# Eco-Friendly Products

We are accelerating the development of Green Products and Super Green Products and are working to reduce environmental burdens throughout the product life cycle.

## Green and Super Green Product Development

The Fujitsu Group has adopted a unified Group-wide approach to eco-design for newly designed products and strives to improve environmental performance throughout the product life cycle. We have been implementing our own environmental assessments for products since 1993, and we develop eco-friendly products that reflect environmental considerations in such areas as energy saving, 3R design,* non-use of hazardous chemical substances, packing materials, and information disclosure.

In 1998, to further strengthen development of eco-friendly products, we established Green Product Evaluation Standards and positioned the products that satisfy them as Green Products.

Then, in fiscal 2004, we combined what had previously been two separate sets of regulations—for product environmental assessment and for Green Product evaluation—into a single set of standards with even higher levels of consideration for the environment. We called these Product Environmental Green Assessment Regulations, and they have helped to both strengthen our Green Product development efforts and make them more efficient.
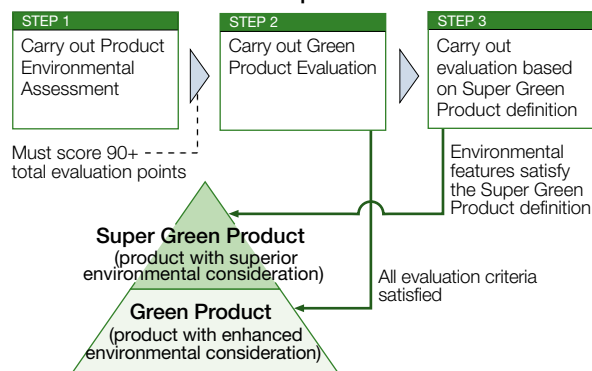
Furthermore, since fiscal 2004, we have been working on what we call "Super Green Product" development for newly developed products. Super Green Products are those that meet the required conditions for Green Products and are also top class in terms of low energy consumption and/or 3R design and technology, non-use of hazardous substances, packing materials and use of eco-friendly materials and technologies. Super Green Products are products or systems with superior environmental characteristics than others we supply or are available on the market.

In fiscal 2006 we offered Super Green products in 21 product categories, and in the three-year period from fiscal 2004 through fiscal 2006, which was the activity period for the Stage IV Environmental Protection Program, we provided Super Green products in 54 product categories.

**\* 3R design**
Design based on the principles of reduce, reuse and recycle

### Mechanism for Green and Super Green Product Evaluation

| STEP 1 | STEP 2 | STEP 3 |
|---|---|---|
| Carry out Product Environmental Assessment | Carry out Green Product Evaluation | Carry out evaluation based on Super Green Product definition |

Must score 90+ total evaluation points

Environmental features satisfy the Super Green Product definition

**Super Green Product**
(product with superior environmental consideration)

All evaluation criteria satisfied

**Green Product**
(product with enhanced environmental consideration)

### Super Green Product Development Achievements

**Fujitsu Limited (15 product categories)**
- Notebook personal computers: FMV-BIBLO NX95U/D, FMV-BIBLO NX95T/D, FMV-BIBLO NB 80S
- Access system for optical LANs: FLASHWAVE 7500 Release 4.x
- Broadband video solution: Broadsight IP-9500 real-time video transmission unit
- Desktop personal computers: FMV-ESPRIMO, FMV-K5230
- IP telephones: IP Pathfinder/CL Series
- LCD displays: 17-inch (VL-17H1) and 20-inch wide format (VL-20WH1, VL-20WH1T)
- PC server: PRIMERGY TX120 compact server
- Network servers: IPCOM EX1000, EX1200, EX2000
- Storage disk arrays: ETERNUS 8000 disk array (models 900 and higher)
- Storage tape products: ETERNUS LT270 tape library
- Mobile phone: FOMA F902iS
- LSI device: MB93475

**Consolidated subsidiaries and affiliates (6 product categories)**
- Digital multiplex wireless equipment: FRX CCC unit (Fujitsu Wireless Systems, Ltd.)
- Electronic components: UWB flexible antenna (Fujitsu Component, Ltd.)
- Capacitors: FPCAP ML Series (Fujitsu Media Devices, Ltd.)
- Bluetooth module: MBH7BTZ24 (Fujitsu Media Devices, Ltd.)
- High-frequency laminated chip inductors: AML0603E Series (FDK, Ltd.)
- Automated teller machine: FACT-V Model 20 (Fujitsu Frontech, Ltd.)

