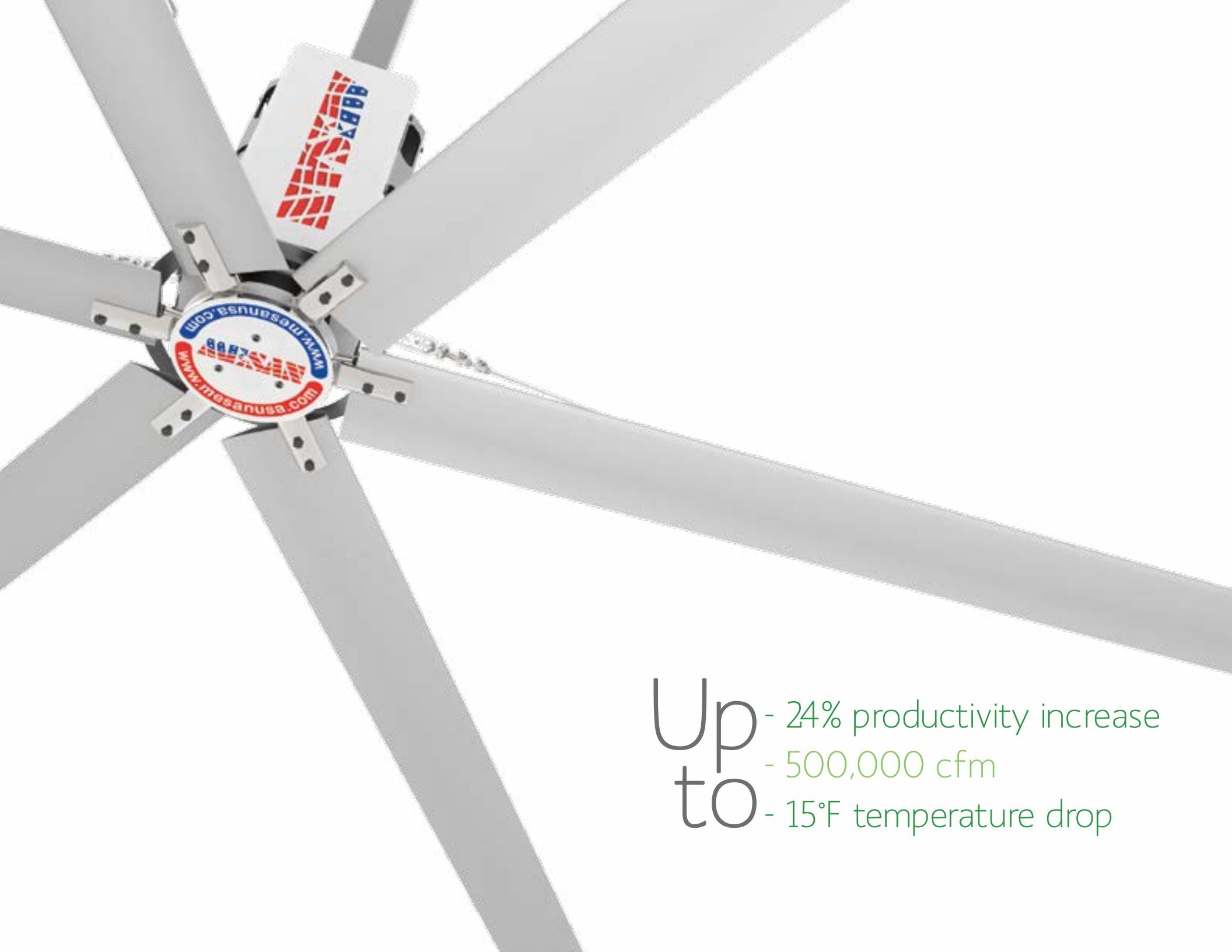


HVLS fans

The energy-saving solution
to increase productivity





Up to - 24% productivity increase
- 500,000 cfm
- 15°F temperature drop

Introducing our new HVLS fans

HVLS stands for High-Velocity Low Speed, and it is a generic trade name given to relatively large, ceiling-mounted, propeller fans, used to ventilate large spaces, like warehouses, gyms, malls, factories, etc.

