## Promoting the Creation of Environment-Conscious Products

Corporate Profile + CSR Activities + Promoting the Creation of Environment-Conscious Products http://www.tdk.co.jp/csr\_e/csr03900.htm

## Environment Protection Is Linked to Product Quality

TDK defines the term "product environmental consideration" as referring to products that are designed in an environment-conscious manner (or to environmentconscious design specifications). This involves preventive management of products so that they do not cause pollution. We believe that protecting the environment ensures sustainability for the company and is directly linked to product quality.

Our activities will be focused on the following four aspects:

- 1. Climate change
- 2. Environment and health
- 3. Sustainable use of natural resources and sustainable management of waste
- 4. Nature and Biodiversity

Our environmental strategy with regard to products will also be oriented along these lines.

In concrete terms, product environmental consideration can be classified into the following three categories:

- (1) Free of regulated chemical substances
- (2) Effective use of resources (resource recycling/ resource saving)
- (3) Energy-saving design (lower energy consumption in the production process/lower power consumption, etc.)

At TDK, we regard it as a given that our products will not contain any banned substances, and we place a chief focus on energy-saving design. This covers all aspects of producing, storing, converting, and applying energy.

## Consistently Creating Environment-Conscious Products

In 1998, TDK introduced a product assessment system that takes the environmental impact of a product over its entire life cycle into account, from the design and development stage right through to the final stage. Even minute amounts of chemical substances in all parts that make up a product are recorded. The energy expended during manufacturing, the energy consumption reducing effect of the product, both on its own and when used in another end product are carefully assessed, and only such products that pass strict evaluation criteria and are approved by the General Manager of the Quality Assurance Department can proceed to the manufacturing and marketing stage. In September 2008, we implemented another important framework aimed at ensuring the consistent creation of environment-conscious products by defining the "Eco Love" and "Super Eco Love" certification categories.

#### Outline of Environment-Conscious Product Certification Framework



Out of the products approved in the product assessment process, this certification framework selects such products that effectively reduce the environmental burden and take the lead in the industry (Eco Love). Among Eco Love items, those which realize environment-friendliness on an even higher level are certified as "Super Eco Love." Products from both of these categories are introduced on our web site.

Products may lose their certification if they no longer conform to the most up-to-date requirements. This is aimed at constantly providing incentives for further development and improvement.

Currently, the main focus is on climate change (preventing global warming). TDK products whose manufacture, distribution, and usage in other end products contributes to saving energy or to the utilization of alternative energy sources will receive the Eco Love or Super Eco Love certification.

### Quantifying Environmental Loads and Designing for the Environment from the Outset

TDK assesses the environmental impact of a product over its entire life cycle. For this purpose, measurable physical quantities are defined for the purpose of quantification (input and output analysis). This is done in compliance with the LCA principles that demand the calculation of environmental load values referenced to standard levels, as well as the requirements of the EuP Directive for ecological profiling. By tackling all environmental aspects, we are able to design and develop products whose overall impact on the environment has been minimized as far as possible.

In coordination with the rest of the industry, we are currently developing optimized LCA methods for input and output analysis (first stage) and inventory analysis\* for background data assessment (second stage).

When the LCA concept has fully matured and become accepted in the marketplace, and when an infrastructure for evaluation of all products is in place, we intend to integrate it as an element of environmentconscious design in our product environmental management framework. We comply with customer requests based on product assessment data gained through this process. \* Inventory analysis: Detailed analysis of energy and materials input and output in all processes over the life cycle of a product

## Preventing Product Related Exposure to Chemical Substances Through Proper Management

In 2004, TDK introduced the "product environmental management" framework to effectively prevent the possibility of product related exposure to chemical substances harmful to human health and the environment. Currently, this has been integrated into our Quality Management System (QMS).

As a component manufacturer positioned within the supply chain, we are concerned with proper prevention and management at the Purchasing, Manufacturing, and Selling stages.

#### Product Environmental Management System



Compliance with REACH Regulation

Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) is a binding EU regulation for manufacturers which came into force in June 2007.

The regulation comprises the following requirements for chemical substances, preparations, and molded products:

- 1. Registration (chemical substances, preparations, molded products)
- 2. Notification (molded products)
- Compulsory application for permission (chemical substances, preparations)
- 4. Usage limitations (chemical substances, preparations, molded products)

5. Communication of information (chemical substances, preparations, molded products)

As a components manufacturer, TDK considers the communication of information our most important duty. Based on the assumption that all products may be used in the EU region, we communicate information on SVHC\* disclosure requirements to our upstream suppliers and partners, in line with our Green Procurement Standard.

We also have established procedures to convey appropriate information to our customers and partners downstream in the supply chain, as required by the REACH regulation.

In fiscal 2009, we have performed information disclosure for 15 substances of very high concern with

# regard to EU market products. We are committed to continue product environment related information disclosure also in future.

\*SVHC: Originally an acronym for "Substances of Very High Concern," now specifically used to refer to substances covered by the requirements of the REACH regulation.

### Fiscal 2009 Excellent Environment-Conscious Products

Excellent Environment-Conscious Product (1) High-Performance Neodymium Magnet NEOREC 53 Series



SUPER ECO LOVE

Metal magnet featuring drastically improved magnetic force characteristics (residual flux density, Br), thanks to a unique low-oxygen process. Enables further miniaturization of sets and products.

Major environmental load reducing effects:

- Does not use any rare terbium (Tb) raw material, but still achieves performance on a par with regular products.
- Improved residual flux density (Br) allows motors to be made more compact, using fewer resources.
- Improved residual flux density (Br) contributes to lower energy consumption by set products.
- Improved manufacturing techniques using fewer resources and less energy.

#### Excellent Environment-Conscious Product (2) DC-DC Converter for Automotive Use



This air-cooled DC-DC converter was developed specifically for use in next-generation hybrid electric vehicles (HEV) with high fuel economy. It features high efficiency, compact dimensions, and light weight. As a DC-DC converter, it provides industry's highest level performance.\*

Major environmental load reducing effects:

- Compact dimensions and light weight help to conserve resources (5% less volume and 45% less weight, compared to previous TDK product).
- Conversion efficiency improved by 1%, to contribute to fuel savings.

\* As of April 1, 2009, according to TDK investigations

#### Excellent Environment-Conscious Product (3) EV/HEV Battery Current Sensor



This high-precision current sensor is designed for use in monitoring the charge/discharge current of high-voltage batteries used in electric and hybrid electric vehicles. It features excellent linearity and temperature characteristics and can measure large currents up to  $\pm 200$  amperes. Thanks to special design technology, power consumption when driven has been reduced by 64%.

Major environmental load reducing effects:

- High-precision current input/output monitoring helps in configuring a highly efficient battery system.
- Support for +5V single power supply drive results in 64% lower power consumption by sensor (compared to previous TDK product).