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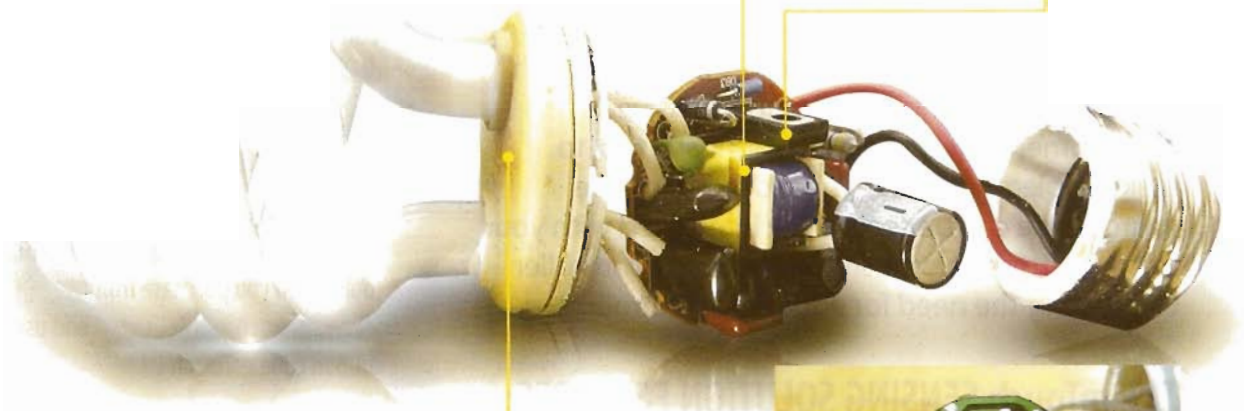
Compact fluorescent lights: not always the best solution

After mentioning in a PowerSource blog post my difficulties with CFLs (compact fluorescent lights) and their tendency to burn out after less than a year of use, I was surprised by the number of comments I received from irate CFL users with similar experiences. It turns out that the lights are not the universal panaceas their developers claimed they would be as replacements for the venerable incandescent light bulbs.

The ideal use for a CFL is in lighting fixtures, such as table lamps, in which the screw-in end is below the unconfined bulb. Sure enough, all but one of my dead CFLs came from enclosed downward-pointing lights with the screw-in end above the heat-generating bulb. In fact, in the whole house, I counted just three upward-pointing, unenclosed lights that would be appropriate for CFLs. Energy Star's Web site, www.energystar.gov, states that "CFLs perform best in open fixtures that allow airflow, such as table and floor lamps, wall sconces, pendants, and outdoor fixtures" (see www.energystar.gov/index.cfm?c5cfls.pr_cfls). The Web site also recommends installing CFLs in fixtures that you use at least 15 minutes at a time or several hours per day, which excludes such areas as closets and laundry rooms.

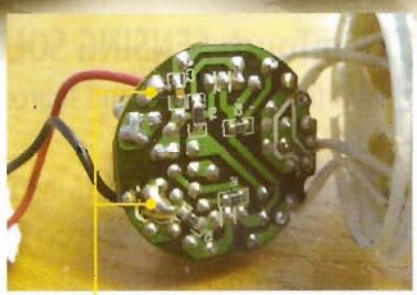
Like any other fluorescent light, a CFL is a gas-discharge tube. It relies on an inductor acting as a ballast to limit the ac current through the tube.

Because the inductor would have to be unreasonably large if the CFL operated at the line frequency of 60 Hz, the CFL's circuitry includes a frequency-multiplier stage relying on several high-voltage transistors; this stage allows for the use of a smaller inductor and smaller current, as well.



Using an infrared-thermometer gun, I found that the CFL in an enclosed, downward-facing configuration yielded a temperature of 160°F, 40 degrees higher than the table-lamp CFL's temperature of 120°F and a significant difference that can shorten the bulb's life.

Compared with an incandescent bulb, a CFL is crammed with electronics. Note the telltale brown stains at the base of the bulb where the CFL overheated.



Note the significant amount of hand assembly a CFL requires, both increasing cost and decreasing reliability. All of the wires require hand assembly and soldering.