PHILIPS

Horticulture
LED Solutions

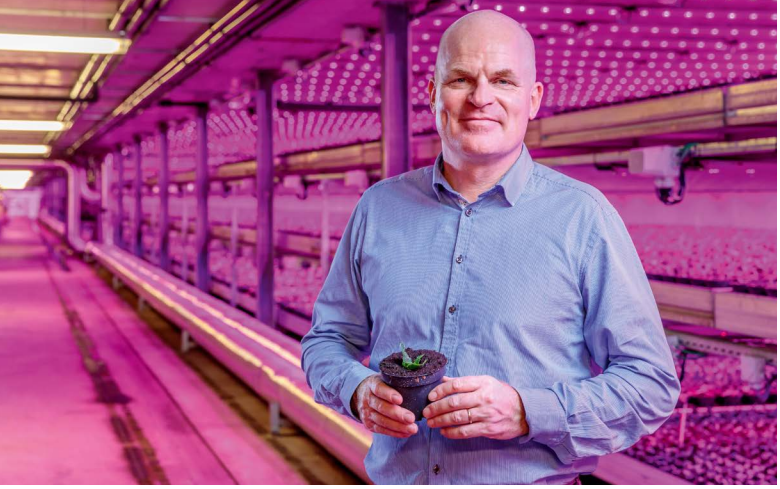
Case study
Queen

Hinnerup, Denmark

GreenPower LED toplighting &
GreenPower LED production module

Expand control and quality of market leading kalanchoes

Longer growing days, increased capacity and faster time to market



“With LED we get two to three days faster rooting, which is 25% faster all year round.”

Frands Jepsen, Managing Director of the Queen brand

Background

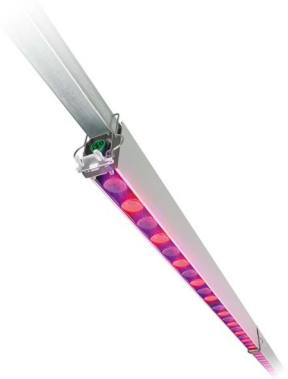
Continuous systematic innovation has made Queen® one of the world’s premium growers of both potted and cut kalanchoes. Since 1939, the Denmark-based company has combined its technology and know-how to produce plants with perfectly formed flowers, succulent green foliage and market-leading durability. “All our plants have a natural robustness, which makes them able to withstand dry conditions and high temperatures much longer than other plants.” says Frands Jepsen, Managing Director of the Queen brand. R&D and Production Manager Kai Lønne Nielsen leads the innovation team at the company’s 120,000 m^2 nursery near Aarhus, Denmark. This facility includes modern greenhouses for the production and propagation of elite, virus-free plants, and chambers for climate optimization. Horticulture companies worldwide pay royalties for the award-winning kalanchoes developed here.

The challenge

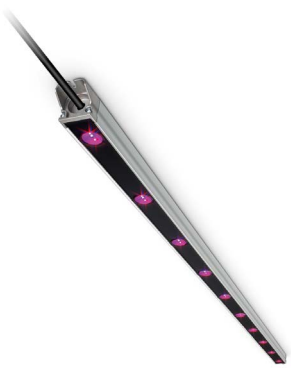
Queen had been successfully using LED lighting in multilayer configurations since 2006. But their greenhouse area still used HPS fixtures, limiting flexibility, increasing heat and reducing growth rates. “We are always searching for ways to optimize and speed up our production processes,” says Frands Jepsen. “We wanted to find a way to produce our plants with only LED.” The heat produced by HPS proved a disadvantage in the multilayer system when it came to producing the kalanchoes the market wanted. Queen has bred kalanchoes to make them more compact, something its customers value. But heat can cause the plants to stretch and Queen was looking for a way to reduce plant temperatures to provide more consistent quality. As with most producers, Queen sought ways to devote more space to its crops. HPS left significant dark zones in the greenhouse, further reducing efficiency and wasting space that Queen could otherwise use for profitable growth.

