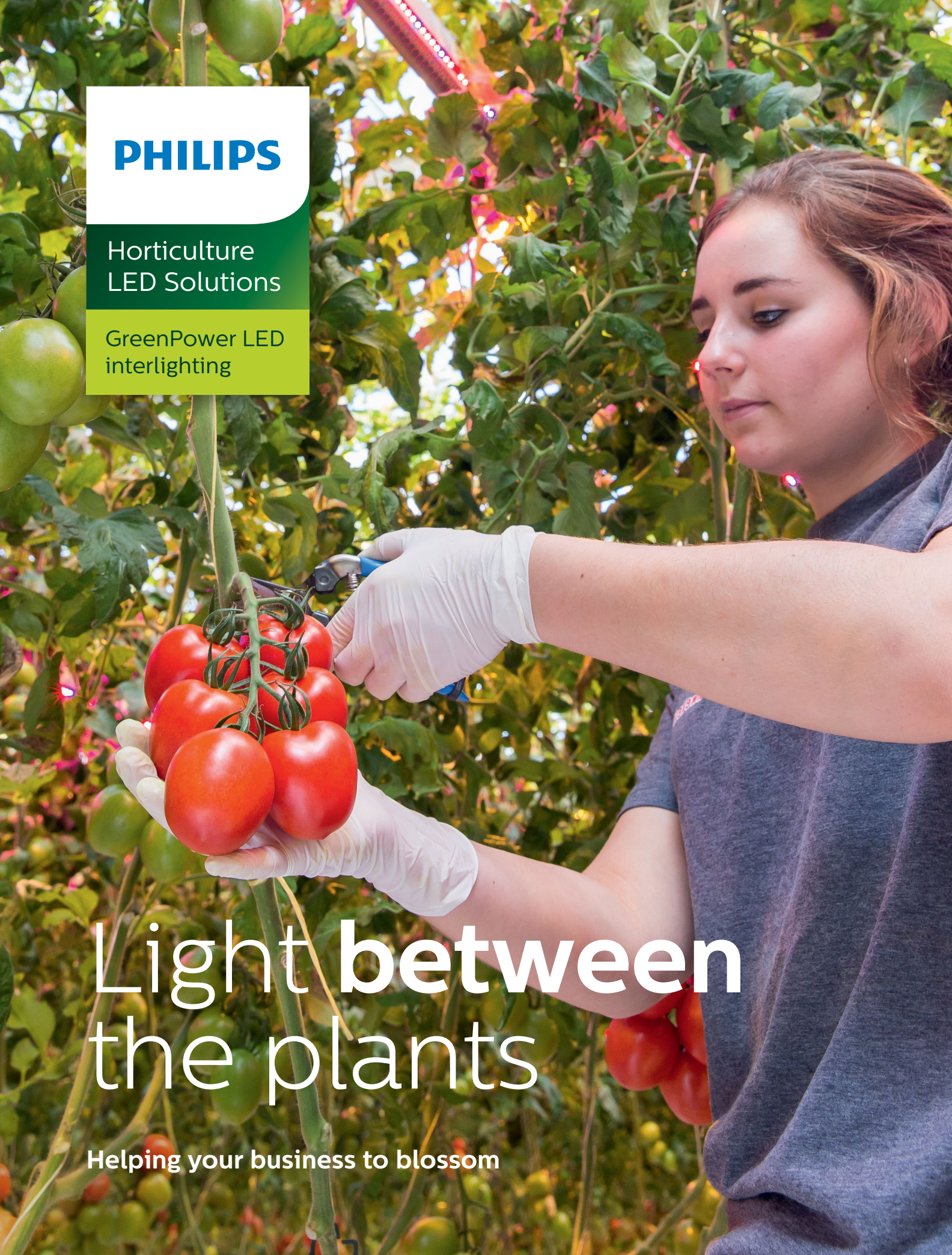
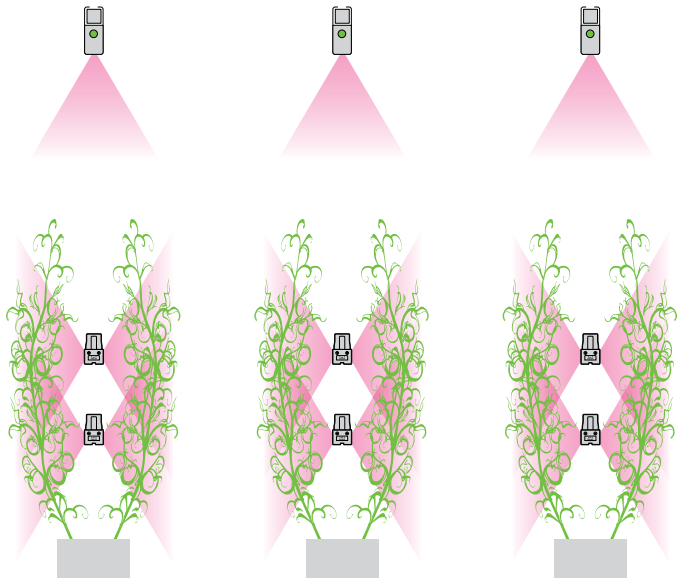

