CUSTOMER GUIDE
TO CUTTING YOUR COSTS USING HVLS FANS
ENGINEERING THE BEST

The end of a ten foot fan blade has a rotational speed 10 times greater than that of its base.

In order to make the most of every rotation, a blade must have a deeper angle of attack where it is moving slower. This is the shape used by Humongous Fans and is the innovation responsible for a lighter fan that moves more air with lower horsepower and at a lower RPM.

By comparison, an HVLS fan without the twist and taper can only, efficiently, push air at the end of its blades. To compensate, the fan must operate at higher RPM, and a higher horsepower gear motor assembly. However, its airflow pattern will remain uneven, comparatively turbulent, and the range of usage will suffer, especially at the critical low-speed settings.

Our blades use twist and taper to account for the difference in rotational speed at the base versus the end of the blade.

On a twenty foot fan, the tip of the blade has a rotational speed that is ten times as fast as the base.

If your fan has the same diameter and the same angle of attack along the entire length of its blades, loss of efficiency will occur at a linear rate approaching the center.

Your Humongous Fan moves more air, at every RPM speed, allowing you to move more air at lower speeds and using less energy.
WHERE TO START

Every application is unique in its opportunities, challenges and outcomes. Despite the endless variety of unique scenarios and settings in which we find our products, we have found four consistent broad categories for which we provide solutions: cooling without A/C, cooling with A/C, destratification/winter comfort, and air quality control.

THE PLAN

Application Type 1 ...................... p.4
  Cooling without A/C

Application Type 2 ...................... p.5
  Cooling with A/C

Application Type 3 ...................... p.6
  Destratification

Application Type 4 ...................... p.7
  Air Quality Control

THE FAN

Accessories ...................... p.8

Personalization .............. p.10

Fan Sizes and Specs .............. p.11

FAQ .............. p.11

Green Incentives .............. p.12

"WE INSTALLED TWO 12" HUMONGOUS FANS [...]. THE FAN PERFORMANCE HAS BEEN EXCELLENT. THEY ARE SUPER QUIET AND THE AIR FLOW IS VERY PLEASING. LAST WEEK THEATER ARTS PERFORMED, "MARY POPPINS." WHILE THE OUTSIDE TEMPERATURE WAS OVER 85 DEGREES, THE 400+ PEOPLE INSIDE ENJOYED THE SHOW IN THE COMFORT THAT THE FANS CREATED."

-Director of Facilities, Primary Education Building, Los Angeles, CA.
COOLING WITHOUT CLIMATE CONTROL

Productivity Loss due to Heat

<table>
<thead>
<tr>
<th>Apparent °F</th>
<th>Relative Productivity</th>
<th>Productivity Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>99.9%</td>
<td>~0%</td>
</tr>
<tr>
<td>80</td>
<td>96.23%</td>
<td>3.77%</td>
</tr>
<tr>
<td>85</td>
<td>92.07%</td>
<td>7.93%</td>
</tr>
<tr>
<td>90</td>
<td>87.40%</td>
<td>12.60%</td>
</tr>
<tr>
<td>95</td>
<td>83.03%</td>
<td>16.97%</td>
</tr>
<tr>
<td>100</td>
<td>79.77%</td>
<td>20.23%</td>
</tr>
<tr>
<td>105</td>
<td>78.41%</td>
<td>21.59%</td>
</tr>
</tbody>
</table>


The Problem:
Overheating means lost productivity, increased mistakes, and lower morale, and the numbers prove it, but we’ve run the math in the table to the left so you don’t have to.

How HVLS Fans Solve My Problem:
A 3-5 mph breeze can reduce apparent temperature by as much as 10°F. And HVLS fans work smarter, not harder: they get results quietly using small amounts of electricity without taking up floor space and last a very long time.

How to Begin Planning:
The first step is to find out where most of the people spend most of their time, and to take a measurement of that space.

Then, consider the direct breeze region associated with each size fan. As a rule of thumb, each fan will produce a 3-5 mile per hour breeze in a space equal to 3-4 times its diameter, depending on the size and number of obstructions present.

