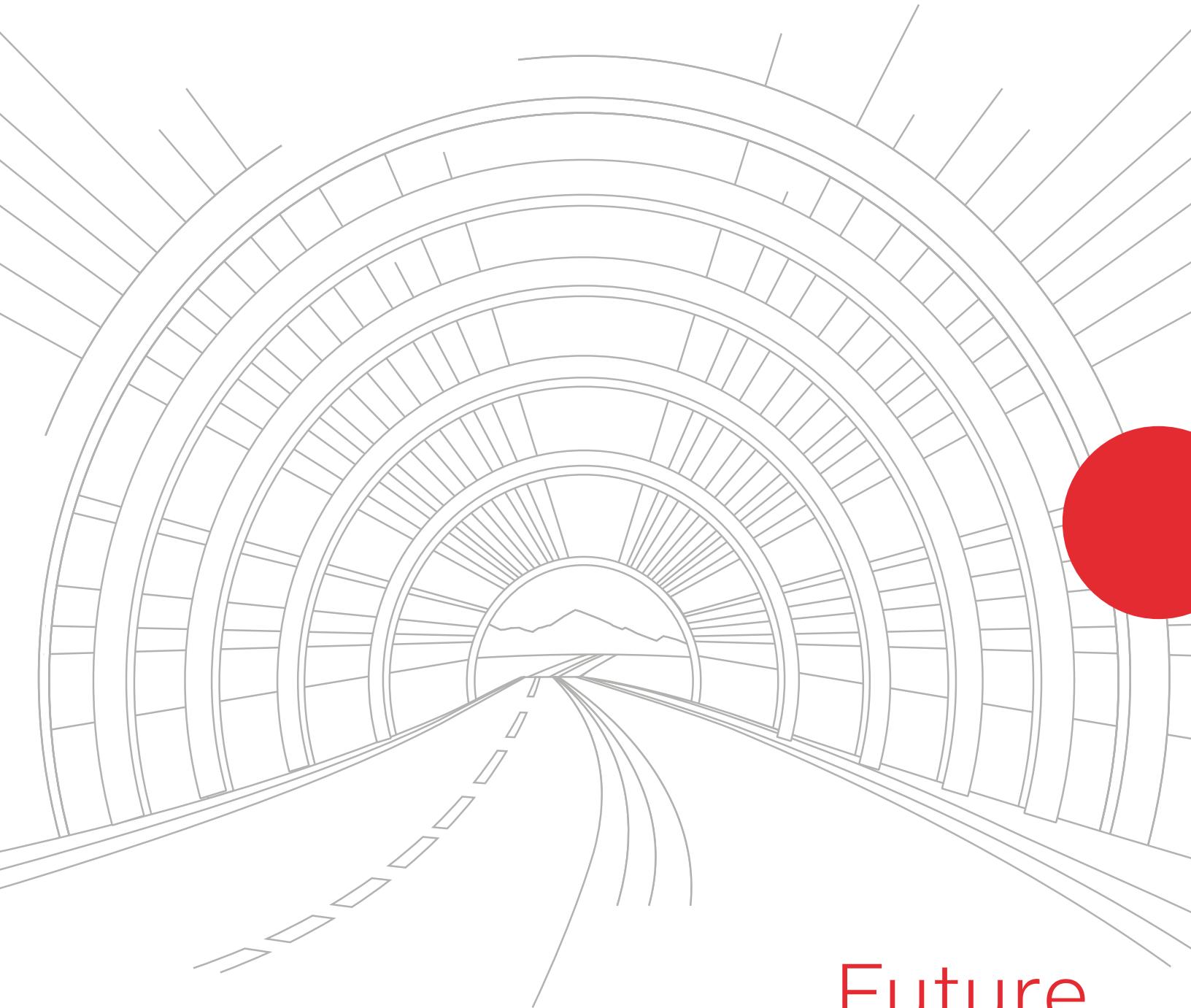


**siteco**



# Future Tunnel.

We take responsibility for your light –  
lighting technology designed and engineered in Germany.



Shape the future  
of tunnels.

# Sustainability

Flexibility  
Quality of life



Efficiency is the key – from the portal to the exit.

Tunnels optimize traffic efficiency, unburden roads, reduce noise and decrease levels of fine dust in towns and cities. It is therefore all the more important that such benefits are not lost due to inefficient operation.

Because tunnels need light – day and night. State of the art light technology enables energy and CO<sub>2</sub> savings of up to 80 % with maximum operation reliability – for a minimum of tunnel closures, greater traffic efficiency and sustainably less environmental pollution.

**SITECO stands for state of the art lighting technology.**

It's a pleasure  
to spend less for  
much better light.

Continuous energy consumption caused by tunnel lighting has a considerable impact on the cost and CO<sub>2</sub> balance of public institutions.

Highly efficient SITECO lighting technology with currently up to 185 lm/W significantly reduces energy consumption, and innovative control of luminous flux based on live parameters via luminance cameras exploits additional savings potential.

Due to the high luminous flux of our luminaires, fewer light points are required and the lower connected load requires a smaller uninterruptible power supply (UPS). This is our guarantee for low investment and operating costs as well as short payback periods – along with sustainable reductions in the CO<sub>2</sub> balance.

