Energy savings provided by EC motor replacement of Shaded-Pole motors

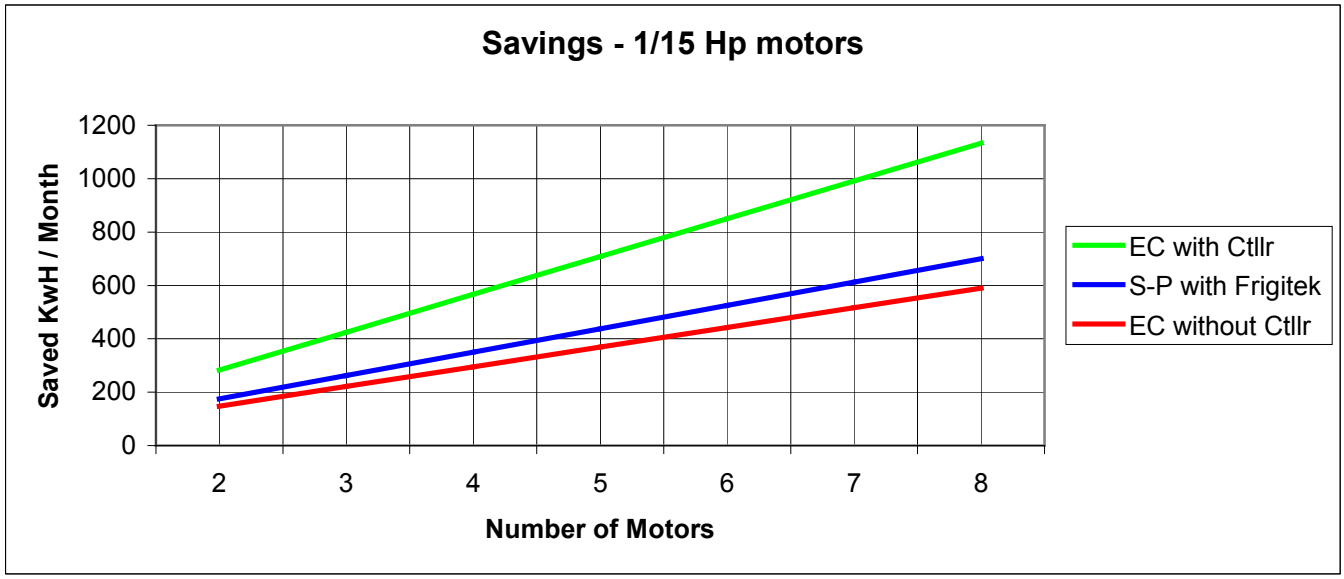
EC motors are new energy-saving replacements for older shaded-pole motors in refrigeration and other air-moving applications. The EC (Electronically Commutated) motors use substantially less energy than shaded-pole motors.

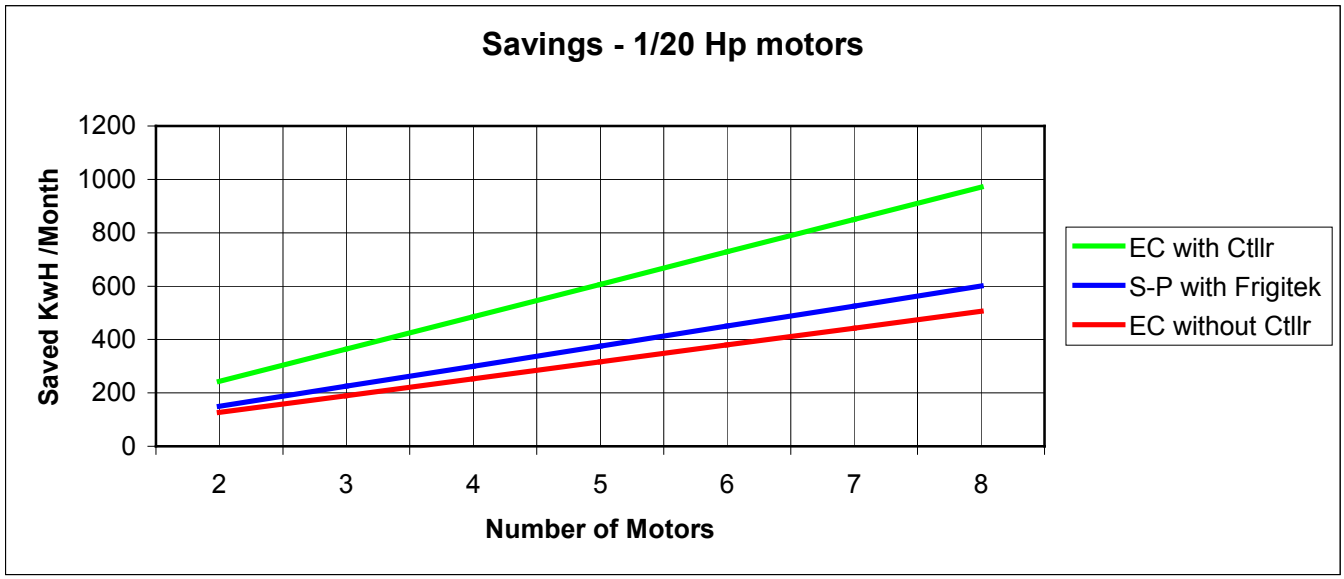
Energy Control Equipment, Inc has designed a special ECMotor Controller, which allows control of the speed of the new EC motors. The use of this controller dramatically increases the savings provided by the EC motors.

