

A man with short hair and a friendly smile, wearing a dark quilted jacket over a grey sweater, holds a potted orchid plant. The background is a greenhouse filled with rows of plants under bright, colorful LED lighting. The lighting is a mix of purple, blue, and white, creating a vibrant atmosphere. The man is looking directly at the camera.

PHILIPS

Horticulture
LED Solutions

Case study
De Hoog Orchids
Delfgauw, the Netherlands



Philips GreenPower LED production module

Standing out from the crowd **with year-round orchids**

Now we can offer special orchid varieties during periods that no one else can



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This is the first LED installation **that guarantees year-round production of challenging orchid varieties.**”

Arjan de Hoog, Co-director, De Hoog Orchids



Background

De Hoog Orchids is a family-run business that began growing flowers in 1928 – chrysanthemums, roses, freesias, strelitzias, cymbidium, and others. In 1985 De Hoog switched its focus to orchids and later on father Nico de Hoog narrowed the focus to the *Dendrobium Nobile*, one of the most popular ornamental members of the orchid family.

Today, brothers Arjan and Marco de Hoog run a highly advanced pot-plant nursery with a total greenhouse area of 40,000 m² and a focus on eco-friendly cultivation. They produce about 1.8 million *Dendrobium Nobile* orchids per year in their greenhouses, which are equipped with the latest technologies, including an energy-efficient combined heat and power (CHP) system and container transport system.

The challenge

In 2010 Arjan de Hoog contacted the Philips Horti LED group to explore how he could use LED lighting to

improve his orchid production. At that time, he was growing all his orchids in a single layer under Philips high pressure sodium (HPS) lighting modules which generate a great deal of heat. An orchid only blooms once a year and it requires a period of relatively cool temperatures to initiate flowering. At that time during summer months, Arjan de Hoog had to use air conditioning to cool down his greenhouse to make it cool enough to promote orchid flower budding, which was very costly and inefficient. Together with Philips, Arjan de Hoog began an intensive period of testing different colored LEDs and light recipes on several orchid varieties, first on a small scale and then on a larger scale. Philips specialists measured the light levels and provided advice on the light recipes. The ultimate goal was to reduce energy costs in the cooling cell used to initiate flowering, increase the number of flowering buds on plants, and achieve year-round production of challenging orchid varieties, like comet king akatsuki, sea mary snow king, Irene smile, and sweet pinky monoko .

The solution

As a result of its thorough LED tests, the company constructed a brand new greenhouse at its location on Vrederustlaan and equipped it with the latest technologies to grow *Dendrobium Nobile* year round in a special cooling cell. The cooling cell has been equipped with three vertical layers, each illuminated by Philips GreenPower LED production modules using a defined light recipe. This makes the most efficient use of space and energy. Lifts are used to move the plants, grown in 12 cm pots on rolling tables, from the greenhouse to the cooling cell. Here the plants are grown for a set period in a controlled climate under the ideal color and levels of light. Each growing layer in the cooling cell is about 1000 m². About 2,000 LED modules are used to achieve the desired light levels.

Benefits

Arjan de Hoog says, “With the LEDs, we have achieved results we couldn’t achieve using HPS lights. The LED lighting gives us a real competitive advantage by inducing more flower buds on a plant, even the

difficult orchid varieties, year round.” De Hoog believes this is the first LED installation of its kind for large-scale production of orchids.

“We’ve noticed a huge difference in the heat levels in the LED cooling cell. It’s much easier to keep it cool compared to HPS. This is ideal for the cooling period that our orchids need.” Arjan de Hoog has not yet added up the final numbers, but he believes that the energy savings with the LEDs will be substantial. “LEDs are ideal for our orchid production because this type of lighting lasts longer, is easier to maintain, and allows us to influence certain plant characteristics, like flower budding, the number of buds, and flower clustering that are critical for our business. LEDs also allow growers to precisely plan the moment when the end product is ready to better meet the demands of customers.”

Looking ahead, Arjan de Hoog believes that LED will play an even more important role in floriculture by allowing growers to reduce energy costs, while controlling certain growth phases of plants, coloration, blooming, and the overall quality of the plant itself.



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Arjan de Hoog, Co-director, De Hoog Orchids



Facts

Horticulturalist / grower

De Hoog Orchids

Segment

Floriculture

Crop

Dendrobium Nobile orchids

Location

Delfgauw, the Netherlands

Solution

Philips GreenPower LED production module

Philips LED Horti Partner

Certhon and Stolze BV

Expected results

Producing special varieties of orchids with more flower buds year round, using less energy



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