Refurbishment of the Kaisermühl tunnel in Vienna exploits the full potential:

Efficiency increase  
by a factor of **3**



If not now,  
then when.

Our specialists show you what's possible by analysing the specific conditions at your site. Hand in hand with architects, lighting designers and electrical contractors, we translate your functional and design requirements into your ideal technical solutions – made tangible using state of the art visualization.

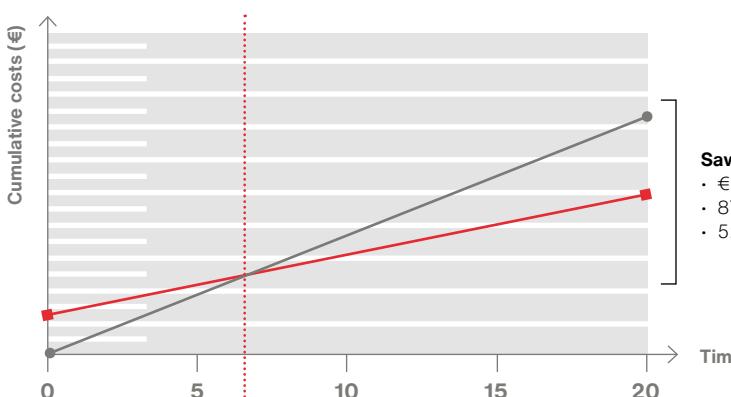
**SITECO enables all scales,  
from pilot projects to a big step.**

The SITECO audit provides complete transparency about the energy consumption and CO<sub>2</sub> emissions of your existing system.

Our lighting consultants design a solution that is based on your requirements and tailored to your needs.

#### TCO comparative calculation for payback period

■ TL33  
● conventional tunnel luminaire with high pressure sodium vapor discharge lamps (SON)



New TL33 system amortized in **6.6 years**

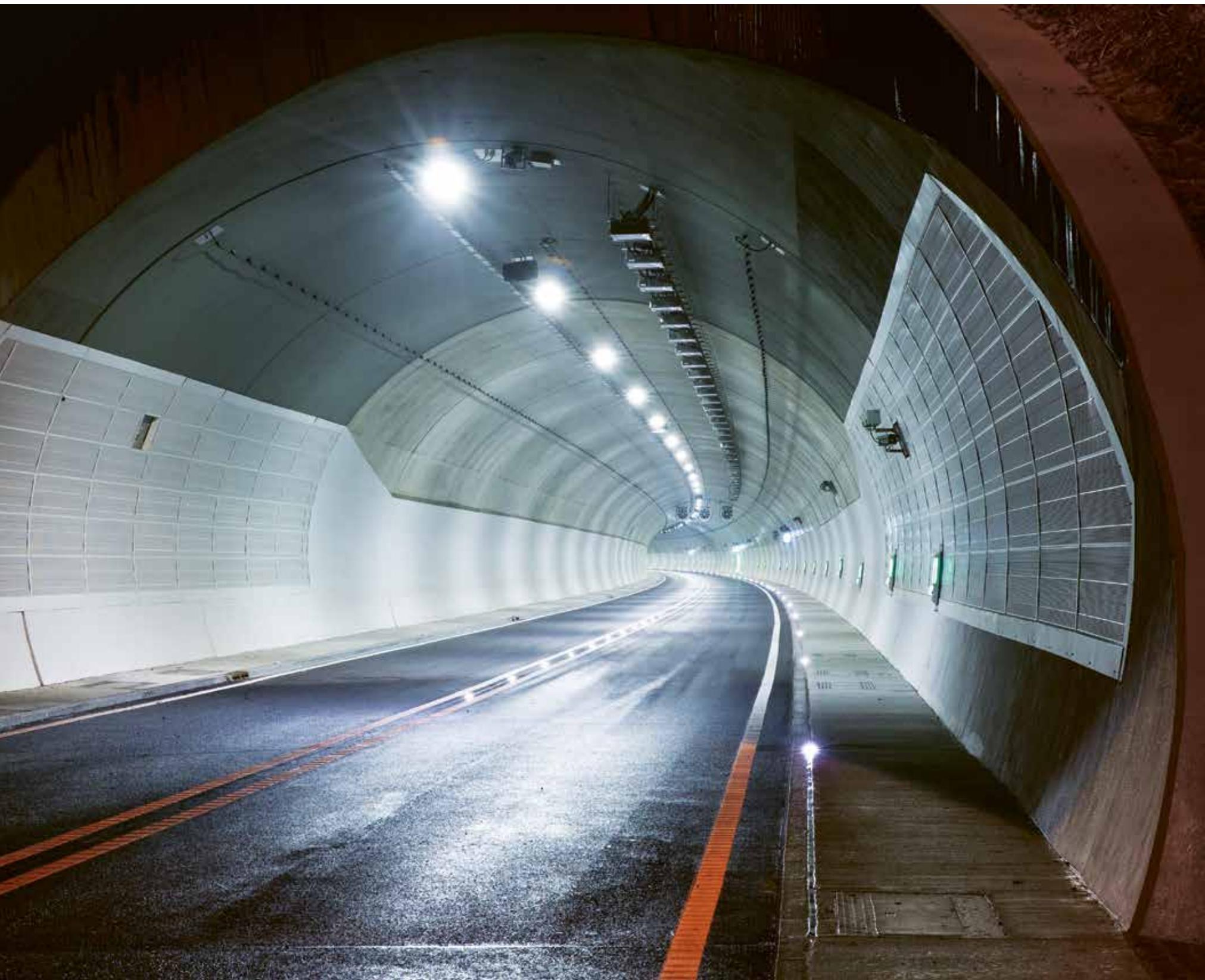
The result: clarity about your cost and energy savings potential – and completely comprehensible thanks to our detailed TCO calculation.

