



**PHILIPS**

Industry lighting

GreenWarehouse



# Warehouses

## that work better

Using light to transform your business

**LOW RESOLUTION  
– NOT FOR PRINT!**





Unilever, Poland

# Your warehouse, **your way**

## **Lighting has always been a challenging issue in 24-hour warehouse environments.**

Designers and specifiers are more focused than ever on reducing the use of energy in warehouses and making the environment a more attractive and productive place to work. With the latest generation of LED technology, it's possible to increase light quality and flexibility while reducing the time and money associated with maintenance.



**Today, we've entered a new era of warehouse lighting.**

GreenWarehouse from Philips is a system designed for a facility of any size and is suitable for both open spaces and racking. It gives you three types of dimmable and wirelessly-controlled LED luminaires. You are able to create different zones and then easily reconfigure them as the nature of your operation changes.

**It's future-proof and it's flexible.  
Above all, it's efficient.**

With GreenWarehouse, you can typically save 50% on energy costs compared to non-controlled LED installations with fixed output. That's because smart lighting systems can anticipate and respond to the changing needs of the people who are using them. And in addition to this greater personalization, you get to see an increase in productivity and improved safety too.

The GreenWarehouse system is fast to implement and easy to install, whether you're refurbishing your existing operation or developing something entirely new. Now, you really can have your warehouse, your way.



DB Schenker, Austria

# Contents

4 That was then,  
This is now

---

6 Time to make  
the change

---

8 Control  
your space

---

10 Get into  
the zone

---

12 Responsive rack  
illumination

---

14 High performance  
in open space

---

16 Case study:  
DB Schenker

---

18 Achieving business  
goals

---

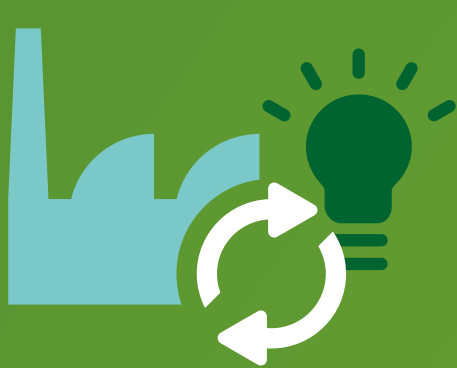
20 Case study:  
Staci Italia

---

22 Services delivered  
the right way, your way

# That was then, **this is**

Whether you're looking at quality of light, the safety of your workforce or the need to reduce your carbon footprint, GreenWarehouse represents the very latest in technological thinking.



## We've seen warehouse lighting evolve in new and exciting ways

Traditionally, warehouse luminaires were seen as inefficient and expensive. This perception started to change with the introduction of digital LEDs. Their long life and low energy use made them highly attractive to energy-intensive businesses.

What's more, LEDs were dimmable through controls and able to respond to the environment around them. Motion sensors could detect exactly when people were entering a particular zone and with the 'instant on' nature of the technology, dimmed lights could be brought up to 100% immediately.

So things had improved considerably. But with high bays, rewiring was still an expense that most businesses would rather not confront. And if you wanted to make a change, it meant even more investment in terms of time and cost.



## The good news is that the world has now changed again

With GreenWarehouse, the complexity and additional expense simply begin to disappear. For a start, the system is wireless. Installation time is therefore cut right down and configuration becomes so much easier. In effect, you have one smart bundle that operates as a complete package.



# now



## Controls have moved on too

A Philips remote is all you need to configure your lighting systems, which means that installers will have an easy job doing so.

It's simple to install and commission and it starts making a positive impact on your warehouse environment right away.



## So what about the future?

Through our professional, lifecycle and managed services, we can ensure your lighting is continually optimized to support business operations.

As data management continues to improve and new lighting technology comes on stream, GreenWarehouse is a system which scales, adapts and responds. Put simply, it's a flexible, future-proof platform for growth.



# Time to make **the change**

Many professionals working in warehousing have been staggered by the pace of change the industry has seen in recent years.





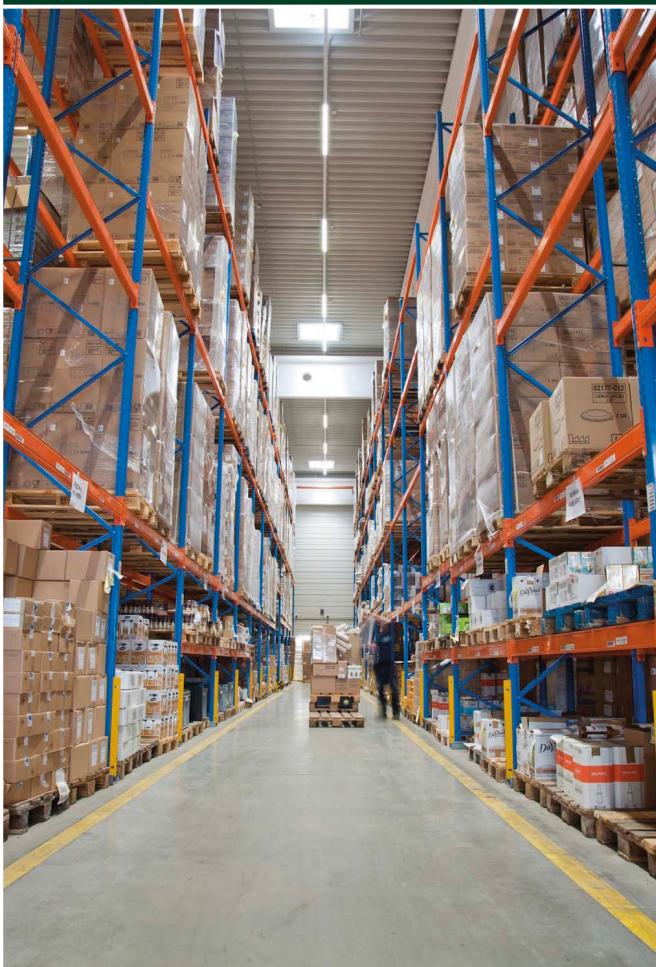
It's not just the pressure from the fast-emerging markets around the globe and the increased levels of competition. It's also the ever-shorter lead times, burgeoning transportation costs and the growing demands of consumers. E-commerce is transforming the way that everybody shops.

