A Review Paper on Variable Frequency Drive

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ABSTRACT: ***This paper discusses the speed regulation of using A Variable Frequency Control Induction Motor (VFD). The Variable Frequency Drive (VFD) is a system for electronics. Shift the energy source of the utility to variable frequency to monitor AC motor for operation at variable speeds. The Induction Load the engine is not static. It can vary according to the load, as requirement needed. So, as per increasing or increasing, speed must be altered diminishing the load. If the supply voltage has decreased, the torque of the motor they are also reduced. Motor speed is directly related to frequency of supply. Therefore, to preserve the voltage of the speed supply the frequency and frequency can differ accordingly. There are several ways to describe Drive Variable Frequency (VFD). This essay is intended to have a fundamental understanding of the Variable Conditions of the Frequency Drive (VFD), Variable Frequency Drive (VFD)***

KEY WORDS: ***Variable Frequency Drive (VFD), Inverter, Single Phase Induction Motor, Rectifier, Microcontroller.***

INTRODUCTION

The Variable Frequency Drive (VFD) is also one of the most common devices. Technique that can be used to monitor the velocity of electrical or Electrical Generator Devices. In this step regulation of the speed of electrical or electrical machinery the Control Electronic Equipment is used for generators. Could to vary the input frequency, electronic devices are used. Power to the engine and to control the speed of the motor before machines for energy[1].

Fig 1: Variable frequency Drive

Control is becoming more and more specific and this is what the Variable Frequency Drive (VFD) concept also offers the concept of the easy case.Whenever we discuss electronic devices, electrical machines we think of the generator as the speed of rotation of

Electrical devices or engines are purely electrical. It depends on the speed or velocity that is regulated by the application of the voltage and frequency of the machines on the stator side.

Another way to change the speed is to change the torque produced the motor which is given by T = + i.e., T = Torque which is produced by motor Ks = Constant Term = Induced EMF in Rotor =Rotor Resistance =Rotor Inductive Reactance[1].

If the torque of the motor is lower than the torque of the load, then the torque of the motor is the motor speed will decrease and the engine torque will decrease. The higher the load torque, then the speed of the motor, another basic Electrical Speed Control System Machines are changed by the frequency of the stator and the number of Uh, poles. The pace at which the magnetic spinning field rotates. Ns depends only on the frequency F of the staator and the number poles of p[2][i].

The only way to do so is if the number of poles P is constant. Changing the synchronous velocity modifies the stator F-frequency.

Ns = 120F / P

Ns = Synchronous Speed of Induction Motor

F = Stator Supply Frequency

P = Number of Poles of the Motor

The parameters, such as supply rate, supply voltage,

The number of poles or the resistance of the external stator may be

Regulated to control velocity on the stator side[3].

We may control the rotor resistance or use cascades to control the rotor resistance. Achieve speed control of the speed of the rotor. There are so many methods are used to regulate the speed of electrical systems electrical Generator or Machinery.

METHODS

The speed controlling techniques are given below:

Stator Frequency Control

We know that Actual Speed N is given by, N = Ns (1 - s) i.e., N = Actual speed Ns = Synchronous speed S = Slip so, we can change the actual speed N by changing the synchronous speed. But synchronous. But synchronous speed Ns can be changed by changing the stator supply frequency. So, theoretically we can control the speed by changing only Frequency[4].

Controlling the Number of Poles:

We know that the synchronous speed is given by,

Ns = 120F / P i.e.

Ns = Synchronous Speed of Induction Motor

F = Stator Supply Frequency

P = Number of Poles of the Motor

So, the synchronous velocity can be modified by modifying the number of poles. It could be the number of poles updated by altering the stator winding connections with the assistance of quick switching. So, we get speeds that are different[5].

Changing in Stator Resistance:

In this process, by adjusting the speed, we can regulate the speed Stator resistivity. This regulation is essentially the voltage of the stator Control because when we alter the connected rheostat in a part of the supply voltage will drop through the stator circuit. It's the Rheostat. Therefore, the real voltage that is

applied to the stator is diminished. Due to variable stator voltage, the speed varies. In a minimum stator voltage is applied to that start location and there is a minimum speed for the induction motor. As well as the rheostat is decreased and the storage voltage is increased. Speed also boosts[6].

REVIEW OF LITERATURE

There have been many paper published in the field of variable frequency drive among all paper a paper titled "A REVIEW PAPER ON VARIABLE FREQUENCY DRIVE" by Mr. Amit Kale1, Mr. Nikhil R. Kamdi2, Ms. Priya Kale3, Prof. Ankita A. Yeotikar4discussed about the variable frequency drive, working of variable frequency drive different methods. Different methods such as controlling the numbers of poles, stator frequency control, advantage of VFD and its applications in different field also its disadvantage.The Variable Frequency Drive (VFD) is also one of the most common devices. Technique that can be used to monitor the velocity of electrical or Electrical Generator Devices. In this step regulation of the speed of electrical or electrical machinery the Control Electronic Equipment is used for generators. Could to vary the input frequency, electronic devices are used. Power to the engine and to control the speed of the motor before machines for energy[7][ii].

CONCLUSION

Therefore, we concluded that when the engine operates at lower speeds,Speed, because the less energy you use, the less energy you use. So, substantial, significant, with the help of Variable, the amount of power can be saved Frequency Drive (VFD). By altering the frequency and frequency, the supply voltage of the Induction Motor Induction Speed. It is possible to adjust the engine. The Variable Frequency Push, therefore, (VFD) can operate in both speed control and speed control situations. Save Electricity.As we know, the conservation of energy is one of the most significant There's a huge need all over the world. Thus, after the review of Induction Motor speed control using the Variable. The Frequency Drive (VFD) can be easily changed. Speed of the induction engine and energy savings. Both of the Variable Frequency Drive operations are done by (The VFD).

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