

Materials cost management - An easy guide



(It is the biggest cost so why do we spend so little time thinking about it?)

1. Materials and the cost responsibilities

- Plastics processing is a conversion industry where we convert raw materials to a finished product. We rarely add much to the product in terms of additional items apart from the forming process. This means that direct materials are inevitably one of the largest cost elements of the finished products and yet it is one of the least attacked. Depending on the product, the raw materials cost element will vary from 45% (technical products) to 80% (mass produced products). Concentrate on this large cost element to get rapid and significant payback.
- So who is really responsible for materials costs?
 - Technical specify the materials to meet the needs specified by sales
 - Production calculate how much material is required.
 - Purchasing negotiate a price within the specification and volume parameters.
 - Production try to make the part and keep waste to a minimum.

The answer is that nobody is really in charge and everybody blames someone else.

This has got to change!

2. Design and materials cost reduction

- Designers influence product cost from the start. They take the basic decisions on the shape and design of the product. These "simple and obvious" decisions (such as the type of material, the production method, the wall thickness and the rough outline dimensions) effectively define the overall cost of the product. Once you have decided the length, width, height, wall thickness and material type at least 80% of the product cost is bolted into place!
- The first 15 to 20% of the project time involves little actual spend but defines and commits 80 to 90% of the final product cost.
- Care and innovation at the start of a project can dramatically reduce materials usage and product costs but there is almost always a rush to get past the critical first stage and onto the actual design. There are two simple reasons for this:
 - Product designers rarely understand the costing systems used and how their decisions affect the cost (or they are not interested or not told).
 - Accountants rarely understand the technical aspects of product design and how they can influence the design at an early stage rather than just calculating the cost after it is all finished (or they are not interested or not told).

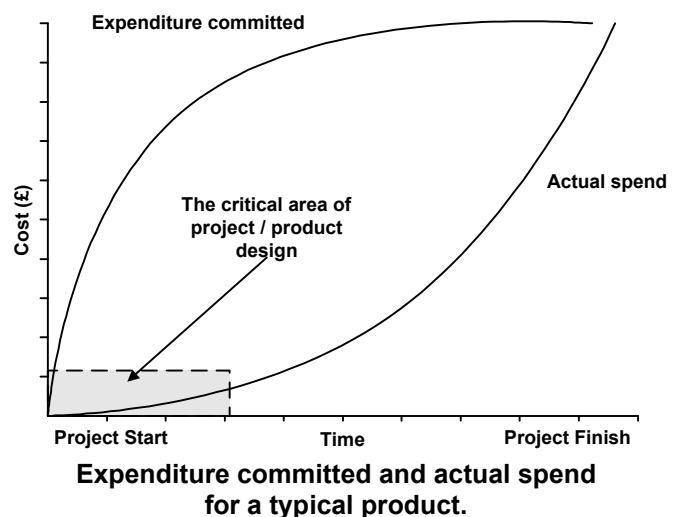
This is a recipe for disaster and for designs that use too much material and cost too much.

"We were late in starting the project so we had to make up the time somewhere".

3. Product features

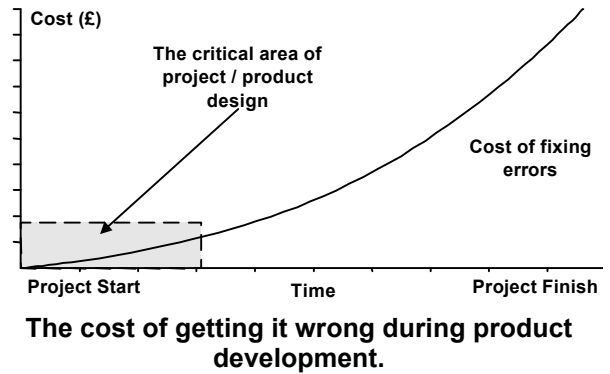
- Reduce the number of product features to meet the customer's needs. Get a clear brief from the customer on what they will pay for. Extra unwanted features generally increase the cost but do not increase the price the customer is prepared to pay.

Over-design is rarely free and adds costs that cannot be recovered in the price.



4. Getting it wrong

- Materials reduction efforts must be concentrated in the early part of the project to get the basics right.
- The cost of reducing materials content or making other changes to a design rises dramatically as a project proceeds. Changes in the early stages are relatively easy to carry out but the cost rises rapidly as actual expenditure takes place.
- Care and innovation at the start of a project reduces the changes necessary and the costs of development.



Get it wrong and your materials costs will be built into the product for life!

5. "Pentamode"

- The "Pentamode" Code of Practice (available free from the British Plastics Federation - 0171 457 5000) gives explicit instructions on how to effectively manage plastics new product development and is strongly recommended as essential reading.
- The development process is the ideal time for materials cost reduction and much of the guidance given in Pentamode is simple and easy to understand. If you are not implementing Pentamode you are almost certainly wasting money and effort.

Pentamode shows you the way forward.

6. Design for manufacture

- Designers must be trained in "Design for Manufacture" and the principles of economic product design.
- Designers and production staff must be trained in "Design for Assembly" to reduce part count and total materials content.
- Least number of parts = least amount of materials.
Least number of parts = least number of assembly operations.

Design for the most economic method of meeting the brief.

7. Current products and materials cost reduction

- Form a Materials Team to look at products in current production.
- Strip down competitor's products and cost every material and production step. Look for areas to reduce cost.
- Use the Value Analysis/Value Engineering techniques to build a cost-benefit table for every feature of the design.
- Retooling - It is rare to retool for materials cost reduction but sometimes even this "unthinkable" option is profitable over a short time scale - do the calculations if in doubt. When a replacement tool is needed for other reasons it is logical to consider materials cost reductions at the same time.
- Scrap reduction - Scrap (with the exception of a small amount of start-up scrap) is generally the result of inadequate production control and is an opportunity for materials cost reduction. Scrap, even when reused, has consumed time, power, effort and has created unnecessary costs in the business.

Current products must be ruthlessly examined for every materials cost reduction idea possible.