FINE PITCH DIRECT-VIEW LED IN CONTROL ROOMS

Display Solutions for Mission-Critical Control Room Operations

- **Seamless Direct View LED Video Walls**
- **Trouble-free Long-Term Continuous Operation**
- **Redundant Components for Highest Availability**
- **Little Space Requirement**
- **Video Wall Controllers and Wall Management Software**

LEYARD™ EUROPE

Water Management Control Room — *Paris, France*
13x5 TVF-1.2 + netPIX

LEYARD™ EUROPE

PLANAR® A LEYARD Company

eyevis® A LEYARD Company

Leyard, Planar & eyevis –
Pioneers in Video Walls for Control Rooms

For more than 25 years, Leyard and its companies Planar and eyevis have designed and provided innovative visualization systems to customers in a variety of control room vertical markets worldwide including Government, Security, Telecommunications, Transportation and Utilities.

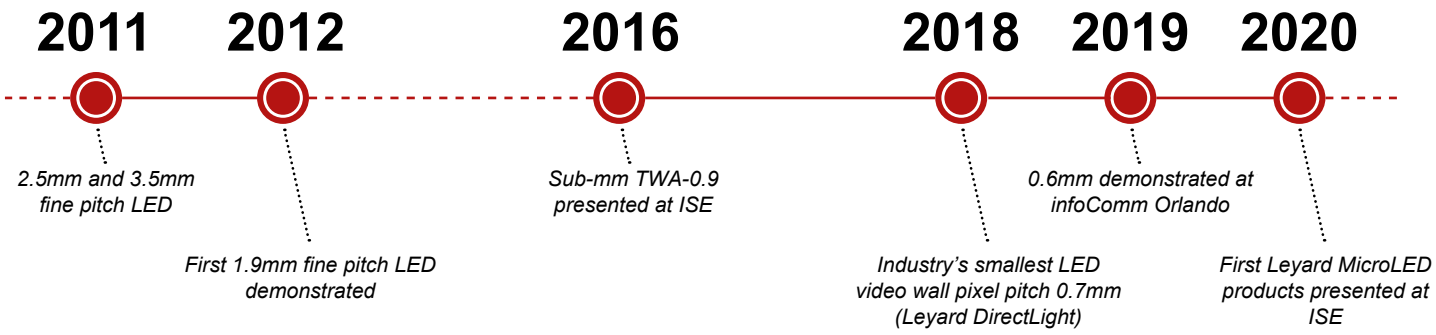
Specifically, the Control Room market has always been very strong for Leyard, Planar and eyevis, and Leyard as a group has a very large installation base on all continents.

This document analyses the current trends in the Control Room display market and how Leyard is leading the conversion of existing control rooms to the latest Direct-view LED technology.

LED Replacing All Other Technologies at a Fast Pace

Fine Pitch LED technology, also referred to as “Narrow Pixel Pitch” LED (NPP), is a recent invention, led by Leyard who believed early in this technology and has achieved many company firsts.

