Made today, gone tomorrow?

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Scrapheap challenge – future materials, scarcity and the future for manufacturing

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Overview

- Resources and raw materials
- Influence of legislation on material usage
- Rush to recycle, reuse, refurbish
- Environmental benefits of WEEE etc
- Disconnect between manufacturing and resources
- IPR, cradle to cradle, waste as resource
- New collection methods

Resources and Raw Materials

- Manufacturers are now largely assemblers
- Long supply chains
- Use of scarce resources
- Raw materials, complex plastics
- Political implications – China’s metals hunger
- Rare earth metals, embedded carbon
- Technological shift - dematerialisation

Influence of Legislation on Materials

- EU's global influence: WEEE, RoHS, REACH, EuP
- RoHS: many versions outside EU; growing band wagon, seeking to out-RoHS the EU!
- RoHS recast: new substitutions
- REACH widespread effect, even on recyclate
- LCA, EuP, search for materials with lower environmental impact

Influence of Legislation on Materials

- So material usage is largely influenced by need to comply with legislation.
- Manufacturers under pressure to find substitutions in time-frame.
- Need to be competitive and innovative also important.
- Burden of compliance and proving compliance.
- Long supply chains, need for co-operation.

Influence of Legislation on Materials – other stakeholders

- As well as legislative pressures, customer demands also important.
- Customers want to know if materials are “politically correct” – where mined, if profits from materials are helping to sustain unsavoury governments.
- Customers want to know amount of embedded carbon in components and total product.

Rush to recycle, reuse, refurbish

- EU legislation on recycling – drawbacks
- Main aim is to reduce WEEE to landfill
- No effective mass balance
- Difficult to trace secondary materials
- Reuse not always a ‘good thing’
- Higher energy usage cancels out material savings
- Need to concentrate on materials usage

Environmental Benefits of WEEE

- Total EU mass balance necessary
- No proper materials streams
- Stops at “treatment” stage
- Need to ensure materials reused
- Proximity principle
- Need to change attitudes to waste

Disconnect between manufacturing and resources

- De-manufacturing – Japanese approach
- Difficulty for West, assemblers not manufacturers
- Problems of security of supply: of scarce materials, of components
- Components manufacture, China, Taiwan, Philippines today, tomorrow, Africa?
- Quality

Change of Attitude

- IPR: Individual Producer Responsibility
- Cradle to cradle approach
- Don’t let’s talk about waste
- Let’s talk about secondary materials

What needs to change?

- Very different collection methods
- Japanese approach
- More technology in disassembly
- Closer connection between recycling and reuse of secondary materials
- Resource scarcity – rare earth metals, new forms of recovery of materials

Conclusions

- Complex problem
- Present situation not satisfactory
- Need to reassess resources
- Need better resource recovery
- Legislation is often part of the problem
- Changing technology demands new approaches