



# Air-Cooled Condensers

WITH IMPROVED ENERGY EFFICIENCY, REDUCED SOUND LEVELS and DURABILITY.

All Krack Vertical Air-Flow Condensers come standard with Florida Building Code (FBC) approval for high velocity high wind zones.

## Highlights:

- Superior protection against high wind and wind-borne debris
- Energy efficient variable speed fan technology
- Multiple condenser solutions available
- Designed to condense multiple refrigerants
- Optimal fan blade design for lower noise level during operations
- Versatile fan cycling control methods
- Vertical or horizontal air discharge arrangements available



Shown: *Levitor II*

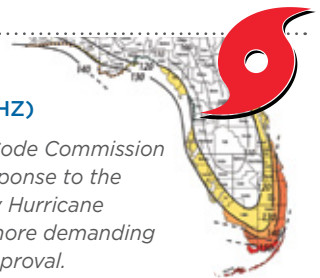


Shown: *Microchannel*

## High Velocity Hurricane Zone (HVHZ)

The Florida Building Code Commission was established in response to the devastation caused by Hurricane Andrew - creating a more demanding system for product approval.

The designation of the High Velocity Hurricane Zone (HVHZ) dictates that building products used within the zone meet high standards of performance under the stress of extreme wind and pressure and manufactured according to a quality assurance program that is third party approved.



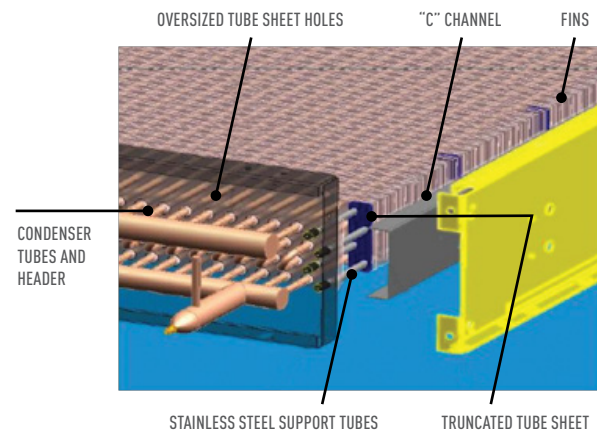
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## Air-Cooled Condenser Solutions

### Levitor II Series



The Levitor coil design provides highly customizable solutions with a wide range of features and options. It incorporates a stainless-steel coil support and "C" channel that eliminates tube wear while reducing sound levels. This solution allows tubes to expand and contract without interference.

### Microchannel



Microchannel requires less internal volume resulting in lower refrigerant charges. With a smaller footprint, Microchannel condensers see an average of 27% weight reduction compared to the Levitor II designs resulting in less infrastructure to support the system.

#### Hurricane-Rated Units:

- Designed to withstand winds up to 175 MPH
  - 88 PSF Lateral
  - 70 PSF Vertical
- Approved for ground or roof mounting (height 30 feet or less)
- Vertical fluid coolers also come standard with FBC approved design
- Meets Florida state high wind zone code regulations

#### Variable Speed Fan Motor Options:

##### Vspeed Variable Speed Motors with Separate Electronic Drives

- Available with Levitor or Microchannel
- Brushless Permanent Magnet (BPM) motors with separate electronic drive per motor
- Speeds vary from 0 to 100%
- Best initial cost
- Requires no field installation
- Baseline for energy use
- Standard electrical service
- Low cost to independently replace motor or electronic drive

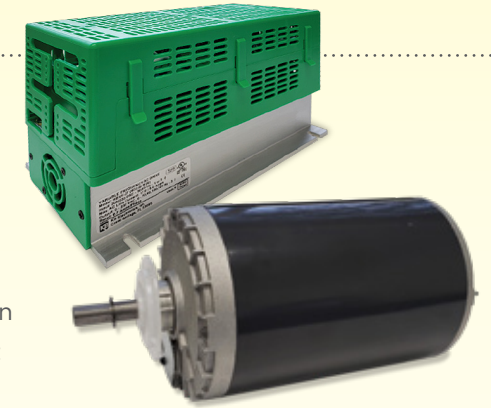
##### 3-Phase Motors with VFD (LAVF / MXF)

