UV LED Case Fan Mod

Greetings once again from the Monster-Hardware Secret Labs down in Silicon Holler! (Yeah, I know I lead with that every time, but hey, I just can't help myself! :)

Today we're gonna take a look at a case fan mod. Recently, I reviewed a Coolermaster TLF-R82-EG case fan. This fan has four bright LED's that give it a neon-ish glow, and it is available in several colors. The problem for me was that the green color of the fan provided to me simply didn't match the color scheme for my computer – I had decided some time back to go the ultraviolet route. I had dabbed some different colors of UV paint within my case and the green was also bright enough to overpower the UV cold cathode lamp. Clearly, the green LED fan – while looking really sweet – just wasn't right for my computer.

So, I put my thinking cap on and wondered if I could get some ultraviolet LED's to install on this fan? A call to the local Radio Shack proved futile. It seems that you can have any color you want there, as long as it is green or red! After looking around a bit, I found some at All Electronics for about $1.75 each. That's a bit pricey for LED's but bright UV versions are hard to find.

Additionally, I wanted to solve another problem inside my case. Due to the configuration inside my Skyhawk aluminum case, and side window panel, installing a case fan in the normal location simply wasn't feasible. But, this case hangs a 80x80mm fan directly over the CPU to provide extra cooling. And since it's easily visible from the window, it was a perfect location. Lastly, UV cold cathode lamps are notoriously weak and I felt that more UV LED's would help provide a little more output.

Once I got the package LED's delivered, I assembled my components and tools together. One note: UV LED's are water clear when not powered and have a purple glow when lit. Also, these LED's are 5mm in diameter while the case fan uses miniature LED's.


Next, I had to prepare a power source for my workbench. Many of you have done this before, but for those who haven't – you can simply place a jumper between the green wire teminal on an ATX connector and a ground (black wire). This will power on your old spare ATX power supply and give you something to work with outside a case. If you do enough bench work, you might consider a dedicated power supply in a truly safe configuration or perhaps a power supply tester. Obviously, be careful when working with power supplies, particularly when using a temporary modification the way I have done here. Don't forget that electric shock = BAD.

Next, I gently removed the power and LED wiring from the tracks around the fan. The LED wiring is pulled of the fan's central hub with two leads and a common ground. Each lead has two LED's, for a total of four. Be extremely careful and gentle when removing the wiring from around the fan body; the wire leads for the LED's are somewhere in the 28-32 guage and are VERY thin and fragile. You may find needlenose pliers to be helpful in working these loose.
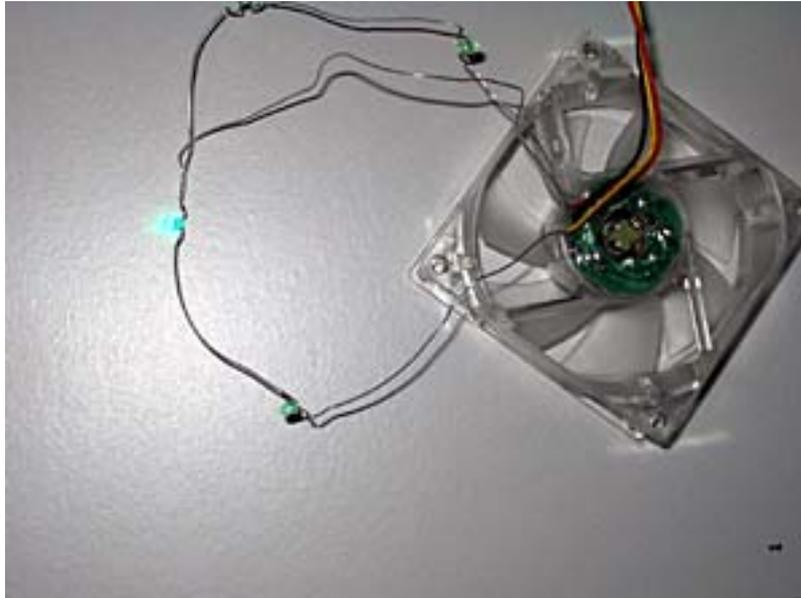
Next, you will need to determine the proper orientation for the replacement LED's which only work in one direction across the voltage. You can simply momentarily contact the leads of your replacement LED's in parallel to the existing LED's. If it glows, make sure you note the orientation and reverse your leads if it does not. On your replacement LED's, one of the leads will be slightly longer than the other. I used a black magic marker to make sure which side got the longest lead (+) on the wiring points at all four existing LED's. The negative (-) terminal always has the shorter terminal leg or perhaps a flat spot on the LED in some cases.
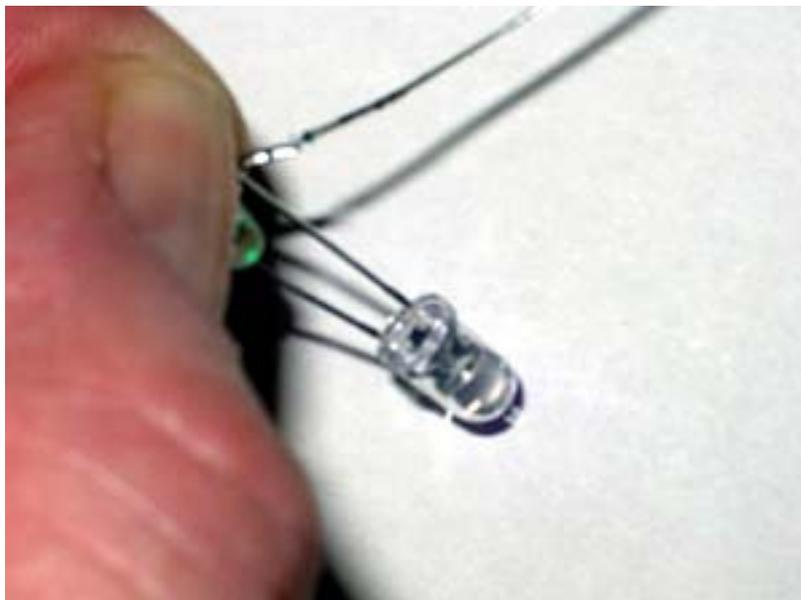

