

A novel SRM drive for ceiling fan application

Ceiling fan is one of the most widely used home appliances. Unfortunately, it is also one of the most inefficient. The conventional single phase induction motor based ceiling fan consumes up to 70-75 W power while the output is only 20-25 W. Therefore, in order to improve the efficiency, a novel switched reluctance motor (SRM) drive is developed to replace the inefficient induction motor. This drive reduces the power consumption of the ceiling fan by 50%. The developed SRM and its power electronic drive shown in the following figures consume only 34 W at the rated ceiling fan speed. Furthermore, the SRM does not require any permanent magnets rotor and has simple and rugged structure, reducing its cost.

In hot and humid countries like India, ceiling fans are quite popular. There are approximately 350 million existing ceiling fans in India. If these are replaced with efficient SRM drive, an estimated 19,162 GWh energy could be saved. Considering the losses in generation, transmission and distribution of this energy, there is a huge potential for energy saving using the high efficiency fans.

