



# Let battle commence

The digital signage market has become a battleground between plasma and lcd technologies. By **Vanessa Knivett**.

**D**igital signage installations for advertising or information provision are becoming a common sight. Whilst printed signage remains dominant, and will do for some years, digital signage has key advantages – notably the ability to run fast changing content.

Also known as narrowcasting, digital signage is believed by analyst InfoTrends to be 'on a path to sustainable growth'. It valued the narrowcasting industry at \$1.1 billion at the end of 2006, claiming an installed base of 630,000 screens at 97,000 sites. By 2011, InfoTrends sees digital signage revenues exceeding \$2.5bn. Meanwhile, iSuppli estimates the global market for point of sale and signage displays greater than 30in diagonally to be \$1.4 billion. Estimates may differ, but all are convinced the market is poised for growth.

Digital signage is taking off thanks to several factors, including the availability of large plasma displays and the advent of cheaper narrowcasting software and hardware. Recently, plasma almost had the market to itself, but its share is being eroded by competition from large panel lcds. With cost and display size both key factors, it isn't hard to understand why plasma is under pressure. But what are the technical factors?

## Plasma beginnings

Plasma tvs were bulging to 40in and beyond by 2002. Whilst the larger sized screens required panel stitching, their size alone was enough to inspire early adopters. Plasma manufacturers are still keen to play up to their main advantage – size. Panasonic announced a 103in prototype hdtv

with 1080p resolution in 2006, while this year, Sharp hit back with a 108in lcd tv.

Plasma displays are emissive – they produce light from individual pixels – resulting in a wide viewing angle. One challenge of this arrangement is achieving uniform light discharge. Shinji Masuda, development team leader for Matsushita's 103in Viera tv panels, recently confirmed research was addressing this. "Our hard work has paid off with the development of a panel comprising around 6million illuminant cells and micron level control that realises uniform light discharge."

Early plasma displays could only generate a grey colour instead of true black, so recent developments have addressed contrast ratio and black levels, typically by including a black drive system. Improvements are also being made to life span and



phosphor burn in – the ghosting of previously displayed images and text, a notorious issue with early plasma displays.

Recent developments at NHK in Japan are focusing on ultra high resolution and low power consumption. NHK has developed an HD plasma display with improved luminous efficiency and an electrode protective film that drives the display at low voltage. Meanwhile, Pioneer debuted technologies at CES in January that it believes will position plasma as ‘the unbeatable picture quality leader, surpassing lcd regardless of lighting conditions’. It has reduced minimum luminance levels to improve black levels and contrast, and produced a filter that minimises the effect of ambient light.

### The challenger

Whilst lcd is new for digital signage, it is a well evolved technology. Sven Johannsen, lcd product marketing manager at Sharp, says: “The advantages of lcd over crt in consumer applications include width, contrast ratio and power consumption, whilst characteristics that make them suitable for more industrial applications, such as signage, include long term availability, long life and serviceability.”

Johannsen says lcds challenge plasma in several areas. Claiming plasma lifetime is typically defined by panel brightness, he recounts that an lcd might retain a minimum of 50% of its original brightness after 60,000 operational hours, whereas the typical brightness value of a plasma display is usually quoted for 50,000 hours.

He adds that plasma screen brightness peaks when you turn on the screen, after which colour can shift to different areas. So where banks of screens are used, each screen may look different over time, in contrast to the consistency of lcds.

Johannsen admits lcds have image retention characteristics, although unlike plasma, are reversible. “There are tricks that you can employ when you turn off the screen to make sure that it doesn’t happen,” he says. “However, there are certain applications where the screen can’t be turned off, so meeting these needs is a focus area for Sharp. “The secret to avoiding image retention altogether is to use very pure liquid crystal material, since it is the impurities that hold the charge which causes image retention. This involves extra processing, so there is a cost implication.”

In ambient light conditions, Johannsen believes Sharp’s lcds cross into transreflective territory, which he recommends for use only in severe ambient lighting. “Our contrast ratios are greater than 1500:1, high enough to cover part of the transreflective market without sacrificing brightness.” And some of Sharp’s latest models offer 3000:1 static contrast.

Johannsen believes lcds have a bright future in signage applications and Martin Cobb at Pacer tends to agree with him, although for slightly different reasons. Pacer has sold lcd and plasma screens into the retail sector, although the latter, Cobb

admits, reluctantly. “An inherent problem with plasma screens is high temperature, which requires forced air cooling. In environments where there is a lot of traffic, such as a train station, the fan filters can get blocked quickly, requiring frequent maintenance. They are also heavy and tend to require substantial support.

“Some years ago, lcds weren’t ideal either. There was the issue of being viewable in daylight, let alone direct sunlight. Also, in sunlight the ambient temperature could increase beyond what the display could cope with. But a radical change occurred last year and lcd panels became sunlight readable.”

This, he believes, is a key specification

criteria for signage. “Four out of five screens used in stores face a window directly. In the past, the only way to get round this was to increase backlight power, which was costly and provoked thermal issues. Now, clever filtering systems employ index matching to cut out glare.”

Cobb believes plasma still tends to win points on the grounds that it can be used portrait or landscape. However, he notes the system is often designed for landscape mode. By using a screen contrary to its mechanical design, the thermal properties of the system can be compromised and lifetime will inevitably be reduced.

Cobb highlights the strong culture of innovation among display manufacturers and believes plasma manufacturers will fight back. On this subject, he notes the advent of led backlighting will enhance lcd’s position. “These run cooler and so will improve the lifetime of an lcd – they also don’t require the use of expensive inverters.” He also mentions the popularity of touchscreens in the retail environment and foresees the novel use of oleds to produce high impact signage.

Meanwhile, work at Philips 3D Solutions (see photo top left) suggests that an extra dimension might soon be added to enhance the power of digital signage – shoppers beware! ☹

