1. A 125 hp motor is used to cut lumber in a sawmill. The motor is loaded only 60% of the time and at this condition the output shaft delivers only 120 hp. The rest of the time the motor is relatively unloaded and the output shaft delivers only 50 hp. The motor turns at 1780 RPM and is powered by three-phase 480 V.
   a. compute the electric (real) power input for both conditions.
   b. compute the reactive power for both conditions.
   c. compute the amperage draw for the motor under both conditions.
   d. what is the effective (average) real power used by the motor?
2. A company has twenty 10 hp TEFC motors that fail each year. The motors operate continuously at an average loading of 70%. Generally the motors are rewound. The motors operate at 1780 RPM and 230V.
   a. Use MotorMaster to determine the payback period if the motors are replaced with premium efficiency motors.
3. The electrical power used by a three-phase motor is measured by the volts and amps it uses. The three RMS voltages recorded are 478V, 479V, and 482V, and the three currents measured are 121 amps, 120.5 amps, and 119 amps.
   a. calculate the power use if the motor is 40% loaded.
   b. calculate the power use if the motor is 100% loaded.