



# There's more to light

Philips GreenPower LED interlighting light between the plants

**PHILIPS**

sense and simplicity



# The position of lighting

Light produces life. 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.



### 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. A plant 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 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.



### Winning combination

Adding LED interlighting to SON-T top lighting 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 LED interlighting and SON-T 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.

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 CO<sub>2</sub> level better, thus giving you greater control over the plant's growth process.



# Light and more



Anyone who goes into partnership with Philips gets much more than just a product. Thanks to the studies we have conducted into light and plants we now have an improved light recipe based on LED interlighting in combination with SON-T lighting. 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.



But more than anything else, 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

Last year, Dekker Glascultures added LED interlighting to its existing SON-T installation. Frank Dekker is very happy with the results. “We obtained a considerable increase in production with a late planting and relatively few lighting hours. Thanks to the LED treatments the plant condition throughout the period was better than with just SON-T top lighting.”



“A better plant condition and a considerable increase in production”

says Frank Dekker, of Dekker Glascultures

“Growers can benefit from this”

says Peter Klapwijk, of knowledge company Green Q



Peter Klapwijk is director of Green Q, the knowledge company for the horticultural sector. He is involved as a consultant in trials at the Philips Improvement Centre. He is very positive about the potential for the LEDs. “The results of all the tests are impressive and the product is ready for the market. Growers can benefit from this. In addition, LED interlighting is highly energy-efficient.”

Tomato grower Robert Zwinkels is involved as an advisor in the project at the Improvement Centre. He was surprised by the added value obtained from interlighting for his plants and by his additional yield. “I was amazed by the effect it had on my plants. The plants used the LED light 30 to 40% more efficiently than if we had used additional SON-T. That results in quite a few extra kilos.”

“During the long Finnish winters we have only four to six hours of daylight. So of course it is very important to have good lighting. With Philips LED interlighting it is possible to bring the light very close to the plant and to distribute it uniformly. This was not previously possible with the traditional SON technology. We are therefore very happy with the Philips LED interlighting. This is the future of horticulture in Finland.”



“Positive effect on our production costs”

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



“The future of horticulture”

says Mona-Anitta Riihimäki, HAMK University of Applied Sciences

“We have been working with Philips since 2008. That was when Philips installed the GreenPower/Vision 1000W system in our new greenhouse. This modern HID installation immediately gave us a production increase of 25%. We are now also using 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.”



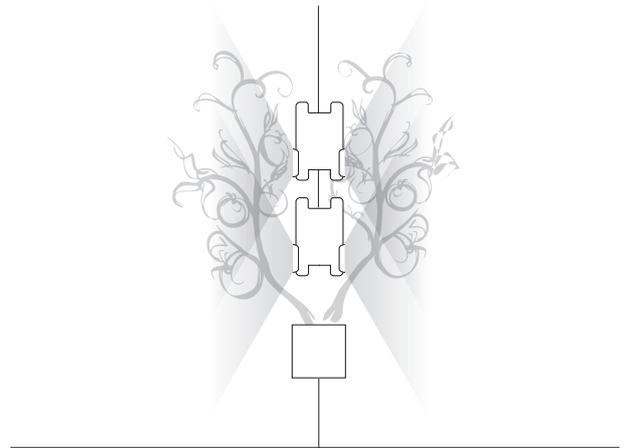
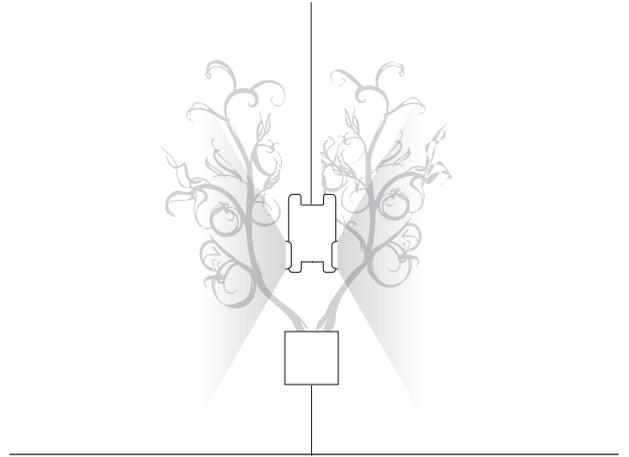
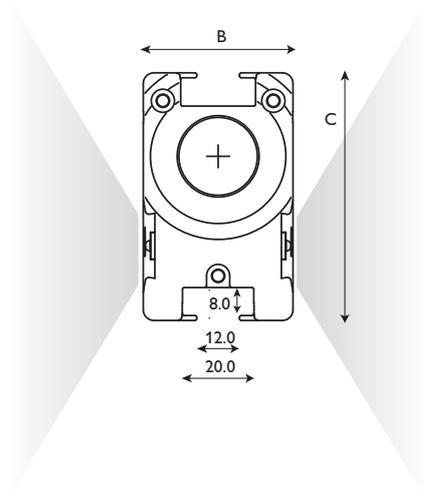
## Philips interlighting

For many years Philips has been developing innovative, efficient and reliable lighting for the horticultural sector. Continuing this tradition, we now present our LED interlighting concept: Philips GreenPower LED interlighting, specially designed for interlighting.

LED interlighting is the ideal energy-efficient solution for lighting in between the plants. The GreenPower LED modules give off very little heat and so require no active cooling. They are simple to install in any new or existing greenhouse. The LED interlighting modules 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 interlighting. These plants also benefit from smarter use of light distribution, color and heat properties and efficient LED lighting. In combination with the new Philips MASTER GreenPower plus 1000W, the plants are doing very well and the increase in production is higher than expected.

The results prove it: LED interlighting has a lot to offer your company too. Interested in what LED lighting can do for you? We would be happy to visit your company to see what is possible. For a no-obligation meeting, please contact one of our staff.



### Specifications Philips GreenPower LED interlighting

Lamp type	Photon flux [ $\mu\text{mol/s}$ ]	Useful life time hrs	Photon flux maintenance ambient 25°C	Ingress protection rating	Energy consumption
GreenPower LED interlighting module deep red/blue	220	25000	90%	IP55	114W

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

Product	Dimensions (in cm)			Order code
	A	B	C	
GreenPower LED interlighting module deep red/blue	250	42	70	929000 632303
GreenPower LED interlighting module mounting bracket	2,5	3,5	2,9	929000 633903

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