



# DID YOU KNOW? SERIES CONSTRUCTION ON AC FILM CAPACITORS

Power inverters designed for long lifespans require highly reliable components with stable performance. A typical component on power inverters connected to the mains, such as UPS and PV inverters, is the AC filtering film capacitor, whose task is to filter the switching noise generated by the commutation patterns of the semiconductor devices and harmonic content present on the output signal.

Being under high AC voltages (50 Hz / 60 Hz), a corona effect can occur inside the capacitor. This effect consists of the ionization of the air trapped within the windings of the film, leading to partial discharges on the surface of the metalized film. These discharges will slowly, but steadily, remove the metal from the surface of the film, leading to decreased capacitance and increased ESR. This effect is worsened by the presence of humidity. Regular mono construction capacitors (as seen in Fig. 1) are often struck by this effect.

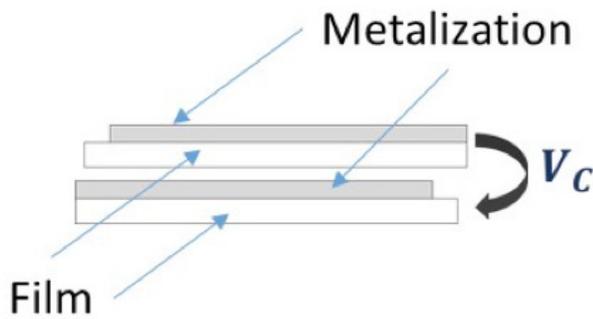


Fig. 1 - Mono Costruction Design

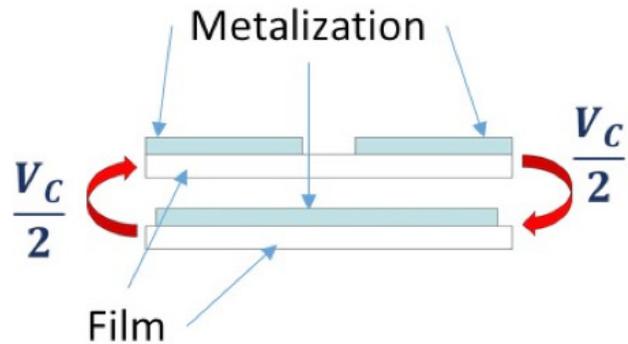


Fig. 2 - Series Construction Design

By using MKP-1847H AC film capacitors with an internal series construction in any application continuously connected to high AC voltage, the voltage across the dielectric is divided by the number of sections implemented. In the example depicted in Fig. 2, the capacitor utilizes two sections, and therefore the AC voltage across the dielectric is divided by two. By drastically reducing the AC voltage across the dielectric, the corona effect will not start.

The utilization of a series construction combined with high robustness against high humidity, as seen in Vishay's MKP1847H series, translates into a high reliability AC capacitor with highly stable electrical parameters over a very long lifespan. The result is long lasting power inverters.