

Re: Solar-hydrogen home power system?

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"Dan Bloomquist" <EXTRApUBLIC21@lakeweb.com> wrote in message
news:419102F0.9030304@lakeweb.com...

>

>

> *Ray Drouillard wrote:*

>

> *Hi Ray,*

> *Supercaps are vended with a 'rated voltage'*

> <http://www.maxwell.com/ultracapacitors/index.html>

>

>>

>> *I'm not being sarcastic when I say that I am genuinely interested in
>> getting my hands on some super-size capacitors. When I first
started*

>> *working with electronics, a one farad capacitor was considered to be*

>> *'impossibly large'. Even in college, one of the teachers referred
to a*

>> *one farad capacitor as 'impossibly large'. In responce, some
students*

>> *tied about six capacitors together to get a total of a farad, stuck
on a*

>> *label saying something like "this is an impossibly large one farad
>> capacitor", and took it to class.*

>>

>> *Anyhow, I really want to know where I can buy a capacitor that'll
store*

>> *a few hundred KJ of work -- or even a KJ or two.*

>

> *The pluses about caps is they don't wear out and don't need
maintenance.*

> *I have no idea the cost difference between caps and deep cycle
batteries.*

Agreed.

I finally found that 2700 farad capacitor. It's about 2.5 inches by 2.5
inches by 6 inches, and stores about as much energy as a AA suze NiCd

sci.energy.hydrogen: Re: Solar–hydrogen home power system?

battery. I still don't know how much it costs. So much for my idea of making a cool flashlight out of it. I would be better off with an electric motor (to use as a generator), parts of a wind–up toy, and a white LED. Oh well...

- >
- > *The down side may have you consider batteries instead.*
- > *The stack must be balanced. If passive, storage time will be diminished.*
- > *At that, (I recall leakage is 1 microamp/farad), you will have a time*
- > *constant of 1 month. The time you will loose 63% of your charge. So if*
- > *you use the charge daily, not a problem.*

Not too different from the losses in a Nickel Metal Hydride cell.

- >
- > *They will occupy a space some 5 to 20 times of batteries, (depends on*
- > *what battery technology you compare.) This may not be a big deal.*

That might be OK for short–term storage. In fact, coupling a huge cap with a small fuel cell might be the way to go. I really dislike the durability issues of batteries.

- >
- > *The biggy for you will be that the voltage is not constant. To be*
- > *efficient, you will need a switcher that is tailored for caps. Here I*
- > *have no idea what is on the market. Without this switcher, you won't*
- be
- > *able to implement in a practical way.*

Switching power supplies are rapidly becoming mature technology. Lower power sticthing regulators are cheap and reliable — they are used in every microcomputer I have seen or heard of.

To control a motor of any type efficiently, you really need some kind of a switching powre supply. If you're using a DC motor (I don't like brushes, but opinions differ), you can use a pretty simple chopper with a freewheeling diode to get rid of the spikes do to back EMF of the coils. If you want to use a synchronous motor (one of the most efficient designs), you can feed each stator pole pair with a switch of some sort (MOSFET, perhaps) and have really good control over the characteristics of the motor.

High current high voltage electronics are still expensive, but the costs are coming down.

Ray Drouillard