



CASE STUDY

Project Snapshot

Industry

Paint Spray Booth
Manufacturing

Application

Paint Spray Booth
Ventilation

Challenges

Low cost, low profile, versatile,
reliable, low noise, low
maintenance, consolidation
of fan sizes

Solution

Belt-Driven BTABD Paint
Booth Exhaust Tubeaxial Fans
from Aerovent

Result

Paint spray booth manufacturers
can choose a low-cost, versatile,
robust, and reliable ventilation
fan that's designed specifically
for their industry

Paint Spray Booth Ventilation



Overview

For manufacturers of paint spray booths, profitability comes from developing booth designs that minimize costs while maximizing quality and reliability. For one large spray booth manufacturer, this meant replacing the ventilation fans used in their existing booths. Because the manufacturer was disappointed with the performance and cost from their existing suppliers, the company turned to Aerovent with a challenge to provide a low-cost, highly reliable fan solution. Aerovent was awarded an opportunity to work with the company to establish customer expectations, design specifications, and goals to meet its ventilation requirements.

Challenges

When designing, developing, and producing their products, manufacturers must keep their costs low without sacrificing product functionality, quality, and reliability. While these criteria are no different for paint booth manufacturers, this company had specific additional requirements that Aerovent had to meet.

Because fans used in paint spray booth applications may be required to run continuously, they must be robust and reliable. They need to have a low profile to fit into tight spaces and to accommodate multiple design configurations. The fans also need to meet the intent of the National Fire Protection Association (NFPA) standards. Specifically, NFPA 33 which is the standard for spray applications using flammable or combustible materials.

Further challenges included fan size and performance. To maximize versatility, the number of fan sizes and propeller configurations had to be minimized. The airflow requirements ranged from 1,500 CFM to 35,000 CFM. Static pressure requirements ranged from 0.5 inches w.g. to 1.25 inches w.g. The fans also needed to operate at a very low noise level due to the fact that operators are frequently working inside the booths.



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Model BTABD

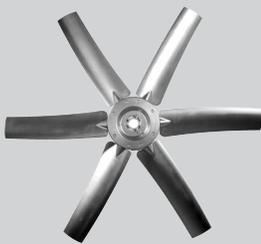
Paint Booth Exhaust Fan

Sizes

12 to 42 inches

Performance

Airflow to 36,100 CFM
Static pressure to 1.25" w.g.



Solution

Aerovent developed the BTABD paint spray exhaust fan, which not only met, but exceeded the established requirements. A notable feature of the BTABD exhaust fan is the special BackSwept™ propeller profile that minimizes turbulence and noise emission while providing optimum airflow. Because of its factory-set adjustable pitch blades, Aerovent BTABD fans easily provided the required airflow and static pressure. The fan housing's belt-driven configuration also keeps the motor out of the air stream.

Along with rugged, robust construction, permanently-lubricated and sealed bearings ensure maximum reliability. The bearing assembly also features a shorter design to minimize the fan housing size. A shorter housing enables the BTABD to be used in more booth types because they accommodate space-sensitive designs.

The BTABD's adjustable-pitch blades, shortened bearing assembly and housing work together to enable paint spray booth manufacturers to consolidate fan sizes while achieving a wide range of airflow requirements. For example, one fan size can be used in a variety of booth sizes, and can accommodate different airflow rates and static pressures by adjusting the motor size and the pitch of the sheaves.

By understanding the needs of spray booth manufacturers, Aerovent designed versatility and application flexibility into one robust fan. They are designed to reliably provide airflow in either horizontal or vertical directions and is available with propeller diameters from 12 inches to 42 inches. The BTABD has airflow capacities from 1,295 CFM to 36,100 CFM, and can provide static pressures up to 1.25 inches w.g. Motor sizes range from 0.75 HP to 10 HP. The fan's shaft and bearing assembly are also mounted within an inner cylinder isolated from the airstream. The V-belt drive assembly is enclosed in an aerodynamically designed belt tube, which maximizes fan efficiency, minimizes air blockage, and reduces noise generation.

Benefits

Exceeding one large paint spray booth manufacturer's expectations enabled Aerovent to develop the low-cost, highly reliable BTABD paint spray exhaust fan. Because of its responsiveness and customer focus, Aerovent turned what was initially a custom order into a standard product line.

From small industrial open front to large units for painting vehicles or even railroad cars, all paint spray booths must be ventilated, which means they all must have ventilation fans. Because Aerovent rose to one company's challenge, paint spray booth manufacturers now have a low-cost, versatile, robust, and reliable fan solution that's designed specifically for their industry.

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