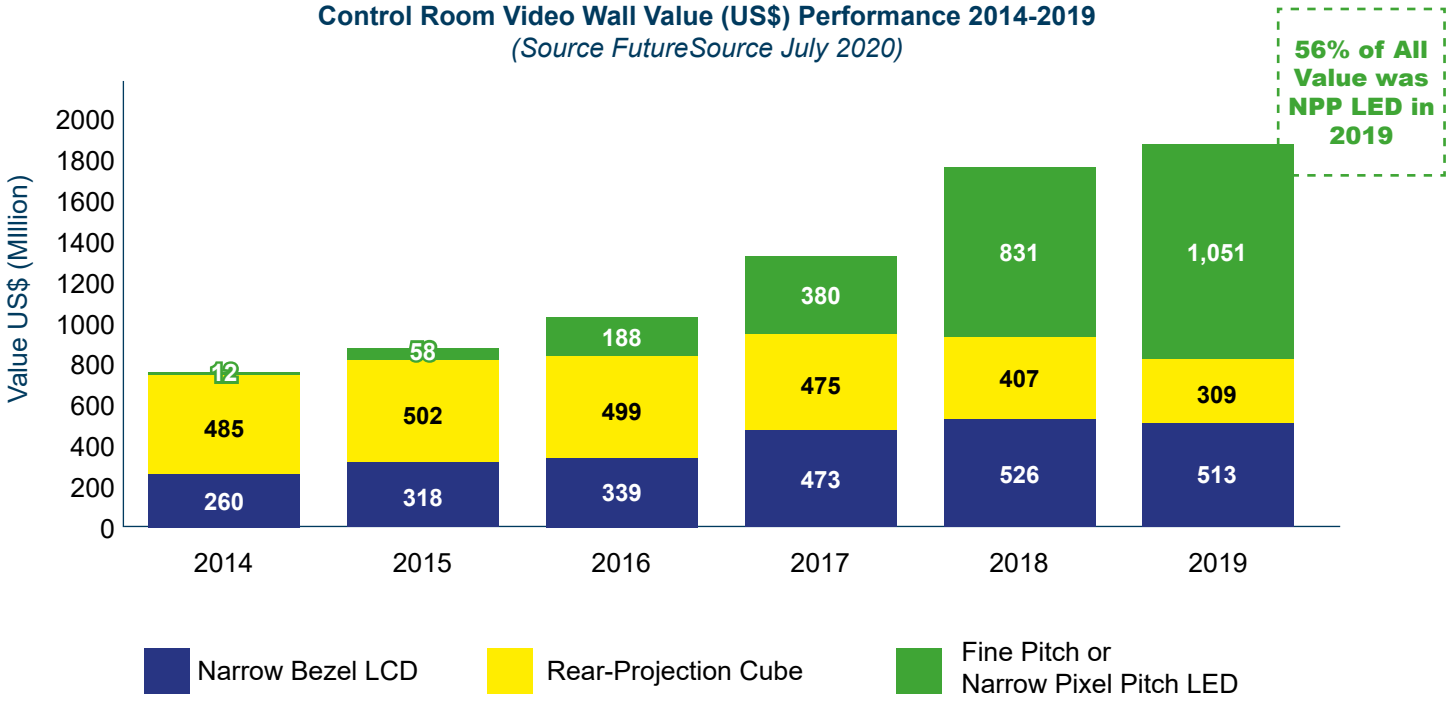
Leyard, a pioneer in Fine Pitch LED



As NPP LED became more common, an increased transparency in the supply chain has enabled cost reductions to flow throughout the supply chain to the end user, and opened up an increasing number of applications.
Among those new applications, the control room sector is the fastest growing with 26% year-to-year growth -and even 176% over the last two years- at the expense of all other video wall technologies.

- Rear projection cubes (RPC) have seen a 24% decrease in value and the decline is likely to accelerate. The second largest RPC manufacturer in Europe has recently announced stopping its production and leaving the market.
- LCD video wall see their utilization more and more confined to very specific segments of the control room market: very small control rooms and surveillance applications. The largest LCD panel manufacturer also stopped all its production in 2020.

Control Room Video Wall Value (US$) Performance 2014-2019
(Source FutureSource July 2020)



The Reasons for Success

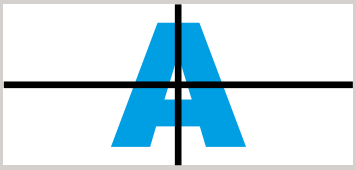
As Fine Pitch LED video wall prices are getting comparable with Rear Projection and LCD Video walls, Fine Pitch LED technology benefits from many technological bonuses:

True Zero-Bezel Design

RPC's and LCD's claim to be "seamless" is merely wishful thinking: the separation even reduced to less than a millimetre is still visible and accentuated by non-uniformities on the edges and optical artefacts especially from an off axis angle of vision.

NPP LED offers instead a stunning single canvas from any angle up to 180° horizontally.

LED → No visible Gap



LCD → Minimum 0.88mm Gap

RPC → Minimum 0.6-1mm Gap

Long-Time Ownership

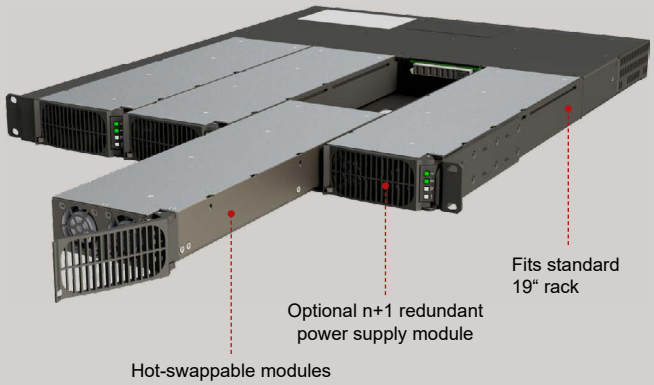
Direct-view LED is a very reliable and long lasting, and furthermore highly repairable especially when you benefit from having a local factory and repair centre. LED repairs are extremely concentrated in the very first few weeks and month of operation. After this period, LED repairs affordable and can be performed over a very long period of time, so much so that Leyard introduced a Lifetime Warranty on a selection of its NPP products.

