



PUBLIC UTILITY

# Good lighting in health care

Patients expect the best care. Our role is to provide them with the best and state-of-the-art lighting.

LED lighting dedicated to health care facilities

# Good lighting makes everyone feel better

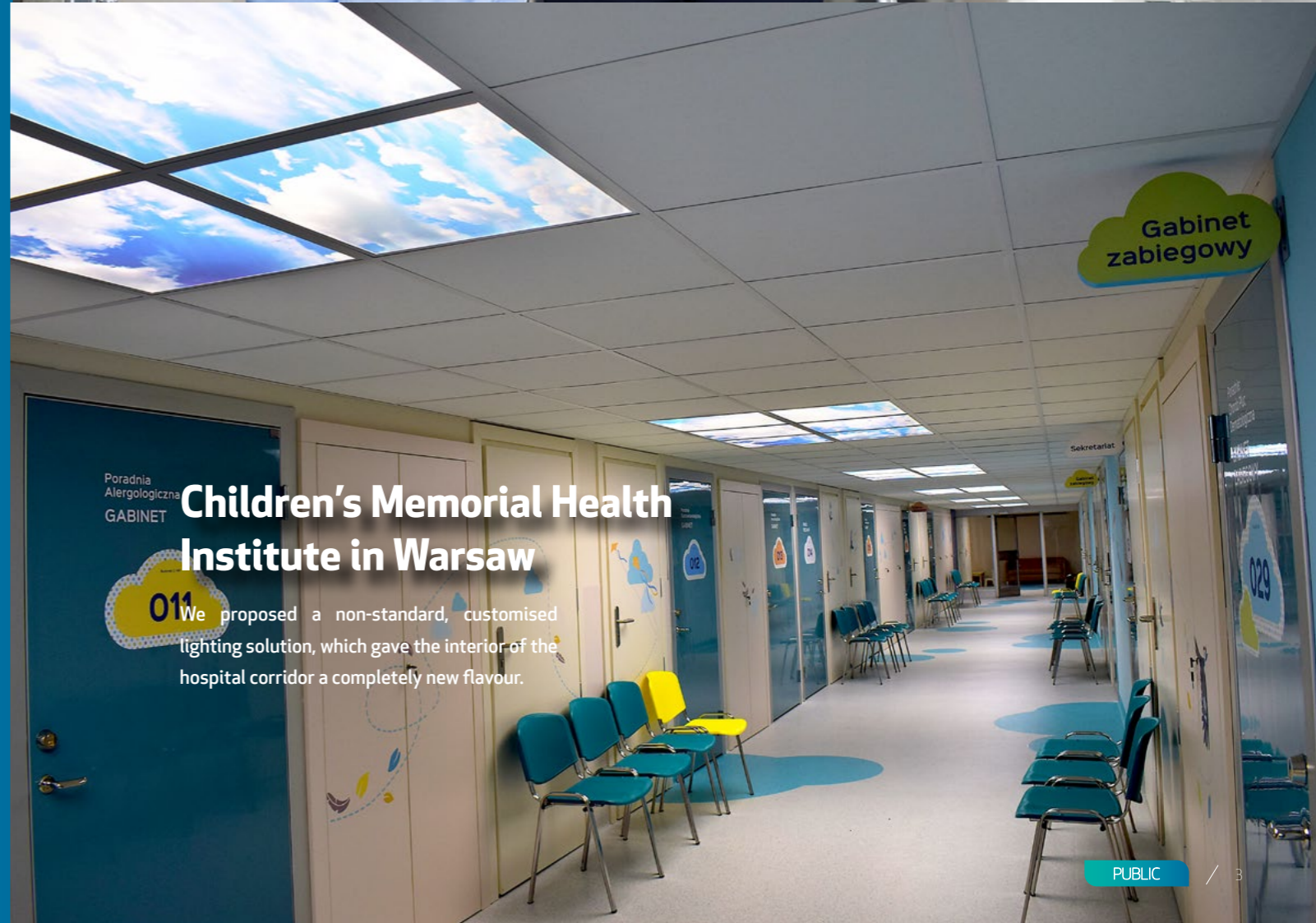


The interior climate and atmosphere depends on many factors. **One of the most important is lighting, which can literally “transform” a room.** The colour of the light and the size of the stream allows you to create an atmosphere of cosiness or austerity. It is the light that shapes the interior and affects our well-being.

Patients tend to choose a health care facility which will provide them with the best care. **We provide the best state-of-the-art lighting** which will increase work efficiency of medical staff and create an atmosphere conducive to patient recovery.

