SiPi
SMF Singapore Innovation & Productivity Institute

Issue 1, 2013

Material Flow Cost Accounting

THE NEW ANGLE TO DIAGNOSING RESOURCE EFFICIENCY IN YOUR PROCESSES

Material Flow Cost Accounting (MFCA) is a management tool that promotes the efficient use of materials more effectively, contributing to reductions in waste emissions and non-products.

MFCA was developed in Germany in the late 1990s and since then, it was adopted widely in Japan. The MFCA process can help boost a company's economic and environmental performance.

INSIDE THIS ISSUE

SPECIAL POINTS OF INTEREST

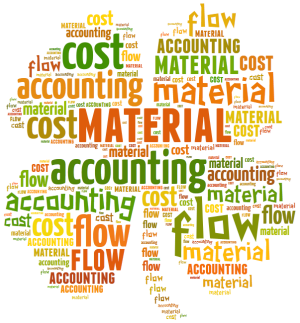
- Material efficiency
- MFCA deployment

Material Wastage in Construction Industry *— What is the true cost of waste?*

The true cost of filling and disposing of one skip with mixed construction waste in one study was found to be £1,343. Although the skip hire was only £85, the labour cost to fill it was £163 while the cost of unused material in the skip was the most significant at £1,095.

Contractors underestimate the real cost of waste on a project as it is not an explicit cost, but a cost built into every trade package that covers traditional wastage rates. As a result, clients often end up paying for new materials that simply get thrown away.

Source : http://www2.wrap.org.uk/downloads/Reducing_Material_Wastage_in_Construction.3708cdab.4711.pdf



MFCA CASE STUDY:

COMMODITY MANU-FACTURER DIAGNOSES GAPS IN RESOURCE UTILISATION:

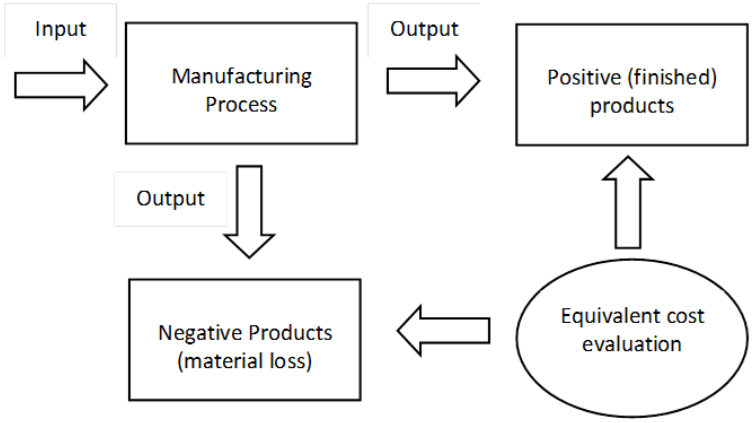
A Japanese manufacturer of brown sugar products applied the MFCA concept to most of its processes from production to packaging. Four types of material losses were identified, i.e. 'off-specification' brown sugar that was conserved for re-use later; losses from products dropped; losses from packaging materials for raw sugar and losses from excessive packaging.

What MFCA Analysis Revealed

The company discovered that off-specification products accounted for 5% of overall products produced. Though they were conserved for 're-use' later, the fact is losses such as system costs, and energy consumption

HOW MATERIAL FLOW COST ACCOUNTING WORKS

MFCA traces all input materials flowing through production processes and measures output in finished products and waste. Finished products and wastes are respectively termed 'positive' and 'negative' products. The point is to recognise waste as non-marketable (second) products when materials are consumed and manufacturing facilities are used.