PHILIPS
Horticulture
LED Solutions
GreenPower LED
interlighting
Light between
the plants
Helping your business to blossom

Philips GreenPower **LED interlighting**

The position of lighting

In order to give the sun a helping hand and support the plants in the dark winter months, we provide additional light by means of lamps positioned above the plants. This is a location that would seem to be perfectly logical. After all, this is where natural light comes from. The quality, intensity and efficiency of the light have improved over the years, but the position of the lighting has hardly changed, until now.

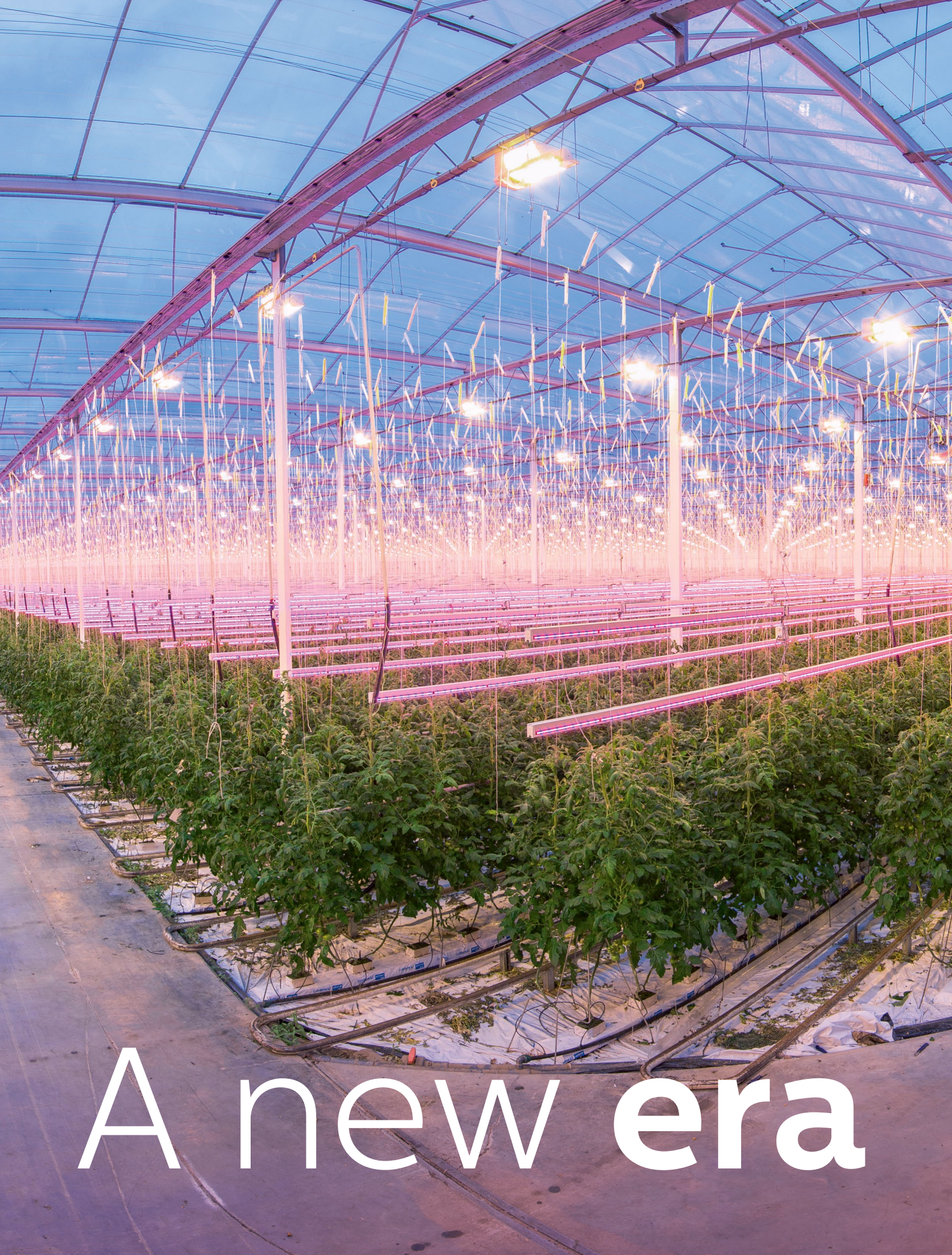
Toplighting (additional)