#### Choosing LED technology:

- increases work efficiency of medical staff,
- bolsters the well-being and recovery of patients in hospitals,
- helps the staff stay focused and increases accuracy and precision in laboratories,
- increases the body's efficiency and effectiveness of exercises in rehabilitation rooms,
- creates the right atmosphere in sanatoriums,
- ensures an adequate level of discretion and peace in hospices,
- supports peace and a homely atmosphere in retirement homes.



## Children's Memorial Health Institute in Warsaw

011 We proposed a non-standard, customised lighting solution, which gave the interior of the hospital corridor a completely new flavour.

# LED lighting is better!

LED technology provides modern and very economical solutions. This is not only related to several times lower consumption of energy but also to the life span of this kind of luminaires.



## FINANCIAL SAVINGS

The several times smaller electricity consumption is a guarantee of lower energy bills.



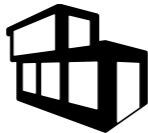
## PERFORMANCE AND QUALITY

A guarantee of excellent quality lighting and luminous flux that will use only a fraction of electric energy.



## DURABILITY, LONG LIFE SPAN

LED long life span means no costs of maintenance and replacing light sources.



## STATE-OF-THE-ART DESIGN

Well-matched lighting will give new and old objects a finishing touch. It is a future investment.



## ECOLOGY AND ENVIRONMENT

Less frequent replacement of luminaires significantly reduces the accumulation of electro waste. LED lighting reduces CO<sub>2</sub> consumption.



## LIGHTING CONTROL

DALI, Tunable White, ActiLume. A control system that will help you adjust the lighting to your needs.



## LIGHT SCENES

Attractive lighting effects will create the right atmosphere.



## LIGHTING COMFORT

LED luminaires provide pleasant, soft and friendly lighting without the so-called "glare" effect.



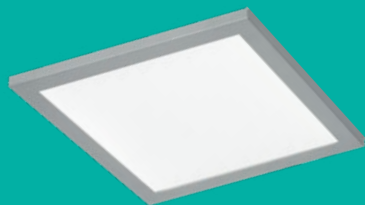


# The quality of light for elderly people

Professionally matched lighting helps the elderly lead an autonomous life.

Elderly people most often suffer from chronic diseases that penetrate each other, which results in many ailments that reduce the comfort of life. With age, sight, 3D perception drastically deteriorate and glare sensitivity increases. Freedom of movement is also more limited. Therefore, when designing our lighting solutions, we pay attention to **adjusting the quality of light to older people's needs**, contributing to their comfort and safety.

## Dedicated products



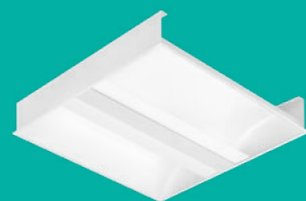
### MADERA 2 LED

A tasteful, surface-mounted luminaire offering high aesthetic values.



### COMPACT LED EVO

Economical 600 x 600 luminaire with high lighting parameters. Designed for surface mounting and mounting in modular ceilings.



### INDO PLX LED

A luminaire emitting comfortable and effective indirect light. Designed for mounting in modular ceilings.



### COMPACT LED 1200

Efficient, surface or flush-mounted light panel providing excellent soft and comfortable light.

# Patients' rooms

The attitude of patients plays a very important role in the process of medical treatment. A positive attitude, willingness to fight the disease, as well as a sense of security are elements that can substantially reduce the time needed for recovery.

Proper lighting can significantly affect patients' well-being. Properly matched colour and intensity of light will ensure a pleasant atmosphere and a feeling of being in a safe and cosy place.

Such a friendly environment has also a positive impact on the efficiency and working comfort of medical staff.

Modern control systems integrated with the lighting allow patients to control the colour, direction and intensity of light and adjust their parameters to individual needs. Simple and intuitive operation means that each patient is able to control the lighting on their own.

## In short:

- Providing patients with a friendly atmosphere and a sense of security can build up their desire to fight the disease and shorten the recovery process.
- A friendly atmosphere accompanied with patient's positive attitude affects the efficiency and working comfort of medical staff.
- Lighting control systems give patients the ability to independently choose certain lighting parameters.



# Support for doctors and medical staff

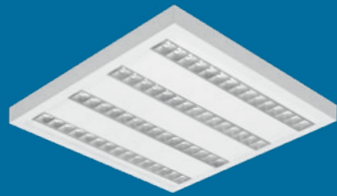
Ensuring optimal care in a health care facility depends on many different factors, including: human resources, knowledge, financing, medical equipment, infrastructure and operation algorithms.

