Building Technologies Research and Integration Center

Delivering Innovations in Buildings

OAK RIDGE National Laboratory

21 INVENTION DISCLOSURES IN THE PAST YEAR

238 PUBLICATIONS IN FY 2020

10 R&D 100 AWARDS

125+ INDUSTRY PARTNERS

6 NATIONAL LABORATORY PARTNERS

26 ASHRAE AWARDS

27 UNIVERSITY PARTNERS

3,500+ VISITORS SINCE 2012

Advancing Building Technologies

The Building Technologies Research and Integration Center (BTRIC), established in 1993, is the Department of Energy's only designated user facility dedicated to performing early-stage research and development in building technologies. With the aim of improving the energy efficiency and environmental compatibility of residential and commercial buildings, research focuses on building envelopes, equipment, building systems integration, energy storage and building-to-grid interactions, sensors, transactive controls, and data modeling and simulation.

The BTRIC is a 60,000 sq. ft. research campus and includes the flagship Maximum Building Energy Efficiency Research Laboratory (MAXLAB), a multipurpose laboratory to advance the energy efficiency and durability of building envelopes (e.g., large-scale wall assemblies), equipment, and appliances.

Envelope and equipment laboratories provide a range of test chambers and capabilities for developing new components that are more resistant to heat flow, airtight, and moisture durable than existing technologies. Flexible research platforms offer the opportunity to plug and play, placing technologies into real-world, highly instrumented buildings for evaluation. From benchtop wind tunnels to computational fluid dynamics modeling to large-scale environmental chambers, BTRIC provides a range of capabilities to advance building technologies. Across its energy science and technology user facilities, ORNL delivers breakthroughs from generation to distribution and storage to end use, accelerating America's transformation to a clean, efficient, flexible, and secure energy future.

Advanced Manufacturing

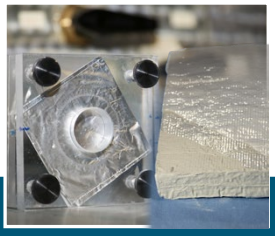
Leveraging multi-disciplinary expertise and exploring new ways to integrate advanced manufacturing into building envelope design such as 3D printing of precast concrete molds that prove to be more durable than conventional wooden molds.

Transactive Controls

Improving energy efficiency by developing new building technologies; whole-building community integration; creating software that leverages data from Internet-connected residential HVAC units and water heaters to enhance energy management in buildings.

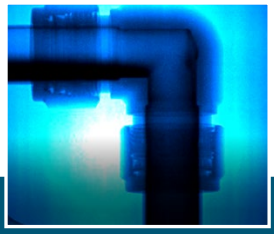
Computational Science

Utilizing the most powerful supercomputing systems in the world to build web visualization tools, showing energy use intensity, providing accurate simulations, helping meet energy reduction and consumption goals.



