

The SIBA Temperature Limiter

By George Moraitis

In a competitive market, people occasionally ask me "what makes the SIBA MV fuses different to any other brand?"

Actually, there are many differences, but the single biggest advantage of the SIBA fuse is the built-in temperature limiter mechanism.

What does it protect against?

There is a particular phenomenon, sometimes known as 'candling' that can have devastating consequences.

MV fuses have a melting current value and an arcing current value.

The melting current value is the current at which the element of the fuse will begin to melt. The arcing current value is the current at which the element of the fuse will separate (disconnect) and open the circuit.

In most applications, MV fuses are used to protect against short circuits.

In the event of a short circuit, the circuit current rises very quickly, passing through the melting and opening current values instantly. The fuse operates quickly, hence opening the circuit.

However, in some instances, it is possible to have an electrical environment that is experiencing a slow overload problem that results in a very slow increase in circuit current over a long period of time. This slow increase over time eventually reaches the melting current value of the fuse and slowly melts the element. The fuse continues to conduct electricity because although the element has melted, it is unbroken.

If this continues over time, the melted element warps and it no longer acts as an engineered device, it becomes a molten metal electrical pathway.

The current continues to rise but the damaged element no longer has an arcing current value so it doesn't separate & open the circuit.

At this point, the fuse is acting as a conductor, not a fuse so the overload current continues to rise with catastrophic consequences for the transformer.

How does the temperature limiter work?

The temperature limiter is a device which monitors the internal core temperature of the fuse. If the situation described above happens, the internal temperature of the fuse will rise above a designated value and the temperature limiter will activate the fuse's striker pin, thus tripping the switchgear and opening the circuit.

The electrical environment that can result in a potential 'candling' scenario is exceptionally difficult to predict.

Therefore, having the built-in temperature limiter mechanism gives an engineer peace of mind.

SIBA – Not just another fuse.