The SITECO audit provides complete transparency about the energy consumption and CO<sub>2</sub> emissions of your existing system.

Our lighting consultants design a solution that is based on your requirements and tailored to your needs.

Luminaire type	Existing system	SITECO solution
Luminaire type	conventional tunnel luminaire with high pressure sodium vapor discharge lamps (SON)	TL33
System configuration		
Average rated power per luminaire [W]	321	302
Average luminous flux per luminaire [lm]	28.755	43.807
Average luminous efficacy per luminaire [lm/W]	89.5	139.6
Energy consumption		
Energy consumption /year [kWh]	133,87	145,2
Reduction in energy consumption	0 %	33 %
Investment costs		
Investment costs [€]	0	110.000
Energy costs		
Energy costs over system service life [€]	678.944	372.812
Energy cost saving	0 %	45 %
Maintenance costs		
Maintenance costs over system service life [€]	26.357	0
Maintenance cost savings	0 %	100 %
TCO total costs		
Total costs over system service life [€]	705.301	482.812
Total cost saving	0 %	32 %
Payback time in years	0	6,6
CO <sub>2</sub> saving over system service life [t]	0	523,3

TCO Calculator is an application of Siteco GmbH - Germany  
© Siteco GmbH 2020



Project: Ettendorf tunnel, Traunstein, Germany  
Product: Tunnellight TL 33

## Our concept for minimizing tunnel closures.

Where performance is required day and night, robustness is even more important. SITECO tunnel luminaires feature top values in terms of dependability and operational reliability thanks to extremely low reduction in luminous flux of 5 % after 100,000 hours and almost maintenance-free operation.

Our design-for-sustainability strategy reaches down to the last detail: resistant housings made of high quality stainless steel defy corrosion and are prepared for the use of automatic tunnel cleaning machines. Modular constructions enable easy replacement of components and separately installable e-boxes in easily accessible locations simplify maintenance work.

# L95/B10

at 100,000 h

Long service life with very low  
luminous flux reduction

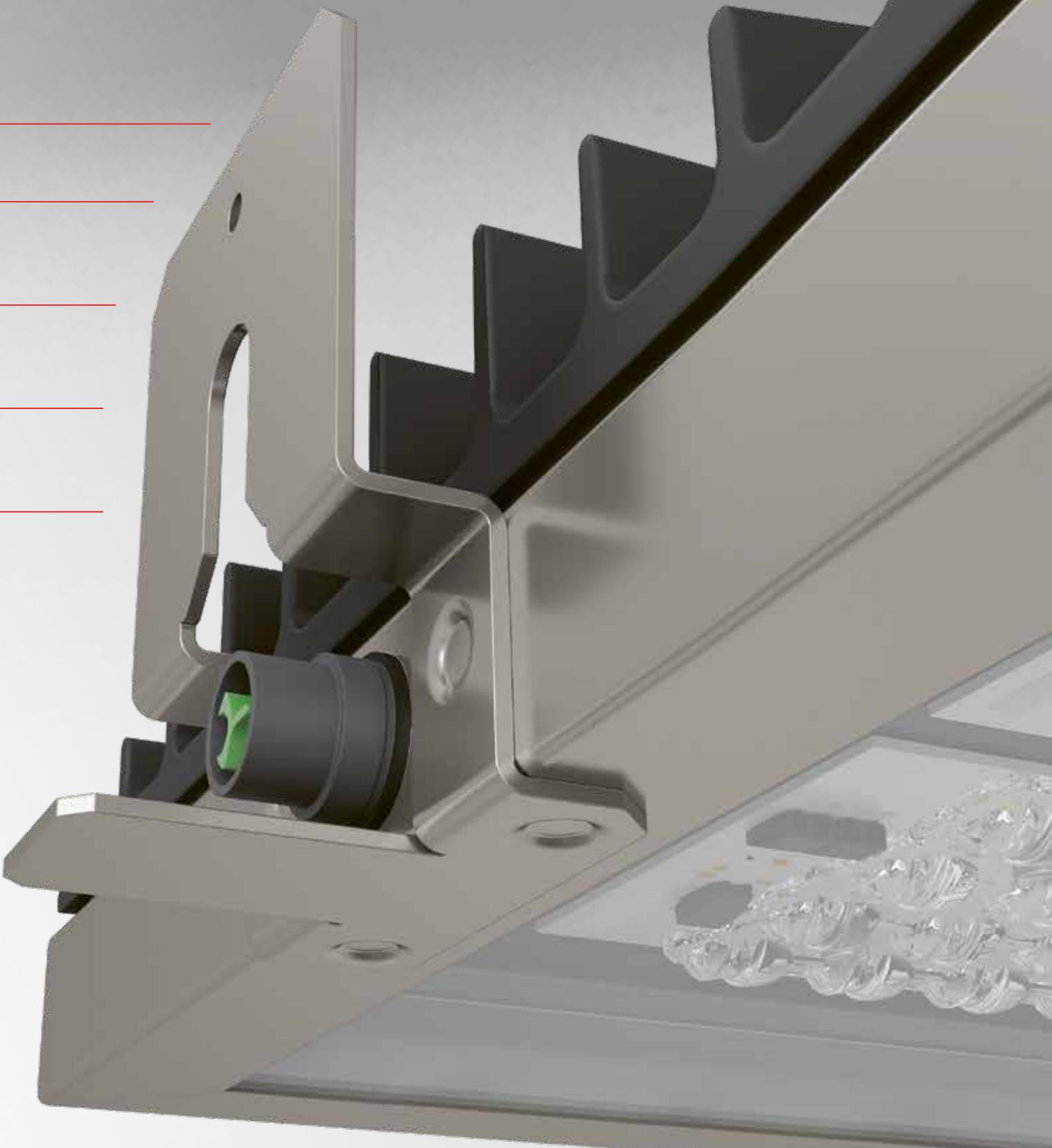
Maximum quality of materials for corrosion prevention, e.g. through high quality stainless steel alloy for all load-bearing parts

