



New Products.

**The BLU-LINE.**

At the beginning of October 2005 the production systems for Blu-ray lines were delivered to key customers. Thus, SINGULUS TECHNOLOGIES is the first European supplier of lines being able to record Blu-ray machines in test production at five major customers in Europe and the US.

SINGULUS TECHNOLOGIES extensively progresses the further development of the production systems to a dual layer production machine.



## HDTV - The New Dimension of Television

Just imagine: You only see through foggy glasses and all of a sudden you have a clear view. At least this is the way a commercial of a renowned German consumer electronics chain answers the question: “What is HDTV actually?”

With a five times better picture quality the new digital high-definition TV is a completely new dimension of watching television. The resolution of 1920 x 1080 pixel compared with the current devices with 720 x 576 pixel provides a significantly sharper and more detailed picture with rich colors – in a nutshell: definitely more fun watching television.

In Germany, the first digital TV programs started at the beginning of 2006. On a global scale the format was already introduced some time ago. For example, in the US the sale of

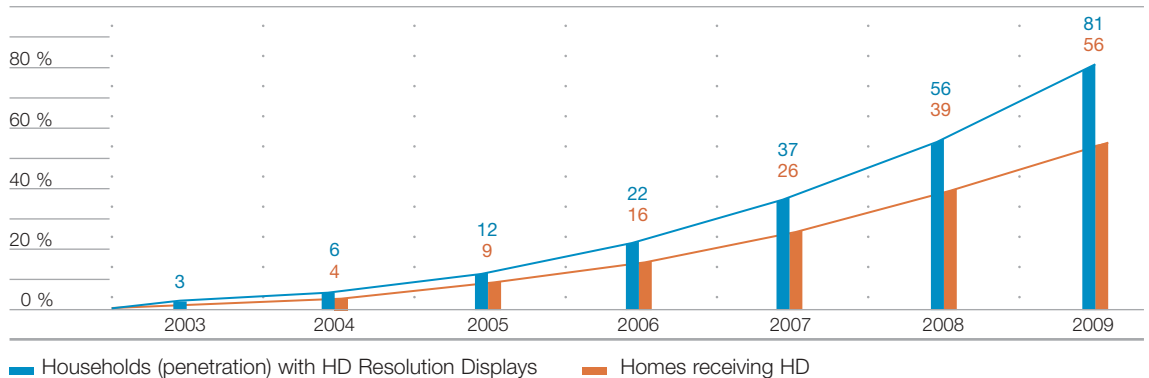
HDTV capable devices already increases by about 50 % per year. The producers expect that volume sales will even continue to rise in the future (sources: Sony, American Consumer Electronic Association). And in Japan, six million households are already using the new technology and almost all the big TV station broadcast digital HDTV.

### Europe is catching up.

Europe is starting to wake up slowly. A considerable boost in the penetration of HD capable technology is expected for 2006. In particular the broadcasting of the Soccer World Cup in HDTV will contribute to this trend. Eventually, also the Soccer World Cup in 1974 only started the transition from black-and-white TV to color TV. According to a study by the research institute Datamonitor published in mid-2004, up to 4.6 million households are expected to have HDTV displays in Europe by the year 2008 already.

### Increasing popularity of HDTV in the US

[in %]



Source: Understanding & Solutions, December 2005

\_HDTV – Up to 1920 x 1080 Pixel



\_HDTV – The new dimension

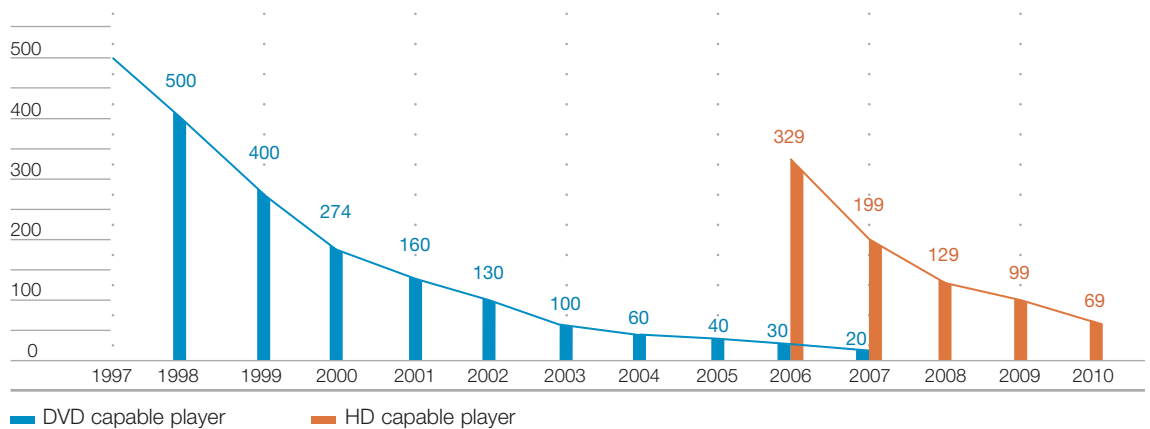


However, featured programs were still scarce here in 2005. In addition to 1080, a Belgium station starting in 2004, Pro 7, Sat 1 and Premiere have been broadcasting several test programs in high-resolution quality since fall 2005. At the beginning of 2006 these stations started to broadcast in HD-quality on a regular basis. The target is to enable the reception of this completely new quality through satellite and cable as well.

