

Review: New TV tech focuses on better picture

January 22 2015, by Troy Wolverton, San Jose Mercury News

It's taken them a while to get there, but TV makers now seem to think that the way to improve the boob tube - and sell more sets at higher prices - is by having it display a better-looking picture.

In the last decade, electronics manufacturers have super-sized televisions, connected them to the Internet, bumped up their resolution multiple times and dabbled with having them display 3-D images. Now, they are focusing on features that are a little more basic: brightness and contrast and the colors that TVs can display.

At the Consumer Electronics Show earlier this month, many of the big TV manufacturers highlighted new sets they claim will offer much better images. The new televisions will be able to display a much wider range of brightness levels, providing detail that can't be seen on current sets, and a much wider range of colors, making their images seem truer to life.

"This is something where the device manufacturers can deliver something that consumers will immediately appreciate," said Dr. Raymond Soneira, president and founder of DisplayMate Technologies, which consults with many research labs of the major TV makers about [picture quality](#).

The improvements in picture quality are based largely on two underlying technologies: HDR, or high-dynamic range, and [quantum dots](#).

You may be familiar with HDR from your digital camera or smartphone. On such devices, it's used to help improve pictures taken in places where there's a high contrast between bright and dark areas. HDR helps balance the light so that both light and dark areas are viewable.

On TVs, HDR works similarly. It allows televisions to display a much wider range of brightness levels, so that they can show details that might have been lost, such as the shape of clouds in a bright sky or the texture of an object sitting in the shadows.

The maximum brightness a typical LCD television can display is 100 nits, which is a measurement of brightness, said Neil Hunt, chief product officer at Netflix. By contrast, the sun viewed with the unshielded eye is about 50,000 nits. The new HDR TVs will be able to reach brightness levels of 1,000 to 4,000 nits, said Hunt, whose company plans to shoot some of its original productions in a way that will take advantage of the capabilities of the new HDR-enabled TVs.

From a technical standpoint, the main difference for LCD televisions that support HDR is that they have more sophisticated image processors and full arrays of LED backlights that can be dimmed in particular places.

The potential for HDR is the ability to display images that look so real, you might at first think you were looking out the window rather than at a television screen, said Paul Gray, a principal analyst at iHS DisplaySearch who covers TV technology and design.

"It should look that good," he said.

While HDR focuses improving brightness and contrast, quantum dots target the color spectrum that televisions can display. The dots are actually precisely manufactured microscopic crystals that can absorb

light of a particular color and re-emit it as different colored light.

Most TV manufacturers use blue LEDs that they cover with phosphor coatings to create a white light. But because that white light typically doesn't include much red or green light, most LCD TVs are unable to reproduce deeply saturated images using those colors. Quantum dots can precisely tune the light coming out of the blue LEDs so that it actually does create more red and green shades, resulting in more saturated, lifelike colors.

Nanosys, the Milpitas, Calif., company which is one of the two leading producers of quantum dots, says that TVs with the technology can produce 50 percent more colors than typical LCD sets. LCD TVs have generally struggled to reproduce the range of colors in the standard spectrum used for years in broadcast television; with quantum dots, they have the potential to display nearly all of the colors in the much wider next-generation standard for broadcasting, experts say.

Quantum dots aren't the only way to produce more colors. At CES, Sharp and Panasonic showed off televisions that use new kinds of phosphors to generate a wider range of colors. But many analysts think quantum dots offers more potential, because they are more efficient than phosphors.

"Quantum dots are one huge step forward," Gray said. "The colors look real."

You should be prepared to pay a premium to get a TV with either quantum dots or HDR. At least for the near future, manufacturers are limiting both technologies to their top-of-the-line sets.

And it may be years before consumers will be able to see the full benefits of either technology. There are competing ideas for what to

include in a standard for HDR televisions. Meanwhile, there are few programs that will take advantage of the capability. Netflix, for example, is talking about releasing only a portion of its original shows this year with HDR support.

Although quantum dots should enhance the [colors](#) you can see on even standard HD programs, almost no television content is available today that supports the much broader next-generation color standard, noted Soneira.

Still, both technologies offer hope that in the near future, the picture on your TV won't only be bigger, it will also be noticeably better.

©2015 San Jose Mercury News

Distributed by Tribune Content Agency, LLC

Citation: Review: New TV tech focuses on better picture (2015, January 22) retrieved 11 May 2024 from <https://phys.org/news/2015-01-tv-tech-focuses-picture.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
