

Breakout Session 4: End of Life Product Management

Focus question #1: VISION AND GOALS

- Recovery Recycle: Separate additive manufacturing parts & component metals to 98% purity
- Collection: Collect 100% of EOL products in a cost effective way
- Design for End of Life: Design products to achieve 100% disassembly
- Strategic Guidance: The impact of reuse/recycling considered in the manufacturing of 80% of all technology based products
- Upcycling: Develop efficient and effective systems to up-cycle 25% more waste
- Remanufacturing: Increase remanufacturing via advancement of technologies (e.g., estimation of remaining life of components) and processes (end of life design & material salvages)

Breakout Session 4: End of Life Product Management

Focus question #2: Challenges and Barriers

Business Model: Cost

- Cost of material is not the total cost of material
- Recycling cost is not included in the initial product price to consumers

Workforce

- Lack of an educated workforce to execute the work at all levels

Incentives and Motivation

- Design of end of life is absent. There is lack of incentives and drivers

Product Design

- Product design requirements are conflicted: Size/format vs. environmental survivability vs. cost vs. EOL

Metrics

- Lack of methodology to quantify environmental & social cost and benefits
- Required improvements of metrics and indicators to measure recycling efficiency

Technology- Separation

- Lack of rapid separation / ID of materials
- Lack of infrastructure & efficient technology to collect, separate and recover materials & mix metals

Knowledge

- Lack of awareness and information about product attributes, such as composition, remanufacturability, recyclability, markets, etc
- Lack of infrastructure for collection and separation

Ecosystem

- Immature ecosystem of engagement between EOL products and remanufacturers/recyclers
- Lack of information sharing mechanism between manufactures and EOL management companies

Breakout Session 4: End of Life Product Management

Focus question: R&D Needs & Focus area

Business Model / Incentives and Motivation

- R&D Needs: Conduct analysis / assessment of end-of-life value
- R&D Focus Area: Valuing the fully burdened cost/recycling costs into the product cost

Product Design

- R&D Needs: Develop design tools that integrate EOL considerations
- R&D Focus Area: Integrated design tools addressing EOL options

Metrics

- R&D Needs: A recycling metric that measure the environmental benefits of recycling different materials
- R&D Focus Area: Simple & accepted metrics for the recycling of complex products

Technology-Separation

- R&D Needs: Ability to separate heterogeneous / multi-component materials? Identify requirements for cost, energy usage, etc
- R&D Focus Area: Identification and Separation of EOL Products for Recycling

Knowledge

- R&D Needs: Additional awareness and information about product attributes, such as composition, remanufacturability, recyclability, markets, etc
- R&D Focus Area: Forum to facilitate stakeholder discussion and improve flow of information between stakeholder

Breakout Session 4: End of Life Product Management

Focus question #2: Challenges and Barriers

Business Model: Cost

- Cost of material is not the total cost of material
- Recycling cost if not included in the initial product price to consumers

Workforce

- Having an educated workforce to execute the work at all levels

Incentives and Motivation

- Design of end of life is absent. There is lack of incentives and drivers

Product Design

- Design conflict. Size/format vs. environmental survivability vs. cost vs. EOL

Metrics

- Lack of methodology to quantify environmental & social cost and benefits
- Improved metrics and indicators to measure recycling efficiency

Technology- Separation

- Rapid separation / ID of materials
- Lack of infrastructure & efficient technology to collect, separate and recover materials & mix metals

Knowledge

- Lack of awareness and information about product attributes, such as composition, manufacturability, recyclability, markets, etc
- Lack of infrastructure for collection and separation

Ecosystem

- Immature ecosystem of engagement between EOL products and remanufacturers/recyclers
- Lack of information sharing mechanism between manufactures and EOL management companies

Funding

- Lack of funding for developing recycling /processes. Current mode of offshore recycling is motivating foreign countries to increase R&D on recycling /processes