

Extending Product Life

Products designed with replaceable parts that are easily detached can be repaired with ease to extend product life. Parts can also be combined into modules or standardized units that are easy to remove and replace. These modules can also make it economically feasible to upgrade products for longer life.

Product Repair

The Natura, a prototype chair, was developed by Grammer A.G., a German office chair manufacturer, to have a life of 30 years. Designed for ease of repair and replacement of parts, the chair was made almost entirely from wood and naturally tanned leather. It was designed so that ninety percent of an old Natura chair could be reused.



This prototype Natura office chair was developed by Grammer A.G. to have a life of 30 years. Replaceable parts allow the chair to be repaired or upgraded.

Modular Architecture

Another method of extending the life of a product is through the use of modular architecture. A modular structure enables a product to be revitalized both aesthetically and functionally to result in longer product life. The needs of the end-user are maintained when modules or standardized units in the product are upgraded. This prevents having to replace and dispose of the entire product if it malfunctions.

Xerox Corporation has developed modules called “customer replaceable units” that allow customers to replace parts such as copier drums. This is in addition to the commonly replaced toner cartridges. Modular designs have also allowed the company to economically recover and reuse parts from copiers. Xerox reports that 148 million pounds of material were diverted from landfills in 1999. Of this, 88 million pounds were recycled and the remaining 60 million pounds were reused, providing significant financial benefits from the recovery of parts.

The use of modules or standardized units in products has been the most notable in computers. In Dell computers, it is so extensive that the system microprocessor, memory, and storage device modules are all easily upgraded or replaced. The Apple PowerMac G4 was designed with the ability to easily upgrade hard drive capacity by adding up to two additional hard drive units.

Another example of the use of this concept, is taking place in Australia, where a Swap Shop™ vending machine is being

The Swap Shop™ is a vending machine for toner cartridges and other office products that was developed by Imaging Technologies of Australia. The machine was designed using modular architecture for ease of upgrade and repair.



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used to collect toner cartridges for recycling and to dispense new ones. The design of the machine is based upon a series of modules, which give it flexibility. It can be upgraded by exchanging modules or sections as technology and styling change. Developed by Imaging Technologies, this vending machine also offers convenience and reduces pollution associated with the need to transport and collect cartridges. A modem in the base control system of the vending machine signals when the machine needs to be restocked and emptied, eliminating unnecessary trips to refill the machine.

Competitive Advantage

Ease of repair or upgrade can distinguish products as they are promoted in the marketplace. These same features that contribute to the ease of disassembly of products can also make it economical to disassemble them for recovery of parts for reuse and recycling. This concept can put manufacturers at a competitive advantage, while enhancing the environmental features of products.



References

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