

Abstract:

This paper studies the star-delta method for starting induction motors with a focus on its connection method and its components to develop this circuit to reduce its cost without affecting its performance and reliability or damaging the components of the induction motor.

This paper includes a new connection method to change the induction motor coil connection from star to delta and a different design of a new electrical power auxiliary contact to do it. This paper includes numerical simulations of the new connection method using the "CADE SIMU" program, a different design of electrical power auxiliary contact, and its mechanical simulation using the "SolidWorks" program.

This paper includes the new connection with a new component method that was tested in the electrical machines' lab on an induction motor. The results show the success of the new method, with a total cost reduction of about 20% from the traditional automatic star-delta starter and about 60% from the STAR contactor cost, without any bad effect on the induction motor or automatic function of the method.

Keywords—star delta, induction motor starting.