In this constantly evolving world, it's vitally important to work as cost-effectively and efficiently as possible. Whether it's reducing energy usage, cutting down on maintenance time or simply working in more intelligent ways, we are under more scrutiny than ever before.

The Philips GreenWarehouse system can play an important role in your overall approach to streamlined logistics.

It's important to remember that light will have a profound effect on people's energy levels and mood.

If you're able to create a healthy workplace, you also create one which is more productive.



If you're able to create a healthy workplace, you also create one which is more productive. For instance, fatigue, poor performance and eye strain can often be traced back to inadequate lighting.

GreenWarehouse provides a uniform light that gives consistent coverage and color rendering. As a result, your teams of workers can do their jobs more comfortably and quickly. They'll also have the reassurance that comes from a safer workplace.

Collectively as a business, you will be working towards your goal of reducing carbon emissions too. With the use of sensors and daylight harvesting, you can cut your energy consumption. And that, in turn, has a positive impact on the bottom line.

Philips believes strongly that GreenWarehouse can play a critical role in helping you drive your company and its operations forward. We invest more in the development of lighting technology than any other company in the market, demonstrating our clear commitment to innovation which helps transform our customers' businesses.

As the world changes, we all need to change with it.



# Control your space

One of the most striking features of the GreenWarehouse system is that it's completely flexible rather than a 'one-size-fits-all' package.

It goes without saying that your environment is unique and you want it to be designed around the specific needs of your business.

GreenWarehouse allows you to create your own lighting zones, set your own dimming levels and plan the duration of particular lighting patterns. And because it's effectively 'plug and play', you're ready to go with the minimal amount of fuss at the point of installation.

We are able to offer state-of-the-art solutions for all parts of the warehouse, including open areas, racking and cold storage. Thanks to wireless controls, these are easy to operate and adjust, while their motion sensors make it straightforward to cut down on energy use. We can tailor a bundle to suit your warehouse, whatever its size, so the system is fully scalable.



## GentleSpace gen2

This product sets the standard in high-bay lighting. Even in extreme conditions, it achieves significant reductions in power consumption and has an impressively long life span of up to 70,000 hours. With its iconic design and reduced height and surface, it is able to meet ESFR sprinkler requirements too.



## Maxos LED General Lighting

With Maxos, you get excellent payback for a minimal investment. Not only does this LED solution meet all the relevant standards for industry applications, but it also offers best-in-class energy savings and high lighting levels. Exchangeable mid-power LED boards can be mounted on a standard trunking rail and come with a choice of wide and medium-beam lenses.



## Pacific LED

We call Pacific LED the 'efficiency champion', as it allows you to save up to 53% on energy. It uses the latest mid-flux LEDs and has low maintenance costs thanks to its long lifetime. Designed to cope with extreme conditions, it also comes with diverse optics, including a system that can provide comfortable lighting with low ceilings.



*Rithenbach Diehl, Germany*



GreenWarehouse allows you to create your own lighting zones, set your own dimming levels and plan the duration of particular lighting patterns.







# Get into the zone

When you establish 'smart zones' within your warehouse, you'll find you're able to shape the environment in exactly the way you want it.

Because the technology is so easy and intuitive to configure and reconfigure, you can change it as your needs evolve. Think of it as a similar process to changing channels on your TV at home.

Even the factory settings for the motion sensors and dimmers are suitable for most warehouse environments, so the luminaires are ready to use as soon as they're installed. But if you want to reconfigure, you simply make use of a remote, which controls dimming level, duration and hold times.

When you combine several luminaires together, they form a network. You then select the mode that dictates

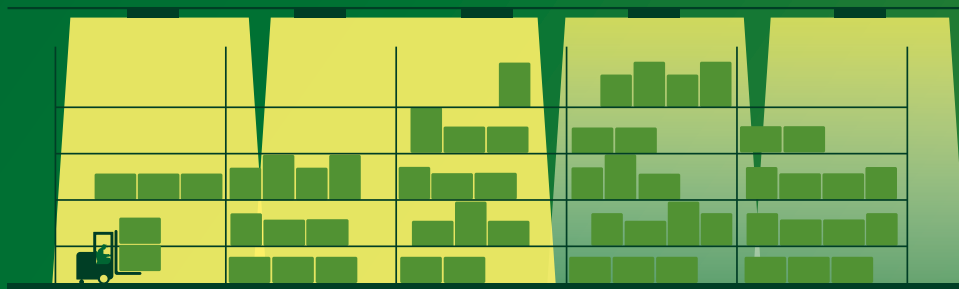
how that network will behave. Some of the settings, for instance, are more geared towards comfort, while others place a priority on energy savings.

