

Arc Guard System™ – TVOC-2

A box that saves lives

When an explosive arc erupts from an old distribution plant there is a risk of casualties. ABB's arc guard system can prevent them. The American authorities have noticed this.

It was a colder February than usual in San Diego, the south-western corner of the USA, and ABB had just presented its arc guard system to an American marine authority. The intention was for the authority to improve electrical safety onboard its vessels by using the arc guard system. And the American engineers were interested. But as is often the case, they wanted to see the product function in reality first.

“So they got an arc guard system from us,” says Andreas von Lako, global product manager at ABB.

The unit was placed out on a vessel and the Americans performed insulation tests when the vessel was still in the port. They witnessed a sudden demonstration of the arc guard system after the tests. Someone had forgotten a copper wire between two of the phases – and when the current was switched on again a strong arc appeared.

The sensors in the compartment picked up the flash, sent the light further through the fiber optical cable to the arc guard system, the current was quickly disconnected by the installed breaker and the damage was minimized.

“It was strong evidence of the fact that we have the world's most reliable arc guard system. Since then two American authorities have purchased it,” says Andreas.

Of the total approximate 10,000 sold units, most have ended up in Sweden. Even here they have been highly beneficial: when an arc erupted in a Swedish paper mill, several casualties were prevented due to the mitigating effect of the arc guard system.

“In three, four years we have had zero cases due to it not functioning as it should when it was needed. It does not prevent the arc from happening, but it reduces the damage significantly,” says Andreas von Lako.



An arc causes damage very quickly. In 100 milliseconds a cable fire occurs – and already after 200 a steel fire. Consequently every year approximately 7,000 people are injured and there are 400 casualties in the USA alone due to accidents with arcs.

What is an arc?

When electric current ionizes the air and with that the air becomes conductive, a sudden powerful electronic discharge may occur: an arc. It occurs naturally during thunder storms, but can also be generated between a rail and a train – or in a distribution plant. Besides strong light, an arc creates several thousands of degrees of heat, and even sound up to 160 decibel.

Contact us

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