



Technology focus

The Which? scientists explain what happens inside your gadgets

LCD TVs explained

TELEVISION

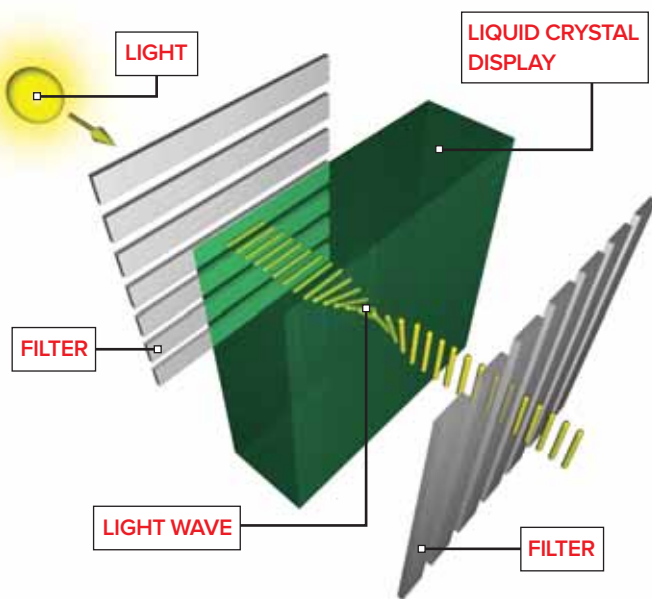
A liquid crystal display (LCD) TV screen is structured much like a sandwich standing on its side. The outermost layers of 'bread' are two filters and the filling in the sandwich is the liquid crystal layer. A backlight provides the light that shines through the sandwich.

When the backlight shines on to the first layer, it filters the light, which then hits the layer of liquid crystal. This contains thousands of blobs of liquid crystal in tiny containers called cells. A trio of these cells makes up one pixel on the screen and each cell has a red, green or blue filter in front of it.

The cells are capable of twisting the light that passes through them – if they didn't do this, the second filter would block all of the light. Varying the voltage applied to each cell controls the amount of twist and, therefore, the amount of light that each one passes through the second filter.

This alters the brightness of each pixel on the screen and, by varying the mix of red, blue and green, the colour. Every single one of the thousands of pixels that make up the screen is controlled in this way to build up the complete picture that you see when you watch TV.

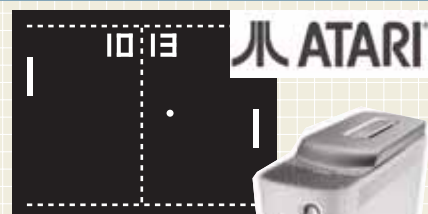
Light travels through an LCD TV's layers. This enables the TV to put together the onscreen picture



Back to the future Consoles

THEN

Launched in the mid-1970s, the Atari Pong was one of the earliest ever games consoles. It allowed you to play a simple game of tennis using two dials to move bats up and down the screen.



NOW

The Sony PS3, Microsoft Xbox 360 and Nintendo Wii offer high-definition graphics, complex fast-moving games and even the ability to compete with strangers over the internet.



AND BEYOND

As technology improves and computers become more powerful, the chance to enter 3D virtual worlds and live out your gaming fantasies is just around the corner.



We investigate next-generation satellites Space-age satnav

FUTURE

A new European satnav system, called Galileo, is set to succeed the global positioning system (GPS) used by today's satnavs and will offer greater accuracy. We asked Dominique Detain, Communications Manager for the European Space Agency (ESA), what Galileo will offer.

'GPS is designed for the US military, and it doesn't guarantee continuity of service,' said Dominique. 'It's essential for Europe to have its own system. Galileo will allow a host of applications that won't work with GPS.'

For instance, Galileo will play an important part in search and rescue. According to Dominique: 'Galileo satellites will be able to pick up signals from emergency beacons carried by ships, planes or individuals and immediately report their precise location.'

There's been talk about what else Galileo could be used for – its super-accuracy could provide collision-avoidance systems for cars, for example. But Dominique didn't want to fuel the speculation: 'We're in charge of the space infrastructure and can only guess what uses others will make of it.'



But we do know there will be a free service that can offer accuracy to within five metres and subscription services that will be accurate to within less than a metre.

A test satellite is already in orbit and a total of 30 will be in place when Galileo's up and running in 2012. See www.esa.int/esaNA/galileo.html for more information.