Why not break the lighting pattern down further by splitting your network into zones, built around motion sensors? When someone has been detected in a particular zone, your lights can automatically come up to 100%, while the other areas remain dimmed. It's a superb way of reducing your carbon footprint and saving on cost.

Now, combined with zoning, controls and presence detection, LED really has come of age.

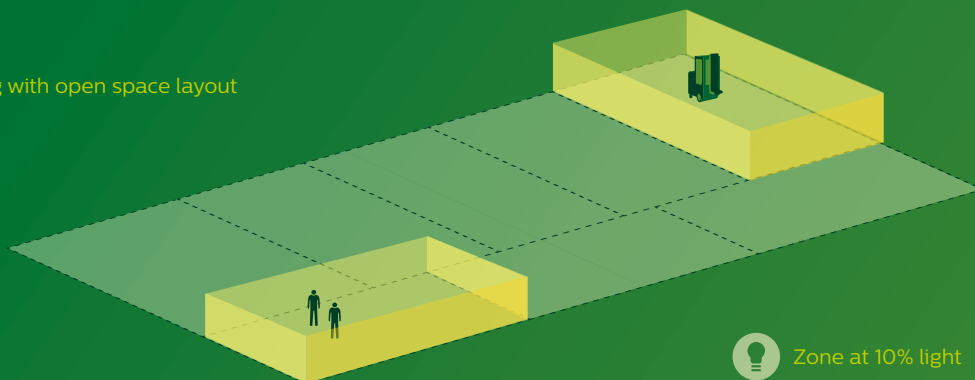
Your lights can automatically come up to 100%, while the other areas remain dimmed.

**Dimming example –** light always one step ahead



**Zoning example –** configure your way

Racking with open space layout

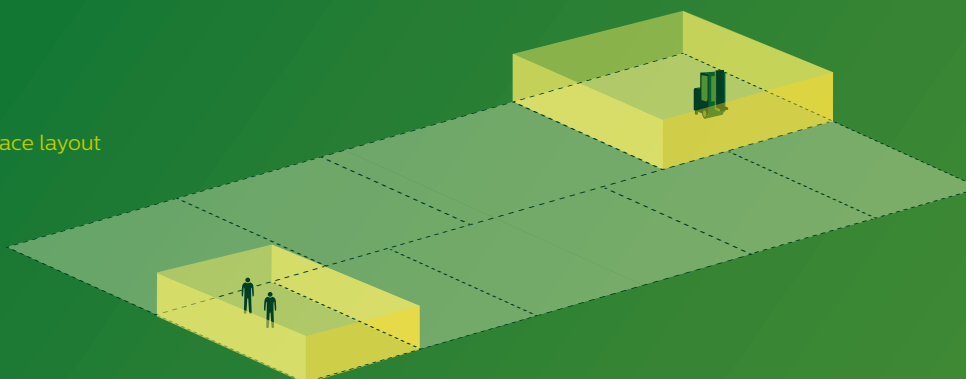


Zone at 10% light



Zone at 100% light due to presence

Open space layout





**Racking**  
ceiling heights of 7/8 meters

# Responsive

## rack illumination

It's essential for your staff to have high-quality, uniform light when picking stock. But the reality is that some areas of the warehouse will often be much more frequently used than others.

With the advanced optics of GreenWarehouse, you can make sure that light adapts to your needs, leading to significant savings in terms of energy.

If you're keen to achieve better uniformity of light, our trunking solutions and easy luminaire connection give you the best possible options. We can also offer different optics based on how high or wide a gangway is. Our Narrow Beam option works in heights of up to 12 meters, which means that your shelves can be uniformly lit to a high standard.





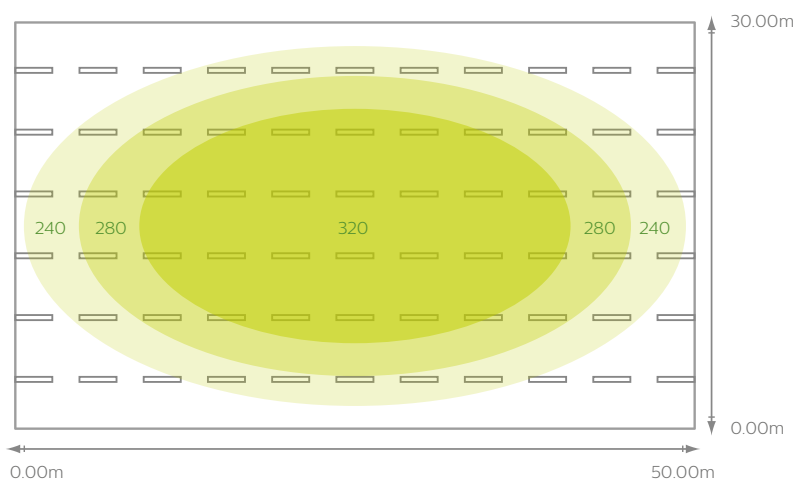
## Solution:

Maxos LED66S/840 PSD WB

Ceiling height: 8m / Mounting height: 7m

Area	p (%)	$E_m$ (lx)v	$U_0$
Workplane	–	301	0.633
Floor	20	289	0.482

Values in lux, scale 1:208. Specific connected load: 3.24  
W/m<sup>2</sup> = 1.08 W/m<sup>2</sup>/100 lx (surface area 1,500m<sup>2</sup>),  
Maintenance factor: 0.72



