



Vital Statistics

Facility Type: Laboratory
Construction: New building
Location: Kansas City, Kansas
Size: 71,955 gross square feet
Occupancy: Up to 75 persons
Opened: May 9, 2003
LEED™ Status: 2.0 Gold
Certified: August 4, 2003
LEED™ Points: 39 of 69 possible

Notable Features:

- Brownfield redevelopment site
- Energy-efficient mechanical systems
- Daylighting and other lighting conservation
- Rainwater recapture/reuse system
- Low-flow plumbing fixtures
- Sustainable landscaping
- Recycled-content building materials and furnishings
- Indoor air quality with low-VOC materials
- Construction recycling

SUSTAINABLE FACILITIES AT EPA:

Science and Technology Center Kansas City, Kansas

When the U.S. Environmental Protection Agency (EPA) decided to replace its outdated laboratory in Kansas City, Kansas, it set out to build a new, state-of-the-art sustainable facility. A typical laboratory, however, uses far more energy and water per square foot than an office building due to intensive ventilation requirements and other health and safety concerns. To meet this challenge, EPA and the U.S. General Services Administration (GSA) conducted a two-stage design competition in which teams first submitted bids based on sustainable laboratory design experience. Then, EPA and GSA selected four teams to move forward with the actual building proposal, requiring energy efficiency, water conservation, and environmentally preferable materials in the design. Each team was required to explain how its design features would reduce energy, water, and resource use during the construction and operation of the facility. The result is the Kansas City Science and Technology Center, the second EPA laboratory to receive LEED™ Gold Certification. See inside for more details on the sustainable features of this laboratory.

SUSTAINABLE FACILITIES AT EPA

During fiscal year 2004 operation, the Kansas City Science & Technology Center (KCSTC) consumed energy at a rate of approximately 258,500 Btus per gross square foot (GSF) per year, or 28 percent less energy than the average amount used by EPA's other new variable air volume laboratories (360,000 Btus per GSF per year). Included in this report are brief descriptions of some of the energy-conserving measures at work in the lab.



A plate and frame heat exchanger system was added to the initial design after energy modeling revealed additional energy efficiency opportunities.

