



Green Design & Manufacturing



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What is Green Design?



- Green Design is a nonconventional procedure of design which involves a framework which considers environmental issues along with relevant analysis and synthesis methods (from IT/Computing point of view i.e. Green IT)
- Green Design is also called Sustainable Design
- Green Design has to be incorporated in the device life cycle right from the start
- Architecture, material of constituent components etc. have impact on the design and must incorporate environment targets in the Design phase for the Green Device

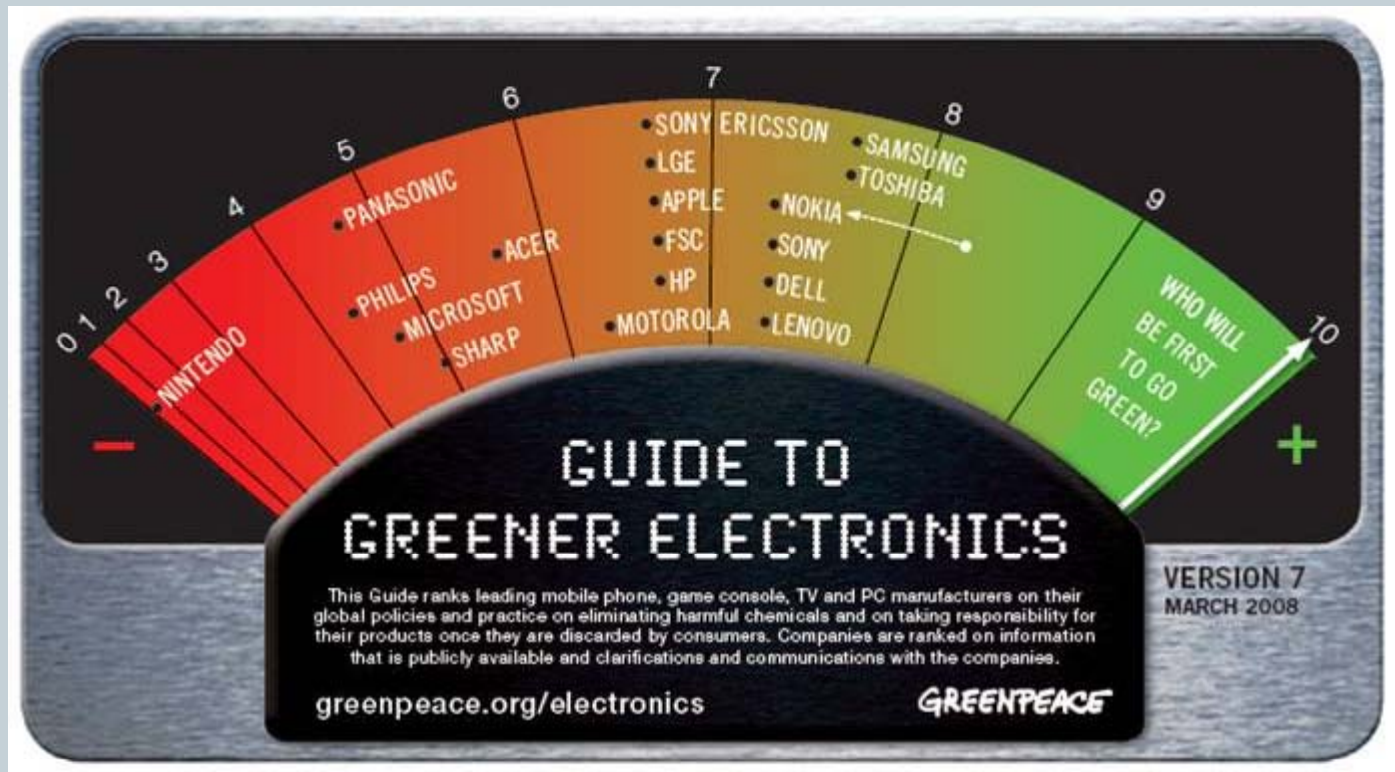
What is Green Manufacturing



- Green Manufacturing is a system that integrates product and process design issues with issues of manufacturing, planning and control in such a manner as to identify, quantify, assess and manage the flow of environmental waste with the goal of reducing and ultimately minimizing environmental impact and increasing resource efficiency (from IT/Computing point of view)
- Green Manufacturing includes, reduction or elimination of toxic material during manufacturing, energy conservation etc. to name a few aspects of Green manufacturing

Green Design and Manufacturing

Who is where?



Examples of Green Design

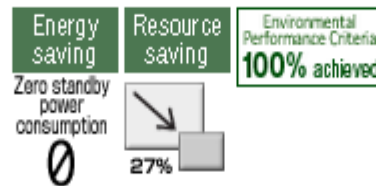
- Sharp – Design – Innovation in Design at Sharp to reduce the energy consumption and resources in their Camera Module

Super Green Device Examples

CCD Camera Module Power-supply IC IR3M55U, IR3M59U



This power supply IC integrates the switching power supply and charge-pump power supply into one chip. A high-efficiency design and a reduction of peripheral components enable a significantly smaller mounting area.



Examples of Green Manufacturing

- Apple - Manufacturing — Extraction of raw materials and product assembly — accounts for 61 percent of Apple's total greenhouse gas emissions. Apple now has cut the toxic material in their manufacturing along with the carbon emissions.

Reduction in Carbon Emissions



Apple's attention to product design has led to significant reductions in carbon emissions compared with earlier-generation products — even though new products are more powerful than ever.

Toxic Materials Removal

Our entire product line — Mac, iPod, iPhone, iPad, and accessories — is free from many toxic materials.



Lead-free	✓
BFR-free	✓
PVC-free ²	✓
Mercury-free	✓
Arsenic-free glass	✓

Benefits of Green Design and Manufacturing



- Environmental Benefits (reduced toxic material and emissions)
- Energy savings for the organization
- Reduced Health risks for people using the products
- Safer more productive work environment for workers
- Enjoy the support of community and influential groups
- Attracts Investors and corporate alliances

Green Design and Manufacturing in India



Flexible, efficient, environment-friendly production lines are designed with adequate space for on-site storage of line materials.

On-site solar PVs cater to 35% of the energy consumption including industrial use, charging facilities for testing and street lighting.

Skylights reduce electricity consumption on the factory floor. 100% of the factory space is lit by LEDs.

On-site rain harvesting system with a drip irrigation system for landscape. 100% treatment and reuse of grey water.

Usage of pre-painted sheets avoids pollution while materials intake, manpower entry and finished goods dispatch are located at different points to maximize operational efficiency.

Challenges in Green Design and Manufacturing (Indian perspective)



- Investment is huge
- Increases the cost of production
- Products need to be priced higher and need to be sold to customers aware of Green IT and are willing to buy these products
- Long Term effort and results will take time to yield profits

Conclusion



- Green Design and Manufacturing is slowly picking up in India
- Cost is high
- Need Govt. Support to companies to invest in Green Design and Manufacturing

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