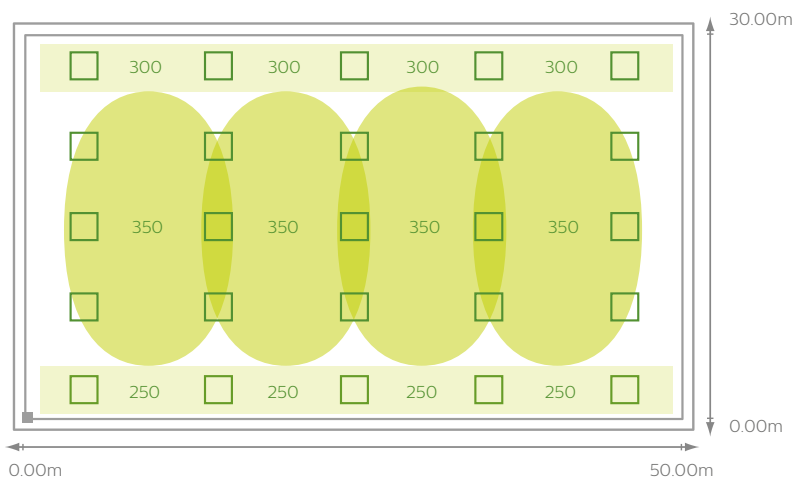
## Solution:

GentleSpace gen2 LED250S/840 WB

Ceiling height: 8m / Mounting height: 7m

Area	p (%)	$E_m$ (lx)v	$U_0$
Workplane	–	342	0.562
Floor	20	328	0.467

Values in lux, scale 1:208. Specific connected load: 3.40  
W/m<sup>2</sup> = 0.90 W/m<sup>2</sup>/100 lx (surface area 1,500m<sup>2</sup>),  
Maintenance factor: 0.72



P = reflectance;  $E_m$  = average illuminance,  $U_0 = E_{min} / E_{ave}$  (uniformity)



Open space  
ceiling heights of 10/11 meters

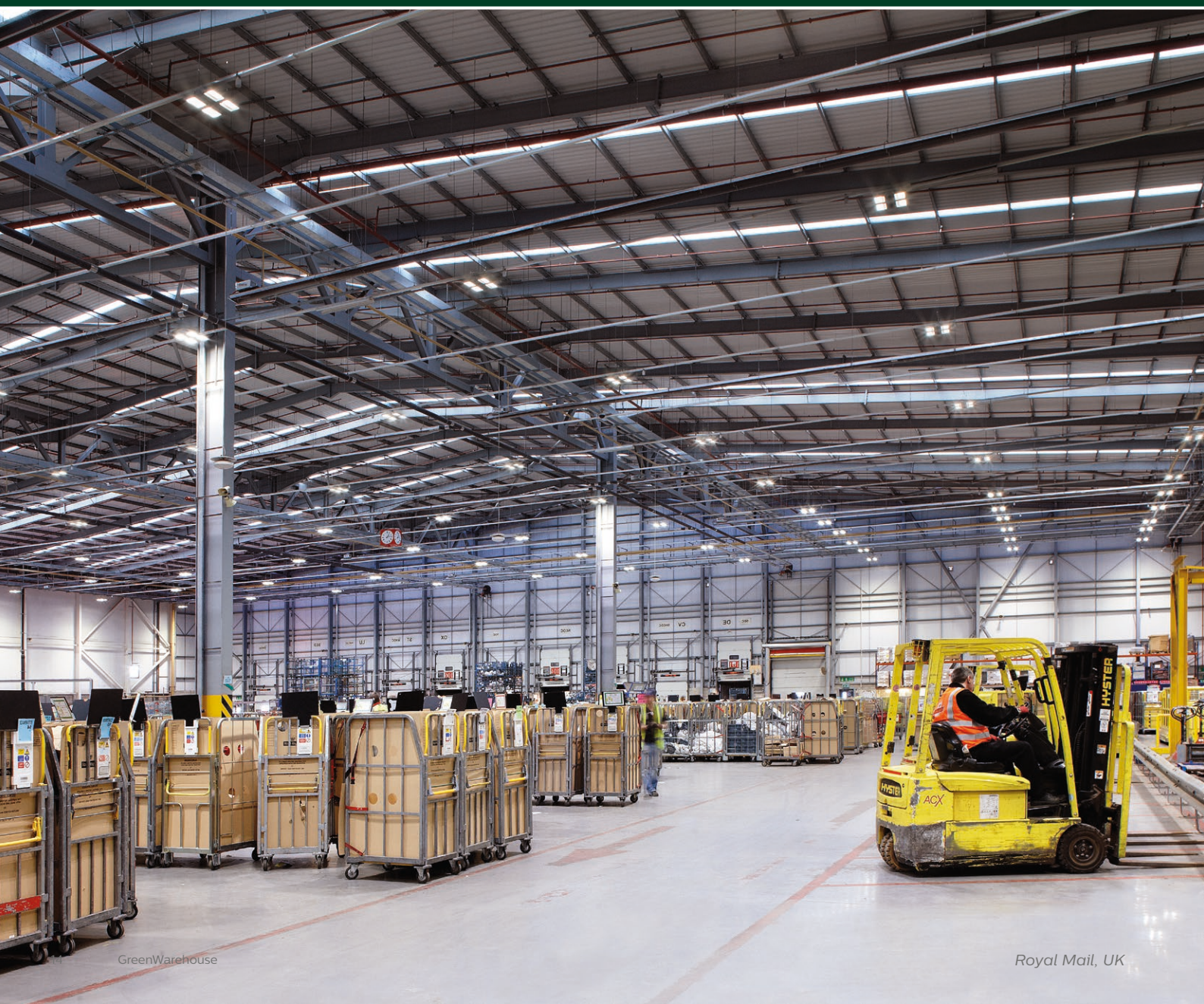
# High performance

## in open space

Many specifiers and designers have tended to think of high-ceiling installations as costly and complex. Certainly, most businesses are looking for a long-lasting solution to minimize expense and disruption.