On the other hand, LCD repairs are impossible when the LCD glass is damaged, and RPC repairs although always possible can have a very high cost when some critical components of the projection engine break.

Redundancy

LED video wall often have an embedded dual power supply as an option. This feature is very rare on RPC and LCD.

Leyard also offers an external power supply (Hot-Swappable with N+1 redundancy) on several of its LED products, namely the DLX and AT Series.

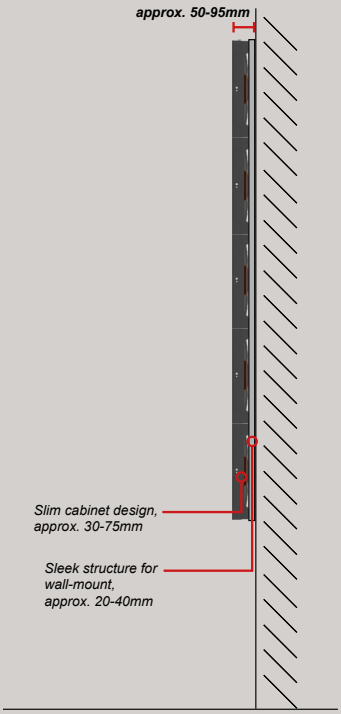


Minimal Space Requirement

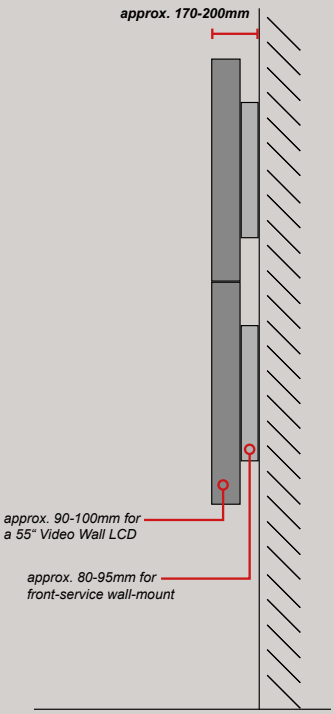
A very small footprint is also a characteristic of modern Fine Pitch LED video walls. The video walls are front serviceable and the total depth generally does not exceed 10cm. Leyard AT features a very shallow depth of just 5cm, hence minimising the real estate footprint.

On the other hand, RPC generally require a depth of 50cm to 100cm depending on the maintenance mode, front or rear.

