

# Re: will my house burn down?

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- *From:* Mark <[makolber@xxxxxxxxxx](mailto:makolber@xxxxxxxxxx)>
  - *Date:* Mon, 19 Nov 2007 09:51:43 -0800 (PST)
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On Nov 19, 10:55 am, John Popelish <[jpopel...@xxxxxxxxxx](mailto:jpopel...@xxxxxxxxxx)> wrote:

Mark wrote:

putting a diode in series with the secondary does NOT push the core towards saturation.. The PRIMARY still has AC on it and the magnetizing current that flows in the primary keeps the core centered.

(snip)

If the primary winding has zero resistance, then the voltage might remain pure AC, but this is not the case, especially for small transformers.

Loading the secondary with DC also loads the primary with DC, and that produces a voltage drop on half of the half cycles that is not there during the other half. That current drops voltage across the primary resistance, and that drop is subtracted from from the line voltage for those half cycles. This effect definitely unbalances the AC applied to the winding, and walks the core toward saturation.

snip

Hmmm OK that's a good point. Let me think about it.

It's interesting therefore to note that the core is actually stressed more (and may approach saturation) during the 1/2 cycle that the diode is NOT conducting and the primary voltage is therefore higher.

So I'm thinking that if the core starts to saturate when the diode is off, the primary current will increase during the "off" 1/2 cycle, until the primary voltage drops to reaches some equilibrium.....it's hard to predict which combination of conditions ends up with more heat in the transformer.....

Re: will my house burn down?

Very interesting question... maybe time for someone to make some measurements...

Mark