Schréder
Experts in lightability™

FOCUS

Bicycle paths

Lighting solutions to make the difference

Content

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Sales Director
Uitrusting Schréder

Changing the way we commute, live, work and play

As traffic keeps increasing, the freedom we traditionally associate with cars is no longer a reality.

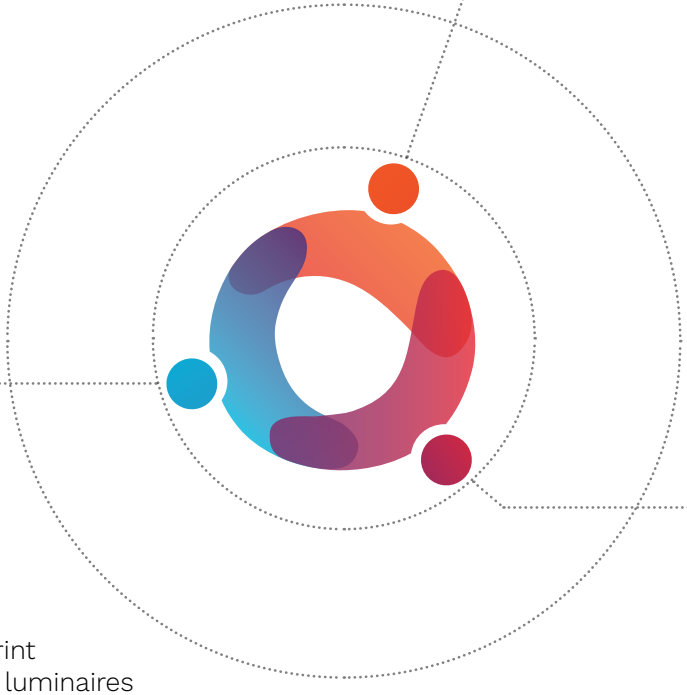
Cycling has become more efficient than driving. As a regular cyclist, I experience it a lot, even for medium distances. But the benefits are not only related to the time saved. When I cycle to work, I am getting my daily exercise, I feel more relaxed and I'm contributing directly to the reduction of CO_2 emissions. At Schréder, we are engaged in acting responsibly for a sustainable future.

As more and more people are using cycling infrastructure, it is definitely worth investing in quality bike paths! With our knowledge and expertise, we can help your city create the best conditions for cycling, with the highest efficiency and the lowest impact on the ecosystem.

Together for our Future

Schréder has developed a cohesive, company-wide sustainability strategy called “Together for our Future”. This commitment is structured around three axes encompassing the relevant prioritised UN Sustainable Development Goals (SDG).

Sustainability is embedded into our strategy, structure, processes and culture. Working this way is the only way forward for truly positive and lasting benefits. Promoting active mobility with the best lighting solutions on the market is a way to create sustainable value for communities.



FOR OUR PEOPLE

Being responsible for our people by developing human growth through diversity and respect for human rights

Focus areas:
- Gender diversity
- Human rights

FOR OUR PLANET

Being responsible for our planet by reducing our own and our customers’ environmental impact

Focus areas:
- Company carbon footprint
- Energy efficiency of our luminaires
- Circular economy

FOR OUR COMMUNITY

Being responsible for our community by having a resolutely positive impact on society through our solutions

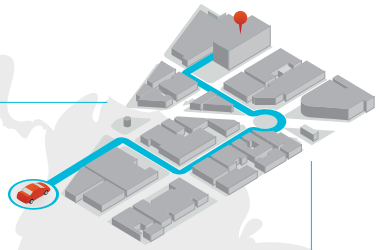
Focus areas:
- Lighting with a positive social impact
- Respect for fauna and flora ecosystems

«Our role as market leader motivates us to take part in the global battle against climate change and contribute to respectful economic development. We help communities face their biggest challenges, making the world more sustainable.»

Werner de Wolf
CEO – Schréder

Reinventing the wheel

Traffic congestion, poor air quality and the effects of climate change are all good reasons to promote active mobility. If we look at the facts and figures, cycling can certainly be part of the solution.



-5 km

50% of all private car journeys in cities are under 5 kilometres (European Union)[1].

1

73%

of European think that bicycles should benefit from preferential treatment compared with cars[1].

3

2

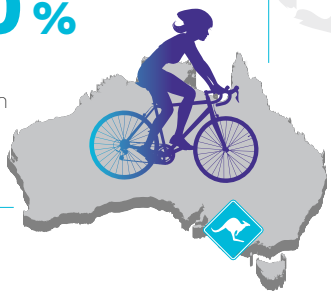
-55%

reduction in greenhouse gas emissions is the objective set by the EU Climate Target Plan for 2030.

4

+270%

increase in bike path use in some Australian cities with the pandemic[3].



5

2.2

new bicycles are sold for every car in Europe. More than 22 million bikes are sold every year in the EU[2].

6

£10-20

is the investment in cycling infrastructure per year and per capita in some cities in the UK[4].

