

BCIT's Building Science Program Update



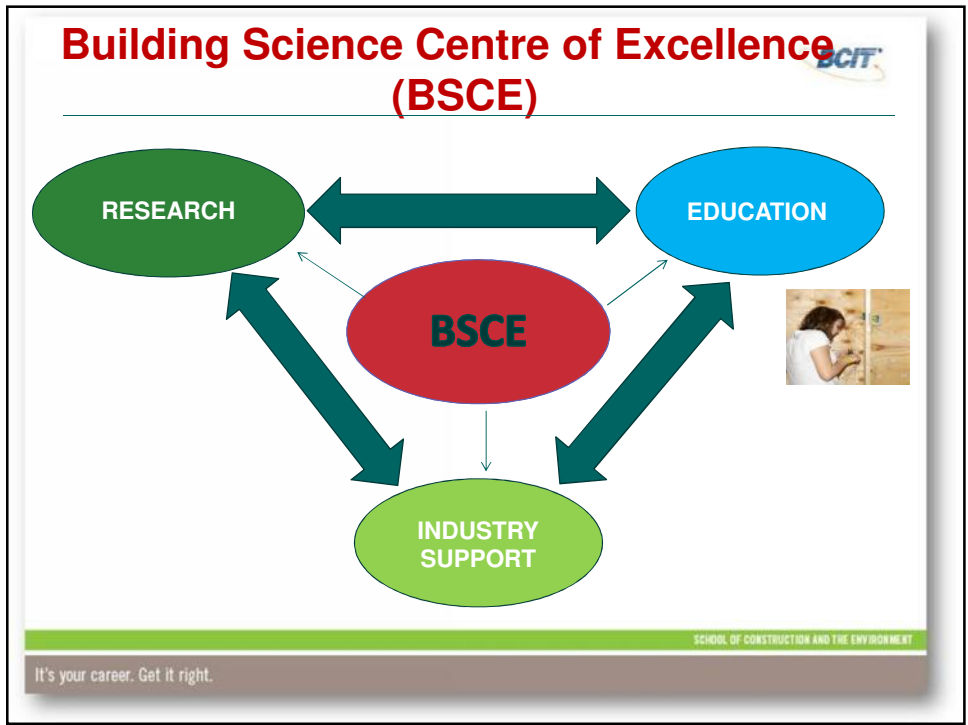
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Fitsum Tariku, Ph.D.

Building Science Centre of Excellence (BSCE)

BCBEC, Conference September 21st, 2011

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Update- Masters Degree in Building Science



- Launch of First-of-a-kind Building Science program in BC & western Canada –Sept. 2010
 - Masters of Engineering in Building Science
 - Master of Applied Science in Building Engineering/Building Science
- First intake
 - 8 MEng (4 FT and 4 PT)
 - 7 MASc (6 FT and 1 PT)
- Three practicing Engineers
- Two instructors from Industry

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Masters Degree Programs



- Curriculum: Fundamentals, Applied, Research
- Offers specialization in building science
- Focuses on applied research and providing solutions to industry problems
- Provides opportunity for students to engage in interdisciplinary research
- Supported by a strong foundation of research infrastructures

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Program Structure: Two Degree Programs

Master of Engineering in Building Science (MEng)

- One Year Full-Time
- Course-based
 - More Coursework
 - Research Project
- 33 Credits

Master of Applied Science in Building Engineering/ Building Science (MASc)

- Two Years Full-Time
- Thesis-based
 - Less Coursework
 - Research Thesis
- 36 Credits

Both programs can be studied part-time to be completed within 5 years

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Course Credit Comparison

| MEng | MASc |
|-----------------------------------|------------|
| Core Technical Courses | |
| 15 credits | 9 credits |
| Elective Technical Courses | |
| 9 credits | 9 credits |
| Graduate Seminar | |
| 0 credits | 0 credits |
| Research | |
| 9 credits | 18 credits |
| Total | |
| 33 credits | 36 credits |

