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Proper Fan Selection Is Critical to Success

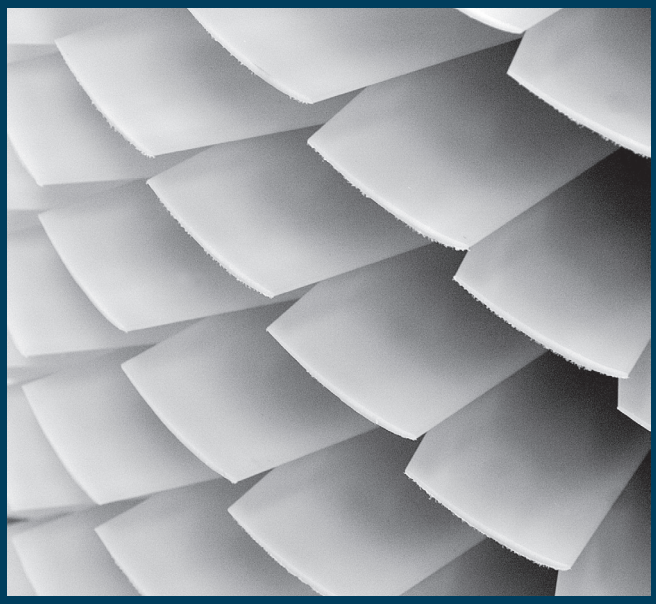
WHITE PAPER



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Selecting the right fan that delivers excellent performance and efficiency for the intended application is complex. And the customizable options, including blade shape, pitch angle, diameter, width, material composition, mounting type and more, are virtually endless. It's also not uncommon for the fan to be one of the last components that specifiers, engineers, integrators and others consider when selecting the cooling system, which can limit options and make it more challenging to customize a fan that meets the application requirements. To minimize delays and get the best fan performance, it's important to work with advanced fan selection tools and a fan expert early in your design process.



PROBLEMS CAUSED BY IMPROPER FAN SELECTION

Fans must be compatible for mounting to the drive or motor source, and ideally provide the most economical solution. Conversely, poor fan selection that results in improper airflow or higher than expected sound levels can increase costs and delay a project.

If the incorrect fan for an application is specified, it can cause under- or overperformance. For example, if a fan underperforms in a radiator application, the engine can overheat and shut down. In a heating, ventilation or air conditioning (HVAC) application, an underperforming fan won't cool properly. When specified for a freezer, it might not freeze as quickly as it would with a properly selected fan.

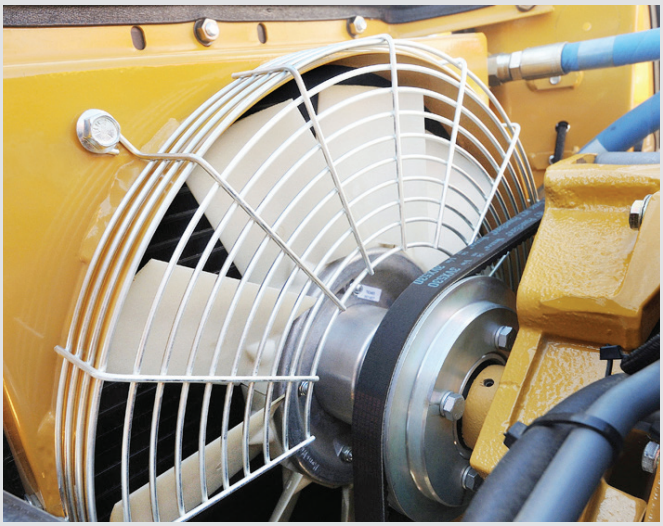
If a specified fan overperforms, it wastes energy and increases expenses. For example, a fan that requires 5 HP to operate needs a 5-HP motor to power it. But if the fan only requires 3 HP to operate, yet is driven by a 5 HP motor, energy is wasted.

In the example of a produce storage facility, if a specified fan is overperforming, it may damage produce, resulting in reduced shelf life and potentially unsalable merchandise.

BENEFITS OF PROPER FAN SELECTION

The benefits of specifying the correct fan for an application can't be overstated. A correctly selected fan efficiently delivers high-performance airflow that meets requirements. It also provides lower up-front cost and long-term reliability. Specifying the correct high-efficiency fan can also provide lower power or reduced fuel consumption, delivering lower operational costs over the life of the fan.





CONSIDERATIONS FOR PROPER FAN SELECTION

There are many important parameters to consider when selecting a fan to meet the specified operating conditions. These include: blade type and pitch angle, position and number of blades, fan diameter, power and noise limitations, resistance to the airflow, speed options, shrouding and mounting requirements, air temperature, obstructions, performance requirements and more.

Fans can significantly contribute to operating noise in any application. The Occupational Safety and Health Administration's (OSHA) Noise and Hearing Conservation Standards for workplace noise exposure require low-noise axial fans in the United States. In addition to ensuring noise requirements are satisfied, selecting a fan that minimizes noise improves customer satisfaction.

When customizing a fan, sound-related characteristics, such as tip speed and temperature limitations, axial and radial deflection and natural frequencies can be complex. Material composition of the blade and any unique customer requirements, such as antistatic environments are also factors.

Engineers and designers who select and specify fans should have a basic understanding of fan curves and how these are generated. This knowledge is helpful for verifying the fan selection, troubleshooting after installation, and understanding future flexibility.



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TRUST THE PROFESSIONALS

Multi-Wing America's expert sales engineers understand the complexities of proper fan selection and are ready to help you make the right selection. These highly trained sales engineers work to fully understand your application and requirements to help you specify the right fan.

Multi-Wing develops fans worldwide for a range of applications, and our team has more expertise than virtually any other fan manufacturer. We customize impellers for radiator and engine cooling, HVAC and refrigeration applications.

Multi-Wing's Optimiser fan selection app allows engineers to input their project data, including airflow, pressure and power consumption, to determine the optimum fan solution. The Optimiser app can be used as a quick reference guide and an advanced tool in the product development process.



When data is input into the Optimiser app, it can deliver more than 100 fan options, and requires a fan expert to determine the best option. A Multi-Wing sales engineer verifies all fan selections.

Engineers are encouraged to download and use the Optimiser app and work with a Multi-Wing sales engineer early in the design process to efficiently specify the proper fan.

Don't leave your fan selection to chance. Contact a Multi-Wing sales engineer to discuss your fan requirements by visiting multi-wing.net, emailing info@multi-wing.net or calling 1.800.311.8465.

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info@multi-wing.net
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