

What is capacitor discharge welding?

Capacitive discharge welding, particularly for large-scale systems, is typically done using film-type capacitors. These capacitors store energy along alternating plates separated by a dielectric film. Charge is stored statically along the lengths of the plates. The basic configuration of the film capacitor is provided in Figure 1.

Are electrolytic capacitors a viable alternative for large capacity CD welding systems?

Electrolytic capacitors (E-caps) offer a potential alternative for large capacity CD welding systems. E-caps incorporate an electrolyte impregnated into a separator. The separator is then sandwiched between anodic and cathodic foils. A dielectric is also used to prevent direct contact of the foils with the electrolyte.

What is capacitive discharge or CD welding?

Capacitive discharge or CD welding is a variant of resistance welding (1,2). The process differs from the conventional variants largely in the type of power supply used. Conventional systems provide some variant of alternating current to a transformer arrangement.

Does a film capacitor provide a similar voltage tolerance for CD welding?

Performance was evaluated based on current range behavior and metallographic response. Conclusions from this work include: to film capacitors - An array was developed to provide similar voltage tolerance and system capacitance to a standard film variant conventionally used for CD welding.

Do electrolytic capacitors yield identical weld performance results?

The results presented here indicate that electrolytic capacitors, configured to provide similar charge voltage and energy storage, can yield identical weld performance results. Process, mechanical strength, and metallographic results are all identical for the two capacitor arrangements.

Can e-caps be used for CD welding?

Use of E-caps for CD welding applications does have some challenges. Most notably, E-caps have limits to usable voltages before electrolyte break-down. Current maximum voltages for large capacity E-caps is on the order of 800 V. In addition, E-caps are relatively intolerant to voltage reversals.

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Capacitive Discharge Welding System Jerry E. Gould and Sam Lewis EWI Abstract Capacitive discharge (CD) welding is a variation of resistance projection welding (RPW). For CD welding, ...

My concerns were in two main areas: a safe and efficient charging method, and preventing unintentional discharge. The latter was simple to fix. As the supercapacitors were roughly the shape of a ...

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