# Changing the Manufacturing Industry for the Better

Changing Organisations for the better

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80% of manufactures accept that digital technologies will open up new markets.

# Background

In a survey of manufacturers, it was revealed that:

- 80% of manufacturers have said that climate change and the drive for a carbon-neutral future will give them the opportunity to transform their business.
- 80% of manufacturers accept that digital technologies will open up new markets.

The destination is therefore clear – climate change and digital technologies hold the answer.

The manufacturing industry has been struggling against increased costs caused by net-zero carbon and the increase in gas prices caused by the war in Ukraine. However, these additional costs are likely to be relatively short-term.

On the other side of the coin, new technologies have started to emerge, which are increasingly likely to counter these problems. If the manufacturing industry can make some sensible managerial choices and introduce some of these technologies, it can expect to reduce costs over the next few years.

# 9 Changes to the Manufacturing Industry

## 1 - Supply-chain management

The war in Ukraine has made people more aware of the dependency on other countries for supplies and their potential to be used as a political weapon. There must be plans for other sources.

Manufacturers should consider supply chain issues and constantly try and trace local supplies for all raw materials and goods which go into their product. It is a fact that long-distance imports cost huge amounts in transport, which affects the carbon footprint of the manufacturer.

This is a sensible part of planning, not just designed for conflict between countries, but also for reductions in competitiveness.

## 2 – Make their own parts

Some supply chain problems can be overcome by the use of 3D printers, which are becoming increasingly advanced – and, of course, manufacturers are ideally placed to make any such parts.

Manufacturers should test the viability of producing as much as possible. Where they can do it faster and cheaper, it is better than importing spare parts.

## 3 - Artificial intelligence

This enables the manufacturer to adjust the materials, mix and the process to check the final product. This is particularly important in continuous manufacture where it is effectively 24 hours per day, 7 days per week. Artificial intelligence can by varied slightly to check the final product, by making incremental changes to each component. (Notably on pharmaceutical products, or in food manufacture made in batches.)

The key objective is to try to apply machine learning and artificial intelligence to improve the product in a safe manner, whilst staying compliant with the regulation of the industry.

## 4 - Reducing the use of energy in manufacturing

The manufacturing industry consumes a lot of fuel.

Net Zero Carbon is high on the agenda for all modern, advanced economies, which means a drive for renewable energy and carbon capture.

The difficulty is in the transition, but the faster manufacturing makes the changes, the better. Switching from heating by coal, gas or oil can only be achieved when sufficient renewable electricity can be produced. There will be a rush to produce electricity in many forms, some of which will be easy to put on the grid, and others used more locally.

Renewable electricity can come from wind farms and solar power (both weather dependent and difficult to put on the grid without modification) and wave power and turbines amongst others.

A manufacturer should make energy a part of its future planning so that it can deal with the emerging technologies and see which one is better for the overall economy and for the economy of the business. There is no “one-size fits all”, because people will make different decisions, based on what their assets are and can make compromises on timing within limits!

## 5 – Mixed reality and process design

Mixed reality alows people to interact with and manipulate computer generated images in the real world, in real time.

Manufacturers understand that the design of processes has a profound effect on productivity and lower costs.

Mixed reality gives them the opportunity to try different options of design, which can be done quickly and, if it works, can be implemented.

## 6 – Using the bi-products of manufacture

Another way of saving money and making the best of resources is to find additional ways of using the bi-products of manufacture.  For example, heat.  If you can re-use it, it avoids waste.

Each manufacturer will have different circumstances, and they must all be considered.

## 7 - Designing with recycling in mind

Products should be designed with recycling in mind.  It is expensive to continue to use the same old materials, when it has become clear that the use of plastics, for example is affecting the rivers, oceans and wildlife dramatically.

Replacing harmful materials provides the opportunity to consider all materials to improve the processes. Production of these materials should be incorporated into the evaluations for the design.

## 8 - Using recycled materials in manufacturing and supporting the infrastructure needed for recyclable materials

Wherever possible, manufacturers should use recyclable materials.  However, may have to assist in the collection and preparation of those materials.

A small investment in infrastructure will gain a significant gain in the use of re-cycled materials.

## 9 - Having a disposal programme with consumers in mind

Making a disposal programme easy for consumers is essential if the manufacturer is to be sustainable.

For example, a Nespresso-type arrangement must be made.  (The coffee-pod manufacturer makes it easy for customers to recycle by allowing customers to return them to stores or return them for recycling if they are delivered to their home.)

Manufacturers must plan for the subsequent disposal of their products if the “whole-life cycle” is to be managed effectively.

# Summary

The manufacturing industry has a lot to gain if it follows the green agenda and uses artificial intelligence to transform their businesses.

We hope that the 9 points of action that we have set out in this article, will also help.

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