INTRODUCTION

1. INTRODUCTION

In this, two new techniques represent the latest approach to display technology; doing away with the screen. While unlikely to replace the desktop computer monitor, these thin air displays could eventually be put to use in product showrooms, museums, corporate conference rooms, trade fairs, theme parks, and advertisements. We know that displaying an image using conventional projectors require a non transparent medium such as white screens, walls etc and air cannot be used since it is transparent. But this describes two display technologies that do not require a non transparent medium to project images and videos to it. The air can be used as the projecting screen. Fog screen technology and Helio display technology are the above said two technologies.

Fog screen technology and Helio display technology are the display of images in thin air that is they are free space display. Free space display means, we can project images into a layer of thin moisture air. Both images and videos can be projected into the air. Here a projector is used to focus the image into a layer of mist in mid air, resulting a display of image in thin air. The images are more realistic in the sense than that on a conventional projecting screen although it is not volumetric. Very important specialty of these technologies are that they add a touch of interactivity to the screen that is they can work as free space touch screen with supported software, when connected to a PC using a USB cable. Touch screen technology is a human interaction technique that recognize touch points, which allow user to interact without using conventional input device like mouse, key board etc. Using this technology the images or videos can be manipulated or moved by using a hand tool or finger. There have been several displays using water, smoke or fog. The basic components of the fog screen are a laminar, non-turbulent airflow, and a fog screen is an internal part of the laminar airflow and remains thus thin, crisp, and protected from turbulence.

The fog is made within the device by using ultrasonic waves and ordinary tap water with no chemicals whatsoever. If you hold your hands in the fog flow, the fog feels dry and cool, and your hands do not get wet. After the screen is formed, images can be projected onto it. The screen can be translucent or fully opaque. The Fog Screen works very much like any ordinary screen in terms of projection. The image is spectacular in normal daylight, but the darker the room, the better the result. The Fog Screen has been featured extensively in international scientific, financial and cultural media including CNN, Reuters, Lightning & Sound, Wired Magazine, Herald Tribune, Discovery Channel, New Scientist and NBC closely related to the fog screen is the Heliodisplay, a medium sized immaterial display based on the same principle as the patented fogscreen. It harvests humidity in air by condensing it into water, which is then broken into fog. Helio display's configuration then blows these particles upward to create a stable fogscreen for rear projection. The screen can also be made interactive, reacting to the touch of viewers, which turns the passive projection screen to an immaterial touch screen. Interaction can be implemented with laser scanning. The finger or hand of the user can be tracked to emulate mouse functionality.

FOG SCREEN DISPLAY TECHNOLOGY

2. FOG SCREEN DISPLAY TECHNOLOGY

The Fog Screen is a new invention which makes objects seems to appear and move in thin air that allows you to project images and video onto a screen of "dry" fog, creating the illusion that the images are floating in midair. The Fog Screen is a suspendible device that creates a thin, smooth fog surface almost instantly when it is switched on. It can be used for image projection just like a conventional screen. This technology uses blending of fog, digital technology, interactivity and a great deal of innovation. Virtually dry fog is created using ordinary tap water with no chemicals. Viewers can stand inside the image and remain perfectly dry! It is the World's first walk through projection screen. It is like a conventional screen in terms of projection properties

Fig. 2.1 Fogscreen

2.1 About Inventers

Inspired by science fiction movies such as Star Wars, two Finnish virtual reality researchers ISMO RAKKOLAINEN & Prof. KAARI PALOVUORI of

Finland's Tampere University of Technology created the Fog Screen to recreate some of the effects from these movies in real life. They wanted to create the fog screen, physically penetrable

display made of dry fog that is flat, thin, and translucent. This is achieved mainly via a concept called laminar airflow, where streams of air move parallel to the flow axis and do not mix. The team wanted to create non-turbulent laminar air flow, which requires directing the flow slowly through small channels. The fog screen was first demonstrated at the Turku Science Exhibition in Turku, Finland in the fall of 2002. Since then it has been featured in many international journals, magazines, and news reports and was also shown at the 2003 SIGGRAPH Emerging Technologies conference in San Diego and other events around the world. International patents are pending. In January, 2003, a prototype was also installed in the Vapriikki museum in Tampere. Fog Screen Inc. was founded in 2003 to develop, manufacture and market products based on the technology. Rakkolainen serves as the company's Research and Development Director. The privately held company is headquartered in the Seinajoki Technology Center, Finland, and clients can purchase various versions of the screens, with optional enhanced features. One of these is an interactivity add-on that allows the FogScreen to act as an immaterial "touch screen." This could potentially be used in shopping malls, for interactive exhibits at museums and arts events, even in hospitals. This property will be especially utilized in applications operated by the public or in hospitals, in advertising, in malls for presenting shops and products, in art productions and events, and as interactive exhibits in museums.

2.2 Components Required

It has both hardware as well as software parts. The hardware parts consist of a prototype device, video projector, a small water tank and IR sensors.

The projecting surface is generated by using a non turbulent flow of air and fog is created by using the water droplets which is trapped between the layers so as to get the screen.

