



Providence Enterprise

Full-Service Global Contract Manufacturing



SUSTAINABLE TEAMWORK:

Design and Manufacturing Partnerships for a Circular Economy

In our last blog, we discussed the many reasons why manufacturers should take part in a circular economy. Not only is sustainable manufacturing good for the environment, it can have a huge positive impact on a manufacturer's brand, stakeholder relationships and bottom line.

Here we carry on with ways to make your value chain more sustainable and the trick to getting a head start.

Start at the **source**

In 2019, about half of total global CO2 emissions came from the extraction and processing of over 100 billion tons of non-renewable materials. Key opportunities arise, therefore, for manufacturers to make more sustainable choices about what goes into the products they make.

Applying circular thinking at this stage of the supply chain, results in:



Ethical sourcing of raw materials and sustainable parts



Reducing dependence on plastics and other oil-based materials in favor of natural, bio-friendly options



Opting for standardized rather than customized parts and components



Using parts or materials that require less processing and energy, such as those that have been repurposed or recycled



Eliminating toxic components that risk harming the user or polluting the environment

Make it better

Manufacturing processes that turn raw materials into finished products and getting them to market, use roughly one third of the world's energy. There are many, many ways to lower that number and make both manufacturing and logistics more sustainable. Here are a few:

- ✔ Use renewable energy to power manufacturing and delivery
- ✔ Adopt lean practices to minimize waste and achieve more-with-less efficiencies
- ✔ Capture heat, carbon and other byproducts that can be used as fuel
- ✔ Recover production byproducts and circle them back into the manufacture of new products
- ✔ Identify and fix areas that use excess energy or water
- ✔ Adopt smart technologies such as artificial intelligence (AI), automation, machine learning, Internet of Things (IoT) and blockchain to improve operational efficiency and supply chain transparency

Make *it* better

Finally, let's look at the product itself. Again, there are boundless opportunities to make the end product more sustainable by:

- ✔ Choosing eco-friendly components and materials such as compostable material in packaging
- ✔ Using smaller components and minimizing use of materials in production and packaging for smaller, lighter, and easier shipping
- ✔ Making products more energy efficient in their everyday use
- ✔ Extending product life to delay replacing or recycling it for as long as possible
- ✔ Enabling the replacement of parts of a device (such as the head of an electric toothbrush) rather than the entire device



It starts with design

Katie Treggiden, author of *Wasted: When Trash Becomes Treasure*, wrote that "up to 80 percent of a product's environmental impact is baked in at the design stage."

Likewise, the Ellen MacArthur Foundation, established to push a faster evolution into a circular economy, urges us make a paradigm shift and start thinking of waste and pollution as *design flaws*.

In other words, sustainable manufacturing begins with circular thinking and designs that leverage every opportunity for:

Use of bio-friendly raw materials	Future repurposing, reusing or recycling	Lower energy requirements in manufacturing
Reduced waste and pollution during manufacturing	Eradication of single-use plastics and non-biodegradable packaging	Elimination of materials that are likely to be banned or regulated in the future
Smaller devices, less material and lighter packaging	Making products that are more energy efficient	Designing products that last longer and are easier to repair than to replace








Furthermore, getting things right at the design stage prevents errors that typically occur further on in the process and the energy and waste that results from having to do things over again.

There will be trade-offs, of course. Designing for a circular economy can mean considerable initial investments and higher manufacturing costs that are passed on to the consumer. Eliminating plastic can also introduce limits in design that not all engineers understand yet. However, as we saw in the last blog, the value far exceeds the cost and a growing number of consumers are willing to put up with paying more and sacrificing convenience in favor of more sustainable products.

Getting your foot in **the circle**

Supply chains for the circular economy require all players to share your commitment to sustainable design. The right contract manufacturing partner (CM) can do even more. They can fill whatever gaps you have in your own manufacturing processes, from sourcing to design to production. They alleviate the burden of investing time and money in making your operations more sustainable all at once, and speed up your entry into the circular economy.

They will tell you:

-  What sustainable materials or components are available through their extensive supplier network
-  What lean manufacturing practices they have in place to increase yield with less waste
-  What water and heat-saving efficiencies they have in place
-  How they help optimize designs for sustainability
-  What possible tax breaks, subsidies or other incentives may be available to encourage greener products and practices
-  What new and emerging technologies they have in their factory – and can incorporate into your design – to make both more efficient
-  How they minimize or eliminate pollution in the production process



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Would you like to know
how Providence
achieves all of the
above for their clients?

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About Providence Enterprise

Providence Enterprise is a Hong Kong contract manufacturer with manufacturing in China & Vietnam. We specialize in electronics, electro-mechanical assemblies and high-volume disposables. We are FDA registered and ISO 13485, ISO 14971, ISO 14001, ISO 27001, IATF 16949, and ISO 45001 certified. Our capabilities include fabricating tooling for silicone rubber and injection molded plastics, clean room injection molding, electronics, clean room assembly, and sterilization.



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