Interlighting (also single line possible)

Good light distribution

The aim in lighting is to have a good light distribution and help with heat distribution across all the plants. Until now the focus has mainly been on achieving uniform light on a horizontal surface. However, it is much more effective if the vertical dimension is taken into account as well, especially with rising plants such as tomatoes and cucumbers. Multiple plants, like roses, can also benefit from this in the dark spots.



A new **era**

“Just imagine that all restrictions are removed. Imagine that you can install light wherever the greatest effect is obtained. **Now you can**.”

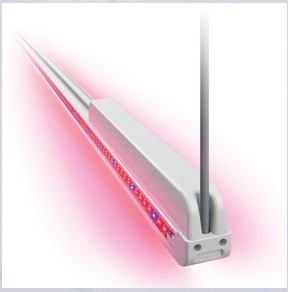
With Philips GreenPower LED interlighting it is possible to provide light between the plants – without unwanted heat generation. This has major advantages: all the plants can be lit at the points where they gain most benefit. The results are excellent. Various trials have demonstrated that this enables much higher and more efficient plant production as the light provided can be converted more efficiently into sugars, the building blocks of the plant.

So now we are moving towards the best possible situation for the plant: greater control over the position of the light, the intensity of the light and the temperature in the greenhouses. As a result, you do not have to ventilate as much and you can manage the CO2 level better, thus giving you greater control over the plant’s growth process.

Interlighting and toplighting a winning combination

Adding GreenPower LED interlighting to HPS or LED toplighting creates a flexible lighting system that provides optimum control over the plants. During the growing season, the grower can decide how he uses light to respond best to, for example, the condition of the plants, the climate conditions and the plant load.

The combination of GreenPower LED interlighting and HPS or LED toplighting offers not only considerable energy savings, but also much greater control over the growth process. And that’s a win-win situation: good for the environment, good for the production costs and good for the plants.



Light and more

Anyone who goes into partnership with Philips gets much more than just a product.”

Thanks to the commercial projects and studies we have conducted into light and plants we now have an improved light recipe based on GreenPower LED interlighting in combination with HPS or LED toplighting. This enables us to offer any grower a customized lighting solution – with precisely the composition of light that the plants make best use of. And not only that: Philips takes work off your hands in the form of support during the subsidy application process, after-care in the form of answers to technical and botanical questions and help if you are experiencing problems with the installations. Of course, we don’t do this on our own. We work with reputable partners that have specialist experience.