Intelligent mounting concepts for simple installation thanks to well thought-out features such as quick-release catches and one-man mounting systems

Mechanical and constructional protection against the effects of mechanical cleaning, e.g. special tabs to protect the plug from brushes

Uniform connector system for all tunnel luminaires for easy stockkeeping and retrofitting with pre-assembled quick connectors

Modular design for easy component replacement and separate E-box installation (up to 12 luminaires per box) in easily accessible locations – for simplest mounting and maintenance work



## Expertise down to the last detail.

For us, sustainability means more than just energy and CO<sub>2</sub> savings. We also consider the service life, the material properties and simply all factors that make your everyday life easier in a meaningful way. This is why all ideas and, above all, many years of experience are incorporated into our product concepts to provide real benefits.

**SITECO considers sustainability in all dimensions.**



Sustainability  
**Flexibility**  
Quality of life

Tunnels are the veins of future-capable traffic infrastructures.

One thing is for sure – the future is digital. It is therefore not enough to look at tunnel lighting in isolation but as an integral part of the networked infrastructure landscape. The basic requirement for this is flexible structures with open standards and maximum adaptability in the application. A further factor is that no tunnel is like another. Local conditions and needs naturally vary and thus require precisely matched solutions.

**SITECO is your flexible partner.**

Experience from over  
1,000 tunnel projects  
all over the world.

## From us to you: the right light for any tunnel.

We know that each and every tunnel is different, and for this reason our portfolio of lighting solutions for tunnels and underpasses offers maximum flexibility.

Whether innovative continuous row luminaires with top photometric values or vandal-proof underpass luminaires: our complete understanding of applications from more than 1,000 projects is bundled in a flexible modular system.

With optimized lumen packages, light distributions and control options for precisely matching configurations in every project. Only our customizing solutions provide even more individuality.

The advantages of our diversified portfolio prove their worth in the refurbishment of several tunnels and approach zones of the northern Zurich expressway ring.

**Complete SITECO application expertise  
for the Zurich northern bypass.**



① + ②

Project: Katzensee Tunnel, Zurich, Switzerland

Product: Tunnellight TL 13, Streetlight SL 20



① + ②

Project: Highway tunnel, Skiron, Greece  
Product: SLC control (Powerline)

①

Finally a genuine added value of digitalization.

Tunnel solutions with open interfaces feature a wide range of networking options for maximum technological flexibility and maximum adaptability. For tunnel operators this creates completely new application possibilities.

A good example: the tunnels in Skiron, Greece. The SITECO control here not only independently regulates 4,000 light points in 17 tunnels but also integrates cameras and sensor technology. Complete system integration enables the client to monitor remotely at all times, which fundamentally facilitates maintenance and operation and reduces operating overheads.

Thanks to SITECO networking solutions for tunnel lighting, our clients are optimally positioned for the future. This also convinced the Energy Metering Award jury:

Winner **2019**  
of the Energy Metering Award



②



Sustainability  
Flexibility

**Quality of life**

The top priority:  
safety.

Light is the basis because it provides standard-compliant tunnel lighting both day and night. However, the best lighting technology is not only based on standards but goes beyond these: optimum glare reduction, complete absence of flicker and trouble-free operation are the differentiating factors for more traffic safety in tunnels and a greater feeling of safety for pedestrians in underpasses. Because there's no room for dark characters in bright areas.