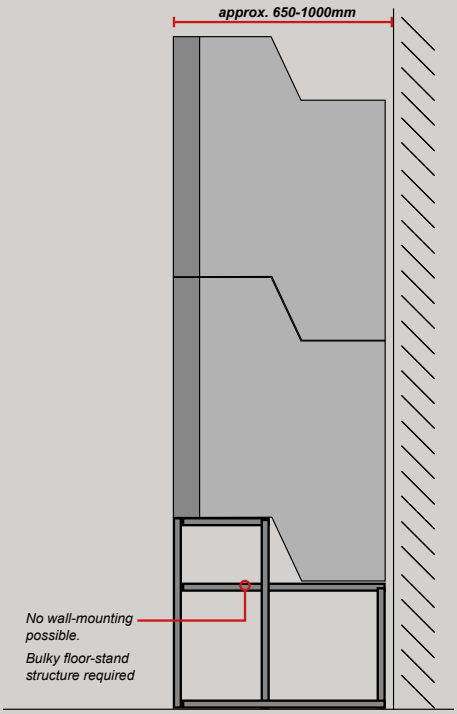
LED VIDEO WALL



LCD VIDEO WALL



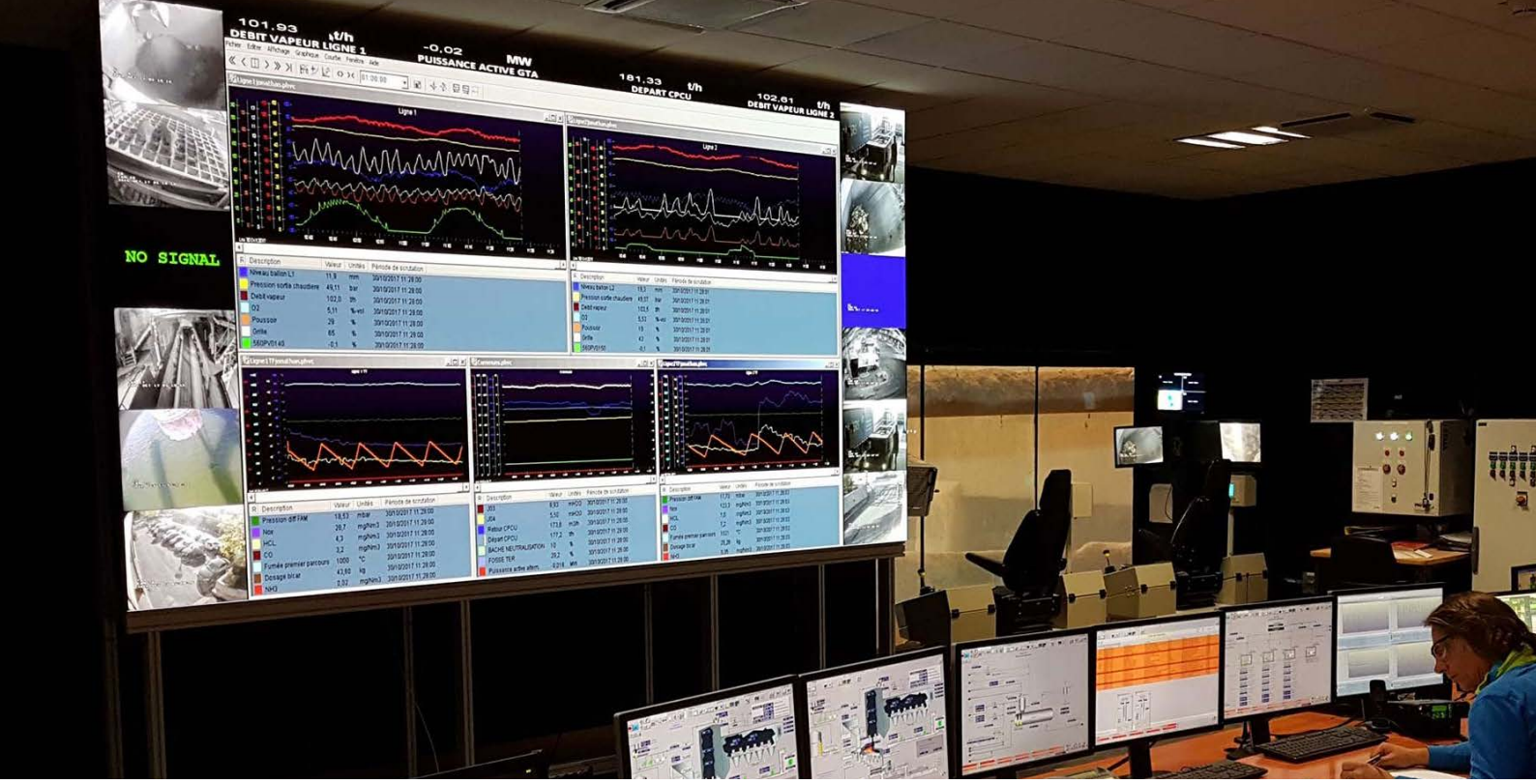
RPC VIDEO WALL



Flexible Video Wall Sizes - Smooth Curves

Fine Pitch LED cabinets small form factor allows you to target precisely any video wall dimension, and setup curved video walls with a very smooth appearance.

In comparison, RPC and LCD have a minimum width of 1 meter, making each individual column very visible in curved installation.



Groupe TIRU Usine Systcom Isséane — *Paris, France*
Leyard® TWA Series (3x3 of 1.4mm)

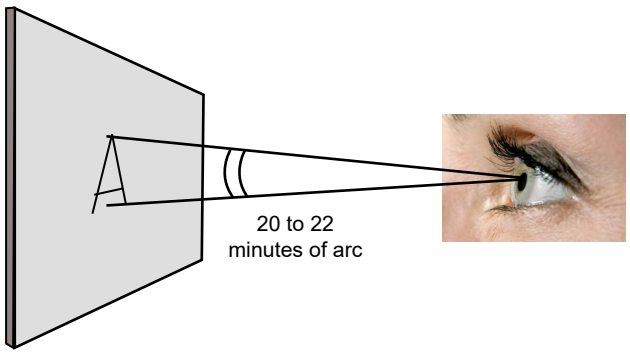
The Pixel Resolution thrown into Question

Before making the final leap towards Fine Pitch LED, the main customer hesitation refers to image definition and dot per inch.

