Cornell University AND Percival Scientific, Inc.

Weill Hall Life Sciences Project

The next generation of chamber heating and cooling!

CASE STUDY

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SUMMARY

The **Weill Hall Life Sciences Technology Building** on the **Cornell University** campus has earned the exclusive Leadership in Energy and Environmental Design (LEED) Gold Certified designation from the U.S. Green Building Council by, in part, utilizing 22 customized designed plant growth chambers from industry leader **Percival Scientific, Inc.**

THE FACILITY

Weill Hall Life Sciences Technology Building is located in Weill Hall, a $162 million, 263,000-square-foot research facility on Cornell University's Ithaca, New York campus. Weill Hall is the cornerstone of Cornell University's New Life Sciences Initiative, one of the nation's leading programs studying all life forms – plant and animal – at the genome level.

Weill Hall is using Lake Source Cooling to save energy and reduce environmental impact. The building uses both an open- and closed-loop system of piped water taken from an adjacent lake. The cold lake water removes heat from the building and then returns the water back to the lake at or below the original temperature.

For more information on this process, visit:
www.sustainablecampus.cornell.edu/energy/lakesource.cfm

For more information on the Weill Hall LEED certification visit:
www.sustainablecampus.cornell.edu/buildings/weill.cfm

THE CHALLENGE

Cornell University was seeking LEED Gold Certification for their newly constructed Weill Hall Life Sciences Technology Building. LEED certification is an internationally-recognized mark of excellence that rewards building owners and designers who have achieved the highest standards in key areas of human and environmental health. LEED certification looks at aspects of the construction and renovation process, including sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

The stringent requirements to meet this designation extended to the types of growth chambers used in their plant growth lab, a large source of energy consumption for the building. The new plant growth chambers needed to conserve energy, reduce the environmental impact associated with creating and using that energy, and utilize a natural, renewable resource for energy production. Because of the initial success of the Lake Source Cooling process for the entire building, staff revamped the initial chamber specifications to require lake-source water as a coolant. After visiting with a number of possible chamber manufacturers, Cornell soon realized that this advanced chamber technology did not yet exist.

"Percival was willing to look at non-traditional design"

SOLUTION

Cornell turned to industry leader Percival Scientific. "Percival was willing to look at non-traditional design," said Todd Pfeiffer, Weill Hall Facilities Director. "They were able to meet all the specifications set forth in our proposal. We desired chambers that could achieve our high standards of temperature control, reduce energy costs, and leave no environmental impact on the lake water. Percival Scientific delivered on all our requirements and then some."
"We have a history of designing and manufacturing chambers and incubators to custom specifications," said Joni Campidilli, Percival's Vice President of Sales and Marketing. "This partnership was no different. Our engineering staff met with them to listen to their exact needs and then delivered a cost-effective approach to meeting those needs."

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CHAMBER DESIGN

The final chamber design included:

- A system of closed water loops, similar to the ones used to remove heat from the building were used to remove heat from the growth chambers.
- Hybrid engineering allowing for use of both Cornell's Lake Source Cooling process and traditional refrigeration for temperature control. Refrigeration is used only when the desired temperature cannot be reached through water temperature alone. Because most of the heat is removed by the water, condensing units are much smaller and require less energy.
- High-efficiency blowers.
- Reduced air flow during night cycle.
- Lamp canopy design elements, such as:
  - Lamp bank efficiency.
  - Chilled water used to remove heat from fixed lamp canopy.
  - Constant temperature to maintain peak light.
  - Minimal need to compensate for temperate-related performance loss.
  - Lamp heat to control optimal temperature.

IMPLEMENTATION

Percival Scientific installed 22 plant growth chambers in the Life Sciences Building. Percival assembled and tested each chamber in their Iowa manufacturing facility prior to shipping. Test loops simulated the exact conditions of Cornell's existing loop-to-loop water system.

"Percival is great to work with," said Pfeiffer. "Their engineering staff visited our facility to resolve any issues. They answered questions about the operation and were willing to lend their expertise at every step along the way. They even sent their IT team to provide on-site training of their computer system."

THE RESULT

Weill Hall is now one of six university buildings to be LEED Gold Certified, a rare achievement among research facilities due to the traditionally high amounts of energy lab facilities use. It is the largest research lab to receive that designation to date.

"I would highly recommend Percival products," said Todd Pfeiffer. "They are very flexible and their customer service is great. They were willing to listen and work with us to ensure the project was successful."

FOR MORE INFORMATION

To discuss how **Percival Scientific** can design a chamber to meet your exact research needs while reducing energy costs, limiting impact on the environment, and delivering the industry's best customer service, contact **sales@percival-scientific.com** or **515-465-9363** or visit **www.percival-scientific.com**

"Weill Hall marks a giant leap toward advancing Cornell's leadership nationally and internationally in the genomics-led science revolution."*

Percival Scientific chambers are proud to be a part of that revolution.

*Cornell Chronicle

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