

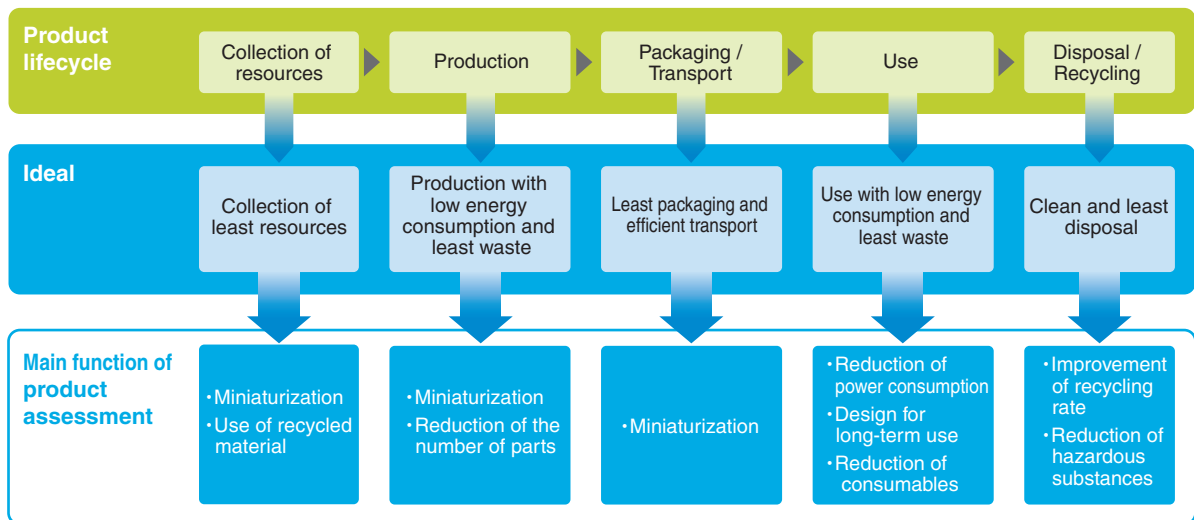
The dimension of the environmental impact of a product is often determined during the design phase. To provide products with little impact on the environment, we need to evaluate the environmental impact throughout the lifecycle of a product, such as their energy/resource saving capability, recyclability, or whether it contains hazardous substances, in order to improve the product as much as possible. The Oki group is striving to reduce environmental impact throughout the lifecycle of our products by implementing product assessment or LCA, or by operating the “Oki Eco Product Certification Program.”

1 Operation of Product Assessment

Product assessment is a system to reduce the environmental impact of a product by comparing a designed model with a reference model with respect to specified evaluation items (for example, resource conservation, electric power consumption, or recyclability), and repeating the design process until the designed model clears the criteria. The following illustration shows a summary of what has to be considered in product assessment.

The Oki group has been conducting product assessment since the introduction of the product assessment system in 1995.

Points to be considered in product assessment



Utilization of product assessment

The following shows product assessment in concrete detail, using the example of LED printers manufactured and sold by Oki Data Corporation.

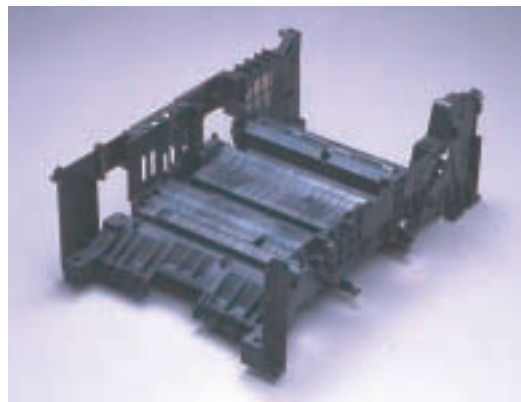
◆ Miniaturization

Miniaturization of a product helps to reduce resources consumed and the quantity of waste. It further reduces energy consumption by improving transport efficiency, and shortening the assembling time.

Page printers used at offices exist in two types: “laser printers”, which use laser beams as the light source, and “LED printers”, which use light-emitting diodes. Compared to laser printers, LED printers have a simpler structure with no moving part, which is suitable for miniaturization. Oki Data is employing the LED method for its page printers to promote miniaturization.