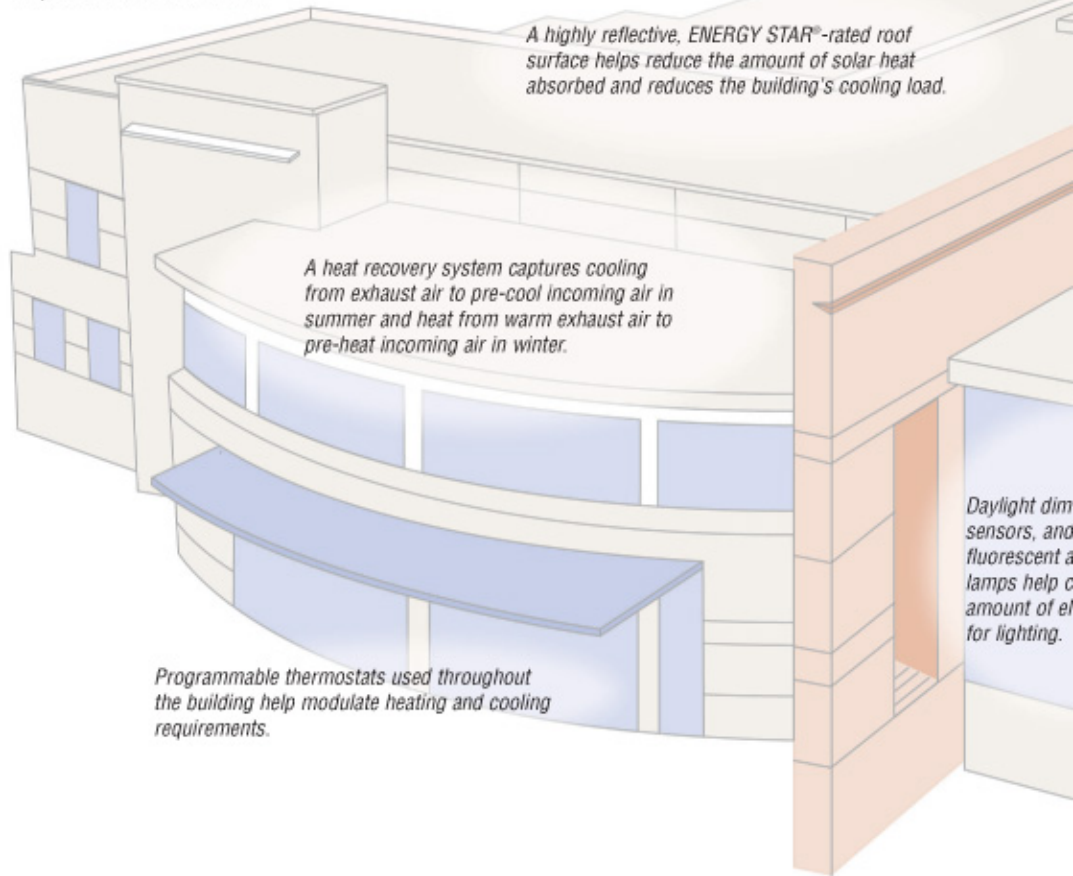


Laboratory corridors have abundant natural daylighting.



Sophisticated variable air volume (VAV) fume hoods and systems allow ventilation, cooling, and heating requirements to be reduced when hoods are closed, at night, and on weekends.

Carbon dioxide sensors in large conference rooms and common areas measure occupancy and help control ventilation needs.



During construction, the HVAC system and duct work were sealed on a daily basis to prevent infiltration of any dust, chemicals, or odors due to construction. Before occupancy, the system was flushed and fresh air filters were added.



The main lobby desk includes native flower insets.

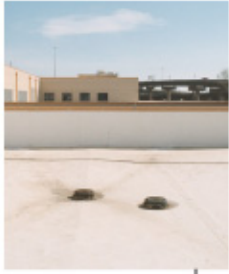


Low volatile organic compound paint, adhesives, glues, carpet, and floor tiles were used to finish the building. Absorbent materials such as carpet, ceiling tile, and furniture were installed after chemical odors dissipated.



Xeriscaping, a landscape design incorporating native plants, proper soil types, and mulches, helps retain soil moisture and conserve water use.

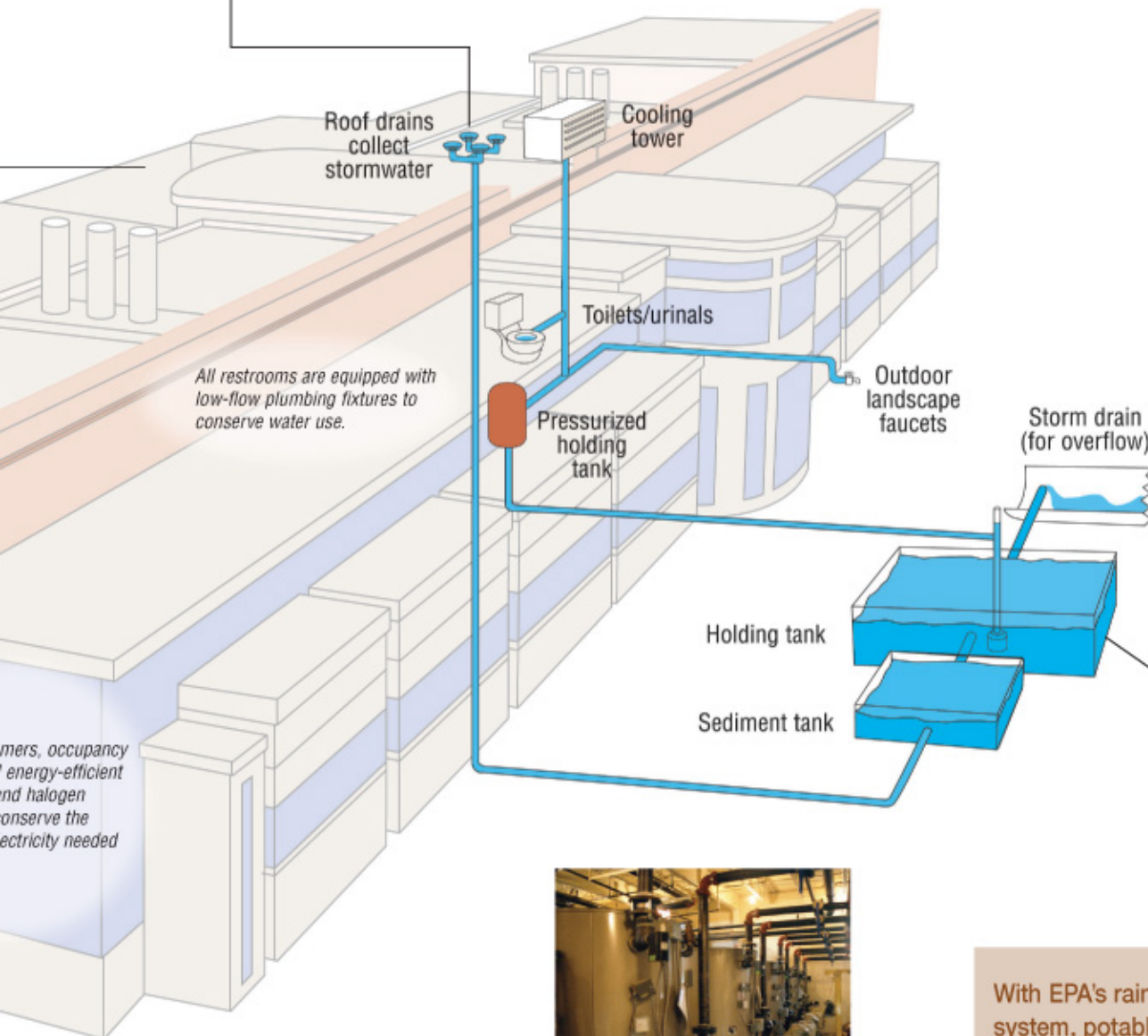
KANSAS CITY SCIENCE AND TECHNOLOGY CENTER



