

HOLOGRAPHY News®

INTERNATIONAL NEWSLETTER OF THE HOLOGRAPHY INDUSTRY

www.holography-news.com

ISSN 0895-9080

Volume 25 - No 10 - October 2011

Remote Holography from Zebra Imaging

Zebra Imaging, which makes pixelated large-format display holograms on DuPont's holographic photopolymer from digital artwork at its base in Austin, Texas, is now offering a service which enables customers to design their own holograms on their own computers from the comfort of their own offices (or other locations), sending the artwork files to Zebra for printing as 3D reflection holograms (although the service is only available in the USA at present).

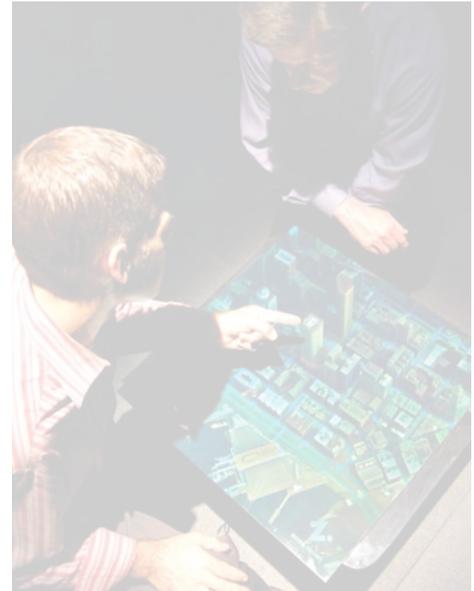
This requires the purchase of Zebra's *ZScape*™ software to preview and prepare a holographic artwork file from commonly-used 3D design or graphic programs. Used with most such programs *Zscape* currently only allows production of monochrome holograms. In 2006 Zebra introduced its cartographical holograms – top-lit reflection holograms viewable from 360° of mapped terrain or urban settings – and it has now supplied over

10,000 3D maps to the US military. Accordingly *Zscape* is optimized for use with mapping software, specifically *ESRI ArcGIS*®, from which it will output full color holograms.

Mapping Software

Environmental Systems Research Institute's (ESRI) software is a *geographic information system* (GIS) program used by around 600,000 organizations to visualize and analyze mapping data. *ArcGIS* is a suite available for most kinds of computer, from desktop to handheld, and an add-on component is *ArcGIS 3D Analyst*, which allows three-dimensional representation of this data. 2D and 3D data can be combined to create high resolution 3D holographic GIS prints with annotations, full color models, aerial photographs, and terrain data.

Zebra works with *ArcGIS 3D Analyst* in particular, a sub-routine called *ArcScene*, to create the artwork



The Seattle Viaduct Submergence Project. This hologram was created for engineering firm Parsons Brinckerhoff in 2008. It shows 360° views of the area above a proposed tunnel to replace the Alaskan Way Viaduct, projecting images of skyscrapers up to 10" above the plane of the hologram.

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Colour to the Fore at HoloExpo Exhibition

Around 150 people attended the annual *HoloExpo* conference, the event which primarily covers developments in holography in Russia and neighbouring countries, held this year in Minsk, Belarus, under the local leadership of Prof Leonard Tanin of Holographic Industry JSC, and Prof Sergey Odinkov of Moscow Bauman University, Chairman of the *HoloExpo* organising committee.

As usual at *HoloExpo*, papers from universities and state-sponsored research organisations across the Commonwealth of Independent States (CIS) predominated, with a particularly strong showing this year from Belarusian organisations. But there were two



Colour Holographic's Denysiuk hologram of medals.

innovations this year: parallel streams on the second day of the conference, with research and science papers in one stream and art and display in the

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Display Holograms

Colour to the Fore at HoloExpo Exhibition ... cont'd

other stream; and a public exhibition of display holograms, curated by Prof Tanin with support and input from his colleagues at Holographic Industry and other display holography luminaries from Europe and N America, in particular Alkis Lembessis of the Hellenic Institute of Holography.