GreenWarehouse incorporates Philips Lighting high-bay luminaires, which are known for their good performance and long life. Just one source, in fact, can play a significant role in the warehouse environment, so you actually need fewer luminaires.

If you have very low ceilings and require lower lumen packages, it's important to think carefully about the optical beam you choose. It must be right for the height of the space and the suspension distance. With the Maxos LED Industry system, you have a choice of wide and medium-beam lenses, giving you real flexibility in light distribution.





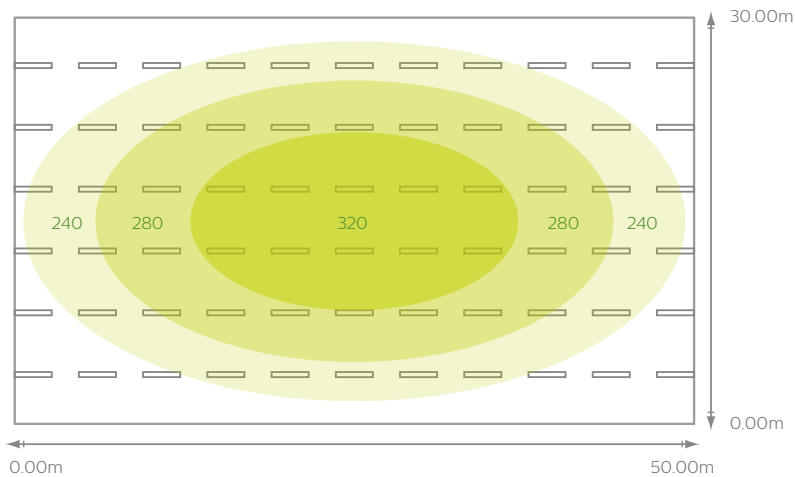
**Solution:**

▮ Maxos LED 66S/840 PSD WB

Ceiling height: 11m / Mounting height: 10m

Area	$\rho$ (%)	$E_m$ (lx)v	$U_0$
Workplane	–	303	0.567
Floor	20	291	0.393

Values in lux, scale 1:208. Specific connected load: 3.49  
W/m<sup>2</sup> = 1.15 W/m 2/100 lx (surface area 1,500m<sup>2</sup>),  
Maintenance factor: 0.72



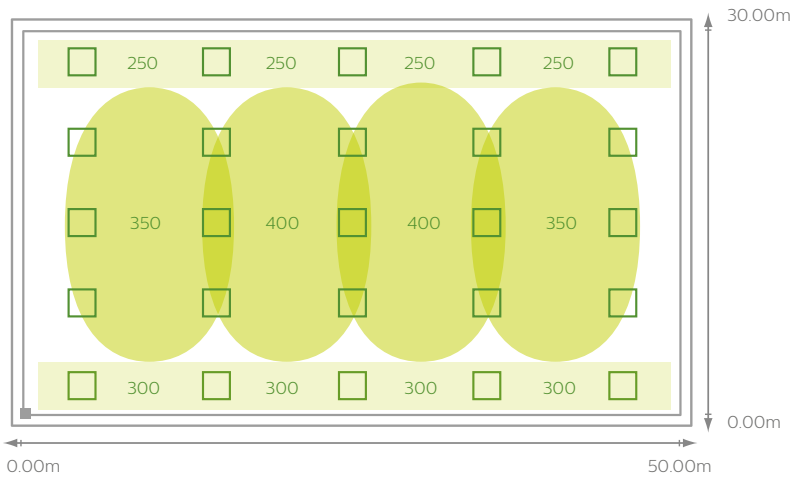
**Solution:**

□ GentleSpace gen2 LED250S/840 WB

Ceiling height: 11m / Mounting height: 10m

Area	$\rho$ (%)	$E_m$ (lx)v	$U_0$
Workplane	–	302	0.612
Floor	20	289	0.346

Values in lux, scale 1:208. Specific connected load: 3.40  
W/m<sup>2</sup> = 1.13 W/m 2/100 lx (surface area 1,500m<sup>2</sup>),  
Maintenance factor: 0.72



P = reflectance;  $E_m$  = average illuminance,  $U_0 = E_{min} / E_{ave}$  (uniformity)



## Case study

DB Schenker  
Linz, Austria

# Super effective, and energy efficient

Lighting needs to be powerful and effective in any industrial setting, but there's increasing pressure to save energy too. Reducing consumption and cutting CO<sub>2</sub> emissions isn't just good for the environment. It saves money and marks your business out as a green trailblazer.

## Managing light in the warehouse

### The project

DB Schenker is the transportation and logistics arm of Deutsche Bahn, with a global network built on customer service, quality and sustainability. The business was already in the process of improving its energy consumption in four warehouses, as part of a large range of initiatives to reduce CO<sub>2</sub> emissions. Working with Philips project partner Siemens, they agreed to move ahead even more radically through the implementation of our GreenWarehouse solution.

