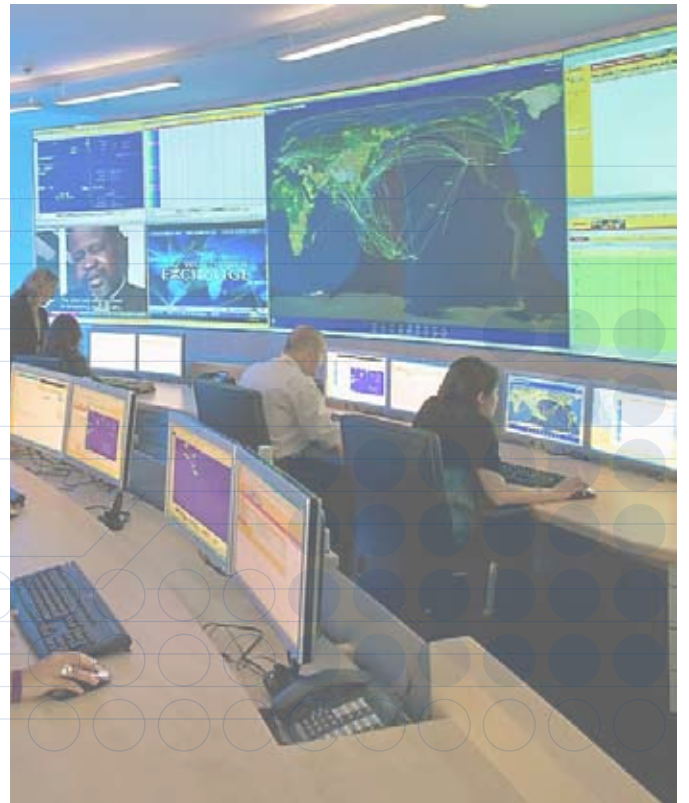


**ME multiView  
Visualization Systems  
Large-Screen  
Rear Projection  
System Overview**



**The Company**

In 1957 Helmut Mauell Limited developed the annunciator relay, a product that combined the company's expertise in precision mechanical and electrical engineering.

The successful development of our company – which today has 450 employees - is based on the continual integration of the latest technologies in electronic engineering, communications and computer science.

**Visual Display Systems**

In addition to the conventional mosaic systems, indicator boards and video terminals, Helmut Mauell Ltd. also offer large-screen projection systems for state-of-the-art graphical representation for a variety of tasks and applications which allow you to further enhance your display possibilities.

Our range of visualization products is made complete by our expert control room design service. With Mauell you opt for individual design solutions for industrial control rooms, power station control rooms, monitoring centers, sports facilities, traffic control centers, exhibition engineering, network centers, conference rooms, show-rooms, etc.

**Large-Screen Rear Projection**

A large-screen rear projection display panel consists of so-called Cubes which are characterized by their large and almost seamless screens. The image is projected to the rear of the Cube's screen. Mauell's state-of-the-art projection methods are based on the DLP™ (Digital Light Processing) technology developed by Texas Instruments. Our Cubes are designed for horizontal and vertical butt mounting and have a low mounting

depth. Images can be divided up for representation on individual Cubes, or expanded across several adjoining Cubes.

**Advantages**

Modular system consisting of standard components which can be easily accessed and thus easily maintained.

High-precision manufacture guarantees minimal dimensional tolerances.

A quality management system certified by the German Technical Control Board (TÜV) setting the standards for all company departments – development, sales, manufacturing, installation and service – and regular revision and customer audits guarantee continued success with our customers.