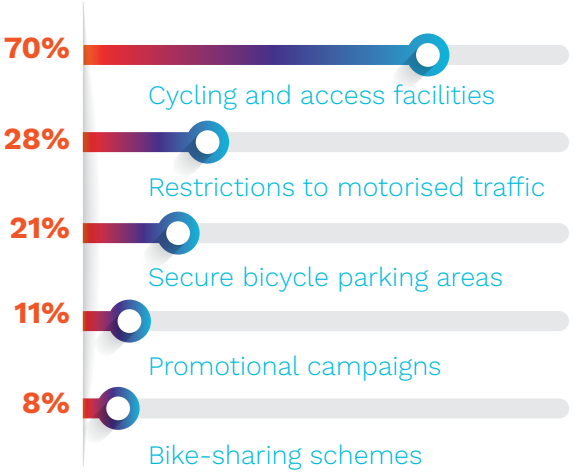
(1) «Cycling: the way ahead for towns and cities.» - European Community.
(2) www.statista.com
(3) https://www.theguardian.com/world/2020/may/26/call-to-fast-track-bike-lanes-to-boost-jobs-and-take-advantage-of-lockdown-induced-bicycle-sales
(4) «Planning for Cycling.» - Rob Gallagher and John Parkin.

A great **bike path?**

Cyclists consider various parameters to rate the infrastructure they use.

- Quality of bicycle path surfaces
- Lighting, especially in difficult zones such as crossroads
- Clear and visible signage
- Presence of traffic lights or small roundabouts
- Sense of safety (objective and subjective)

Incentives to **cycle in cities**



What do **the rules** say?

Lighting bicycle paths is essential to provide a secure route, to ensure safety (subjective and objective) for cyclists and to guide them on their way. It also increases comfort.

The European Committee for Standardization (CEN) has established a series of standards for public lighting (**EN 13201-x Road Lighting**). For cycling facilities, these standards provide recommendations for the level of illumination according to the layout of the road and the (relative) positioning of the bicycle paths, the presence or absence of speed-reducing devices, the risk of aggression and the possible need for facial recognition.

In general, a **value of between 5 and 10 lux** is recommended for bicycle paths.

The lighting must enable cyclists to **follow their route safely**, regardless of the time and the season, otherwise the bicycle path risks being under-used.

The lighting must also allow cyclists to easily **see obstacles in their path and to understand the marking** on the ground. This is known as horizontal illuminance. It measures the amount of light hitting the surface in lux.

The lighting should also **make all vertical objects clearly visible.** It is important for cyclists to be able to read signposts, to identify nearby buildings and to see cyclists or pedestrian coming towards them. It is also essential that motorists can see them, if the bicycle path is beside or near a road. The illumination of these vertical objects (traffic signs, cyclist's shadow, etc.) provides what is known as vertical illuminance. It is measured 1.5m above the road.

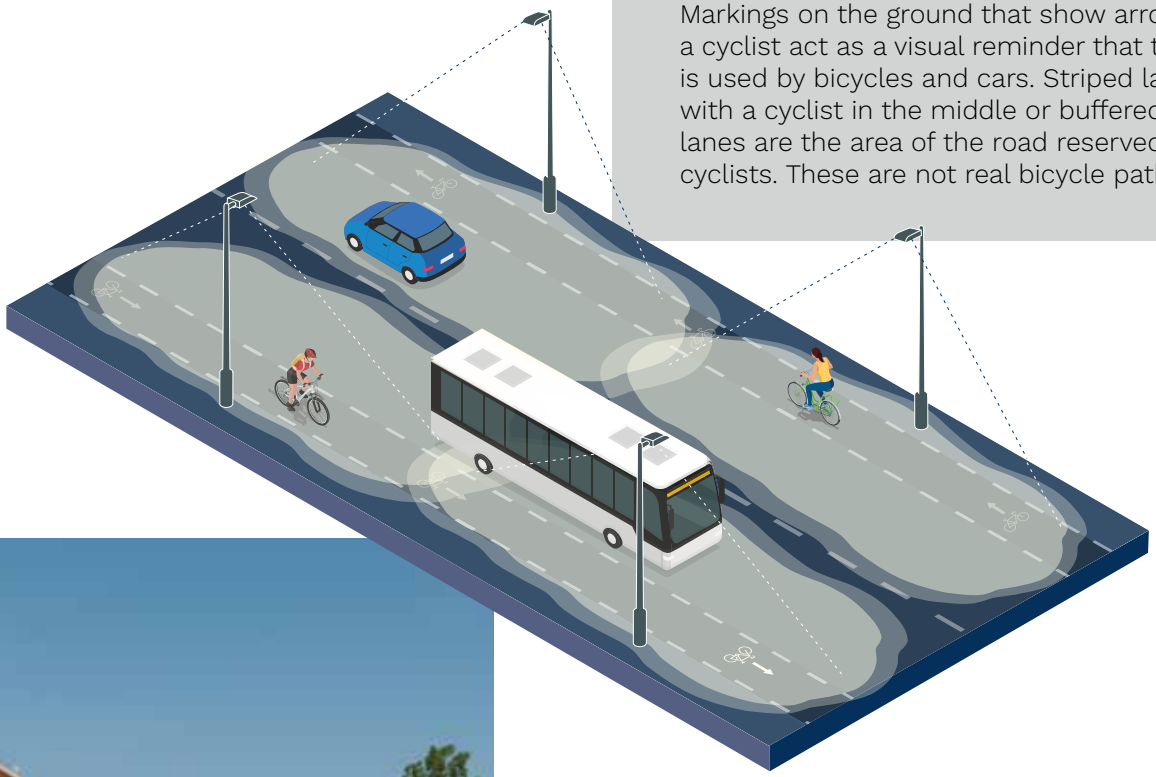
The level of illumination should be as uniform as possible and always prevent pools of darkness.

How to optimise the **various layouts**

Several types of bicycle path exist. All of them have their specificities and require dedicated lighting solutions.

