

SMES AND ENVIRONMENTAL SUSTAINABILITY (PART III)

IMPLEMENTING MFCA

Introduction

SMEs must realise that improving environmental performance can also improve a company's bottom line. Material flow cost accounting (MFCA) is the tool that can help SMEs optimise resource consumption thus enhancing the company's cash flow and improve both its environmental and economic performances. Essentially, MFCA helps trace a company's waste, material, energy losses and emissions by looking at its processes and activities. MFCA can be used to analyse either a single isolated process, the whole factory production line or a product's full supply-chain. The tool will enable the organization to identify the largest inefficiencies across its activities and focus on those it can make the greatest savings.

Implementing MFCA

The discussion here focuses on an SME supplying parts (Alpha), to a major car manufacturing company (Beta). There are various steps in its implementation.

1. Material Loss

To emphasize on the importance of costing wasted materials, Alpha's manager was asked to determine the waste costs and Alpha gave us the waste disposal costs. We then pointed all the "hidden" costs attached to the waste. When they included the storage cost of material loss, the cost of wasted materials, the wages of the people engaged to take charge of the waste and utilities, the waste cost was actually 5 times the original costs initially estimated.



FIGURE 1: Material Loss

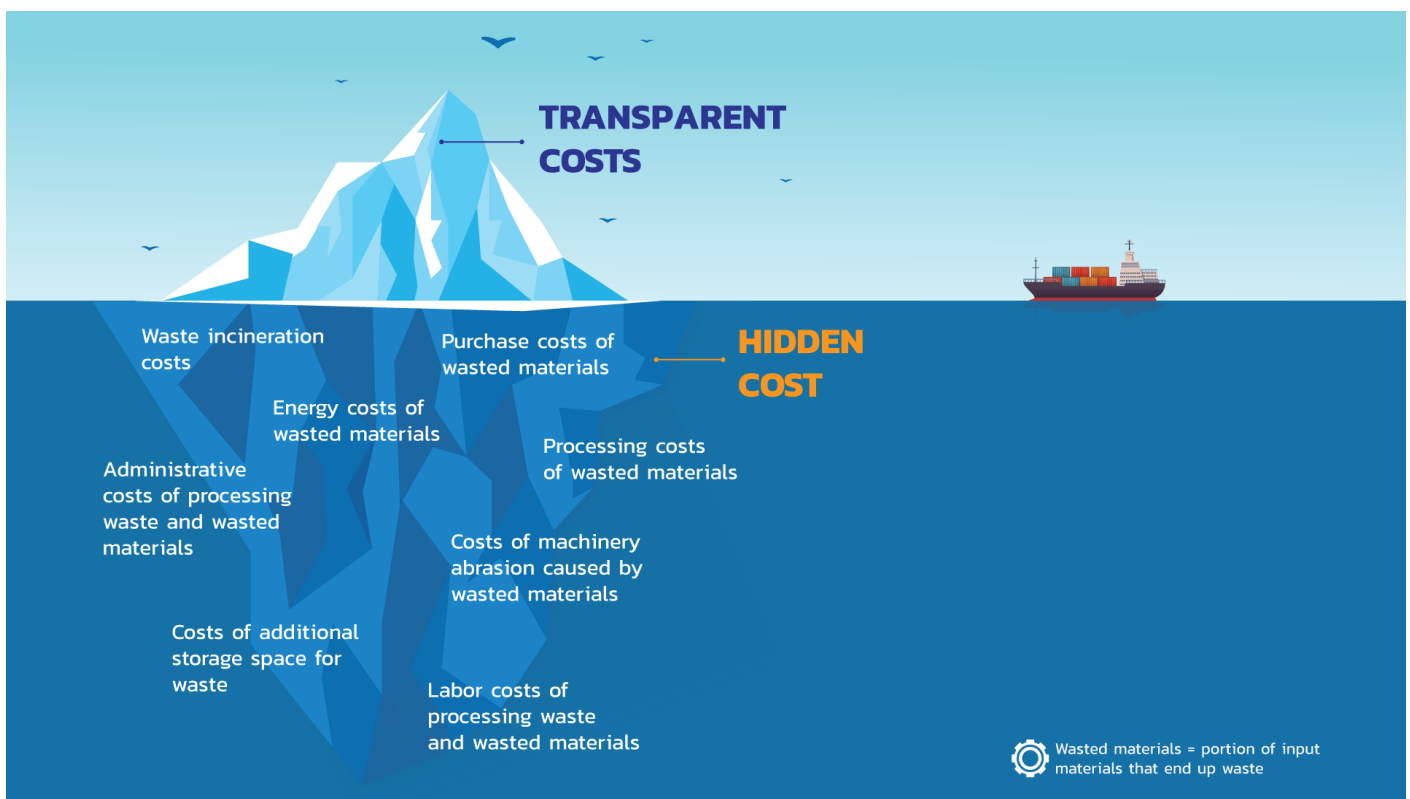


FIGURE 2: "Hidden" cost of wastes

2. Planning

There are 3 stages to this phase.

First

Qualified staff at Alpha who will be involved in the project are determined.

Second