### The challenge

Under DB Schenker's 2020 climate protection program, CO<sub>2</sub> emissions had to be reduced by 20% between 2006 and the end of the current decade. In the company's warehouses, lighting accounts for up to 60% of total energy costs. It was imperative to reduce this figure, while at the same time acting flexibly and respecting the requirements of the business at every stage of the operation.







“

**This is how  
I see the future.**

Everything around  
me reacts to me,  
including the light.”

Robert Donev  
Facility, Safety and Environmental Management



#### The solution

GreenWarehouse combines energy-efficient lighting (in this case, Maxos LEDs), with an interactive light management system. All the lights are equipped with a control unit which has a movement sensor and wireless controller, ensuring that lights are dimmed when they are not needed.

A 2,200-meter busbar system was easily installed, as no cables had to be laid, meaning there was minimal disruption to DB Schenker's daily operations. The new technology was also seamlessly linked with the existing Siemens daylight control system.



Savings of nearly

€42,000 p.a.

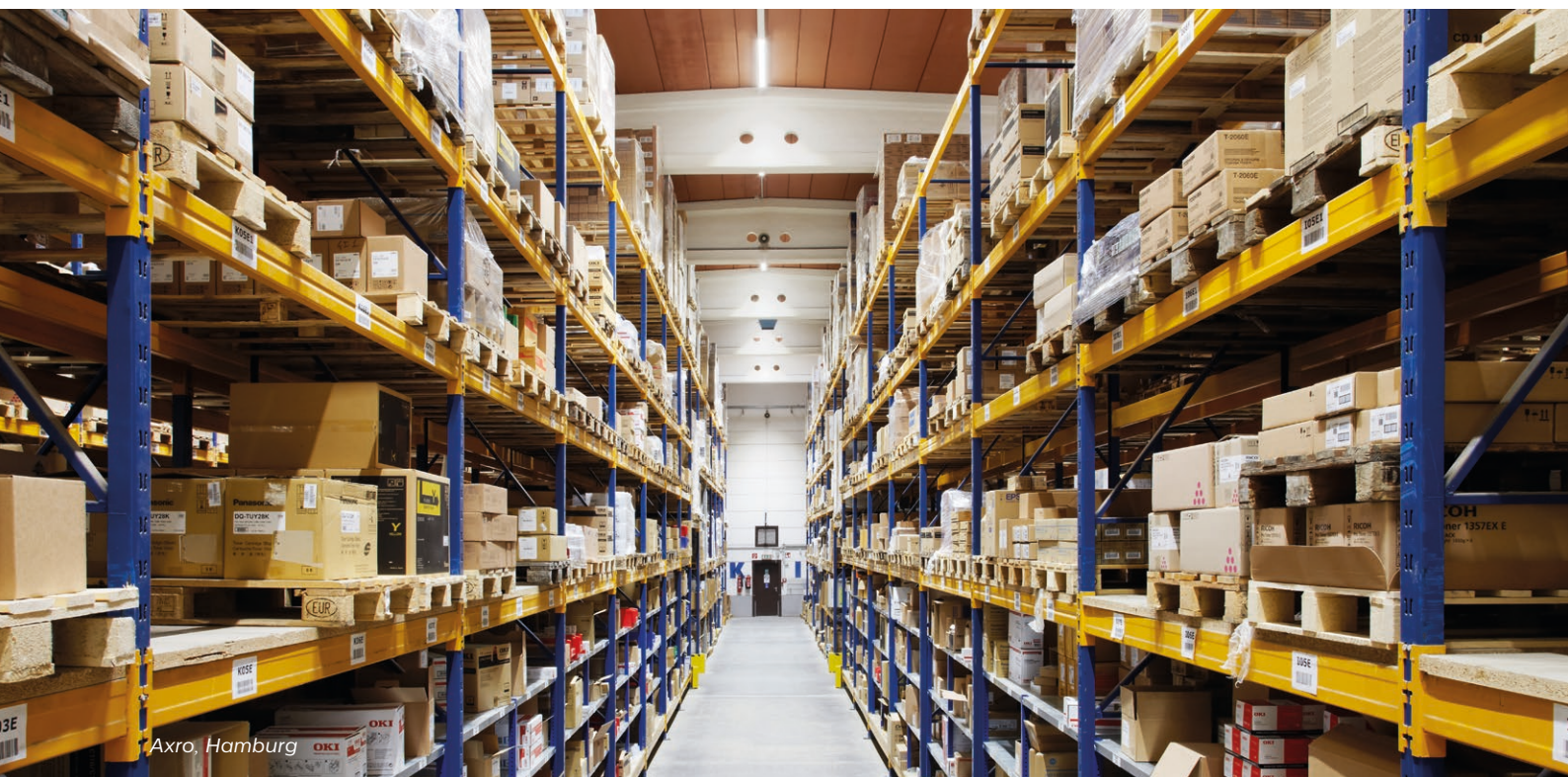


CO<sub>2</sub> emissions reduced by

201 tonnes p.a.



