LEED-ing the Way to More Efficient Data Centers

GE Appliances & Lighting just opened the first LEED Platinum-certified data center in Kentucky.

GE Appliances & Lighting has taken significant measures to ensure its new Louisville, Ky., data center was designed and constructed efficiently and sustainably. The U.S. Green Building Council has certified this center as the first data center in Kentucky to achieve Platinum-level certification for the Leadership in Energy and Environmental Design® (LEED) program – a tremendous accomplishment in the information technology (IT) community.

High-density servers provide more computing power per square foot and higher efficiency.

Data Centers – A Global Look

Have you ever noticed how warm your personal computer (PC) or laptop gets when it's running? In your PC, there's a fan to keep the machine cool. Imagine thousands of laptop-sized servers stacked in a data center and the amount of energy that would be required to keep them cool. Multiply this by thousands of data centers worldwide, and there's significant impact – in terms of energy consumption and the environment:

- Data center emissions are growing faster than many other carbon emissions;[1]
- The IT industry represents about 2 percent of the world's carbon emissions, and data centers are the fastest growing piece of IT's "footprint";[2]
- There is a rush to make data centers more efficient; in fact, it's estimated that global revenue for "green" data centers will increase from $7.5 billion to $41.4 billion by 2015 – about 28 percent of the data center market;[3]
- A 2008 McKinsey & Company study predicted carbon dioxide emissions from data centers would quadruple by 2020, exceeding that of the airline industry.[4]

FACT SHEET

"GE is joining an elite group of LEED Platinum data centers around the world," said Rick Fedrizzi, president, CEO and founding chair of the U.S. Green Building Council (USGBC). "Given the amount of energy data centers consume, achieving LEED Platinum will help GE reduce its environmental footprint, while moving the industry forward in its effort to reduce the global environmental impact of IT operations."

What is LEED?

"Developed by the U.S. Green Building Council (USGBC) in March 2000, LEED provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions." – U.S. Green Building Council.[7]

Did you know ...

GE's Louisville, Ky., data center is the first LEED Platinum-certified data center in Kentucky and the third LEED Platinum-certified building in Kentucky.[8]

Of all LEED-certified buildings globally, only 6 percent have achieved Platinum-level certification.[9]

GE received exemplary performance points from LEED for:

- Water efficiency
- Building with recycled content
- Sourcing construction materials regionally

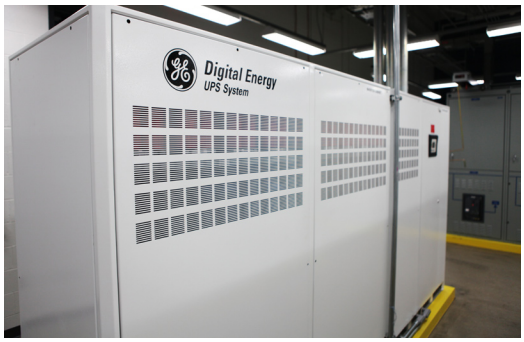
Turning Green to Platinum

From the back-office to the retail floor, GE is dedicated to environmental sustainability and efficiency. The process for constructing GE's new data center was no different and is consistent with GE's ecomagination[SM] initiative to deploy solutions for today's energy and environmental challenges. Here's a look at just some of the key steps GE took to meet LEED-Platinum requirements.[5]

Data center is built on 4-foot raised floor to maximize airflow and cooling efficiency.

Efficiency

- GE received 8 points on a 10-point scale for optimized energy performance in the data center, which is one of the most important LEED criteria. Specifically, GE's data center is 34 percent better in terms of energy savings than a typical code-compliant building.[6]
- GE's data center is built on 4-foot raised floor for maximum cooling efficiency.
- High-density computing means GE can squeeze more servers per square foot than the data center it replaces, resulting in less space to cool.
- Two 27,000-gallon thermal storage tanks help cool the facility.



GE Digital Energy's uninterruptable power supply (UPS) units with eBoost™ technology. eBoost technology enables data centers to achieve up to 99 percent UPS efficiency, without sacrificing reliability.

Sustainable Construction

- GE reused an existing building to avoid environmental impact of new construction; 98.3 percent of existing walls, roofs and floors were used.
- GE sourced 50.7 percent of construction materials regionally.
- GE's data center is built with 30.2 percent recycled content.
- GE diverted 85.4 percent of on-site generated construction waste from the landfill into recycling facilities.
- GE built with low-emitting materials, including adhesives and sealants, paints & coatings, carpets, composite wood, agrifiber and more.

Clean Energy

- GE has offset 35 percent of the data center's predicted annual energy consumption through the purchase of off-site renewable energy.[10]

Reduced Water Consumption

- GE is reducing water consumption inside the building by 42 percent compared to the industry baseline[11] by installing ultra low-flow fixtures. Outside the building, GE is reducing water consumption by 100 percent.[12]

NOTES

1. Gartner Research cited in CNET article: "Gartner urges action on data center emissions," http://news.cnet.com/Gartner-urges-action-on-data-center-emissions/2100-1022_3-6212965.html.
2. Pike Research. "Green Data Centers." http://www.pikeresearch.com/research/green-data-centers. Released Q3 2010.
3. Pike Research. "Green Data Center Market to Reach $41 Billion Annually by 2015." http://www.pikeresearch.com/newsroom/green-data-center-market-to-reach-41-billion-annually-by-2015. August 2010.
4. McKinsey & Company. "Data Centers. How to Cut Carbon Emissions and Costs." http://www.mckinsey.com/clientservice/bto/pointofview/pdf/BT_Data_Center.pdf. 2008.
5. All LEED claims have been independently validated by the U.S. Green Building Council and the Green Building Certification Institute.
6. ASHRAE building code 90.1-2004.
7. http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988
8. Other LEED Platinum-certified buildings in Kentucky are owned/operated by Haystack Partners and Bernheim Arboretum and Research Forest. LEED Projects & Case Studies Directory. http://www.usgbc.org/LEED/Project/CertifiedProjectList.aspx.
9. U.S. Green Building Council (www.usgbc.org) and Green Building Certification institute (www.gbci.org).
10. GE is matching 35 percent of the data center's predicted annual energy consumption with renewable-energy certificates to help offset emissions. Green-e accredited Tradable Renewable Certificates (RECs) equal to 35 percent of predicted annual electrical consumption over a two-year period.
11. Baseline established in Energy Policy Act of 1992.
12. No permanent irrigation system was installed to reduce water consumption by 100 percent for landscaping purposes. Data for LEED analyzed and independently verified by the Green Building Certification Institute.