Illumitex provides LED fixtures for use in vaccine development

Project GreenVax, a plant-based vaccine development project initiated by the Texas Plant-Expressed Vaccine Consortium and funded by the Defense Advanced Research Projects Agency (DARPA), was established to develop ways to respond more quickly and efficiently to urgent patient needs, particularly in fighting bioterrorism and widespread infectious diseases. To meet the demands of this important project, G-CON Manufacturing oversaw the construction and management of a custom-designed 145,000-square-foot production facility that would house the world's largest vertical farm to grow the plants needed for the base of vaccine development. The world-class team of physicians and scientists of Caliber Biotherapeautics provided the science and leadership for the project.

Proven plant science provides solution

In order to meet the aggressive timeline of Project GreenVax—18 months or less from raw concept to vaccine development—G-CON Manufacturing needed a high-tech partner to provide lighting for the vertical farm. Early in the construction stage, and with limited expertise in the specific science of plant growth, G-CON installed a test quantity of traditional fluorescent lights for the project. However, the limitations of that technology quickly became obvious; the overall bulk of the fixtures themselves and the quality of light they produced was not the right solution for a project of this magnitude. Instead, G-CON needed to find an equally innovative lighting partner with cutting-edge technology based on proven plant science to provide greater efficiency and more robust plant growth for Project GreenVax.

Case Study ■ Illumitex

The right light offers the right answer

Illumitex Eclipse LED light fixtures offered just that—the only LED technology based on specific plant growth science and optimal design for use in vertical farms. With a known delivered efficacy two times greater than fluorescent lighting (LFL), Illumitex LEDs provided a superior solution to G-CON for every aspect of the short- and long-term operational success of Project GreenVax. Based on Illumitex's own in-house research, the Illumitex Surexi LEDs used in Project GreenVax (100,000 individual LEDs) emitted light at the F1 spectrum (75% red, 25% blue) in response to G-CON's exact specifications for growing the host plants (tobacco) used to develop new vaccines. Additionally, all Illumitex LEDs are designed with integrated precision optics, meaning that more useful light can reach the target area. And without the need for space-wasting secondary optics to control light direction, the Illumitex Surexi LED fixtures used in Project GreenVax were built with a 3/4-inch profile, allowing for construction of nearly twice the number of plant growth racks over LFL, permitting greater biomass to be achieved. As a function of design, Illumitex LEDs are all inherently waterproof with an IP66 rating, which gave G-CON additional peace of mind in the overall functionality and durability of lighting a wet environment.

More than 17,000 Illumitex Eclipse LED fixtures were used in Project GreenVax. Although full details of the vaccine development process are not public knowledge, the superior functionality of Illumitex F1 Spectrum LED over fluorescent white light allowed host plants to achieve optimal growth in 20% less time; from seed-to-seed in less than 30 days. Grown in cycles, this meant that more plants were available at any given time to support the vaccine development process. In utilizing Illumitex's LED technology, Caliber Biotherapeutics scientists were able to pioneer new treatments with increased safety and effectiveness, while reducing both operational costs and development time.

Case study job specifics

Customer: G-CON Manufacturing
Sector: Vertical Farm
Plant/Crop: Tobacco
Location: Bryan, Texas
Solution: Illumitex Eclipse LED fixtures
Results: More plants could grow at a faster pace, which meant more plants were available for vaccine development