The components required are

- Projection surface
- A laminar non turbulent flow of air
- A thin fog screen injected into & inside the laminar flow of air
- A power outlet
- standard video source

2.3 Fog Screen Devices

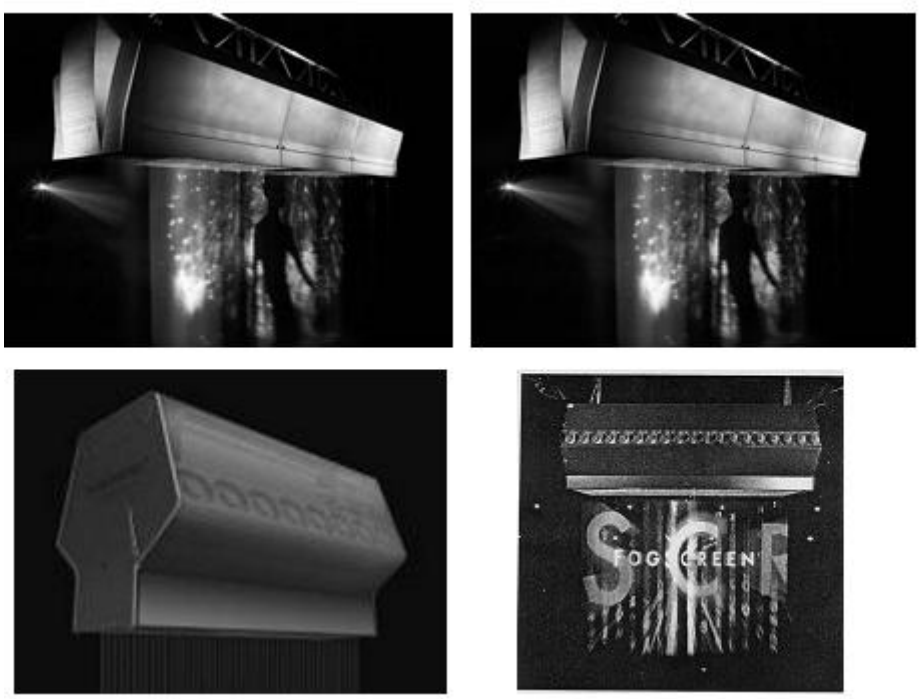

Fig. 2.2 Fogscreen devices

2.4 Working

The prototype device consists of ultrasonic transducers which blasts the water into very small droplets of 2-3 microns in diameters. Here we can use ordinary water, distilled water etc. The internal tank needs to be filled with water for the operation.

To protect the fog particles from turbulence, we use large non turbulent air flow and the fog particles are trapped between the layers of the air. The tanks internal design plus three sets of fans work together to create a very thin wall of mist about half an inch thickness. One set of fans blow the fog downward while the other two sandwiches the fog between

air columns so that it becomes a smooth projection screen. The light from the projector is scattered through the sheets of fog creating rear projection image.

Fig.2.3 Creation of images using fog screen

2.5 Requirements

Before designing the content it is essential to know the ambient lighting, background color and the Fog Screen's and audiences relative position. These will have a crucial role in the viewing experience and will have an impact on the design of colors, graphical elements etc. of the presentation. The best viewing experience can be gained if the projector can be placed about 6-7 meters (20-23 ft.) from the viewers, but shorter distances can also be used. The best viewing experience results if you can control ambient light, the overall environment and can direct the audience to the best positions (= in front of the screen).

2.5.1 Ambient lighting conditions

As with any screen, the ambient lighting has a big impact on the visibility of a presentation. Bright ambient lighting can be compensated with a brighter projector. Even more important (and more cost effective) is to arrange in certain limits a dark back ground wall or drapes FOR the screen. Note that what is behind can be seen through the screen. If there is a window or bright lights behind the screen, that may ruin your show. Remember that the Fog Screen also passes some of the projected light, so you will need a bit brighter projector than usually. 5000 ANSI lumen projector is usually enough for typical environments like tradeshows, if the background is dark. In dark rooms even less lumens will do. Also the colors and brightness of the presentation have a big impact on visibility. Section2 tells more about the ideal color design.

2.5.2 Viewing angle

Because the Fog Screen is a living surface, and because it is not infinitesimally thin, the viewing angle has a strong impact on the experience. The image quality is the best, when the presentation is viewed towards the projector. The more oblique the viewing (or projection) angle, the more blurry the image becomes, as pixels increasingly mix with the neighboring pixels. When viewed from the right side, especially the left edge of the screen becomes blurry. On the sides, narrow visual elements may even disappear, or their color may change. When viewed from the sides, the bright areas may blend into darker areas, as the neighboring pixels get mixed. If the ambient lighting is low or nearly dark, this effect does not take place as strongly as in brighter environments

2.5.3 Position of the projector

It is recommended to use rear projector to the screen, because only rear projection works well. The Fog Screen produces good image with rear projection, but reflects hardly anything back towards the projector side. This feature can also be used to create a two-sided screen. With one as bright projector on each side of the screen, you can show the same image, or totally different images on the different sides, and the images will not interfere each other. You could e.g., says "Welcome" on one side, and "Good bye" on the other! The position of the projector depends on which direction and on which height the audience is viewing the show. For maximal experience, try to prevent the hot spot hitting the eyes by placing the projectors so high that the device itself hides the hot spot. This will also reduce the nearby viewers to block the projector light. If the audience is standing on the floor, put the projector high up. If the audience is sitting down, put the projector down on the floor.

2.5.4 The Fog Flow Adjustment

The speed of the fog flow on Fog Screen can be adjusted. A faster flow gives smoother but faster influence but also the noise of the device increases. An important point is to make the air and fog flows roughly uniform, so there is no speed difference between them. The differences in image quality are however relatively small.

2.5.5 The Background Color of the Presentation

As a general rule, the background color of the presentation should be dark, and the contrast of the graphical elements high. Various color hues may look different on the screen. E.g., blue background color seems to visually smoothen the screen. Also dark red looks better than many other background colors. White and bright shades (as light
yellow or light green) emphasize the movement and turbulence of the fog. This can be used to create 3D-like illusions for the viewers.

2.5.6 Special Features

Fog Screen is an unique projection screen for presentations. You can create stunning experiences for your audience. However some special properties of the Fog Screen need to be taken into account, when designing the presentation. The recommended aspect ratio is 16:9 (widescreen format). The lower part of the screen is more turbulent, and image quality is not as high as on the upper part. It is thus not recommended to place small visual elements (like text and buttons) onto the lower part of the screen. If the projection area is about 185 x 104 cm (6 ft. x 3 ft. 5"), the precise area is over half of the screen height. The lower part still produces an acceptable image for most applications. Please note that also other content than images can be used. When using for example only color lightning to the screen, the "picture area" can be much bigger!