Therefore, if employees spend most of their day in a space which is 80’ across, the optimal solution is a single 20’ fan positioned roughly in the center of this space.
COOLING WITH CLIMATE CONTROL

“The remarkable thing is the volume of air that is being moved. It’s like a wave in the ocean vs air. Thick and weighty, with momentum [...] These turned out exactly like I intended. Couldn’t have done it without your help.”

-Private Owner, Residential Application, Lawrenceville, GA

The Problem:
You have a building A/C system that keeps occupants comfortable but that comfort comes with a price not limited to power draw. Breakdowns, replacements, inefficiency and maintenance all grow your bills. Fortunately, HVLS fans are a cost-effective solution to all of those problems.

How HVLS Fans Solve My Problem:
Humongous Fans reduce the apparent temperature experienced by the people working or playing beneath them. This allows owners, managers, and designers to leave the A/C system at a higher set-point without compromising comfort.

Savings can be as much as 6 percent per degree, and green energy credits are also available for air quality (see Tools and Resources, p. 11).

How to Begin Planning:
Determine the regions of your facility where people spend most of their time working or playing. Measure the dimensions of these locations, and size the best fan by its effective breeze region (see Technical Specs, p.9). For low traffic or diffused-presence areas refer to the maximum effective square footage specifications.

Why Humongous Fan:
The breeze pattern produced by our airfoils is bigger and more consistent at slower speeds with less turbulence. For the user this means more air can be moved more slowly in sensitive environments, giving you an added degree of control and better results across the continuum of usage, from zero to one hundred.

Add the savings gained through power efficiency over competing models and the choice becomes clear.
Destratification will always result in big savings, especially over time. However the optimal solution is as much about your goals as it is about your space. The two broadest categories are outlined below.

**A: COMPLETE DESTRATIFICATION**

*Ex: temperature sensitive products on tall shelving.*

The ideal solution balances your work environment’s airspeed tolerance with the fan’s specified maximum square footage. If airspeed is not a problem your solution will use fewer fans running faster. A larger number of fans may be required if airspeeds must be kept low.

_The savings will come primarily for less HVAC usage at a lower intensity, less spoilage and a lower setpoint._

**B: LOCAL DESTRATIFICATION**

*Ex: maintain employee comfort while cutting costs*

The most efficient solution is to place the fewest number of the largest possible fans above the spaces where most of the people spend most of their time and to focus on redirecting heated air from the ceiling directly to the people below.

_The savings will come primarily from dropping your setpoint and allowing the fan(s) to direct warm air to the floor._
AIR QUALITY CONTROL

The Problem:

Ceiling-located HVAC systems’ intake and return vents can struggle to efficiently and evenly distribute the benefits of climate control building occupants.

This results in increased burden on your system as it tries to compensate for inefficiency. This causes more frequent repairs and a higher cost of usage.

How HVLS Fans Solve My Problem:

HVLS fans can dramatically reduce HVAC air intake by circulating and destratifying climate controlled air volumes. The result is lower operational costs, stable indoor air quality, and reduced maintenance needs.

“THE HUMONGOUS FAN IMPROVES PRODUCTIVITY AS IT COOLS THE SPACE IN THE SUMMER AND MAKES IT WARMER AND MORE COMFORTABLE IN THE WINTER. WITHOUT THE FAN, WE WOULD ROAST IN THE SUMMER AND FREEZE IN THE WINTER”

-President, Equipment Manufacturer, Cleveland, OH

CHANGING FROM OUR PREVIOUS SUPPLIER WAS AN EASY DECISION. OUR CLIENTS APPRECIATE THE INCREASED BREEZE AND COMFORT THESE FANS PROVIDE.