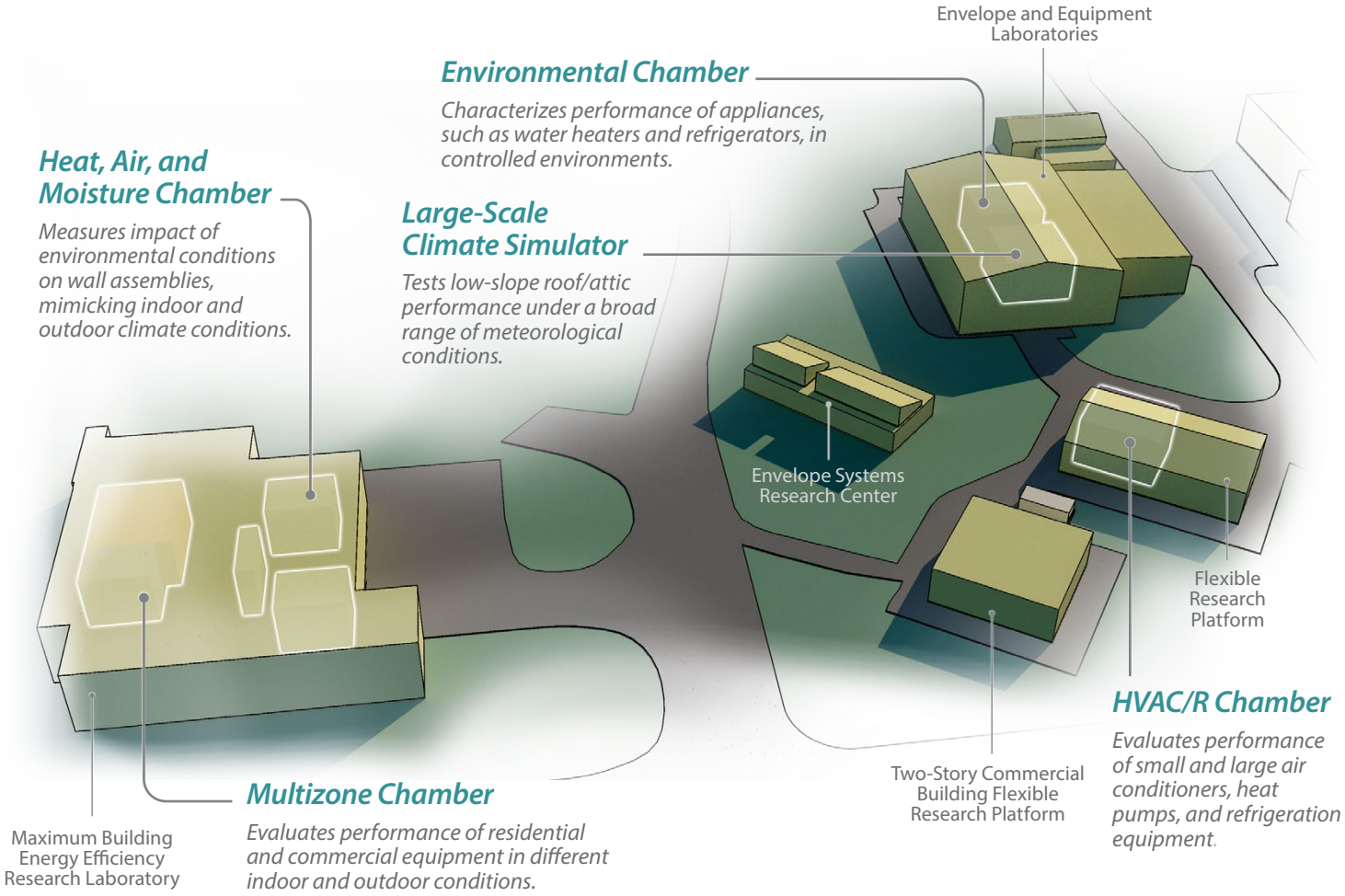
Emerging Materials

Investigating emerging materials, components, and systems; under-standing heat, air, and moisture transfer; looking at ways to use a building's envelope as a filter to store or reject solar radiation; eliminating unwanted heat and airflow.



Thermal Solutions

Deploying neutrons to gain a deeper understanding of the structure of novel phase-change materials and refrigerant flow and to characterize the performance of heat exchanger designs.



Working with ORNL

More than 125 industry partners annually work with BTRIC to advance and commercialize building technologies. The industry partners can leverage ORNL's world-class buildings capabilities through user agreements and collaborations approved by DOE. For more information on how to work with ORNL, visit www.ornl.gov/partnerships.

DOE's MAXLAB

The Maximum Building Energy Efficiency Research Laboratory is the flagship facility of BTRIC and includes a working laboratory with test chambers for wall and moisture penetration and refrigeration as well as appliance and equipment research.

For more information, contact

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OAK RIDGE National Laboratory | BUILDING TECHNOLOGIES RESEARCH AND INTEGRATION CENTER

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