



What is EC Fan?

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Electronically Commutated (EC) means a fan which has a brushless, permanent magnet Dc motor with onboard electronics available for controlling a fan rotor. Common fans within the air conditioning and ventilation units are generally motorized by asynchronous AC motors, responsible for driving the impeller by belt technology. It takes up a significant amount of space in AC devices which make installation complicated. Moreover, belt driven systems need replacement and maintenance due to wearing parts. Asynchronous drives are low in efficiency levels and have a negative implication in most appliances' power consumption.

In view of these factors, EC technology is a greater alternative. EC fans achieve an efficiency level of up to 90% which mean not only the primary energy will be utilized, but also heat loss will be reduced providing longer service life.

How does EC affect energy efficiency?

EC fans can help in increasing the efficiency of any device such as in a cooling system, if you keep the refrigerant pressure constant instead of rising and falling it as the fans turn on and off, it will lessen the pressure on the compressor which further result in energy saving.

The interface of electronics, aerodynamics, and motor means that EC fans not only surpass in energy efficiency ability but due to the enhanced commutation method and the aerodynamic impellers, they function very quietly. Moreover, varied speed control of EC fans makes it possible to adjust the air volume to the requirements.

EC fans comprise of compact motors, which allow them fully substitutable with Air Conditioned products for retrofit. So instead of spending money on the purchase of brand new equipment, replacement of EC technology into existing appliances is possible as a retrofit installation.

Using EC technology in HVAC Systems

Heating, Ventilating and Air Conditioning (HVAC) system are designed to heat or cool an environment. The importance of an HVAC system is increased when it comes to designing big office buildings or naturalistic controlled environment i.e., marine enclosures at the zoo. A rapid air movement from one place to another is highly needed to maintain a cooling and heating system simultaneously in an HVAC system. As an old method, AC motors were used largely to maintain air driving force, but due to their disadvantage of running only on full power, they are not the better choice nowadays.

Replacing AC motors with advanced **Electronically commutated motors (ECM)** is a better choice as they are efficient and function quietly.

EC fans are now used widely in numerous applications, both for recently manufactured appliances and for retrofit into existing equipment such as refrigeration condensers, computer room AC units, and general HVAC systems.

EC fans advantages over traditional fan & motor technology

- Energy consumption has been reduced by using EC fans.
- Maintenance of high-efficiency level at normal speed is possible by the use of EC motors.
- Speed control such as lower motor noise is possible.
- Integrated adjustable speed control competences to permit fan performance to match changing air movement requirements without energy uneconomical damping.
- There is no need for external line devices as ECM gives onboard electric protection.
- It is also possible to remotely monitor via analog or digital communication ports.
- Due to compact motors, they can be replaced for retrofits.
- It also runs cooler than Air conditioned motors as they reduce heat into the airflow and cause longer component life.

Installation Considerations

- ECM needs a software setup to start operating under indicated parameters.
- They can be programmed, encoded and addressed before being delivered to the site. It reduces the work time on site.
- When using EC fans for a fire-mode process, the capacity to supersede all internal controls should be considered.

Overall

ECM or EC fans are a feasible and striking solution for many HVAC applications, posing a number of benefits over old-fashioned AC motors, chiefly for AHU fan upgrades.

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