Abstract

ABSTRACT

Amongst many types of electrical motors, induction motors still enjoy the same popularity as they did a century ago. Several factors which include robustness, low cost and low maintenance have made them popular for industrial applications when compared to dc and other ac motors. Another aspect in induction motor drives which has been researched recently is the use of multiphase induction motors where the number of stator phases is more than three. Here, a multi-phase system is a system with more than three stator phases.

Among the different multi-phase induction motor drives being researched, following important advantages are derived for the dual-3-phase induction motor having two stator winding sets spatially shifted by 30 electrical degrees with separated neutral.

1. The current stress of each semiconductor power device is reduced by one half compared with the same power 3-phase conventional induction motor.

2. The dual-3-phase solution can generate higher torque as compared to conventional three phase motor. This characteristic makes them convenient in high power and/or high current applications, such as ship propulsion, aerospace applications, and electric / hybrid vehicles (EV).

So when high power levels are required, the use of six-phase induction motor is one of the alternatives in industry. Six phase synchronous motor may also be used for high power applications, but weight of six phase induction motor is less as compared to six phase Synchronous motor of same rating [13]- [49].

The research work is divided into following major parts:

1. Design of six phase Induction motor.
2. Development of prototype six phase Induction motor
3. Testing of six phase induction motor.
4. Simulation of Multi motor drive control and its comparison with three phase IM
5. Simulation for vector control of six phase IM.
6. Control of same motor when fed from two voltage source SVPWM inverters.