The specific system boundary and the time period is then identified. In the case of Alpha, it focuses on a production of a sub component as its system boundary. It is important to note that boundaries can be a single process, several processes, the whole organisation or the entire supply chain.

Third

The quantity centres (QC) are determined. For example, in a typical production process, this may include "receiving, cutting, assembling, heating and packing". Essentially, one needs to determine the activities in the system boundary.

In Alpha's case,
the activities are drawing/blanking, piercing and trimming.
These are the QCs.

3. The Flowchart

A flowchart is typically drawn underlining the activities in the process and identifying the material inflows and outflows of each QC. It is at this phase that the flows and stocks of materials within the system boundary are traced and quantified in physical units (e.g. mass, volume) and the costs associated with those material flows are also estimated/calculated. Thus, it is important to quantify the flow of materials using both the physical and monetary units. This will enable material losses (both in physical and monetary units) to be identified and steps taken to address such losses. Eventually, material efficiency is enhanced within or even across companies and the corresponding material costs reduced.

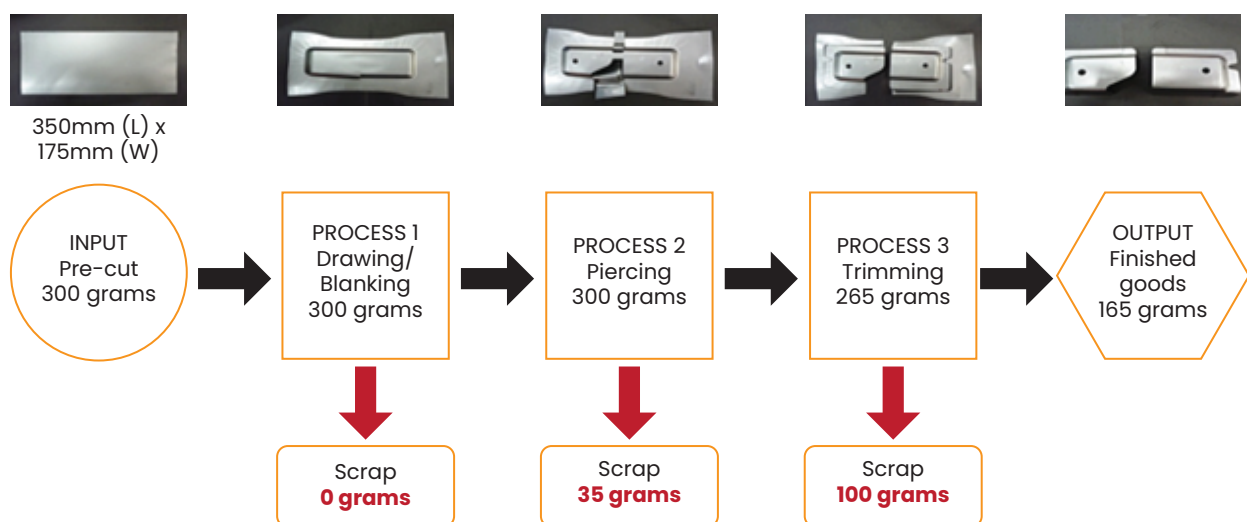


FIGURE 3: The flowchart and QCs ("Before")

The input is a pre-cut metal sheet weighing 300 grams with a length of 350mm and width of 175 mm.

QC 1 is the drawing/blanking of the metal sheet. There is no material waste in this process.

QC 2 involves piercing of the metal sheet and this process results in a scrap of 35 grams.

QC 3 is trimming. There is 100 grams of scrap in this process.

The output (finished product) weighs at 165 grams.

