

ENERGY TRANSITION.

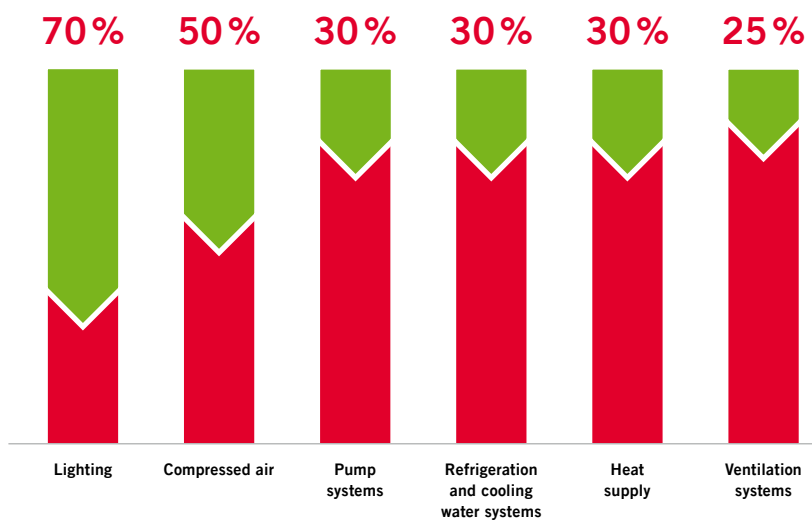
**BUILDING AUTOMATION  
AND LIGHTING**

ENERGY-EFFICIENT,  
DEMAND-RESPONSIVE CONTROL

# 70 %

## SAVINGS POTENTIAL? 100 % FEASIBLE.

ENERGY EFFICIENCY POTENTIAL ACROSS ALL SECTORS  
OF TRADE AND INDUSTRY



Source © Initiative EnergieEffizienz (Energy Efficiency Campaign), Deutsche Energie-Agentur GmbH (Germany Energy Agency – dena)

## ARE YOU STILL LIGHTING OR ALREADY SAVING?

When looking into the various ways of reducing energy costs in buildings, the first thing that tends to spring to mind is the thermal insulation of the building shell. A lesser known fact, however, is that an enormous unrealized savings potential lies dormant in the intelligent control of lighting, heating and air-conditioning systems. Let's take office buildings as an example. According to the German Energy Agency (dena), lighting accounts for up to 50 % of operating costs. Companies could cut their lighting costs by up to 70 % by replacing inefficient technology with modern solutions. If heating, ventilation and air-conditioning systems are also integrated into the building automation (BA), energy costs can be further reduced by as much as 10%. **All of this is feasible** with ESYLUX. Simple, fast and often with low installation costs, whether for new constructions or renovations. When will you start saving?

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**SUSTAINABILITY IN  
THE SPOTLIGHT**

EU ECODESIGN REGULATION ON  
INDUSTRIAL LIGHTING PRODUCTS  
**No. 245/2009/EC**

EU DIRECTIVE ON THE ENERGY  
PERFORMANCE OF BUILDINGS  
**2010/31/EG**

GERMAN ENERGY SAVING ORDINANCE  
**EnEV**

### **DIN EN 15193**

Energy performance of buildings –  
Energy requirements for lighting

### **DIN EN 12464**

Lighting of workplaces

### **DIN EN 15232**

Energy performance of buildings – Impact of building  
automation control and building management

### **DIN V 18599**

Calculation of the energy needs, delivered energy and primary energy  
for heating, cooling, ventilation, domestic hot water and lighting