The solution

Philips Lighting has the plant knowledge and solid reputation that Queen was looking for to address its challenges. “We have a long term relationship with our partner Horticoop Scandinavia,” says Frands Jepsen. “And we saw that Philips Lighting has proven solutions and a good reputation.” Before selecting a solution, Queen tested different spectra of light to find the optimal LED product for its crops. In 2017 Queen replaced three cultivation stages with Philips LED lighting. In the multilayer rooting phase Queen upgraded its LED production modules to the second generation of its kind, to further optimize control and flexibility. In addition, the company installed GreenPower LED toplighting in the handling warehouse, where young plants are held for two days before Queen transfers them into the greenhouse. Finally, Queen added another installation of GreenPower LED toplighting to its existing HPS toplighting in the greenhouse for use during the kalanchoe vegetative phase, the long-day phase of the crops



GreenPower LED toplighting

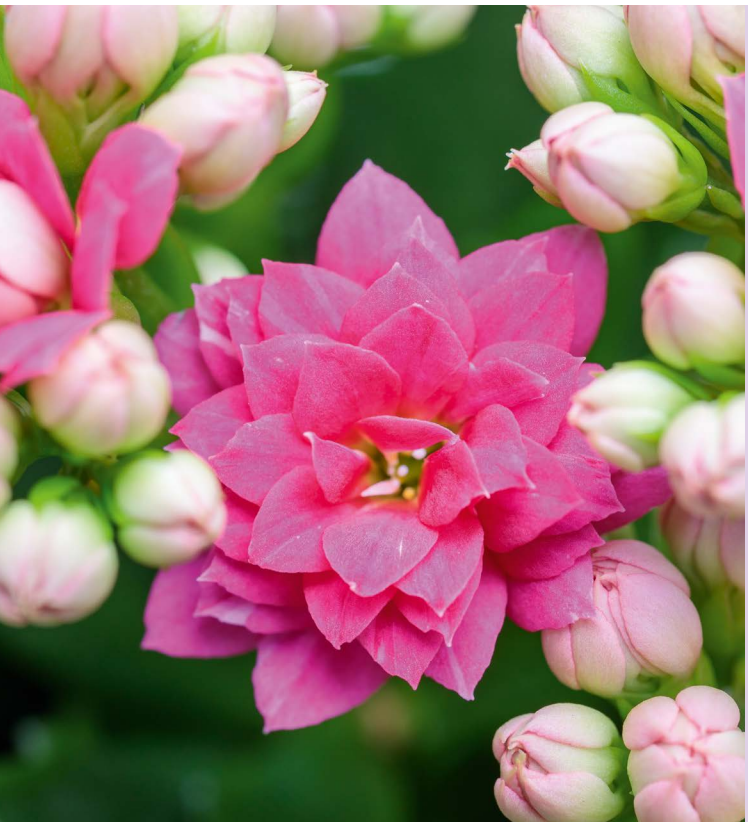


GreenPower LED production module

Benefits

By expanding its LED lighting, Queen has gained immense control over its entire growth process. “The kalanchoes really benefit from the LED’s red light,” says Frands Jepsen. “We get two to three days faster rooting, which is 25% faster, all year round.” The cool LED lights mean Queen can add light in the summer without increasing heat on the propagating plants. In Denmark’s long, dark winters, Queen is able to increase the light levels by 30%. In the greenhouse, the addition of LED toplighting helps cut costs, particularly from late spring to early winter, when electricity rates are highest. LED toplighting takes less electricity to run, a crucial consideration when Queen is extending its day lengths. In wintertime, when light intensity is lower and electricity costs go down, Queen uses a more balanced combination of HPS and LED toplighting. “LED toplighting has led up to 15 percent increase in our number of buds,” says Jepsen. “We also see more side shoots and higher numbers of buds on each side shoot. The increased number of long days also means Queen has to spray the plants less with plant growth regulators, a considerable cost savings.”

> “**The number of buds increased up to 15%** after having installed LED toplighting”



Facts

Nursery
Queen

Segment
Floriculture

Crop
Kalanchoe

Location
Hinnerup, Denmark

Solution
GreenPower LED toplighting &
GreenPower LED production module

Philips LED Horti Partner
Horticoop Scandinavia

Results
- Increased light level by 30%
- 2-3 days faster rooting
- Year-round uniform production

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