



With TPMOV[®] technology, Mersen harnesses innovation to enhance the safety of electrical equipment

Surge protection devices (or SPDs) perform an important safety function in electrical systems. Specifically, they protect electrical equipment against transient overvoltages. They are commonly fitted in electrical distribution boards, control systems, and power supplies for industrial and communication applications. And they are increasingly used to help solve power quality problems.

Mersen sells a key SPD component, based on new TPMOV[®] technology, developed by Mersen R&D teams.

The MOV in TPMOV[®]

The metal oxide varistor, or MOV, is a key component in the electrical protection devices that are used in lightning conductor and surge protection systems. The word “varistor” stands for “variable resistor”, because this component displays a non-linear resistance characteristic: when the voltage in an electrical circuit exceeds a certain threshold, the resistance of the varistor drops sharply to direct excess current outside the circuit and thus protect all electrical and electronic equipment downline of the surge protection device against damage from the voltage surge.

In performing its intended function under repeated power surges, a classic varistor will gradually deteriorate (figure 2), eventually giving rise to serious malfunction, possibly involving fire or explosion, in extreme cases. So this component must necessarily be disconnected and replaced before component deterioration risks damaging the systems that the device is supposed to protect.

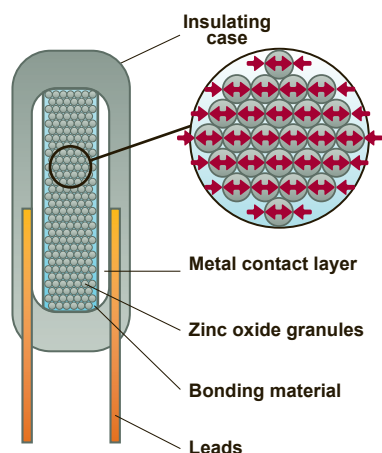


Figure 1
Varistor

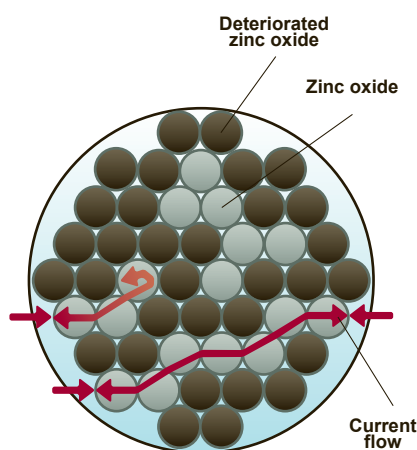
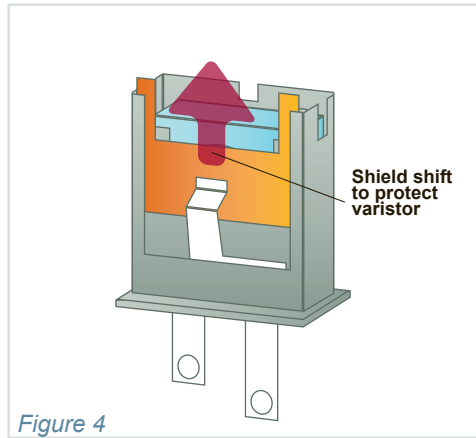
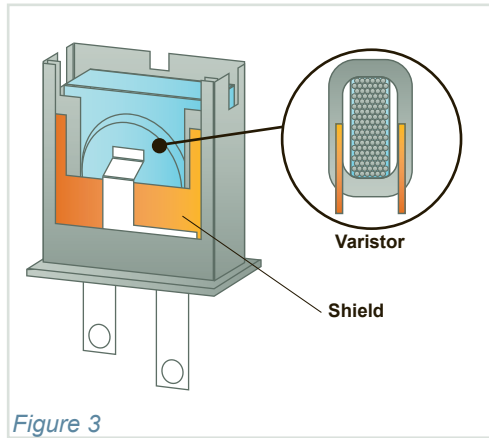


Figure 2
Deteriorated varistor

Some ten years back, Mersen began work on a technology that would remedy this very important failing in ordinary MOV devices. The result was TPMOV[®] technology, for “thermally protected metal oxide varistor”. A TPMOV[®] takes the form of a cartridge containing a metal oxide varistor, a heat sensor in direct contact with the varistor surface, and a spring-loaded shield in insulating material (figure 3). If the varistor heats under transient overvoltage conditions, with high fault current, the heat sensor trips, causing the screen to be pushed into place by the spring to isolate the varistor from the circuit well before thermal runaway can take place (figure 4). The device also includes a remote status indication system for reporting when replacement is needed. This is especially important in critical control circuits.

TPMOV® diagrams



Mersen's patented TPMOV® technology was initially designed for use in SPDs. Under industrial-scale manufacture it soon became a standard in electric protection. Using this technology, Mersen covers 80% of SPD applications in North America.

Successful market take-up of TPMOV® technology spawned development of new product lines that continue to expand, addressing new markets such as power electronics and electrical power distribution. TPMOV® technology is especially suitable in applications such as solar power, which are sensitive to power surges and power quality.

What's next...

Mersen will be continuing development of products and applications based on TPMOV® technology, enhancing functionality along with voltage and power characteristics to meet market demand, especially in surge protection for DC power distribution.

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Check out the next issue of Focus for insights into another of Mersen's innovations for growth.

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