**ACCIDENT PREVENTION FOR ELECTRICAL MACHINERY**

**ABSTRACT**

While a fuse protects a circuit, it is destroyed in the process of opening the circuit. Once the problem that caused the increase in current flow or heat is corrected, a new fuse must be placed in the circuit. A circuit protection device that can be used more than once solves the problems of replacement fuses. Such a device is safe, reliable, and tampers proof. It is also resettable, so it can be reused without replacing any parts. This device is called a CIRCUIT BREAKER because it breaks (opens) the circuit. The first compact, workable circuit breaker was developed in 1923. It took 4 years to design a device that would interrupt circuits of 5000 amperes at 120 volts ac or dc. In 1928 the first circuit breaker was placed on the market. A typical circuit breaker and the appropriate schematic symbols are shown in figure

Each type of fuse ( and all other over current devices) has a time-current characteristic which shows the time required to melt the fuse and the time required to clear the circuit for any given level of overload current. In common fuse selection, simple ratios between the fuse closest to the load and the next fuse to the source can be used to prevent having several circuits interrupted. In power system design, main and branch circuit over current devices can be co-ordinate for best protection by plotting the time-current characteristics on a consistent scale, making sure that the source curve never crosses that of any of the branch circuits. To prevent damage to utilization devices, both "maximum clearing" and "minimum melting" fuse curves are plotted. Similar curves are used for all over current devices: fuses, common circuit breakers and power circuit breakers.

We propose to design and develop an electronic circuit breaker which is programmable and efficient. The circuit was designed as an additional safety for electrical equipment like jig saw. It is observed that most of the accidents in using zig saw results in loss of certain portion of the hand, many a times the fingers are more vulnerable. The proposed circuit detects the current leakage to the earth and stops the motor almost instantly with least possible damage.

This project uses regulated 5v, 500mA power supply. 7805, a three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12v step down transformer.

BLOCK DIAGRAM



