Auto-EProS: Automated Electrical Protection System

AUTO-DETECTION AND AUTO-RESET SYSTEM FOR ELECTRICAL APPLIANCES

Power outage is a common problem, which happens when there are electrical faults occurring, which would lead to discontinuity of electric supply to domestic buildings. For domestic consumers, power continuity is very important since some of their appliances such as refrigerators, aquariums and alarm systems need a continuous electric supply. However, faults occurring in the system will trip the earth leakage circuit breaker (ELCB) and disrupt the supply to all the appliances. Fault may occur due to short circuit, ground fault or overloading. Therefore, fault location detection is essential to ensure power continuity and reliability, in which the fault may be isolated from the system once detected.

The current ELCB needs to be switched on manually when a house is left unoccupied for a period of time. In addition, the current auto reset ELCB system is unable to operate if the faulted miniature circuit breaker (MCB) is still in ON position. As such, an automatic system for fault detection and ELCB reset setting is crucial to be developed, to encounter the problem.

The present study have come out with an automatic system, which is known as Auto-EProS, and is designed for domestic electrical system to auto-reset ELCB and auto-detection, if any permanent fault occurs. This is the first automatic protection system that is able to detect and isolate the fault in order to ensure the power continuity in the building.

COMPETITIVE ADVANTAGES

- An automatic system that restores the electrical supply by switching on the ELCB
- An automatic system that detects fault location and isolates the fault by switching off the affected MCB. Once fault is detected and isolated, ELCB will be switched on and power supply is restored
- Manually switching on off residual-current breaker (RCCB) is needed currently, whereas for Auto-EProS, the RCCB will automatically be switched on without human presence
- Manually checking the MCB for any fault is needed currently, whereas for Auto-EProS, there is an automatic system to detect fault location and isolate the fault by switching off the affected MCB

COMMERCIAL POTENTIAL

The potential market for Auto-EProS is as below:

- House developer
- Pet shop
- Safety equipment
- Frozen food shop