

[HOME](#) > French Firm Reveals Pocketable, Affordable Head-mounted Display

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Optinvent S.A., a France-based venture firm, revealed that it is developing the "Clear Vu," a goggle-type head mounted display (HMD) that can be manufactured at a lower cost than existing products.

The Clear Vu is an optical transmission type HMD, which is based on plano glasses and casts an image from a microdisplay in the wearer's vision. A Japanese maker will manufacture the HMD, which is scheduled for release at the end of 2010.

In the past, the video transmission type, which completely cuts off the wearer's view and shows images from a video camera, was mainstream. However, in recent years, many manufacturers including Konica Minolta Holdings Inc, Olympus Corp and Sony Corp are developing optical transmission type HMDs.

Optinvent defines the Clear Vu as a "portable large-size display," said Kayvan Mirza, CEO of the company. The optical transmission type was chosen because it enables to develop a small, light-weight and low-cost HMD and to view surroundings and images at the same time.



Optinvent CEO Kayvan Mirza wearing a prototype of the "Clear Vu"



The rear side of the prototype. The saw-toothed lens is needed to superimpose images on the actual sight. Normal sunglass lenses are attached to the front side of the HMD for design's sake. And the aluminum frame of the prototype will be replaced by a light plastic frame when it is commercialized.

"When connected to a video-enabled mobile device like the iPhone, the Clear Vu makes it possible to watch movies and TV programs, play 3D games and use navigation on a large screen," he said.

With a device that can determine the actual location by using a GPS or a magnetic field sensor, the HMD can be used as a monitor-based augmented reality (AR) system, Mirza said. The HMD's horizontal angle of view, which indicates the size of a superimposed image, is 35°, which is equivalent to the size of a 71-inch TV placed 2.5m away.

"The Clear Vu must have a wider horizontal angle of view than any other optical transmission type HMDs including those currently being developed," Mirza said.

Lens part costs few dollars

The production cost of the Clear Vu is much less than those of other companies' HMDs, Mirza said.

Optinvent's optical transmission type HMD is a "reflective type." Specifically, one side of its lens is cut to have a saw-toothed surface, where reflection coating is formed seemingly by aluminum evaporation.

Images are sent to the rim of the lens from the microdisplay via a collimator lens. Then, the reflection coating sends the images to the eye.

The lens is made of plastic and can be mass-produced by injection molding. Therefore, the cost can be lowered to several US dollars per lens, and the HMD can be priced at less than \$200, Mirza said.

Optinvent was spun off from Thomson S.A. (former Thomson Multimedia) of France when Thomson temporarily withdrew from consumer product business. Optinvent is now developing flat panels and small projectors in addition to the HMD.

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