Road-marked bicycle lanes

Markings on the ground that show arrows and a cyclist act as a visual reminder that the road is used by bicycles and cars. Striped lanes with a cyclist in the middle or buffered bike lanes are the area of the road reserved for cyclists. These are not real bicycle paths.

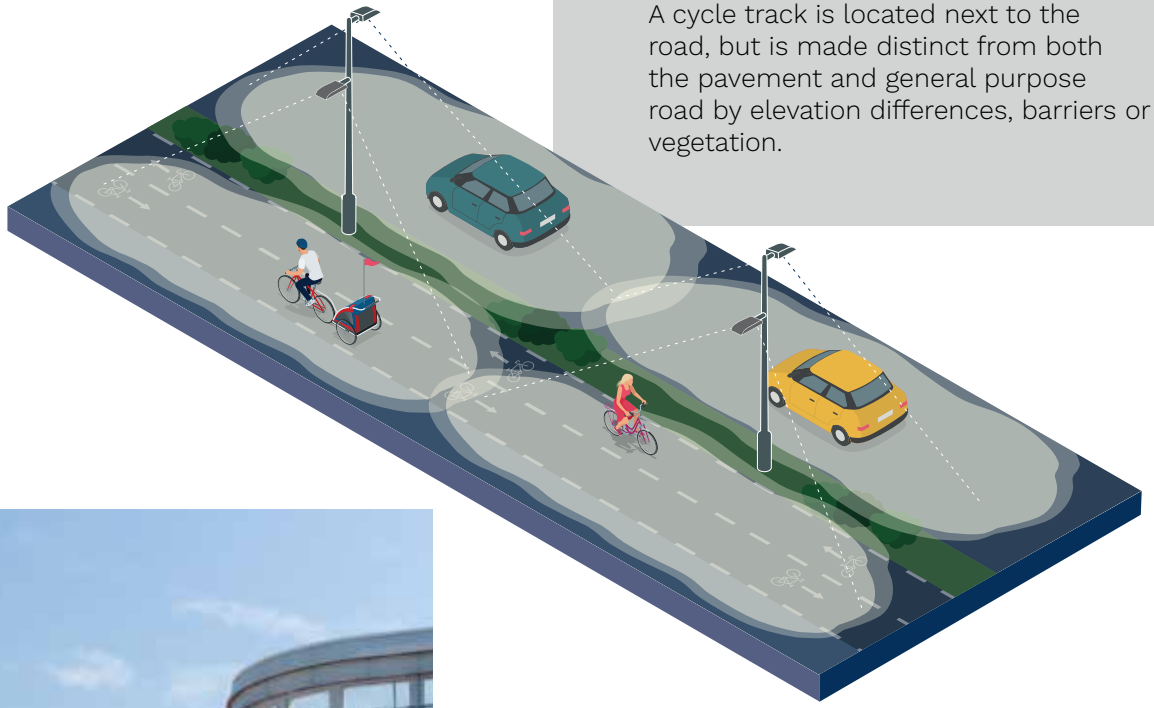


How do we light them?

In this case, the bicycle lanes are part of the road. We propose luminaires with the right light distribution to cover the entire surface, including the lanes. In full compliance with CEN 13201-1, we select the light distribution that respects class -1 of the main road for the bicycle lane.

Cycle tracks

A cycle track is located next to the road, but is made distinct from both the pavement and general purpose road by elevation differences, barriers or vegetation.



How do we light them?

We recommend using poles with luminaires mounted on two types of brackets: one fixed at 6 to 10 metres for the main road and another, at the back of the pole and at a lower height, for the cycle track. The rear bracket allows the luminaire lighting the cycle track to be offset to use extensive light distribution, matching the spacing of the poles for the road lighting.

Bicycle paths

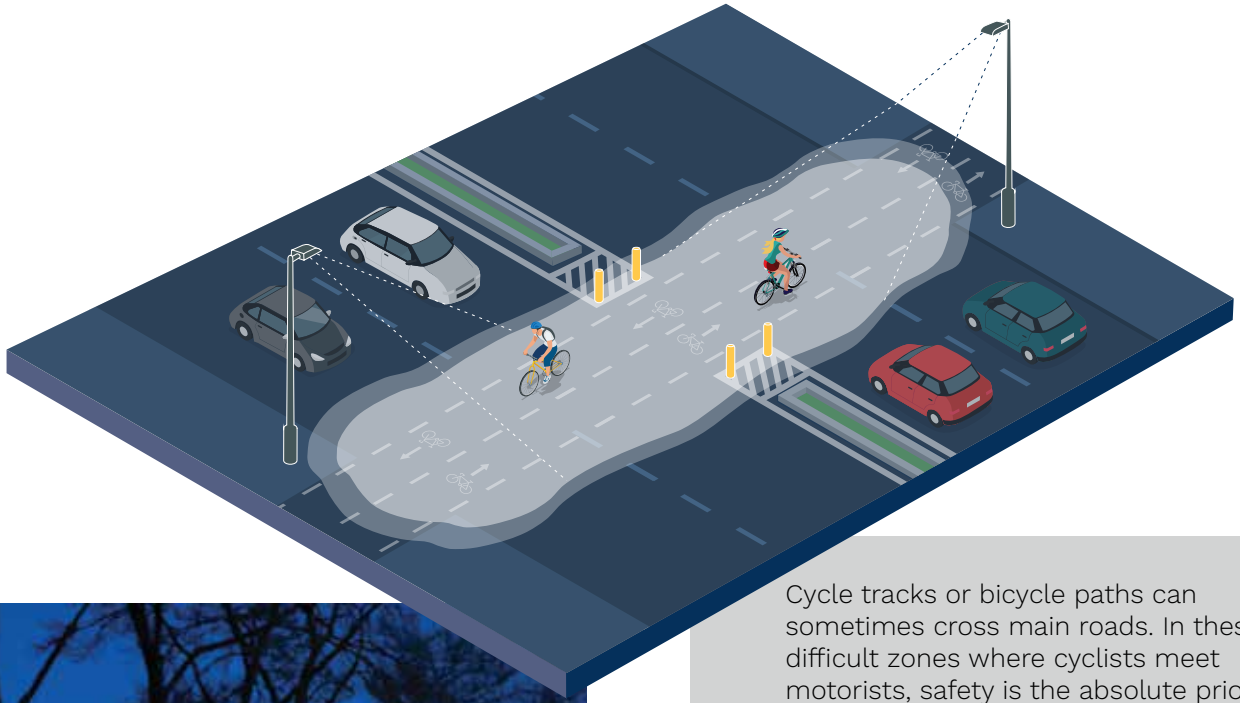
A bicycle path is a bikeway separated from motorised traffic. It is dedicated to cycling or shared with pedestrians or other non-motorised users.