-Fitness Center Owner, Jacksonville, FL
HARDWARE OPTIONS

**Single Fan Controller**
Ships standard with every fan.

**Remote Operator Station**
Controller with key-lockout for space sensitive locations

---

**Multi-Fan Control Unit**
Control up to 4 fans from a single unit

**Mounting Extension Kits**
3’ and 6’ Drop Kits Stock, Modification to Order
# TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Fan Diameter</th>
<th>8 ft.</th>
<th>12 ft.</th>
<th>16 ft.</th>
<th>20 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Airfoils</td>
<td>8 Airfoils</td>
<td>8 Airfoils</td>
<td>8 Airfoils</td>
<td>8 Airfoils</td>
</tr>
<tr>
<td>Fan Weight</td>
<td>91 lbs.</td>
<td>109 lbs.</td>
<td>127 lbs.</td>
<td>161 lbs.</td>
</tr>
<tr>
<td>Motor Enclosure</td>
<td>Totally Enclosed Fan-Cooled</td>
<td>Totally Enclosed Fan-Cooled</td>
<td>Totally Enclosed Fan-Cooled</td>
<td>Totally Enclosed Fan-Cooled</td>
</tr>
<tr>
<td>Motor Power</td>
<td>0.5 HP</td>
<td>0.5 HP</td>
<td>0.5 HP</td>
<td>0.5 HP</td>
</tr>
<tr>
<td>Maximum RPM</td>
<td>44 RPM</td>
<td>44 RPM</td>
<td>44 RPM</td>
<td>39 RPM</td>
</tr>
<tr>
<td>Maximum CFM*</td>
<td>~45,000 CFM</td>
<td>~90,100 CFM</td>
<td>~123,000 CFM</td>
<td>~197,000 CFM</td>
</tr>
<tr>
<td>Sound Level (dBA)**</td>
<td>&lt;57 dBA</td>
<td>&lt;57 dBA</td>
<td>&lt;57 dBA</td>
<td>59 dBA</td>
</tr>
<tr>
<td>Direct Breeze Region ***</td>
<td>28 - 32 ft. diameter</td>
<td>42 - 48 ft. diameter</td>
<td>56 - 64 ft. diameter</td>
<td>70 - 80 ft. diameter</td>
</tr>
<tr>
<td>Best Industrial Spacing ****</td>
<td>42 ft.</td>
<td>63 ft.</td>
<td>84 ft.</td>
<td>105 ft.</td>
</tr>
<tr>
<td>Max Square. Footage ****</td>
<td>4,250 sq. ft.</td>
<td>8,500 sq. ft.</td>
<td>12,750 sq. ft.</td>
<td>19,750 sq. ft.</td>
</tr>
<tr>
<td>Input Power</td>
<td>110-120V, 1φ: 10.25 A</td>
<td>208-240V, 1φ: 5.13 A</td>
<td>208-240V, 3φ: 3.00 A</td>
<td>208-240V, 3φ: 1.50 A</td>
</tr>
<tr>
<td>Motor Maximum</td>
<td>208-240V: 1.90 A</td>
<td>208-240V: 1.90 A</td>
<td>208-240V: 3.66 A</td>
<td>208-240V: 3.66 A</td>
</tr>
<tr>
<td>Full Load Amps</td>
<td>208-480V: 0.95 A</td>
<td>208-480V: 0.95 A</td>
<td>460-480V: 2.85 A</td>
<td>460-480V: 2.85 A</td>
</tr>
<tr>
<td>Standard Mount</td>
<td>I-Beam/Z-Purlins/Open Joist</td>
<td>I-Beam/Z-Purlins/Open Joist</td>
<td>I-Beam/Z-Purlins/Open Joist</td>
<td>I-Beam/Z-Purlins/Open Joist</td>
</tr>
<tr>
<td>Extensions</td>
<td>3 ft. and 6 ft. Mounting Extensions Available</td>
<td>3 ft. and 6 ft. Mounting Extensions Available</td>
<td>3 ft. and 6 ft. Mounting Extensions Available</td>
<td>3 ft. and 6 ft. Mounting Extensions Available</td>
</tr>
<tr>
<td>Controller</td>
<td>NEMA 1 Wall Mounted VFD w/Safety Disconnect, On/Off Toggle and Speed Pot</td>
<td>NEMA 1 Wall Mounted VFD w/Safety Disconnect, On/Off Toggle and Speed Pot</td>
<td>NEMA 1 Wall Mounted VFD w/Safety Disconnect, On/Off Toggle and Speed Pot</td>
<td>NEMA 1 Wall Mounted VFD w/Safety Disconnect, On/Off Toggle and Speed Pot</td>
</tr>
<tr>
<td>Warranty</td>
<td>5 Years All Parts</td>
<td>5 Years All Parts</td>
<td>5 Years All Parts</td>
<td>5 Years All Parts</td>
</tr>
</tbody>
</table>