# Achieving **business goals**



Axro, Hamburg

“

It's really economical not having to run new wiring; **the installation costs end up minimal, but the savings are maximised.**”

Jan Persson, Project Manager at Orkla Foods Sverige AB and AH Automation AB

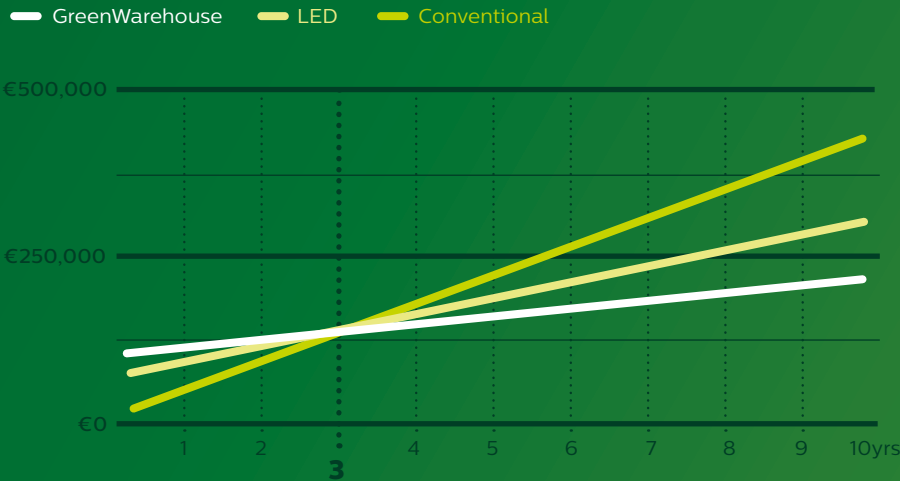


We understand the challenges you face, from a commercial perspective as well as a lighting one. Our pedigree in lighting means we're uniquely placed to keep innovating. Philips spends more than any other lighting company on new product development (around 7% of turnover) – and our focus is firmly on enhancing your business efficiency.

**Speedy return on investment**

Typical payback time for the Philips GreenWarehouse system is just three years, as the combined efficiency of LED plus controls and zoning results in up to 50% energy and cost savings. Constant Light Output – adjusting over-lighting by dimming down to the correct lumen level from installation can create up to 10% additional energy savings.

**Total cost of ownership:**  
over a 10 year period

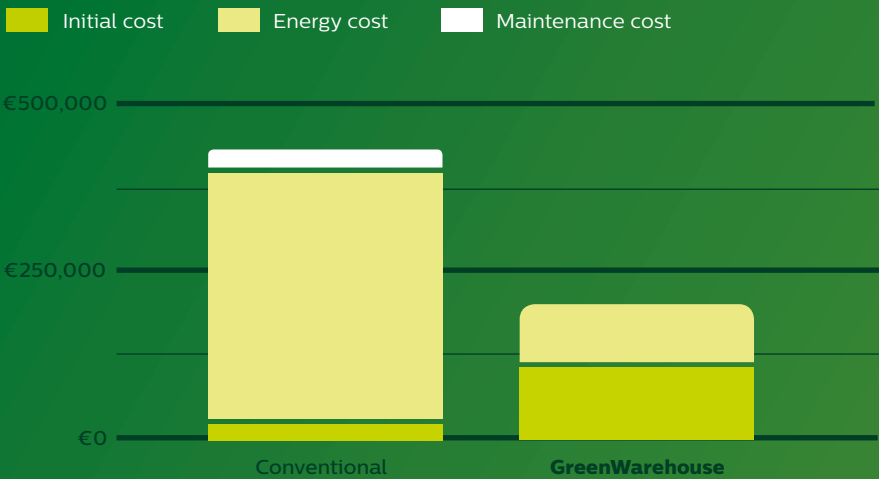


Typical payback on investment



Possible energy and cost savings over LEDs without controls

**Return on investment example:**  
over a 10 year period



Additional energy saving with constant light output



#### Case study

Staci Italia SRL, French international logistics firm  
Casorate Primo (PV), Italy

# Brighter warehouse, lower energy bills

In 2015, Staci invested in a 24,000 square meter warehouse and needed a new lighting installation. It wanted a system that would significantly reduce its operating and maintenance costs, while meeting all relevant lighting regulations.

The company opted for an innovative solution: GentleSpace gen2 with the GreenWarehouse wireless control system.

