Variable Frequency Drives

An Online Continuing Education Course for Engineers

Course Number: E-3094

Credit: 3 Hours / 3 PDH / 3 CPD

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1. Introduction

In today's industrial and commercial world, variable frequency drives (also known as **VFDs**, **Frequency Drives**, **AC motor controllers**, and **Inverters**) are becoming a more and more important method of speed control. They are used for all but the most demanding speed control applications. Large rolling mills are among the few places where DC motors and controls are still used. One of the reasons for this is that AC motors and their associated controls are much more reliable than the DC motors and the associated controls that, to a large extent, they have replaced. According to the Rockwell Automatio bsite, they make VFD to control ¼ to 30,000 horsepower. I put the comma in ther sion. The website really says 30 000

Let's give a b They had a rather limited applic of the day. When higher power t were made, and many more app s (MTBF) were still a problem. A their basic operation. Small characteristics. In the 1990s, digi ate devices were also develop ossible for inverters to be used much more versatile device. In eliable. For many applications, t , turned on, and operated without applications, additional effort is needed to program an ive to the application.

The motors that are usually controlled by VFDs are **induction motors**. A three-phase induction motor is one of the simplest power conversion devices ever made. It has one moving part. Of course, if the motor has ball bearings, and we call ball bearings moving parts, then an induction motor with ball bearings does have more than one moving part. In any case, they are very simple and hence very reliable. They have a winding on the stator or part that stands still and a winding on the rotor, or the part that turns. When voltage is applied to the stator, a voltage is induced (Hence – induction motor) in the stator coil. This causes a current to flow in both the stator and