

Abstract:

Smart (Indoor) Farming – From LED Component Player to Full-stack Solution Provider

Speaker:

Timo Bongartz (OSRAM, Business Field Head – Smart Farming)

OSRAM has equipped NASA with Phytofy RLs, its intelligent research lighting system for plant growth. The American space agency is using it to expand its research into food production during space missions.

The project with NASA is part of OSRAM's global research facility network. Its common goal: The study of optimum plant growth conditions under digital light. The research, in turn, is a building block on OSRAM's path to becoming the leading provider of smart farming solutions. "Our vision is the intelligent, automated farm of tomorrow," says Timo Bongartz, head of Smart Farming at OSRAM. "To achieve this, we are working on a holistic system that extends beyond intelligent light management. The goal is the overall networking of plant cultivation." Integrated sensors ensure ideal growth conditions: They regulate and control environmental factors such as light, temperature, humidity and CO2 content. Optical sensors monitor plant growth and health, while a central software platform links up the logistics chain, from the fertilizer to the harvesting machine and the buyer.

To realize this vision, OSRAM has successively expanded its market leadership in the field of horticultural LEDs through the addition of further system components, most recently by acquiring Fluence Bioengineering, one of the world's leading providers of smart lighting in vertical farms and greenhouses. The U.S.-based company specializes in LED-based horticultural lighting, and has an extensive database of "lighting recipes." The application spectrum ranges from lettuce and herbs to medicinal plants.

In addition, OSRAM recently acquired a stake in the Canadian startup "Motorleaf" through its venture capital arm, "Fluxunit." The young Montreal company offers technologies for yield forecasting in greenhouses and indoor farms. It has developed one of the world's first software and hardware solutions for this purpose: With artificial intelligence and machine

learning, it can forecast the harvest yields for tomatoes, for example. This makes production more predictable and reduces the number of staff required to determine the harvest quantities.

However, a critical component of the integrated cultivation system comes from OSRAM: The new software platform for the Internet of Things, "Lightelligence." "Our cloud-based platform will form the backbone of the system. It will be the basis for the sensor data analytics as well as for modeling plant growth and networking the logistics chain," says Bongartz. Self-learning algorithms will use it in the future to create and optimize digital growth models. Platform partners such as supermarkets, online grocery stores and pharmaceutical companies can indicate their inventories in the system and in this way influence the growth speed in the greenhouses. For farmers, the smart farming approach means efficient use of production resources and real-time planning. Additionally farmers will benefit from the artificial intelligence and learn together with the system. "The data collected in "Lightelligence" also will allow them to benefit from the experience of countless other growers and researchers," says Bongartz.