PHILIPS

Horticulture LED Solutions



Your recipe for growth. **Better control. Better quality.**

Offer special crop varieties precisely during the market's peak periods

Common questions

Products	
Making a choice	



Common questions about LEDs for ornamental crops

Do I need to supplement the LEDs with HPS to get the radiant heat?

No, there are many examples of growing situations all over the world which are only using LED lighting. The downside of HPS is you cannot turn the heat down and control light and heat separately, which can result in overheating or burning the plant. This means with HPS you have to ventilate the air and it is difficult to keep a stable climate for the plants. With LED lighting you can remain the stable climate without opening your windows and losing CO₂. You can apply higher levels of light to plants with 70% less radiant heat than HPS light, giving you more flexibiliy because you can seperate heat and light. That means you can illuminate roses longer without overheating them and keep orchids, annuals, and perennials cool when growing them in multiple layers or greenhouses with LED lighting.

3 Is LED a mature technology in floriculture?



The LED revolution in floriculture has been going on for several years and Signify has been involved right from the start. We work side by side with many innovative growers and independent research institutions and Universities around the world to develop reliable and efficient LED technologies for their needs: Wageningen (NL), Colorado State (USA), Chisholm (AUS), and Guelph (CAN). After decades of intensive development, we believe that today LED lighting is a mature, reliable technology that has earned its place in the mainstream lighting market.

2

How fast do LEDs pay for <u>themselves?</u>

We started our operations in 2009 and since 2011 our first customers started second or third purchases of LED lighting to expand their operations, proving the quick payback time. The investment for LED lighting is higher, but a thorough calculation shows that the investment can be paid back in a few years. Compared to high pressure sodium lamps (HPS) which have to be replaced annually, LEDs use much less electricity, cost less to replace, last longer, allow more control over heat and light and produce higher light levels. LED lighting has the potential to improve your business results and deliver when the market demands are the highest – through larger, heavier blooms, more intense colors, stronger stems, more precise flowering and higher yields.

4

Can LED lighting benefit ornamental crops?

Yes, the dedicated horticultural research team at Signify has carried out many research projects with an international network of Universities, horticulture research institutes and other light recipe partners on diverse floriculture crops and environments. Based on this work, we can advise growers on which crops will benefit from LED technologies and custom light recipes – and which ones will not. LED lights have been shown to produce longer, stronger cut roses and increase yields, improve rooting and health of crops, and speed up growth for many floriculture crops.

Results of **LED lighting** in typical floriculture applications

Read the results that other ornamental crop growers and horticulture research institutes have achieved with Philips LED technologies and custom light recipes for their crops and situations.

Young plant production for annuals and perennials

GreenPower LED toplighting



Excellent choice for photoperiodic lighting

GreenPower LED flowering lamp



- Higher quality, uniformity and yields, lower energy costs. Rudy Raes Perennials, Belgium
- 5-7 day faster rooting, up to 3 week shorter crop cycle. Iwasaki Brothers Bedding Plants, USA
 Better climate control by adjusting light, ventilation and
 - **temperature separately.** Delphy Improvement Center, The Netherlands
- Much better quality crop, more uniform plant growth and longer stems. Esmeralda Farms cut flowers, Ecuador
- Better control of the day-length manipulation cycles. Florensis Mother Plants, Kenya
- Earlier petunia flowering and up to 90% energy savings. Ruibal's Plants of Texas Ornamentals, USA

A combination for roses and chrysanthemums

HPS toplighting & GreenPower LED toplighting



- Improves the quality of winter grown crops in a cost-effective way. Linflowers Chrysanthemums, the Netherlands
- Longer, bigger rose stems, 30-50% higher yields. Scheers Rose Nursery, Belgium
- Easier to control growing conditions by separating heat and light. Van der Harg Potroses, the Netherlands

Productive option for potted plants and multi-layer cultivation

GreenPower LED production module



- More flower buds per plant, more control over budding moment.
 De Hoog Orchids, The Netherlands
- Significantly higher propagation rates of perennials, up to 75% energy savings. Kernock Park Plants Perennials, United Kingdom
- Better germination rate and more control with less water, labour and space. PanAmerican/Kieft Seedlings, USA

For more information, go to: www.philips.com/horti

Common questions Results

Products

Making a choice

Reliable GreenPower LED products, **not just a paper promise**

Philips GreenPower LED toplighting



For new installations or to replace existing HPS or HID lights in a greenhouse

Philips GreenPower LED toplighting opens up new opportunities for every greenhouse grower in the ornamental sector to increase their quality and yields and move to year-round production.

Proven benefits

- Increases lighting capacity
- Shortens growth cycles
- Improves plant quality
- Separates light from heat
- Increases yields

Philips GreenPower LED flowering lamp



For photoperiodic lighting of bedding plants and perennials in a greenhouse

Philips GreenPower LED flowering lamp has demonstrated its ability to cut your energy usage by up to 90% versus incandescent lamps, offers big energy savings versus halogen and compact fluorescent lamps (CFL) and boosts crop results. It is an effective, energy-efficient way to extend daylight in greenhouses.

Proven benefits

- Easy fluorescent lamp replacement
- Fast growth cycles
- Cost-effective
- Prevents flowering of cuttings in motherplants
- Early flowering for young plants production
- Reduces energy costs

Philips GreenPower LED production module

The efficient option for multilayer and large-scale greenhouse cultivation

The GreenPower LED production module for multilayer applications gives you more control over your growth process and more consistent results, higher quality crops and energy savings of up to 75%. These energy-efficient LEDs also give off less heat and create a more uniform light distribution, making them ideal for climate controlled environments.

