INTERNAL ARCING FAULT TEST
Appendix ZD AS/NZS 61439.1:2016

The occurrence of an arc fault is the most serious fault within a power system. These types of faults can result in serious injury to operators within a switch room or operators within the vicinity of switchboard.

Arc faults are extremely dangerous and potentially fatal. An arc fault generates a massive release of energy that manifests itself in heat and light. The arc temperature can reach four times that of the surface of the sun, causing third degree burns and possible blindness to anyone in close proximity to the arc flash, and potentially igniting other flammable substances. These high temperatures can vaporise conductors instantaneously. Copper vapour expands to 67,000 times the volume of solid copper. This pressure wave can often blow open panels and doors with explosive force, releasing the gases into the atmosphere and potentially exposing the remaining live conductors. These gases help sustain the arc and the duration of the arc is primarily determined by the time it takes for over current protective devices to open the circuit.

AS/NZS 61439 addresses this in Appendix ZD "Internal Arcing Fault Test". The arcing fault test is carried out to assess the ability of the assembly to limit the risk of personal injury and adjacent equipment damage resulting from an arcing fault under normal operating conditions*.

Having a switchboard system that complies with Appendix ZD ensures personal safety of any person/s within the vicinity of the fault as well as minimising the extent of equipment damage. In order for a switchboard system to comply with this vigorous test large amounts of engineering and structural strengthening is needed to contain the energy that is created. It is also important to note that after an arcing fault the assembly needs to be thoroughly tested and deemed fit for service prior to re-energisation.

**Normal operating conditions are defined by the normal operating of a switchboard with all covers, doors, locks and fasteners closed or tightened. It will not protect operators working behind the doors and escutcheons of a switchboard. Working within the doors of a switchboard should have appropriate PPE needed to protect both the operator and bystanders. This can be achieved with an arc flash study to establish safety protocol for qualified electrical personnel required to work on electrical equipment and circuit parts that cannot be placed in an electrically safe work condition.*

Test Report No.
AU24HV9Z001

Test according to Appendix ZD 'Internal Arcing Fault Test':
AS/NZS 61439.1:2006
Test Item: **Complete Assembly**
Test laboratory: TUV Rheinland Australia Pty Ltd,
182 Dougharty Road, Heidelburg West, VIC, 3081 Australia

BE Switchcraft switchboards can be found throughout Australia, from Parliament House in Canberra through to major hospitals, commercial buildings and sporting stadiums across the country. For over 5 decades we have built a reputation on trust, integrity, innovation and delivering on our commitments. Leading electrical contractors and engineers choose BE Switchcraft because of our ability to deliver a wide range of products and services that are renowned for their design, build quality and outstanding long-term support.

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