**Resolutions and standard screen sizes**

Our Cubes are available with the following screen diagonals and resolutions:  
DL = Double lamp projector, LED = LED projector

Resolution	XGA	DL	LED	SXGA+	DL	LED	WUXGA	DL	LED	HD	DL	LED
Screen diagonal												
50"		X	X		X	X						
61"												X
67"		X	X		X	X						
70"												X
72"									X			X
80"		X	X		X	X						
100"		X	X		X	X						



**ME multiView controller**

**Image Quality**

The image quality is determined by the following characteristics:

- Brightness
- Illumination
- Depth of focus
- Contrast
- Color rendering
- Distortion-free image
- No burn-in effect
- No hot spot effect
- Continuous operation

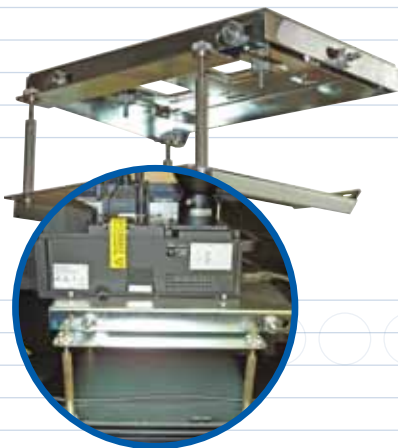
Standard Microsoft or UNIX/LINUX applications are installed on this computer platform so that different image signal sources can be represented on the large-screen projection panel according to customer requirements. Alternatively, split PC target systems with virtual PC technology based on the operating system LINUX can also be used.

The split computer manages all configured data and data received from the LAN/WAN, video and capture interfaces and makes this information available to the Cubes.

**Split Technology/Hardware and Software for Cube Activation**

A split PC is the heart of the large-screen projection panel - it is from this PC the entire panel is managed.

A configuration software is available for adjusting the projector's optic devices and RGB scheme and for tuning several screen segments arranged in an array.



**six-axis projector alignment**

**no disturbing fixing devices**



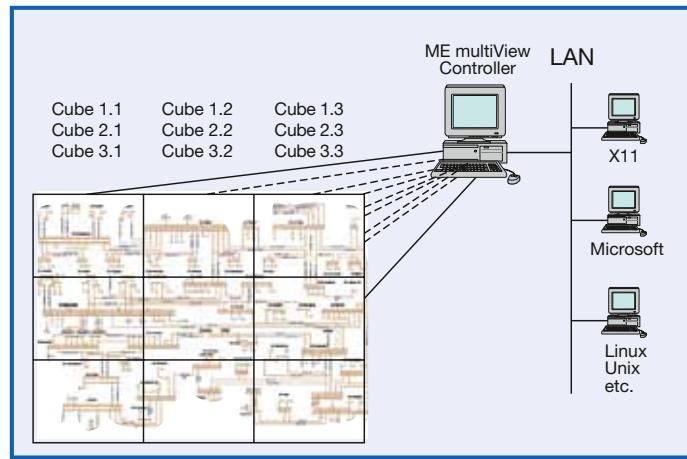
**The Advantages at a Glance:**

**Hardware**

- Implementation of highly progressive projection technologies.
- The Cubes can be arranged in a polygonal array direction.
- The seamless frame technology allows an optimal utilization of the display area without the need of disturbing fitting devices.
- A consistent earthing concept has been implemented.

**Commissioning**

- Internal test images (generated in the projector) make the use of a PC unnecessary.
- All Cube types are buttable both in horizontal and vertical direction.
- High-precision mounting of the Cubes in a straight and polygonal array due to the use of a 4-cylinder coupler.
- The projector can be adjusted in six axes.
- Fine-adjustable deviating mirror for setting up the symmetrical screen geometry



**Commissioning**

Mauell's special Cube commissioning equipment used by our on-site commissioning engineers ensures homogeneity even in complex networks of large-screen arrays. Critical factors in system setup are the brightness adjustment taking into account the room environment and the tuning of the individual units of the array.

High-quality connection cables, converters, splitters, nodes, hubs and switches ensure maximum image results.

**Six-Axis Projector Alignment**

All Cubes have a six-axis alignment facility allowing a quick mechanical and geometric alignment of the projector at commissioning. A test image assists you in setting up a full-area display without distortions.

