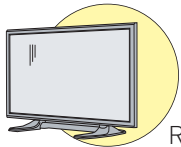


DISPELLING THE MYTHS ABOUT PLASMA DISPLAYS:

THE ADVANTAGE OF PLASMA DISPLAYS OVER LCD MONITORS

BY
NEC Solutions America



The plasma display market continues to experience growth and skyrocketing unit volumes!

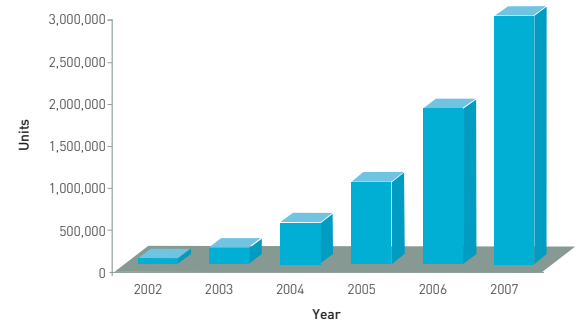
Research by the major display tracking services predicts that plasma sales will grow exponentially over the next few years. According to IDC, the plasma market will average 74% growth per year through 2007, offering resellers selling plasma a great opportunity to grow their businesses.

With the increasing popularity of plasma displays both for commercial and residential use, many questions have begun to circulate about the technology – particularly when directly compared to LCD monitors.

Below are some of the more common misconceptions about plasma displays. It is CRITICAL that light is shed on these truths so end users truly understand the advantages of plasma displays for virtually any large screen display application.

Plasma Monitor Shipments Explode in US Market!

Combined Annual Growth Rate of 74% through 2007



Source: IDC, 2003

MYTH

PLASMA DISPLAYS ARE MORE EXPENSIVE THAN LCD MONITORS.

TRUTH

CURRENTLY, PLASMA DISPLAYS ARE OFFERED IN LARGER SCREEN SIZES AT LOWER PRICE POINTS.

Plasma displays have become increasingly affordable and feature-rich since their introduction nearly a decade ago. The growing demand of plasma displays, combined with advancements and efficiencies in the development and production of the technology have resulted in larger, higher performing products offered at prices that start at under \$3,000.00. LCDs by comparison, start at \$5,000.00 for similarly sized models.

EXAMPLE

42" WVGA plasma:	\$70.00 per diagonal inch
42" XGA plasma:	\$95.00 per diagonal inch
40" LCD:	\$125.00 per diagonal inch

*Based on market price as of June 2004

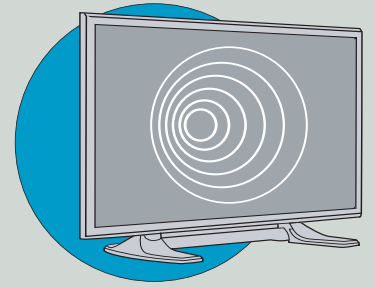
MYTH

PLASMA DISPLAYS WILL “DIM OUT” IN A COUPLE OF YEARS.

TRUTH

GRADUAL LOSS IN BRIGHTNESS IS THE NATURE OF ANY IMAGE-DISPLAYING DEVICE, LCD MONITORS INCLUDED! **MANY PLASMA DISPLAYS WILL REACH 50% OF ORIGINAL BRIGHTNESS RATINGS AROUND 60,000 HOURS.** THIS IS COMPARABLE TO OTHER FLAT PANEL TECHNOLOGIES.

This being the case, the plasma would reach half of its original brightness rating in 20 years given operation 8 hours a day, 365 days a year at factory default settings.



MYTH

PLASMA DISPLAYS HAVE PERMANENT IMAGE RETENTION.

TRUTH

SOME FORM OF IMAGE RETENTION, WHETHER PERMANENT OR TEMPORARY, IS POSSIBLE WITH ANY IMAGE-DISPLAYING DEVICE, INCLUDING LCD MONITORS. IN FACT, MANY USER MANUALS FOR LCD MONITORS SPECIFICALLY CAUTION THAT IMAGE RETENTION MAY OCCUR DEPENDING ON USE.

Many plasma displays incorporate built-in phosphor protection measures with operating modes such as inverse RGB selection and programmable orbiters that can dramatically extend their lives. It is also critical that the proper content is used with a plasma display. Ultimately, however, responsible use is the best way to maximize the life of any plasma display.

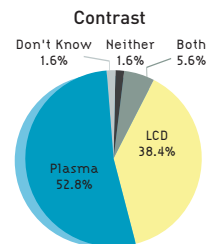
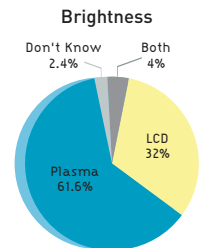
MYTH

LCD MONITORS HAVE HIGHER BRIGHTNESS AND CONTRAST THAN PLASMA DISPLAYS.