The *Display Holography World Exhibition* at the Academy of Science, which will be open to the public until December 1, lives up to its title. It is a well-displayed and arranged collection of around 100 display holograms, showing the history of the medium from early examples of monochrome Denisyuk holograms of items from museums in Russia, Ukraine and Belarus to recent full-colour Denisyuk and digital holograms. The early works, on Slavich silver halide plates, hold their own against the latest work, despite being monochrome golden-green, because the items were carefully chosen

as metallic or ceramic items of similar colour. Nonetheless, examples of recent full-colour holograms show how far this medium has come in the last few years.

Large-format digital holograms from Canadian company Rabbit Holes (see HN Vol 23 No 12, but sadly now closed down) and Geola were clear demonstrations of the depth that can be achieved with this technology, while Denisyuk and stereogram holograms from Colour Holographic in London, shot on its own BB silver halide plates, were realistic enough to achieve the old trick of making the viewer think the object was behind the glass.

Hellenic Institute's Work

One of the most impressive presentations was a collection of holograms from the Hellenic Institute of Holography. As founder-director Alkis Lembessis explained in his conference paper, it has been continuing its work to develop

high quality full colour holograms to record Greece's extensive collection of antiquities (see HN Vol 23 No 11). The Institute's holographer, Andreas Sarakinos, has now made some excellent Denisyuk holograms of objects that can be brought to a studio, as well as digital holograms of items which cannot be moved.

The Institute's display at the exhibition showed several full colour 8" x 10" Denisyuk holograms, displayed in two-part unit on a table. One side of the unit houses the object (or an excellent reproduction of it), the other holds the hologram plate. So observers can see for themselves the fidelity of the hologram – or play 'Am I looking at the hologram or the object?'.

Lembessis told *Holography News*® that the Institute worked closely with Colour Holographic on these holograms, using BB plates. He also acknowledged

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Holograms and DOVIDs ... cont'd

being demetallised and diffractive. The 1,000 rouble banknote has the same windowed effect but the thread is diffractive, multi-coloured and optically variable - when tilted in reflected light the text appears and disappears but in transmitted light it is fully visible as reverse demetallised text. The 5,000 rouble note features Goznak's new *Mobile* thread, a remarkable new optically variable security feature developed in conjunction with the Center for Computer Holography in Moscow. The numerals 5,000 in the metallic silver thread, when illuminated with a point source of light, glow as if written with minute point sources of light; they appear to be alternately above and below the plane. When the banknote is tilted vertically, the numbers floating above the plane move up and down compared with those below and when the banknote is tilted horizontally, the numbers move in opposite directions but this time horizontally. The thread is based on nano optical technology, can be coloured or colour shifting and is not adversely affected by varnishing or laminating.

Securrency's Latitude

Polymer (now *Guardian*®) was used to introduce the world's first diffractive features on a banknote more

than 20 years ago. Recently Securrency, the company that now markets Guardian polymer for banknotes, launched *LATITUDE*™, an optically variable device integrated within the polymer substrate that is the first in what it terms a new suite of durable substrate-infused security features (see HN Vol 24 No 5).

The holographic feature is incorporated into the substrate during the manufacturing process, requiring no separate purchase of holographic foil or its application by foil stamping. The other major advantage of Latitude is the freedom of design it offers – hologram designs can be incorporated anywhere on the substrate and linked one to the other by another hologram if neces-

sary. The designs can be integrated in register with other Guardian features, and can occupy multiple positions and large areas of the banknote, giving the public a dynamic, instant recognition feature that can be viewed from both sides of the banknote.

The Central Banks and their banknote specifiers and designers will be the ones to decide to what extent these new features measure up against the criteria for security features listed above.

Contacts: www.delarue.com,
www.toppan.co.jp,
www.landqart.com,
www.goznak.ru/eng,
www.securrency.com.