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Program Admission Requirements

MEng

- Bachelor's degree in an engineering field with a GPA of 2.7 out of 4.0 (70%)

MASc

- Bachelor's degree in an engineering field or architecture with a GPA of 2.7 out of 4.0 (70%)
- Bachelor degree in a related Science field with a GPA of 2.7 out of 4.0 (70%) and ABET with Building Science option

- Bridging courses may be required
- Full admission requirements:

<http://www.bcit.ca/study/programs/buildingscience>

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Application Process



- Intake September
- Application for Fall 2012 will be open in October.

<http://www.bcit.ca/study/programs/buildingscience>

- Enrolments
 - MEng – 10 students
 - MASc – 10 students

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Graduate Student Research Assistantship



- Financial Support
 - Graduate research assistantship: Department
 - Bursary: Institute
 - Natural Science and Engineering Research Council (NSERC) graduate scholarships program
- Industry Sponsorship
- Student Loan

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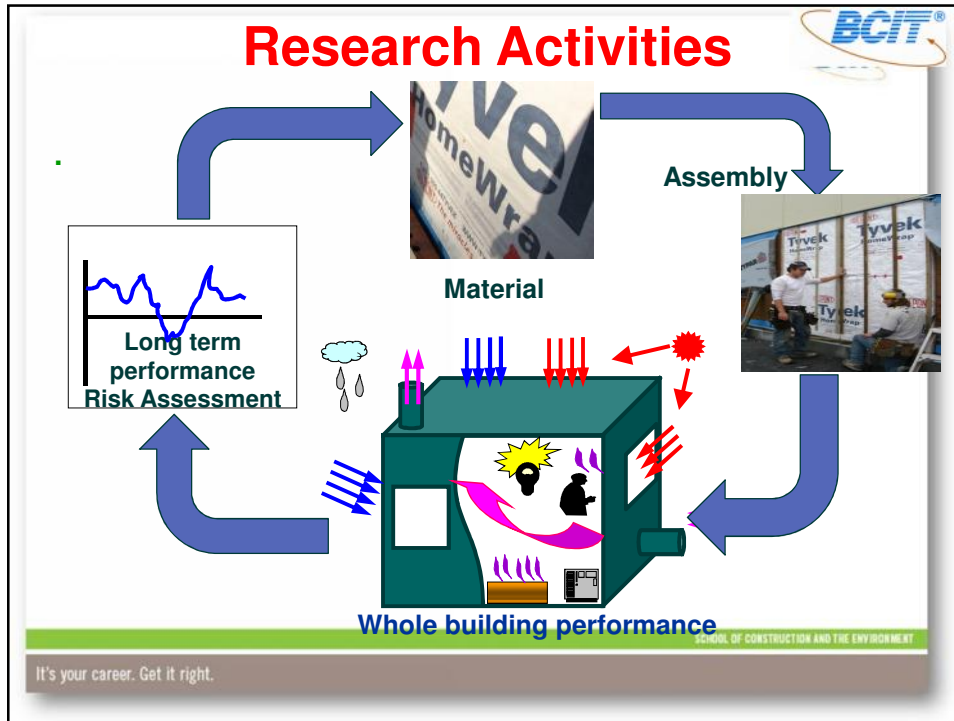
Research



- Facilities
 - Laboratory
 - Computer Models
 - Field Experiment
 - Field Monitoring
- Support
 - Education
 - Undergraduate students
 - Graduate students
- Industry
 - Testing and Evaluation
 - Research and Development

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Material Property Measurements