## **EUROPEAN LAWS AND STANDARDS**

### **SAVING ENERGY – DEMANDED BY POLITICS AND, THANKS TO BUILDING AUTOMATION, HIGHLY EFFICIENT**

Climate protection and sustainability are hardly new issues on the political agenda. The desire to save energy and resources, and to protect the environment, is currently reflected in a whole host of European laws and standards. The EU is also pursuing ambitious climate targets with its “20/20/20” policy: a 20 % reduction in greenhouse gas emissions; a 20 % increase in the share of renewable energies and a 20 % improvement in energy efficiency.\* The low annual renovation rate of existing buildings at around 1 % is just one example showing that much still

remains to be done on this score. What’s more, many laws and standards can only set a minimum standard. Many studies, such as the one carried out by ETH Zürich\*, show that the situation is improving and that sustainability and cost effectiveness are not mutually exclusive. Anyone wishing to make the most out of energy cost savings while cutting CO<sub>2</sub> emissions simply can’t avoid making use of intelligent sensors and demand-responsive building automation to control electrical appliances.

\* by 2020

\* ETH Zürich (Swiss Federal Institute of Technology Zurich) 2010, 16th Status Seminar “Forschen und Bauen im Kontext von Energie und Umwelt” (Research and construction in the context of energy and the environment), C. Struck, inter alia: energy saving potential offered by building automation and building energy management

# ENERGY EFFICIENCY POTENTIAL

## WITH DETECTOR TECHNOLOGY AND LIGHTING FROM ESYLUX



Energy efficiency class



Modern building automation systems offer the best foundations for efficient energy use. The first steps towards improvement are easy to take. Replacing halogen floodlights with LED versions, to name but one example, reduces energy consumption for lighting by up to 90%. Controlling and regulating lighting according to requirements by means of presence and motion detectors unleashes even greater potential (see graphs on the right).

But the full potential for achieving efficiency class A (pursuant to EN 15232) can be opened up by intelligently networking modern detector technology and building automation systems, for example via KNX detectors or an HVAC contact. Maximum possible use of daylight is crucial for efficient lighting control. For this purpose, the required level of ambient brightness is regulated by mixing sunlight and artificial light to maintain a constant light value (constant light control).

A study conducted by Biberach University of Applied Sciences in Germany\* on behalf of the Central Association of the German Electrical and Electronics Industry (ZVEI) revealed that partial building technology automation is insufficient to achieve full savings potential, the reason being that people don't always act with energy in mind. They sometimes forget to turn off the light or the heating when leaving a room. Fully automatic BA solutions "think" one step further and guarantee the greatest savings by switching energy-consuming devices on or off depending on whether people are present. It's good to know that "fully automatic" does not mean that lighting can't be switched on or off manually if need be. All modern BA solutions from ESYLUX feature a manual override function. This falls in line with our motto:

**to only use the light when it is needed.**

\* Source © Biberach University of Applied Sciences: energy saving potential with modern electrical installations



### More background info?

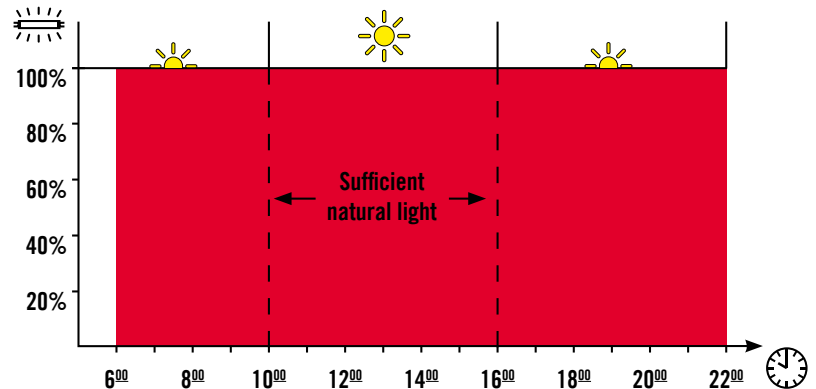
The technical book entitled "Energieeffizienz durch Präsenzmelder und Bewegungsmelder" (Energy efficiency with presence and motion detectors) offers extensive practical information on demand-responsive building automation.

