

# *Light for Industry and Engineering*

Surface-Check Lighting



*Quality Lighting for Quality Control*



Intelligent machines are increasingly replacing manual labour, yet people are still crucial when it comes to quality control. Why is that? The human eye has the unique capacity to check for subtle flaws and irregularities on different surfaces. However, detailed inspections can only be performed effectively in optimal ambient conditions – making quality lighting an essential part of quality control.



*The Task*



The right lighting concept for demanding visual tasks depends on the type of products that need to be inspected. It is therefore crucial that the lighting is tailored to suit the particular surfaces, colours, reflections, shadows and dimensional characteristics. This includes surface inspection areas in the automotive industry, where the coatings, paint finishes and materials of components such as doors, bumpers, hoods and panels have to be painstakingly examined. Various surface-finished products in the metal industry, chrome finishes on kitchen and bathroom appliances and plastic or patent leather goods with glossy surfaces are further examples of items where the highest quality is of the highest importance.



*The Need*



Quality inspections are often carried out in poor conditions, as unsuitable lighting leads to irritating problems like glare. This means that the work requires more time and effort, while faults or imperfections are often missed. The right light affects employee performance and dictates the quality of the final product, making it an essential consideration for any company. When it comes to surface-check lighting, it is therefore vital that the lighting solution meets the particular requirements of the specific materials and finishes.



Light is precise.

#### Fault Detection

*Aim and function are key aspects of any product. Yet few items are chosen purely with practical considerations in mind, as factors such as the quality of finish and a complete lack of faults often have a major influence on the final purchase decision. No one wants to buy goods with a scratch, a dent or an imperfection, so selection – and indeed rejection – of materials is now a key part of any manufacturing process.*

#### Light Quality

In compliance with EN12464-1, industrial luminaires from Zumtobel ensure perfect lighting conditions in a range of different situations, including automotive manufacturing processes like painting, spraying and final inspections. These kinds of applications demand higher illumination levels of 1000 lx, colour rendering of >80 and UGR values of <19.

To help avoid perceived and reflected glare, which is often caused by lower luminaire mounting heights, the lighting needs to be soft, uniform and designed with high-quality opal diffusers to avoid direct glare from the LED light source. In this way, precise visual tasks can be performed swiftly and accurately.



#### VDA

Silicone can generally be found in most luminaire wiring systems. However, as this material is widely recognised as a possible source of contamination, the Association of the German Automotive Industry (VDA) has banned silicone and halogen from all automotive production areas. As a result, Zumtobel quality-check luminaires contain no silicone components, ensuring a safe and compliant lighting installation.



Light is human centric.

#### Industrial Safety and Well Being

The benefits of the right lighting for a company and its employees are quite clear: fewer mistakes, increased commitment and minimised risk of injury. Several factors have to be considered to help reduce error rates and improve worker safety. Continuous glare generated by constant reflection from shiny surfaces can cause tiredness, limit concentration and ultimately have a negative effect on the health of employees. In contrast, shadow-free illumination lessens fatigue, cuts the risk of injury and enables fault detection to be completed with added speed and accuracy, making it an absolute must in modern industrial operations.

Workers also benefit from light that carefully adapts to the natural rhythms of the human body and the increased demand for light. Lighting from Zumtobel can be configured to reflect factors like age, user preference and working hours, helping to increase well-being and boost employee productivity.





Light is efficient.

#### **Cost Effectiveness**

Long production hours in the automotive industry generally translate into substantial energy requirements. This puts the emphasis firmly on energy efficiency – which is exactly where the right lighting solution can make a valuable contribution. With an average service life of 50,000 hours and a guaranteed end-of-life luminous flux in excess of 90 per cent, industrial LED luminaires from Zumtobel have been specifically designed for demanding environments, where long operating life and the lowest possible drop in luminous flux are both important factors.



Light is reliable.

#### **Easy Installation and Maintenance**

Reducing the need for maintenance also means reducing costs, as there is less frequent disruption of manufacturing processes. This is especially beneficial for large industrial halls with lighting solutions that are installed at difficult-to-reach heights.

The powerful blend of LED lighting and higher degrees of protection significantly increase the intervals between maintenance. Long operating periods and high durability help ensure that the luminaires rarely need to be accessed. In addition, compact designs that combine the LED light source with optics and diffusers make scheduled cleaning a quick and simple process.

The same is true for the installation. Zumtobel works hard to minimise the physical weight of the luminaires, which helps save on valuable manpower and installation time.