In the last 20 years, the AV market has been driven by a pursuit of higher and higher resolution: FHD, 4K, 8K, etc. This is mainly attributed to the TV consumer market that constantly needs to create new standards in order to create new customer needs. An 8K TV will probably look better than a FHD one, but when the application is to monitor a control-command Scada application and the operator is sitting at a 3,5 meter distance from the video wall, this does not necessarily provide a better comfort in vision.

The role of the Control Room designer is to come back to the root customer requirement and do a proper ergonomic study from the operator perspective. This process will help you avoid the pitfall of considering that your LED video wall should be a pixel-per–pixel replacement of your existing LCD or rear-projection video wall. Instead, the video wall definition has to be defined according to the operator's perspective and what a normal human eye can discern from its viewing distance, which is superior to 1 minute of arc.

One minute of arc corresponds of a 1mm pixel viewed from a distance of 3.4 meters / 11feet (= 0,001/tan(1')), which is a standard control room viewing distance. An LED video wall is characterized by its pixel pitch, which is the distance in millimetres from the centre of a pixel to the centre of the adjacent pixel in millimetre.



Empirical studies have shown that for legibility, the height of a lower case character must underlie at least 10 minutes of arc. As the eye moves off-axis, this figure needs to be increased. In fact, the ANSI standards call for a minimum of 16 minutes of arc, and recommends 20 to 22 minutes of arc. This corresponds to 22mm viewed from a 3.4m/11ft distance.

Most of the control rooms that Leyard is installing today are equipped with Pixel Pitches in the range of 1.2mm to 1.8mm. Those definitions have proven to fit the display content in relation to operator positions perfectly in many different layouts.

Leyard Europe can assist our partners with this process, through our demo rooms, demo systems, and a new Control Room Adoption Kit described below.

Debunking LED Myths

Other LED myths attached to Fine Pitch LED technology often are reminiscences of certain weaknesses of the Direct-View LED technology used back in the 2000s for outdoor signs.

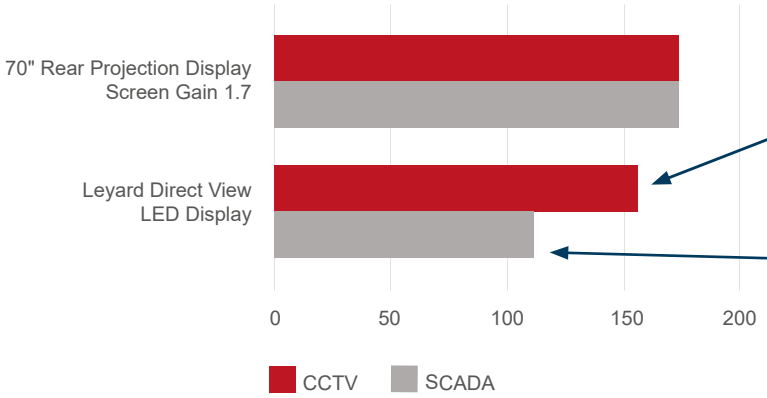
Too bright ?

Indoor Fine Pitch LED video walls are usually calibrated at 600 nits and can operate at a lower brightness, typically at 300 nits or less in a control room environment. The superior colour performance and uniformity compared to LCD or RPC makes the Fine Pitch LED image very comfortable.

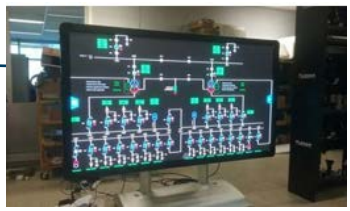
High power consumption ?

Power consumption (and heat dissipation) has long been a concern for LED video walls in control room applications, but the latest technology improvements, including driving LEDs with a common cathode, demonstrate that LED technology can in fact have a better brightness efficiency than the other two technologies.

Power consumption per square meter comparison for 400cd/m² brightness setting for two different control room contents: CCTV and SCADA.



