Posters with depth effect -- 3D advertizing

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This poster is impressive for its spatial effect. A unique visual perspective appears at each viewing position - just like in the real world. (© RealEyes)

(PhysOrg.com) -- Soon, manufacturers will be able to advertize with 3D posters that are remarkable for their hitherto unattained spatial effect. The casual observer need not use any special glasses. Modern lighting techniques generate the 3D images that can measure up to five meters in size.

The advertisement glows in three dimensions. If the observer gets closer to it, the image appearance changes with each step and adjusts to the visual angle. The visual impression when sauntering past a 3D depiction of columns is as if you were walking past a row of them for real. The 3D displays will be produced on an industrial scale in future. These posters are the brainchild of German researchers from the Fraunhofer Institute for Physical Measurement Techniques IPM in Freiburg, working jointly with their colleagues at the RealEyes company and the University of

Kiel.

"The displays function similar to the lenticular images that we've all seen on postcards," says Dr. Dominik Giel, group manager at IPM. "Instead of the grooved sheet with the image attached, we use a lens array. It consists of 250,000 individual lenses with a diameter of two millimeters each." Whereas the lenticular images can really only be viewed well at arm's length, these new kinds of displays can be seen clearly even from the other side of the street. That's because of the greater precision: With a lenticular image, the finished picture is glued to the grooved sheet. In the process of attaching it, the sheet cannot always be put in an exact position.

"It's just like filling out a pre-printed form: If you use a typewriter to complete it, the print often shifts slightly downward or upward. By contrast, if you enter the information into a computer and then print out the form, the print sits exactly where you want it," explains Giel. "The same applies to how we make these displays: We glue the lenticular sheet to the photo paper, and only apply the image in the next step."

A specialized software modifies the digital image data so that the lenses do not distort the resulting image. Based on the three dimensional model of the overall motif, the program calculates a complete image for each of the 250,000 individual lenses. Each lens subsequently renders a perspective of the overall motif that shifts toward or away from its neighbor to a negligible degree. For each of the 30,000 different viewing angles, the display delivers an independent view of the scene - therefore, the viewer sees one image that continuously changes with the viewing angle. Altogether, in a one-square meter display a data volume is illuminated that corresponds to more than a full-length feature film.

One prototype already exists in DIN-A0 size. Over the course of the next year, the first advertising posters may soon appear. They are expected to

be larger and cover a space of approximately three to five meters - something you cannot simply pass by.

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