

LCAT from LCA Analytics for Environmental Impact Assessment of Computers

Case Study: Environmental Impact of Notebook Optical Drives

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. LCA Analytics is a company that provides accurate and easy-to-use tools to fill this need.

LCAT

LCA Analytics 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 LCA Analytics consists of experts from academia and industry with a passion for the environment:

Shiva Nanda of Newport Computers, Professor Venky Venkatachalam of the University of New Hampshire, and Dr. Samudra Vijay of Sam Analytic Solutions, they are assisted by Michael Ernsting, majoring in environmental engineering at Tufts University and Christopher Schwab, majoring in business administration at the University of New Hampshire.

Case Study: Notebook Optical Drive



Total Mass Ratio

Previous life cycle studies make several assumptions to estimate the mass of components. Total mass ratio is often used to estimate notebook optical drive component mass from desktop optical drive component mass data. LCAT shows that the use of a total mass ratio is only accurate when comparing two optical drives of similar specifications. LCAT's component level analysis yields more accurate results than using ratios to make mass estimations.

Largest Contributors to Total Carbon Footprint

The main printed circuit board in an optical drive accounts for about 50% of the total carbon footprint of a notebook optical drive. Other major contributors to total carbon footprint are electricity mix, motor PCB, and reader assembly.

Changing Technology

CD and DVD drives will soon phase out of production as Blu-ray optical drives are backward compatible. LCAT includes Blu-ray optical drives, and future technologies, such as Blu-ray 3D, when they come to market. Flash memory and cloud computing have already reduced the need for optical drives.

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