**SITECO stands for best light.**



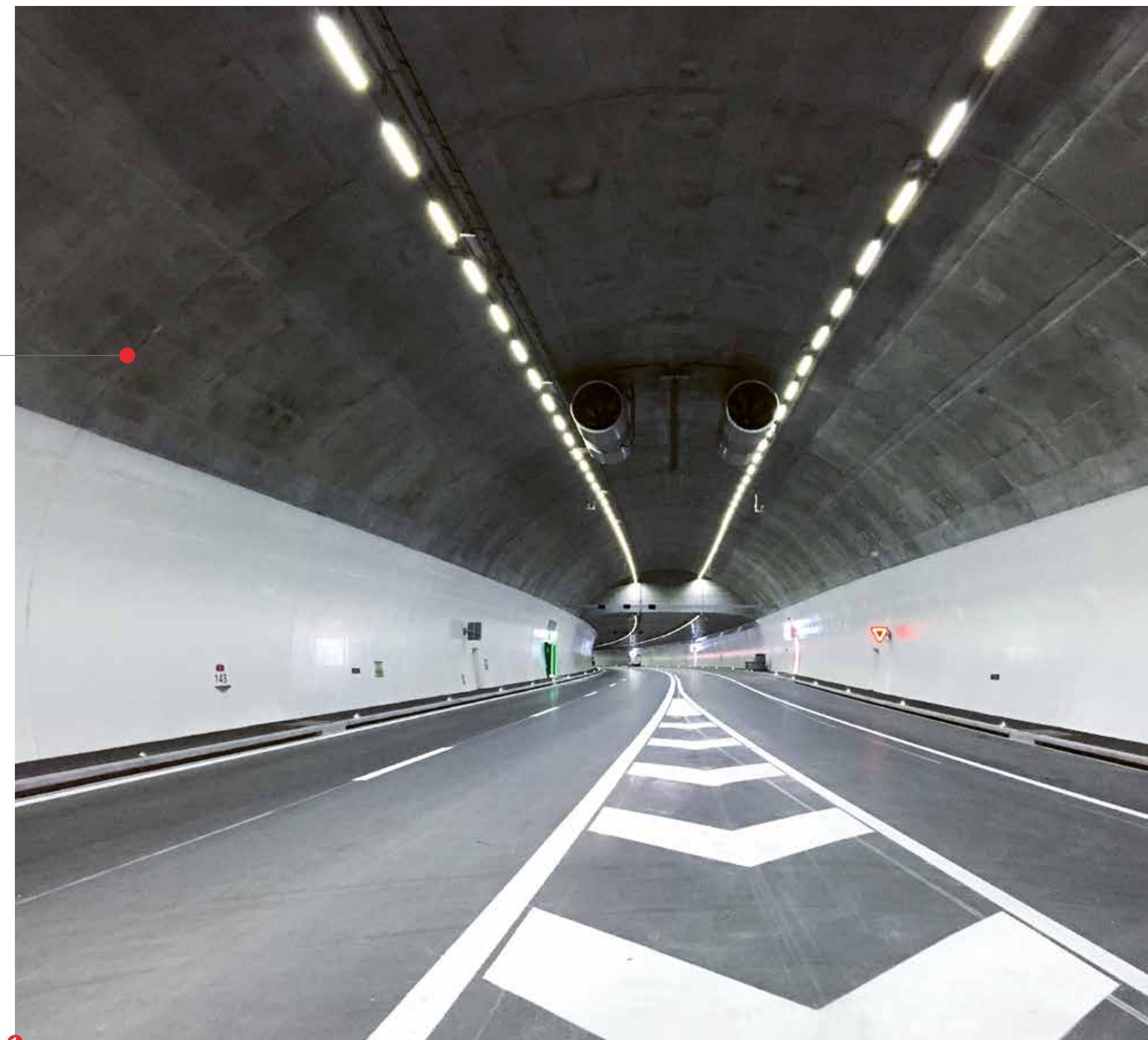
SITECO solutions for optimum visibility and ultimate visual comfort.

## Safe driving thanks to outstanding lighting technology.

Our tunnel lighting solutions set maximum standards in terms of safety. High lumen-output LEDs provide best visibility without glare via powerful, uniform illumination for UI values of up to 1. Absolutely homogeneous lighting, particularly with our innovative continuous row luminaires, prevents fatigue and creates maximum visual comfort in the tunnel. Thanks to sophisticated, asymmetric counter-beam optics, our entrance zone luminaires provide a pleasant and above all safe adaptation route.

Maximum reliability for almost maintenance-free operation and continuously optimal visibility always guaranteed – convincing arguments for the Eyholz Tunnel in Switzerland.

**SITECO solutions for more traffic safety.**



1 + 2

Project: Eyholz tunnel, Visp, Switzerland  
Product: Tunneleight TL 13



Project: Freimann pedestrian underpass, Munich, Germany

Product: Project-specific special luminaire

## Grateful for more security.

Underpasses often have a gloomy charm. The right lighting can counteract this: SITECO luminaires for underpasses provide almost daylight-bright illumination thanks to luminous flux levels of over 5,000 lm. This not only enhances the cityscape but also creates a greater sense of safety and security for its residents. Robust housings and impact-resistant covers (2 x IK10) protect against damage from vandalism. Advanced sensor technology enables adaptive light with situation-related lighting scenarios. This saves energy, prevents light pollution and increases the feeling of safety.

The pedestrian underpass in the Freimann district of Munich shows how an underpass with an inviting character can look like.

Situational light supports safety, environmental protection and cost efficiency.

# Lighting technology



We admit it,  
we love lighting  
technology.

SITECO is a technology pioneer with more than 150 years of experience. CLO 2.0, full cut-off, free-form reflector technology with a globally unique silver coating process.

We stand for more than 200 patented lighting technologies with diverse application options for you and your future.

We also offer you holistic luminaire development from a single source – from the optics, mechanics and thermal design right up to the control electronics. The perfect integration of hardware and software designed and engineered in Germany.