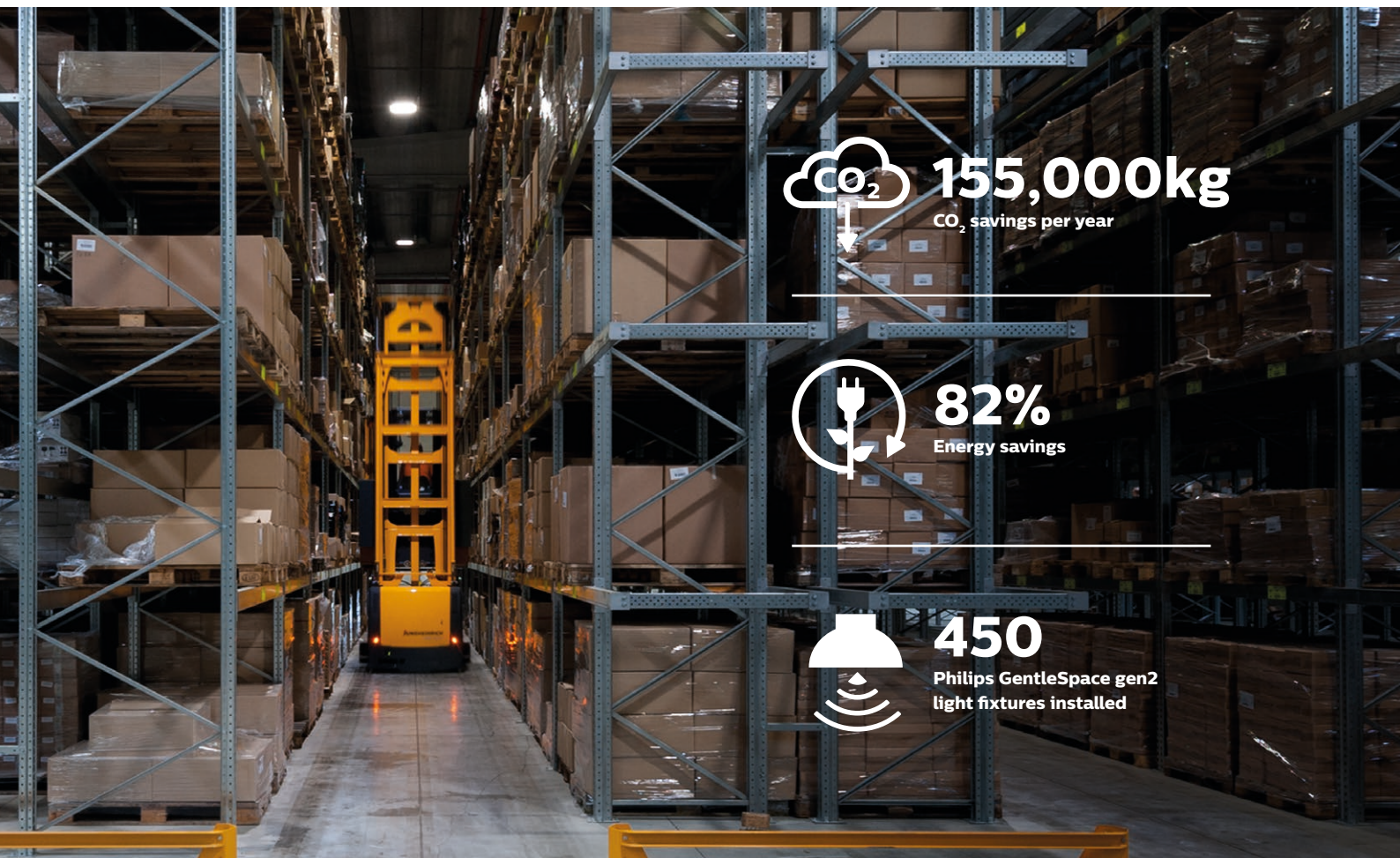


“

We've achieved our goal in terms of energy savings and, just as importantly, we've created an environment that protects our workers' health.”

Daniele Conti, Staci Quality and Business Processes Engineering.





#### Our solution

The main challenge was how to create a well-lit, healthy environment for warehouse staff, while at the same time saving energy and cutting operating costs.

The large warehouse required a detailed lighting design, but the installation of the GreenWarehouse system was fast and simple.

Around 450 GentleSpace gen2 light fixtures were grouped into zones. The lights are controlled by motion sensors and an automatic regulator with wireless control, which dims the lights to 10% of their power when they're not in use.

This motion-detection technology has created a highly flexible lighting environment that responds to activity at Staci's warehouse. For example, lighting zones activate automatically when staff are unloading deliveries, or when they're moving stock from one part of the warehouse to another.

Using GreenWarehouse, Staci has created a healthy working environment, with lighting levels that meet all current standards. And because the motion sensors activate the lighting only when it's needed, energy consumption has dropped by 82%.

Environmental performance has also improved. In terms of tonnes of oil equivalent, Staci anticipates annual savings of around 55 TEP – which means 155,000 kg less CO<sub>2</sub> emissions every year.





# Services delivered the right way, **your way**

Lighting is in our DNA. We've been designing and delivering lighting installations for more than 120 years, so one thing you can bank on is peace of mind. How do we work? We're big on flexibility. We'll package our support around exactly what you need.



## Professional services: pre installation

We offer help at the planning stage through our unique professional services approach – by doing an initial audit and recommending a design solution to ensure best outcomes.

### Audit

#### On-site data collection and data analysis

Recommendation for improvement with a clear base line; ensures customer receives the latest and most up-to-date information on the lighting installation

- Lead
- Scope
- Data Collection
- Data Analysis

### Consulting

#### Solution design arising out of data analysis

Right design with help of data from field, options to work with to get best optimized (cost to benefit) solution to move forward, we also ensure selected design is implemented to expectation

- Solution design
- Business case
- Solution Implementation
- Sign off



## Lifecycle services: post installation

And post installation we offer a menu of options to choose from, with three packages, from Essential to Premium and Premium+ depending on your needs.

### Essential Package

#### Protecting your investment

- Helpdesk and service ticketing
- Preventive maintenance via field support
- Corrective maintenance via remote call support
- Spare parts and additional services at discounted prices

### Premium Package

#### Ensuring hassle-free and budgeted operation

- Everything in the Essential Package
- Comprehensive maintenance via trained service engineers for on-site service activities
- Spare-part kit and replacement for failures

### Premium+ Package

#### Optimize performance and meet your business objectives

- Everything in the Premium Package
- Documentation and project information in a customer portal
- Ongoing user training





© 2016 Koninklijke Philips N.V. All rights reserved. Philips reserves the right to make changes in specifications and/or to discontinue any product at any time without notice or obligation and will not be liable for any consequences resulting from the use of this publication.

[www.philips.com/greenwarehouse](http://www.philips.com/greenwarehouse)

GentleSpace GreenWarehouse:  
<http://philips.to/1UY0aV6>

Maxos LED GreenWarehouse:  
<http://philips.to/1GjgSTV>