2.5.7 Font Size on the Fog Screen

An example:

Position of the projector:

- Height 2.5 m (8 ft. 3")
- Distance from the screen 3.7 m (12 ft. 2")

Fog Screen:

- The height of the Fog Screen unit 2.20 m (7 ft. 3") from floor
- The screen distance 30 cm (1 ft.) from the edge of the Fog Screen unit
- Top edge of the image 4 cm (1 -2") below the unit

The environment:

- Low ambient light
- The presentation has black background and white text
- Viewing distance about 3-4 meters (10-13 ft.)

Font size: Size on the screen (about)

72 cm (0.8")

10 3 cm (1.2")
15 5 cm (2")
20 8 cm (3.2")
40 15 cm (6")
60 21 cm (8.2")

In this example the smallest font size (7) is legible only on the area where the beamer is right behind the text. Elsewhere the text is blurred. Font size 10 makes the text a little more legible, but not very clear. Font size 15 is legible from many viewing angles except on the very sides and on the lower parts of the screen. Font sizes above that are clear in most case

2.6 Interactive Fog screen

The Fog Screen can also be made interactive with the interactivity add-on, reacting to the touch of the viewers. This turns the passive projection screen into immaterial touch screen, and extends greatly the application possibilities. Only imagination sets the limits. The interactivity is an easy-to-use and relatively low-cost option. The hand becomes a mouse! The interactive system interprets the viewer's touch near the screen plane as a mouse left click. This means that you can design and try your content initially on your computer, and use any Windows-compatible software to create your web pages, Flash animations, and any other format presentations. With the interactive option, you could e.g., make sounds or music by touching the objects on the fog. There are separate instructions on installing and using the interactive option.

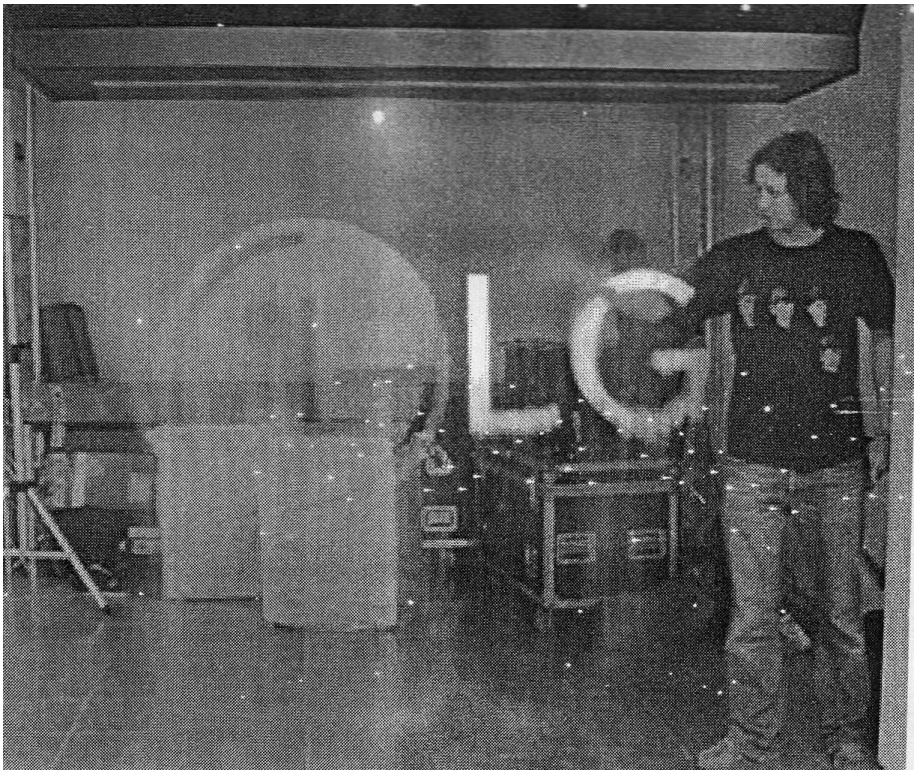

Fig.2.4 Interactive fogscreen display

HELIODISPLAY TECHNOLOGY

3. HELIODISPLAY TECHNOLOGY

The Hello display is a free-space display developed by 102 Technology. A free-space display is a device that projects images into a volume of free-space. A projector is focused onto a layer of mist in mid-air, resulting in a two dimensional display that appears to float. The image will be more realistic than on a projection screen, although it is still not volumetric. Hello display can work as a free-space touch screen when connected to a computer by a USB cable. A PC sees the hello display as a pointing device, like a mouse. With the supplied software installed, one can use a finger, pen, or any other object as cursor control.

The mist is formed by a series of metal plates. The helio display transforms water into fine vapour, suspended in mid-air to create a nearly invisible screen into which any image can be projected. The audience sees a floating mid-air image or video. These projected images and video are actually 2D but appear 3D since there is no physical depth reference. The helio display only requires a standard power outlet and a video source. The system is compatible with most video sources currently available. The helio display uses no additives or chemicals, only plain water .The screen is safe for human interaction and will not cause any harm of any kind.

3.1 About the Inventor

IO2 Technology: 102 Technology is a San Francisco, Bay Area Company that develops interface platforms relating to free-space displays. Free-space imaging is an emerging arena and constantly evolving. 102 Technology and Helio display resellers offer the Helio displays and various plug-in modules to meet specific range of requirements for a broad solution set. About Chad Dyner: Dyner studied as an architect and began his career at Frank O. Gehry & Associates and worked on, among other notable projects, the design proposal for the Guggenheim in New York City. Chad developed numerous input/output (I/O) analogue-digital communication tools including a precursor to current (digital picture-frames) which display a continuous series of digital.

images on re-recordable media without requiring a computer. While still in his 20s, Chad left Gehry & Associates and set forth to develop his vision of the next-generation interface.