**ISBN 978-3-941276-04-8**

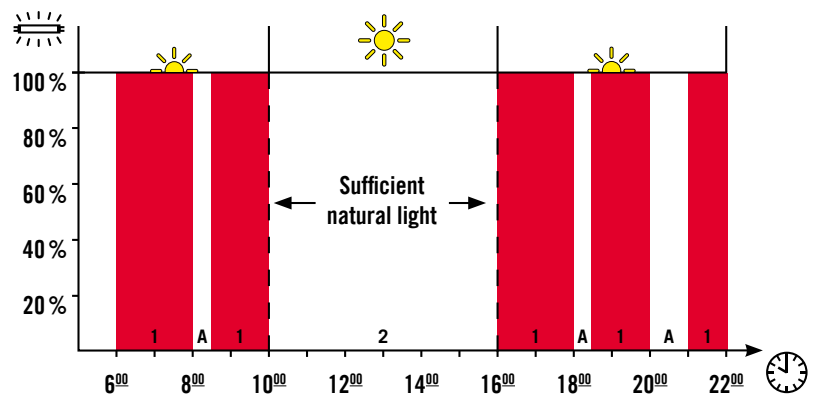


# SAVINGS POTENTIAL OF UP TO 70 % WITH ESYLUX DETECTORS

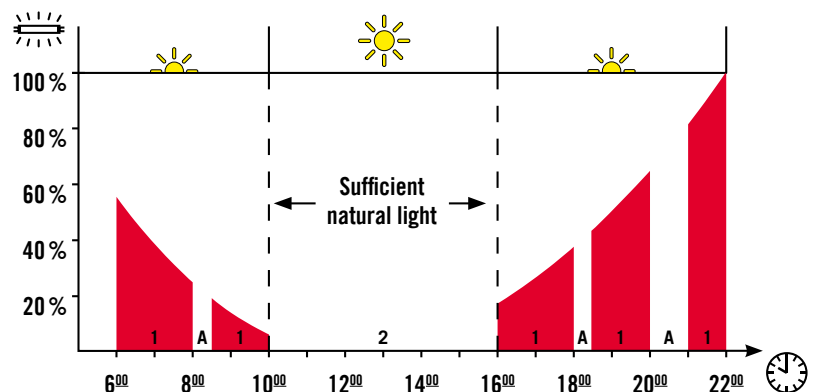
No presence or motion detectors = no energy savings. Energy is wasted because lights are often left on.



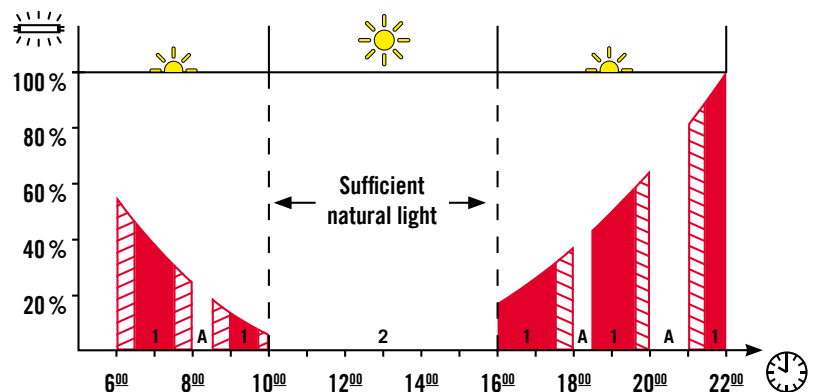
With presence detectors, lights are controlled depending on presence (1) and daylight (2).



Even greater energy savings and optimised lighting are achieved with constant lighting control, according to the level of natural light, together with presence detectors.



Optimum energy savings involve the use of switches and a semi-automatic function which can influence the presence-controlled lighting system if need be.



1 Proportion of artificial light when persons are present  
2 Sufficient natural light  
A Absence

# GUARANTEED COST-EFFECTIVENESS

## OFFICE BUILDING RENOVATIONS WITH MODERN LIGHTING CONTROL

### REQUIREMENT

An existing office building is to be modernised and optimised for energy efficiency. The building has 4 storeys with a total of 120 offices, 1 underground car park, 5 hallways, 2 interior staircases and 8 toilets.