**SITECO stands for exceptional  
lighting technology.**

# Tunnellight TL 13

## The absolute top model in tunnel lighting.

An innovative design for seamless continuous rows and with best lighting values – the optimum solution for maximum visual comfort and traffic safety in tunnels.



- Continuous row luminaire with innovative, extremely compact design for challenging mounting situations, made of high quality stainless steel
- Simple installation thanks to double-secured quick release catches for one-man mounting
- Very uniform illumination (UI values up to 1,0) and seamless continuous row as visual guiding element for high visual comfort and thus traffic safety
- Outstanding efficiency of over 185 lm/W for low energy consumption and operating costs and low luminous flux reduction for long service life
- Controllable via 10 StepDIM or DALI, thus highly compatible with various control systems
- Sophisticated product concept with E-box for 10 to 12 luminaires and exchangeable driver reduces investment costs and simplifies maintenance thanks to separate installation option



# Tunnellight TL 23

## The efficient all-rounder among tunnel luminaires.

As a linear compact luminaire it combines the best of two concepts: uniform illumination with good visual guidance and a lower number of luminaires to be installed.

# Tunnellight TL 33 luminaire range

## Transit zone luminaire

### **The well thought-out tunnel luminaire.**

The compact luminaire with minimal construction sizes and symmetric lenses for very large light point spacing.



- Compact luminaires with low construction height for more flexibility with overhead clearance heights – especially important for renovation projects

- Suitable for wide light point spacing of up to 18 m thanks to symmetric lenses for low investment costs
- Double the efficiency of luminaires with high pressure sodium vapor discharge lamps – saves luminaires and energy
- Robust construction with high-grade materials, housing made of stainless steel 1.4404 and aluminum heat sink of AlMg<sup>2</sup> for long lifespan
- Controllable via 10 StepDIM or DALI, thus highly compatible for various control systems
- Sophisticated product concept with integrated control unit and with two circuits for high operational reliability



- With special asymmetric light distribution according to the counter-beam principle for rich-contrast visual comfort or symmetric light distribution for especially pleasant adaptation to the lower light level of the tunnel transit zone

- Generates 40 % more light than a luminaire with 400 W high pressure sodium vapor discharge lamp – saves luminaires and energy
- Sophisticated product concept with ECG in separate E-box for simple replacements

- Thermally decoupled for a long service life and ESD protection of the luminaire head for simplified maintenance work
- High quality materials with housing made of 1.4404 stainless steel and aluminum body made of AlMg<sup>2</sup>
- Available in three performance packages with up to 63,500 lm for efficient design of the adaptation zone and thus more visual comfort in the portal area

## Portal luminaire

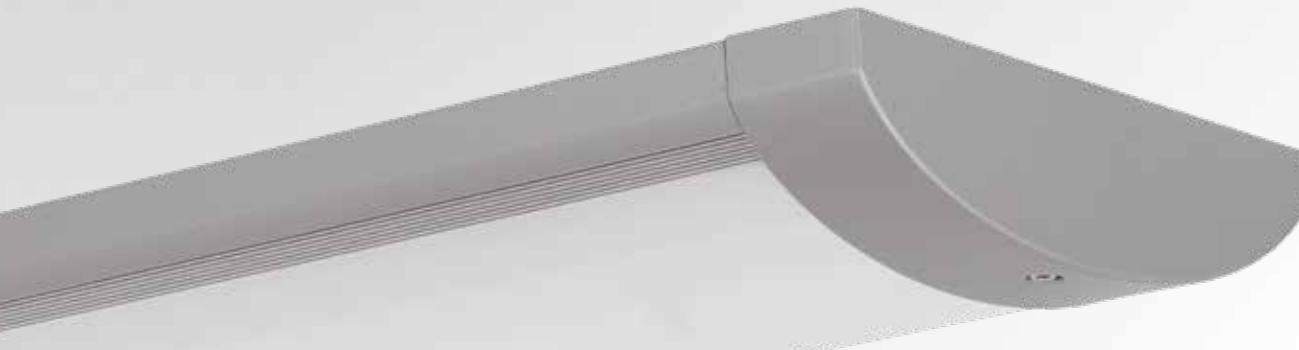
### **Power for the tunnel entrance zone.**

Intelligently designed entrance lighting with innovative counter beam optics for high visual comfort at tunnel portals.

# TV 20

## Luminaires for underpasses.

Complete robustness and daylight-bright illumination in combination with well thought-out features – the ideal underpass lighting.



- Anti-vandal luminaire of die-cast aluminum with high 2 x IK10 (50 J) impact resistance and polycarbonate cover – especially robust for reliable operation

- Designed for harsh environments thanks to corrosion-resistant materials such as stainless steel and special aluminum alloys as well as increased resistance to damage

- One-man mounting with variable mounting distances using click-in stainless steel fasteners for quick, flexible mounting

- Integrated cable routing channel and concealed fixing points for 'visually clean' mounting and protection against vandalism

- Form-fit corner mounting brackets allow installation between wall and ceiling



- Multilumen technology with luminous fluxes up to 12,000 lm for maximum adaptability

- Highly robust with IP66 protection rating and suitable for outdoor use in ambient temperatures up to 50 °C
- Simple maintenance and easy upgrading of sensors due to tool-free opening of the luminaire

- CLOi also with On/Off models for standard-compliant lighting over the complete service life without over-planning and for optimized energy consumption
- Durable and reliable with service life up to 100,000 hours

# Monsun®

## The next level in damp-proof lighting.

The future-fit damp-proof luminaire for all ancillary areas such as maintenance tunnels – reliable, robust and with upgradeable intelligence.