**Modern technologies support and increase the quality of health care.** This is because their development contributes to the growing expectations of specialists and the demand for the better quality of medical equipment, as well as infrastructure, where lighting plays a substantial role. And this is not just about diagnostic imaging that requires an appropriate level of lighting – which cannot be dazzling and must accurately reproduce colours. Work specificity of doctors and

medical staff requires them to work for many hours and at night. **Irregular working hours**, particularly night shifts, interfere with the natural circadian rhythm and cause sleep disturbances. **According to the recommendations of medical communities**, the type of lighting should be as close as possible to natural light, so that it matches the human circadian rhythm. This maximally supports **concentration**, when it is the most desired.

## In short:

- It has been demonstrated that the imitation of changes in natural light throughout the day brings great physiological and psychological benefits.
- The importance of this aspect is due to the fact that stress and sleep or concentration disorders should not accompany people who take responsibility for other people's lives and health.



### LABO LED

Surface-mounted, flush-mounted luminaire IP65.  
Toughened glass, CRI(Ra) >90 (on request)



### LABO LED 1200

Surface-mounted, flush-mounted luminaire IP65.  
Toughened glass, CRI(Ra) >90 (on request)



### COMPACT LED EVO IP65

Surface-mounted, flush-mounted luminaire IP65.  
Competitive price-quality ratio.



### DL 220 LED EVO

Flush-mounted downlight IP65. Excellent lighting  
parameters and life span



# Operating and treatment rooms

Support for team's perfect visual adaptation by choosing the best lighting solution with 2000 lx illuminance. There is no place for half measures.

Dedicated products

Operating and treatment rooms must be evenly illuminated while maintaining high levels of illumination. In such cases it is recommended to use lighting solutions integrated with the DALI system. As a result, the power and height of the light beam can be adjusted to the actual needs. CRI (Ra) is an index that determines the degree of colour rendering. The higher its value, the more natural the colours. Ra > 90 provides comfort for the eyes and a greater ability to recognise colours and their shades. Luminaires with such a high index are used wherever you need the highest accuracy in colour reproduction. In operational conditions, this is an extremely important parameter that allows, for example, to distinguish blood colour.

Minimally invasive surgeries are now often performed with green light lasers that require low levels of illumination. Strongly dimmed light also makes it easier to assess the contrasts on monitors and ideally coacts with specialised shadowless lights.

A surgeon's eyes must constantly adapt to different levels of light, and this causes fatigue. Lighting concepts offering variable colour temperatures consistent with the characteristics of daylight improve concentration and well-being.

All luminaires dedicated to these applications are characterised by very good IP65 tightness and hold necessary certificates issued by the Polish National Institute of Public Health (PZH).





# Space and accessibility

Healthcare and nursing care are constantly confronted with the problem of limited availability of space. A well-thought-out, ergonomic infrastructure perfectly harmonises with the possibilities offered by LED technology.

## Why to choose LED technology:

- a wide range of luminaires available in various sizes
- possibility of integration with architecture and equipment
- individual control
- significantly limited maintenance (no need to replace light sources)

## Resulting from:

- spatial flexibility
- expandability options
- modern technology

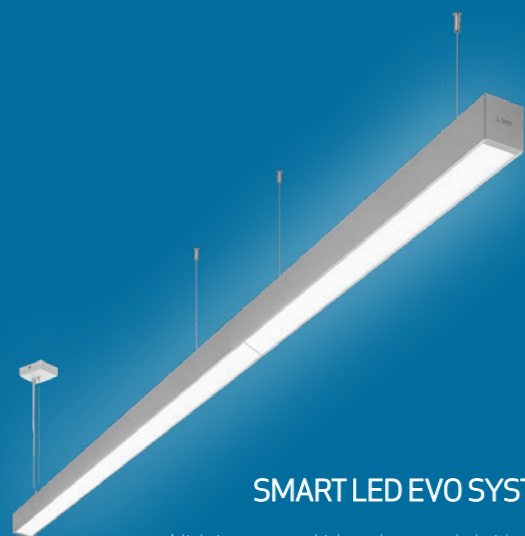


# With accuracy in mind

In the areas of research and diagnostics, the emphasis is primarily on precision. The added value incorporates the ability to control its intensity and colour.

Properly balanced lighting, its intensity and impeccable colour rendering are the basic requirements in laboratories and diagnostic rooms. High quality lighting solutions offered by Lena Lighting S.A. prevent the formation of distracting reflections and glare on the surface of equipment, monitors or apparatus for viewing x-ray images.

Lighting systems offering direct/indirect light distribution and the ability to control colour and intensity of light will be an excellent choice for such applications.



**SMART LED EVO SYSTEM**

A lighting system which can be expanded with advanced control systems (DALI, Tunable White, ActiLume). Version with indirect light distribution available.



# Corridors and communication areas



## In short:

As passageways are often internal rooms, devoid of daylight, they are areas where artificial light is used for the longest time. Therefore, the use of energy-saving solutions and lighting control systems will be very important here.