TRUTH

FOR MANY APPLICATIONS, **PLASMA DISPLAYS HAVE ESSENTIALLY EQUAL BRIGHTNESS AND A SIGNIFICANTLY HIGHER CONTRAST RATIO THAN LCD MONITORS,** ALTHOUGH THE COMPARISON IS NOT “APPLES-TO-APPLES” SINCE THE TECHNOLOGIES ARE DIFFERENT.

Brightness and contrast ratio play vitally important roles in displaying an image with clarity and definition. Contrast is also very important when displaying video images or playback because without them, there is no depth to the image or video being displayed.



Based on Customer Preference.
Source: ProAV, November 2003
(TFCInfo's "In-Store LCD TV vs. Plasma Study")

MYTH

PLASMA DISPLAYS ARE BEING REPLACED BY LCD MONITORS IN LARGE SCREEN DISPLAY APPLICATIONS.

TRUTH

PLASMA IS A PROVEN TECHNOLOGY AND HAS BEEN SUCCESSFULLY USED FOR ALMOST A DECADE IN LARGE SCREEN DISPLAY APPLICATIONS TO HELP ATTRACT, INFORM, EDUCATE AND ENTERTAIN TARGET AUDIENCES.

Users requiring a large screen that delivers accurate color reproduction, excellent motion handling, vibrant video images at extreme viewing angles with no color shift and the flexibility to be used in a wide range of environments should strongly consider plasma displays, since the technology currently outperforms LCD monitors in these specific areas. Plasmas typically have extensive input options, and, as such, are versatile enough to display superior images from the most cutting-edge technologies.

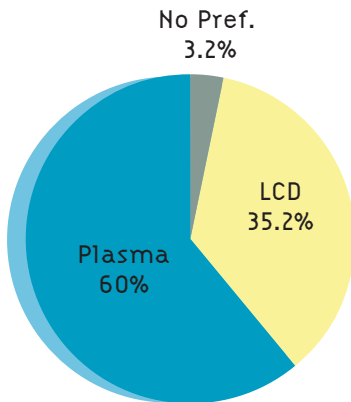
MYTH

LCD MONITORS HAVE SUPERIOR IMAGE QUALITY TO PLASMA DISPLAYS.

TRUTH

TO DELVE INTO THIS MYTH, IT HELPS TO HAVE A BASIC UNDERSTANDING OF HOW THE TECHNOLOGY WORKS.

LCD technology utilizes liquid crystal molecules in between two pieces of glass in a cross hatched formation (creating a screen door effect when viewing up close). When voltage is applied the molecules align with the electrical field at varying degrees to create the color array across the panel. As the image information changes with the content being sent to the panel, the voltage cues adjust the molecules accordingly to respond to the image adjustments. LC molecules have a slower response rate than the gas plasma used in plasma displays. This slower response time with LCD monitors can sometimes create a smearing or trailing image across the display when fast motion occurs in the content being viewed.



Overall Customer Preference

This being the case, it is no surprise that in store research by industry analyst firm TFCInfo identified a 3-to-1 consumer preference toward plasma image quality over LCD.

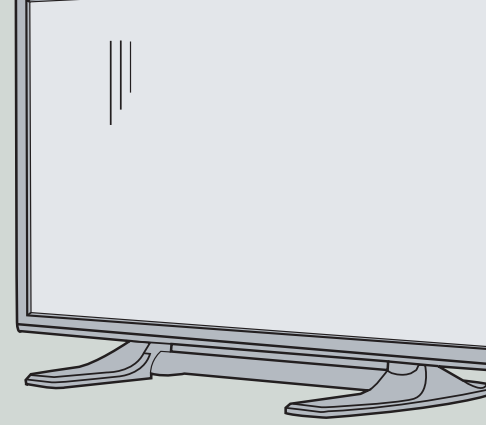
MYTH

PLASMA DISPLAYS TAKE UP MORE SPACE THAN LCD MONITORS.

TRUTH

WHILE PLASMA DISPLAYS OFFER A "LARGER-THAN-LIFE" IMAGE WITH SCREEN SIZES **UP TO 60+ DIAGONAL INCHES**, THEY ALSO PROVIDE A THINNER AND SMALLER FOOTPRINT THAN ANY TECHNOLOGY AVAILABLE FOR LARGE SCREEN APPLICATIONS, **WITH DEPTHS JUST OVER 3 INCHES!**

To date, the largest commercially available LCD monitor is 40" with the smallest footprint at 3.4".