How do we light them?

The lighting columns should not impact the width of the path. We use our highly efficient luminaires, dedicated to low-height (4 to 6.3m) installations with a spacing of 6 to 8xh to respect the P4 class, enabling cyclists to see 30 to 40m ahead. Depending on the environment, we use light distributions that can overflow up to 1.5m on both sides of the bike path.

Cycling infrastructure

Road crossings



Cycle tracks or bicycle paths can sometimes cross main roads. In these difficult zones where cyclists meet motorists, safety is the absolute priority. Barriers, marking and lighting protect the most vulnerable users.

How do we light them?

At 50km/h, motorists have a narrow field of vision and need 28m to stop (13.5m at 30km/h). For these difficult zones, we use the same specific lighting distributions as with pedestrian crossings to provide a high level of vertical luminance. We combine them with cool white LEDs to ensure the sharpest contrast that helps motorists to see cyclists crossing the road.

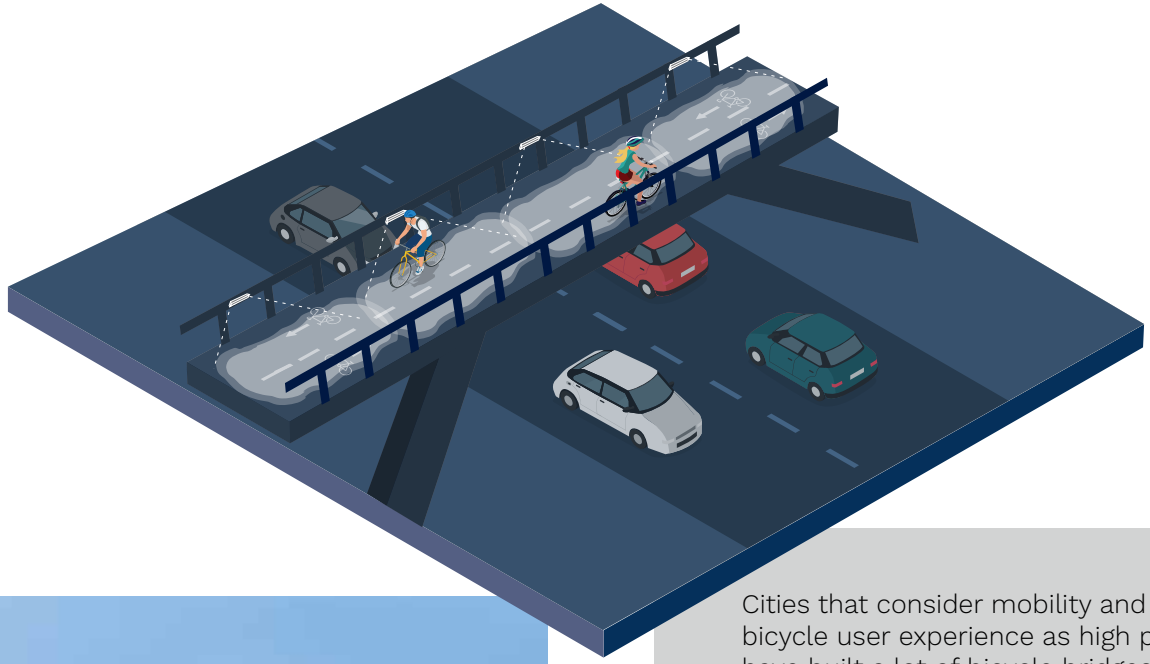
Underpasses

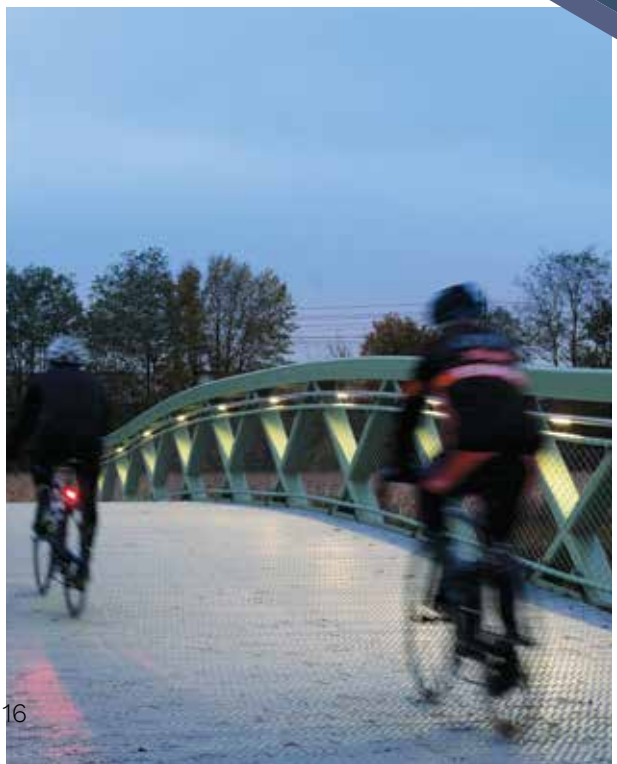
To avoid crossing roads, underpasses are often created. They provide shortcuts and enable cyclists to avoid motorised traffic.

How do we light them?

Cyclists should feel comfortable in these enclosed areas where they naturally perceive a higher risk of danger. We apply higher lighting levels and provide vandal- and waterproof linear lighting fixtures such as our MY1 LED or our SCULPLINE range. We can combine them with motion sensors to dim the lighting levels when the underpass is not being used.

Bridges





Cities that consider mobility and the bicycle user experience as high priorities have built a lot of bicycle bridges. Some of them have become really remarkable structures in the landscape.

How do we light them?

As the architectural aspect is crucial, we tend to integrate the lighting into the structure of the bridge. We can create custom handrail lighting systems to light the deck while we use our SCULP LED floodlight range to enhance the structure with coloured lighting schemes.

6 solutions that go the extra mile

1 Ensuring the utmost **safety**

Subjective safety is the feeling or perception of safety. However, there are objective criteria to define that a bike path is safe. It must have a **high level of uniformity** to prevent patches on the ground. Cyclists must be able to clearly see uneven surfaces and obstacles.

It should guide cyclists so that they can easily follow the markings. The right vertical illuminance level is key for **facial recognition or reading signs**. It also helps to see other cyclists coming from the opposite direction.

As e-bikes can go up to 45km/h (12,5m/s), it is essential that cyclists can **quickly spot hazards** such as unexpected bends, steep drops, barriers or intersections. Different colour temperatures can be used for difficult zones such as crossroads.

Schréder luminaires

With the TECEO S and IZYLUM 1 or 2, widely recognised by independent bodies, Schréder offers a large range of **lighting solutions optimised for bike paths**.

The combination of the right lumen package (from 600 to 15,000lm) and the right light distribution enables our application engineers to propose the best configurations to **meet the safety challenge**.

2 Providing **comfort** for all users

