ATHENA™

ENVIRONMENTAL IMPACT ESTIMATOR

The only North American software for the life-cycle assessment of buildings

Architects, engineers and researchers can get life-cycle assessment (LCA) answers about conceptual designs of new buildings or renovations to existing buildings from ATHENA Institute's Environmental Impact Estimator – ***Athena™ 2.0.***

The ***Athena™ Estimator*** lets you assess the environmental implications of industrial, institutional, office, and both multi-unit and single family residential designs. Where relevant, it also distinguishes between owner-occupied and rental facilities. ***Athena™*** puts the environment on an equal footing with other more traditional design criteria at the conceptual design stage of a building project.

Life-Cycle Assessment is widely accepted as the best basis for comparing the environmental impact of alternative materials, components and services.

In the case of buildings, material manufacturing is the most important contributor of emissions to water and land, including toxic releases. A recent US study found that construction is the sector producing the most CO2 emissions through the manufacture, transport and use of materials. A Canadian study indicates that the embodied energy in office buildings can be equivalent to more than 20 years of operating energy use, and that material selection or other design decisions can significantly reduce embodied energy.

LCA is the route to document, understand and reduce such critical environmental effects.

Athena™ incorporates the Institute's internationally recognized life cycle inventory databases, covering more than 90 structural and envelope materials. It simulates over 1,000 different assembly combinations and is capable of modeling 95% of the building stock in North America.[1]

Athena™ takes into account the environmental effects of:

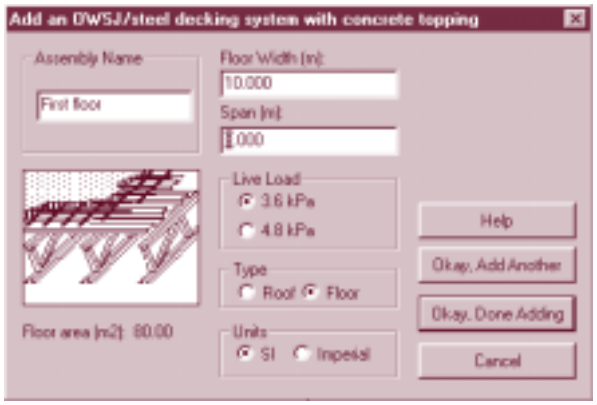
- ✓ material manufacturing, including resource extraction and recycled content
- ✓ related transportation
- ✓ on-site construction
- ✓ regional variation in energy use, transportation and other factors
- ✓ building type and assumed lifespan
- ✓ maintenance, repair and replacement effects
- ✓ demolition and disposal
- ✓ operating energy emissions and pre-combustion effects[2]

Easy to Use

Using preset building assembly dialogues *(see diagram at right)*, a conceptual building design can be quickly entered. Instantly, and specific to your geographic region[3], you can see the cradle-to-grave implications of your design in terms of:

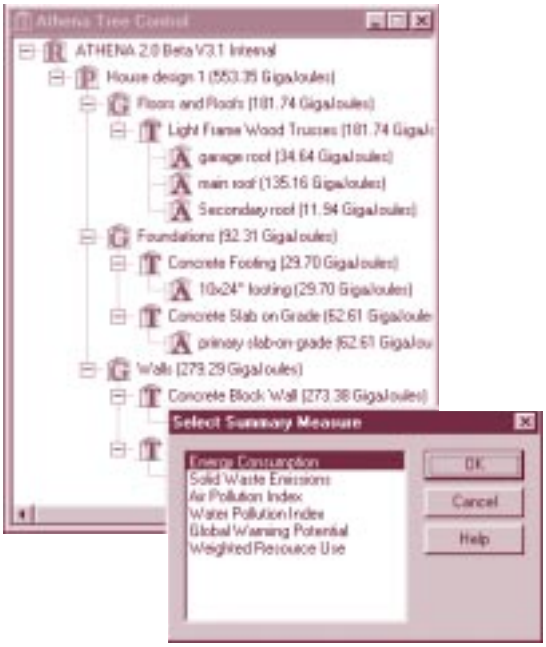
- ✓ embodied primary energy use
- ✓ global warming potential
- ✓ solid waste emissions
- ✓ pollutants to air
- ✓ pollutants to water
- ✓ natural resource use

▼ Assembly dialogue



[1]For buildings higher than eight stories, users should ensure they stay within the ***Athena™*** parameters, e.g., live loads. [2]***Athena™*** does not have an operating energy simulation capability, but it does have provision to enter the results of a simulation to compute the fuel cycle burdens and factor them into the overall results. [3]***Athena™*** currently includes six regions for Canada, two specific regions for the US, and a US average. Some US data is based on Canadian data with adjustments for energy production and transportation.