Once you have everything laid out and ready to go, the next step is to prepare the fan housing. If you recall, the replacement UV LED's were a larger diameter than the fan's existing LED's. Therefore, I had to drill out the holes in the fan's housing that held the LED's. I used a 13/64" drill bit to enlarge the holes; you could probably get by with a 3/16" bit but it will be a snug fit.

Once the holes were drilled out, I got ready to replace the LED's. For this task, you will need a soldering iron, solder, and wire strippers/cutters. At this time, I'd like to add a safety note: if you touch your skin (like say, your arm….) to a hot soldering iron, it will hurt. A lot. Not that I've ever done it, I'm just pointing it out. Make sure your soldering iron tip is cleaned and "wetted" well with solder and the process will go much quicker and smoother. Be very careful in stripping the fine wires, if you break one, you may not have enough slack and you will need to solder in a short piece of wire like I did.

After all the LED's have been replaced one-by-one (DO NOT cut the old LED's off at one time!), reroute the wires back into their tracks. I found that my hot melt glue gun came in handy in training these back into place and making sure that they stayed. I ended up having to use a dab of hot melt glue to hold these in place. Make sure that the "nose" of the new LED does not stick out into the path of the fan blades. Now you can power your fan back up to make sure that everything is lit correctly. If, not, you may have to reverse an LED (I also recommend ordering one or two extra just in case). After everything was lit up okay, I turned out the lights and took another picture in the dark.
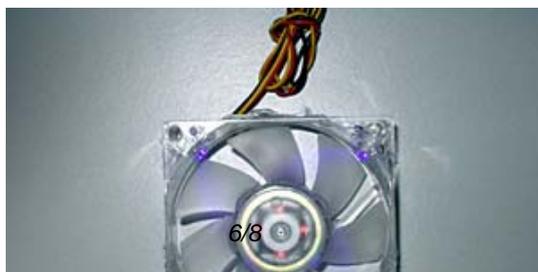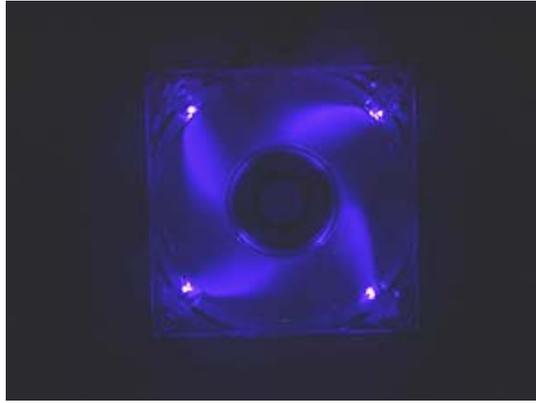
Finally, I installed the fan into my case. Unfortunately, digital cameras simply aren't the best for taking pictures in extremely low light. It was hard to get a good picture with only my UV sources, but I am very pleased with the way it looks. Even in working light at my desk and a camera flash, these LED's are bright enough to give a bright and distinct purple black light glow – brighter even than the UV cold cathode lamp in my case.

Finally, I can't give a rating on this mod since it's not really a product review but more of a true mod. I know that Coolermaster offers the TLF-82 fans in a purple version, but they certainly don't advertise it as having UV properties that way I wanted. Just because a light or LED is purple doesn't mean that it also projects light in the ultraviolet wavelengths the way that these LED's do. All I know is, this fan now makes the UV paint inside my case really jump out, and I really like the way it looks. Maybe one of these days I'll get around to rerouting some cables to make the accents even more visible.

This project only took about an hour and a half from start to finish and it was not technically difficult although care had to be taken. The results were certainly worth the effort to me, and I think you just might enjoy this mod as well.

Insulglass

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