### Development of Bio-Based Plastics

Fujitsu and Fujitsu Laboratories, Ltd. have been researching bio-based materials and developed polylactate-based plastic with good flame resistance, heat resistance, impact resistance, and formability properties. This material has been used in certain Fujitsu notebook PCs since 2002.

Furthermore, in 2006, in cooperation with the French company Arkema, Inc., we developed a new bio-plastic using castor oil extracted from castor beans that has a level of flexibility unknown in earlier polylactate plastics. We are using this material in certain components for our notebook PCs.

Connector cover (FMV-S8240) made from bio-plastic

Castor beans

## Management of the Restricted chemical substances in products

In compliance with Japanese and international laws and regulations, we have specified Banned Substances and Control Substances in Products. And through our Green Procurement activities we are working to eliminate use of these specified substances. From April 2006 we have begun shipping products that do not contain Fujitsu Group-specified Banned Substances in products.

In fiscal 2006 we worked meticulously on chemical substances management in all processes, from design through product shipment, to comply with European RoHS directive[1], China RoHS[2], and so on.

**[1] RoHS directive**
Restriction of the use of certain hazardous substances in electrical and electric equipment

**[2] China RoHS**
Regulations that limit use of certain hazardous substances included in electronic and information equipment (currently limited to display of such contents).

### Framework for RoHS Directive Compliance
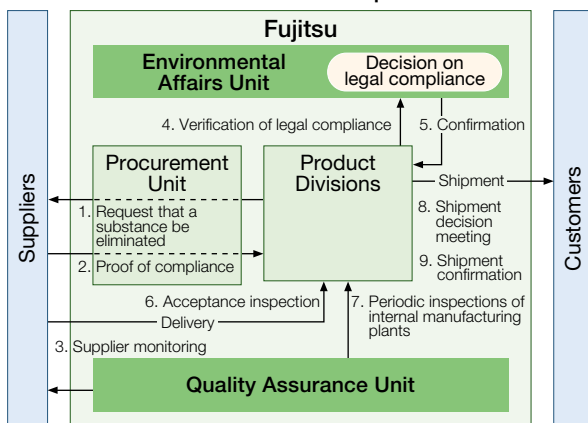


## Carrying out Life Cycle Assessments

We carry out life cycle assessments (LCA) to evaluate Green Products and Super Green Products. LCA enables us to perform a finely detailed analysis of a product's environmental impact, such as determining whether the product generates proportionally higher environmental burdens in the materials procurement or manufacturing stages, or whether the product consumes large amounts of energy during use. This detailed grasp of environmental impact characteristics allows us to effectively design even more eco-friendly products.

## Disclosure of Environmental Information on Products

We actively disclose environmental information on our products, both via the Internet and in the form of environmental labels.

At the end of fiscal 2006, we started registering notebook personal computers under the EPEAT[1] system, which encourages the purchase of green PCs and is used chiefly by

US government bodies.

In Japan, environmental information on electronic computers, magnetic disk drives, displays, printers, and scanners that are covered by green purchasing laws[2] are listed on the Ministry of the Environment's web site[3].

**[1] EPEAT web site**
http://www.epeat.net/

**[2] Green purchase laws**
Laws related to promoting the purchase of eco-friendly goods and products by the country or other parties.

**[3] Ministry of the Environment web site**
http://www.env.go.jp/en/laws/policy/green/index.html

### Regarding the Targets of the Stage V Environmental Protection Program

#### Increasing the Number of Super Green Products

Targeting in particular the Green Products being newly developed in all business units, by the end of fiscal 2009 we aim to increase to over 20% the proportion of products that are Super Green Products with top-class environmental characteristics in areas such as energy savings, 3R design and technology, chemical substances, and eco-friendly materials and technologies. In so doing, we will strive to further strengthen our eco-friendly product development capability and enhance differentiation of our products in terms of consideration for the environment.