Performance cannot be compromised at the expense of comfort. As bike paths require luminaires to be installed at low mounting heights, it is crucial to **limit glare**. Not all solutions are able to provide the level of visual comfort end users expect.

Cyclists also want to clearly see their surroundings, be able to read signs and recognise other users. The quality of light plays an important role in **colour recognition**.

When it comes to providing the right light in the right place at the right time, **light-on-demand** can ensure that people benefit from the best conditions in a given environment. This is particularly true for bicycle paths where the activity at night can vary a lot.

TECEO S

Schréder luminaires

Schréder sets **high standards in terms of glare control** (G class) and colour rendering (CRI). TECEO S, for instance, respects the **G*4 class** to offer a high level of visual comfort. It also delivers a gentle, warm white light with a colour rendering index of 80, to show colours as they are during natural daylight, for a better experience.

As it can be equipped with an **optional integrated motion detection sensor** (PIR), TECEO S is ready to create intelligent lighting scenarios that maximise safety and comfort for cyclists.

3 Optimising the **resources**

Lighting accounts for a large part of a city's energy bill, yet with the right technology and the right partner, it can be considerably reduced.

The relevance of an investment has to be measured over time, considering the savings it provides in terms of **energy and maintenance costs over the years**.

Quality products offer high efficiency and high performance photometries that enable the spacing between the poles to be increased, reducing the number of lighting points per kilometre and **optimising the use of energy**.

The savings can be further extended with control features, including dimming and motion detection options.

Schréder luminaires

IZYLUM 2

Schréder prevents excessive lighting by providing the best solution to **ensure that only the necessary energy will be used**, taking into account the natural output depreciation over time (maintenance factor).

The IZYLUM 1 and IZYLUM 2 have been optimised for low-height applications such as bicycle path lighting. Ultra-compact, energy efficient (up to 172lm/W) and available with high performing light distributions, they offer **long term performance** (LED lifetime of 100,000h or 25 years) and optimise the total cost of ownership. With a very low power consumption, that can be reduced further by integrating sensors, IZYLUM provides a **cost-effective solution for any type of bicycle path**.

4 FutureProof and **vandal proof**

In public areas where there is little activity, vandalism might occur. This could be the case for bike paths in the suburbs or between two towns.

It is important to consider the **robustness of the lighting installation**. Bicycle infrastructure may need to be extended or adapted over time. It is worth investing in systems that can be **easily expanded and updated**.

Schréder solutions

Schréder's philosophy is to design and develop **FutureProof** products for circular economy. They can be upgraded at any time. With our wireless control systems, you can also easily extend an installation by adding new luminaires.

Our vandal-proof (IK 09) TECEO S and IZYLUM luminaires are built to last.

5 Preventing **bike theft**

With e-bikes becoming more and more popular, they are being targeted by thieves.

Bike theft is on the rise, matching the growing popularity of this alternative mode of transport.

