

VFD OPERATION

Understanding the basic principles behind VFD operation requires understanding the three basic sections of the VFD: the rectifier, dc bus, and inverter.

The voltage on an alternating current (ac) power supply rises and falls in the pattern of a sine wave (see Figure 1). When the voltage is positive, current flows in one direction; when the voltage is negative, the current flows in the opposite direction. This type of power system enables large amounts of energy to be efficiently transmitted over great distances.

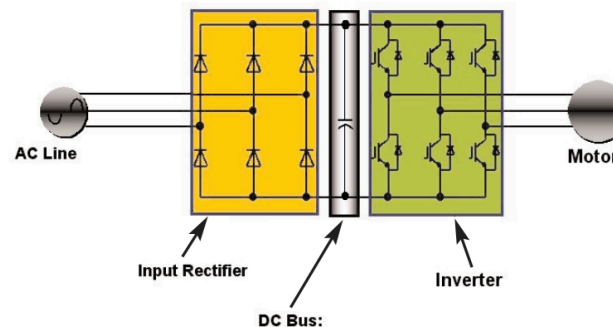
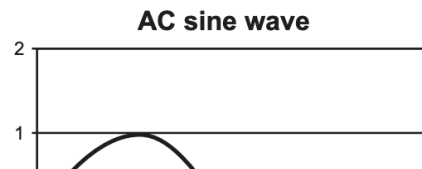


Fig. 2. VFD basics: Existing technology

microprocess [Download](#) control when the power may begin to flow, making this type of rectifier useful for solid-state starters as well. Transistors include a gate circuit that enables a microprocessor to open or close at any time, making the transistor the most useful device of the three. A VFD using transistors in the rectifier section is said to have an “**active front end.**”