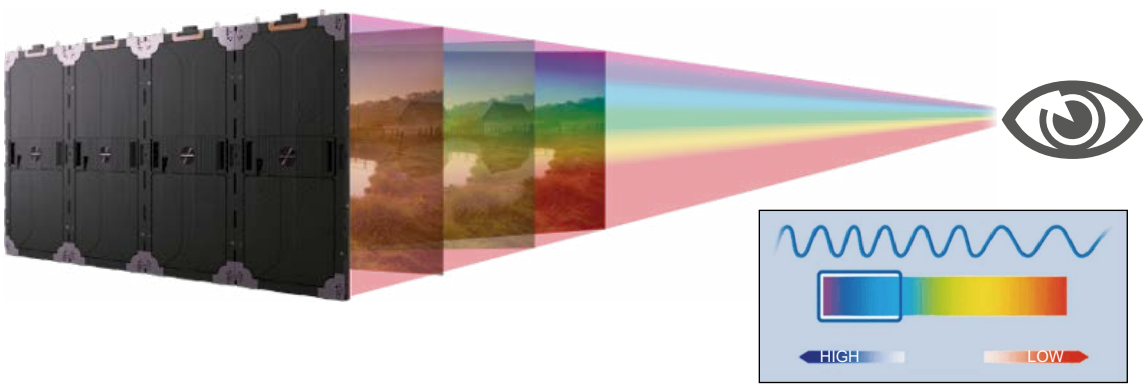
33% power consumption reduction compared to Rear Projection



For application that are not 24x7, Leyard is also offering extreme low standby power on DLX, AT and TVF Series.

LED blue light ?

This is not to mention that the backlight of LCD displays and the majority of RPC is also made of LEDs, and that all Leyard Direct-View LED Video Walls are easily within the blue light normative. According to regulation, the ratio of light in the range of 415-455nm compared to 400-500nm should be less than 50%. In the case of AT and TVF, for example, this ratio is only 13.5%.



Not enough return of experience ?

Let us not forget either that LCD and RPC have been using LED backlight for more than a decade, that Fine Pitch LED has now been used for more than 8 years, including 24x7 control rooms (in Europe for more than 6 years), and we have never witnessed any customer turning back to LCD or RPC technology. Instead, Fine Pitch LED has proven to be very reliable in the long run, and customers are very satisfied with the change.

Prices vary a lot ?

For a given pixel pitch, on the market there is a huge difference in price between an established brand and a Z. brand having no experience in control room or no establishment in Europe. The customer must always weight the risk taken for a cheaper price with the following factors:

- Can I be sure of the quality of the product?
- Is the product really certified to EU regulations?
- Will the company still exist in 5 years, and be able to support?
- How efficient can the post-sales support be?

Leyard is the worldwide market leader for Fine Pitch LED with 18% market share (source FutureSource July 2020). Leyard manufactures Fine Pitch LED video walls in Europe from the SMT-Line up to the finished product, and also performs post-sales repairs in the same factory.

Experience and Turnkey Solution

As mentioned above, Leyard, Planar and eyevis have more than 25 years of experience in designing, supplying and maintaining control room video systems. The systems also include many generations of control-room controllers, whose latest version if the netPIX-core controller platform and eyeUNIFY software. eyeUNIFY software is as of today the most advanced control room software offering an extended set of features, including RDP support, video wall synchronisation and offline layout programming.

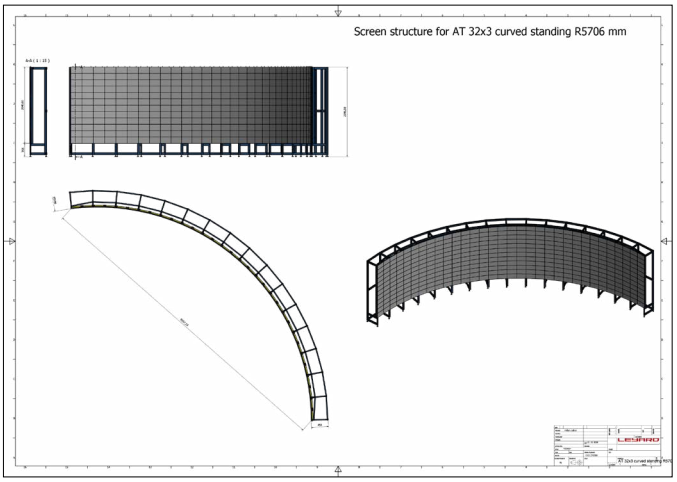
eyevis™ eyeUNIFY Video Wall Software *answers the flexible requirements of modern video walls and information display systems in control rooms, collaboration rooms, board rooms, crisis rooms and corporate signage applications.*

