



## Engineering Design & Development

### Designing and Developing Lithium Polymer Charging Circuits for a Military Robot Manufacturer

#### OUR CUSTOMER'S ISSUE

A manufacturer of military robots approached Safco to custom design an array of AC/DC and DC/DC dual chargers to simultaneously charge both their robots and control units.

#### SAFCO'S ROLE

Safco engineers worked closely with the customer's product managers to fully understand the requirements and the relevant charger design elements.

- The battery technology was lithium polymer.
- The batteries needed to be fully charged in less than 2 hours, even in the field.
- The customer wanted one charger assembly capable of charging both the robot and the control unit – this would require a dual charging circuit.
- The completed assembly needed to be designed to pass UL, CE, cUL and FCC standards in addition to withstanding harsh operating environments (battlefield).
- The military's delivery schedule was very tight and time was of the essence.
- Made in the USA was a critical criterion.

#### PROJECT DETAILS

Safco's engineers became an extension of the customer's engineering and product development team in order to design, develop and manufacture the desired charging assemblies.

- Safco's PCB layout expertise and knowledge of lithium polymer battery technology facilitated a quick turnaround on the circuit schematic to be approved by the customer.
- New in-line housings were designed to meet space restrictions.
- Safco utilized its longstanding partnerships in China to craft a dual manufacturing strategy leveraging low cost PCB production in China and domestic value added assembly in Skokie, IL to meet the Made in the USA requirement.
- Safco managed the agency submittals and approval processes for the customer which streamlined the total elapsed approval time.
- To bridge the gap between existing units in the field and these new charging assemblies, the customer needed a conversion assembly. Within a week Safco presented a solution and within another 10 days, production samples were delivered to the customer.

#### ABOUT SAFCO

Safco is a full-service partner in the design, manufacturing and delivery of custom, low-voltage DC power supplies. Our experience, service and commitment to quality enable us to produce a low-voltage power assembly that offers superior performance and longevity, allowing our customers to focus more on what they do best.

#### CONTACT INFO

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