4. Physical and monetary value of material waste

In Alpha's case, a metal sheet of 300 grams produced a finished product of 165 grams. Thus, there is a material loss of 135 grams. The results on material losses will motivate managers to address such losses. This will lead to improved financial performance and at the same time, reduces adverse impacts on the environment.

It is important to compute the material loss in monetary terms. The following is just hypothetical figures to enhance our understanding on the importance of putting a monetary value.

Say, the material input cost in \$3.50. Thus, the material loss is $\{(135/300) \times \$3.5\} = \1.575 . If the material loss is \$1.575 per unit, for a batch of 1000 units, the loss will be very significant (\$1,575). Figure 4 gives a diagrammatic summary of the physical and monetary value of material loss for one unit. The information can also be presented a data summary sheet. The complete data summary sheet is given in Figure 5.

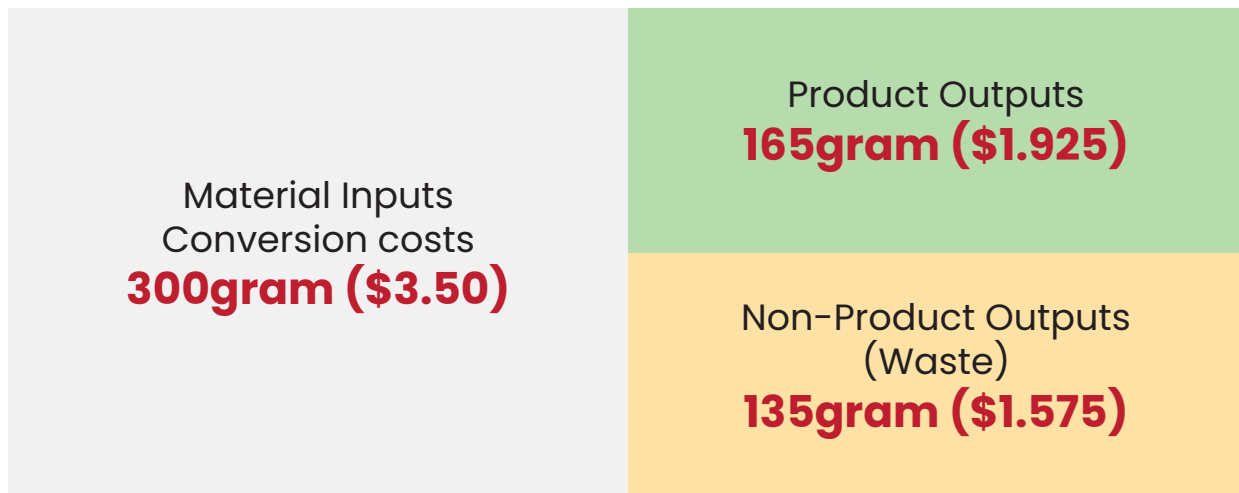


FIGURE 4: The physical and monetary value of material loss per unit

5. Specific measures

Once it is clear how much waste was produced, the company will decide on the specific measures that it should take to reduce material wastes. In Alpha's case, they worked on how to reduce the size of the pre-cut metal sheet (i.e. reduce the width/length of the input). The production engineer played an important role in this. Tests were carried out to ensure the optimum size of the metal sheet without it affecting the finished component and the efficiency of the workers.

