



## **DC MOTORS/DRIVES vs AC MOTORS/DRIVES**

Both AC and DC drives, simply put, control the speed and direction an electric motor. Both technologies have been around for over 100 years. AC drives, also known as adjustable speed drives or variable frequency drives (VFD's) control motor speed by changing the frequency of the electrical supply to the motor. With DC drives, the motor turns at a speed directly proportional to the voltage applied to the armature.

### **Disadvantages of AC:**

While the installed base and market for AC motors and drives is larger than DC, it is difficult to find an AC solution with a horsepower rating under 1/2. The current trend for VFD development is to add more (programmable) features and even programmable logic controller (PLC) functionality, making them complicated to commission and operate. These features may place additional pressure on the technical ability of maintenance and operations personnel.

### **Advantages of DC:**

Advantages of DC drives include: High starting torque, easy installation, speed control over a wide range (both above and below the rated speed), quick starting, stopping, reversing, and acceleration, linear speed-torque curve and accurate step-less speed with constant torque. DC motors are readily available and in fact dominate the fractional and sub-fractional horsepower installed base and new purchase market. There is growing demand for 12 and 24V motors to support applications in solar and portable (truck mounted) equipment which DC technology readily supports. With DC technology the initial investment (motor and drive cost) is typically less than AC, in general.

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