

Variable Frequency Drives compared to Frigitek

A Variable Frequency Drive controller (also known as “variable speed drive, VFD, and VSD) is a method frequently used to control the speed of three-phase industrial motors. These controllers operate by changing the frequency of the power sent to the motor. Since AC motors turn at a speed related to the frequency of the power supplied to them, this method provides a wide range of speed control for three-phase motors.

In the refrigeration application served by the Frigitek, a VFD is quite a bit of overkill, because the evaporator fans only need to be operated at two speeds – full speed when the refrigeration system is cooling, and a low speed, to save energy, when the system is idle.

In addition, VFDs have some other characteristics which make them a poor choice for evaporator fan speed reduction.

- They require special motors with high-voltage insulation because of the way they change the power.
- They require a special location for installation – they cannot be installed in the cooled room.
- They require special wiring to be installed for their connection into the evaporator fan circuit – often running long distances inside the building.
- They generate pulses and noise on the power lines – so-called “power line pollution”.
- They can generate radio interference to nearby radio systems.
- They are typically costly to purchase, and costly to install. *
- They generate heat in their operation.
- They require special configuration and setup when they are installed.
- Certain failures can result in "Single-Phasing" of the motors, burning them out.

The Frigitek has none of these undesirable characteristics. A comparison chart shows the differences.

Characteristic	VFD	Frigitek
Requires special motors	Yes	No
Requires special location	Yes	No
Requires extended wiring	Yes	No
Creates power line noise	Yes	No
Creates radio interference	Yes	No
Expensive to purchase	Yes	No
Expensive to install	Yes	No
Generates heat	Yes	No
Requires installation setup	Yes	No

* It should be noted that there are some inexpensive VSDs on the market which only control one of the phases of the power applied to the motor. These are even more problematic than the full-capability VFDs, because they stress the motor even more than the standard VFDs. Motor failure is a very common problem with these controllers.