

Partners:

Client: University of Ottawa
Architects: Shore Tilbe Irwin &
Partners &
Teepie Architects, Coles &
Associates and
McKee Engineering

Our Services:

Sustainable design facilitation

Status:

Completed 2003

Energy Efficiency:

73% savings relative to the
Model National Energy Code

Environmental Impact:

- Essentially no ozone depleting
chemicals used in material or
equipment
- CO₂ levels below 450 ppm

Cost Savings:

\$270,000 annual cost savings at
a premium of 3% - a payback
of 1.6 years

UNIVERSITY OF OTTAWA BIOLOGY BUILDING

Canada's Most Energy-Efficient Building

The University of Ottawa Biology Building, a 5,200 m² research and teaching facility, is the most energy-efficient building in Canada. The building achieves a remarkable 73% reduction in energy consumption compared with standard design practice (Model National Energy Code). The energy savings were independently verified by Natural Resources Canada as the highest value seen in over 220 CBIP and C2000 projects (as of February 2004).

The building features a distinctive curtainwall with thickened thermal breaks and insulated spandrels. Instead of the conventional terminal heating process used in large buildings, this building is designed with a terminal cooling system. This system sends dry, dehumidified air from a central plant throughout the building where it can be heated or cooled in individual rooms as required. This biology building has 37 growth chambers and 49 fume hoods, which normally have a high exhaust air flows. The design team worked with the client to select energy efficient equipment that is both functional and safe.

**Notable Features:**

- > Terminal cooling system sends centrally dehumidified air throughout the building
- > High performance glazings
- > Insulated curtainwall mullions
- > Insulation details to avoid thermal bridging in spandrel panels
- > Energy efficient T-8 lighting
- > Low flow fume hoods
- > Exhaust air heat recovery
- > Lighting with daylighting controls
- > Ventilation and lighting controlled by occupancy sensors
- > Heat pipe dehumidification of ventilation air
- > Waste heat recovery from growth chambers

Recognition:

- > Energy savings were independently verified by Natural Resources Canada as the highest value seen in over 220 CBIP and C2000 projects (as of February 2004)
- > Project was awarded Natural Resources Canada's New Building Energy Efficiency Award for 2004.