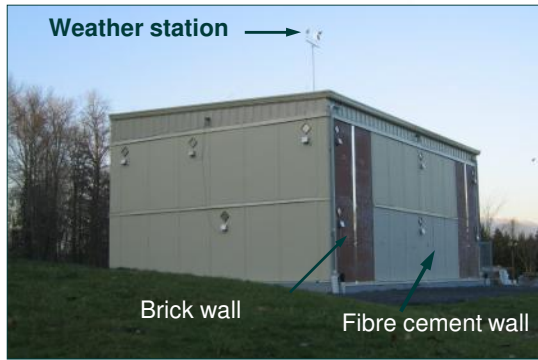
- Moisture sorption isotherm
- Vapour permeability
- Water absorption coefficient
- Thermal conductivity

| Square root of time (s ^{1/2}) | FC17 (kg/m²) | FC20 (kg/m²) | FC21 (kg/m²) | FC18 (kg/m²) |
|---|--------------|--------------|--------------|--------------|
| 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | 0.5 | 0.5 | 0.5 | 0.5 |
| 200 | 1.0 | 1.0 | 1.0 | 1.0 |
| 300 | 1.5 | 1.5 | 1.5 | 1.5 |
| 400 | 1.8 | 1.8 | 1.8 | 1.8 |
| 500 | 2.0 | 2.0 | 2.0 | 2.0 |
| 600 | 2.1 | 2.1 | 2.1 | 2.1 |
| 700 | 2.2 | 2.2 | 2.2 | 2.2 |
| 800 | 2.2 | 2.2 | 2.2 | 2.2 |

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Building Envelope Test Facility (BETF)

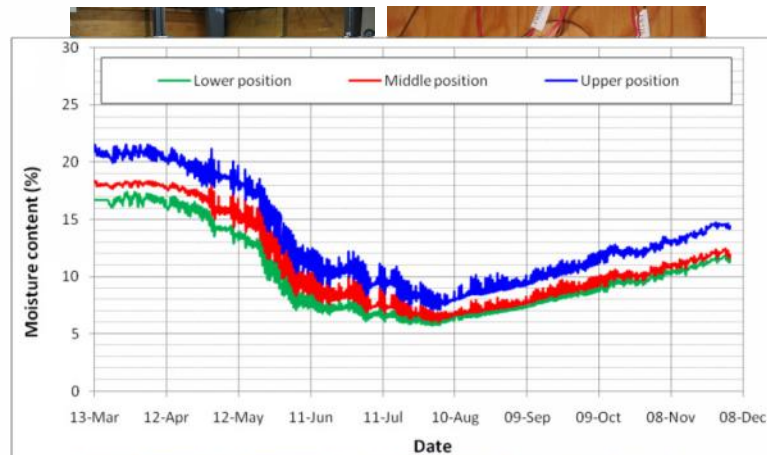


- Dimensions
 - 44' x 28'
- Test
 - Walls
 - Roof
 - Windows
- Accommodates
 - 62 Panels

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Fabrication and Instrumentation



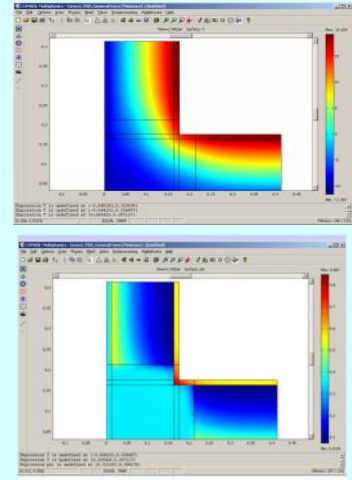
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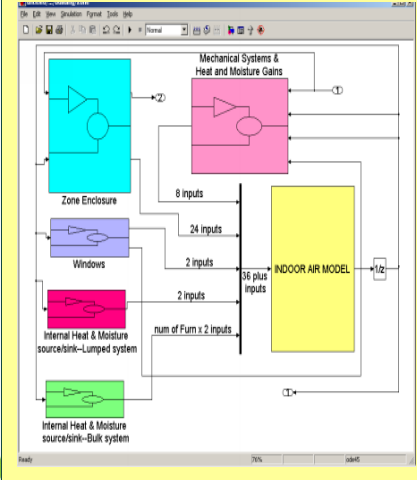
Computer Models



