

The future of capacitor web films: versatile source capabilities for high-end applications.

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For over 40 years, the metallized capacitor technology started in Europe which has contributed to the advancement in electronics. These advancements will continue, the future trend for capacitor films is no more strictly based on the two conventional materials aluminium and zinc. The demand for silver metal as pre-nucleation, single metal deposition, reduction in dielectric thickness, down gauging of film substrate and special pattern designs diversifies the scope for AC and higher voltage capacitor applications.

Due to the diverse and crucial applications, the urgency in the capacitor film industry continues to strive on purity, specific zonal (bi)-metal distribution profile, defined non-metallized patterns and defect-free deposition.

In order to serve the industry with these demands, this paper will discuss a coater design for high end product optimization, as well as the high speed online monitoring system designed to view 2D images, measure optical density < 4.0 OD, structural patterns < 3x3mm² at coating speed up to 1200m/min. Other additional features to improve coating quality required for the future of capacitor films will also be elaborated.

Subject of discussion;

This paper will focus on the technical trends, improvements and advancements for the production of complex electrodes.

Metallized capacitor film is manufactured by vapor deposition of metal electrode onto the dielectric material in the web coater.

1. The material required for DC capacitors has been aluminium, whereas AC capacitors have been driving the change from pure aluminium to bimetal aluminium, zinc and silver to improve adhesion, reduce corrosion and electrical stability.
2. Dielectric material required continues to shift to very thin films down to 2µm orientated polypropylene.
3. Width size of the strip metallization continues to narrower and the ability to produce zero defect electrodes is stringent.
4. Quality assurance: at higher energy densities, thinner dielectrics and more exotic electrodes, the quality and performance should be achieved by machine manufacturers.