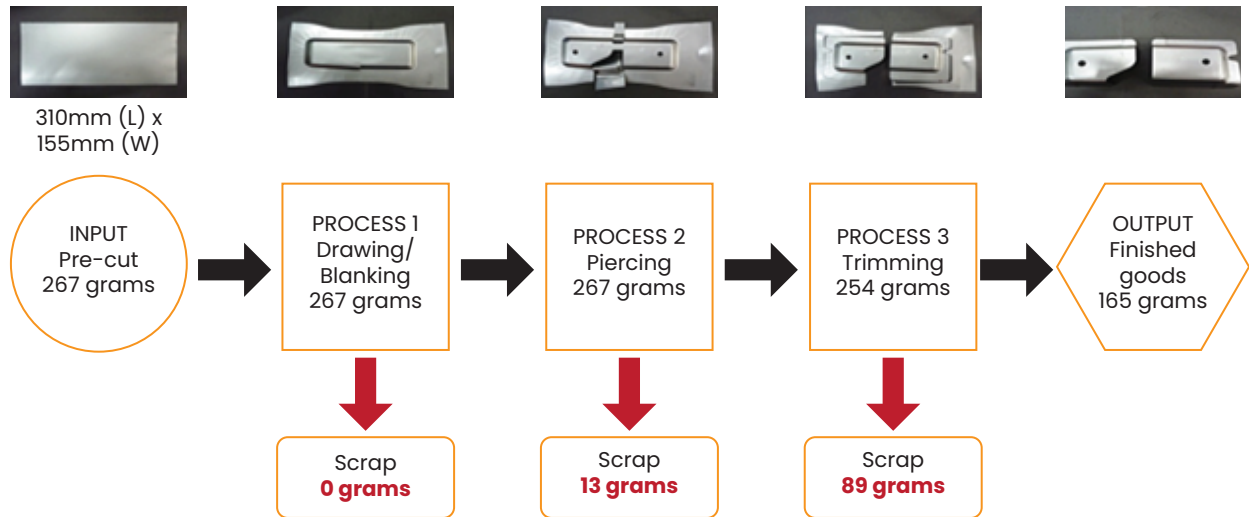


FIGURE 5: The flowchart and QCs (“After”)

The optimum length and width of the metal sheet was finally decided at 310 mm by 155 mm, giving a weight of 267 grams. Because this is smaller than the original metal sheet, Alpha could save more as it has to buy less materials.

Process 2 now had 13 grams of scrap as compared to the 35 grams originally obtained.

Process 3 had 89 grams of scrap as compared to 100 grams.

Thus, for QC 2 and QC 3, the total scrap was 102 grams as compared to 135 grams, originally

6. Evaluate

To assess how successful Alpha was in addressing material wastes, a “Before” and “After” data summary sheet was prepared.

The finished product has a cost of RM4,125 for both “Before” and “After” as the finished product cannot be compromised. It should have the same quality as before. The material loss is now 1020 kg and the monetary value is RM2,550

For a 10,000unit production batch:	Before (350mm x 175mm)	After (310mm x 155mm)	Difference
Product (kg)	1,650kg	1,650kg	- Nil -
Product (RM)	RM4,125	RM4,125	- Nil -
Material Losses (kg)	1,350kg	1,020kg	↓ 330kg (↓ 24%)
Material Losses (RM)	RM3,375	RM2,550	↓ RM825 (↓ 24%)

FIGURE 6: Data Summary Sheet (“Before” and “After”)

The company managed to save RM 825 per batch. This would be significant if it is multiplied by the number of batches that Alpha manufactures in a month.

In fact, Alpha managed to save a staggering RM 1.5 million of waste costs over an 18- month period after it adopted MFCA for the manufacturing of various sub components.

Conclusion

It can thus be seen that the MFCA tool can assist SMEs in making better resource management decisions as well as address sustainability issues. Addressing sustainable issues is indeed good business sense.

SALIHIN Shariah Training

Those who want to enhance their understanding of MFCA, may attend the course that SALIHIN will be conducting in October 2022.



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SYNOPSIS

- SMEs are now under increasing pressure to minimise the environmental impact of their activities. Accordingly, SMEs should aim to optimise their resource consumption by reducing their waste costs. More importantly, companies should focus on the hidden costs associated with wasted materials. Material Flow Cost Accounting (MFCA) is a tool that will help SMEs optimize resource consumption and at the same time address environmental issues. This is a basic course on MFCA and the introduction of the ISO standard on MFCA (ISO 14051). Additionally, an example of how MFCA has been implemented in an SME will also be discussed.

LEARNING OUTCOMES

At the end of the session, participants will be able to:

- Explain the basic principles of MFCA,
- Discuss the important elements of MFCA as per ISO 14051 and implement MFCA, and
- Implement MFCA.

“ A practitioner from an SME will also be at the training session to enlighten participants on the “dos” and “don’ts” of MFCA. ”

TRAINER



Prof. Dr. Maliah Sulaiman
Advisor & Director,
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TOPICS COVERED INCLUDE

- The basic concepts of MFCA
- The scope of the MFCA Standard (ISO 14051)
- The Objectives and Principles of MFCA
- The Fundamental Elements of MFCA
- Guide to implementing MFCA

FEE

RM 1,500

Includes lunch, refreshments, training materials, and certificate.



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FOR MORE INFORMATION & REGISTRATION, PLEASE CONTACT:

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