- Available with Levitor or Microchannel
- Speeds vary from 25 to 100%
- Better initial cost
- Field installation and programming
- Higher energy use - VFD losses
- Standard electrical service

## Krack Vspeed Solution

### HIGH PERFORMANCE ELECTRONIC DRIVE and MOTOR SOLUTION FOR LEVITOR II and MICROCHANNEL APPLICATIONS

Krack's latest fan technology is now offered with a variable speed fan solution called Vspeed under the LAVK and MXK configurations that utilizes a BPM and panel mounted electronic drive (per motor).



Shown: Vspeed Drive and BPM Motor

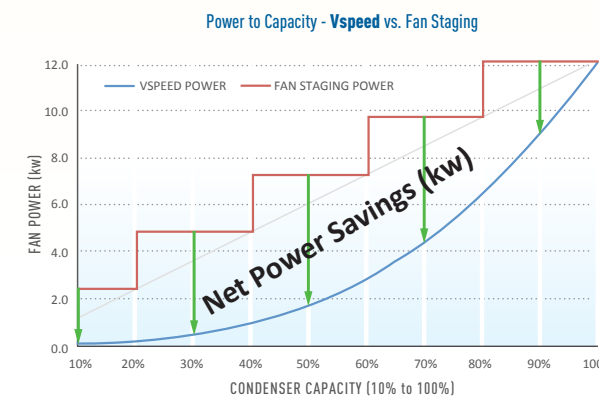
#### Why Vspeed?

- **ENERGY EFFICIENCY:** Uses more efficient BPM motor and electronic drive versus 3-phase motor
- **ENERGY SAVINGS:** Varies the fan speed to match the system capacity resulting in increased energy savings
- **SYSTEM LONGEVITY:** Keeps condensing temperatures consistent reducing compressor cycling resulting in less wear and tear on system components
- **SOUND REDUCTION:** Decibels decrease at a constant rate with the fan speed resulting in lower sound
- **ISOLATED:** Electronics are isolated from vibration and rain

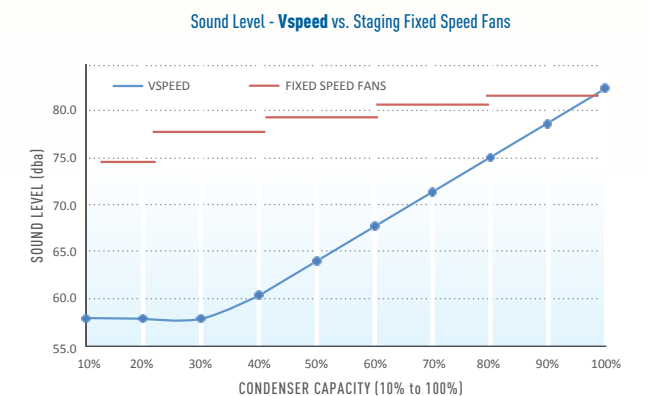


#### California Title 24 Regulations

Meets requirements for variable speed and efficiency for Refrigerated Warehouses and Commercial Refrigeration in retail applications.



Vspeed matches the required capacity by varying the speed of all fans delivering significant energy savings versus staging fixed speed fans. Graph of a 10 fan model above has savings of >5 kw when operating at 60 to 80%.



Vspeed Technology achieves significant sound reduction by varying all the fan speeds versus turning off fixed speed fans.

# Air-Cooled Condenser Solutions

## Features and Benefits

**- QUIETER FAN:** The “swept-wing” blade design offers lower noise levels at the same fan speed. For example, the QUIETOR fan blade on a 575 RPM motor will be much quieter (8 dba) than the previous 575 RPM fan design.