Building on the successful experience with its cooling tower fans, MESAN USA, has designed this new line of fans, which incorporates some of the same design clues of the cooling tower fans, like, airfoil type blades, to generate higher airflow rates at lower RPM, aerodynamic winglets to reduce drag, and reduce energy consumption, single-piece fan hubs for sturdier and better balanced construction.

In addition to these well-known design features, our HVLS fans, now incorporate, NORD (Germany) parallel-shaft, motor-gear reducers, with helical gears, for lowest possible noise, long service life, and low maintenance.

On the electrical / controls side, our panels (a standard feature), are housed in an IP55 steel enclosure, with a gasketed and lockable door, and include, only top-quality components, like a DANFOSS variable frequency drive, and SCHNEIDER miscellaneous components.

In summary, a very high-quality product, backed by MESAN USA's reputation, which comes with a lifetime warranty on the fan blades and hubs, and a three-year warranty on all the other components.



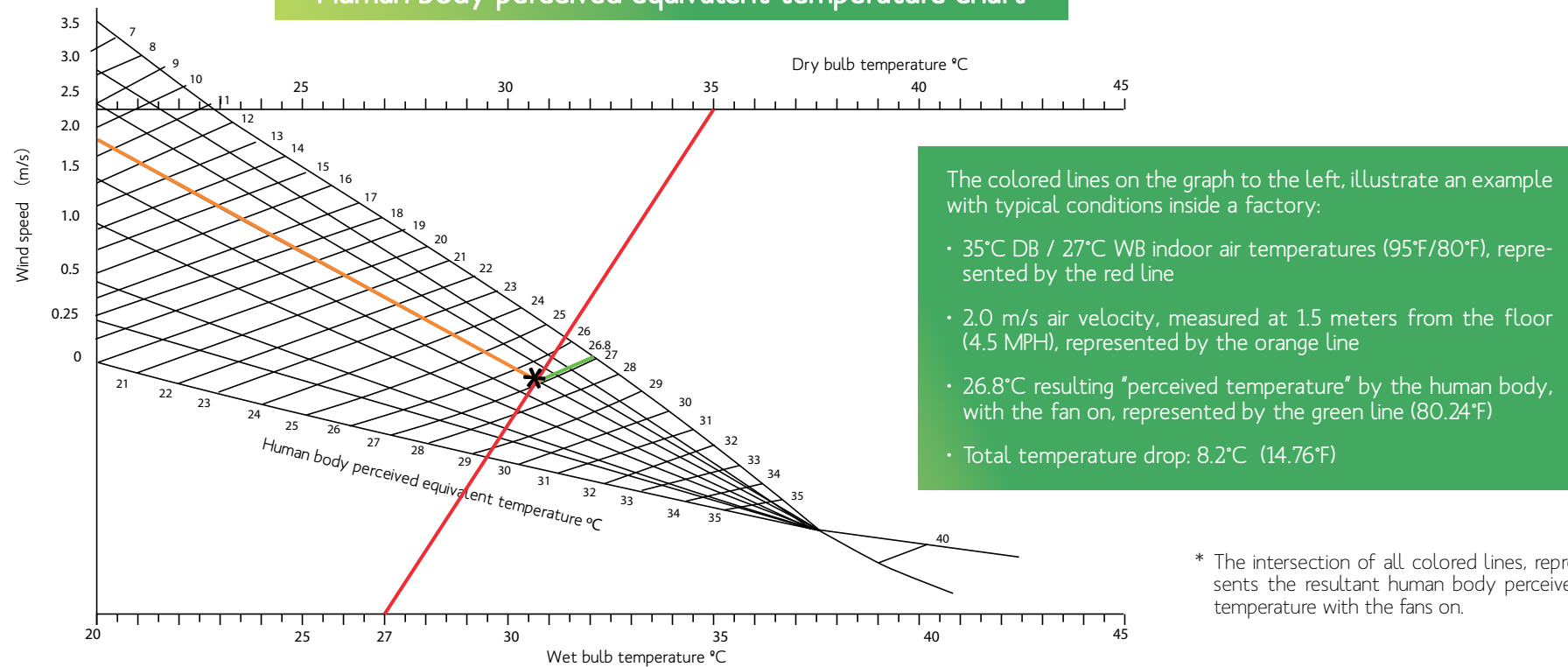
Operating Principle of HVLS fans

It is a scientifically proven fact, that heat stress, caused by high temperatures in the workplace, negatively affects labor productivity.