Well-designed lighting is a prerequisite for providing intuitive communication in buildings. Adequate luminance levels are required in common areas to provide users with proper orientation and comfort of movement.

Hospitals, retirement homes or nursing homes are naturally visited by patients with impaired vision. Elderly people are prone to the so-called glare effect, which in some circumstances may have negative consequences. The glow reduces dexterity in seeing people and objects, and can lead to disorientation. **This constitutes a strong argument for using high-quality lighting solutions.**

According to accepted standards, the required minimum illuminance in corridors and staircases is about 300 lux, with particular emphasis on light uniformity. Such uniformity makes potential dangerous places more visible. **This helps elderly or sick people move along shaded or dark areas.**

Our offer also includes certified emergency and evacuation lighting, which is necessary to maintain safety and meets the required fire protection standards.

## Dedicated products



**VESPO LED**

Ceiling- or wall-mounted, multi-purpose, energy-efficient batten.



**CAPELLA PLUS LED**

Bulkhead luminaires offering the possibility of expansion with a Wi-Fi amplifier, BT speaker, control system, etc.



**NECTRA LED IP44**

Flush-mounted downlight offering great parameters and a good price-quality ratio.



**DLN 220 LED**

Surface-mounted downlight with an interesting design and satisfying parameters.



**COMPACT LED EVO**

Surface-mounted, flush-mounted panel 600x600. Ideal for modular assemblies.



**ELEGANTE LED SYSTEM**

A complete solution for creating diverse, flush-mounted lighting lines.



# Reception areas and representative rooms

Make a good impression and unleash positive thinking, thus minimising the anxiety and tension associated with the disease.

Reception areas and representative rooms are showcase areas of each health care facility. They are often characterised by a larger surface area than other rooms and have a representative nature. Most of all, such areas must be functional – as it is the reception area where patients and guests usually direct their first steps to. Often there are a large



number of people awaiting admission. Luminaires designed for this space, in addition to excellent lighting parameters supporting the comfort of work, should bring in a positive and calming atmosphere. Large, eye-catching accent luminaires – giving focused spotlight will work great here.

## Dedicated products



### CORIA LED

A representative, suspended luminaire offered in 3 sizes. A version emitting light around its peripheries is also available.



### TRIPACT LED

Flush-mounted panel 600x600 with an unconventional, original diffuser design.



