

Condensing units

Maximizing efficiency and minimizing noise with ESM fans.

ebmpapst

the engineer's choice



Series	W1G200
Product type	ESM fan assembly
Air volume	440 CFM
Static pressure	.08 in. w.g.
Power consumption	15 W

Background

Condensing units are the workhorses of commercial refrigeration systems, responsible for keeping perishable foods and other heat sensitive goods at proper temperatures. They can be found everywhere from refrigerated display cases and bottle coolers to commercial refrigerators and freezers. Their design has remained unchanged for many years and includes a condenser coil, a compressor, and a fan (typically an axial). The fan moves air across the condenser coil which helps the system reject heat and ensures consistent performance of the entire system, regardless of external temperatures.

The fans used in condensing units are compromised of a motor (which is usually a shaded pole, PSC, or three phase), venturi, and blades which are typically each purchased from a separate vendor and assembled on location to make a complete fan package. The result is less than ideal and often provides inefficient, single speed, noisy operation due to poor component compatibility and/or an unbalanced blade. The airflow is normally too much or too little due to the limited availability of blade offerings.

Department of Energy mandates to lower energy consumption, the desire

Application

to reduce noise, and the benefit of these systems being compatible with flammable hydrocarbon refrigerants are all creating opportunities to upgrade condenser units with EC (electronically commutated) fan assemblies. EC motors are exceptionally energy efficient brushless DC motors with an AC input.

A leading manufacturer of bottle coolers needed to lower the energy consumption of their refrigeration system to meet new regulations. They wanted the coolers to maintain their original footprint as their compact size was a major benefit to their customers, and they didn't want to have to change any of the connection points. Replacing the shaded pole motor on the condenser fan with an EC assembly offered the ideal solution.

Our W1G200 series fan fit perfectly into the existing housing, reduced the average energy consumption of the bottle cooler by 30%, and decreased the noise level by 3 dB(A). Our fan also weighed less and was more durable than its predecessor.

This solution is part of our Energy Saving Motor (ESM) series which features our GreenTech EC technology for maximum efficiency.

Solution

These fans range in size from 154 mm to 225 mm and all provide the following standard features:

- Two speed operation via a customer supplied relay or control board
- Ability to program the operating speed in 10 RPM increments to set the ideal speed needed for a specific system design without wasting any energy
- Complete fan assembly with optimized blade and venturi designed to reduce noise
- Balanced blades which reduce any structural born noise in the final assembly
- Various program settings within the fan (e.g. reverse on start which can help keep the condenser clean by reversing the airflow for a set time on each start up cycle)
- Compatibility with flammable hydrocarbon refrigerants
- Our GreenTech EC technology offers significantly higher efficiency of up to 90% vs conventional asynchronous motors

