

# How to Choose the Right Variable Frequency Drive

Variable Frequency Drives (VFDs) allow the speed of a 3-phase AC electric motor to be altered whenever the behavior of the motor's load changes. By changing its output frequency and voltage, the VFD allows the motor to modify RPM to respond to those demands.



## Benefits of Variable Frequency Drives vs. Motor Starters

- Improved process control
- Energy savings
- Higher reliability
- Reduced wear and tear



## Considerations for Choosing a VFD

- 1 Select the proper size for the load.**
  - Consider the operating profile of the load it will drive
  - Size the VFD to the motor at its maximum current requirements at peak torque demand
- 2 Are there braking requirements?**
  - Heavy loads that must be quickly decelerated require a dynamic braking resistor
- 3 Determine I/O needs.**
  - Discrete input and outputs
  - Analog input and outputs
- 4 Select the proper control mode.**
  - V/Hz, sensorless vector, or closed loop
- 5 Understand the control profile requirements.**
  - Acceleration/deceleration
  - Ramp linearity
  - Torque control
  - Braking
  - PID
- 6 Know the network compatibility requirements to connect to other devices, such as PLC or PC based controllers.**
  - Ethernet protocols such as Modbus TCP/IP and EtherNet/IP
  - Serial Modbus RS-232/RS-485
  - Fieldbus communication
- 7 Determine the installation and operating demands.**
  - Heat exposure
  - Speed of standard motor operation



All information courtesy of BELDEN, Machine Design Magazine, and Wikipedia

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