Air purifiers

Featuring GreenTech EC centrifugal fans - RadiCal®

ebmpapst

engineering a better life

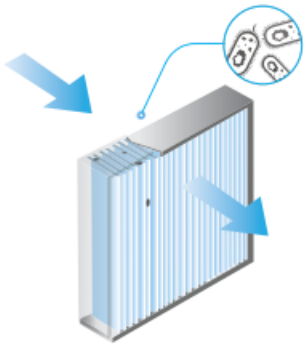
Series	R3G190
Product type	RadiCal EC centrifugal impeller
Air volume	300 CFM
Fan static pressure	1.8 in. w.g.
Fan input power	169 W
Fan speed	4120 RPM

Background

Contaminants like dust, pollen, pet dander, and smoke particles can all have negative effects on health. Exposure to hazardous toxins such as volatile organic compounds (VOCs) and mold can cause long term issues including neurological problems or even cancer, and airborne bacteria and viruses can spread disease. People suffering from respiratory conditions like asthma or environmental allergies often use air purifiers to help alleviate their symptoms, and these "air cleaners" can help in a variety of other situations as well. Air purifiers were developed to remove odors, chemicals, and pollutants from the air, and can now be found almost anywhere - from office buildings and factories to hospitals and even residences.

There are two methods used to purify air: active and passive (some systems incorporate both). Active purification utilizes UV technology or a form of chemical processing to break down pollutants at a microscopic level and convert them into harmless cells. Passive purification uses a fan to pull air through a filter, or series of filters, which capture and remove up to 99.97% of contaminants (HEPA filters are the most effective and widely recognized type). Since filters create a barrier, the fans must be able to handle higher pressures in order to effectively pull the particles through. Air purifiers are often placed in populated spaces, so even with this higher performance requirement, the fans need to operate quietly. Speed control helps to mitigate noise and maximize efficiency, and is therefore almost always included.

Application



A leading manufacturer of air purifiers wanted to utilize the latest technology to design a residential air purifier that was more reliable, more efficient, and quieter than their competition. The final product was to be sold in both U.S. and Asian markets, so minimizing noise and optimizing efficiency enough to meet Asia's strict requirements on noise and power provided the biggest challenge.

Solution

ebm-papst R3G190 and R3G220 series

To meet the stringent noise and power requirements, EC motors were required. Fans with AC motors are commonly used in air purifiers due to cost considerations; however, they are not as efficient and typically require additional components for speed control (which can also add noise). Our 190 mm and 220 mm impellers were the perfect fits for the two different sized models that were ultimately developed, and our advanced aerodynamic impeller design provided the ideal noise and airflow characteristics. The customer was also able to benefit from our onsite engineering services to design, test, and manufacture the assemblies all in one place, saving them both time and money.