By coupling a variable frequency drive chiller with two conventional chillers, the lab is able to maximize efficient chiller operations over the range of cooling needs.



The lab design team implemented a construction waste recycling plan for concrete, metals, wood, asphalt, and paper. By training demolition and construction workers and raising awareness of the program, the team was able to divert 72 percent of construction debris from area landfills.



EPA promotes alternative transportation options with the inclusion of electric car recharging stations, designated car pool parking spaces, shower facilities, and bicycle racks and storage.



White pipes on the right carry rain water drained from the roof to a 10,000-gallon, pre-cast concrete, fiberglass-lined underground holding tank.

...mers, occupancy energy-efficient and halogen conserve the electricity needed



Five natural gas-fired boilers are more efficient than a traditional mega-boiler, since individual boilers can work more often in their highest efficiency ranges.



The high-ceiling, open bay office area has large clerestory windows specified with low emissivity glass, which allows beneficial light to pass through while increasing the thermal efficiency of the windows.

With EPA's rainwater recapture system, potable water usage for sewer conveyance is offset by 100 percent, and the Agency saves approximately \$2,800 annually in water costs. An innovative rooftop rainwater recapture system collects approximately 735,000 gallons per year from a 31,000-square-foot portion of the roof. This measurement is based on Kansas City's average annual rainfall.

SUBMITTED USGBC* LEED™ SCORECARD FOR KCSTC

Total Project Score - 39 of 69 Possible Points

Sustainable Sites		11 of 14 Possible Points
◆	Prereq 1 Erosion & Sedimentation Control	0
■	Credit 1 Site Selection	1
	Credit 2 Urban Redevelopment	1
■	Credit 3 Brownfield Redevelopment	1
■	Credit 4.1 Alternative Transportation, Public Transportation Access	1
■	Credit 4.2 Alternative Transportation, Bicycle Storage & Changing Room	1
■	Credit 4.3 Alternative Transportation, Alternative Fuel Refueling Stations	1
■	Credit 4.4 Alternative Transportation, Parking Capacity	1
■	Credit 5.1 Reduced Site Disturbance, Protect/Restore Open Space	1
■	Credit 5.2 Reduced Site Disturbance, Development Footprint	1
■	Credit 6.1 Stormwater Management, Rate and Quality	1
	Credit 6.2 Stormwater Management, Treatment	1
■	Credit 7.1 Landscape & Exterior Design, Non-Roof	1
■	Credit 7.2 Landscape & Exterior Design, Roof	1
	Credit 8 Light Pollution Reduction	1

Water Efficiency		5 of 5 Possible Points
■	Credit 1.1 Water Efficient Landscaping, Reduce by 50%	1
■	Credit 1.2 Water Efficient Landscaping, No Potable Use/No Irrigation	1
■	Credit 2 Innovative Water Technologies	1
■	Credit 3.1 Water Use Reduction, 20% Reduction	1
■	Credit 3.2 Water Use Reduction, 30% Reduction	1

