

Re: Using a uC for DC-DC conversion?

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Hi Chris,

>>Yes, same in medical. After all, doctors are not engineers and are

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>>

>

>Ah well that's a help. Most of the people who use inverters **think** they are
>engineers and they are the worst type of all for blowing things up.

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>

That's true. Also, most people's confidence level is usually
proportional to the blood alcohol content. Especially when out in the
woods where being macho is cool ;-)

>>usually under a lot of stress. So we anticipate all the abuse that we
>>ever heard of from the Service and QC folks and then redesign in
>>safeguards.

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>Which adds to the cost

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Not always if we think out of the box. Isolation barriers are an
example, in case somebody applies a defibrillator without disconnecting
diagnostic equipment. I'd consider that a panic reaction which must be
expected. If provided that used to be done with terribly expensive iso
amps. Then I convinced a client to roll our own and it went from way
over a hundred Dollars to just a few.

>You missed the point. In order for this hypothetical inverter to operate to
>it's full spec, it's battery fuse must be able to pass 1000 amps for 10
>seconds. Now what diode do you propose to use that will blow that fuse and
>**never**, not even for 1 pS allow the voltage across it to exceed the voltage
>drop of the body diodes in the inverter?

>

sci.electronics.design: Re: Using a uC for DC-DC conversion?

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If you provide some LC, just a little, maybe you don't need a picosecond.

>Refer to the above and show me one at reasonable cost that will pass 1000 amps
>with less voltage drop than the mosfet body diodes for long enough to blow the
>fuse.

>

>

It's been too long ago that I used big Schottkys. One was I believe from Ixys' DSS series. A monster of a diode that came in a flat pack and needed to be bolted down. I think it was 400A and had two diodes. But it may be too expensive here. One of the guys actually commented that it was "puny". He had worked in surge protection for power plants...

I don't know if this can be done: A crowbar solution around the LTC4412 power path controller? The challenge would be to supply it fast enough though and that alone might rule it out in an inverter.

Ok, how about this low-tech solution: A sizeable automotive relay. Wrong polarity – no turn on. It could even light an LED, telling the user that it would be nice to swap the leads A few hundred amps over a relay is no big deal and they aren't even that voluminous. It should beat the Schottky in terms of cost.

>But in this case there is very large inductance between the IGBTs and the
>output port which thereby slows the voltage rise time as seen by the IGBTs when
>it is backfed.

>

>That isn't the case in a modified sinewave inverter so no matter *how* fast you
>make the sense circuit, the overcurrent on the IGBTs is instant. They blow at
>the same time as the overcurrent circuit senses the problem.

>

>

But a little inductance should not cost that much since this is the low current side. Then again in modified sinewave every penny counts.

>Again you have inductance to help.

>

>It would be somewhat more difficult to protect the transmitter output against
>someone connecting it to another transmitter output with 100 times the power
>capability, the same output voltage and an output impedance of about 1 ohm.
>Which is a fair analogy to an AC backfeed.

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>

Usually there is just that big toriod push-pull transformer. Not much inductance there. But you are right, feeding RF power into a turned off unit will probably cause an impressive kablouie.

>Now think how much more difficult it would be if the original transmitter was
>operating in class D.

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They were usually class C.

>>*I never had one blow up.*

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>*But you're not likely to connect it to the batteries the wrong way round, or
>backfeed it, or connect a heart interface remote panel to a prosine. Or plug a
>temperature sensor into the remote panel, or fill it with salt water etc etc
>etc*

>

>*These are things that get done.*

>

>

Well, I try to treat it with the same respect as my car. I don't throw that into 2nd gear either when doing 65mph.

>*Try a *variable speed* electric drill on it. Don't come asking me to help when
>it blows up :-)*

>

>

Actually, I did run a variable speed Milwaukee Sawzall for quite some time on a mod-sine unit. I held my breath for the first few seconds but I had no choice. The only problem was that the overload tripped whenever I pushed too hard on the blade because the inverter wasn't quite rated for that big saw.

>*It will remain so as long as customers in general buy the cheap ones. When they
>finally realise that the expensive ones *are* better the prices will fall even
>faster than they already are doing.*

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>

The two sides have to meet somewhere in the middle. Then there needs to be some education in the advertising material, plus other publicity. That's how Honda or Toyota got to command a much higher price for a sedan than some other brands. People realized that you do get what you pay for, that there are no free lunches.

Regards, Joerg

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