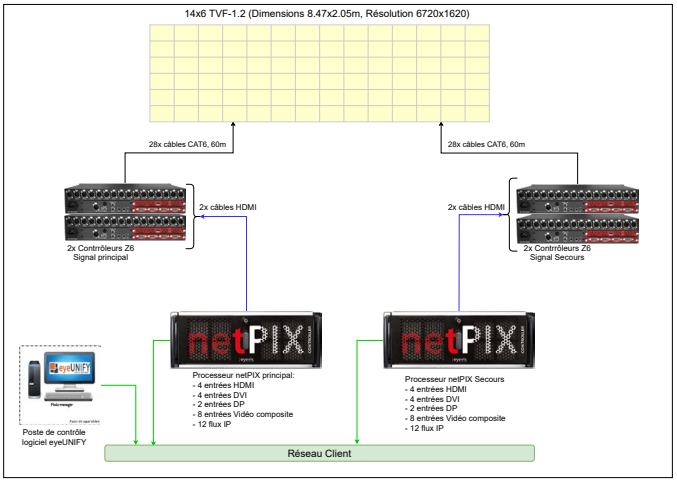
eyevis netPIX™ *is a flexible and easy-to-use video wall processor designed to capture, display and manage multiple sources on video walls.*

Sophisticated Engineering

Experienced Application Engineers & In-House Design Team

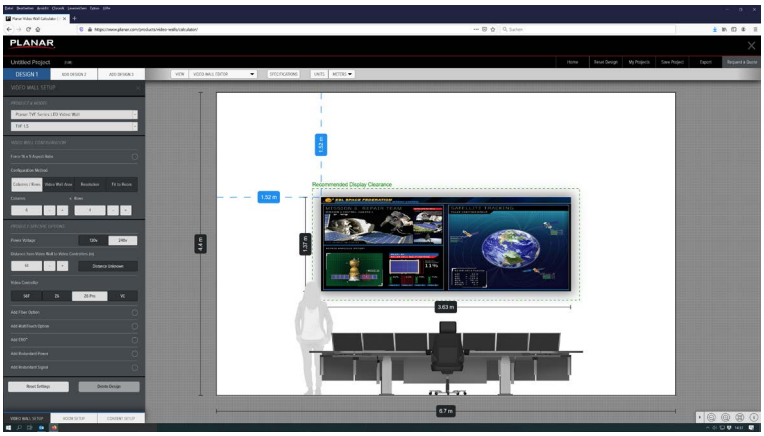
A video wall for a control room is not something you can buy off the shelf, as each individual installation is different in terms of the architectural conditions on site and, in particular, the technical requirements for the system. Our experienced team of application engineers and technical designers are at your disposal during the preparation of the installation. This ensures that the final integration of your system runs smoothly from a technical and mechanical point of view.





Video Wall Calculator

The free online video wall calculator is a powerful tool for the design and calculation of video walls using display products from Leyard/Planar. The tool addresses both, end-customers and integrators, do get a clear view on the final appearance, the dimensions, as well as diagrams for power and signal cabling. The possibility to upload real images of the room and preview images of the planned content allows a very realistic first impression of the final installation already at an early stage of the planning.



Weblink

https://www.planar.com/products/video-walls/calculator/

(the calculator tool is hosted on the website of our North American sister company Planar)

General Control Room Requirements

Control Rooms monitor and control various processes, applications and networks. In most applications, Control Room operators are responsible for recognizing potential problems and initiating responsive actions. The return on investment for a control room video wall is correlated to the fulfillment of a set of key criteria, and a few details can easily determine the success or failure of a project.

For example, the size of the characters relative to the operators' distance are to be carefully considered when designing a control room environment according to ergonomic principles. The choice of the right video wall display technology is a major decision, but also, for a given technology, the video wall design has to provide the standard of quality that will make a control room project successful in the long-term. The most valued features for control room video walls include:

- High reliability and a high level of redundancy. This implies either redundant power supplies, redundant light sources, redundant source connection and/or failover scenarios for any type of failure
- An extended lifetime and low cost-of-ownership
- A very good image uniformity from any angle, and minimum separation between displays
- Picture quality and precision, to ensure no loss of pixels containing information
- A high resistance to image retention, as applications will typically involve static images being displayed 24x7x365
- A low power consumption, heat dissipation and minimal noise at the display is important for 24x7x365 applications
- A small footprint in environments for control rooms with space constraints
- The success of a control room project also relies heavily on the supplier's experience with control room installations and their ability to provide local support, turnkey solutions with processing hardware, consulting, project management and qualified 24x7 technical support

