



CREDIT: ADIDAS

Up cycling, or creative reuse as it may also be referred to, can be defined as the process of transforming by-products, waste materials, useless or unwanted products into new materials or products of equal or better quality or environmental value. As such, it is the opposite of down-cycling, which is the other face of the recycling process.

Up cycling

For centuries, almost all footwear was made of leather, cotton and other purely natural materials. When a shoe was totally worn out and no longer repairable, it would be discarded to degrade naturally over time without creating any lasting harm to the environment. The past 70 years has seen an ever increasing use of synthetics, beginning with soling materials, followed by linings and complete uppers. None of these materials degrade naturally. Furthermore, the huge increase in the amount of footwear produced over the same period due to population growth, increasing per capita disposable income

and falling production costs, has only served to exacerbate the problem. So, what to do?

At present, there are four main options, all of which have their downsides: landfill, incineration/ gasification, reuse and recycling. Landfill is the most undesirable due to environmental impact, depletion of resources, increasing landfill taxes and, in some countries, an increasing lack of available land. Incineration remains controversial due to environmental concerns over polluting emissions. Reuse involves collection for distribution to mainly developing countries. It is likely, however, that as their economic power increases,

demand for second hand shoes will inevitably fall. This leaves recycling as the best/least worst option.

Unfortunately, current commercial material recycling methods are either unable to cope with the complex mix of materials found in footwear or do not provide the best method of recovering maximum value. It is therefore not surprising that it has been estimated that less than 5% of the 20 billion or so pairs of shoes produced worldwide every year are currently recycled or reused. The best results have been achieved by a system developed by Loughborough University in the UK under its Centre for Sustainable Manufacturing and Recycling

Technologies (SMART) programme. Even so, it has still only been able to separate four material types: leather, rubber, foam and textiles. Although applications were found for all these materials, they all involved down-cycling with insufficient financial return.

GERM OF AN IDEA

Recycling would of course be much easier if only a single material was involved, thereby removing all the complications of separating a mix of incompatible materials. In 2015 and in conjunction with Parley for the Oceans, sports shoe brand adidas introduced the first performance footwear concept with an upper made entirely of yarns and filaments reclaimed and recycled from marine plastic waste and abandoned fishing nets. In the course of this year (2019), it is expected to produce around 11 million pairs of shoes using material from this source and says it is committed to using only recycled polyester in every product and on every application where a solution exists by 2024. Creating products using up cycled marine plastic waste is, however, only the start of the company's sustainability strategy.

"Taking plastic waste out of the system is the first step, but we can't stop there," says Eric Liedtke, Executive Board Member responsible for Global Brands. "What happens to your shoes after you've worn them out? You throw them away – except there is no 'away'. There are only landfills and incinerators and ultimately an atmosphere choked with excess carbon, or oceans filled with plastic waste. The next step is to end the concept of waste entirely. Our dream is that you can keep wearing the same shoes over and over again."

TOTAL RECYCLING

One can readily see his point. But, then again, being able to actually up-cycle a pair of shoes into a new pair of replacement ones would surely be too much to ask for? Well, it would seem possibly not as in April, adidas announced Futurecraft.Looped, a closed loop system that on the face of it, would appear to do just this. The first example is a 100% recyclable running shoe that can be returned to the company where it will be broken down and reused to create new ones. It will form part of adidas' widest ever global beta

programme, ahead of a wider commercial release targeted for spring/summer 2021.

Once the shoes have come to the end of their first life, the company says they can be returned to adidas where they will be washed, ground into pellets and melted into material for components for a new pair of shoes, with zero waste and nothing thrown away. More to the point, the company has claimed that each regeneration is designed to meet its sports performance standard without compromise. This suggests there is no long term reduction in polymer quality which goes against perceived wisdom and was discussed and analysed extensively in the May/June 2019 issue of *World Footwear*.

Tanyaradzwa Sahanga, manager, Technology Innovation says, "We set out to create a new type of product that we can take back, grind up and reapply into new adidas product. We knew this was a far-reaching vision in every way, technically and even behaviourally. There were times when it didn't seem like we could get over some of the technical hurdles. Now we've made the first leap, the playing field has changed. We cannot create a circular future on our own, we are going to need each other. We're excited to see this first step come to life as part of the beta launch."

First-generation shoes are being rolled out as part of a global beta programme with 200 leading creators from across the world's major cities. They will be challenged to run in them extensively, then return them and share feedback on their experience, ahead of the second-generation drop.

The feedback received will be used to shape a final roadmap for the wider release targeted for spring/summer 2021. Adidas is a well respected and successful company and, one would have thought, not likely make claims it was unlikely to be able to substantiate. It will be most interesting to see how things develop as it could have exciting implications for the future.

SEEKING A NEW WAY

Whilst Futurecraft.Looped is a specialist running shoe, there would appear to be no apparent reason why this new adidas technology—if proved successful—could not also be used for other types of footwear. With the continuing trend to maintaining healthy

lifestyles, athleisure/casual shoes form a substantial and still growing section of the global footwear market. We are also seeing more and more one-piece uppers being used as the overall economics and lack of waste involved are so financially attractive for major brands. The fact that new and increasingly advanced knitting and weaving machines are being introduced suggests that machinery manufacturers also see this type of construction as having a viable future.

There is a further factor that should be considered. The recent UN report on the environmental crisis the world faces if we continue to over-exploit natural resources at the present rate in order to create products that we then throw away, suggests that we really do need a rethink and is food for thought. So, too, is this development from adidas which, whether it proves to be practical or not, is a step in the right direction. Creating a product from the outset with the intention that it can be used and then up cycled into either a further product of the same type and quality or something else without any waste and at a value equivalent to the original is what we should be aiming for. Granted, it will involve a radical rethink of how we do things in the future but we clearly cannot continue as we do at present. Increasing public anger around the world calling for change makes this quite clear and, while most of these people may not know the answers, they do know that something is seriously wrong and that it needs addressing.

The fact that leather as a shoemaking material is no longer considered economically viable by an increasing number of footwear brands has opened the door to ever greater innovation in footwear manufacture. Until recently, the idea of a shoe made from a single raw material by knitting or spinning into a one-piece upper and self-bonded to a sole made from the same raw material would have seemed impossible. Being able to continually renew it without waste or loss of performance likewise is still open to question. However, we get nowhere without trying and adidas is certainly doing that. One can only hope that at some point they succeed. Until then, the total up cycling of footwear, like perpetual motion, remains a dream we can but pursue. 🌀