How to improve Resource Efficiency using Material Flow Cost Accounting
Michael Hauke

Member of iPoint Group | www.ipoint-systems.com
Corporate development

ifu hamburg
Productivity meets Sustainability.

Stands for...
Institute for Environmental IT Hamburg

Founded: 1992

Location: Hamburg, about 25 employees

Software for material flow visualization and analysis
- Standard software: e!Sankey and umberto
- Customizing: specialized applications and interfaces

Sustainability consulting
- Consulting on Carbon Footprinting, Life Cycle Assessment, and Resource Efficiency
- Sustainability workshops, methodological training
iPoint is a software and services company focused on product & process compliance & sustainability.
Sankey diagram creation

✔ Visualize material and energy flows
✔ Create convincing Sankey diagrams
✔ Used for presentations and reports

Material flow management and material flow analysis

✔ Increase material and energy efficiency
✔ Calculate carbon footprints
✔ Conduct life cycle assessments (LCAs)
✔ Analyze the eco-efficiency

Sustainability experts through experience

✔ Competent partner for sustainability management
✔ Sustainability workshops
✔ Consulting on carbon footprints, LCAs, eco-efficiency analyses, and energy and resource efficiency

Our portfolio
References

in 90 countries

7000 user

12.500 licenses
The basic principle

Increased system transparency leads to increased energy and material efficiency.
Our consulting services

Problem Definition
- Environmental assessment, process optimization, ...

System understanding
- Model
- Analyze

Quantification of potentials
- Prioritize

Measure catalog
- Implement

Less energy and material consumption, reduced environmental impacts and costs

Tools

Material and energy flow analysis

Resource efficiency analysis

Life cycle assessment (LCA)

Material flow cost accounting

Carbon footprinting
MFCA view on costs of material losses

- Waste management costs
- Material costs
- Logistic costs
- Production costs
- Labour costs
- Investment costs
- Energy costs
- System costs

Hidden Costs (often 7 times as high as waste management costs)

MFCA: All costs are also allocated towards losses in the system based on the physical relations (DIN EN ISO 14051)
MFCA in multi-process systems

- MFCA is usually applied to multi-process systems on-site, but can be applied to supply chains and life cycle models, too.
- Efficiency increase in a downstream process causes huge financial savings and environmental improvements upstream.

Figure: Wastage- and product-related flows in a life cycle model (Source: Viere)
Material Flow Cost Accounting (MFCA; ISO14051)

Material and Energy Flows

Traditional Cost Accounting

MFCA

Calculation of the hidden costs of material losses
Case study: textile company

Company produces yarn from cotton and fabrics thereof

Complex material and energy flow model to inventory the production and identify causes of costs

Holistic information on entire production process based on consistent data.
MFCA example: textile company – combed yarn waste sold

- Goal: Identification of all waste-related cost → inefficiency costs
MFCA example: textile company – combed yarn waste sold

The yarn waste from combing, is purchased with the cotton expenses of combed yarn waste.
MFCA example: textile company combed yarn is waste sold for 38,038 € ➔ loss 31,152 €

Value of purchased material and energy used embodied in combed yarn waste
Additional benefits through holistic approach

- Efficient motors can reduce energy consumption for spinning
- Amortisation > 5 years does not justify investment
- Additional reduction in air conditioning, through reduced off heat from motors
- Net amortisation < 2 years
- Resource efficiency improved!
Identify your improvement potentials

Problem Definition
Environmental assessment, process optimization, ...

System understanding
Model
Analyze

Quantification of potentials
Prioritize

Measure catalog
Implement

Less energy and material consumption, reduced environmental impacts and costs

Tools

Material and energy flow analysis
Resource efficiency analysis
Life cycle assessment (LCA)

Material flow cost accounting
Carbon footprinting
Thank you very much for your attention!

Any questions concerning the implementation of MFCA?

Please Contact us!

... also if you are interested in our products and services!