

Terminology

EC Fans



The Essentials

CFM/Static pressure/Power



Cubic Feet per Minute (CFM)

- **CFM is a unit of measurement used to quantify the airflow rate or volume of air moved by a fan or an air handling system. CFM indicates the amount of air passing through a particular cross section in one minute.**
 - In the context of fans and ventilation, CFM is a crucial metric for assessing the fan's performance and suitability for specific applications. A higher CFM value indicates a fan with a higher airflow capacity, while a lower CFM value suggests a fan with lower airflow capacity.
 - The CFM rating of a fan depends on factors such as the fan's size, design, motor power, and operating speed. It is typically determined through testing in a controlled environment to measure the actual airflow delivered by the fan.
- **It's important to note that CFM is one of several factors to consider when choosing a fan. Other factors such as static pressure, noise level, power consumption, and efficiency also play a significant role in selecting the most suitable fan for a specific application.**

Static Pressure

- **Static pressure is an essential consideration for EC fans. Static pressure in EC fans refers to the resistance the fan must overcome to push or pull air through a duct or system.**
 - When an EC fan operates within a ventilation system or an air handling application, it encounters various obstructions and components that impede the flow of air. These obstructions can include filters, coils, dampers, bends in the ductwork, and other restrictions.
 - The ability of an EC fan to generate static pressure is crucial in ensuring that it can effectively deliver the required airflow through the system, even when faced with resistance. High static pressure capabilities allow the fan to overcome these restrictions and maintain the desired airflow rate.
- **Properly considering static pressure ensures that the selected EC fan can meet the demands of the application, maintaining adequate airflow and optimizing overall system performance. It also helps to ensure that the fan operates efficiently and with reduced noise levels.**

Input Power (w)



- The input wattage of EC fans can vary depending on the fan's size, model, speed, and operating voltage. EC fans are designed to be energy-efficient, meaning they consume less power while providing the same or better performance compared to traditional AC fans.
- The input watts of EC fans typically range from a few watts for smaller fans to several hundred watts for larger and more powerful fans. Here are some approximate ranges for different types of EC fans:
 - Small EC Fans
Smaller EC fans used in applications like electronics cooling, computer cooling, or small ventilation systems may have input wattage in the range of 1 watt to 50 watts.
 - Medium EC Fans
Medium-sized EC fans used in applications like HVAC systems, data centers, or industrial ventilation might have input wattage in the range of 50 watts to 350 watts.
 - Large EC Fans
Larger EC fans used in industrial ventilation, large-scale HVAC systems, or other high-performance applications may have input wattage in the range of 350 watts to 1kw or more.

Watts to HP Conversion

745 w = 1 hp

Power Consumption

- **The power consumption of EC fans is one of their key advantages over traditional AC fans. EC fans are known for their high energy efficiency, which means they consume less power while delivering the same or even better performance compared to AC fans.**
- **The power consumption of an EC fan depends on many factors. Such as:**
 - **Fan Size**
 - Larger EC fans with higher airflow and pressure capabilities may consume more power than smaller fans with lower performance.
 - **Fan Speed**
 - The power consumption of an EC fan is directly related to its speed. As the fan's speed increases, the power consumption also increases.
 - **Load**
 - EC fans are designed to operate efficiently at different loads. The power consumption may vary based on the actual demand or the required airflow in a specific application.
 - **Controls**
 - The method of fan speed control (e.g., PWM or 0-10V) can influence power consumption. Efficient speed control allows the fan to adjust its speed based on actual requirements, reducing unnecessary power consumption.

Design Understanding



Designing EC Solutions

- **EC fans' energy efficiency and low power consumption make them a popular choice for applications where energy savings and precise airflow control are essential, such as in green buildings, sustainable HVAC systems, and energy-conscious industrial processes.**
- **When selecting an EC fan for a particular application, it's crucial to consider:**
 - Static Pressures
 - Airflow Goals
 - Speed Regulation
 - Input Power (w)

For More Information

Contact us: Ventilationus@johnsonelectric.com

