

Consistency

The word “consistency” means coherence, constancy, unity. Consistency strategies are about reconciling nature with technology; an alternative term is “eco-effectivity”. The idea behind this approach is that in intelligent systems there is no waste – only products.

The consistency strategy targets the production process. Its goal is an economic model which is compatible with nature, functioning as a closed loop. Nature itself offers plenty of examples of such systems. For instance, a cherry tree bears thousands of blossoms and fruits every year. Many of them fall to the ground and rot, without harming the environment. Indeed, as components in a sustainable system, the rotting fruits become nourishment for microorganisms and fertiliser for the cherry tree.

According to the consistency strategy, industrial production can and should follow this example. The primary goal of consistency is not to reduce the energy consumption or materials required for each manufactured item, but rather to constantly reuse the resources employed. Production chains modelled on this concept are sometimes referred to as “cradle to cradle”, in opposition to the traditional approach whereby products follow a path from cradle to grave.

There are two ways in which this can be achieved. One is to use compostable parts which are completely biodegradable, enabling them to be fully assimilated by the biosphere within a relatively short period of time and fed back into the biological cycle as nutrients. For example, there are shampoos with no synthetic ingredients, or t-shirts produced without toxic materials.

But how can cars, buildings or planes ever be composted or harmlessly returned to nature? This is where another kind of material cycle comes into play: materials which cannot biodegrade fully or quickly enough are designed so as to function as resources within a technological system, keeping them separate from the ecosystem. When a product reaches the end of its useful life, it is not discarded as rubbish, but enters a subsequent stage of usefulness of equal or even greater value (upcycling). Computer housings, for instance, can be used indefinitely if the device is regularly fitted with new electronic components.

Even when the housing can no longer be used for this purpose, it could be given a new lease of life, performing another function, possibly of greater value than its previous one. Housings could be designed in such a way as to allow them to be combined into shelving or cupboard systems, using existing bolt holes, to provide storage space. According to this principle, known as upcycling, any form of waste can be reused as a resource in the creation of a new, useful product.

Many companies are adapting their production processes to follow the consistency model, and entire regions are experimenting with the concept. Dutch carpet manufacturer Desso, for example, has completely transformed its production cycle, only producing carpets from non-toxic and 100% recyclable materials. The company takes back used carpets and uses them to produce new ones. The energy consumed in the process is generated by the company’s own solar, natural gas and wind power plant. Another example is Austrian company Gugler, which manufactures environmentally sound products for the printing industry. Conventional paper recycling processes produce large amounts of toxic paper sludge and harm the environment, as toxic printing inks can only be separated from the paper with great difficulty. In a cradle-to-cradle process, Gugler produces paper and inks which contain no environmentally hazardous substances, enabling a significantly higher degree of recyclability.

Even so, the material cycles of an economy cannot be achieved without some loss of mass and energy, making absolute consistency an unattainable ideal. Even a 100% biodegradable shower gel takes energy to manufacture. Nonetheless, the aim of the consistency approach is to motivate industry to strive towards this ideal, keeping resource use and emissions as low as possible.

Sources:

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