SPFA Life Cycle Analysis Project

Part II

SPFA Project Details and Update
Building The Project Team

Active Members of the SPFA LCA Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tr>
<td>Joe Costa</td>
<td>Arkema</td>
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<td>Shelly West</td>
<td>Biobased Insulation</td>
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<td>Katharine Davino</td>
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<td>Tom Ponder</td>
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<td>Monica Karamagi</td>
<td>Huntsman</td>
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<td>Bruce Uhlman</td>
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<td>Robert Naini</td>
<td>Demilec USA</td>
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<td>Peter Birkbeck</td>
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<td>Jim Lambach</td>
<td>Bayer Materials Science</td>
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<td>Steve Crain</td>
<td>Dow</td>
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<td>Jason Hoerter</td>
<td>NCFI Polyurethanes</td>
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<td>George Pavelovich</td>
<td>Bayer Materials Science</td>
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<td>Tom Sojak</td>
<td>Gaco</td>
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Project Roadmap

Following the ISO Process

- Based on ISO 140xx Standards
  - Objectives and Scope
  - Inventory
  - Impact and Assessment
  - Interpretation

START → IDENTIFY CONSULTANTS → DEVELOP RFP → SELECT CONSULTANT → EVALUATE PROPOSALS → CONSULTANT PROPOSALS → DEFINE SCOPE → UNDERSTAND PROCESS → REFINE SCOPE

- MATERIAL DATA → COLLECT DATA → PERFORM LCA → CONSULTANT REPORT → LCA PUBLIC REPORT → FINISH

- ENERGY ANALYSIS

Objectives and Scope
Inventory
Interpretation
Impact and Assessment
CONSULTANT
Understand Process

Guest Presentations

- ISO 140xx Standards
  *Robert Naini, Demilec*

- Eco-Efficiency Analysis
  *Bruce Uhlman, BASF*

- LCAs and Trade Organizations
  *DeLane Wisner, ACC Consultant*

- LCA for SPF Insulation in Residential Buildings
  *George Pavelovich and Jim Lambach, Bayer Materials Science*
Objectives and Scope

Consensus Process

• Used online survey to help define objectives and scope of project
• 12 respondents from project team
Objectives and Scope

Why is an LCA needed?

• Compare SPF with other insulations
• Comply w/ green building standards
  • LEED 2009, GBI, BEES, NAHB-GB
• Support ‘green’ marketing message for SPF without ‘greenwashing’
  • Environmental Product Declaration
• Provide selection tool for design professionals
  • U.S. LCI Database
Objectives and Scope

What is our scope?

- **Cradle-to-Grave** analysis
- Must include **SPF applications:**
  - Open-cell residential
  - Closed-cell residential
  - Closed-cell commercial roof
- Should include **competitive insulations:**
  - Fiberglass
  - Cellulose
  - XPS
  - Others
Objectives and Scope

What are the metrics?

- **Metrics** to include:
  - Energy Consumption/Savings+CO2
    Emissions and Life Cycle Cost **
  - Resource and Raw Materials Consumption
  - Health Effects (indoor air quality, volatile organic compounds, ecological toxicity, etc.)
  - Solid and Liquid Waste (materials disposal)
  - Land Use (extraction, mining, water use,..)
  - Other Emissions (GWP, ODP, acidification, photochemical ozone creation, water, etc.)
Objectives and Scope

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Request for Proposal

Needs defined in RFP

- **PHASE I - Energy and GWP Savings for SPF**
  - Target Completion: Q3 2009
  - Cost: $25-30k
  - Determine Embodied Energy needed to create SPF and competitive products
  - Estimate Energy Saved over use period in three applications with SPF versus competitive products
  - Calculate Net GWP during use period from three applications with SPF versus competitive products
Request for Proposal

Needs defined in RFP

- **PHASE II – LCI and LCA for SPF**
  - Target Completion: Q1 2010
  - Cost: TBD from proposals
  - Develop complete LCI data for SPF to create Environmental Product Declaration and data for US LCI Database, BEES, etc.
  - Perform Complete Life-Cycle Environmental and Cost Assessment for SPF
Needs defined in RFP

- **PHASE III – LCI and LCA for Other Insulations**
  - Target Completion: Q2 2010
  - Cost: TBD from proposals
  - Collect LCI data for other insulations from US LCI Database, BEES, etc.
  - Perform Complete Life-Cycle Environmental and Cost Assessment for competitive insulation products
Request for Proposal

Needs defined in RFP

• PHASE IV – Define LCA Roadmap
  • Target Completion: Q3 2010
  • Cost: minimal
  • Provide a quotation to update the LCA/LCC studies based on individual SPFA members providing proprietary SPF formulations and product cost data.
Request for Proposal

RFP sent to five consultants

PE Americas (PE International GmbH)
www.pe-international.com

Franklin Associates
www.fal.com

Boustead Consulting Ltd.
www.boustead-consulting.co.uk

Athena Institute International

Sustainable Solutions Corporation
www.SustainableSolutionsCorporation.com
Consultant Proposals

Awaiting proposals – Jan 18th

- PE Americas (PE International GmbH)
  www.pe-international.com

- Franklin Associates
  www.fal.com

- Boustead Consulting Ltd.
  www.boustead-consulting.co.uk

- Athena Institute
  International

- Sustainable Solutions Corporation
  www.SustainableSolutionsCorporation.com
Next Steps

Evaluate and Refine Proposals

• Evaluate Proposals
• Refine scope to meet budget
• By February 1
Next Steps

Select Consultant

- February 15
- Begin Phase I work
Next Steps

Material Data

- Now
- Define generic formulations
- Provide manufacturing data to consultants
Questions?

- Objectives and Scope
- Inventory
- Interpretation
- Impact and Assessment
- CONSULTANT

Flowchart:
- START
- UNDERSTAND PROCESS
- DEFINE SCOPE
- IDENTIFY CONSULTANTS
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- PERFORMANCE ANALYSIS
- MATERIAL DATA
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- CONSULTANT REPORT
- LCA PUBLIC REPORT
- FINISH