### SOLUTION

Full modernisation by means of the following measures:

1. Insulation and modernisation of heating, ventilation and air conditioning
2. Modernisation of lights and their control via presence and motion detectors
3. Purchase of modern, energy-saving office equipment

Installation of 165 ESYLUX presence and motion detectors provides for a demand-responsive light control.

### SAMPLE CALCULATION

The investment costs for using the detectors amount to approx. 33,850.00 EUR and are recovered in just 2 years.\*

Approx. savings  
**70 %**

	Before modernisation		After modernisation	
Electricity consumption	142,575.36	kWh/year	46,001.44	kWh/year
Electricity costs	26,663.56	EUR/year	8,280.26	EUR/year
<b>Electricity cost saving</b>			<b>17,383.30</b>	<b>EUR/year</b>
CO <sub>2</sub> emissions	88.68	t/year	28.61	t/year
<b>CO<sub>2</sub> reduction</b>			<b>60.07</b>	<b>t/year</b>

\* Sample calculation does not include savings as a result of replacing illuminants

## REPLACING HALOGEN FLOODLIGHTS WITH LED TECHNOLOGY

### REQUIREMENT

15 halogen floodlights are to be replaced on the façade of the offices and warehouse of a logistics provider. The main requirements are low energy consumption, long service life and low maintenance.



### SOLUTION

Installation of 15 ESYLUX OF 240 floodlights. Advantages of replacing halogen floodlights with modern LED floodlights:

1. LED floodlights consume up to 90% less energy than their halogen counterparts.
2. The illuminant life is up to 30 times longer, which also saves on maintenance and replacement costs.
3. LED floodlights are particularly long-lasting thanks to their active and passive heat management as well as the die-cast aluminium housing.