Protected bicycle parks can help prevent these thefts.

SHUFFLE

Schréder solutions

SHUFFLE offers a unique solution for bicycle parks: while comfortable ambiance lighting creates attractive places, **state-of-the-art surveillance cameras**, with digital zoom or fully motorised control, keep an eye on bikes.

SHUFFLE **deters people with bad intentions** and provides a sense of security. It can also offer charging stations for e-bikes.

6 Preserving **wildlife** and the **environment**

In some areas, bat roosts can be present. Trees and hedgerows are natural environments for bats while rivers and canals are also important for foraging. **Certain species of bat are very sensitive to light**.

Installing inappropriate lighting can destroy feeding areas and prevent bats from moving through the landscape. Yet bats are not the only animals that need to be protected from light spill and uncontrolled lighting.

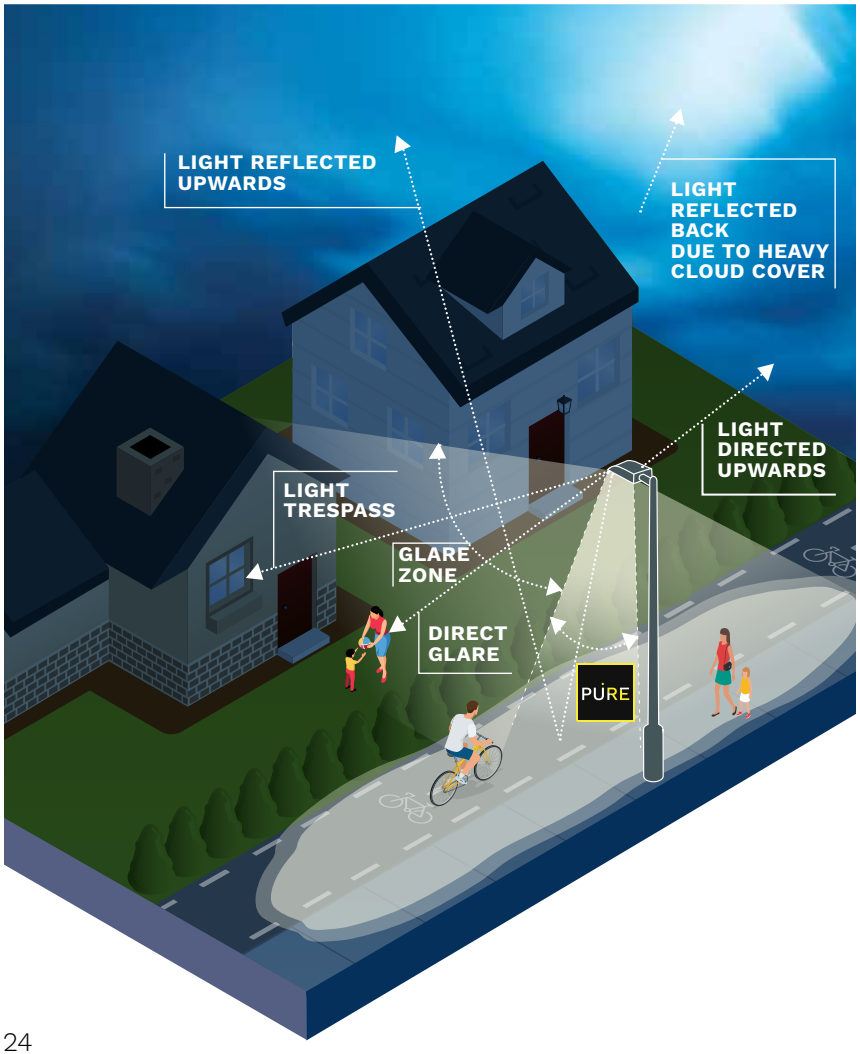
Fauna and flora can suffer from high light intensity, the colour spectrum (blue light) and excessive lighting over time. Only experts can minimise the disturbance to the different species of fish, insects and endangered animals.

Schréder solutions

The Schréder **PureNight photometry meets dark-sky specifications** (0% ULOR) and take advantage of new accessories (backlight control and glare limiter) to focus the light only on the bicycle path.

Schréder's **FlexiWhite solution** combines dimming and colour temperature changes according to fixed or on-demand scenarios with sensors for safe and environmentally-friendly lighting.

Photometry for **minimised light pollution**



With its PureNight concept based on high-end photometric designs, **Schréder offers the ultimate solution for getting the night sky back without switching off cities**.

Schréder PureNight solutions direct the light only where it is wanted and needed, complying with the strictest environmental regulations.

FLEXI WHITE

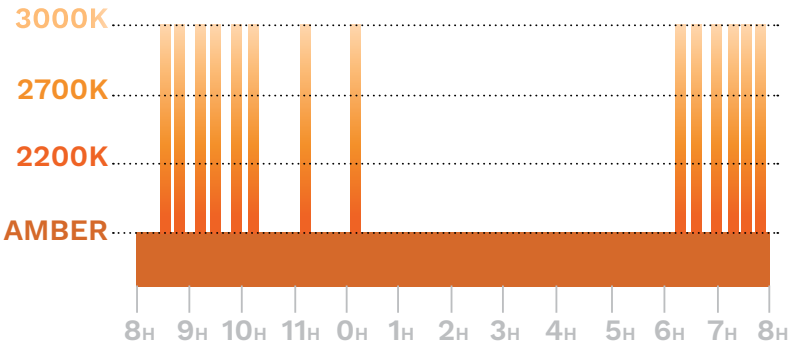
The right colour temperature **for people and fauna**

AMBER — **Nature-friendly**, minimal safety lighting

3000K — **people detection**, maximised safety and comfort (high visibility)

With PCBAs using two types of LED (e.g. amber and 3000K), you can select one of the two colour temperatures or mix both at various levels (dimming) to create a palette of colour temperatures. **As lenses cover the complete PCBA, the light distribution remains unchanged whatever you select**.