These and many other new or improved technologies
will be covered at



Optical Document Security
The Conference on Optical Security & Counterfeit Deterrence
18-20 January 2012, San Francisco, California

Hologram Industries 29% Growth

In its October 10th financial statement for the first nine months, Hologram Industries (HI) declared 29% sales growth over the same period last year, with sales of €30.2m compared with €23.5m. Organic growth was very strong at 21%. Revenue from new business in the 9-month period was €4.1m compared with €1.8m in the same period last year.

In each of the first three quarters HI has achieved 40%, 26% and 23% sales growth respectively compared with the same periods in 2010. Identity documents represented 47% of the sales in both years and grew by €3.1m (+28%), with all major business sectors show-

ing growth: vehicle Identification sales (24% of sales), the second largest sector grew by 12.5% from €6.4m to €7.2m; branded products (18% of sales), strengthened by the integration of the Label Systems acquisition in the USA, grew by 71% from €3.1m to €5.4m and fiduciary documents (9% of sales), gaining from the new banknote sales, grew by €1m (+52.6%) to €2.9m.

International Growth

It was noted that the Group has continued its international expansion with nearly half of total revenue (46%) now coming from outside Europe, with sales in Asia more than doubled

at €8m (27% of total). Western Europe (€10.5m: 35% of total) and Eastern Europe (€5.9m: 19% of total) grew by 17% and 33% respectively, with the Americas (€4.2m; 14% of total) and Africa/Middle East (€15m; 5% of total) making up the rest.

HI's cash position at September 30 was a positive €2.5m and its order book was also very strong leading it to forecast record sales for the fourth quarter and, based on the quality of its recurring and new business and order pipeline, it predicted another year of growth for 2012.

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Colour to the Fore at HoloExpo Exhibition ... cont'd

that the Institute had lent 60 holograms from its collection for the exhibition, including works of many holographic artists.

The conference presented over 60 papers, including invited presentations from veterans of the field such as John Caulfield, Hans Bjelkhagen, Michelle Grossman and Ann-Marie Christakis. Topics spanned security holography, interferometry, new materials and characterisation of materials for holographic exposure, HOEs and solar concentrators and holographic art. *Holography News* will report on key papers in the next few issues.

Conference Papers

The Belarus Academy of Science, the Belarusian State University, the Belarusian Mechanical-Optical Association and the Holography Industry JSC supported the conference and exhibition.



Hellenic Institute's display of holograms of art: hologram or object?

The next **HoloExpo** conference will be in Moscow on November 9th, immediately following **Holo-pack•Holo-print®**, the **Holography Conference**, which will be in Moscow on November 6-8th.

Contact: www.holography.by/en

Remote Holography from Zebra Imaging ... cont'd

for its holographic maps and geographic visualizations, and has developed Zscape as the program/hologram interface. So the company is now offering Zscape as a free download from its website. Zscape *Exporter* is for ArcGIS, allowing users to seamlessly prepare, view, and submit their data for 3D printing via a web-based service. Zscape *Preview* is for other programs.

From Software File to Hologram

Once the required image is created it

can be sent for printing at Zebra via an upload facility on its website. According to Mike Klug at Zebra, once the order is confirmed, it will be shipped in 7-10 days.

Klug explained that the data is rendered into tens of thousands of component 'Hogel images that are recorded using laser light into a single portable, film-based hologram that can be viewed with a simple halogen or LED light source. 'When the hologram is illuminated from above, the light is reflected to appear just the same way it

would if a solid physical model were actually there' he enthused. The price of the final images ranges from \$249 for a 12" x 12" mono hologram, \$599 for 12" x 12" color, to \$1999 for a full color print 24" x 24".

Mike Klug will be presenting a paper on this and other Zebra developments at **Holo-pack•Holo-print®**, **The Holography Conference**, in Las Vegas, November 9-11.

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