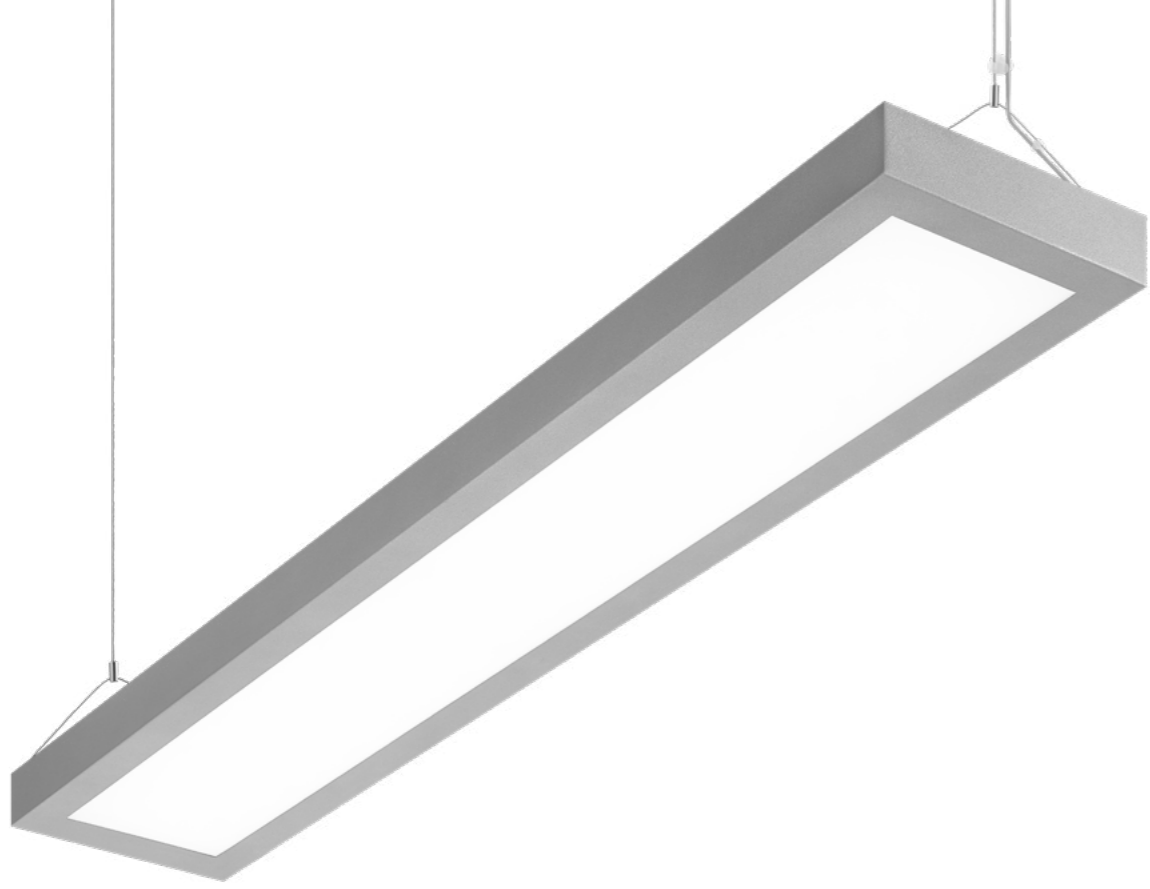
### PIATTO LED

Suspended or surface-mounted luminaires distinguished by an elegant design and pleasant lighting.



### LUNGO LED

Suspended or surface-mounted accent luminaire, providing powerful spotlight.



# Measurable savings

In the healthcare sector costs are important. With LED technology, lighting solutions can help you find the savings you need.

#### Why to choose LED technology:

- very high efficiency
- maintenance-free operation
- long life and reliability

#### Resulting from:

- energy savings and reduced CO<sub>2</sub> emissions
- low operating and maintenance costs
- using state-of-the-art technology and branded components



## Reduction of energy consumption

Hospitals and health care facilities capable to treat hundreds of patients have **high energy requirements associated with** heating, ventilation, air conditioning, medical equipment service and finally - lighting. The needs of patients and staff must be met around the clock. This means that older buildings, particularly their systems and supply technologies, **do not comply with today's standards anymore**. The result is high energy consumption, generating excessive and unnecessary costs. **Lighting has a significant impact on the overall energy balance**. The "inclusion" of savings begins with

the implementation of innovative lighting technologies. Modern light sources **reduce energy consumption, providing light of the highest quality**. Control and dimming options, presence detectors and daylight control systems significantly facilitate achieving this goal. Light scenes precisely tailored to the needs of patients, staff or guests help consume the energy in a precise way. **Innovative LED solutions are particularly recommended in clinics and health care facilities**. They are many times more efficient and durable than standard lighting.

# Tunable White

## Light adjusted to your rhythm



### In short:

- Appropriate lighting helps synchronise biological rhythms and works in harmony with them.
- Colour temperature and light intensity can imitate natural daylight during the day.
- Human natural environment is the perfect model for making the correct choice of lighting.

TUNABLE  
WHITE

Tunable White is a technology that allows you to control the colour and luminous flux of a single or group of luminaires, reflecting the natural light whose colour and intensity changes over the day. Tunable White also allows the luminaire to adapt to current needs and activities, regardless of the time of day. You can control the lighting parameters from the touch panel or application; manually or via programmed scenes.

In addition to functional and emotional spheres, lighting has also a **non-visual, biological impact on people**. Light is perceived **subconsciously**, it feeds balanced biological rhythms. Natural light in health care facilities provides a sense of freedom and **supports** patient's subsequent recovery **and health**. In hospitals and health care facilities, however, there is often no access to daylight. Therefore, biological rhythms are quickly becoming out of balance, which has a negative impact on well-being. This applies particularly to elderly and ill people, who show the need for greater absorption of light during the day. When it is too low, they may experience insomnia at night.

**Due to the development of technology**, we are able to choose the brightness and colour of lighting, as well as other parameters that affect our mood, ability to concentrate and general well-being. We can choose the type of lighting, so that it is as **close as possible to natural light** and adjusted to the human circadian rhythm. This is also of great importance for the medical staff, especially in the context of working at night.

Human biorhythms are not adapted to **working night shifts**. It is the time, when the pulse rate and body temperature automatically decrease. In addition, irregular working hours disturb the natural body rhythm and cause sleep disorders. The right lighting helps adjust it. High light intensity inhibits the production of melatonin and ensures alertness not only when at a night shift.



# External lighting, utility and sanitary rooms

Health care facilities consist of many rooms and workplaces intended for various purposes and requiring different types of lighting. However, the area of a hospital or a clinic starts... at the parking lot!

