



## APPLIED RESEARCH AND INNOVATION SERVICES

# GREEN BUILDING TECHNOLOGIES

The Green Building Technologies (GBT) research initiative got its start within SAIT Polytechnic's Applied Research and Innovation Services (ARIS) department in 2008. ARIS, SAIT's gateway for applied research, has brought SAIT Polytechnic and GBT researchers together with industry partners to identify and develop environmentally friendly technologies, processes, programs, systems and services that will fundamentally change the way we build, educate and develop skilled labour.

### Mission

- Partnering with industry in implementing green-building technologies
- Providing training and education in green-building technologies
- Advancing applied research and development towards the commercialization of green-building technologies

### Service Offerings

- Early-Stage Business Development
- Design and Engineering Services
- Construction Innovation
- Fabrication, Prototyping and Installation Services
- Performance Monitoring and Management
- Testing Services
- Education, Workshops and Seminars

### Our Researchers

SAIT's GBT team is made up of architects, environmental professionals, industrial engineering designers and fabrication trades, including a Red Seal Carpenter, with credentials ranging from master trades people to master's degrees. The team's industry experience helps ensure that projects align with the needs of private-sector partners and transform the green building industry in Alberta. Projects also include PhDs and subject-matter experts from SAIT programs (i.e. Bachelor of Construction Project Management and Bachelor of Business Administration), in addition to other college- and university-based collaborators.

## TECHNOLOGY ACCESS CENTRE

With its latest NSERC grant award, GBT at SAIT is now a nationally recognized Technology Access Centre (TAC), offering testing and consulting services and applied research to industry partners.

The GBT Office will be located in the new, \$2.7-million Green Building Technologies Lab and Demonstration Centre currently under development on the SAIT campus. This combination of expanded facilities, funding and expertise will provide industry with new research facilities, resources and a growing offering of GBT technical services.

### Our Awards

2011 Net-Zero Energy Coalition  
Custom Project of the Year

2012 DIRTT Award  
Technical Implementation and  
Innovation

2014 Emerald Award  
Public Education and Outreach

## APPLIED RESEARCH THEMES

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### Net-Zero Energy and Energy-Positive Design (NZE)

GBT has worked with a number of industry partners on net-zero and energy-positive design and construction. A series of Net-Zero Energy Homes (NZEH) – homes that produce as much energy as they use – included two homes (Discovery 4 and 5) that were built on campus and relocated to residential communities.

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### Building-Integrated Renewable Energy (BIRE)

SAIT designed and constructed a Solar Thermal Lab to demonstrate building-integrated renewable energy. The lab is a flexible, living laboratory, designed to incorporate and test new solar technologies over time.

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### Architectural Ecology (AE)

SAIT's Rainwater Harvesting Lab houses an innovative rainwater harvesting system. This lab is used to test building-integrated water-filtration technologies such as green roofs, living walls and rainwater collection, harvesting, filtration and reuse systems.

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### Energy Management and Monitoring (EMM)

Energy management and monitoring is essential to the successful integration of Green Building Technologies. The award-winning, SAIT-designed solar balustrade incorporates evacuated tubes for solar thermal heating into the handrail of the Discovery 4 home. GBT researchers designed and fabricated the handrail, with ongoing energy monitoring for prototype performance.

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### Education and Industry Transformation (EDIT)

A multi-million dollar GBT Lab and Demonstration Centre is underway, expanding the GBT infrastructure as well as its research capabilities in building envelope testing and analysis, green roof construction and water treatment testing. This lab will contribute to numerous learning opportunities in addition to enabling innovation within industry.

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### Materials and Advanced-Component Assembly (MACA)

The continued development of more complex, high performance, sustainable and locally produced construction materials has strengthened the need for standardized prototype development and testing processes. GBT offers MACA fabrication and ASTM equivalency testing services that have garnered a range of interest from product manufacturers, builders, professional consultants and regulatory offices.

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