# DK Products with Future Vision

The TDK Group is constantly developing new products that derive their strength from our original technology and know-how. Because our output is mostly electronic components, the end-user rarely encounters our products directly, but they are at the core of what makes many set products function. By extension, the set products embody our vision for the future.

A few examples are shown below, highlighting sophisticated technology for effective use of energy and for a new generation of environment-conscious products.

#### Soft Magnetic Metal Material for Generators and Motors

Utilized in generators and motors in wind power installations that turn wind energy into electrical energy.



#### AC-DC, DC-DC Power Modules for High-Voltage **DC Current Power Feeding** Applications

Designed for HEMS (Home Energy Management Systems) to efficiently supply electrical energy inside the home.



### Two-Way AC/DC **Converter for PHEVs\***

Used for converting AC from the commercial power network into DC for PHEVs, and also for supplying energy to the home in DC form. \* PHEV: Plug-in Hybrid Electric



Vehicle

#### **High-Capacity Lithium** Ion Battery

Ideal for storing energy produced by solar power and wind power generators and supplied from outside the home.



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## **DC Electrification Eco Home**

Normally, electrical power is supplied to residential homes in the form of AC (alternating current) by power companies or other providers. However, because many electrical appliances actually run on DC (direct current), AC adapters are needed to convert the alternating current into direct current. In the DC electrification eco home on the other hand, power is distributed as direct current. Power obtained from natural energy sources is stored in lithium-ion batteries, eliminating the need for the conversion stage with its inherent losses. Consequently, energy can be used more efficiently, which helps to reduce CO2 emissions

#### **Dye-Sensitized Solar Cells**

Used in solar power generation that turn solar energy into electrical energy, for greatly reduced CO<sub>2</sub> emission levels.

Hybrid Electric Vehicle

Automobile that uses both an electric motor and a combustion engine to achieve much better fuel economy than a conventional automobile. Exhaust gas is cleaner, with significantly lower CO<sub>2</sub> emissions. This type of vehicle is currently attracting a lot of attention because of its overall lower environmental load.

#### **DC-DC Converter**

Used in PCUs (Power Control Units) of hybrid electric vehicles to turn the high voltage from the batteries into the lower voltage required to drive the electronic equipment of the automobile. Featuring high conversion efficiency as well as compact dimensions and low weight, these TDK products contribute to better fuel economy.



#### **Battery Current Sensor**

Designed for detecting input and output current levels in battery systems, so that overcharging and excessive discharging can be reliably prevented. This protection contributes to longer battery life. Accurate detection of remaining battery capacity is another important aspect for precise system control, which contributes to better fuel economy.





Proprietary TDK technology has made it possible to build magnets with drastically improved magnetism. These are used in the electric motors of hybrid electric vehicles, providing assistive power to the engine and enabling the recycling of energy. The magnets have excellent heat resistance characteristics, which prevent a drop in motor output power at high temperatures, thereby contributing to better fuel economy.



# **TDK Products with Future Vision**

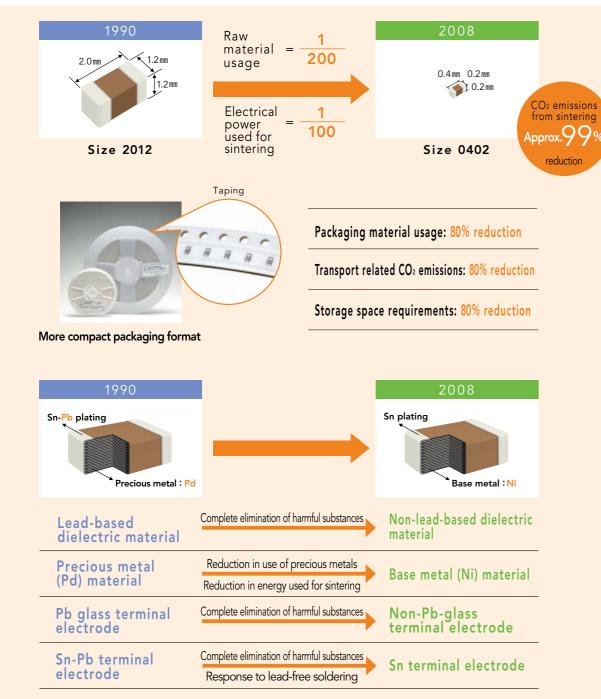
## The Technology Behind TDK's Environment-Conscious Products

TDK creates its range of environment-conscious products by fully utilizing its core technologies. There include

materials technology at the source, process technology to develop and optimize the characteristics of materials and apply them in products, as well as evaluation and simulation technology to sustain and accelerate our development and design activities.

Some examples of how technology is applied are shown below.

### Changes in environment-conscious design of chip components



# The Eco Love Logo and TDK **Products**

The Eco Love symbol is meant to indicate that a product is based on love for our global environment. Its design expresses our stance, awareness, and concern for environmental issues.

The logo is used widely, both for company-internal communications related to our drive for creating

#### **TDK's Environment-Conscious Products Line-up**





environment-conscious products and in promotional material aimed at third parties. It serves to identify environment-conscious products that have special merits, and is found in catalogs, on our web site, and in other locations.

We intend to further increase the ratio of "Eco Love" and "Super Eco Love" products in our overall output in future. Together with our customers, we want to help protect the earth and achieve sustainable progress.