

## FDC Flexible Circuit Production Process for Low Voltage Connectivity



*The recent automotive-grade Flexible Die-Cut Circuit (FDC) capability offers engineers a more sustainable wiring alternative for new battery designs, without sacrificing performance.*

**ENNOVI**, a company specializing in electrification solutions for mobility, introduces a more advanced and sustainable method for the production of flexible circuits for low-voltage signals in electric vehicle (EV) battery cell connection systems.

Although flexible printed circuit boards (FPCs) are commonly used in these systems, they represent the most expensive component of the current collector assembly.

For this, ENNOVI's flexible die-cut circuit (FDC) technology offers a more cost-effective and sustainable solution, with fewer manufacturing steps and continuous, faster production, from coil to reel.

## **Advantages & Benefits**

Typically, FPCs are produced using a multi-stage batch photolithography process to etch trace copper into the flexible circuit. This process involves the use of corrosive chemicals that dissolve unwanted copper. In addition, a considerable amount of time and energy is required to extract residual copper from chemicals, making it difficult to recycle efficiently.

In contrast, the die-cutting process allows for the instant recycling of copper, making it a more favorable alternative to chemical etching.

Compared to FPCs, which have a size limitation of 600 x 600 mm, FDCs have no length restrictions as they are manufactured continuously, from coil to reel. Under certain design considerations, the FDC provides performance characteristics similar to those of FPCs.

Thus, these results have been corroborated by rigorous internal tests of dimensions, thermal shock, trace resistance, temperature rise, insulation resistance and high voltage.

Additionally, this advancement in flexible circuit technology not only offers a more economical and sustainable option for design engineers, but also promotes greater production efficiency and lower environmental impact in the manufacturing process.