Philips GreenPower LED interlighting

Possible lighting addition:
Philips GreenPower LED toplighting

If you would like more information on LED toplighting, please visit our website:

www.philips.com/horti

But what’s more, Philips offers know-how and support. Our plant physiologists and application specialists know the best approach to your specific situation, and every plant gets a specific and unique light recipe.

The light spectrum, light intensity and light distribution are calculated by one of our plant physiologists, together with light specialists. An application specialist ensures that this lighting is not only customized for the plants, but is also used in a way that is appropriate for your greenhouse and business processes. The result? The plants not only get light where they need it, they also do more with it. This makes for greater control over the conditions and the growth process, better results and greater yield. The effort put in by Philips means one worry less for you and the certainty of a balanced and customized approach to your company and your plants.

Proven in practice

Vegetables & Fruit

Van Nature / Jami VOF

Jami is the first nursery in the Netherlands to grow with Philips GreenPower LED interlighting. Michel Zwinkels and his partners Arjan and Andy de Jong are growing Komeett. Michel: 'We know this variety through and through, so we know what to expect and how to steer. We are very pleased with the total production of Komeett. We're happy to report that Komeett responds well to growth light.'

In order to increase production, lengthen the season and also to keep the temperature in the greenhouses at the required level during the longer season, Van Nature and Jami opted for a hybrid solution: a double line of GreenPower LED interlighting (110 micromoles per m^2) in combination with conventional HID lighting (105 micromoles per m^2). Jami has now fitted lighting on 3 ha, half of its cultivated area.

"The production of Komeett is excellent, constant at about 160 grams fruit weight."

Says Michel Zwinkels of Jami

Alfred Pedersen & Søn ApS

Alfred Pedersen & Søn ApS is the biggest tomato grower in Denmark and sells mainly to Danish retailers. In February 2013 they installed, together with Philips, a hybrid system which combines their existing HPS system with new Philips GreenPower LED interlighting.

Average daylight levels in Denmark's winter months are not sufficient to grow tasty tomatoes like Piccolos. Therefore, additional lighting is needed during this period.

"Within two weeks of starting to use the LEDs we saw production increase. Two fruits more per truss, faster ripening and higher fruit weight."

Says Mads Pedersen of Alfred Pedersen & Søn ApS

Kwekerij Wim Peters

Kwekerij Wim Peters in Someren specializes in growing Roma Vine plum tomatoes and Tasty Tom cocktail tomatoes. Partly thanks to the new installation, owner Wim Peters can now produce top-quality tomatoes all year round. The produce is marketed through ZON fruit & vegetables. 'The LED lighting gives us both flexibility and consistent quality, which are particularly important in the winter months'.

With Philips' LED solution the need to import during the winter months will soon be a thing of the past. 'We can control growth perfectly throughout the year by means of the hybrid lighting system.'This is a combination of HPS lighting, fitted with Philips GreenPower 600 W lamps, and Philips GreenPower LED interlighting. The HPS lighting supplies heat and light and the LED modules provide the tomatoes with precisely controlled and highly efficient interlighting.

"A perfect combination for creating the best possible conditions for the plants with maximum control."

Says Wim Peters of Kwekerij Wim Peters

Uman Greenhouse Complex

We have been working with Philips since 2008. That was when Philips installed the GreenPower/Vision 1000 W system in our new greenhouse. This modern HPS installation immediately gave us a production increase of 25%. We are now also using the GreenPower LED interlighting. With this we expect to increase production by a further 15%. Thanks to these excellent figures our payback period is around two and a half years.