So, in order that the day does not start with a nervous search for a place to park your car safely, without the anxious feeling that the next 10 minutes spent on going around the building may result in being late for a surgery or a doctor's appointment, and so that drivers who are often nervous about a sudden illness attack and hurry for help, did not cause collisions – **it is worth thinking about the parking lot and design it so that it is not a source of stress.** In social and technical rooms such as bathrooms, kitchens or server rooms, it is very important to make use of practical solutions that save energy. Durable

lamps, resistant to harsh conditions such as increased humidity, larger amounts of dust or increased ambient temperature will work here well. Due to the periodic nature of their use, the best lighting solution here will be luminaires equipped with **motion sensors or presence detectors**. Such solutions enable the light to be automatically turned on and off depending on room occupancy. This way, electric energy will be consumed only in justified cases. When designing this type of rooms, it is also worth paying attention to luminaires offering quick and easy assembly options.

## Dedicated products



**COMPACT LED EVO N 1200**

Surface or flush-mounted light panel. Excellent, soft light and efficiency.



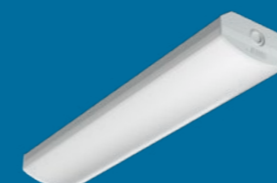
**DIONE PLUS LED**

Surface mounted bulkhead luminaire IP65 expandable with additional functionalities.



**MIMO 2 LED**

Light and functional batten IP66. Very quick assembly, great parameters, 4.5 cm wide.



**VESPO LED**

Ceiling- or wall-mounted, multi-purpose, energy-efficient batten.



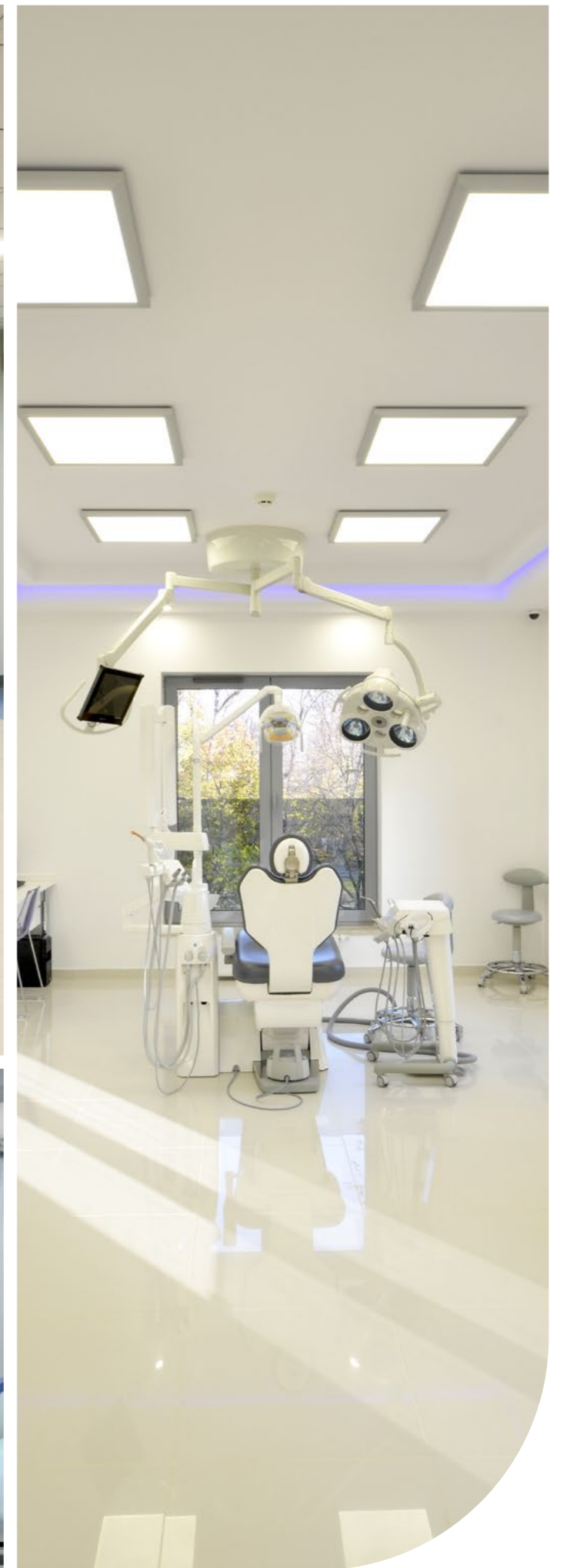
**QUEST PLUS LED**

Modern, robust floodlight offering versatile possibilities of use.



**TIARA LED**

Road and car park luminaire offering excellent lighting parameters.



# Architecture as an ambassador

A consistent and well-designed illumination of the building's façade helps the hospital or the health care facility accentuate values they want to convey.