### SAMPLE CALCULATION

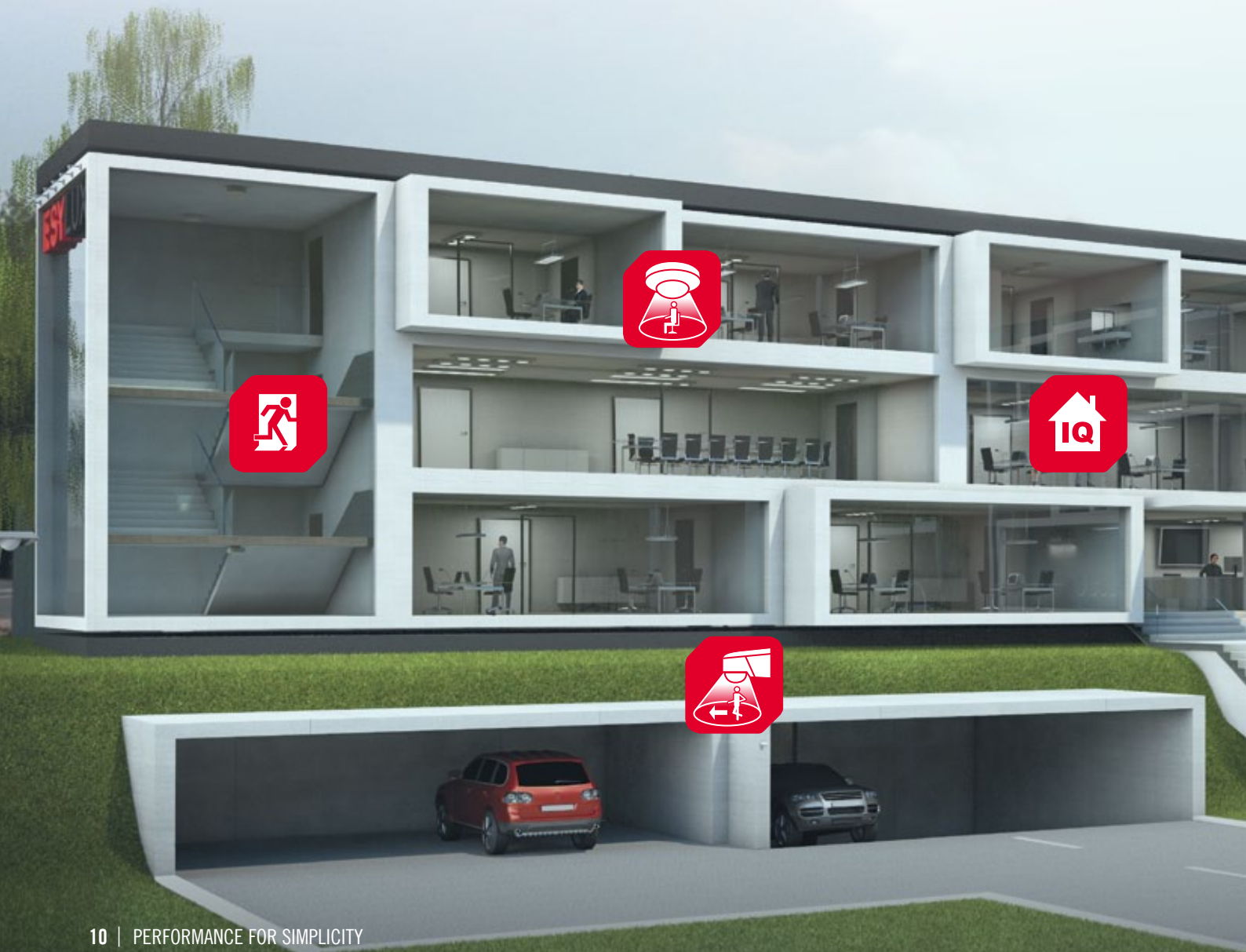
The investment costs for the LED floodlights amount to 9,420 EUR and are recovered in just 2.5 years.

Approx. savings  
**88 %**

	Before modernisation		After modernisation	
Electricity consumption	16,425.00	kWh/year	1,912.60	kWh/year
Electricity costs	4,106.25	EUR/year	477.69	EUR/year
<b>Electricity cost saving</b>			<b>3,628.56</b>	<b>EUR/year</b>
CO <sub>2</sub> emissions	2.9	t/year	0.3	t/year
<b>CO<sub>2</sub> reduction</b>			<b>2.6</b>	<b>t/year</b>

# PERFORMANCE FOR SIMPLICITY

ESYLUX EMBODIES PERFORMANCE FOR SIMPLICITY. IN ENERGY-EFFICIENCY TERMS, THIS MEANS SMART PRODUCTS AND SOLUTIONS THAT MAKE IT SIMPLE TO SAVE ENERGY SUSTAINABLY.



## SPECIALIST SOLUTIONS

ESYLUX offers a suitable solution for all conventional applications. You benefit from our over 20 years' experience in detector technology, not to mention our wide range of products, including presence and motion detectors with state-of-the-art sensors, extra-efficient LED floodlights for outdoor use and clever automatic solutions for controlling lighting, heating, air conditioning or ventilation.

## EASY OPERATION

Whether individual products or systems (e.g. KNX, DALI) – the principle behind all of our solutions is to make assembly, installation and maintenance easier. Examples of this include the pre-set installation profiles of our remote controls, the multipliable installation macros via X-REMOTE or the “blue mode” technology from ESYLUX.

