

Using Optima for LEED-NC Certification

Duke University's Commitment to LEED

Leadership in Energy and Environmental Design or LEED is an initiative of the US Green Building Council (USGBC) to rate building environmental performance from a whole building perspective. The rating system awards credits based on five categories and there are four progressing levels of achievement with platinum being the highest.

In 2003, the University solidified its commitment to green building and the LEED rating system in particular. All new construction and renovations will be registered with the USGBC and strive to attain a rating of silver or higher. Duke was the first university to receive LEED certification for a dormitory renovation. To learn more, please visit www.usgbc.org.



Background

Envirotrol is a successful HVAC solutions provider who, in recent years has expanded their services to include IAQ assessment and remediation. As part of that expansion, the company purchased an Optima™ system and used it to offer complimentary IAQ testing to their existing customers.

Scott Goller, General Manager of Envirotrol soon recognized that it would be ideal for use in LEED (see sidebar) verification. Specifically, Optima's automated testing fulfills the IAQ requirement to establish a building baseline post construction but prior to occupancy.

After using it successfully to test two renovation projects at Duke University, Scott was asked to develop a proposal to test a new 400,000 square foot facility. Known as the Center for Interdisciplinary Engineering, Medicine and Applied Science (CIEMAS), this project recently earned a LEED NC V2.0 Silver certification.

Testing Within A Tight Timeframe

To earn credit under LEED's NC V2.0 Indoor Environmental Quality requirement, a baseline indoor air quality testing procedure must be conducted. This included the following parameters: CO, CO2, mold, particulates, formaldehyde, and TVOCs. A single Optima monitor contains sensors to sample for all the above except formaldehyde.

According to protocol, testing was done after construction but before furnishings are installed. Occurring so close to occupancy creates an inherent sense of urgency.

To speed time to completion, Envirotrol used four Optima monitors and tested the building's four major wings individually. This allowed the owner to begin moving in as soon testing was finished in each section. In subdividing a large building, the key is to isolate test areas by the air handling systems serving them, removing the possibility of cross contamination.

The monitors were set up on a Monday on site and automatically collected samples unattended for four days. On Thursday, they would be taken to the Envirotrol office and readied for the next test area. This included three easy steps:

- Upload the weeks' data to the Aircuity Knowledge Center for analysis
- Replace the mold cartridges
- Enter the building identification data for the next area.

Employing this procedure, two people were able to test the entire building in approximately six weeks time. According to Scott, "the entire operation was pretty much hands free".

"Optima streamlined the entire process."

However, without the convenience of nine sensors in one monitor, he estimated it would've required 4 or 5 additional instruments, very likely handheld and lacking data logging. "Optima streamlined the entire process and offered the ability to access data in



LEED Certification continued

minutes” he observed. In one of the last areas tested the monitor’s ability to display real-time data proved quite valuable. The particulate levels were unusually high compared to the other sections, indicating a potential problem. Scott decided to continue to collect data overnight before calling a halt to the testing. A cleaning crew was brought in to make a second pass through the area and then testing was resumed and results were satisfactory. Without the instant feedback, they would have lost an precious time waiting for results. With most other types of instrumentation they would have had to wait week to ten days before knowing there was a problem.

Mold testing

The requirement for mold testing was one of the main reasons they used Optima according to Scott. One monitor was used to collect an outdoor sample (38 minutes) while the other three simultaneously collected indoor air samples (2.5 hours). These two readings are necessary because mold occurs naturally in the environment. A marked difference between outdoor and indoor readings determines whether there is a problem within the building.

The mold test is the only one whose results are not available in real time. Grab samples filter cartridges are sent to a laboratory and results are posted in 5-7 work-

ing days. For the indoor sample, the monitor automatically switches from mold testing to sensor mode without requiring user intervention.

Preparing the LEED submittal

The final step in the process is to compile the test results into a submittal document. It is from this document that projects can earn credits toward certification. For each test area, data is required for normally occupied hours and needs to state:

- the testing limits
- average daily readings and
- the average of all 3 days.

The Optima system records data over a 24-hour period so Scott consulted with Aircurity tech support to isolate the necessary time frame.

“Report writing would’ve have taken a lot longer with multiple instruments”.

Final results

It was a busy summer, but everything was completed by the owner’s deadline of mid-August. All documentation was submitted to the project coordinator to become part of the total LEED submittal. The length of the review process conducted by the USGBC varies. Duke University’s CIEMAS project was awarded Silver certification in April of 2005. The project

earned 33 points, 9 of which were awarded in the category of Indoor Environmental Quality.

From Envirotrol’s point of view, IAQ assessment and LEED certification have become an important part of their solution set. The timing couldn’t be better as the green building movement continues to gain momentum. Scott sees a very bright future for his business and Optima.

About Envirotrol

Envirotrol’s professional engineers provide HVAC/IAQ solutions to make buildings perform at optimal operational efficiency, comfort and safety. The company is a member of the US Green Building Council and certified by the National Environmental Balancing Bureau in air and water balancing and building systems commissioning. Their offices are located in Greensboro, North Carolina.