Several studies have been made, to verify the effect of ambient temperature on workers. Results show that for every degree Celsius of temperature increase above 25°C (77°F), the output or productivity of workers, decreases between 3 and 4%. This has a quantifiable economic impact on companies. The effect of

ambient temperature in the workplace can be measured in dollars! The curves below can be used to calculate the temperature drop created by these fans in the workplace, or human body perceived temperature. The curves relate the Dry and Wet Bulb temperatures inside the working environment (building) with all fans off, the air velocity created by the fans, measured at 5' from the ground, and the intersection of these lines defines the resulting perceived or "feels like" temperature for the workers, with the fans on.

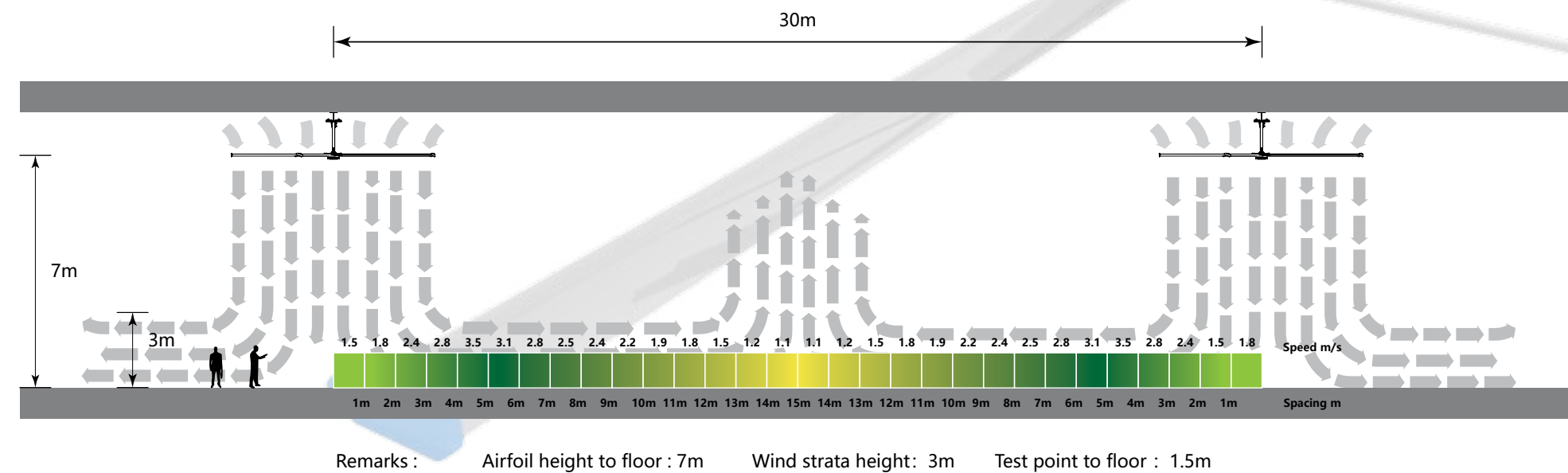
Human body perceived equivalent temperature chart



HVLS fans are the most cost-effective way to reduce ambient temperatures in the workplace, without resorting to expensive air conditioning.

To take advantage of the cooling effect that high velocity air has on the human skin (by evaporation), HVLS fans move very large volumes of air (up to 500,000 cfm), over large floor areas, while rotating at very low speed (20 to 75 rpm), with minimal noise (45 dBA), and using little energy (2.0 HP motors).

Temperature drop perception (a.k.a. "feels like" temperature) that can easily be achieved by these fans, is in the 4°C to 6°C, which means that productivity can be increased by up to 24% by using HVLS fans.