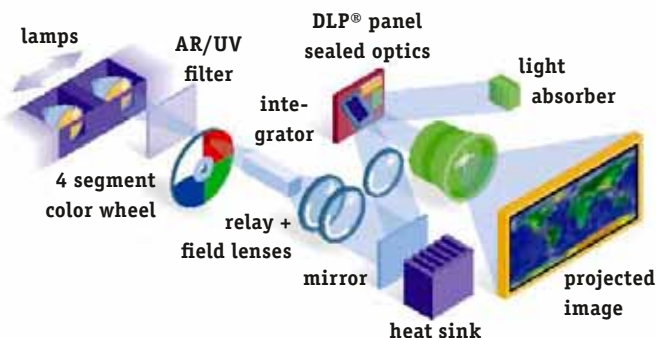
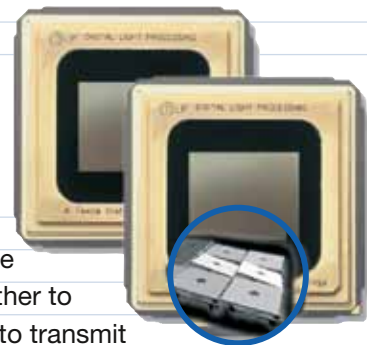
**DLP™ (Digital-Light-Processing)**

The projection light is projected through the color wheel onto the DMD™ chip. The color is generated by means of a three-color filter wheel (red, green and blue) which rotates in synchronism with the image deflection device. Three successive color images are generated which - due to the high speed - visually merge into one true color image. The DMD™ chip reflects the light which passes through a lens and is then deflected by a high-quality deviating mirror onto the screen.

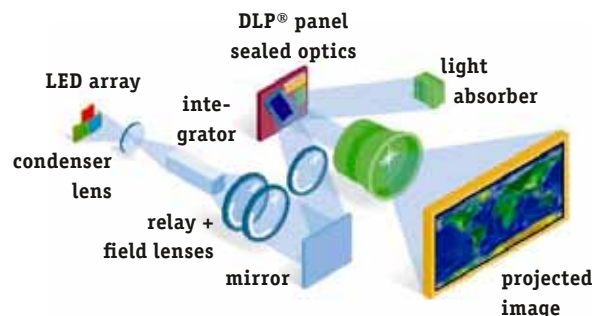
Pixel structures are almost undetectable. High intensity and uniform brightness is a further characteristic of this technology.

**DMD™ (Digital-Micromirror-Device)**

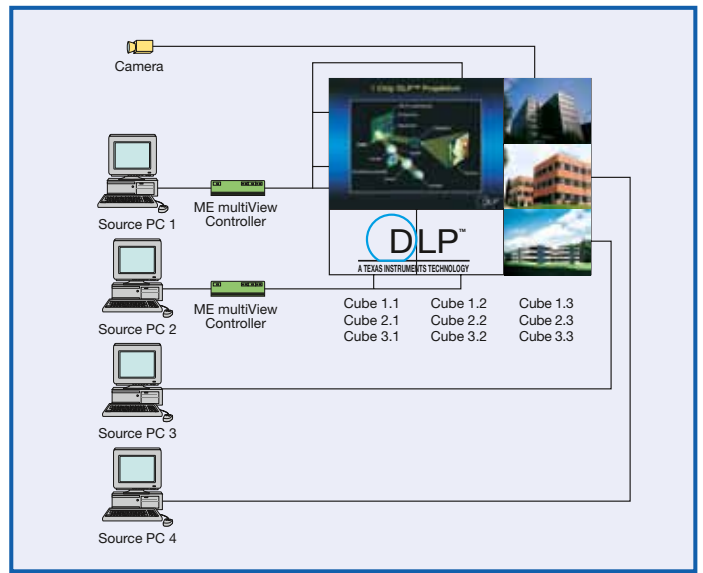
The kernel of this technology developed by Texas Instruments Corp. is the Digital Micromirror Device (DMD) which consists of smallest mirror elements. Each mirror element corresponds to one image dot of the projected image. Electronic controls decide separately for each image dot of the reflected light whether to mirror the light information, i.e. to transmit it to the screen, or whether to interrupt it, i.e. to transmit it to an absorber area. This way up to 90 % of the generated light arrive on the ME multiView screen.



