



European researchers make an innovative breakthrough in 3D technology

Some of the thrills of 3D cinema reached this year the living room of the average family mainly through products designed in South East Asia or the United States, but the result is still far from perfect. That could change thanks to a technology developed by a German-Swiss partnership.

No one forgets their first 3D film experience. Some people first experienced the illusion of an extra dimension wearing red and green glasses inside an attraction at a theme park. They may have watched short films simulating dizzying rides on rollercoasters or high-speed skiing. Others may have been wowed for the first time by the 3D version of James Cameron's film Avatar..

German and Swiss researchers on a EUREKA project, however, have come up with technology that they think could soon affordably deliver the thrills and immediacy of 3D into our homes, as well as into some other unexpected places like operating rooms with a level of quality never reached before. "The seed of this project was just three friends chatting on the web" recalls Arnold Simon, Chief Technical Officer at the German company Infitec. At the time Simon was working as a consultant for Infitec and one of the other friends was Helmut Jorke, Chief Executive of Infitec, which had developed some of the best 3D technology for cinemas.

The friends chatted about the next challenge in 3D: how to develop a 3D LCD flat-screen monitor capable of displaying the full resolution of the new high-definition television formats. On that online chat, Jorke decided his company should create that screen. "The consumer market is the biggest and most interesting focus," says Simon. Last year, in the UK alone, prior to the country's switch over from analogue to

and blue for the right eye and different wavelengths of the same colours for the left eye. The glasses filtering out very specific wavelengths give the spectator the illusion of a 3D image. Backed by EUREKA, Infitec partnered up with Optics Balzers, a Swiss company it knew that specialised in 3D filters, and the pair secured funding to start developing the 3D LCD screen – a mission they called Dualplex Display.

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Arnold Simon - Infitec, Germany

digital, 10 million television sets were sold.

Infitec had made its name in the 3D world by developing more sophisticated technology based on the principle of the old red and green glasses. The company's glasses use a narrow colour band wave to improve the quality of the image, using specific wavelengths of red, green

While Infitec researched the best signal and lighting to use in the monitor and software for it, Optics developed special filters for the lighting unit and the glasses. The project was not an easy one. Obtaining sample backlighting units from suppliers was not easy for two relatively small companies. Then the first demonstrator did not work and the partners decided they needed



to create a brand new optic design for the monitor. They finally combined four light-emitting diode lamps (LEDs) – two green ones, one red and one blue one – to create the colour range they needed.

After two years of hard work, the partners have a demonstrator 23-inch monitor that they are proud to say pushes the boundaries of 3D technology. The quality of the image causes less strain on the eyes than other 3D technologies, the glasses do not darken the ambient light and the screen can be viewed from all angles without distorting the 3D images. "Viewers will be able to lie down on the sofa to watch the screen, they can turn their heads in any direction and the image won't change," explains Simon.

The partners have applied to patent

project to brighten its images.

The team believes the EUREKA project has provided the foundations to tap into a large market. "Through this, we not only gained a new product but we've also acquired knowledge for others, new contacts and new insights," says Simon.

"EUREKA offers participants a strong platform to distribute results and for participants who need a technical partner in a specific domain they can team you up with one."

The Dualplex team's final goal is to sell its 3D LCD screen for HD to ordinary consumers, but initially the partners think they will find it easier to target niche professional markets such as medical professionals. Using 3D imaging could help surgeons doing operations,

are different: better viewing can help a surgeon avoid cutting an artery." Whether for work or for pleasure, Simon's team is convinced that in the near future, their screens will make the illusion of a third dimension far more than a one-off cinema treat. They predict we will soon be watching 3D TV in our homes, our offices and on our mobiles on a daily basis.

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the screen in Germany and are in the process of submitting patents for other countries. They have presented the screen at conferences around the world and potential customers have been impressed with their demonstrator. However, the Dualplex Display team wants to further improve their screen and has secured funding for a follow-up

for instance. Until now, the 3D imaging was too poor to interest them, says Simon.

"For consumers, 3D represents fun. It brings them closer to the reality on the screen, immerses them in a scene and makes it more emotional, but in the professional market the benefits

Project participants:
Germany, Switzerland

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