



Arc Fault Current Detection

Background

Arcing is a normal function of switching loads or equipment on or off or running certain types of equipment such as motors, etc. Such arcing is not dangerous and will not normally pose an electric fire threat. On the other hand, arcing due to an arc fault currents that is sustained can pose a fire threat and should preferably be detected and interrupted before a fire occurs. This is the primary function of arc fault current detectors.

In the USA, Arc Fault Current Detectors are referred to as AFCIs – Arc Fault Current Interrupters. In most other parts of the world they are referred to as AFDDs – Arc Fault Detection Devices.

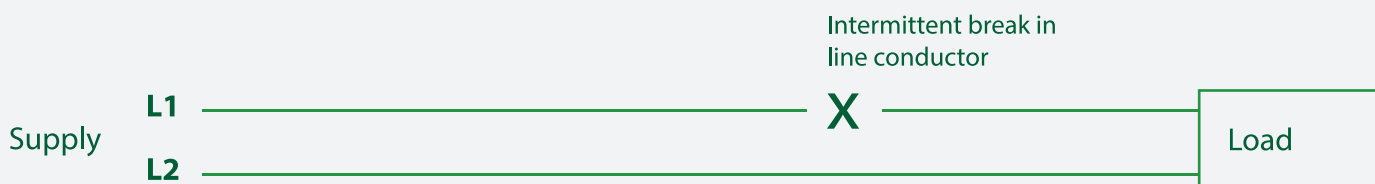


Fig 1 - Example of an arc fault condition

Figure 1 shows a load connected to a supply. A break has occurred in one of the supply lines which results in intermittent contact in that conductor. Every time the contact makes, a current will flow to the load, and each break results in breaking of the current flow. Each connection and disconnection can result in arcing, and if this is sustained over sufficient time the resultant heat can build up to such a level that combustion occurs and fire results.

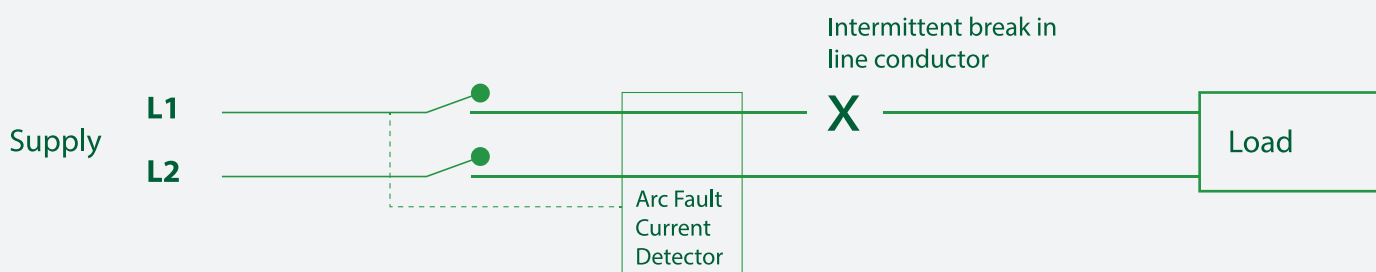


Fig 2 - Example of the problem that can be mitigated by an AFCI or AFDD

An AFCI or AFDD is connected in line with the load, and when an arc fault current occurs the current will be detected and cause activation of a circuit breaker to disconnect the supply and prevent heat build-up and fire.

Western Automation R & D has arc fault detection technology that can be used on AC and DC systems. This technology can meet the requirements of UL1699 for AFCIs and IEC62606 for AFDDs.