He was told it was not possible. One year later, having worked 7 days a week researching, and struggling against all odds he completed the first 5-inch operational prototype. He spent the following years refining the technology, and founded 102 Technology to commercialize the technology.

During his work as an architect, Chad recognized an opportunity and dismissed the challenges that lay ahead for constructing a new paradigm to interact with information that are not based on the archaic system based on the conventional paradigm of mouse, keyboard and monitor—technologies that are now over 30 years old. From this vision evolved the Helio display, the world's first interactive free-space display and from which digital information (computer) can be viewed and manipulated—touch, select, and drag— with the hands and fingers. Viewing and interacting with graphic-based information such as selecting and manipulating in the same viewable location allows for a more intuitive interface in a similar fashion to engaging objects in the physical world. Users can grab and drag an icon, for example, as if it actually existed in front of them and they were actually grabbing it. This intuitive and user friendly design allows for streamlined productivity and enhanced creativity by fostering collaborative working environments using non-intrusive, penetrable images viewable and interactive to access centralized information.

3.2 Requirements

Helio display technology has both hardwires and software parts. The hardware part consists of a prototype device and this prototype device consists of a projector, a series of metal plates, and a small water tank etc.

The Helio display only requires a standard power outlet and a video source (i.e. computer, DVD, video etc). The system is compatible with most video sources currently available. Helio display uses a standard monitor VGA connection; for TV or DVD viewing, it connects using a standard video cable. The Heliodisplay can be

concealed (i.e. into furniture) and hidden away from sight and thereby creating an unobtrusive display.

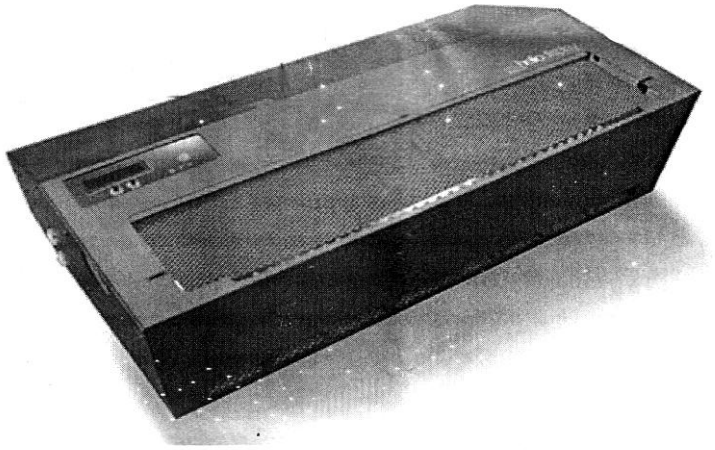

Fig 3.1 The prototype device

The helio display work as a free space touch screen when connected to a computer by a USB cable, our prototype device is fitted with infrared sensors and the io2 technology provides a software called 'HELIOCAST and with this software installed, one can interact with the contents of the screen .i.e. both infrared sensors and this software facilitates the touch screen technology.

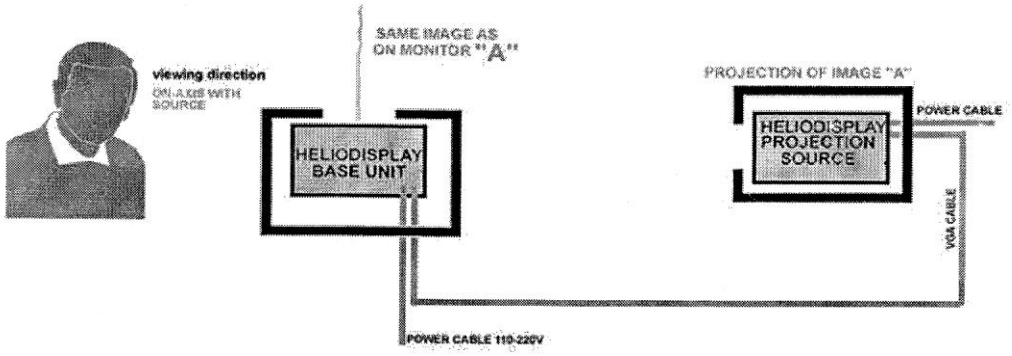

Fig.3.2 Simplified overview of setup

3.3 Technology

The Helio display transforms water into a unique screen of fine vapour* suspended in mid-air to create a nearly invisible screen into which any image can be projected. The display can create a true 3D hologram effect when the right content is used. Heliodisplay images are not holographic although they are free-space employing a rear projection system in which images are captured onto a nearly invisible plane of transformed air. The audience sees a floating mid-air image or video. These projected images and video are actually two-dimensional but appear 3D since there is no physical depth reference.