Energy & Atmosphere		3 of 17 Possible Points
◆	Prereq 1 Fundamental Building Systems Commissioning	0
◆	Prereq 2 Minimum Energy Performance	0
◆	Prereq 3 CFC Reduction in HVAC&R Equipment	0
●	Credit 1.1 Optimize Energy Performance, 20% New / 10% Existing	2
	Credit 1.2 Optimize Energy Performance, 30% New / 20% Existing	2
	Credit 1.3 Optimize Energy Performance, 40% New / 30% Existing	2
	Credit 1.4 Optimize Energy Performance, 50% New / 40% Existing	2
	Credit 1.5 Optimize Energy Performance, 60% New / 50% Existing	2
	Credit 2.1 Renewable Energy, 5%	1
	Credit 2.2 Renewable Energy, 10%	1
	Credit 2.3 Renewable Energy, 20%	1
■	Credit 3 Additional Commissioning	1
	Credit 4 Ozone Depletion	1
	Credit 5 Measurement & Verification	1
	Credit 6 Green Power	1

Key:

- ◆ Prerequisite Achieved
- Point Achieved
- 2 Points Achieved

Materials & Resources		6 of 13 Possible Points
◆	Prereq 1 Storage & Collection of Recyclables	0
	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell	1
	Credit 1.2 Building Reuse, Maintain 100% of Existing Shell	1
	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
■	Credit 2.1 Construction Waste Management, Divert 50%	1
■	Credit 2.2 Construction Waste Management, Divert 75%	1
	Credit 3.1 Resource Reuse, Specify 5%	1
	Credit 3.2 Resource Reuse, Specify 10%	1
■	Credit 4.1 Recycled Content, Specify 25%	1
■	Credit 4.2 Recycled Content, Specify 50%	1
■	Credit 5.1 Local/Regional Materials, 20% Manufactured Locally	1
■	Credit 5.2 Local/Regional Materials, of 20%, 50% Harvested Locally	1
	Credit 6 Rapidly Renewable Materials	1
	Credit 7 Certified Wood	1

Indoor Environmental Quality		9 of 15 Possible Points
◆	Prereq 1 Minimum Indoor Air Quality Performance	0
◆	Prereq 2 Environmental Tobacco Smoke (ETS) Control	0
■	Credit 1 Carbon Dioxide (CO ₂) Monitoring	1
	Credit 2 Increased Ventilation Effectiveness	1
■	Credit 3.1 Construction IAQ Management Plan, During Construction	1
■	Credit 3.2 Construction IAQ Management Plan, Before Occupancy	1
■	Credit 4.1 Low-Emitting Materials: Adhesives & Sealants	1
■	Credit 4.2 Low-Emitting Materials: Paints	1
■	Credit 4.3 Low-Emitting Materials: Carpet	1
	Credit 4.4 Low-Emitting Materials: Composite Wood	1
	Credit 5 Indoor Chemical & Pollutant Source Control	1
	Credit 6.1 Controllability of Systems, Perimeter	1
■	Credit 6.2 Controllability of Systems, Non-Perimeter	1
■	Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992	1
■	Credit 7.2 Thermal Comfort, Permanent Monitoring System	1
	Credit 8.1 Daylight & Views, Daylight 75% of Spaces	1
	Credit 8.2 Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process		5 of 5 Possible Points
■	Credit 1.1 Recycled Content - Achieved 107%	1
■	Credit 1.2 Local/Regional Materials - Achieved 76%	1
■	Credit 1.3 Energy Recovery Technology	1
■	Credit 1.4 Variable Speed Drive Technology	1
■	Credit 2 LEED™ Accredited Professional	1

Certified: 26 to 32 Silver: 33 to 38 Gold: 39 to 51 Platinum: 52+

Built with Recycled Content

- Concrete: 3%
- Drywall: 31%
- Insulation: 25%
- Metal Studs: 25%
- Rebar: 90%
- Reinforced steel: 90%
- Structural steel joists: 100%
- Miscellaneous steel: 100%
- Window glass: 20%

Design/Construction Principals:

Architect: Hofer Wysocki Architects

Engineer: The Clark Enerson Partners, Engineers

General Contractor/LEED Accredited Professional: Koll Construction

*For more information on the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System® visit <www.usgbc.org/LEED>. LEED™ is the most widely recognized sustainable design rating system in the United States.

For more information on the Science and Technology Center, visit <www.epa.gov/greeningepa/facilities/kansascity-lab.htm> or <www.epa.gov/region7/p2/offtheshelf>.

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U.S. Environmental Protection Agency

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