

# New circuit breakers prevent electrical fires

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A new fire protection circuit breaker from Siemens prevents electrical fires from developing. The device registers dangerous arcing in an electrical installation and breaks the circuit automatically. Arcing can happen as a consequence of voltage flashovers in electrical circuits, for example, or occur due to a loose contact. In the past, some disturbances threw the breaker but others went unchecked. The new fire protection circuit breaker detects all kinds of arcing, effectively closing that gap. In the USA, arc fault circuit interrupters have been required by law since

2008. With the 5SM6 circuit breaker, Siemens is the first manufacturer to introduce this kind of device onto the European market.

Around a third of all fires in Germany are caused by [electricity](#) - e.g. due to defective installation or an appliance fault. Installation defects often occur when wires are pinched or kinked, or [insulation](#) has been damaged by a nail. If an arc flashes between two neighboring circuits, it causes them to short or ground out which will blow the fuse or trip the residual-current-operated circuit breaker. However, if an arc occurs within a circuit, for example across a break in a wire, it doesn't change the flow pattern of electricity and the defect goes unnoticed. In time, the point in the wire that is damaged will get so hot because of the arcing that it can catch fire.



As a complement to residual current operated circuit breakers and miniature

circuit breakers, the Siemens 5SM6 AFD unit provides enhanced safety for people and assets and closes the gap in terms of protection against fires caused by electricity.

This is exactly where the [fire protection](#) circuit breaker comes in. It can detect all kinds of arcing by noting current and voltage characteristics. The difficulty is that there are situations where arcing is permissible and the circuit breaker shouldn't be tripped - for example, in electric drills and vacuum cleaners. A special evaluation software can identify dangerous arcing based on characteristic [high frequency](#) components in the current profile. When such a profile is observed, the circuit is broken within a fraction of a second and the arc is extinguished.

The fire protection circuit breaker has been designed to make retrofitting into older buildings no problem. The extra protection would be particularly suitable for bedrooms, especially if they have wooden walls, in buildings that require special protection such as orphanages and nursing homes, for machines that operate without being monitored (e.g. washing machines), and in buildings such as museums and libraries, where valuable objects are housed.

Source: Siemens

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