Lamp-based systems



LED-based systems

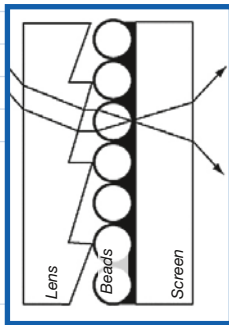


### Screen

In our Cubes we insert a DNP black bead screen with an almost seamless frame.

A Fresnel lens and small beads focus the projected light to image dots. These are then passed through a black screen which faces the viewer.

This method produces a brilliant image with a high depth of focus and is highly insensitive to false light.



The "Seamless"-technology developed by Mauell guarantees an almost seamless transition between the units.



### LED illumination

As a light source for projectors of Cubes are available the mercury lamps or LED illumination. The LEDs are characterized by a long life. In addition, the colour wheel can be eliminated with this technique because it is replaced by three coloured LEDs.

### Automatic Lamp Replacement

Cubes with an automatically lamp replacement put a 2nd lamp into operation if the currently active lamp fails. So that the Cube can continue to operate almost without delay. An error message is

generated to inform the operator about the lamp replacement. The defective lamp can then be replaced without interrupting the operation of the Cube so that a spare lamp for automatic replacement is always available.

### Remote Control

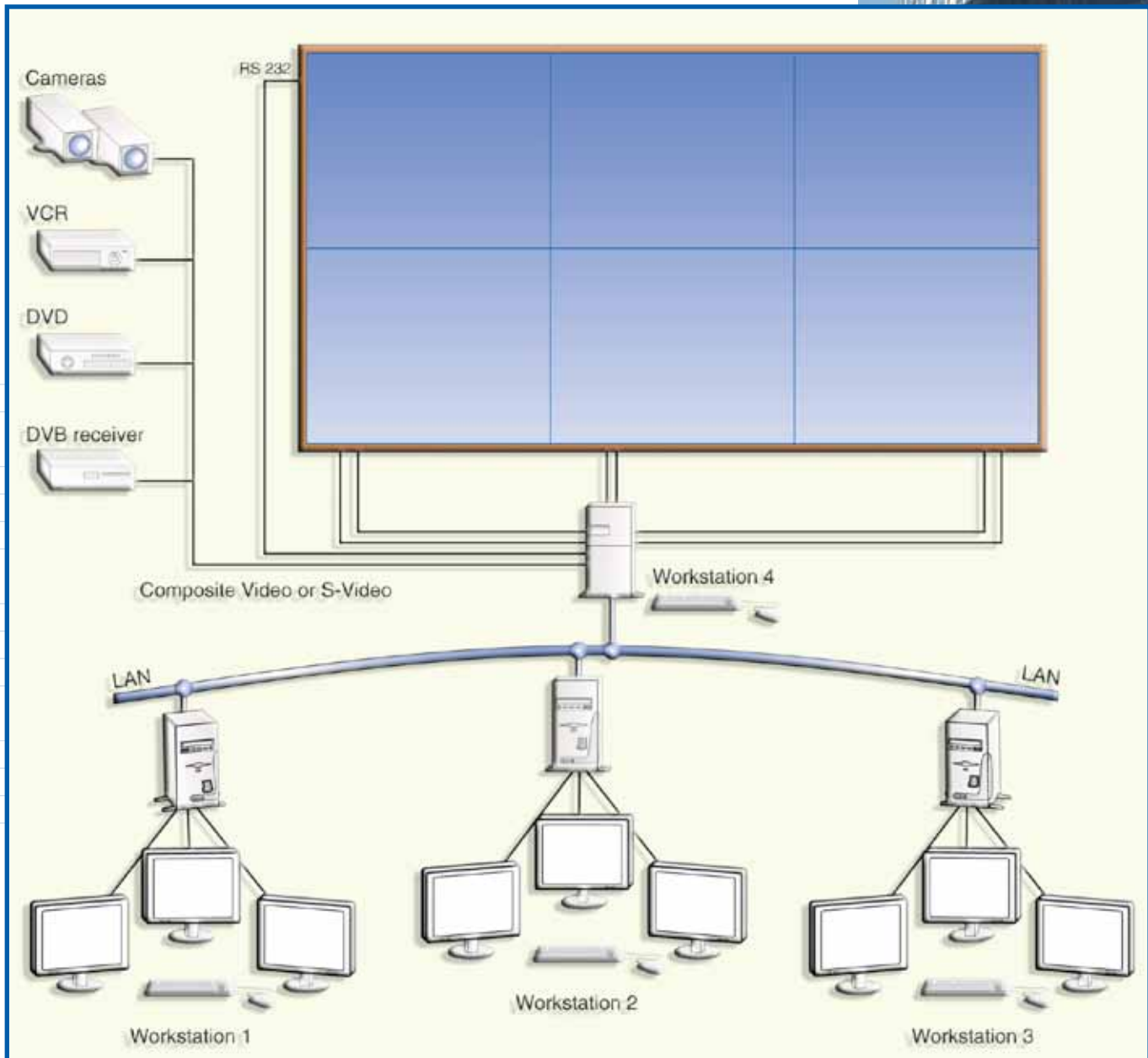
A portable remote control device is available for all Cubes. This remote control device enables you to conveniently program all Cube functions while standing in front of the Cube, as well as via the serial interface of the configuration computer. On-screen menus (OSD) guide you through the available functions, such as horizontal and vertical alignment and brightness, contrast and color adjustment. You can also use the remote control device to call up important information.

