

Re: Fans and Hard Drives

Source:

<http://www.tech-archive.net/Archive/WinXP/microsoft.public.windowsxp.hardware/2004-12/0485.html>

From: Richard Urban (*richardurbanREMOVETHIS_at_hotmail.com*)

Date: 12/05/04

Date: Sun, 5 Dec 2004 07:36:11 -0500

You are referring to a "power failure". We are considering the effects of a voltage "drop" – which may still keep the platters spinning, but at a reduced rate. The heads will still be floating on the air bearing till the speed drops such an extent as to enable the mechanism to "park" the heads! Hence, no crash.

There may be corrupted data due to low voltage in the drive electronics, and then only if the drive is writing at the time of the voltage drop.

I have purposely reduced the drive voltage to 10 volts (via a divider circuit) and have experienced no mechanical problems during the test. I have experienced some loss of data though as I was able to successfully boot into Windows 2000 at this reduced "drive" voltage (Windows was reading writing during my test).

The 3 volt and 5 volts rails were not altered during this test.

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Regards:

Richard Urban

aka Crusty (-: Old B@stard :-)

"Timothy Daniels" <TDaniels@NoSpamDot.com> wrote in message news:z7WdnTU70LTYfi_cRVn-tg@comcast.com...

>A simple loss of power **has** been anticipated in modern
> hard drive design, but **unsteady** power remains a problem
> for any electronic device. Here is the traditional problem
> with power loss for hard drives, and the modern **attempt** at
> protecting against it, from http://en.wikipedia.org/wiki/Hard_drive:

>
> "Head crashes can be caused by electronic failure, a sudden
> power failure, physical shock, wear and tear, or poorly
> manufactured disks. Normally, when powering down, a hard disk
> moves its heads to a safe area of the disk, where no data is ever
> kept (the landing zone). However, especially in old models,
> sudden power interruptions or a power supply failure can result
> in the drive shutting down with the heads in the data zone, which
> increases the risk of data loss. Newer drives are designed such
> that the rotational inertia in the platters is used to safely park the
> heads in the case of unexpected power loss. In recent years,
> IBM pioneered drives with "head unloading" technology, where
> the heads are lifted off the platters onto "ramps" instead of having
> them rest on the platters. Other manufacturers have begun using

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> this technology as well."
>
> *TimDaniels*
>
>
> "Richard Urban" wrote:
>> It could, but I'm betting that it would not. Even when drives
>> were spinning at a lowly 4500 RPM the heads were
>> suspended by an "air cushion". The drive would have to
>> spin down to a almost dead stop while the heads were still
>> in the data area, and not in the park position.
>>
>> I believe the designers of the hard drives would have
>> anticipated this scenario (-:
>>
>> --
>>
>> Regards:
>>
>> Richard Urban
>>
>> aka Crusty (-: Old B@stard :-)
>>
>>
>> "Timothy Daniels" <TDaniels@NoSpamDot.com> wrote in message
>> news:Ptmndnc_wvplkky_cRVn-rA@comcast.com...
>>> "Richard Urban" wrote:
>>>> [.....] I don't think that the corresponding voltage drop caused
>>>> by the simultaneous starting of all the small motors would cause
>>>> physical damage to "any" of the devices (except maybe the
>>>> power supply itself - if it's built in protection doesn't kick in). It
>>>> may have the effect of creating hard drive sectors that contain
>>>> corrupted data - if the device were trying to write to the drive
>>>> at that particular instant. But, when the computer is starting from
>>>> an "off" state, the drives are reading information - not writing!
>>>>
>>>>
>>>> The read/write heads depend on a minimum speed for the
>>>> heads to "fly" (i.e. be held off the platter by the air wedged
>>>> between them and the platter). If the speed should drop
>>>> suddenly before the arm can be withdrawn, the heads will
>>>> "crash" (i.e. contact the platter), causing the whining sound
>>>> of death. It can be imagined that such a scenario would
>>>> occur if the voltage were to suddenly drop.
>>>>
>>>> *TimDaniels*
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