

## **Determination of soft starter firing angle performance to mitigate motor high inrush current using current limitation method**

### **Abstract**

Inrush current in the simplest form can also be determined as current drawn by an induction motor during startup period. This starting current will shoot up about 5 to 7 times the rated current. However, this high current usually occur in the starting period only. To overcome this, several techniques can be implemented to reduce the high current. The configuration of soft starter just involving some power semiconductor device act as switches that control the current flow from power source to the motor. The switches is in form of thyristor and are connected back-to-back because the system conduct in AC system. The current output can be controlled by varying the firing angle. This changing of firing angle will be managed by a firing angle control circuit. This soft starter was connected between power source and motor. The thyristors that built in soft starter act like a gate to control the voltage applied to the motor. The firing angle for current limitation soft starter was changed to several angle and what can be concluded that the high current succeed to mitigate with increasing the firing angle. The current drawn for this type of starter is steadily constant. The lower current during starting took longer time for motor to reach its rated speed. This type of starter successfully reduces inrush current about 42 percent. Finally what can be concluded is that the soft starter was proven to mitigate inrush current. Type of soft starter that going to implement is depending on the application of motor. When the application need to control the torque is more suitable to use current limitation soft starter because the current is steadily control.