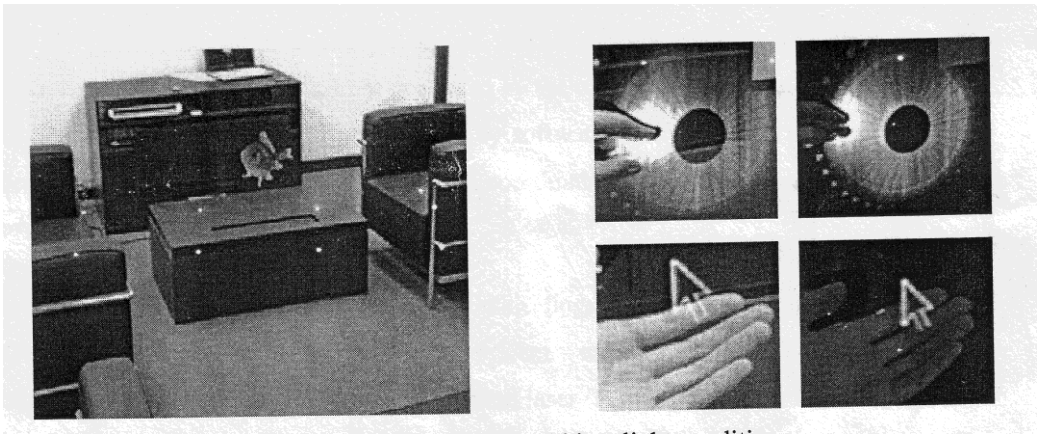

Fig.3.3 Images under various ambient light conditions

Conventional displays have the benefit of being enclosed in a solid frame or case with lights shining directly towards the audience. Heliodisplay projections are suspended in thin air, so you will notice some waviness to the screen stability and the intensity and clarity of the image is subject to ambient light conditions and optimization of display settings. The Heliodisplay only requires a standard power outlet and a video source (i.e. computer, DVD, video etc).

3.4 Principle

The major technologies used for touch screen includes Resistive, Capacitive, Surface Acoustic Wave, Infrared, Optical imaging & Dispersive signal technology based on the medium and sensing techniques . But the most advanced is the Frustrated Total Internal Reflection (FTIR) introduced by Perceptive Pixel is a company to touch screens. The displays use infrared light emitting diodes along with an infrared camera to determine the point of contact.

Infrared light is beamed inside the acrylic \and reflects internally. IR-light bounces inside the acrylic, from one side to another. As “soon as a finger touches the acrylic surface, the internal reflection of the IR-light, is interrupted. The infrared light scatters on the finger tips. By placing an infrared camera behind the acrylic fingertips will be visible on the infrared camera. The images that are generated by the camera contain white blobs (caused by the fingertips). The blobs will be analyzed by software. Every blob corresponds to certain coordinates. Software can by analyzing these coordinates perform certain tasks, for example move, resize or rotate objects.

Images/videos can be manipulated with fingertip, hands or any objects. the prototype device consists of a proprietary system called 'HELIOCAST' to interactively control the displayed images. It uses an optical laser tracking system to follow the user’s movements. A sensor inside the device identifies the user's movements. The 'HELIOCAST' software calculates the movement of object projected. In a total internal reflection, even though the entire incident wave is reflected back into the originating medium, there is some penetration into the second medium at the boundary. This wave can lead to a phenomenon known as frustrated total internal reflection. The touch is using FTIR is a simple, inexpensive, and scalable technique for enabling high-resolution multi-touch sensing on rear-projected interactive surfaces FTIR is force-sensitive, and provides unprecedented resolution and scalability .It is large enough to accommodate both hands and multiple users. It is also used in fingerprint and robot sensors.

3.5 Working

An ordinary projector requires a non-transparent media like white screen or walls tec. onto which images can be projected. But heliodisplay requires only moisture air as the screen. Here the projector is focused into a layer of mist in mid air resulting in 2D display which appears floating. The displayed images appear more realistic than on conventional project screen.

The mist is formed by a series of metal plates fitted inside the prototype device. The heliodisplay transforms the water contained in the water tank of prototype device into unique screen of fine vapors suspended in mid air to create nearly, invisible screen into which any images can be projected moisture film generated by the device captures light from projector and forms images. I.e. the heliodisplay creates a particles cloud by passing the surrounded air through metal plates which in turn cool the air to a level below its dew point, where it condensates and then collected to create an artificial clouds. The particle clouds is composed of vast no of individual micro droplets which are too small to be visible by the naked eye and they are held together by the surface tension, Heliodisplay projections are suspended in mid air so you will notice some waver effects to the screen stability and the intensity and clarity of the displayed images are subjected to the ambient light conditions and optimization of display settings. Contrast of the display is a paramount for optimal viewing.

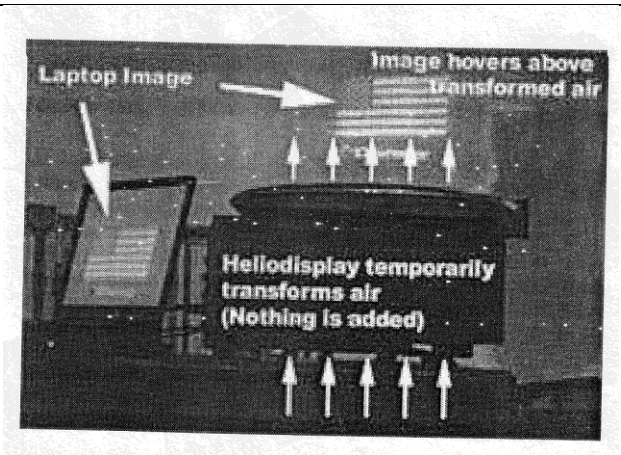

Fig.3.4 Working of Heliodisplay

Dark background emphasizes the contrast of the images and it is lightly encouraged when designing a location to view the display. Viewing any type of display in direct sun light is almost impossible and also applies to heliodisplays. The images are best seen within 150 degree angle from either side.

The Heliodisplay can be concealed (i.e. into furniture) and hidden away from sight and thereby creating an unobtrusive display. Although Heliodisplay images are easily viewed in an office environment, this system is unique, and therefore has to compete with its surroundings, so contrast becomes paramount for optimal viewing. Dark background emphasizes the contrast of the image and is highly encouraged when designing a location to view the display. Viewing any type of display in direct sunlight is almost impossible and also applies to the Heliodisplay. Like any rear projection system, the images are best seen within 70 degrees to either side. Viewing requires no special glasses. The Heliodisplay uses no additives or chemicals, only plain tap water (you can also use distilled water, ionized water or demineralised water if desired). The screen is safe for human interaction and will not cause any harm of any kind.