An analysis of the potential savings provided by EC motors in various configurations was done in order to determine the best possible savings resulting from replacement of shaded-pole motors with EC motors.

EC motors were analyzed with and without the Frigitek® ECMotor Controller. In addition, EC motor replacement was compared to using a Classic Single-Phase Frigitek® with the original shaded-pole motors. The comparisons cover the range of two motors per evaporator to eight motors per evaporator.

The following two graphs show the savings provided by the three different configurations using 1/15 Hp and 1/20 Hp motors. These are the motors most commonly used in walk-in and reach-in refrigerators.

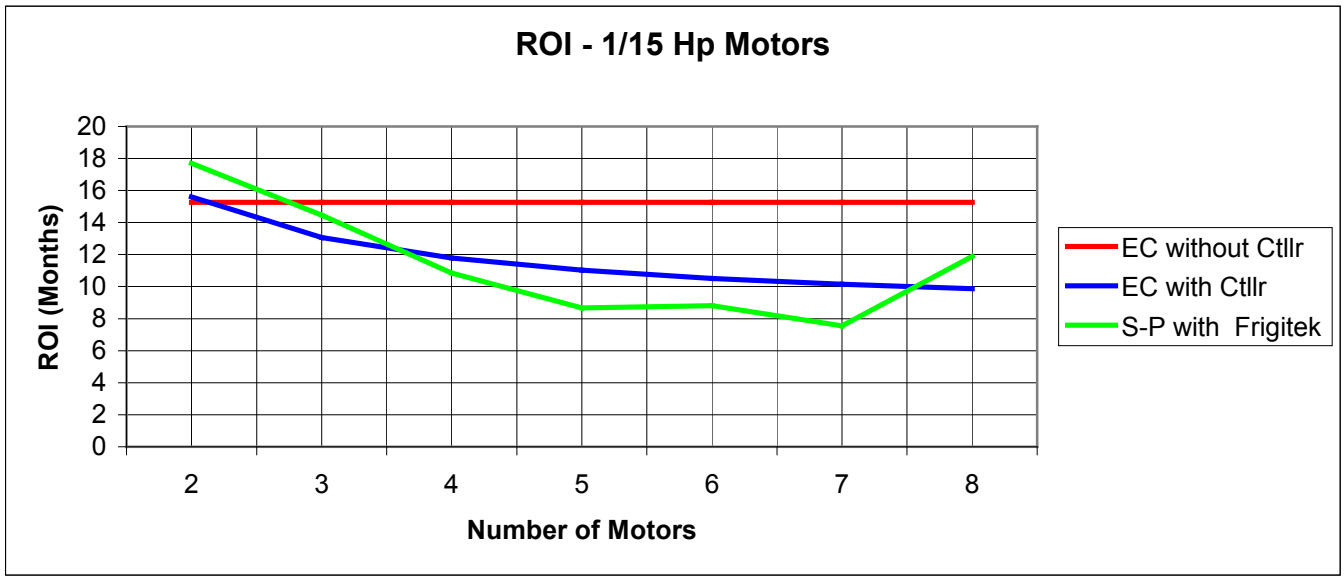


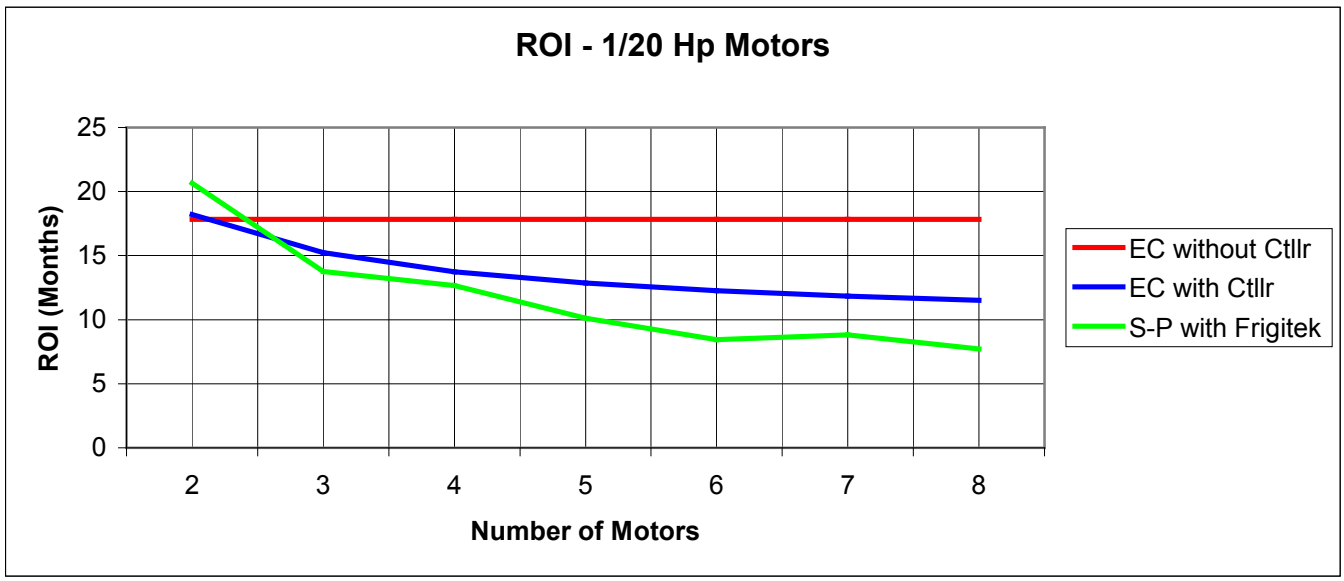


In all cases, the use of the Classic Single-Phase Frigitek with the original shaded-pole motors provides more savings than the EC motors alone.

And, in all cases, the EC motors with the Frigitek ECMotor Controller provides more savings than the EC motors alone, and more savings than the Classic Single-Phase Frigitek with the original shaded-pole motors.

The next graphs show the Return on Investment (ROI) for the different configurations. ROI – also called Payback Time – is the time required to save enough electricity cost to pay for the retrofit of the new equipment. These graphs were produced using an electricity cost rate of 10 cents per kilowatt-hour.





It is interesting to note that EC motors alone provide the longest (and least desirable) ROI time, except for the two-motor scenario. Also, the jump in ROI time seen for the 1/15 Hp transition from seven motors to eight motors is due to the need for a different Classic Frigitek model to handle the higher current of the eight-motor configuration.

It is clear from the graphs that EC motors alone are the least desirable upgrade from shaded-pole motors. In almost all cases, the use of a Classic Single-Phase Frigitek with the original shaded-pole motors provides better savings and shorter ROI than the EC motors alone. Best savings are provided by using the EC motors along with Energy Control Equipment's ECMotor Controller.

These comparisons were made by using ECE's Analysis Spreadsheets for the EC motors and for the Classic Single-Phase Frigitek. These spreadsheets are normally used to provide accurate predictions of the savings and the ROI which would result from the installation of ECE's products in a customer's location. The accuracy of these spreadsheets has been verified by various engineering firms and electrical power providers, and by extensive use in the field.

For more information, please contact Energy Control Equipment at 877-522-6924 (Pacific time), or visit our website at www.frigitek.com.