Product Assessment and LCA

Products have an impact on the environment throughout their long product life, right through from the production stage to the disposal stage. In order to provide products that have less of an impact on the environment, it is essential to evaluate the environmental impact of products throughout their life cycle with respect to energy conservation, resource saving, recycling, and hazardous and toxic contents, and to improve on these issues as much as possible through the development and design stages of the products. At Oki Electric, we are engaging in environmental impact reduction activities throughout the life cycle of products, by conducting product assessments.

Product Assessments

During product assessment, evaluation items (resource saving, power consumption, ease of disassembly, etc.) are compared between designed models and reference models, and the design process is repeated until the criteria for satisfying the judgment standards have been met. Thus, Oki is making continuous efforts for reducing the environmental impact. Product assessments for manufactured electronic equipment and electronic devices are conducted at Oki Electric.

■Assessment for electronic equipment

Product assessment for electronic equipment is conducted with the check sheet (1). The “Resource saving” of the check sheet is shown as an example of items included in the check sheet.

❶ Description of product assessment (an example for evaluating “resource saving”)

Category	Check items	Former model	New model	Improve-ments	Evaluation	Judgment
●Miniaturization ●Weight reduction ●Resource saving	Reduction of product weight (Comparisons made with existing products or by specified performance)	13 kg	10.7 kg	18 %	2	○
	Reduction of product volume (Comparisons made with existing products or by specified performance)	0.034 m3	0.021 m3	38 %	2	○
	Reduction in the number of product components (Comparisons made with existing products or by specified performance)	360 items	330 items	8	1	○
	Use of recycled paper certified with the Eco Mark for catalogs, user’s guides and manuals.	×	○	—	2	○
	Increase in utilization rate of recycled resources. Utilization rate of recycled resources = (1) / (2) x100 (1) Mass of recycled resources used (recycled plastics, etc.) [Note 1] (2) Mass of product’s main unit	①0.5 kg ②13 kg	① 2 kg ②10.7 kg	—	2	○
●Extended product life	Are parts and consumables, which are in use but have a shorter life, easily replaced? (Comparisons made with the existing products regarding replacement time of parts and the number of screws that need to be removed.)	0.25 H	0.21 H	16 %	2	○
●Reduced consumables	Reduction in the amount of consumables used. (Comparisons made regarding consumption quantity of standard consumables.)	111 pieces	92 pieces	17 %	2	○

■Results of assessment for electronic equipment

The results of the product assessments, conducted on telecommunication equipment during the year 2001, are described below:

Product assessment results

Product group	Number of applicable models	Size/weight reductions (average reduction rate)	Energy saving (average reduction rate)	Internal assessment evaluation
Telephone, switching and transmission equipment	7	42%	34%	PASS
Computer telephony integrated equipment	8	23%	25%	PASS

(The average reduction rate is calculated based on the environmental impact (per function) of existing similar models of Oki Electric.)

Product Assessment and LCA

Assessment for electronic devices

Product assessment is utilized in the development and design stages of electronic devices to promote a continued reduction of the environmental impact through energy saving and resource saving, etc. An example of a check sheet used for product assessment is shown below.

Description of product assessment (an example of "package" evaluation)

	Reviewed items	Check items	Former model	New model		Preliminary evaluation	Secondary evaluation
				Preliminary	Secondary		
Chemical substances	Substances prohibited for use in manufacturing processes	Number of substances	0	0	—	○	—
	Substances prohibited for inclusion in products	Number of substances	0	0	—	○	—
	Substances suppressed for inclusion in products	Number of substances	0	0	—	○	—
	Substances controlled for inclusion in products	Number of substances	2	3	1	×	○
	Total						
Package size		Reduction rate	100%	68%	—	○	—
Are customer's environmental requirements being satisfied?			○	○	—	○	—

Results of assessment for electronic devices

The following table is an example of the product assessment for memory LSI in 2001.

Product assessment results

Item		Reference product	Developed product	Reduction rate (%)
Product specifications	Memory size (Mbit)	32	64	
	Power voltage (V)	3.0~3.6	3.0~3.6	
	Power consumption (mA)	50	50	
Energy saving (nW/bit)		4.5	2.8	37
Resource saving	Chip footprint/Mbit	1.0	0.7	32
	Package size (mm^2)	217	217	0

Promotion of LCA

Promoting Life Cycle Assessments (LCA)

An evaluation can be made easily with a product assessment, so many companies are using product assessment. With this method, however, it is not possible to analyze at which stage throughout the product life cycle the environmental impact is greatest. For this reason, it is difficult to formulate effective measures based on this method. Introduction of LCA is being promoted to compensate for this flaw in this method.
A series of trial runs of LCA was conducted with printers and telecommunication equipment in 2001. The diagram on the right shows the results obtained from the LCA for printers. This shows the point during the life cycle of the product which represents where carbon dioxide (CO_2) emissions are at their highest. This result is utilized in the design of the product.

Results of LCA for printers