

What power source does a spot welder use?

Other spot welders often use car batteries, microwave oven transformers, high-current li-po battery packs or supercapacitors as power source. All of these things seemed to be very powerful and somehow scary to me, so I decided to use an capacitor bank made of regular electrolytic capacitors.

Does a spot welder need a microcontroller?

This spot welder, unlike many available DIY projects, doesn't need a microcontroller to work: the welding pulse is triggered using relay module and a timing capacitor. Welding current is switched with an old recycled industrial thyristor module. Pulse energy can be adjusted with a potentiometer, which changes the voltage of capacitor bank.

How does a spot welder work?

It can be used to weld nickel strips to battery packs. This allows re-building battery packs for various devices, especially ones that are no longer maintained by the manufacturers. This spot welder, unlike many available DIY projects, doesn't need a microcontroller to work: the welding pulse is triggered using relay module and a timing capacitor.

Can a spot welder use a Nichicon capacitor?

Currently this spot welder uses automotive grade Nichicon capacitors. It would be a good idea to check the feasibility of using cheaper capacitors, and test if it's better to use higher voltage ratings, or higher capacity. I managed to capture oscilloscope image of the pulse with an old analog Philips PM3226 oscilloscope.

What is a portable spot welder?

Portable spot welder that doesn't need microcontrollers, uses recycled industrial thyristor and mostly off-the-shelf components. In this project I designed and built a prototype of USB-C powered capacitive discharge spot welder. It can be used to weld nickel strips to battery packs.

How do you charge a welding probe?

Capacitors are charged with a step-up DC-DC CC/CV converter and USB-C PD connector (a regular barrel jack can be used instead, if one prefers). Welding probes are connected with XT90 connector. Welding pulse is triggered with a button attached directly to one of the probes.

At first glance capacitor storage systems seem to offer best performance. However, an in-depth analysis reveals that a flywheel storage system gives better results for the given application, ...

This item: U.S. Solid USS-BSW06 Battery Spot Welder 14.5 KW 2500A Capacitor Energy Storage Pulse Welding Machine, Mini Portable Spot Welding Equipment for 18650, 21700 Lithium ...

The welding was performed using 3 different power levels (1.2, 1.4 & 1.6kW) with the ultimate to induce changes in the mechanical and electrical quality of the joints. Nearly 270 ...

Battery casings are essential components in all types of lithium and lithium-ion batteries (LIBs) and typically consist of nickel-coated steel hard casings for 18650 and 21700 ...

The UK government has launched its consultation on its proposals for kickstarting investment into long-duration energy storage (LDES), which includes a cap-and-floor mechanism and excluding lithium-ion from ...

1. The welding gun with built-in bi-axial galvanometer device achieves precise positioning of tiny welding spots and ensure welding quality and accuracy. 2. The high-speed swinging lenses ...

Within any battery storage, the smallest energy storing component is the battery cell or short cell. Whereas for mobile devices, e.g., laptops, only a few cells are combined, in ...

Laser welding is considered a desirable choice for EV battery manufacturing due to its non-contact nature, high energy density, precise control over the heat input, and ease of ...

Cruachan Dam, Scotland, where Drax has a 440MW pumped hydro energy storage (PHES) facility. Image: Drax. A cap and floor regime would be the most beneficial solution for supporting long-duration energy storage in ...