3.6 Prototype Models

Ml

The original Ml units produced by 102 were advanced prototypes and proof-of-concept, but a few were sold to early adopters through channels such as eBay.

M2

The second-generation M2 Heliodisplay supports a 30" image with 16.7 million colors and a 2000:1 contrast ratio. The interactive M2i version includes virtual touch screen capability.

M3 and M30

The new third-generation M3 version launched on February 28, 2007 has the same basic specifications as the M2 but is said to be much quieter, with improved brightness and clarity and more stable operation with an improved tri-flow system. Apart from displaying at a standard ratio of 4:3 in addition it also displays 16:9 widescreen ratio. There is also an interactive version called the M3i The M30 is the updated version of the M3, which fits into the current model numbering system, 30 designating the diagonal screen size.

M50 and M100

In late 2007, 102 Technology introduced two larger Heliodisplays, the M50 and Ml00. The M50 has a 50" diagonal image, equivalent to displaying a life-size head-and-shoulders person. The Ml00 has a 100" diagonal image, equivalent to displaying a large full-body person (about 2 meters tall).

The M2-series Heliodiplay is the second-generation mid-air projector with 30-inch diagonal (76cm) display area (4:3 aspects). Heliodisplay images are unique and offer many advantages over existing displays, but the M2 is not designed as a replacement for conventional displays.

The Heliodisplay's projected image hovers a few inches above the unit. The top of the image is 28" above the top of the unit. The M2 is about the size of a tower desktop computer case turned on its side. Heliodisplays will work in well-lit environments such as

trade show floors, and also low-light environments such as museums and nightclubs. As with any display technology, lower ambient light makes the image easier to see

Heliodisplay images are not holographic although they are free-space, employing a rear projection system in which images are captured onto a nearly invisible plane of

transformed air. What the viewer sees is floating mid-air image or video. These projected images and video are two-dimensional, (i.e. planar) but appear 3D since there is no physical depth reference. While conventional displays have the benefit of being attached to a physical substrate, Heliodisplay projections are suspended in air, so you will notice some waviness to the quality of the projections.

The Heliodisplay is designed to be hidden (into a pedestal, table etc), so that only its projected image is visible. The display connects to a standard video source (such as DVD player or Personal computers) and projects any images that would be viewable on a computer screen or television. No specialized hardware or software is needed to view images. The interactive version of the Heliodisplay (M2i) allows a finger placed on the floating image to act as a computer pointing device. The user can interact with floating images or video, and manipulate them as you could with a mouse, including clicking and dragging. The M2i comes with Heliocast software and PC drivers to enable this.

Both the M3 and M3i are ground breaking developments which render a convincing three dimensional display in mid-air. What's truly unique, however, is that these devices are only producing a two-dimensional display that is so detailed; the eye is tricked into seeing objects in three dimensions. Despite stunning video clarity, and the ability to read static text on the Heliodisplay, improvements will still be needed to match the visual quality of LCD and CRT screens.

Making use of a new and improved tri-flow system, both devices are light-years ahead of their previous models. These new display systems are capable of producing very smooth and steady images at resolutions of up to 1024*768 in both 4:3 and 16:9 ratios. A stream of microscopic particles is used to project the image onto, and
at the moment 102 Technology has decided to keep the molecular composition of the microscopic particles a secret. The idea of projecting images onto screens of tiny particles is not necessarily a new development, but the ability to display images with the clarity and integrity of the M3 and M3i is quite an accomplishment.

The M3i's interactive capabilities are truly incredible. The cursor control features essentially convert the entire hovering display into a giant touch screen, allowing the user to manipulate objects on the screen manually. This feature is made possible by a series to motion detecting devices that pinpoint the location of your hand and mimic your hand's movements with the mouse pointer. Although this extra feature is costly, being able to control immaterial displays of objects as if they were solid entities is quite amazing.

3.7 Features and Specifications

FEATURE	SPECIFICATION
Image size	50" (diagonally)
interactivity	Heliocast version 2.0
Aspect ratio	4:3 or 16:9
Resolution	1280X1024
Contrast ratio	2000:1
Video input connectors	RGB analog, USB,VGA,RCA video
Video compatibility	NTSC,PAL,MAC
Electric power supply	220-240 V
Electric power frequency	47-63 Hz
Electric power consumption	350 W
Working temperature	12 -35^{0}C

