

# All I have is the light in my eyes...

# Qlab

LABORATORY OF LIGHT

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Qlab Laboratory of Light is not just another lighting design company. It is a group of enthusiasts fixated on light – a team made up of passionate people: architects, engineers, and technicians. Combining their diverse interests, they are distinguished by their interdisciplinary approach to design, not only for artificial light, but also for all aspects of light in our lives: daylight, its integration and use. Recognised as our Most Innovative Architectural Lighting Design Practice 2024, we learn more.

With many years of experience, creativity and unconventional approach to design have resulted in many interesting projects for Qlab Laboratory of Light, both spectacular and more intimate. These are places where light plays the leading role, but also places where it is only a backdrop to human activity. This is confirmed by prestigious awards such as the IALD Award of Excellence, the IES Award of Merit, or the d'Arc Award.

But what its people are most excited about these days is the use of daylight in interior lighting and its integration with artificial light. Why is this so? Let us try to explain.

## Daylight

Sunlight is the main source of energy on Earth and its effects on living organisms over many millions of years have made it an essential component of the environment for human functioning. The beneficial effects of daylight are primarily related to health, including the regulation of the biological clock, but also to wellbeing, comfort, and productivity. Ensuring constant, good access to daylight is one of the most important criteria when evaluating the design of a modern office or educational building.

## Protection from the sun

Bringing plenty of daylight into rooms is not a difficult challenge – large, glazed areas, sometimes covering an entire wall, take care of this. What makes this aspect of the project challenging for the designer is the need to protect the occupants from excessive sunlight. A common solution is to install full-surface shading in the windows – blinds or shutters – but while these protect people from the sun, they



Protection from excessive sunlight and comfortable lighting conditions with QLS

completely deprive them of daylight. The typical situation boils down to people being completely cut off from daylight and spending most of their time in artificial light, which is often completely unsuitable for their specific work.

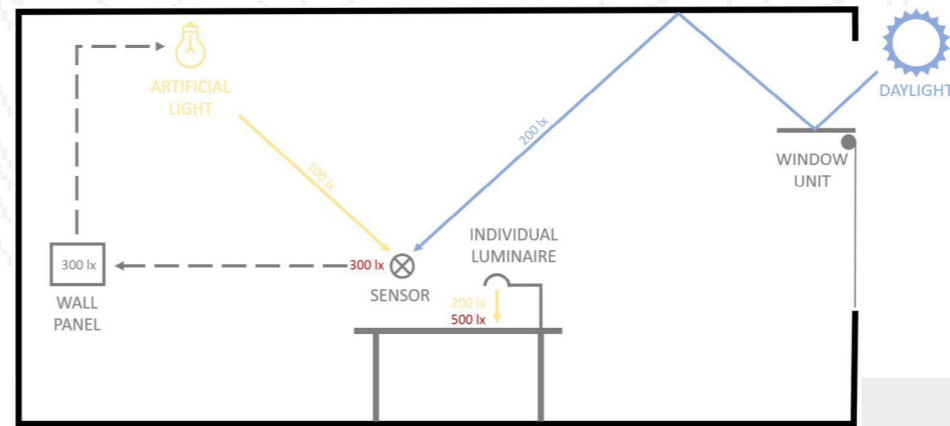
## QLS - Qlab Lighting System

Qlab Lighting System solves the problem of access to daylight and protection from the sun and ensures the integration of natural and artificial light in office and educational spaces. The system provides uninterrupted access to daylight thanks to the Daylight Shelf, a lightweight system installed in the window area that redirects sunlight towards the ceiling, where it is diffused and transmitted into the room as an even glow. Any lack of daylight is supplemented by suitably designed artificial lighting, the output of which is automatically regulated by light sensors.

Light shelves installed in south-, east-, or west-facing rooms provide an enormous amount of light, ensuring illuminance levels of 300-2,000 lux on work surfaces for most of the year. The installation of a light shelf alone saves 50-65% of the electricity used for lighting. By using the QLS system in the building, savings of up to 90% of the electricity needed for lighting purposes can be achieved, compared to standard solutions and operation between 8:00 and 18:00.

The sources of these savings are:

- Efficient use of daylight through the use of



QLS operating principle

- a light shelf
- Precise control of illuminance at user eye level
- Control of luminaire output to ensure that only as much artificial light as necessary is produced
- Ability to set lower overall illuminance levels through the use of desk lamps that provide additional light only when needed
- Zoning of rooms to allow different illuminance levels to be predefined for different zones
- Use of occupancy sensors to dim or switch off lighting when not needed

A key component of the lighting control system is a network of light intensity sensors located at workstations at eye level. The sensors, mounted on monitors, desk lamps, or partitions, detect the light reaching them, i.e. mixed daylight

and general artificial lighting (without desk lamps). Where it is not possible to install sensors on fixed luminaires, it is possible to use small, freestanding table-top illuminance sensors, which are also useful in meeting rooms, on reception desks, and more.

The heart of the lighting integration system is the controller and wall panel. The panel allows the user to define the expected level of illuminance in a particular zone, which is continuously maintained by the controller running in the background, controlling the operation of the general lighting luminaires.

Changes in luminaire output are made slowly so as not to distract users, who can concentrate on working in very stable, comfortable lighting conditions. The system

is complemented by presence detectors that react to prolonged absence by dimming and then switching off the lighting.  
**Environmental and social responsibility**

Qlab Laboratory of Light's responsibility to the planet and future generations requires concrete action. The QLS system reduces the electricity required for office lighting by 70-90%. All major components of the system are made of materials that can be easily and repeatedly recycled and reused.

QLS contributes to improving the working conditions and social aspects of the company. The system improves the comfort and wellbeing of employees by allowing them to work in daylight and, when daylight is scarce, to adjust the lighting conditions to their individual preferences. This translates into increased satisfaction and improved team wellbeing. Studies show that optimal lighting through QLS helps to reduce stress and fatigue, resulting in increased productivity and creativity.

The system simplifies the management of lighting within an organisation through central control and programming, allowing lighting scenarios to be tailored to suit needs and work schedules. The ability to monitor energy consumption and system performance enables better management and informed decisions regarding building energy efficiency. Increased productivity through optimal lighting conditions can contribute to better work organisation and team performance. This is all thanks to the intelligent use of daylight and its integration into the integrated QLS system.



Daylighted office interior using QLS



QLS in action - ARUP office