

Life-cycle Assessment Case Study



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Presentation Outline



- ⌘ RAE Project in context
- ⌘ MEng in Product Design & Manufacture
- ⌘ Sustainable Product Design
- ⌘ LCA Elements
- ⌘ Conclusions

RAE Project Chronology



- ⌘ Manufacturing for the Environment exists
- ⌘ October 1999 RAE Start
- ⌘ October 2000 Wolfson School formed
- ⌘ 2001 IEE Accreditation (MfE compulsory for Manuf.)
- ⌘ October 2001 MSc module EDfSD
- ⌘ October 2002
 - ☑ SPD Module
 - ☑ LCA software
 - ☑ New staff involvement
- ⌘ October 2003 module handovers

MEng in Product Design & Manufacture



- ⌘ Programme introduced in the 1980s
- ⌘ Strongest 'manufacturing' programme
- ⌘ IEE Manufacturing Division accredited
- ⌘ New Year 4 modules in 2003
- ⌘ Includes compulsory Sustainable Product Design
- ⌘ Manufacturing for Environment compulsory in Year 3

Sustainable Product Design



- ⌘ Single semester module (15 weeks, 2 hours/week)
- ⌘ Taught by lectures, tutorials, case studies and a group project (6 weeks for lectures etc. and 6 weeks for project)
- ⌘ Examined by exam. (1.5 hours, 2 from 3) (50%) and project (50%)
- ⌘ 9 students in inaugural module

LCA Element



- ⌘ Taught in 2 of the 6 'lecture' sessions
- ⌘ Session 1 lecture + tutorial + case study
- ⌘ Session 2 software demonstration + tutorial
- ⌘ Application in group projects
- ⌘ Boustead LCA Model: £2250 for software and introductory training.
- ⌘ LCA 'Expert': RA on EU funded project

LCA Feedback (1)



⌘ New knowledge gained	4.44
⌘ Intellectual challenge	3.78
⌘ Interest value	4.56
⌘ Enjoyment value	4.00
⌘ Overall average	4.20

Nortel Case Study



- ⌘ Faceplate: aluminium or plastic?
- ⌘ Functional unit
- ⌘ Features
- ⌘ Compromises

LCA Feedback (2)



- ⌘ Invaluable for quantitative and objective data/decision
- ⌘ Time-consuming
- ⌘ Limited database
- ⌘ Lacked flow chart guide
- ⌘ Poor output display
- ⌘ Data not transportable for 'what-if?'

Conclusions



- ⌘ LCA preferably taught by 'hands-on' use of software tool
- ⌘ Case study is useful
- ⌘ Group project is better (live issue)
- ⌘ LCA requires an 'expert'
- ⌘ SPD module numbers expected to double to 18 in October 2003
- ⌘ New teacher for October 2004