Re: Power supply design help needed

Source: http://sci.tech−archive.net/Archive/sci.electronics.design/2004−09/3846.html

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From: Pooh Bear (*rabbitsfriendsandrelations_at_hotmail.com*)
Date: 09/17/04

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Date: Fri, 17 Sep 2004 21:35:01 +0100
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Robert Wolcott wrote:

> I am a mechanical engineering student at Oregon State University and plan to
> build a high power laser (20 Watt CuBr) as my senior project. I have been
> researching the design for a few years and have solutions for everything
> vacuum and mechanically related. The power supply is another story however.
>
> The journal articles I have ordered and read clearly label all components
> with specifications and values with the exception of the "HVDC portion"
> (highlighted in red on the link). The only advice I have received to date
> regarding this is that it would follow a switching scheme as outlined at the
> link.
>
> Being mechanically inclined, and not electrically, is there something that
> I'm missing? How would I go about determining the required output
> characteristics of the HVDC portion of the supply? Any help will be GREATLY
> appreciated. I'm still in the research phase and hope to have the design
> finalized for fall 2005.
>
> Thanks,
> Bob Wolcott
>
> http://oregonstate.edu/~wolcottr/Switching%20supply%20outline.jpg

The answer is in the jpeg.

It says 'rectified and *filtered*' AC Line.

240V A.C. fullwave rectified into a capacitor input 'filter' a.k.a. storage caps
will indeed give around the 339V DC mentioned.

It might be wise to transformer isolate the power though for safety reasons.

You'll likely need a 'surge protection device' too, such as an NTC thermisitor.
The 'inrush current' from directly recifying mains into a capacitor bank will
blow fuses quite happily. Google Rhopoint and Surge−Gard

Graham