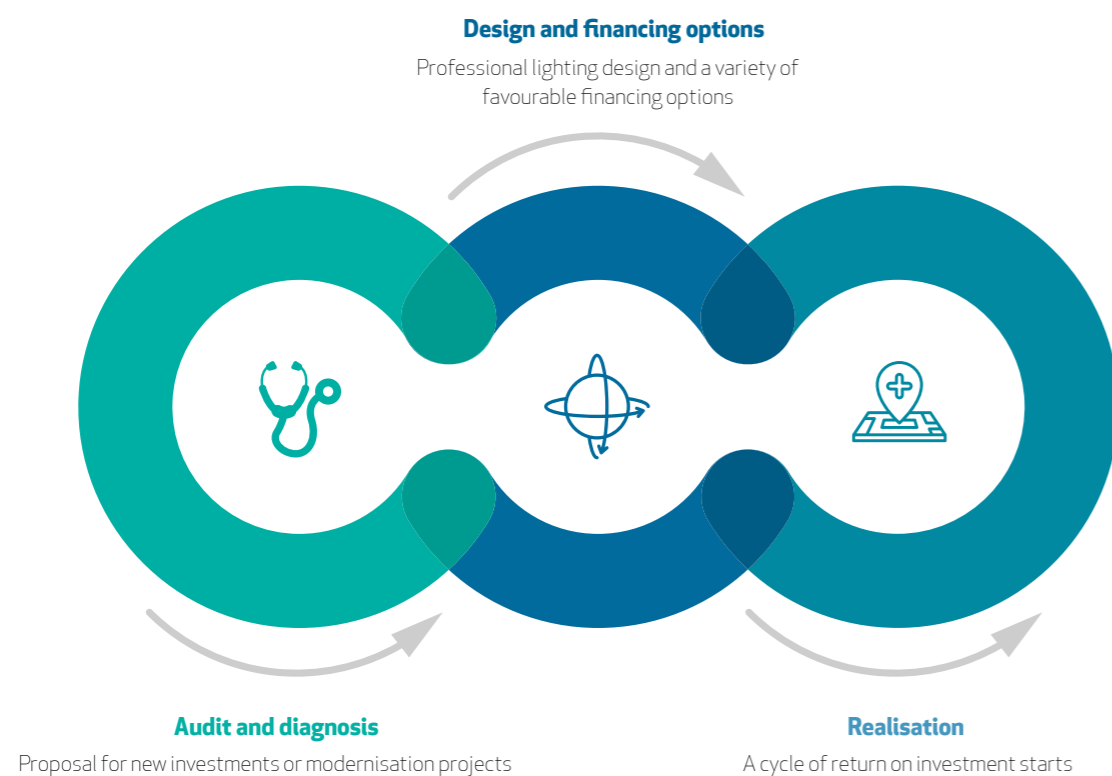
Architecture plays the roles of an ambassador. Impressions exerted on patients and visitors are also shaped by building the first impression. Light emphasises architecture with well-chosen, modern and aesthetic luminaires. With proper lighting the object can obtain a new look.



# Lighting design dedicated for health care facilities

## Important stages of the process

- Lighting design begins at the stage of spatial planning – along with the planning of the distribution of beds, workstations, monitors and medical equipment.
- Lighting is an integral component of the room. "Light on demand" is the watchword of modern lighting solutions.
- Lighting should be adaptable to specific visual tasks, and control with the use of sensors should improve its functionality.
- We not only support you in choosing the right lighting concept and products, but we can also make visualisations and free-of-charge lighting designs using specialised computer software.
- Our lighting design ensures 100% compliance with the lighting standard PN-EN 12464-1



Engineers working in our design office will prepare a project that meets all standards and guarantees comfort of use. The client receives free-of-charge consultancy and project documentation, which guarantee high quality. The comprehensive design often includes a lighting control system, ensuring the greatest possible energy savings during use.



# We are responsible for the highest quality of lighting


It is worth choosing products supplied by renowned manufacturers, who employ highly-skilled engineering staff with the long-time experience in designing lighting systems and have laboratories with equipment that enables the constant quality control. Thanks to the professional R&D facilities, the state-of-the-art laboratory operated by specialists and with the constantly controlled production process, Lena Lighting offers full 5-year warranty for each QUEST PLUS LED fitting it manufactures.



POLISH PRODUCTION  
POLISH TECHNOLOGY

# We are here for You

In order to get more detailed information about distribution, products and prices please contact our employees responsible for Your area.