Tree screen ▼



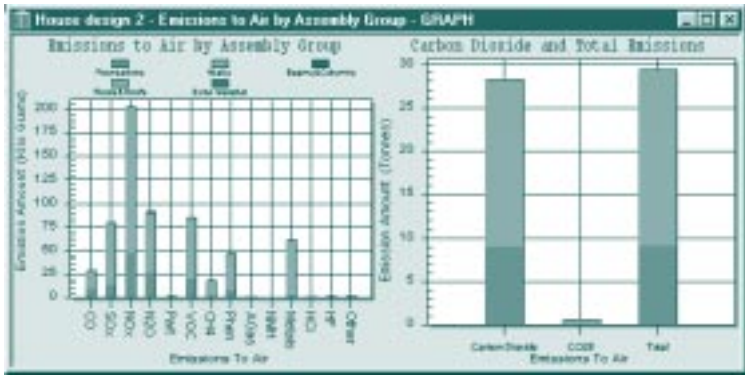
Track Your Entries

As design data is entered using the assembly dialogues, ***Athena™*** builds a tree *(see diagram at left)* so that you can easily track your entries. The tree can also display, in value or percentage terms, any one of the summary measures. This enables you to track the effects of each assembly addition as you make it, or to quickly pinpoint which one is causing a particular environmental effect.

View Detailed Results

Results from an individual design can be seen in summary tables and graphs by assembly group and life cycle stage. Detailed tables and graphs show individual energy use by type or form of energy and emissions by individual substance for both the assembly group and life cycle stage breakouts *(see diagram below)*.

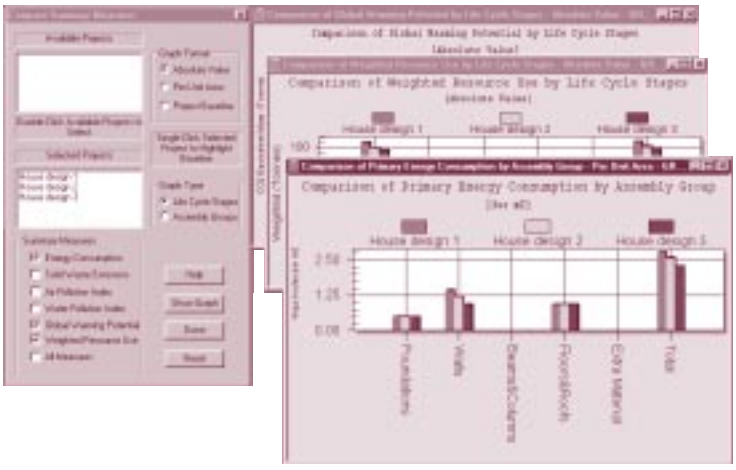
▼ Detailed results graph



Make Comparisons

Change a design, substitute materials, and then make side-by-side comparisons for any one or all of these measures *(see diagram below)*. Or compare the new building design to one you did last year. You can also compare similar projects with different floor areas on a unit floor area basis. ***Athena™*** can handle as many as five comparisons at a time.

Comparison graphs ▼



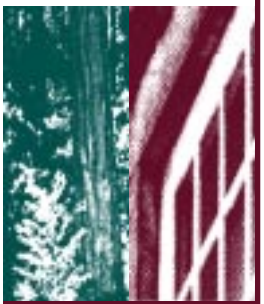
More Information?

To see how user-friendly the software is, visit our web site at www.athenaSMI.ca and go through the animated tutorial.

Companion CD ensures transparency

To make the ***Athena™ Estimator*** as transparent as possible, we offer a companion CD containing all our database reports in pdf format.

*Note: **Athena™** is not an engineering design tool. It's a tool that lets you express a design in simple terms so that you can readily see the environmental implications of your choices.*



How to Order

Call 1-866-520-6792 to order, or download the order form from our website, www.athenaSMI.ca, and fax or mail it to us.

Athena™ 2.0 is a Visual C++ application and has been tested on a PC system with the following minimum configuration:

- Microsoft® Windows 95™, 98™ , 2000™, XP and NT operating systems;
- 150Mh Pentium microprocessor; and
- 32M bytes of RAM.

Athena™ 2.0 has also been run successfully in Virtual PC 5.0 on a Macintosh running System 9.1 with 128Mbytes of RAM.

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