LCAT from LCAnalytics for Environmental Impact Assessment of Computers

Case Study: Environmental Impact of Non-Manufacturing Phases

LCAnalytics

The growing use of computers and electronics is a significant environmental concern. Manufacturers and consumers are increasingly conscious of their impact on the environment; however, no tool exists to accurately model the environmental impact of personal computers and components. LCAnalytics is a company that provides accurate and easy-to-use tools to fill this need.

LCAT

LCAnalytics Tool, LCAT, provides:

- Accurate assessment of a computer's impact on global warming, human health, and nature.
- High precision estimates based on component-level analysis.
- Estimates based on more accurate assumptions than existing models, which only use industry-wide averages.

The development of LCAT was based on:

- Professional disassembly, material and process analysis of computers and components.
- Review of recent literature and documentation.
- Correlation of product manufacturer specifications with environmental impact.
- Industry-standard LCA software, including the Ecoinvent database.
- ISO 14000 series requirements

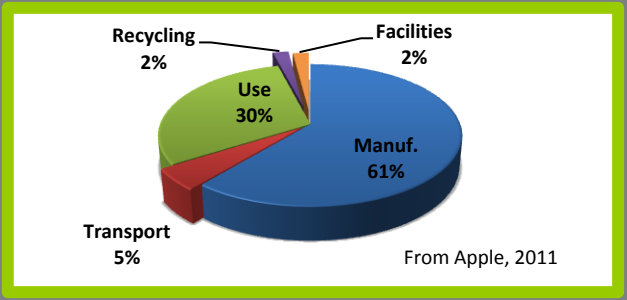
Team

The team at LCAnalytics consists of experts from academia and industry with a passion for the environment- they are: Shiva Nanda of Newport Computers, Professor Venky Venkatachalam of the University of New Hampshire, and Dr. Samudra Vijay of Sam Analytic Solutions, assisted by Mike Ernsting, majoring in environmental engineering at Tufts University, and Chris Schwab, majoring in business administration at the University of New Hampshire.

Case Study: OEM Reports

AMD Processors[1]

A 2011 study by CPU manufacturer AMD established that assembly accounted for less than 0.3% of the total carbon footprint, that test, marking, and packaging accounted for less than 7% of the total carbon footprint, and that the transfer of product to warehouse distribution centers has a negligible impact (about 1%) on the greenhouse gas emissions. Various studies have shown that energy consumption during the use phase can account for up to 90% of the overall GHG emissions.



Apple's Environmental Footprint[2]

In Apple's 2011 environmental impact report, they estimate that 61% of their total greenhouse gas emissions came from manufacturing and 30% from product use, leaving only 5% for transport and packaging, and 2% each for recycling and facility operation.

Korean Computer Industry[3]

A 2006 report from the Korea Advanced Institute of Science and Technology estimated that "pre-manufacturing" (raw material, component, and part production) made up at least 85% of the total global warming potential of a computer.

LCAnalytics Tool

Based on this and other research, LCAnalytics chooses to focus on the impact of the manufacturing stage primarily, with consideration of the use phase impact (which is much easier to calculate) in future versions of the tool.

[1]http://www.amd.com/us/Documents/APU%20Carbon%20Footprint%20white%20paper%20FINAL%201%2021%2011.pdf
[2]http://www.apple.com/environment/
[3]http://psp.sisa.my/elibrary/attachments/441_11LifecycleAssessment.pdf

For additional information, contact Dr. Samudra Vijay
samudra@lcanalytics.com 919.491.9796

life cycle analytics