# Streetlight luminaire range

- Especially durable thanks to robust diecast aluminum housing (IP66/IK09) with optimum heat dissipation, ensuring more than 90% residual luminous flux after 100,000 hours of service life
- Highly efficient LED technology and tool-free opening for quick maintenance of the luminaire for low operating costs

- Digital interface for automatic communication when replacing ECGs or modules – no need for resetting or pre-parameterization
- Maximum visual comfort on the road: precise, uniform and glare-free illumination via HD faceted reflectors with patented silver coating
- High flexibility due to several sizes and optics as well as various light colors and housing colors
- Future-proof configuration thanks to various control options, intelligent dimming function, CLO 2.0 and open interfaces for Smart City applications, along with modular design for component upgrades



## Streetlight SL 11

### **Undisputedly the top model in technical streetlighting.**

A modern design with outstanding light, efficient performance, reliable operation and intelligent control.



## Streetlight SL 20

### **A smart concept for strong performance.**

The efficient multitalent with a well thought-out product concept – for a wide range of applications from cycle paths to multi-lane main roads.

- Sustainable module approach for easy replacement of the upper part of the luminaire as a complete module at the end of the long service life of 100,000 hours
- Precise illumination thanks to innovative lighting technology based on PMMA lenses and a wide range of different light colours and distributions – also suitable for customer-specific versions
- Sights set on the future: State-of-the-art lighting control and wireless networking through optional Zhaga interface as the basis for future Smart City applications

## Streetlight SL 30

### **Pragmatic, efficient, well thought out.**

The practical solution for modern street lighting from residential areas to motorways.

- Durable and robust: Stable die-cast aluminium housing (IK08) with optional double coating and easy to clean ESG glass
- Simple and sustainable design for quick installation and secure ECG replacement
- Three sizes for relevant main applications in all lighting classes and different light colours for different design approaches



## Streetlight SL 40

### **The uncomplicated partner for technical street lighting.**

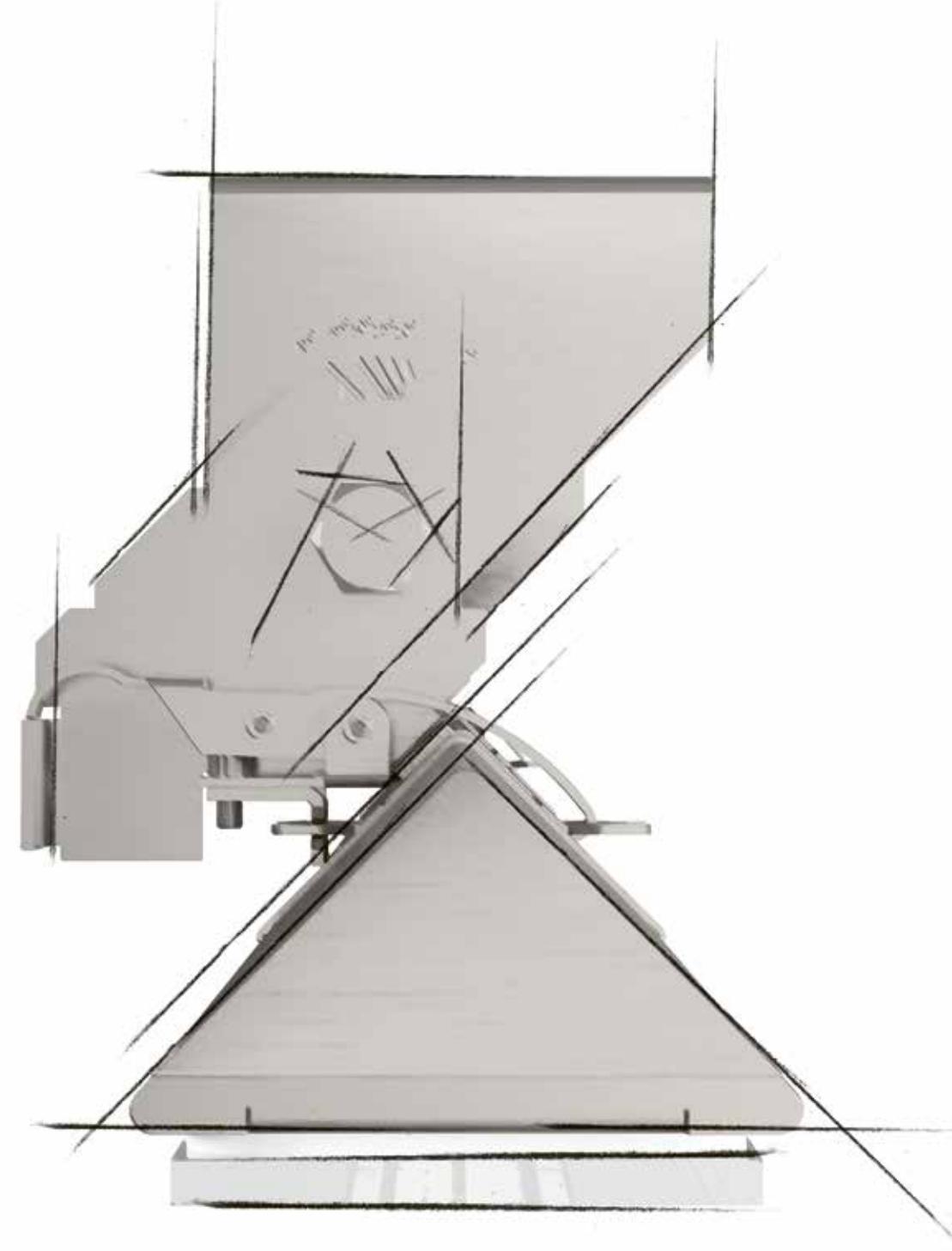
Cost effective but yet durable and efficient solution for comprehensive light infrastructures in cities and towns.