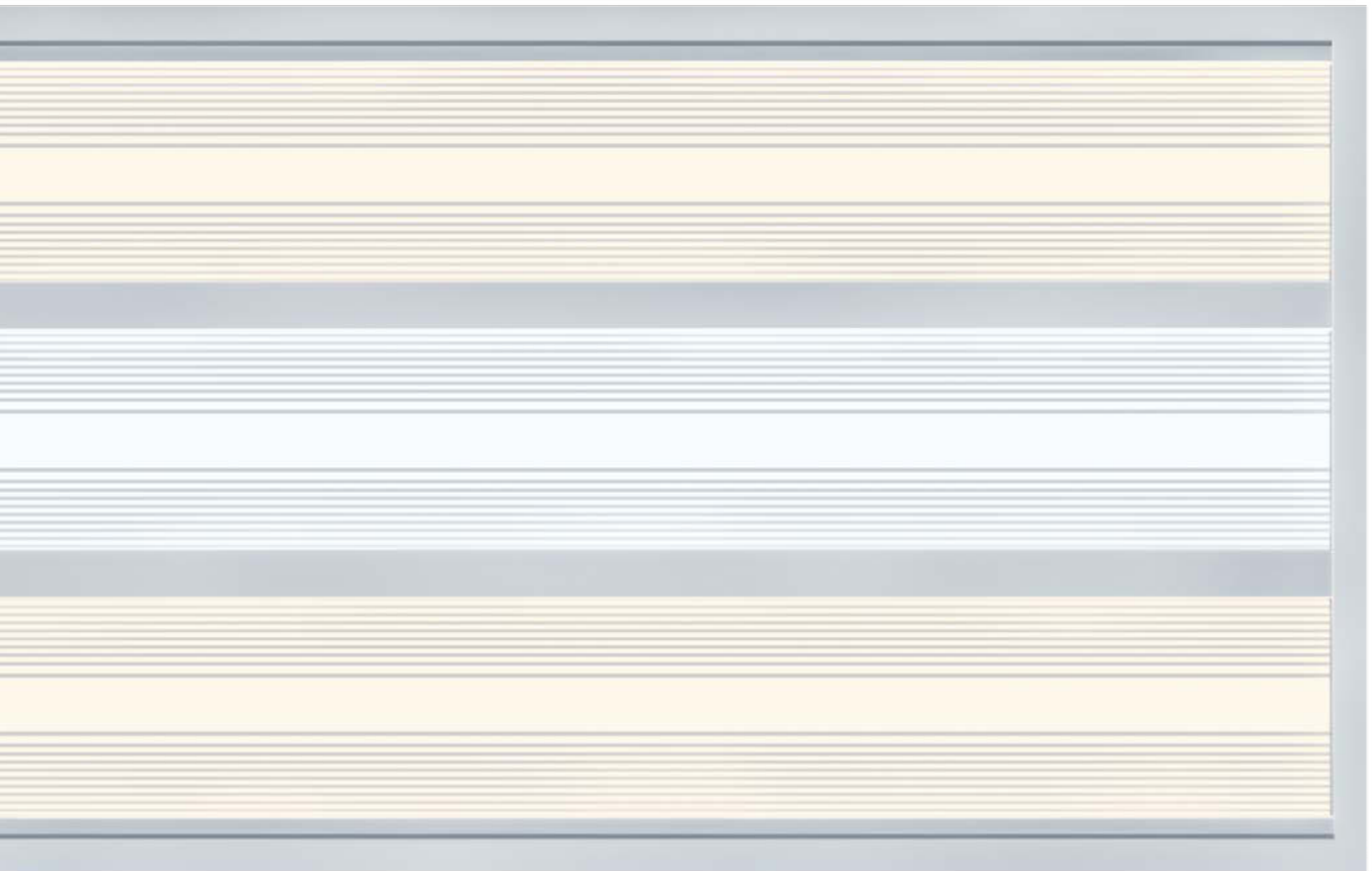
*The Solution*



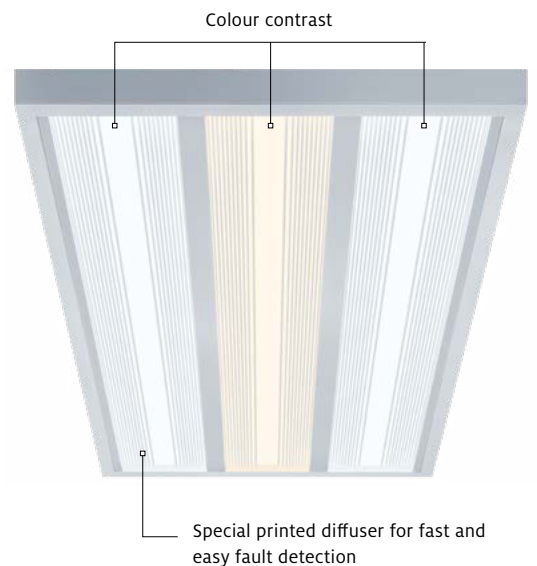
COESA is the first quality-control luminaire from Zumtobel. Sharper than the human eye, this task-specific luminaire perfectly complements general lighting and utilises optimal area lighting to find any fault and irregularity in installations where the highest quality is of the highest importance.

