNATIONAL CORPORATION** expands their line of in-ceiling mount powered air curtains to handle mounting heights from 13-16 feet. Nozzle widths from 36" to 144" are available offering fifteen (15) different models. These units are BUILT IN THE USA and carry a five (5) year parts warranty.

## Company News

- **NEDERMAN** introduces a portable, wheeled, filter box, duct collector for light to medium applications. This dust collector can handle up to 600 CFM and is available with manual cleaning, mechanical cleaning, or compressed air cleaning. These units have integrated silencers, polyester filter cartridges and a 6"Ø extractor arm with a capture hood. Each unit weighs 225 lbs. and is 31½" wide X 48" deep X 50.4" high.
- **T.A. MORRISON CO., INC.**, manufacturer of Tamco dampers announces a new engineering, research and production facility in Nashville, Tennessee. This new complex follows a new manufacturing facility in Phoenix, Arizona which opened in 2009. TAMCO manufactures high quality, high temperature, low leakage, AMCA certified for pressure drop, aluminum and stainless dampers. They excel in a salt water, salt air environment. Smoke dampers are now available and have UL / ULC approval.

**VENTILATION SPECIALISTS, INC.:** Exports of fans and blowers to Latin America continue to be strong. VSI received a large order for a tunnel ventilation project in Central America and are preparing a proposal for three (3) 3400 horsepower, centrifugal blowers for a project in Cost Rica.

## Technical Tidbit

Industrial fans and blowers should be evaluated for efficiency prior to being ordered. The static efficiency of a fan or blower determines how much energy is turned into work vs. how much friction loss that turns into heat dissipation. The following formula outlines how to calculate static efficiency:

$$S.E. = \frac{CFM(S.P.)}{6356(BHP)}$$

Traditionally centrifugal blowers can reach a maximum of 80% efficiency. Axial fans are not nearly as efficient as centrifugal blowers and often struggle to reach 50%.

One can calculate the temperature rise from the discharge of a blower. For example, if a blower has a static efficiency of 54.1%, the heat gain is 45.9%. If the motor horsepower was ten (10), the BTU/Hr capability would be 25,450. Based on a blower exhausting 1930 CFM, the discharge temperature rise would be 5.58°F based on a 14" S.P.

$$\left[ \begin{array}{l} 10 \text{ HP} = 25,450 \text{ BTU/Hr} \\ 25,450(.459) = 11,681 \text{ BTU/Hr} \\ \Delta T = \frac{\text{BTU/Hr}}{10.85(\text{CFM})} = \frac{11,681}{1.085(1930)} = 5.58^\circ\text{F} \end{array} \right]$$

Below is a comparison of various types of industrial fans & blowers and their relationship between static pressure and one degree of temperature rise from their discharge.

TYPE	CONFIGURATION	S.P.*
Axial	Propeller	1.14"
Axial	Duct	1.66"
Centrifugal	Radial Pressure Blower	2.50"
Centrifugal	Radial Shrouded	3.85"
Axial	Vane Axial	5.55"
Centrifugal	Backward Curved	8.33"
Centrifugal	Airfoil	10.53"

For example, for the centrifugal backward curved blower, this indicates a 1° temperature rise of the discharge air for every 8.33" S.P. Since the airfoil and backward curved centrifugal blowers are the most efficient, their discharge air temperatures are low compared to other types of fans and blowers.

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