### Color Management

Colour adjustment to achieve uniform colour rendering properties is of great importance especially in arrays of several Cubes. As all Cubes of the array communicate with each other, color balancing of all devices can be performed via a serial interface.



Process visualization



### Configurator

The configurator presents you an overview of the different sources of the large-screen projection wall. Monitoring devices such as cameras and multimedia devices for training and presentation normally transmit information in the form of digital and analog video signals. The applications on the operator stations interconnected in a network transmit their information in the form of RGB signals.

All these data are represented in windows that can be freely scaled and positioned. You can select from predefined layouts, or activate a specific layout by means of an incoming message.

The highly ergonomic design, an intuitive user interface, and features such as remote mouse and keyboard greatly facilitate the daily tasks of the projection wall operator.



## References (Excerpt)

### Steag AG

#### Load control center of the local power supply company

Scope of delivery:

5 cubes 50" XGA (1 x 5); connection to 12 operator consoles via a cross-bar distributor.

Task: Load control and monitoring of all power stations of the Steag AG.

The Cubes are also used as reference units.

### VMZ – Bremen

The road traffic management center – a novelty of the town of Bremen – combines for the first time Bremen's existing traffic management systems on a common platform. This new center integrates the following subsystems: the traffic guidance system (VBA) of the A1 motorway, the traffic computer system with the connected light-signal systems, the parking guidance system, the road works management system of the Roadway and Traffic Office (ASV), and the future dynamic routing control system GVZ.

Scope of delivery:

2 x 3 XGA ME multiView Cubes, Split controller with the Windows ME 2000 operating system, representation of 12 camera images, two RGB inputs, integration of a client of the Siemens management system.



### RWE Rheinbraun - Grevenbroich Coal-fired (brown coal) power station operator

Scope of delivery: 5 Cubes, 70" SXGA, incl. automatic lamp changer.

Direct hardware-controlled analog RGBHV connection to the ABB control system Pro Contol P.

The large-screen projection wall of the control center visualizes the technological and control processes of the coal-fired power station Neurath. It also displays the video camera images supplied by a digital security system.



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