* CFM measurements are an approximation derived from several factors. AMCA does not certify CFM ratings for fans larger than 8' in diameter.
** dBA measurements taken directly beneath units running at 3/4 speed in an active work environment.
*** For applications in which breeze production/ventilation is the foremost consideration, applies to operation at 1/2 max speed with a clear floor.
**** For applications in which heating/cooling cost reduction is the foremost consideration.

---

Humongous Fan
23103 Miles Road, Cleveland, Oh, 44128
Support: 1.216.663.8830

www.humongousfan.com
CUSTOMIZATION OPTIONS

8 Stock Colors
No surcharge applied, available with every fan

BLACK  WHITE  GREEN  YELLOW  BRUSHED ALUMINUM  BLUE  RED
FREQUENTLY ASKED QUESTIONS

Q: What speeds will I be running this fan at?

A: The only speeds we know for sure that you won’t be using are 0% and 100%

Longer A: We run our own Humongous Fans at about 33Hz (out of 60Hz max) during the summertime. During the winter we run it at closer to 11Hz, when the goal is not to create a breeze but to bring that nice warm air off the ceiling where it’s just melting snow.

Q: Is it possible to run these fans backward?

A: No. We have made the deliberate design choice not to implement reverse rotation. The reason is that running HVLS fans in reverse is inefficient and counterproductive for your goals.

Longer A: For one, these blades are not the same shape as standard ceiling fan blades. They function on the same aerodynamic principles as airplane blades, or propellers.

Second, it’s lose-lose no matter what season you’re in. By running HVLS fans backward you are failing to maximize the evaporative-cooling effect in the summer. During the winter you are doing the most work for the least destratification.

If it’s a cold draft you are worried about, you have only to turn up the speed until you feel the breeze, then turn it down slightly. You’ll get all the benefits of destratification without getting any chills. This is possible because our VFD (Variable Frequency Drive) input controllers are infinitely adjustable, in speed: no big jumps in air-speed with which to contend, as with your standard ceiling fans.

Q: Why doesn’t your fan have winglets?

A: They are unnecessary and costly and represent an additional point of potential failure.

Longer A: You see winglets on airplanes all the time. But how many helicopters do you see that have them? Part of the reason is that rotating airfoils are constantly moving through each other’s wake, meaning that the vortex-minimizing properties of winglets are not in appreciable effect. This is why few helicopters sport them, except for those designed with highly specialized purposes in mind, such as noise reduction.

But you don’t have to take it from us. NASA and the US Army conducted research which led to the same conclusion: winglets, paddles, rails, and other air-diversion structures do not provide any significant improvement on the performance of rotor systems. Additionally, winglets and rails on fixed-system rotor blades (fans) must work to divert (heavy) air which is already flowing in a column (and has inertia). This work creates additional torque on the fan blade, which reduces its efficiency without proportionally increasing airflow.

If you would like to pay for that, we are sorry to say that we don’t offer it.

Q: Can I get a quote?

A: Absolutely!

Longer A: Call or email us and we’ll prepare a full quote for you as quickly as we can.
ADDITIONAL PLANNING RESOURCES

LEED
- EQ Prerequisite 1 - Minimum Indoor Air Quality Strategies
- EA Credit 1 - Enhanced Indoor Air Quality Strategies
- EQ Credit 5 - Thermal Comfort
- EQ Prerequisite 2 - Minimum Energy Performance
- EA Credit 2 - Optimize Energy Performance
- EA Credit 4 - Demand Response
- A Credit 6 - Enhanced Refrigerant Management
- IN Credit 1 - Innovation

Living Building Challenge
- Imperative 06 - Net Positive Energy
- Imperative 08 - Healthy Indoor Environment
- Imperative 10 - Red List

Green Globes
- Section 3.30 - Energy, Path B
- Section 3.71 - Ventilation Requirements

State Incentives Database
- http://www.dsireusa.org