Table 3.1 SPECIFICATIONS OF M 50

3.8 Images

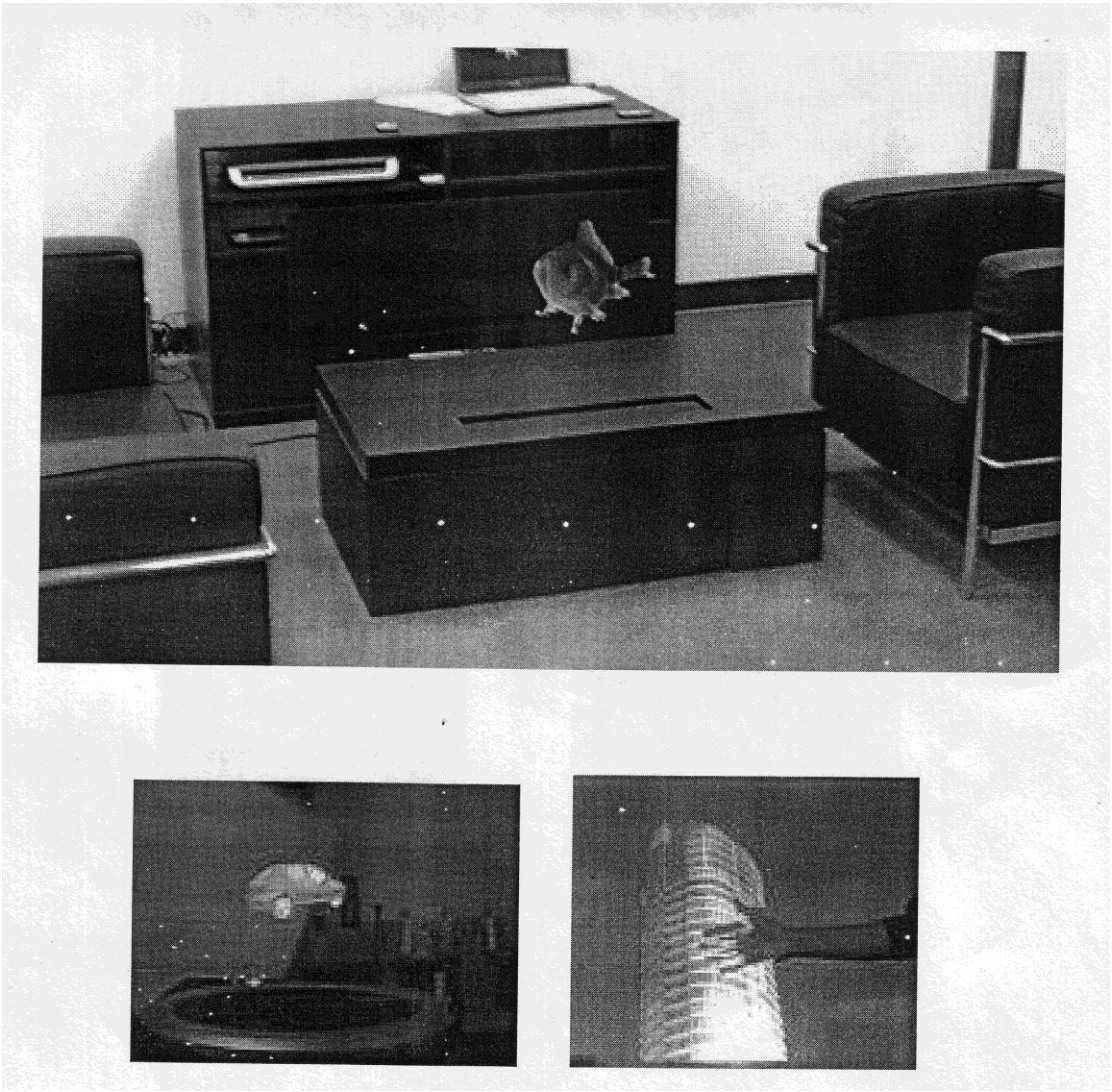

Fig. 3.5 a Heliodisplay images

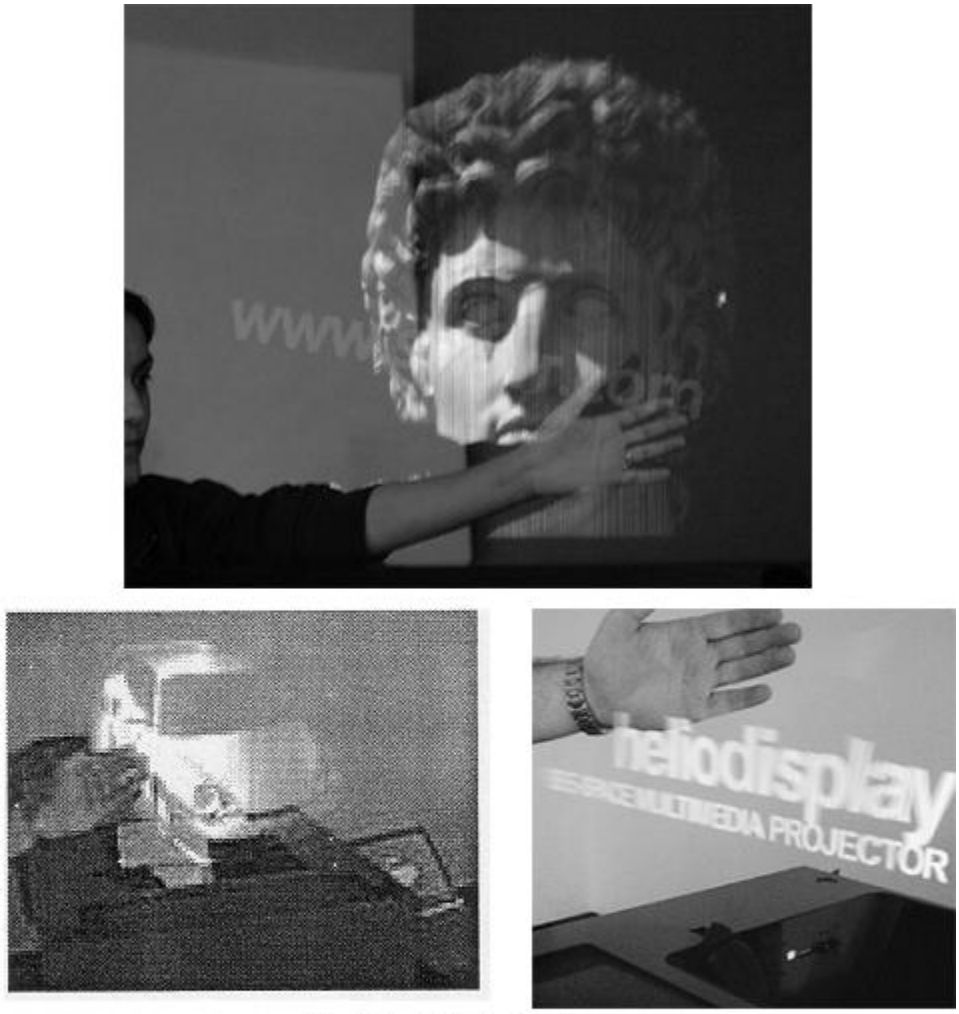

Fig. 3.5.b Heliodisplay images

FEATURES OF FREE SPACE DISPLAYS

4. FEATURES OF FREE SPACE DISPLAYS

1. It doesn't need a physical display screen.
2. It creates a 2D display which appears to float.
3. The touch screen technology is backward compatible with most of video sources such as PC, TV, DVD etc.
4. It has high resolution.
5. The projecting device does not consist of moving parts.
6. It uses no additives or chemicals.
7. It does not produce any harmful effects on air.
8. The screen is safe for human inter action and will not cause any harm of any kind.
9. It replaces CRT, LCD, plasma screens.