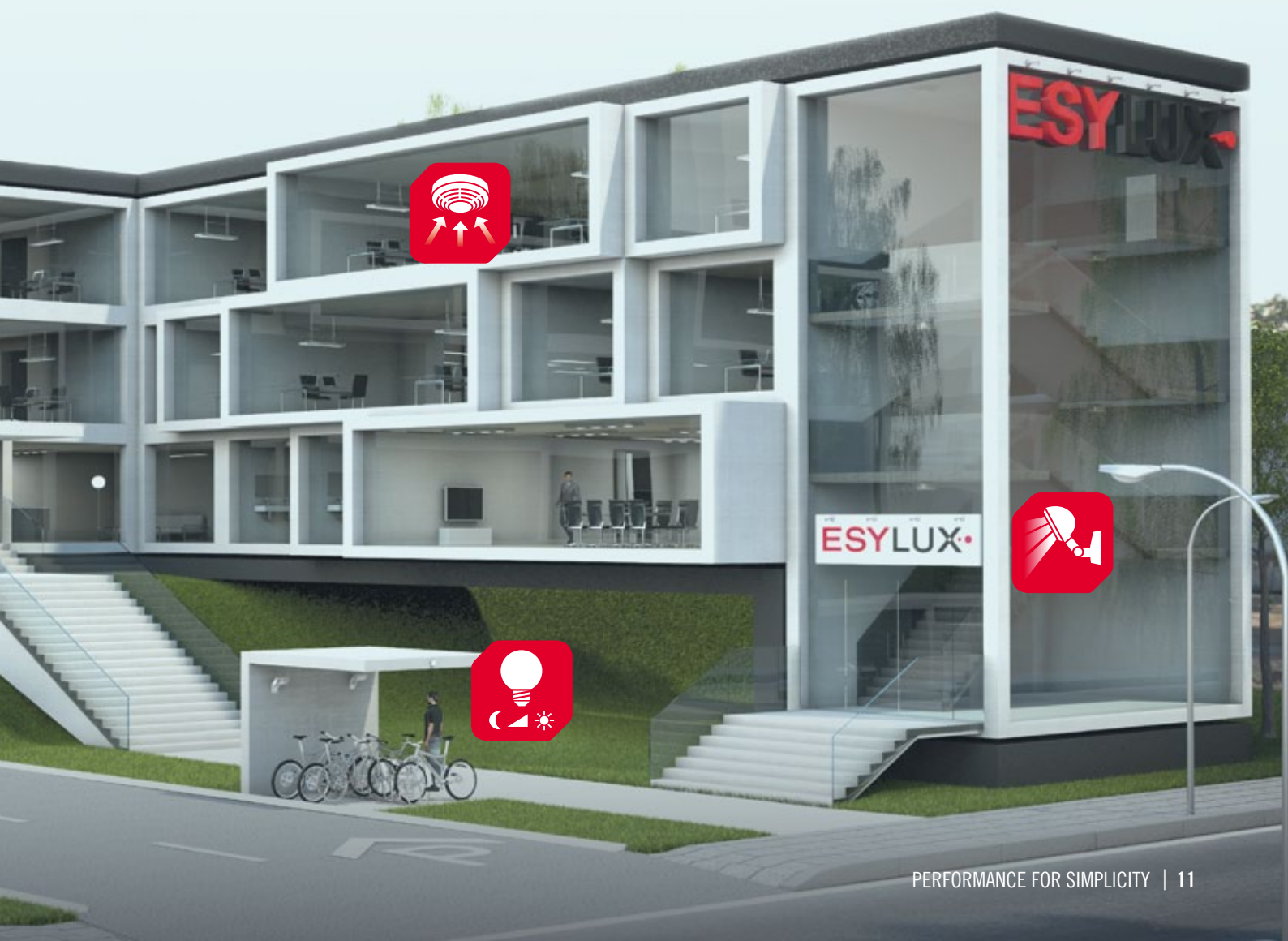


## SUPERIOR PERFORMANCE

ESYLUX is not satisfied with just fulfilling the standard. Three examples: our products consume the lowest amount of energy in the industry. Our LED floodlights boast a particularly long service life thanks to active and passive temperature management. With our 7in1 X-REMOTE you can easily manage all setting functions.