Amber as default, 3000K upon detection.



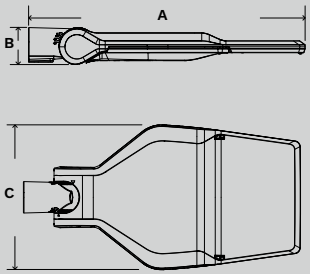
Technical characteristics

IP 66/67

IK 09

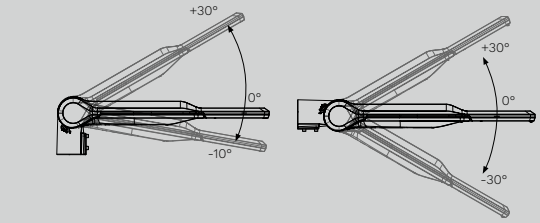
IZYLUM

	IZYLUM 1	IZYLUM 2
Recommended Installation height	4 to 8m	4 to 10m
Typical luminaire output flux (range)	600 to 8,200lm	1,900 to 15,000lm
Power consumption	7.2W to 65W	18.6W to 109W
Colour temperature	Warm, neutral or cool white	
Nominal voltage	220-240V - 120-277V / 50-60Hz	
Surface protection	6, 8 or 10kV	



Dimensions	IZYLUM 1	IZYLUM 2
A	587mm	604mm
B	94mm	94mm
C	294mm	352mm
KG	4.9kg	6.3kg

Universal slip-over mounting (side-entry and post-top):
Ø32-60mm - Ø32-76mm

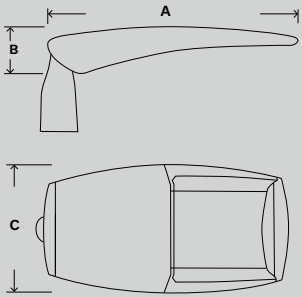


IP 66

IK 09

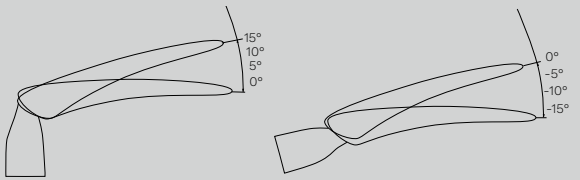
TECEO S

Recommended Installation height	4 to 8m
Typical luminaire output flux (range)	800 to 9,000lm
Power consumption	9.8W to 78W
Colour temperature	Warm, neutral or cool white
Nominal voltage	220-240V - 120-277V - 347-480V / 50-60Hz
Surface protection	6 or 10kV



Dimensions	
A	450mm
B	99mm
C	252mm
KG	5.1kg

Universal slip-over mounting (side-entry and post-top):
Ø32mm - Ø42-48mm - 60mm - Ø76mm



IP66
GLASS IK 07
PC IK 08
DMX RDM
DALI

SCULPLINE

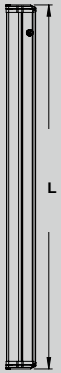
Typical luminaire output flux (range)	500 to 10,000lm
Power consumption	13.6W to 90W
Colour temperature	Warm or neutral white RGB cool white
Nominal voltage	220-240V / 150-60Hz
Surge protection	10kV

	SCULPline 1	SCULPline 2
Length	500mm	1,000mm
KG	4.8kg	6.4kg

IP 67
IK 10

MY1 LED

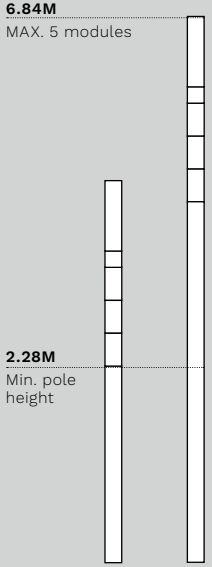
Typical luminaire output flux (range)	1,600 to 11,100lm
Power consumption	23W to 89W
Colour temperature	Warm white
Nominal voltage	220-240V / 50-60HZ
Surge protection	4 or 10kV
Length	295mm to 1,581mm
KG	1.4kg to 6kg



IP 66
PC IK 09
PC IK 10
PMMA IK 06

SHUFFLE

Typical luminaire output flux (range)	1,300 to 6,700lm
Power consumption	18.1W to 55W
Colour temperature	Warm or neutral white
Nominal voltage	220-240V / 120-277V 50-60Hz
Surge protection	10kV



- **Luminaire**
- **CCTV**
- **WLAN**
- **Light ring**
- **Loudspeaker**
- **Intercom**
- **EV charger**

Flexibility, maximised savings and **enhanced comfort**

Our smart solutions ensure that we provide the right light at all times in the right places. They minimise energy consumption, facilitate network expansion, optimise maintenance operations and asset management while offering the best user experience. We offer a full range of solutions, from basic dimming features to full remote management systems.

Bluetooth for easy on-site adjustment

Available with the TECEO and IZYLUM ranges, the Schréder Bluetooth solution is **ideal for the on-site configuration of individual luminaires**.

From the ground, the user is able to switch the luminaire on or off, adapt the dimming levels and get data.

