Wire-Shaped Power Storage

Supercapacitors for the world's wiring infrastructure

Hero-X Round 4
Ready! Competition
American-made Solar Prize

Capacitech Energy, Inc.

Background

- Capacitech Energy, Inc. (Capacitech) is commercializing a flexible, and wire-shaped supercapacitor, the Cable-Based Capacitor (CBC), which can go where no supercapacitor has gone before, inside of DC power cords.

Motivation

- Solar installers like energy storage systems. They help increase revenue and offer aftermarket products to sell to existing customer bases.

Problem & Solution

- Batteries in solar power energy storage systems are large and expensive.
- Batteries are designed to deliver energy over long periods of time, they are not designed to deliver energy quickly (bursts of power).
- Appliances in the home, like air conditioning units, need large bursts of power to turn on, but batteries cannot deliver the peak power required. The current solution is to add more batteries (increasing size and cost).
- Supercapacitors can offer this peak power for the battery, but most supercapacitors would create another eye sore in the home.
- The CBC can complement batteries from inside the system's DC power cords. This can be used to increase the peak power capability of the energy storage system and can also extend the operating life of batteries used.

Market Value

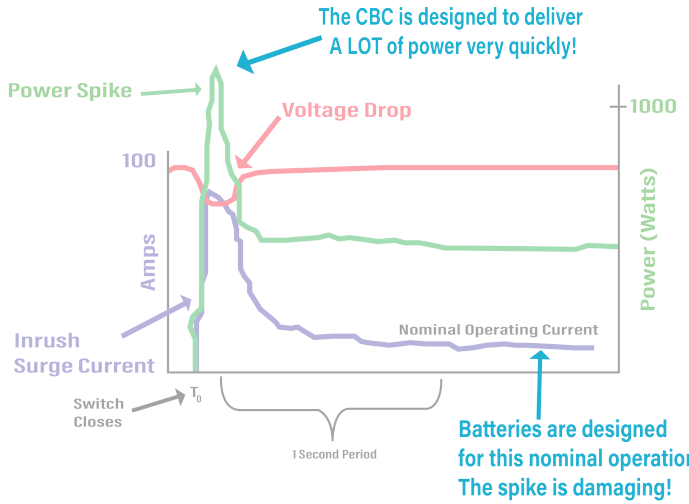
- Capacitech's flexible supercapacitor can be built into the system and home's infrastructure without requiring floor space, wall space, or creating an eye sore. It also boosts peak power capabilities to improve the overall system!
- Solar installers can use this technology to help sell energy storage systems to new customers and aftermarket products to existing customers.
- Advantage: Capacitech's form factor offers space saving and aesthetic advantages over traditional form factors that are restricted to circuit boards.

Objective(s)

- Quantify the value the CBC adds to solar power systems and batteries.
- Develop power electronics and management system for using the CBC in residential solar power systems.

Ideal Outcome(s)

- Launch solar and battery pilot programs/demonstrations.
- Design, prototype, and test a supercapacitor management system, which may control the i/o power in the case multiple batteries, or any other related modification, is installed.



The figure above shows the peak power required to turn on an appliance. The CBC is designed to provide the surge, or spike, so the battery does not have to.