£311

the average amount British households spent on consumer electronics last year

SOURCE GFK

13%

of people in the UK are not aware of the digital switchover

SOURCE OFCOM AND DIGITAL UK SURVEY

The digital switchover has started in Cumbria. We report back

Television front line

GOING DIGITAL

In October, Whitehaven in the county of Cumbria, was the first area in the UK to be switched from analogue to digital TV. We contacted our members who live there to find out how things were going.

The good news is that the message was pretty positive. Most of the people we spoke to felt they'd been given enough notice (well over a year) and some reckon they'd actually been given too much time. 'I wish they'd just got on with it,' said Ronald Reed.

Everyone was unanimous that they'd been given enough information about the process, with Sandra Parry telling us: 'We've had leaflets, billboards around town, local news reports on radio and TV, road shows and public meetings.' DigitalUK, the body behind the switchover, told us that this is the approach it will adopt in all TV regions before their switchover date.

Back in September (see *Which?*, p8) we warned you about a scam that tries to trick you into paying for an aerial you don't need. Thankfully, Whitehaven residents have nothing but praise for local retailers and aerial installers, who seemed very knowledgeable when asked questions.

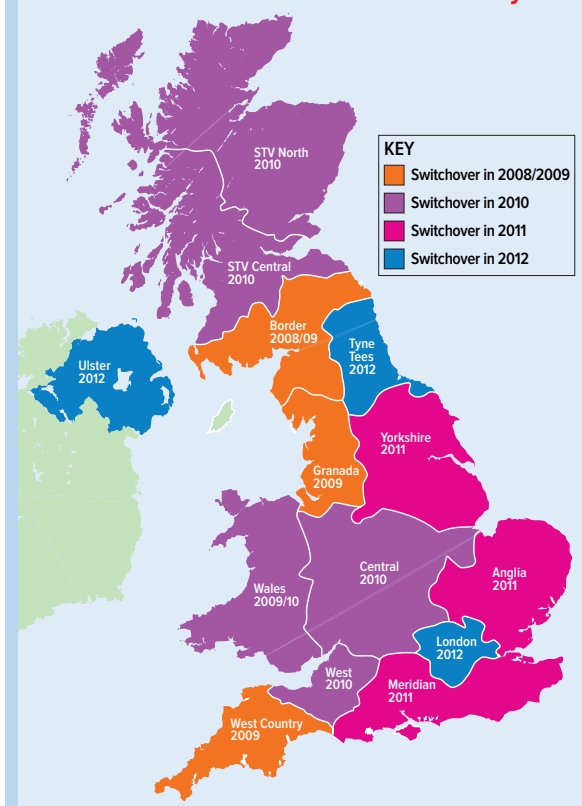
Most of our readers were geared up with the right equipment and ready for the switch. All you need is either a TV with built-in Freeview (IDTV, see p37) or a Freeview set-top box – those who already subscribe to Sky or cable services won't be affected. However, a few were leaving it late. 'None of my TVs is digital ready,' said David Fletcher. 'I'm waiting for the switchover to happen and will then probably buy the Which?-recommended Logik set-top box and the Best Buy Humax PVR.'

They're both good choices (see *Which?*, May 2007, p54)



Digital roll-out

Discover when the switchover will affect you



Residents have nothing but praise for local retailers

but if David hadn't installed a set-top box by switchover day, his TV wouldn't have got a reception when he switched it on.

Sue Ostler summed things up nicely: 'Most people I know have taken it in their stride and are already equipped. A friend who lives in sheltered accommodation has had it all sorted out for her.'

VERDICT It's started well and we'll contact members again next year to see if it went as smoothly as hoped. For more on the switchover, go to www.digitaluk.co.uk or call 0845 650 5050.

News in brief

Heart power

Charging a mobile could soon be as simple as keeping it in a breast pocket. Scientists have turned tiny vibrations, like those created by heartbeats, into electricity to power gadgets. Southampton University researcher Dr Steve Beeby said: 'The body has a lot of energy available. Heartbeats or even the impact of a heel on the floor could be used.'



Hand signals only

Lost your TV's remote control? No problem. A new prototype controller lets viewers operate their TV by simple hand gestures. A camera recognises hand signals and translates them into electronic commands for the TV. For example, an outstretched hand means power on and a thumbs-up sign means volume up.

A virtual field

Scientists have come up with a novel way of stopping cattle from wandering off. If a cow goes outside a designated area, a collar with built-in GPS satnav receivers emits a warning hum or, if the cow strays further, delivers a mild shock. 'It's an invisible electric fence,' said Andrew Fisher of the Commonwealth, Scientific and Industrial Research Organisation.