MYTH

PLASMA TECHNOLOGY REQUIRES MORE EXPENSIVE POWER CONSUMPTION THAN LCD MONITORS.

TRUTH

WHEN COMPARED TO OTHER FLAT PANEL DISPLAY TECHNOLOGIES, **THE DIFFERENCE IN OVERALL POWER CONSUMPTION IS NEGLIGIBLE WITH PLASMA USING AS FEW AS 270 WATTS.**

Plasma offers a cost-effective solution over LCD monitors (see Myth #1). This is where the true investment will be recognized, not on the few dollars saved on the electric bill each year.

Operational Cost Per Year



OPERATIONAL COST PER YEAR

42" ED Plasma Low:	\$78.84
42" HD Plasma Low:	\$87.02
40" LCD Low:	\$68.62
40" LCD High	\$81.76

ED (Enhanced Definition)
HD (High Definition)

	42" PLASMA	40" LCD
WATTS:	270 WATTS	240-280 WATTS
COST per year:	\$78	\$70-\$82*

*Operating costs based on .10 cents per kilowatt with a usage of 8 hours a day, 365 days a year.

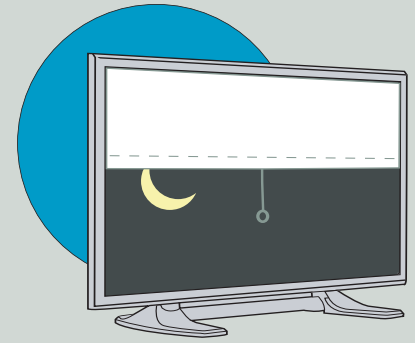
MYTH

PLASMA DISPLAYS CAN'T BE USED IN APPLICATIONS THAT REQUIRE AMBIENT LIGHT.

TRUTH

MOST PLASMA DISPLAYS ARE CAPABLE OF HANDLING AMBIENT LIGHT AND SOME EVEN HAVE ADDITIONAL FUNCTIONS SUCH AS **ANTI-GLARE SCREEN FILTERS** THAT DIFFUSE DIRECT LIGHT SOURCES, ENABLING THE DISPLAYS TO BE **EFFECTIVELY USED IN STOREFRONT WINDOWS AND OTHER APPLICATIONS WITH UNCONTROLLED LIGHTING ENVIRONMENTS.**

Additionally, plasma displays typically offer better images at more extreme viewing angles than LCD monitors, which further aids image comprehension.



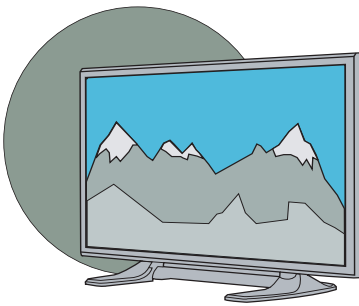
MYTH

PLASMA DISPLAYS CAN'T OPERATE IN HIGH ALTITUDES.

TRUTH

SOME PLASMA DISPLAYS CAN OPERATE AT UP TO 9200 FEET ABOVE SEA LEVEL--ALMOST AS HIGH AS LCD MONITORS--MAKING THEM APPROPRIATE FOR USE IN HIGH-ALTITUDE ENVIRONMENTS.

Since there are very few places in the world that would require a large screen display at a range that is higher than 9,000 feet, this is rarely a concern.



REMEMBER

WHEN YOU CONSIDER ALL THE ADVANTAGES, **PLASMA REMAINS A VIABLE CHOICE FOR BOTH COMMERCIAL AND RESIDENTIAL ENTERTAINMENT USE. FEATURE-FOR-FEATURE AND AFFORDABILITY MAKE PLASMA AN EXCELLENT DISPLAY CHOICE.**

- Showcase areas such as boardrooms, lobbies and reception areas where the company wants to convey professionalism to customers and executives.
- Operations centers, call centers, and trading floors where space constrains, lighting conditions, and wide viewing angles are critical.
- Dedicated video conferencing solutions where split screen capabilities allow for viewing of participants and conference materials simultaneously,
- Interactive whiteboards, for team collaboration with a touch screen,
- Hospitality and entertainment environments in restaurants, bars, and hotel rooms.
- Digital signage and public display needs in retail stores and public areas.
- Residential entertainment for movies, programming, gaming, digital pictures, and Internet access.

For more information on NEC's industry-leading plasma display monitor line, please contact us at 800 NEC-INFO or visit www.necvisualsystems.com

The opinions expressed in this document are those of NEC Solutions America, Inc., based on the current state of LCD and plasma display technologies as of June 2004.