How to Choose the Right Video Display

by Paul Diggin

Not too long ago, you could walk into a TV or appliance store and, with the help of a friendly salesperson, buy a new television. The choices were few and fairly easy to understand; the differences revolved more around size and appearance than different technologies and features. You've probably noticed that those days are gone. As one customer recently said, "I feel like I need a Ph.D. in electronics to understand everything out there now." My answer to that: don't despair, my friends. With some help, it is much easier and faster to learn about the choices and choose what is right for you than seven years of higher education. Following is a brief explanation of the different technologies available today.

The technology used in conventional and rear-projection television sets is called CRT or cathode ray tube technology. Standard television sets have one cathode ray tube. Rear projection sets use three to project images onto the screen from behind. Front projectors, like those found in movie theaters and custom home theaters, also generally use CRT technology. The biggest drawback to CRT is the size requirements needed for the tubes. Larger conventional and rear-projection television sets are gigantic and require a great deal of space in a room.

Plasma technology uses a thin layer of phosphor pixels sandwiched between panels of glass. The image is displayed when high-frequency UV rays stimulate the red, green and blue cells, making them glow. The images produced are incredibly clear and detailed. This enables manufacturers to produce thin and spacious televi-

sion displays with uniform picture brightness. This technology has come a long way since its inception. In fact, contrary to popular belief, plasma screens from quality manufacturers should have a lifespan similar to conventional televisions. The biggest drawback to plasma technology is burn-in. This can occur if something with a call sign or ticker symbol is left on for long periods of time. For this reason, plasma screens are not a good choice for those that want to play video games or work from home and have, for example, a stock market ticker running on the bottom of the screen all day.

LCD or Liquid Crystal Display technology uses thin panels and thousands of tiny transistors to create a bright, smooth image. Inside the LCD panel is a layer of liquid crystals sandwiched between layers of glass. Each individual cell or pixel contains a thin film transistor. These cells are turned "on" and "off" by applying a small electric charge to the transistor. LCD screens can be used as computer monitors and are also fine for video gaming. The biggest drawbacks to LCD technology are that the screens tend to look washed out when there is a lot of natural light on them and fast moving images appear fuzzy on inexpensive models.

At the heart of every DLP TV projection system is an optical semiconductor known as the Digital Micromirror Device or DMD chip. It contains a rectangular array of up to 1.3 million hinge-mounted microscopic mirrors that each correspond to one pixel in a projected image. The DMD and the sophisticated electronics that surround it are what we call Digital Light Processing™ technology. DLP rear projection televisions can create bright, detailed images and can be used for video gaming. DLP is also an excellent technology for front (movie) projectors. Drawbacks on the TV side of DLP are size requirements, the fact that there are no flat panel models yet, and price. DLP is more expensive than LCD at this time.

HDTV, or high definition television, produces images digitally and with high resolution (the amount of detail in an image) for better clarity and realism. All television channels will be required to broadcast in high definition by the year 2006. High definition signals are a huge step forward in viewing technology. The images displayed are more three-dimensional and have much greater detail than standard video signals. Because HDTV will soon be the standard it is always advisable to buy a television or projector that can display high definition signals.

With so many new technologies on the market, how can you choose which one is best for you? The answer depends on your lifestyle, the room you watch TV in, what kind of viewing you want to do, and your budget. As with any home entertainment product or system, it is helpful to begin by thinking about which features are most important to you and your family.

The conventional television sets we all grew up with are commonly referred to as Direct View televisions, which use a single cathode ray tube to project images onto the screen from behind. Direct view televisions range in size from 10" to 38" screens and in price from under a hundred dollars to nearly a thousand dollars. These sets have gotten better

over the last twenty years. Some newer developments in Direct View sets are flat screens and HDTV capability. Flat screens offer better viewing angles and make the screen appear larger than a similar sized conventional direct view.

Plasma televisions have a flat screen and are flat panels; they typically measure between three and six inches deep. They are also excellent for rooms with a lot of natural light. They range in size from 32" to larger than 60". Plasmas range in price from three thousand to twenty thousand dollars or more. They also vary a great deal in quality. The best measure of quality for plasmas can be found in reviews from industry magazines and experts. Most of the lower priced models (three to five thousand dollars) are vastly inferior in picture quality and video scaling performance.

LCD televisions can be flat screen, flat panel or rear projection. Flat screen, flat panel LCD displays range in size from roughly 13" to 45" and in price from five hundred to more than six thousand dollars. Smaller LCDs are ideal for kitchens, bathrooms and for use as computer screens. LCD rear projection televisions range in screen size from 40" to 70" and are anywhere from 14" to 20" deep. These can cost anywhere from two thousand to six thousand dollars. These sets are ideal for larger spaces and are great for video gaming.

DLP televisions are flat screen, rear projection sets. DLPs range in size from 42" to 70" and in price from three thousand to eight thousand dollars. These, like LCD rear projection sets, are ideal for larger spaces and are great for video gaming. Some of the best new front projectors are DLP projectors. Unlike their CRT movie theater cousins, they are much smaller and much more affordable. They weigh as little as three pounds and can be mounted in a variety of ways. DLPs range in price from fifteen hundred dollars to fifteen thousand dollars, with many quality models offered between four and ten thousand dollars. Like LCD and CRT projectors, DLPs are ideal for dedicated home theater rooms with controlled light.

Once you decide which technology will work best for your family and your space, you need to decide how to buy your new television. If you are going to buy a conventional or rear-projection set or a small flat panel LCD television, retail chain stores are good places to look for the best model at the best price.

If you are going to buy anything else, or if you plan to integrate your new television into a larger system or incorporate surround sound, a custom dealer/installer is the right choice. With custom dealers comes an industry professional who knows how to properly install your new set. A professionally installed system is designed to meet a specific homeowner's needs and to offer the best performance and look at the best price for a homeowner's unique space and style. •SSM•