#### Achieving the Target Environmental Efficiency Factor

We assess the increase in product value and reduction in environmental burden over the product life cycle as an environmental efficiency factor*. Along with promoting the environmental performance of our products, we continually strive to improve this factor. In particular, for newly developed Green Products in all business units, by fiscal 2009 we aim to achieve an environmental efficiency factor of "2" (i.e., twice the environmental efficiency) relative to products in fiscal 2005.

##### Environmental efficiency factor
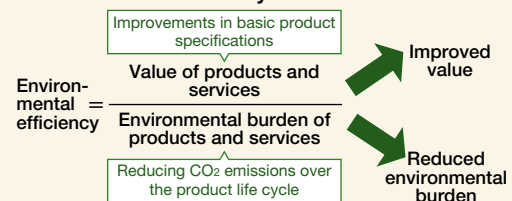


*Environmental efficiency factor
Comparison of environmental efficiency of the product in question with that of a reference product.
Factor = (environmental efficiency of the product in question) ÷ (environmental efficiency of the reference product)

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With Our Employees

For Our Shareholders

With Our Business Partners

With Local and International Communities

For the Environment

# Eco-Friendly Products

**Super Green Product Development Examples**

## PC server: PRIMERGY TX120 compact server

**Energy Savings**
Power consumption was reduced by 39% compared to earlier products.

**3R Design Technologies**
Product size (volume) was reduced to 1/4, installation area was reduced to 1/3, and weight reduced to 1/3 that of earlier products.

**Environmental Efficiency**
Environmental burden was reduced by 37% compared to earlier products and CPU performance, which is a key element of the product's value, was improved by a factor of 4.1. These improvements resulted in an environmental efficiency factor of 6.5 for the product.

## Notebook PC: FMV-BIBLO NX95U / D

**Eco-Friendly Materials**
Bio-based plastic was adopted in parts used in the product chasis (lower cover, hard disk drive cover, memory module cover).

## Network server: IPCOM EX200

**Energy Savings**
Power consumption per unit was reduced by 57% compared to earlier products.

**Chemical Substances**
In conformance with the RoHS prohibition on the use of lead, lead-free manufacturing was adopted (except for the IX121GS2 option).

## Broadband video solution: Broadsight IP-9500 real-time video transmission unit

**Energy Savings**
Image quality was maintained, video transfer circuit efficiency doubled, and power consumption reduced by 14% compared with previous products.

## Digital multiplex wireless equipment: FRX CCC unit

**3R Design Technologies**
Product size (volume) per unit performance was reduced by 50% compared to earlier products. A configuration with 16 systems (16 units each with a data transfer rate of 155.52 Mb/s) can be housed in a single rack compared to the two racks required for the same configuration under the previous ETSI standard.

## Automated teller machine: FACT-V Model 20

**Eco-Friendly Materials**
Bio-based plastic was adopted for parts used in the product housing. Powder coating technology was used for the first time in the ATM industry.

**3R Design Technologies**
Recyclable plastics were used for the molded parts of the case (with certain exceptions).

## Capacitors: FPCAP ML Series

**3R Design Technologies**
Low ESR and ESL enabled the number of devices previously required to be reduced by up to 90%. The products feature top-class levels of reliability and humidity resistance (guaranteed for 1,000 hours at 85% RH and 85 degrees C).

## High-frequency laminated chip inductors: AML0603E Series
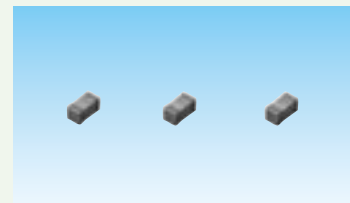
**Energy Savings**
These inductors achieve the industry's highest Q value*, and thus achieve an energy consumption efficiency improvement of up to about 30% compared to earlier products.

**\* Q value**
A value that expresses the quality (sharpness of the resonance) of an inductor (coil). Performance indices such as phase noise and power consumption improve with higher values of Q.

## Electronic components: UWB flexible antenna
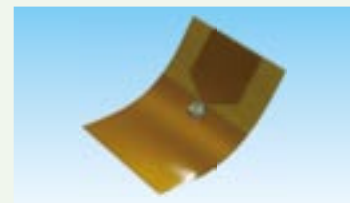
**3R Design Technologies**
Product volume has been reduced by 87.5% compared to earlier products. These are the industry's smallest UWB flexible antennas.

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