- Three sizes, a standard light distribution and programmable lumen packages for appropriate flexibility
- Designed for efficiency in all areas: Uncomplicated assembly and installation, cost-effective operation, uncomplicated storage
- Autonomous dimming and AstroDIM function with an easily programmable preset during commissioning

## Adaption.

### **Modification of series luminaires**

- Changing the light color and color rendering
- Changing the housing dimensions, colors and mounting devices



## Combination.

### **Modular construction system**

- Versatile combinable systems for your ideal project solution
- Modular SITECO optic platforms as the basis for your project luminaire

## Creation.

### **Special luminaire development**

- Concept development and project management
- Construction planning and special luminaire construction with an experienced development team

**800,000**  
customized  
luminaires

in over 1,000 projects

We symbolize customer proximity through flexibility and speed.

If the diversity of variants in the catalog ends, the almost infinite variance of customizing options begins.

SITECO offers a wide spectrum of options for customized solutions thanks to its experienced team of designers and engineers. *Made in Germany* also means we provide additional flexibility and speed.

**Custom-fit solutions for your tunnel project.**

- ▷ Optimized housing shape adapted to specific tunnel conditions
- ▷ Flexible angle adjustment
- ▷ Double secured quick-release fastener



# Lighting solutions

One of many topics for you, but for us it's everything.

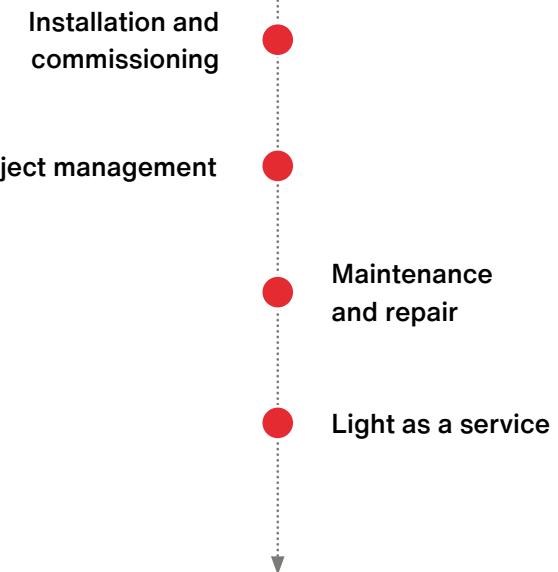
Outstanding lighting technology provides the perfect foundation. In addition, our claim is to also make a significant contribution to the future viability of our customers. For this reason SITECO solutions include the complete spectrum, ranging from planning and project management to the financing and operation of your system.

**SITECO takes responsibility for your light.**

# Complex is fine. But not complicated.

Whether functional lighting or complex lighting solutions – each project is individual and depends on the desired functionalities, the existing framework conditions and the architectural demands. SITECO supports you in defining these parameters and converting them into an overall concept. We also speak your language – always in an understandable way even with complex technologies. This is how we make sure that your specific requirements are taken into account and successfully implemented in the project.

**SITECO – the planning and development partner for your lighting solution.**



## Your time and your budget are not infinite.

Modern lighting systems not only require precise planning but also precise implementation. This often means high organizational and coordination effort. This must not be allowed to become a project stopper – and neither should concerns about high investment costs.

The systematic modernization of lighting systems usually pays for itself through lower operating costs.

We have a network of reliable partners ranging from installers to programmers to provide you with turnkey solutions. We also offer you individual financing solutions, for example monthly installments or individual leasing contracts. You decide whether CAPEX or OPEX and whether we take over your maintenance at the same time.

**SITECO guarantees the success of your project.**

Project: Marienplatz subway station, Munich, Germany  
Product: Project-specific special luminaire

# Contact.

## **Siteco GmbH**

Georg-Simon-Ohm-Str. 50  
83301 Traunreut  
Germany  
Tel. +49 8669 330  
info@siteco.de

[www.siteco.com](http://www.siteco.com)

## **Technical support**

Tel. +49 8669 338 44  
technicalsupport@siteco.de

# Team Tunnel.

## **Pascal Heiz**

Head of Team Tunnel  
Tel. +41 79 384 21 01  
p.heiz@siteco.ch

For reasons of readability, the brochure largely dispenses from using gender-specific formulations.

If personal designations are only provided in masculine form they refer to people of any gender.

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