Typical Applications

The best places to apply these HVLS fans, are large open area buildings with high ceilings, because the recommended hanging height for these fans is 15 to 20 feet above ground. Typical applications are:

- Factories
- Warehouses
- Gyms
- Schools
- Farms
- Train Stations
- Exhibition Halls
- Shopping Malls



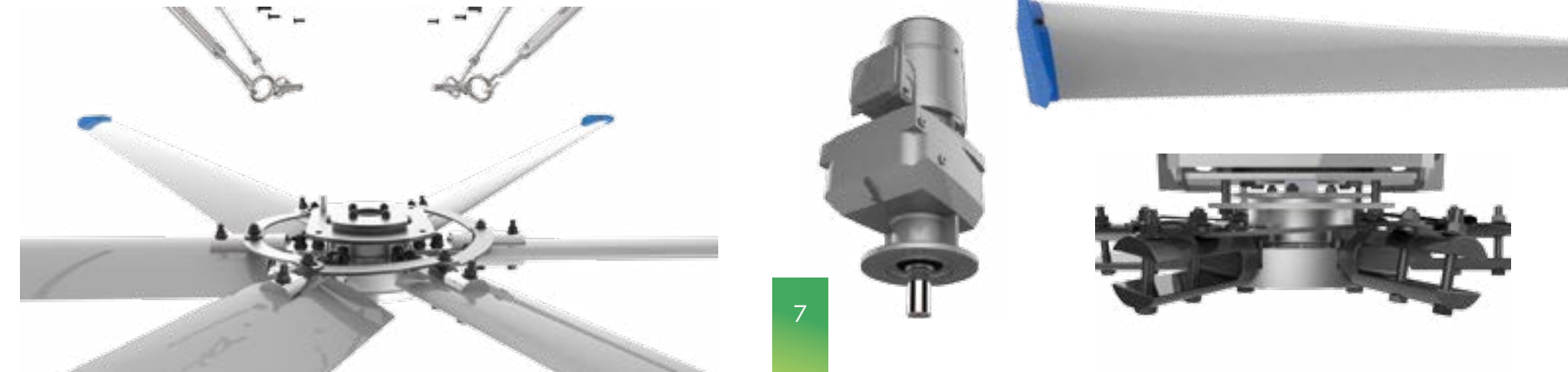
Model	Diameter (m/ft)	Motor (kW/HP)	Amps (220V)	RPM min-max	Air Volume (cfm)	Coverage (ft ²)	Maximum coverage diameter (ft)	Wt. (kg)	SPL (dBA) @15'
MKQ-24	7.3 m (24 ft)	1.5/2.0	5.50	20 - 53	500,000	19,375	148	125	60
MKQ-20	6.1 m (20 ft)	1.5/2.0	4.32	20 - 53	400,000	14,854	131	113	55
MKQ-18	5.5 m (18 ft)	1.5/2.0	4.00	20 - 64	350,000	11,302	118	108	52
MKQ-16	4.9 m (16 ft)	1.5/2.0	3.40	20 - 64	280,000	9,149	98	102	48
MKQ-12	3.7 m (12 ft)	1.5/2.0	3.25	20 - 75	220,000	6,781	78	90	45

