

Interview Rob Munday  
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**You have been working since quite a while in digital holography, how is it going?**



Very well, we have sold more than 30 Lightgate machines, worth approx 3 millions pounds, over the last few years and we are now working

on new systems. Our new dot matrix systems, the Lightgate-S and Lightgate-P, are ultra high resolution, high speed systems. One is designed specifically for the security industry and the other for the packaging industry. The Lightgate-P can produce surface relief photoresist holograms up to 2 ft square (600\*600 mm) at in excess of 2000 pixels per second which is very fast. By contrast older dot matrix systems can only operate at 10 – 20 pixels per second. The size of a single image embossed hologram is no longer limited by speed but by the size of photoresist plate. Telic, in California, however can make plates as large as 50 inches square and so now there is really no limit to the size and complexity of an embossed hologram.

**Can you tell us a little of the history of digital holography in the embossing industry.**

It all started in the early 80's when the first dot matrix systems were produced by people such as Frank Davis and Craig Newswanger. It is always difficult to say who the first was however it was reported in Holography News that Spatial's DI-HO system, which I developed in 1991, was the first computer automated LCD stereogram printer to be offered commercially. The DI-HO system automatically created full colour and

animated 3D stereograms from electronic images and video. We sold four such systems from 1991 to 1994. Walter Spierings also developed a similar system in Holland at this time. Until the late 90's dot matrix systems were primarily used to create kinetic patterns rather than 3D images. If those patterns displayed 3D effects it was usually by accident. In the late 90's however Spatial Imaging and Ahead Optoelectronics in Taiwan independently developed the use of such technology for the production of 3D digital stereograms. The techniques developed are now widely used in the security hologram industry. E-beam systems are also used extensively to produce digital holograms and there are now several dot matrix type machines on the market.

**Is there a new evolution in your product?**

Two years ago we asked ourselves how we could develop the Lightgate dot matrix technology. We had achieved very high resolutions and developed extremely user friendly software that enabled the user to incorporate many different types of holographic effects and features into their holograms. The one big problem with all systems however was speed. At best dot matrix machines could only achieve about 20 pixels per second. This meant that a 1 inch square hologram at 3000 dpi would take as long as 6 days to make. We decided therefore to develop a very high speed system. It has taken us over two years and a lot of money but we have finally developed the Lightspeed system which won the top award at last year's IHMA awards. Ironically, at the same conference, we were accused by some people in the industry of potentially destroying the security hologram business by making it easier to create sophisticated holograms. I would argue however that as almost all security hologram manufacturers now use digital systems the reverse is true and that digital mastering systems have actually enabled the industry to grow. Having said

that there does need to be some control and we have made every effort not to sell systems to dishonest companies. Our newest security systems will only be sold to members of the IHMA (the International Hologram Manufacturers Association).

**What is about the pulsed portraiture?  
Are people finally ready to see  
themselves in holograms?**

I think people have always found holographic portraits intriguing. The problem has been one of cost and rarity. We receive many inquiries from people who want to have portraits made of them and their families but decline because of cost. I still believe that there is a good business to be had in making them. In particular many young people have never seen them before. As you know, I am particularly passionate about holographic portraits and after making one of Her Majesty the Queen I decided to revive this part of my business. I have refurbished my pulsed laser portrait studio and we have also developed a lenticular portrait system which works very well.

**What about the courses Spatial Imaging  
is now running?**

Over a year ago I decided to found a new school of holography. I had much equipment and two studios that were not utilised. I also have a big interest in teaching people holography and in reviving the medium. It has been more than 15 years since Richmond Holographic Studios stopped running courses in the UK and I decided that it was time to start a new chapter in holographic education in the UK . Patrick Boyd , a well known photographer and holographic artist has stepped in and is now running the school. We have called it The London School of Holography. Holographic education is now looking good as Pearl John, another well known artist and holographer, has also started teaching holography in the UK .

**So are you happy about the future?**

Yes indeed. I have enough work for 3 years and we are expanding. My goal is to make all these branches, technology, display holography, portraiture, teaching etc. independent with Spatial Imaging as the mother company. I would also like to go back to my roots and spend more time making creative display holograms.