

**CTM Magnetics**

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**Subject:** Capacitor Performance

**Application:** All Magnetic Applications

**Case Study:** Film vs. Electrolytic Capacitors

# FILM CAPACITOR ADVANTAGES

## Overview:

CTM Magnetics utilizes high-reliability poly-film capacitors. Compared to the electrolytic capacitors used in competitors' filters, CTM film capacitors have higher temperature ratings, higher surge voltage ratings, lower ESR for higher ripple current handling, and are self-healing. ESR is the series resistance of the capacitor. The lower the ESR, the better the capacitor will perform. All of these factors lead to boosts in system reliability and longevity.

Electrolytic capacitors have high ESR at lower temperature. Hence, in cold environments, they require time to heat up during start/restart. If this procedure is not followed, electrolytic caps will fail. On the other hand, CTM's capacitors are ready for 100% load at all temperatures, leading to quick cold-starts and restarts. Additionally, film capacitors don't contain oil whereas electrolytics do. Capacitors that contain oil can lead to numerous operational problems, especially when being stored for prolonged periods of time.

# FILM CAPACITOR PERFORMANCE DATA

Below is a graph comparing the ESR rating and life expectancy between two capacitors with the same 50  $\mu$ F rating @ 60 Hz. The data shows that the film capacitor has a better (lower) ESR rating, as well as a significantly longer life expectancy.

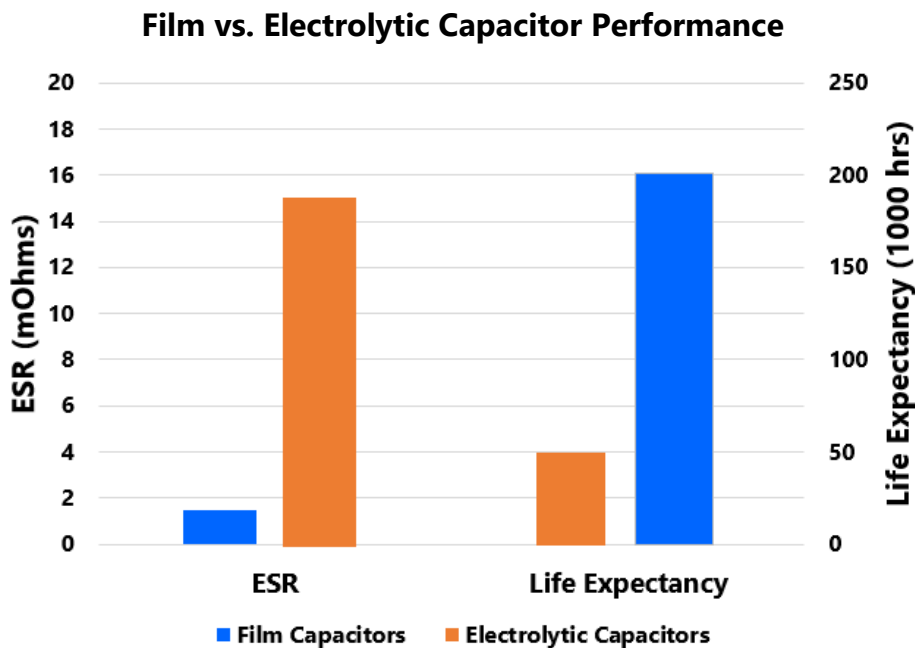


Figure 1. Film Capacitor Performance Comparison