Proven benefits

- Quicker rooting
- Less botrytis control needed
- Year-round production
- Control over growth
- Higher rooting percentages

Due to our network, we have the opportunity to mass produce our products and take care of both small and large projects worldwide. Every grower has different needs, so we offer a variety of LED products that support you to make the most of your crops and growing situation. This page provides an overview of the products we offer for the ornamental crop sector. For advice on your specific situation, please contact us via horti.info@signify.com. Your request will be handled by the Signify account manager and Horti LED partner in your region.

EU mains – 400 V				Universal mains				
Regular Output		High Output		Regu	Regular Output		High Output	
Voltage	400 V	Voltage	400 V	Voltage	200 - 400 V	Voltage	277 - 400 V	
Power	160 - 190 W	Power	195 - 210 W	Power	175 - 215 W	Power	265 - 285 W	
Light output	410 - 520 µmol/s	Light output	620 µmol/s	Light output	410 - 550 µmol/s	Light output	800 µmol/s	
Efficiency	2.6 - 3.1 µmol/J	Efficiency	3.0 - 3.2 µmol/J	Efficiency	2.3 - 2.6 µmol/J	Efficiency	2.8 -3.0 µmol/.	
Ingress Protection	IP66	Ingress Protection	IP66	Ingress Protection	IP66	Ingress Protection	IP66	
Lifetime	35,000 hrs	Lifetime	35,000 hrs	Lifetime	35,000 hrs	Lifetime	35,000 hrs	

Note: All data is subject to change

Deep red / white

Voltage	120-230 V
Power	13 W
Light output	25 µmol/s
Efficiency	1.9 µmol/J
Ingress Protection	IP44 UL/CSA
Lifetime hrs	25,000

Deep red / white / far red

Voltage	120-230 V
Power	11 W
Light output	20 µmol/s
Efficiency	1.8 µmol/J
Ingress Protection	IP44 UL/CSA
Lifetime hrs	25,000

Note: All data is subject to change

120	cm	
Voltage	120 - 277 V	Vol
Power	10 - 25 W	Po
Light output	25 - 66 µmol/s	Lig
Efficiency	2.6 - 3.0 µmol/J	Eff
Ingress Protection	IP66	Ing
Lifetime	35,000 hrs	Life

150 cm		
Voltage	120 - 277 V	
Power	12.5 - 32 W	
Light output	62.5 - 83 µmol/s	
Efficiency	2.1 - 3.0 μmol/J	
Ingress Protection	IP66	
Lifetime	35,000 hrs	

Note: All data is subject to change

Thanks to Philips LED toplighting we are improving the quality and success rate of propagation"

Bruce Harnett Owner Kernock Park Plants

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Making a choice

Ask yourself the right questions, beyond the product

At Signify we understand that your business is unique and there are many factors involved when considering LED grow lights for your crops. Our team includes plant specialists, key account managers, and light specialists who are all dedicated to helping you make the best decision to grow your business.

Experienced partner

You want to be sure that your investment will rapidly pay for itself and that the entire process will be professionally carried out. Signify is a global leader in the lighting sector and has built up a substantial track record in hundreds of projects in the horticultural lighting market since 1995.

How many years of experience does your potential LED supplier have and how many LED lighting projects have they carried out?

Realistic business plan

To help you make a realistic decision about how you can get the most out of your LED investment, we provide you with a business calculation based on your business goals, crops and growing situation. It shows how long it will take you to repay the investment, as well as your savings and additional potential earnings over time. We can also help you in the rebate process and in financing the investment.

Does your potential LED supplier have examples of having realized their predictions?

Local support every step of the way

We work with a global network of certified LED horticultural partners, and one of our local partners are always involved in your project. Our local partner is responsible for installing your Philips LED solution and is right around the corner to provide local assistance and after-sales support if needed or desired. **Can your potential LED supplier ensure quality installation and after-sales service through local horticultural partners?**

Growing and evolving

Our global network connects growers across the horticulture spectrum with experts from Universities, horticulture research institutes and other light recipe partners so you can learn and evolve LED technology to a higher level. We organize events to bring this community together to share results and discuss their best practices of growing with LED lighting. **Does your potential LED supplier**

actively invest in research for horticultural LED lighting?

Making the most of your business

Signify brings together a variety of specialists to help you make the most of your business. From plant specialists to lighting experts and business advisors, we have all the experts in house to create a custom solution that will help you realize your business goals. Working with Signify guarantees you to have access to state of the art knowledge from LED experts.

Does your potential LED supplier have its own plant specialists in house?

Financial support

The only way to stay ahead of the competition is to invest in new technology. We understand just how important this is, but in these times it can sometimes be difficult to obtain financing for your investment. Signify can support you in creating a realistic business plan to convince your financiers.

Does your potential LED supplier offer support with financing options?



LED Horti Partner

Make your business bloom with Philips LED technologies

Many ornamental crop growers are using LED technologies to light the way to more satisfied customers and higher profits. Whether you want to increase propagation success in your potted plants, get bigger flowers and higher yields of cut flowers or grow more crops of perennials in a year, Philips LEDs can help you achieve your goals.



More questions?

Visit our website www.philips.com/horti

Write us an e-mail: horti.info@signify.com

Or tweet us: @PhilipsHorti



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Document order number: 4422 942 64671 C 12/2018 Data subject to change