The Athena Institute
Activity Highlights

Jamie Meil, Managing Director

AGM – June 6th, 2012
It has been a busy year

- Completed over 25 projects for members and clients
- Advanced the Impact Estimator for Highways software from a “prototype” to a publicly available “beta” version
- Released two updates of our Impact Estimator for Buildings software
- Larger presence & developed new booth materials at GreenBuild in Toronto
- Complete website makeover
- Educational support for our tools
Building Product LCA studies

Completed 16 building product/system LCA studies: For example,

- Gypsum board – sector and individual firms
- PVC roofing
- Built-up roofing
- Glulam beams and columns
- Log home – timber frame and walls
- Metal building systems
- Composite metal decking systems
- Precast concrete – col/beam, hollow core, double T, conventional and insulated wall panels
The Athena Institute completed a critically reviewed cradle-to-gate LCA study for the Gypsum Association’s members for two of the industry’s most common gypsum wallboard products.

Study entailed collecting primary LCI data from:
• 5 N.A. gypsum quarry operations
• 3 gypsum paper producers
• 17 gypsum wallboard plants

Employed system expansion methodology to encompass the industry’s growing use of FGD gypsum as a substitute to natural gypsum

GA data submitted to USLCI Database & uploaded to the IE4Buildings software
Tremco Roofing LCA: BURmastic vs. Rock-it

The Athena Institute completed a critically reviewed cradle-to-grave LCA study for Tremco Roofing contrasting its conventional BUR with its cool-roof “Rock-it” version of the same roof.

Collected LCI data from two of Tremco’s manufacturing facilities for 3 products.

Modeled both C2Grave product systems for a standard office building in two climatic zones (including use phase).

Identified environmental hot spots during manufacture and pros and cons of each system in varying climatic conditions.

Tremco considering next steps for using the study results internally and externally.
CPCI engaged Morrison Hershfield and the Institute to complete a critically reviewed LCA of Canadian precast concrete products and their comparative use in a mid-rise office building in two Canadian cities.

Study Elements:
- Primary data collection: life cycle inventory data for Canadian precast concrete plants and products
- “Cradle-to-grave” LCA of precast concrete mid-rise commercial buildings in two Canadian locations
- Study considered:
  - 5 variations of building envelope
  - 3 variations of structural framing
  - 2 Canadian locations (Toronto, Vancouver)
  - 2 service lives (60, 73 years)
  - Total of 60 scenarios

Study results widely presented (Construct Canada, AIBC, CSCE). Also prepared product fact sheets
Some Other Activities

- Developed an LCA based benchmarking and reporting tool for CPCI in support of their Sustainable Plants Program – 40 plants in various regions
  - Focused on calculating C2Gate energy use, GHG and water use footprint
- Working with various clients/members to help guide them through the ever evolving PCR/LCA/EPD process
- Led or served on 6 LCA critical review panels
- Working with other LCA practitioners to get their clients’ LCI data in our tools – e.g., PE Int. PIMA data
- PE & Athena collaborating on a white paper – LCA in codes and rating systems – status, impact & limitations
The Athena Institute recently released a beta version of a free LCA-based software for pavement designers. Visit our website

Tool facilitates LCA of various concrete and asphalt mix designs for a myriad roadway types – arterial, collector & freeway from the sub-base up to the road surface including periodic rehabilitation and repair over a 50-yr life span

This tool will meet a new and growing demand for greater sustainability in infrastructure.

Currently working with the CAC to have a full commercial version of the tool for Canada available by the late fall – stay tuned!
Software & Tools: IE4Buildings

The Athena Institute’s N. American whole building LCA software. Currently in its 4th commercial iteration. Major new version (4.2) scheduled for release later this summer. New version to include:

- **Updated product data** – gypsum wall board (GA), glulam (FPI), CDN precast products (CPCI), & polyiso insulation – foil and glass faced (PIMA/PE), PVC roofing membrane (CFFA)
- **New assemblies** – precast columns and beams, composite metal floor and roof systems (AISI/SEI)
- **New functionality** – ability to import a bill of materials for a complete building, facilitating assessment of finished buildings not just conceptual designs. New on-site construction effects for bill of materials input.
- Supports EPA’s TRACI v2.0 (2012) impact indicator method

**Version 5.0** already on the drawing board – will be driven by LEED 2012/LCA in codes, incorporate new N.A. metals data (steel and Al), new end-of-life module(s) and updated and expanded product LCI data.
The **ATHENA EcoCalculator for Assemblies** (EC) is our free Excel-based software that provides instant LCA results for commonly used building structure and envelope assemblies – approximately 400+ assemblies based on detailed assessments conducted using the IE.

The program is simple to use, requiring users to only input of the area of each building assembly to arrive at a complete building assessment.

New version to be released following IEv4.2 summer release.

GBI recently agreed to continue their annual support for the EC. The EC is the basis for their GreenGlobes LCA educational credit.
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Get in touch with us for more information.

THANK YOU!