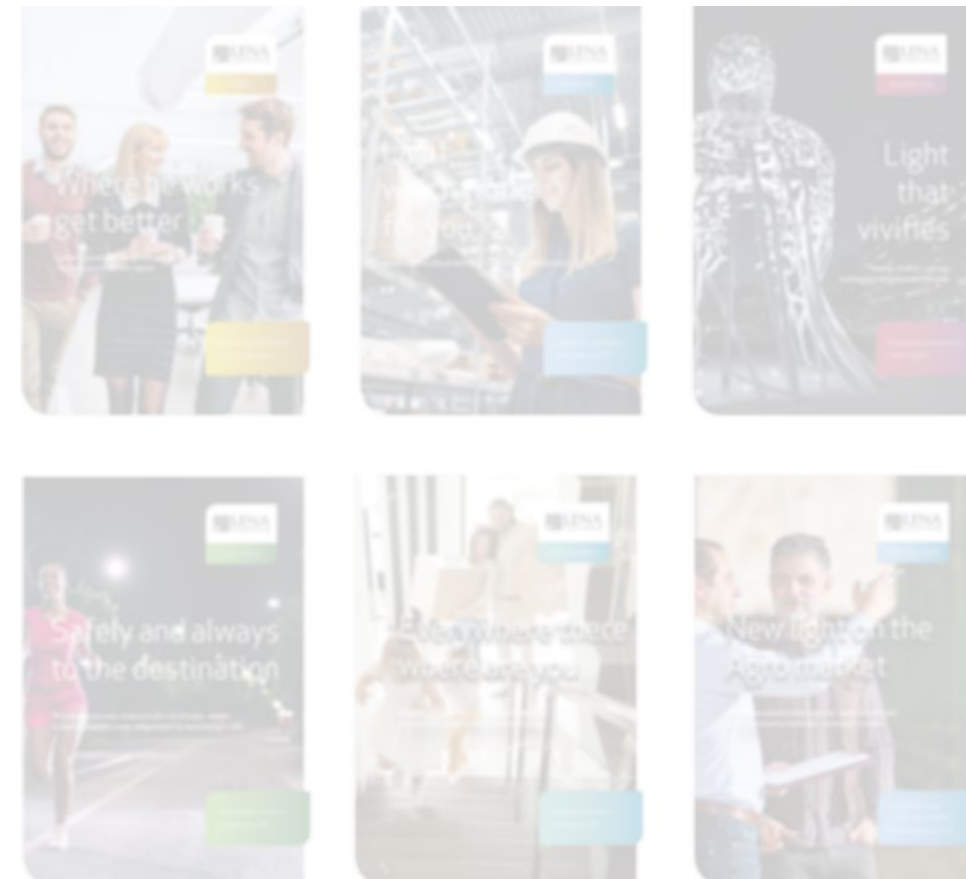
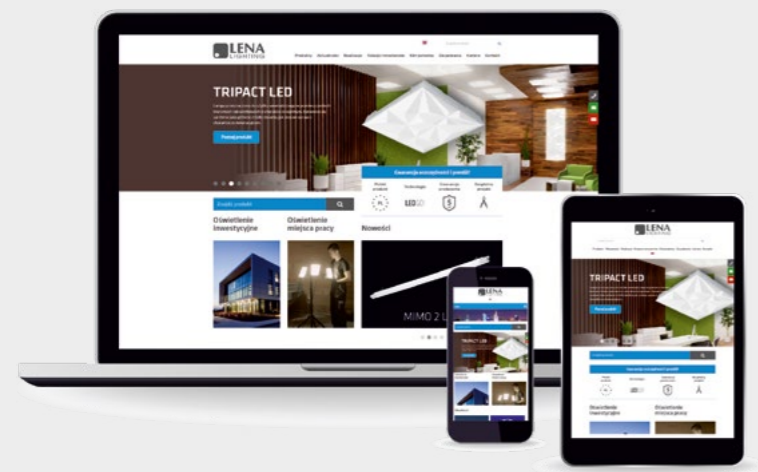
 [www.lenalighting.pl/en/contact/sales-department](http://www.lenalighting.pl/en/contact/sales-department)



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# Much more to discover...

Due to the limited number of pages, we could not include in this release all the information we would like to share with you. That is why a number of booklets dedicated to various applications has been created to present the offer versatility. We encourage you to take full advantage of them. Do you need personalized information? Do not hesitate to contact us. You are also welcome to visit our website [www.lenalighting.pl/en](http://www.lenalighting.pl/en)



## Coming soon...

We are working on a set of folders presenting the complete offer of our LED lighting divided into main segments: OFFICE, INDUSTRY, ARCHITECTURE, STREETS AND ROADS, REAL ESTATE and PUBLIC USE. We will distinguish them by color division to make the message more consistent and give a new expression to our offer.

[www.lenalighting.pl/en](http://www.lenalighting.pl/en)

 [bit.ly/2YIQUeI](https://bit.ly/2YIQUeI)

 [linkedin.com/company/lena-lighting](https://linkedin.com/company/lena-lighting)

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