

Lab 9: Three Phase Induction Motor
Performed: April 01, 2013
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Abstract

In this experiment, the basic principles of an induction motor were studied. Using a wound-rotor motor at two different supply voltages, the motor's speed, torque output, and line current was recording at various load torques.

Results

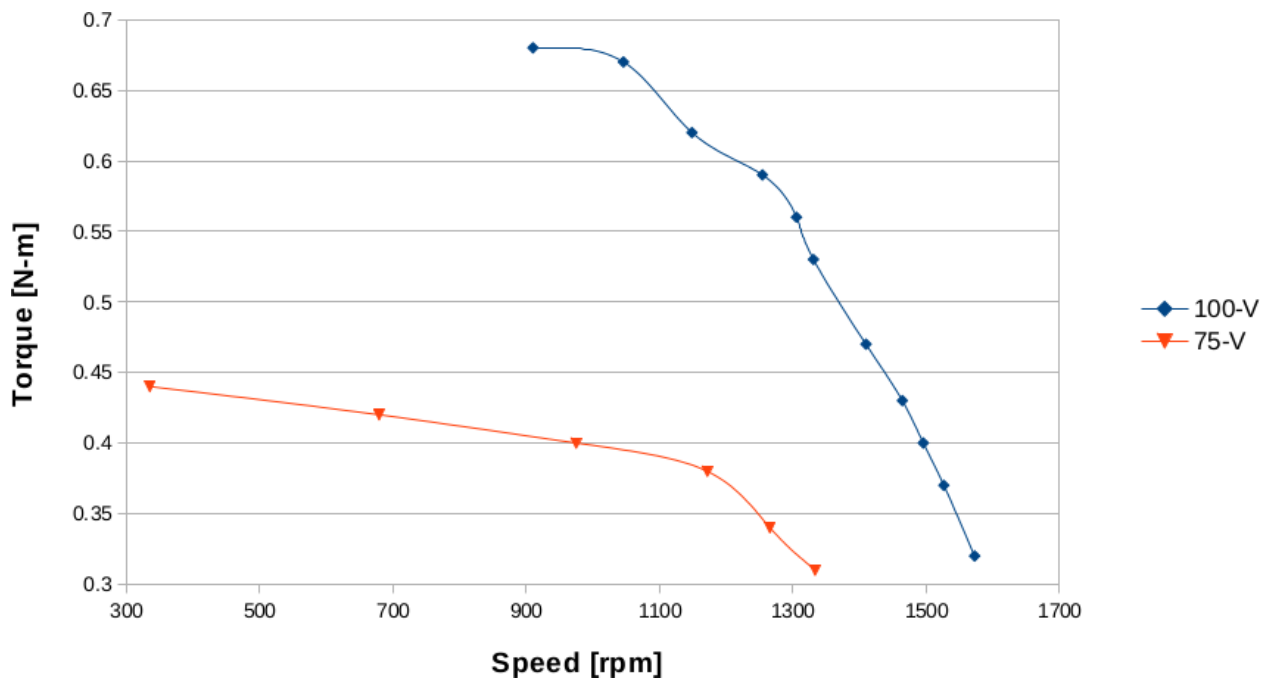


Figure 1: Comparison of Output Torque vs. Speed for Different Supply Voltages

Conclusions

In a typical torque speed curve, the plot rises sharply from the starting torque to the breakdown (peak) torque, and then decreases linearly to the no-load mark. This linear section is the motor's operating region.

As shown in Fig 1 the no-load torque is not changed, but occurs at a slower speed with a reduced starting voltage. Since the rotor acts as though there is no load, this is also the synchronous speed, so lowering the starting voltage also reduces synchronous speed. The torque developed is proportional to the square of supplied voltage, thus a relatively small reduction in supplied voltage here drastically changes the the operating region. The higher starting voltage has much higher starting and breakdown torques.