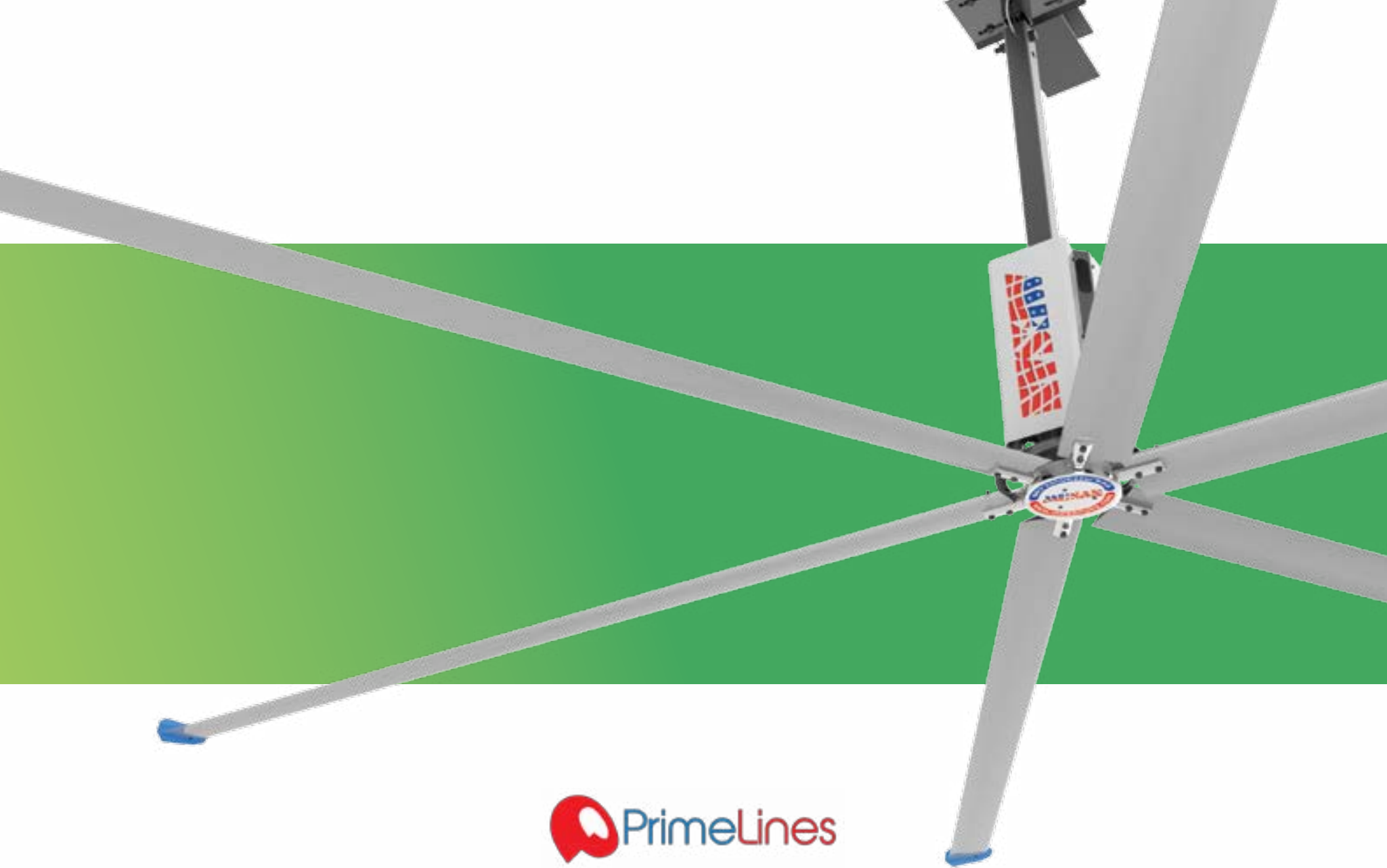
- 1.- The built-in Danfoss VFD allows these fans to be operated at 50 or 60 Hz (single-phase) without problem.
- 2.- Coverage area is based on a hanging height of 20' from the ground (from blades to ground), higher installations achieve larger area coverage, but at lower terminal air velocity. Data above is based on a terminal air velocity of 0.5 m/s or 105 ft/min.
- 3.- Minimum recommended hanging height is 15'
- 4.- Minimum clearance between ceiling and fan blades is 4'
- 5.- Minimum suggested separation between identical fans: 3 x fan diameters (measured center-to-center)

Technical Data

Made with top-quality components to ensure reliability and long service life. Life expectancy of these fans under normal operating conditions is 20 years, thanks to the high-quality components, used in their construction:

- NORD brand motor-gear reducers. (Germany)
- Single-piece hubs, made of high-pressure, heat-treated forged aircraft-grade 7075 aluminum (750 MPa of yield strength), with a lifetime warranty.
- 7075-grade forged aluminum fan blade arms, also with a lifetime warranty.
- AISI-1045 heavy-gauge steel structure, powder coated for maximum corrosion protection.
- Proprietary designed 7075-grade anodized aluminum airfoil fan blades, to create higher airflow at lower RPM.
- Aerodynamic wing tips on each blade to improve performance, and area coverage.
- All fasteners are grade-12.9 tempered alloy steel, the strongest grade in the market (1,200 MPa yield strength).
- Danfoss micro-VLT VFD drive with built-in LCD screen that shows speed percentage.
- Schneider electrical hardware and components.
- ON-OFF-RESET switch, and rotary stepless speed controller.
- Steel control panel with lockable, gasketed door, and positive ventilation (built-in cooling fan).
- Built-in RF interference filter and brake chopper.





MESAN USA HVLS fans are exclusively
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