

## Variable Frequency Drives (VFD's) and Powerboss (MB) A Comparative Review

### Common questions asked about VFD's

- How do VFD's compare with Powerboss?
- Can VFD's be used to save energy?

**Aliases:** Variable Speed Drives, Inverters, Freq Drives, speed controllers, etc.

**Basic functions:** VFD's are used primarily for speed control. A secondary benefit would include soft starting functionality. By controlling the Volts/Hz relationship the speed of the motor can be controlled. Consideration needs to be given when lowering a motor's speed beyond the stall curve of the motor. A VFD will rectify the AC sinusoidal wave into a DC bus for control and conversion to a simulated sine wave.

#### Pros:

- Ideal when speed control is required.
- Cheaper than DC motors
- Relatively easy to implement
- Proven technology

#### Cons:

- Causes unnecessary heat in the motor
- Not suitable for older motors due to the insulation class
- Not cost effective if used for only soft starting functions
- Not an optimization device. The VFD will consume any potential energy savings in heat plus the motor may suffer premature failure from over temperature.
- Does not save any operational kW dollars
- Causes heavy harmonic distortion (8 and 16 pulse drives). Inherently a switching power supply, these devices cause EMI and RFI interruption in the electrical system.

### Powerboss:

**Basic functions:** Powerboss is a soft starter and a torque controller. First ramping the motor to full speed, and then monitoring the torque requirements of the motor, MB will deliver the precise amount of power (kW) to meet the required load.

#### Pros:

- A cost effective solution to many problems associated with motors. ie: inertial torque, surge currents and spikes, mechanical lashing, operational kW consumption.
- Significant less expense to purchase (~ 30-40% the cost of a VFD)
- By reducing operational kW, MB will pay for itself over time
- Can be applied to a motor without regard to its age or insulation class. Perfect for retrofit
- Years of reliable operation
- Removed unnecessary heat (looses) from the motor allowing it to run cooler.

#### Cons:

- Not for controlling speed
- Cannot be applied in concert with a VFD (constant speed only)