**- DIRECT DRIVEN PROPELLER FANS:** Multi-bladed propeller fans provide uniform air distribution through the coil. Venturi fan orifices optimize efficiency.

**- MODULAR DESIGN:** Arranged for vertical or horizontal air discharge. Multi-fan sections compartmented to allow individual fan cycling while preventing off-fan “windmilling.” Large, clean-out access doors are standard.

**- CORROSION RESISTANT:** All models employ mill galvanized steel fan sections and coil side baffles. Legs are heavy gauge mill galvanized steel.

**- HIGH EFFICIENCY COIL (LEVITOR):**

- Coils are helium leak and pressure tested with 400 psig dry air, and shipped pressurized with dry nitrogen
- Optional fin materials copper or polyester-coated aluminum
- Optional Electrofin coil coating available
- Multi-circuiting available

**- VERSATILE FAN CYCLING CONTROL METHODS:**

All models have the ability to vary the speed of all fans delivering a significant energy savings versus staging fixed speed fans.\*

\* See graph example “Power to Capacity - Vspeed vs. Fan Staging” on page 3.



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NOTE: Hussmann reserves the right to change or revise its specifications and product designs in connection with any feature of its products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

## Air-Cooled Condenser Options

FEATURE	LEVITOR II	MICROCHANNEL
<b>Capacity Range (THR)</b>	2-283 Ton	14-189 Ton
<b>Motor Types</b>		
Standard Fixed Speed, Inverter Duty Motors (A, B, C, E, and F)	✓	✓
Vspeed (K Motor)	✓	✓
<b>Available Voltages</b>		
230/1/60	✓	-
208-230/3/60	✓	✓
380/3/50	✓	✓
460/3/60	✓	✓
575/3/60	✓	✓
<b>Motor / Fan Combinations</b>		
A = 850 RPM, 1.0 HP, 30"	✓	✓
B = 1140 RPM, 0.5 HP, 24"	✓	-
C = 850 RPM, 1.5 HP, 30"	✓	✓
E = 575 RPM, 0.5 HP, 30"	✓	✓
F = 1140 RPM, 1.5 HP, 30"	✓	✓
K = 1140 RPM, 1.5 HP, 30"	✓	✓
<b>Design</b>		
Single or Double Wide	✓	✓
Multi-Circuit	✓	✓
Single Wide - Up to 7 Fan Arrangement	✓	-
Double Wide - Up to 14 Fan Arrangement	✓	✓
Painted Housing	✓	✓
Horizontal Discharge Arrangement	✓	-
Vertical Discharge Arrangement	✓	✓
Galvanized Cabinet Construction	✓	✓
<b>Fan Diameters</b>		
24"	✓	-
30"	✓	-
Coated Steel Fan Guards	✓	-
Large Clean-Out Access Door for Fans	✓	✓
Heated and Insulated Receiver	✓	✓
Standard Phase Monitor	✓	✓
<b>Fan Cycling Methods</b>		
Temperature	✓	✓
Pressure	✓	✓
Temperature and Pressure	✓	✓
Electronic Relay Boards	✓	✓
Variable Speed Header End Fans	✓	✓
Energy-Saving Variable Speed Drives for All Fans	✓	✓
<b>Corrosion Protection</b>		
Electrofin	✓	✓
Copper Fin	✓	-
Polyester Coated Aluminum	✓	-
<b>Additional Options</b>		
<b>Circuit Breakers and Contactors</b>		
Individual	✓	✓
Paired	✓	✓
<b>Motor Fuses</b>		
Individual	✓	✓
Paired	✓	✓
<b>Disconnects</b>		
Fused	✓	✓
Non-Fused	✓	✓
<b>EMS Control Boards</b>		
CPC	✓	✓
Danfoss	✓	✓
MicroThermo	✓	✓
JCI	✓	✓
Custom	✓	✓



Krack, a Hussmann Corporation brand

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