



S & P USA

CASE STUDY

Balanced Air Solution for a Well
Maintained and Clean Factory

OVERVIEW

When Shaw Industries built Plant T1, located in Adairsville, Georgia they recognized the need for a balanced air solution to keep their factory clean and their employees comfortable and happy. Using HREB-C & HRSB hooded roof exhaust and supply fans , S&P provided a system that brings fresh air in while creating a balanced system inside the warehouse.

JIM WEBSTER | National Sales Manager

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APPROACH

Shaw Industries is a global flooring provider, offering carpet, hardwood, resilient, laminate, tile and stone, synthetic turf and specialty products domestically and internationally for residential and commercial applications. Headquartered in Dalton, GA, Shaw Industries has offices throughout the US, Australia, Brazil, Canada, Chile, China, France, India, Mexico, Singapore, United Arab Emirates and the United Kingdom.



FIG.1

Warehouse ventilation requirements differ throughout the United States. The typical accepted requirement is a minimum of 6 air changes per hour but can go up to 30 air changes per hour. To determine the requirement for this project, S&P USA used the International Mechanical Code Table 403.3.1.1. To determine the ventilation load please use formula.

$$\frac{L \times W \times D}{6}$$

Example:

$$100 \times 200 \times 25 = 500,000 / 6 = 83,333 \text{ cfm.}$$

When Shaw Industries built

Plant T1, located in Adairsville, Georgia they recognized the need for a balanced air solution to keep their factory clean and their employees comfortable and happy. This 2.2 Million Sq.Ft. warehouse, the largest warehouse in the United States in 2015, would need six full air exchanges within an hour determined by ventilation codes. (Fig.1) Creating this full air exchange is important because it helps keep employees cool and comfortable increasing productivity. A clean warehouse is created by introducing fresh air, which helps maintain the overall building's healthy by replacing stagnant, humid air; typical for the region.

SOLUTION

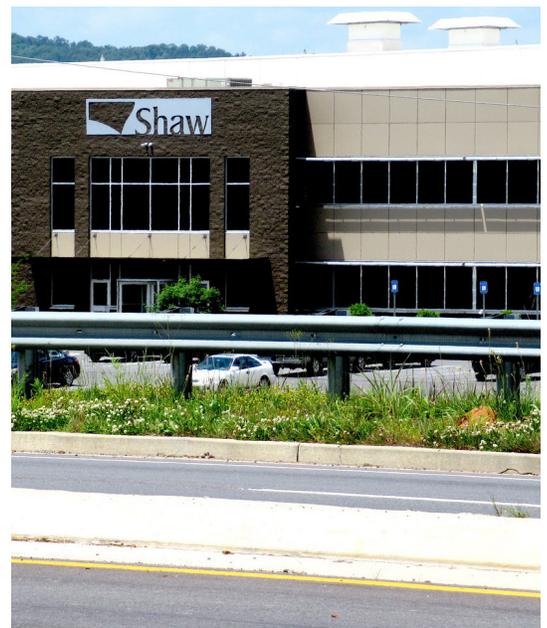
S&P USA worked with Georgia Air to determine that HREB-C belt drive hooded roof exhaust fans and HRSB hooded roof supply fans were needed to create balanced air flow. HREB-C fans focus on exhausting the air that is contaminated from the machinery used within production. HRSB fans bring in fresh air that helps the staff stay comfortable, and they provide the positive pressure inside the warehouse to keep it clean.

Fans helps with the comfort of employees in three ways:

1. evaporating sweat
2. providing convection of body heat
3. keeping the warehouse clean

Air flow replaces hot and humid air with cooler, drier air resulting in the evaporation of sweat. Evaporation is a cooling process that absorbs latent heat away from the body, making the person feel cooler.

Convection of body heat is another way that a person may feel cooler. Heat is expended into the air when the internal temperature is higher than the outside air. This air remains stagnant around the employee without air movement. Creating



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air flow allows the air to be expelled. (Keyser, 2014) Air movement created by a balanced ventilation system is especially important in a warehouse of this size where air conditioning is not an option.

