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## Miscellaneous Comments on Diverse Topics

Gary Breed  
Editorial Director



I'll admit it—sometimes an editor runs out of ideas for a serious, in-depth editorial column! Instead, this month's offering is a collection of shorter comments on different subjects.

### CFLs and LEDs

Despite their energy savings, I'm not much of a fan of compact fluorescent lights (CFLs). It's not that they cost more than good ol' tungsten bulbs from Thomas Edison's era, and it's not that they contain mercury. No, my problem is that the color of the light is harsh. Even models that claim to be "warm" are simply uncomfortable to live with for long periods of time. So I still use the old fashioned bulbs in those parts of our house where we spend most of our time, and relegate the CFLs to closets, basement, garage and other places where the quantity, not quality of light is important.

LEDs have more promise, since the color temperature can be tailored to almost any desired range. However, LEDs get their final color by mixing different narrow bandwidth colors, like your TV set gets its colors by mixing different proportions of red, green and blue. Thus, current LED lights have the same overall effect as the "blue glow" of a room lit solely by a TV set. Eventually, I expect LED developers to overcome this problem.

Both CFLs and LEDs have high frequency circuitry to make them work—the CFL ballast and the switching power supply or DC-DC converter used in most LED assemblies. I may be able to tell when a problem with a light is causing interference, but I hope they are reliable enough so ordinary consumers don't experience any mysterious behaviors.

### What is "Green"?

Continuing the previous theme, one of my pet peeves is the bizarre use of the term "green" to describe everything from simple energy conservation to environmental extremism. The CFL is a good example. Is it green because it saves energy, or is it contributing to pollution because it contains mercury? Is my house green because it's well insulated and has a high efficiency HVAC system, or is it a problem that the concrete took a lot of energy to produce and it has many materials from non-renewable resources? And why don't the "green" folks get on the RF interference bandwagon? The electromagnetic spectrum is part of our environment, too!

## Regulatory Balance

Maybe it is fruitless to discuss politics, but we sure seem to get too much or too little government oversight—rarely the right balance that common sense would dictate.

In the financial world, we have excruciating detail in the rules for IRAs and 401ks, but too little regulation of some parts the investment community that we are supposed to trust with those funds.

In the communications arena, we have the FCC, which continues to operate with the schizophrenic mix of simultaneously promoting and regulating communications. The Commission's ability to make balanced decisions is further hampered by the reduction of the FCC's in-house technical capabilities to a bare minimum.

## Science and Math Education

I use the word "science" instead

of "technology" because I mean grade school and high school science and mathematics, where the fundamentals that create technology are first learned ... or not, which is the problem. Somehow, the interest and ability of students in math and science has not advanced much, even with a lot of recent hand-wringing on the subject.

Again this year, I was a judge for the regional high school science fair, where the main problem is not enough entries. The winner and runners up get some serious scholarship money and great credentials for a college admission application, but all the judges expressed disappointment at the turnout. The top couple projects were outstanding, but the quality—especially the originality—dropped off rapidly.

Educators need your creative suggestions! Thirty or more years ago, most of us found it easy to be

enthusiastic about science and technology—how do we renew that kind of excitement?

## Internet Pros and Cons

As an open forum, the Internet is incredibly valuable for the rapid and widespread exchange of technical information. But, only portions of the available material are edited or reviewed. The ability to identify reliable sources and quickly judge the value of content takes as much knowledge and experience as any other part of engineering.

In a sense, the Internet is like early computer-aided design tools—a valuable asset, but very easy for inexperienced engineers to rely on too much, with the potential for obtaining incomplete and possibly incorrect information.

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