Building Envelope Model— HAMFit

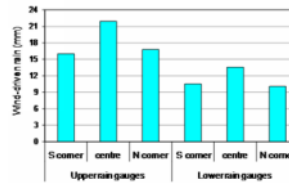
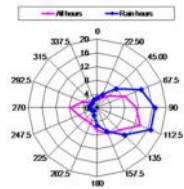


Whole-Building Hygrothermal Model— HAMFitPlus



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Outdoor Climate Load Analysis



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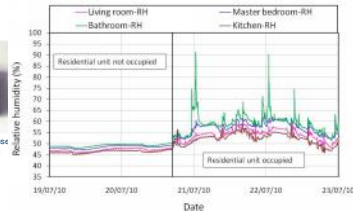
Indoor Climate Load Analysis



The residential building for indoor climate testing in Vancouver



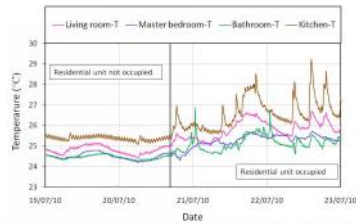
The HOBO data logger used for measurement



A HOBO data logger installed in kitchen



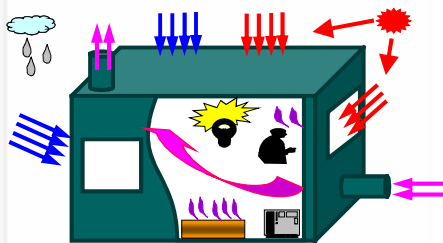
A HUSO data logger installed in living room



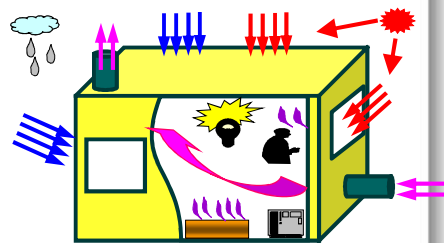
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Upcoming: Whole-Building Performance Research Laboratory



Reference Building

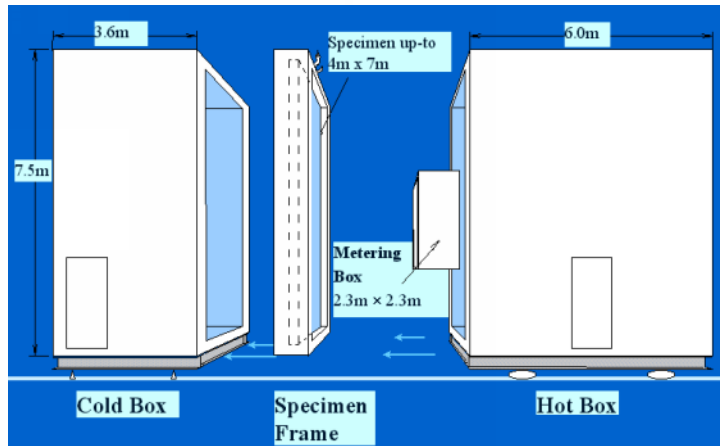


Test Building

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Upcoming: Full Scale Environmental Chamber



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Acknowledgements



- **BCBEC**
- **HPO**
- **BC Housing**
- **CMHC**
- **FPIInnovations**
- **UBC**
- **Concordia University**
- **RDH**
- **RJC**
- **BC Masonry Institute**
- **NSERC, CRC, CFI, BCKDF and WED**



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Partnership Opportunities

- **Masters degree program:**
 - MEng projects
 - Thesis projects
- **BSCE:**
 - R&D projects
 - Collaborative Research Projects
- **Funding:**
 - Joint proposals to Provincial and Federal funding agencies



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Questions?



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