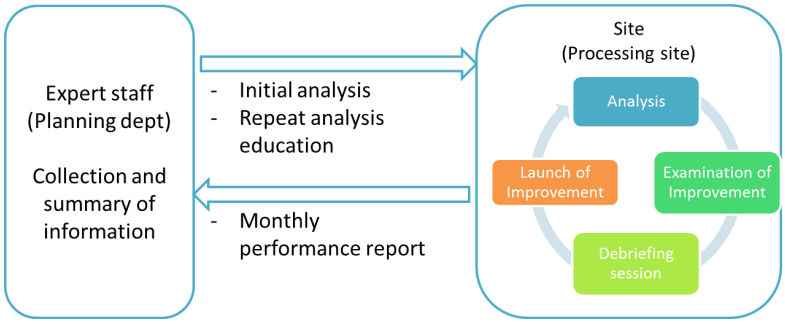


Wastages from Manufacturing

The MFCA recognises that waste is material losses from the manufacturing processes and hence they are part of the manufacturing costs. If there is less wastage from the process, manufacturing costs would be reduced and also the cost of waste recycling and disposal would be reduced. Reducing the amount of material and wastes, lowers manufacturing costs and improves productivity. This leads to increased competitiveness, increased environment friendliness and improved manufacturing processes.

Critical Success Factors

For MFCA to be successful in a company, there must be buy-in and support from line managers and supervisors, i.e. bottom-up approach on-site. The company's top executives will have to show great commitment, in order to convince the next working levels. With both levels of management involved, this concept would be an effective and potent management tool.



COMPANY-WIDE MFCA DEPLOYMENT AT NAGAHAMA CANON

Nagahama Canon is one of the subsidiaries of Canon Inc. group that manufactures products such as laser beam printers, cartridges and photoconductor drums for copying machines. When the company was first introduced to MFCA concept, the management realized how it complemented to the company's existing efforts in Continuous Improvement and resource efficiency.

The company implemented MFCA in its manufacturing processes, and subsequently introduced to office premises and other areas to achieve company-wide commitment and implementation. What is worthy of learning from Nagahama Canon is the deployment approach towards MFCA at all levels of group employees:

Step 1: Groom and Train Champion staff

Professional training was provided to help assigned internal staff acquire skills. These staff will be champions and change agents who could perform MFCA analysis, deployment and internal training.

Step 2: Education / introduction to sites

The company introduced MFCA on-site through conducting initial analyses, and identifying required improvement plans, debrief sessions and launching improvement activities. The company also mandated departments other than manufacturing to attend the debrief session and launch of improvement activities.

Step 3: Education for management staff through meetings

Training was provided to the management staff and managers regularly in a year, through existing calendar of meetings, where the MFCA concept, terms and principles were shared and reinforced.

Step 4: Internal communication through newsletters

To share the MFCA on a massive scale to all employees, the company's communications department also strengthened its editorial focus on MFCA concept and project progress in their internal newsletter on a quarterly basis.

In embracing MFCA, Nagahama Canon has demonstrated tremendous efforts in its awareness building activities and implementation. **Three takeaways from the company include:**

1. Engage internal departments and companies (upstream and downstream) in their supply chain in the MFCA implementation and sharing MFCA data and analysis for an aligned goal towards continuous improvement and cost reduction activities.
2. Experience the trial and error process together, with a keen interest in managing resource efficiency and process optimisation for the sustainability of interest
3. Ease the analysis of MFCA data and plan the exposure of MFCA concept internally with minimum effort at regular meetings on-site and off-site, to encourage compliance to the MFCA principles

CONT'D

were generated during the manufacturing processes. It was also discovered that the off-specification products led not only to a smaller output, but more ongoing night duties for the shop floor personnel, which added to labour costs. The dropped brown sugar bits also contributed another 5% of the overall products, which suggested losses as mentioned above. The packaging process also unveiled losses from packaging material for raw sugar, as well as excessive packaging which posed negative impact to the environment.

Directions for Continuous Improvement in Company

Apart from identifying the gaps in current processes, and target areas for improvement, the company was convinced that the losses from off-specification products and dropped materials stemmed from muri, mura, and muda operations, which meant 'overburden', 'variation' and 'waste'. The company understood the need to tackle with operational improvement and loss reductions to bring down costs of operations, and improve labour productivity through reduced night duties.

Collaboration with value chain suppliers and Reviewing Market Needs

The company also saw the need to work with its current suppliers for packaging materials and raw sugar to reduce costs further. The company was also prompted to relook at excessive packaging from the customers' perspective. The company was considering a change of packaging materials that are less costly, instead of prioritising packaging quality which was not necessarily appreciated by customers for brown sugar products.

For more information on Innovation & Productivity resources, Lean Six Sigma project coaching and implementation, research and benchmarking and seminars, please contact :

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