



Going green with material flow cost accounting

Going green enables SMEs to grasp many opportunities, from economic growth to fiscal consolidation and enhanced productivity, through more efficient use of resources. Manufacturing is the most competitive business in the world. To make higher profits, value must be added by rationalizing systems. One way that manufacturers can go green is by adopting material flow cost accounting (MFCA). This environmental accounting method incorporates the calculation and management of quantity and cost data on losses of resource inputs during the manufacturing process. This model accounts for final finished products as “positive products” and everything else involved in their manufacture as “negative products.” Analyzing negative products and reducing their amount results in less environmental impact and lower costs because the resource inputs are reduced by an amount equivalent to the decrease in negative products.

Companies adopting MFCA can quickly lower processing costs caused by material loss, loss of recyclable waste, etc. The major characteristics of MFCA are dividing costs into positive and negative product costs, calculating costs throughout all processes, and categorizing costs into material costs, system costs, energy costs, and waste treatment costs. Another characteristic is that all materials that do not become products are treated as losses or negative products, and all related costs are negative product costs. MFCA thus enables companies to visualize loss costs in multiproduct, small-lot production and offers a model for comparison of losses. Standard cost accounting, on the other hand, cannot indicate all material losses.

Information is the key for a successful MFCA initiative. A company must have correct data from reliable sources, with timely updates and confirmation of accuracy. These will ensure that a company can calculate the precise value of waste and cost of waste-generating steps in the manufacturing process. MFCA is especially helpful in enhancing production in SMEs because it focuses on waste reduction with the technological ideals of “zero negative product cost,” resource conservation, lower energy consumption, and reduction of emissions.

It is a challenging task for SMEs to remain competitive against the current backdrop of global economic problems, which will affect their growth and business in the long run. However, implementing MFCA will enable SMEs to green their operations and increase their productivity simultaneously. SMEs ready to undertake MFCA should be aware of six essential steps for success. But first, they should recognize that the approach must start “from the top down but be from the bottom up onsite.” In other words, aggressive support from management is crucial, but workers must be responsible for MFCA activities on the shopfloor. The key steps for introducing and promoting MFCA are:

- 1) Know the principles and fundamentals of MFCA (Figure). Knowledge can be acquired by attending ISO 14051:2011 training or reading management literature and MFCA success stories from other SMEs.
- 2) Obtain buy-in of stakeholders. Responsible personnel must be equipped with sufficient information to obtain buy-in from all stakeholders, especially top management, to put the MFCA concept into practice. Success stories from other SMEs can be incorporated to illustrate the merits of MFCA.
- 3) Identify the leaders. Pick people from different fields of expertise who have the necessary vision to make MFCA work in the organization, then form a cross-functional team.
- 4) Carry out a pilot run. A trial period using minimum resources will demonstrate how MFCA can benefit the company.
- 5) Name the project and hold a kick-off meeting. It is essential to have a large banner or signboard at the plant as a visual reminder that the organization is embarking on MFCA.
- 6) Involve everyone. The original team should share MFCA knowledge, tools, and concepts with all involved in a unit implementing MFCA, set specifications for product loss, establish quantity centers, and identify expected inputs and outputs for each quantity center.

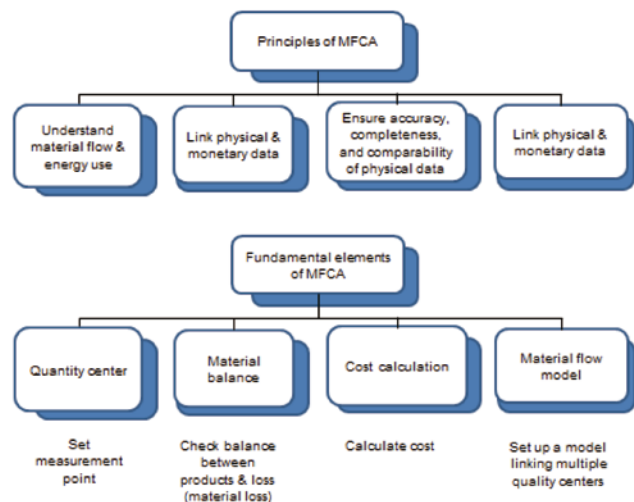



Figure. ISO 14051:2011: Principles (upper panel) and fundamentals (lower panel) of MFCA.

Source: Chart information from Propharm Japan Co. Ltd.

Terms defined in the ISO 14051:2011 standard related to MFCA include cost accounting, cost allocation, energy cost, energy loss, environmental management accounting, input, inventory, material, material balance, material distribution percentage, material cost, material flow, material loss, output, quantity center, system cost, and waste management cost. SME personnel involved in MFCA initiatives should become familiar with these terms in their own company's situation.

Why should a manufacturing company implement MFCA? MFCA will reduce the amount of waste generated in production processing and prevent the need for expensive waste recycling. The company will save money on supplies and waste disposal, while conserving natural resources and energy. Therefore it will be able to give customers what they want: greener products. Employee morale will also be raised when staff have an opportunity to work together on an environmental project and reduce the risk of future liability associated with solid waste disposal. In terms of administrative value, MFCA helps increase transparency and allows monetary evaluations of the use of raw materials and natural resources by controlling and financially evaluating the generation of waste and its management.

To help local SME entrepreneurs go green, Malaysia's Ministry of Energy, Green Technology and Water (MEWC) is supporting national efforts to promote green technology, and the Malaysian Green Technology Corporation has been entrusted with carrying out awareness activities.

The objectives of the program are to: encourage participation of government agencies and local SMEs in greening technology; help local entrepreneurs become certified in green technology; create more ecolabeled products and services; assist manufacturers in managing waste; foster a culture of using green products and services; and increase marketing activities for green products and services domestically and internationally. The Malaysian Green Technology Corporation, with budget from the MEWC, will host a series of "roadshows" to promote waste minimization and Green Productivity among SMEs. One element is a case study of MFCA presented by a successful MFCA practitioner. About 1,200 companies will benefit from this program by attending a free half-day seminar. A similar program on MFCA could easily be adapted in other APO members. 



Roslina Muhammad took the May 2012 APO e-learning course on Green Productivity and MFCA and was among participants earning the highest points on the exam. She then attended the advanced training course on MFCA in the ROC in August.

After returning to her position in the Malaysian Green Technology Corporation, she linked up with the MECW to disseminate her MFCA knowledge for widespread multiplier effects. The APO News applauds her efforts and thanks her for contributing this article.