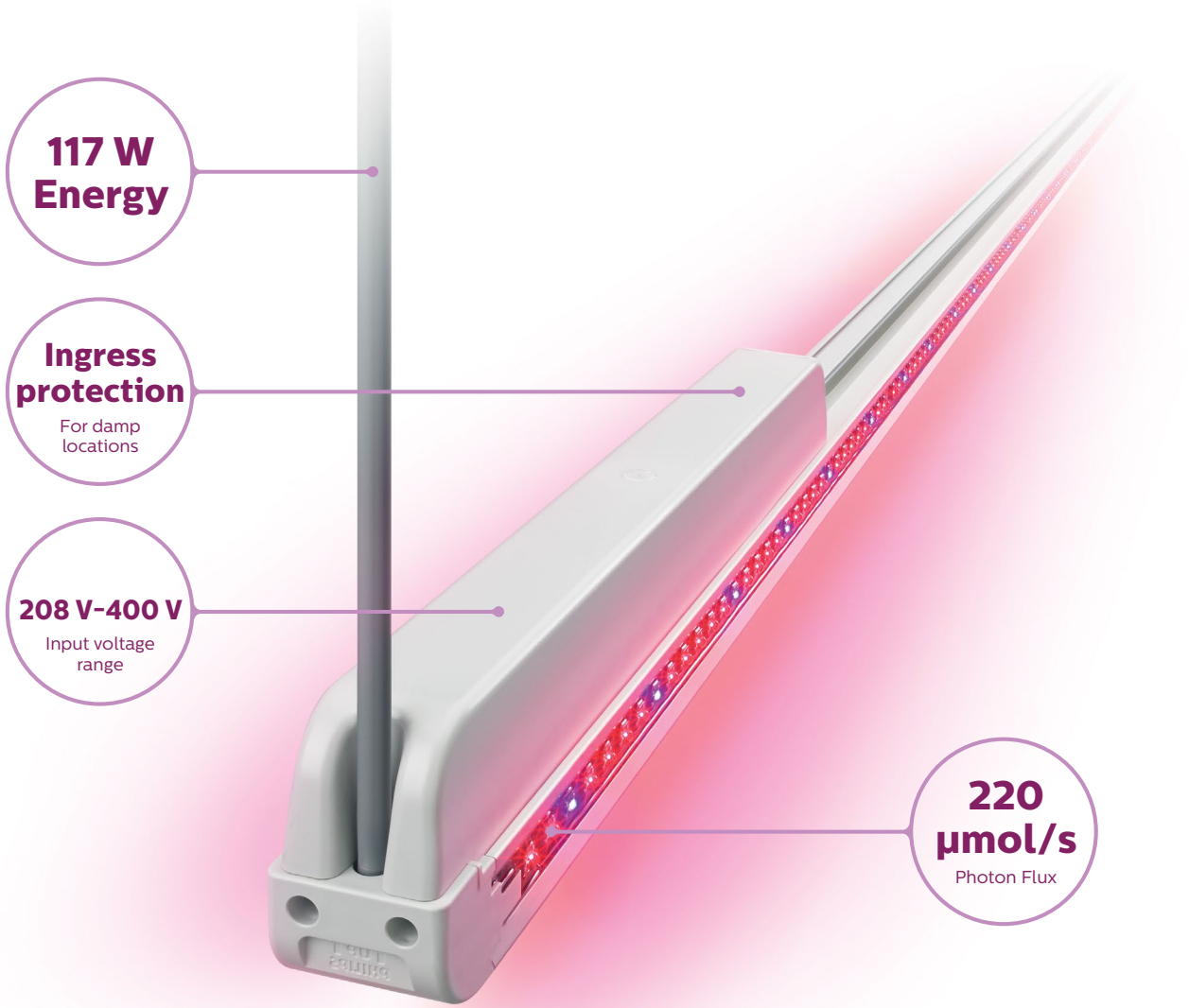
Compared with the traditional method of lighting, the Philips LED solutions are very energy-efficient. In the long run this will also have a positive effect on our production costs. We are of course extremely happy with this.

"Positive effect on our production costs."

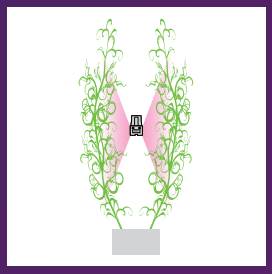
Says Nikolay Gordiy, General Director of the Uman Greenhouse Complex in the Ukraine

Philips GreenPower LED interlighting

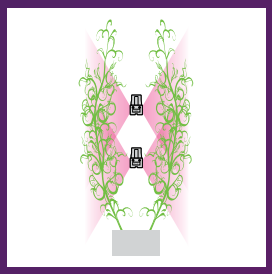
Light between the plants
All the plants can be lit at the points where they gain most benefit. Various trials have demonstrated that this enables much higher and more efficient plant production as the light provided can be converted more efficiently into sugars, the building blocks of the plant.