◆ Reduction of the number of parts

Decreasing the number of parts used in a product reduces energy consumption by shortening the time for assembly. Another effect is that it reduces waste, because of less packaging materials used for the parts. As an effort to reduce the number of parts, we are, for example, integrating multiple molded components into one.



Integrated Molded Component

■Reduction of power consumption

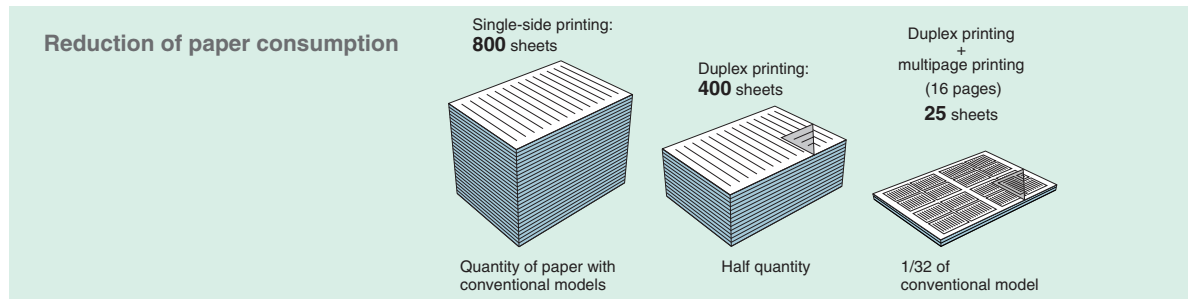
According to the results from the LCA (life cycle assessment) of printers, 60% of the CO₂ throughout the lifecycle is emitted during the use in households or offices. The majority of CO₂ generated is caused by electric power consumption, so that the reduction of power consumption has a significant effect on the reduction of environmental impact. The part that consumes most power in a page printer is the toner fixer, which is heated to a high temperature to melt the toner. The electric power consumption can be improved by lowering this temperature. To solve this problem, we developed "micro-capsule toner," which consists of two layers - a shell layer that softens at high temperatures, and a core layer that softens at low temperatures. This has enabled the toner to melt at low temperatures, realizing fixing at low temperatures. We have further realized power saving by improving the design of control circuits, which contributes to the power consumption during standby.

Standby power consumption of printers (monochrome printers with A4 size output)

Model	Printing speed	Standby power consumption	Power consumption/PPM	Launched in
MICROLINE 701N3	18PPM	25.9W	1.44W/PPM	1999
MICROLINE 14N	14PPM	8.5W	0.61W/PPM	2000
MICROLINE 18N	18PPM	8.0W	0.44W/PPM	2002

◆Reduction of consumables (print paper)

We cut the quantity of paper in half by giving the printers a duplex printing function. By reducing the size of multiple pages so that they can be printed on one, users can now reduce the quantity of paper to 1/32 to the maximum in comparison with single-side printing if they use this feature in combination with duplex printing. (New color printer models launched in 2002)



◆Improvement of recycling rate of used products

To improve the recycling rate of used products, we need to disassemble the products up to the individual materials as far as possible. We basically have to avoid anything that hinders disassembly - such as plating, coating, affixing labels, or inserting screws - in the design stage.

2 Operation of Oki Eco Product Certification Program

To provide customers with eco-friendly products, Oki is operating the Oki Eco Product Certification Program. This program internally certifies products that satisfy Oki's original environment standards as "Oki Eco Products", and provides the customer with environmental information on the product. Certified products bear a symbol mark in catalogs or user's manuals, and are published on our website together with the certification standards.

Number of Eco Product certified models (as of March 31, 2003)

OA equipment	9
Telecommunications equipment	10
Financial equipment	3

3 Promotion of LCA (life cycle assessment)

Product assessment is an easy evaluation method employed by a large number of companies.

However, with this method, it is impossible to analyze in what stage of its lifecycle a product has its largest environmental impact. For this reason, product assessment has the problem that effective countermeasures are difficult to find. As an evaluation method that solves this problem, we are promoting the implementation of LCA. Up to now, we have been conducting trials with LCA for ATM (automated teller machines), printers and telecommunications equipment. The results are utilized in product design.

Printer LCA Results