A **user-friendly mobile app** provides easy and secure access to the control and configuration features.

It enables you to adapt the dimming scenarios whenever you want while simply standing by the pole.

Key advantages

- Cost-effective stand-alone control solution
- No need to use a cherry-picker or to open the luminaire
- Easy dimming settings and adjustments over time
- Collects diagnostic and statistical data

Autonomous local network with motion sensors

Luminaires equipped with OWLET LUCO AD controllers can create a **closed network** that provides light-on-demand scenarios with motion sensors.

The lighting levels are dimmed most of the time to maximise energy savings. When cyclists arrive, the sensors detect their presence and the luminaires ahead of them increase the light output to deliver the best conditions in terms of safety and comfort.

Thanks to the wireless communication between the luminaires, **sensors can be installed in the most appropriate places**.

The network can be expanded at any moment as it only means adding new luminaires to the loop. Scenarios can also be changed over time to adapt to new situations.

Key advantages

- Smart autonomous solution
- Light-on-demand scenarios
- Maximised savings with optimised use of energy
- Utmost safety and comfort for the cyclists
- FutureProof with on-site adjustments possible

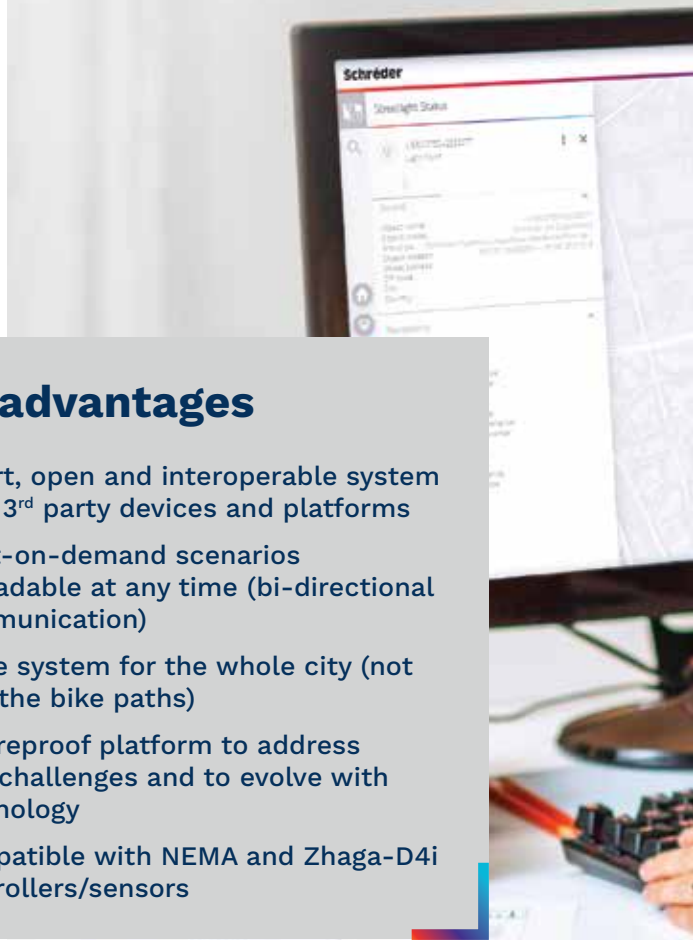
Schréder EXEDRA remote management system

Schréder EXEDRA is a remote control system for **monitoring, metering and managing a lighting network**. It is a complete solution based on open standards and protocols

Schréder EXEDRA offers a unique combination of state-of-the-art technology and an **easy-to-use web interface** to control each luminaire at all times through a secured internet connection.

With bi-directional communication, the **operating status, energy consumption and possible failures can be monitored**.

Schréder EXEDRA can be combined with a large range of sensors to create **responsive lighting scenarios**. Through advanced data analytics tools, presented both visually and in reports, Schréder EXEDRA is a powerful tool for efficiency, rationalisation and decision making.



Key advantages

- Smart, open and interoperable system with 3rd party devices and platforms
- Light-on-demand scenarios upgradable at any time (bi-directional communication)
- Same system for the whole city (not only the bike paths)
- Futureproof platform to address new challenges and to evolve with technology
- Compatible with NEMA and Zhaga-D4i controllers/sensors

PIR or radar?

When it comes to choosing a detection device, how do you choose between PIR and radar? It is a matter of flexibility and cost.

Traditional motion sensors have been designed using PIR as it is a **cost-effective and simple detection device**. The PIR sensor detects changes in the amount of infrared radiation.

A **radar** uses the Doppler principle to determine an object's **motion, speed and direction.**

So the required features will ultimately dictate the choice of technology.

Is distance important? If so, take into account that PIR sensors have a detection range of roughly 5 metres.

Radar can work within a range of 2 to over 30 metres.

If the speed and direction of the moving object are key parameters, radar is the best solution as it can detect both characteristics.

A few of our projects

Thy-Le-Château (Belgium) - Product: CITEA NG with sensors

Budapest (Hungary) - Product: SHUFFLE

Roeselaere (Belgium) - Product: TECEO S with sensors and solar energy

As (Belgium) - Product: TECEO (with sensors)

A few of our projects

Heidelberg (Germany) - Product: TECEO

Tiel (Netherlands) - Product: YOA

London (UK) - Product: YOA

Tilburg (Netherlands) - Product: PIANO

Tessenderlo (Belgium) - Product: TECEO (with motion sensors)

Póvoa de Varzim (Portugal) - Product: PIANO

Schréder

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