In addition, according to research it is expected that HD capable players and drives will be significantly cheaper from the beginning than DVD players when they were introduced in 1997. While a DVD player cost more than € 500 at the outset, HD capable players are expected to be offered around € 300 - 400. A subsequent decline in prices and the trend towards a mass market will materialize considerably faster than experienced with the launch of the DVD.

**Comparison of starting prices of DVD / HD capable players**

[In €]



Source: Understanding & Solutions, December 2005

***With the clarity of the pictures comes the data surge.***

The breakthrough of the digital HD television is scheduled for the same time as the launch of the new memory intensive media HD DVD and Blu-ray. These still competing formats have something in common: necessarily, their storage capacity exceeds the capacity of regular DVDs many times. This is because the high-resolution TV-pictures require enormous amounts of data. Compared with ordinary broadcasting a HDTV channel requires four to five times the transfer rate and works with a data rate of 25 MBits compared with only 4 to 6 MBits used for the PAL standard. Of course, the recording and transfer technologies have to be adjusted for this.

***Upgrading for the television of the future.***

Not only the hardware for recording, but also the devices for the reception have to be upgraded. A HDTV capable plasma or LCD television set with high resolution or a HD capable Sat-receiver

are requirements for enjoying high-resolution television quality. As an orientation for the consumers the European Information & Communications Technology Industry introduced its own seal of approval - the “HD Ready” logo. This only concerns displays and identifies devices which meet the minimum requirements of the HDTV format. Reception, playback and other player devices are expected to be awarded the protected HDTV approval of the European HDTV Forum as a quality feature.

***The new dimension is on its way.***

Market observers expect that more and more programs of public and private TV stations in Germany as well will broadcast in HDTV quality in addition to the standard format. The transition from today's TV standard to HDTV is necessary if Germany wants to keep up with the technological change that is taking place all over the world.

**Storage capacity of optical discs**

	<b>CD</b>	<b>DVD</b>	<b>HD DVD</b>	<b>Blu-ray Disc</b>
Capacity [GB]				
Single Layer	0.7	4.7	15	25
Dual Layer	–	8.5	30	50
Laser	infrared	red	blue	blue
Wave length [nm]	780	650	405	405
Min. Pit length [nm]	833	400	204	150
Track Pitch [µm]	1.6	0.74	0.40	0.32

### HD-ready: display for HDTV.

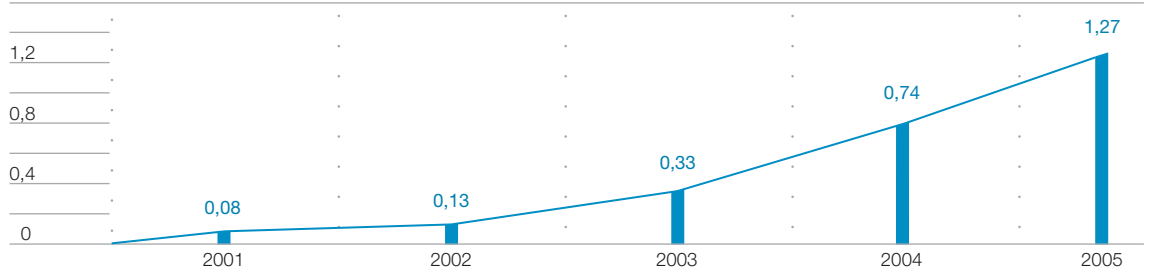
A TV-set or a projector has to meet the following specifications to be awarded the 'HD-ready' logo and therefore to be compatible with HDTV receivers:

- \_ Resolution: minimum of 720 native lines in 16:9 format
- \_ YUV component input (or component through VGA/DVI-I)
- \_ HDMI input (or DVI with HDCP)
- \_ picture signals available for analog or digital processing, including the correct formats:
  - 1280 x 720p, @ 50 Hz and 60 Hz
  - 1920 x 1080p, @ 50 Hz and 60 Hz



### Sales of LCD and plasma displays (incl. projectors), Germany

[in million units]



Source: GfK, GfU, 2005 forecast

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