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**Soft Start for Induction Motor Using IGBT switches**

ABSTRACT

This project goal is to achieve soft start control technique for a single- phase A.C. induction motor. It presents design of a low-cost; high-efficiency drive capable of supplying single-phase a.c. induction motor with PWM modulated sinusoidal voltage during start. Circuit operation is controlled by an 8051 family microcontroller. The device is aimed at substituting conventional triac phase angle control drives. Circuit is capable of supplying single-phase a.c. induction motor (or general a.c. inductive/resistive load) with varying a.c. voltage at the start. Similar to triac control, voltage applied to load is varied from zero to maximum value in a small span of time during start. On the other hand, it uses a pulse width modulation technique (PWM), and when compared with phase angle control used for triacs, it produces much lower high order harmonics. Thus, it suits EMC/EMI regulations much better. Because circuit is aimed at low-cost, low/medium-power applications, it does not use a conventional converter topology to produce the output voltage waveform. It directly modulates the mains a.c. voltage. Compared with costly

converter, it requires a lower number of active and passive power components. In summary, the device attempted here takes advantage of both the low price of the phase angle control and the low harmonic content and high efficiency that we can get with standard converter topology. The drive uses a PWM controlled MOSFET and the load in series with a bridge rectifier. This drive based on this new control technique is targeted for use in consumer and industrial products: washing machine, dishwashers, ventilators, compressors, and wherever the system cost is a consideration.

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