## AWARD-WINNING QUALITY AND DESIGN

ESYLUX products are characterised by their high-quality workmanship. Our outdoor floodlights of the OS/OF series, for example, are salt water-resistant and certified in accordance with DIN EN ISO 9227:2012-09. The fact that we succeed in combining technology and design to perfection is demonstrated not least by the PD-C360i/24 DUODIMplus-SM, which received the Plus X Award (see picture on the left) in five categories, awarded by an international, independent jury comprising specialists from 25 industries.



# YOUR PARTNER FOR ENERGY-EFFICIENT SOLUTIONS

OUR FOCUS ON THE PRINCIPLE OF SIMPLICITY IS NOT MERELY LIMITED TO OUR PRODUCTS. ABOVE ALL, WE ALSO SEE OURSELVES AS YOUR PARTNER AND OFFER YOU COMPREHENSIVE SERVICES WHICH MAKE IT EASIER FOR YOU TO BECOME MORE ENERGY EFFICIENT. COMPETENT, UNCOMPLICATED, EUROPE-WIDE.



## ESYLUX ACADEMY

The ESYLUX Academy provides planners, electricians and wholesale staff with information several times per year on the basics, standards, latest trends and new solutions for designing and planning projects involving demand-responsive lighting control.



## PROJECT PLANNING SUPPORT

Even in the early stages of your planning process, our project department is on hand to assist and advise you: from selecting the right product to explaining the areas of application or providing competent support with positioning and function planning. Planning software and EULUMDAT files (for our lighting products) also complement our personal advice.



## TECHNICAL HOTLINE

We offer you fast and professional assistance via our technical hotline: 04102 / 489 489. Whether you have a question on technical features, assembly or installation, we can provide you with competent, friendly and fast assistance. Mondays to Fridays from 7.00 a.m. to 7.00 p.m.



## COMMITTED TO ENERGY EFFICIENCY

The information and qualifications of our staff and customers are just as important as the development of energy-efficient products. We help you to pinpoint and make use of energy saving potential, e.g. with tools such as our web-based energy-savings calculator.



The fastest way to the  
ESYLUX energy-efficiency and amortisation calculator.

## 1 MORE ENERGY SAVINGS ●

With ESYLUX, tap into your unrealised savings potential and reduce your energy costs by up to 70% in the field of lighting alone by means of demand-responsive building control systems. With power consumption of less than 0.3 W, ESYLUX sensors are classed as “A+ technology” on the market.

## 2 MORE SUSTAINABILITY ●

With ESYLUX, you can install the industry’s lowest-energy-consuming products and use natural resources optimally thanks to intelligent light control. As such, you make a contribution, quite automatically, to reducing CO<sub>2</sub> emissions, in line with the current objectives of EnEV.

## 3 MORE RETROFITTING OPTIONS ●

ESYLUX offers you numerous ways of reducing your operating costs by modernising/retrofitting with energy-efficient sensors, LED or security products. It’s often possible to incorporate ESYLUX products into existing installations, even without laying new lines (e.g. via Powerline).

## 4 MORE CONVENIENCE ●

ESYLUX products are particularly easy to assemble, install and maintain thanks to the snap-in function, intelligent remote controls, blue mode technology, etc. Above all, however, they make their users' lives more convenient by switching light on and off automatically. They can, naturally, be overridden manually at any time, if need be.



## 6 REASONS TO SWITCH TO ESYLUX NOW.

### 5 MORE SECURITY

ESYLUX offers building users and residents more security, e.g. with smoke detectors, escape route lighting/markings or with motion detectors to deter unwanted visitors. Contact-free light control via sensors also improves hygiene (e.g. in hospitals).

### 6 MORE ATTRACTIVE DESIGN

ESYLUX enables you to kit out your building with high-quality, attractively designed products that blend into the existing architecture in a presentable or deliberately inconspicuous manner. Attractive design and miniaturisation – “Made in Germany”.

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**Intrigued to find out more?**

Scan the QR code to find out more  
information on ESYLUX.