Fig. 4.1 Walk Thru Screen

For screen is the world's first walk through project screen

Viewers can cross the screen to view from other side.

fig 4.2 Dual side projection

The fog screen's support for dual sided projection allows two independent images to be projected on each side of the screen, such that the opposite sides of a 3D object can be rendered on the screen for a pseudo-3D effect.

APPLICATIONS

FogScreen display and helio display screen are stand-alone product that can be integrated into any environment, including casinos and clubs, malls and showrooms, fairs and convention centers, theme parks, science centers, museums, theatre, TV, fashion shows, and corporate venues.

- Advertising and promotion (e.g. Trade shows, in-shore displays, museum, movie and casino displays, theme parks)
- In automobile show rooms
- Collaborative decision making (e.g. Board meetings, presentations, air traffic control)
- Teleconferencing centers
- In military
- Consumer (e.g. Video games, home theatre)
- For technology demos
- Architectural & engineering design.

Fig. 5.1 CREATION OF MONSTERS IN THEME PARKS.

Fig. 5.2

AS AN ENTRANCE TO AN EVENT

Fig 5.3

IN CONFERENCES AND DISCUSSIONS.

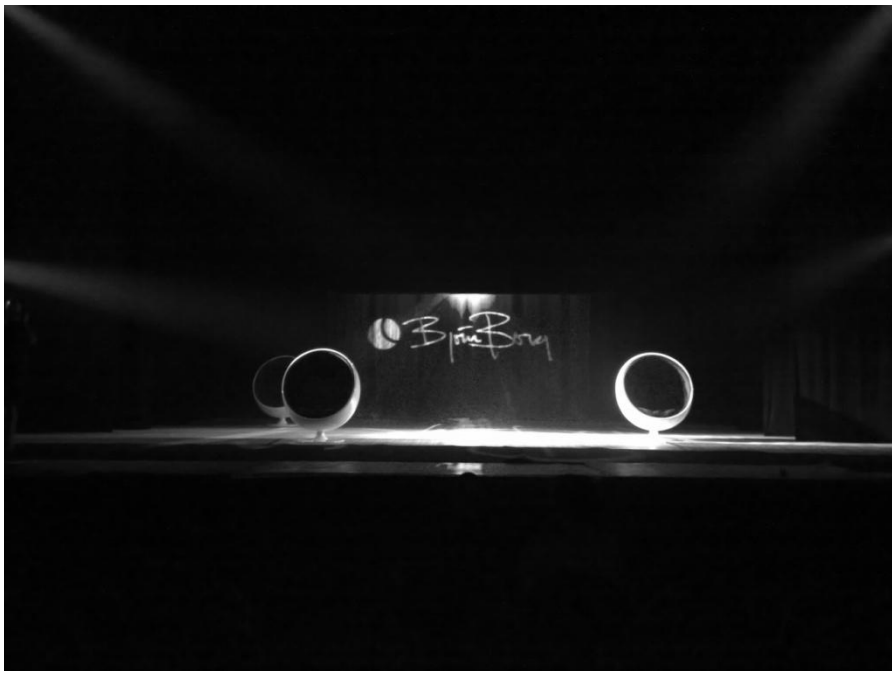

Fig 5.4

FOR ADVERTISEMENTS AND BRAND PROMOTIONS

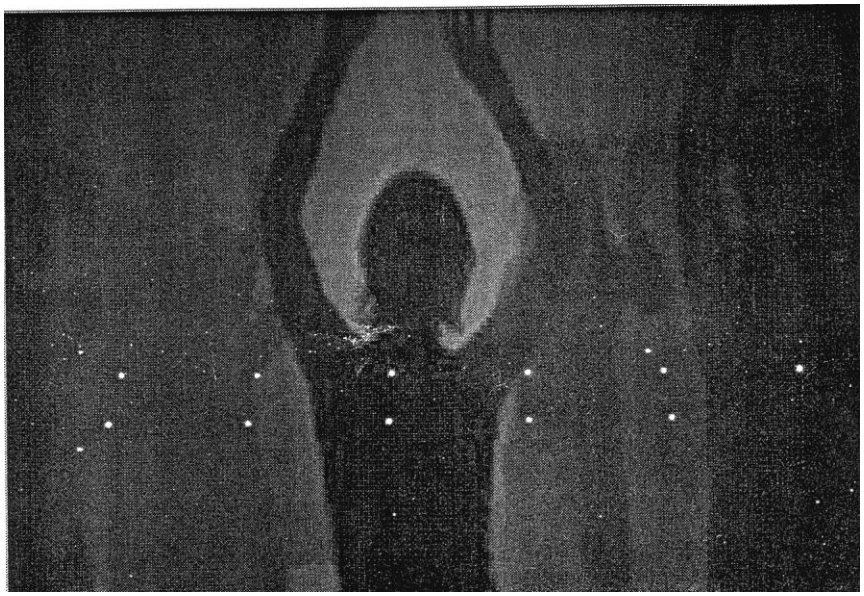

Fig 5.5

IN NIGHT CLUBS

Fig 5.6

IN TV SHOWS

CONCLUSION

CONCLUSION

The fog screen & heliodisplay technologies are growing technologies. This could one day replace conventional CRT, LCD, Plasma screens. A future display might incorporate the two things: an open air display with high resolution, clear 3D capacity along with an accurate interactive capability.

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