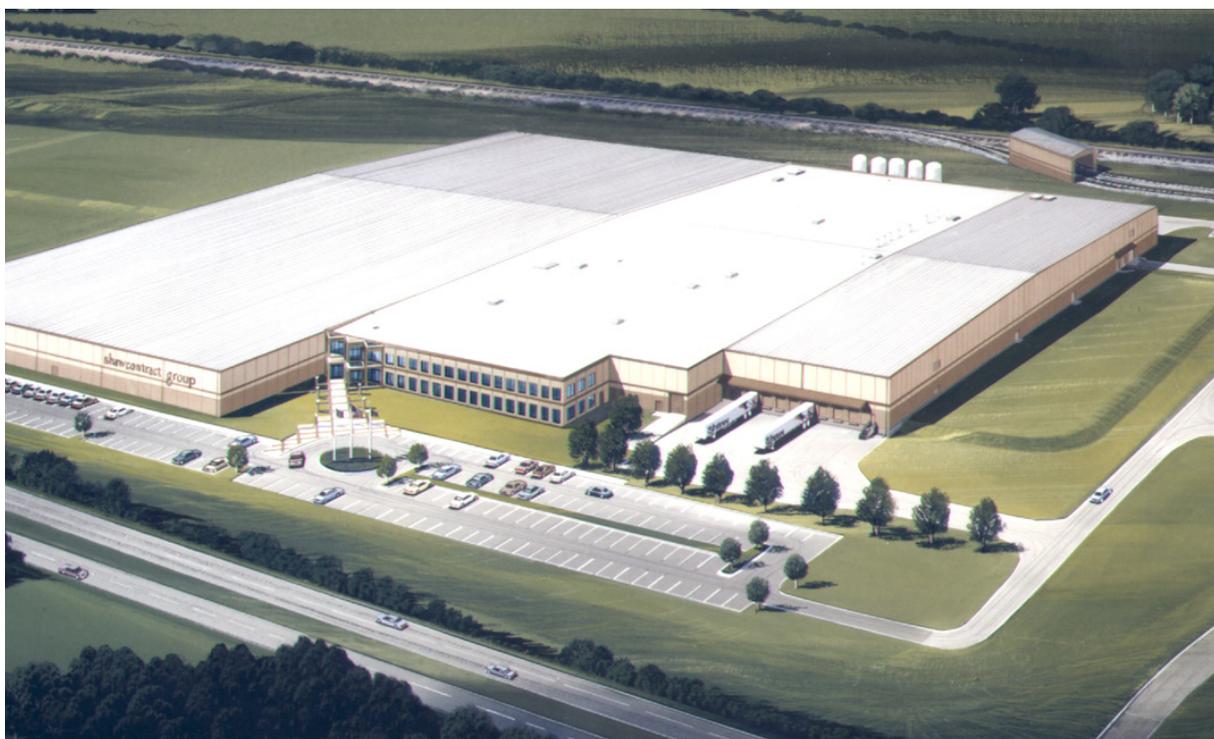
HREB-C and HRSB hooded exhaust and supply fans have been in the S&P product offering since the 1970s. They have been used on warehouses of varying sizes and within many industries, including food processing and power plants, due to their protection from outdoor elements. They were chosen for their ability to provide high volume air exchanges within the required time frame and the ability to have a supply and exhaust units at the same time. Keeping the noise levels low is important to keep employees comfortable and productive. Lower DBs in HREB-C and HRSB units are achieved by keeping lower RPM while maintaining the CFM necessary to meet the goals. When it comes to aesthetics, this project called for the use of custom white anodized aluminum with stainless steel fasteners to avoid deterioration of the appearance over time. By choosing this model, the customer was able to have an exhaust and supply unit that looked similar.



HREB-C



HRSB



CONCLUSION

S&P's HREB-C belt drive hooded roof exhaust fans and HRSB hooded roof supply fans offer a solution to create balanced air flow. HREB-C units focus on exhausting the air that is contaminated from the machinery used within production while HRSB brings in fresh air that keeps the staff comfortable and provides the positive pressure inside the warehouse to keep it clean and their employees comfortable.