TECHNOLOGY PERFORMANCE COMPARISON

	 **Rear Projection**	 **Tiled LCD**	 **Leyard Direct View LED Video Wall**
High Reliability and Redundancy	**Good**: DLP® LED-lit rear projection cubes are usually stable and long lasting, however real redundancy features are rare	**Variable:** Most LCDs will come with no specific enhancements for control rooms applications. Few models (e.g. as our Clarity Matrix G3 Series) provide such enhanced features.	**Best:** Redundant power supply with two parallel video channels for various Leyard LED Series; Hot-swappable power modules for Leyard® DirectLight X and AT Series
Extended Lifetime	**Good:** DLP® rear projection usually provides a stable performance over time. But repairs are usually time-consuming and expensive	**Bad:** Image-wearing due to heat	**Better:** The long service life is the main argument for LEDs in almost all applications. With the EverCare lifetime warranty extension, which we offer for certain products, the operation of the system is guaranteed for the time of operation.
Image Uniformity and Bezel	**Variable**: Relies on the cube design and the front screen quality	**Medium:** Not as good as the other two technologies, usually relies on the precision of a 3rd-party mounting system	**Best:** No bezel and perfect uniformity from any viewing angle
Picture Quality and Precision	**Variable:** May involve warping algorithm and interpolation	**Good**	**Best:** Selection of pixel pitch from 0.6mm to 2.5mm, huge viewing angles
Resistence to Image Retention	**Perfect:** No image retention with DLP®	**Bad to Medium:** According to the quality grade of the LCD panel	**Best:** No image retention
Power and Heat	**Good:** Rear projection cubes have usually a good power efficiency	**Bad:** Power consumption per sqm for a given brightness is higher than the other two technologies	**Best:** LED video walls calibrated to control room operation require less power and dissipate less heat than average rear projection systems or LCD video walls
Small Footprint	**Bad:** Rear-projection cubes require the most space of all considered display technologies, independent from their service method (front/rear)	**Good:** LCD are very shallow displays that can be wall mounted	**Best:** Available in both front service and rear service with minimum footprint

We’re Here to Help You !

Leyard Europe is the European branch of Leyard Optoelectronics, a global leader in the design, production, distribution, and service of digital displays, video walls, and visualization products worldwide.

From Europe - for Europe

Leyard Europe is much more than a mere distributor. With our own production facilities in Presov (Slovakia) and Reutlingen (Germany), we are able to offer customers in our region products “Made in Europe”.

In addition to Leyard’s LED products, the portfolio of Leyard Europe also includes LCD screens, DLP rear-projection cubes, controllers and wall management software from our subsidiaries Planar and eyevis.

Close to the Customer

Our professional visualization solutions are distributed through a wide network of sales offices in Europe. Through our decentralised service organisation, we guarantee local, prompt deployment of our technicians for installation, customer service or repairs.

Leyard Europe Offices Reutlingen, Germany

Leyard Europe Offices & Factory Presov, Slovakia

Benefit from Local Proximity

- Local production ensure short lead times and direct access to the factory
- Simple logistics and shipment of goods to installation site, no complex handling
- Factory Assessment Tests can be realized at our facilities in Presov or Reutlingen
- Local service and repair centres in several countries within Europe
- European Customer Service team at your disposal
- Product trainings at our locations through-out Europe, on customer‘s site, and remote training sessions
- Access to local application engineers and design services

Leyard Europe in Numbers

- Established in 2013
- Headquarters in Reutlingen (Germany) and Presov (Slovakia)
- 5 European group companies (Leyard Europe s.r.o., eyevis GmbH, Planar SAS, Planar SpA, Teracue GmbH)
- 2 factories in Presov (Slovakia) & Reutlingen (Germany)
- 190 employees
- 5 Service and Repair Centers in Europe
- 5 Demo Rooms in Europe
- Establishment of own SMT lines for LED display production in October 2020

Control Room Adoption Kit

In order to help our control room customers figuring out the benefits of Fine Pitch LED technology, Leyard Europe is offering a demonstration kit made of a 54'' P1.2 LED screen as a loan.

This kit will allow our partners to ensure that the LED technology meets their customer's control room requirements. By setting the demo kit next to its video wall, the end customer can validate the following aspects, among others:

- Picture quality and comfort of vision
- Required Pixel Pitch according to the operators distance, type of displayed images, and control room layout

Register below to get a "Control Room adoption kit"

Surname, Name

Company Name

Contact Email

Contact Phone

Shipping Address

Requested Date of Arrival

Expected Date of Return

SEND REQUEST

www.leyardeurope.eu

Leyard Europe
+421-907-775-941
sales.emea@leyardgroup.com