“**The results prove it:** GreenPower LED interlighting has a lot to offer your company too.”



A single line installation



A double line installation

GreenPower LED interlighting is the ideal energy-efficient solution for lighting in between the plants. The GreenPower LED interlighting give off very little heat and so require no active cooling. They are simple to install in any new or existing greenhouse.
The GreenPower LED interlighting have LEDs on both sides, so they can light two rows of plants at once. Depending on the required light level, two or more modules can be positioned above one another.

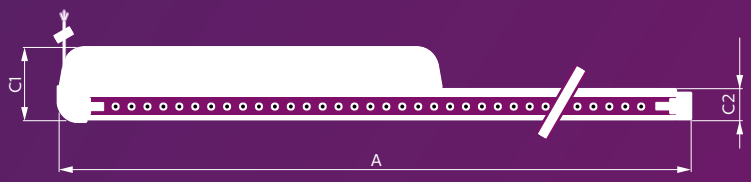
Philips is now having success not only with tomatoes, but we can also help growers of cucumbers, bell peppers and roses with the GreenPower LED interlighting. These plants also benefit from smarter use of light distribution, color and heat properties and efficient LED lighting. In combination with the Philips LED GreenPower toplighting or the Philips MASTER GreenPower plus 1000 W, the plants are doing very well and the increase in production is higher than expected.

Interested in what GreenPower LED interlighting can do for you?
Please feel free to contact us. At the back of this brochure you can find multiple ways to get in touch.

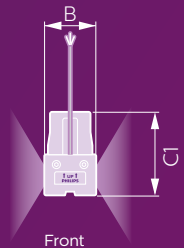
Specifications Philips GreenPower LED interlighting

Lamp type	Photon flux	Photon flux maintenance 90% *	Ingress protection rating	Energy consumption
	[µmol/s]	Hours		W
GreenPower LED interlighting module DR/B (deep red/blue)	220	25,000	For damp locations	117

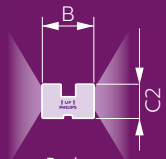
* The values for service life and photon flux maintenance are valid for an ambient temperature of 25 °C.



Side



Front

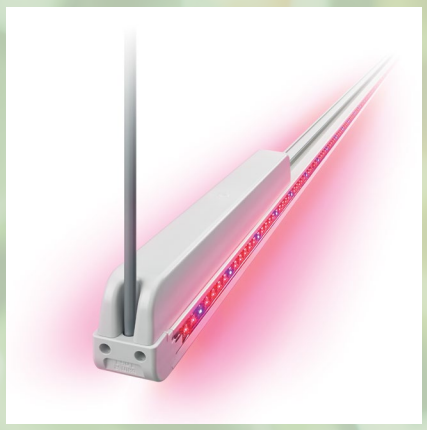


Back

Mounting bracket

Dimensions Philips GreenPower LED interlighting

Product	Dimensions in mm (inches)				Order code	Order code
	Length (A)	Width (B)	Height 1 (C1)	Height 2 (C2)	12NC	6NC
GreenPower LED interlighting module DR/B (deep red/blue)	2491 (98.07)	48 (1.89)	76 (2.99)	33.8 (1.33)	9290 009 10406	260992
GreenPower LED interlighting module mounting bracket	89 (3.50)	50 (1.97)	140 (5.51)		9290 008 80406	262220



More than a product, it's a complete solution

The Philips GreenPower LED interlighting offers all the proven benefits of LED technology and – as a complete solution – much more besides.

- Quick and easy installation
- Support and advice from technical experts
- Advice on which lighting strategies are best for your situation

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07/2015
Data subject to change

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horti.info@philips.com

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