By illuminating the task area from an appropriate distance, COESA delivers planar, uniform and shadow-free light onto the object that needs to be inspected. This kind of area lighting is particularly helpful when it comes to locating bumps, dents or imperfections on matt, shiny and transparent surfaces.

## The Technology



COESA's fault detection technology is further optimized by colour temperature contrast and precise pattern lines, which can be specified in three different configurations. By creating the right degree of contrast, the reflex picture shown on the inspected surface is highlighted, thus making it easier to detect defects on any paint colour. The pattern lines, on the other hand, 'mutate' depending on the grade of fault. When the inspected surface is free from blemishes, the lines remain parallel. If there is any kind of flaw, the lines immediately 'stick together'. The Italian term for 'sticking together' is COESA – the name of Zumtobel's first quality-check luminaire.





Surface illuminated with diffuse light – faults are barely visible



Fault detection with COESA – quality check **failed**



Surface illuminated with COESA – quality check **passed**

**Identified objects**



Bubbles



Dents



Bumps



Scratches



Paint runs



Dirt



Orange peel effect



Paint defects

**Features**

**Benefits**

Special printed diffuser  
Colour contrast

Fast and easy fault detection,  
better productivity

Side-lit guide panel  
Special design

Less perceived glare and  
improved UGR values

Dimming

Flexibility of control

Long life L90@50,000 hours

Less maintenance

Higher efficiency (122 lm/W)

Lower operating costs

Less weight

Easy installation

**Options**

The reflectors come in the standard version middle, but can be made available upon request in two other configurations – small and wide – to meet the requirements of any application.



*Small*  
A wide middle stripe, with other stripes getting narrower towards the edges.



**Middle (standard version)**  
A wide middle stripe, with outer stripes of equal width.

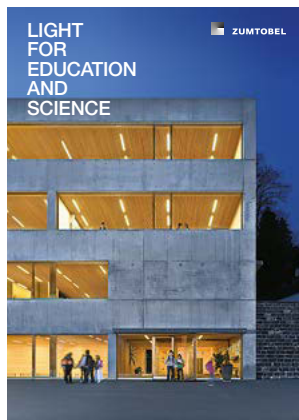


*Wide*  
A wide middle stripe and wider outer stripes.

**Zumtobel, a company of the Zumtobel Group, is an internationally leading supplier of integral lighting solutions for professional indoor and outdoor building lighting applications.**



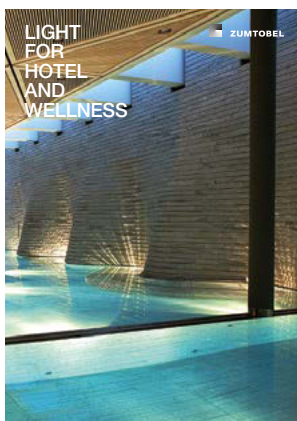
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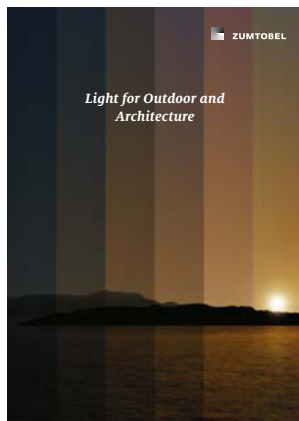
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- **Living**

We provide unique customer benefits by integrating technology, design, emotion and energy efficiency. We combine the best possible ergonomic lighting quality for an individual's well-being with the responsible use of energy resources. The company's own sales organisations in twenty countries, as well as commercial agencies in fifty other countries, form an international network of experts and design partners providing professional lighting consulting, design assistance and comprehensive services.

**Lighting and sustainability**

In line with our corporate philosophy "We want to use light to create worlds of experience, make work easier and improve communications and safety while remaining fully aware of our responsibility to the environment", Zumtobel offers energy-efficient high-quality products, while at the same time making sure that our production processes based on the considerate use of resources are environmentally compatible.

[zumtobel.com/sustainability](http://zumtobel.com/sustainability)



**Top quality – with a five-year guarantee.**  
As a globally leading luminaire manufacturer, Zumtobel provides a five year manufacturer's guarantee on all Zumtobel branded products in accordance with the terms of guarantee at [zumtobel.com/guarantee](http://zumtobel.com/guarantee).

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We reserve the right to make technical changes without notice. Please contact your local sales office for further information.





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Recessed luminaires

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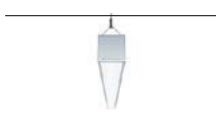
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Free-standing and wall-mounted luminaires

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Luminaires with extra protection



Façade, media and outdoor luminaires



Lighting management systems



Emergency lighting

