



TDK Corporate Social Responsibility Report 2011

TDK CSR Report 2011



TDK CSR REPORT 2011

Harnessing the resources of the entire group
to create innovative electronic components of true value
is our way of helping solve the challenges
facing society today.

Responding to the challenges of a rapidly changing society requires bold and innovative thinking. Creating new products is the TDK way of contributing to find viable solutions.

Takehiro Kamigama, President & CEO, TDK Corporation



In March 2011, the Great East Japan Earthquake caused massive damage and loss of life, mainly in the Tohoku region of Japan. We extend our deepest condolences and heartfelt sympathy to all those affected by the disaster.

Within our group, a plant in Kitaibaraki city suffered damage, and temporary shortages of raw materials affected operations, but thanks to full cooperation by our suppliers and partners both in Japan and overseas, we were able to overcome these challenges. This made us realize once again the importance of establishing relationships built on mutual trust during day-to-day business. At the same time, we are determined to learn from this experience and are giving priority to measures such as business continuity planning (BCP) to further strengthen our risk management framework.

This unprecedented disaster has brought our society to a point where decisive changes are called for. The use of renewable energy sources such as solar power, along with the establishment of distributed energy systems is growing. Businesses are increasingly utilizing cloud network services or computing platforms to store their data. We believe that a component manufacturer such as TDK has a major role to play in these developing applications.

We already supply a wide range of components used in solar and wind power installations. The advancement of cloud computing means a growing demand for high-performance hard disk drives, an area where the importance of TDK technology will only grow stronger and more relevant.

With an objective of preserving precious natural resources, we are pursuing the development of magnets that do not require rare earth materials. Looking ahead and gauging future needs will enable us to put the required systems in place in a timely manner.

The reduction of CO₂ emissions is another major focus of TDK. Under the newly established “TDK Environmental Action 2020” platform, we are aiming to achieve carbon neutrality, in the sense that CO₂ emissions caused by our manufacturing operations are offset by the reduction of CO₂ emissions achieved through the use of TDK products and expertise.

In order to realize this goal, it is necessary to make the environmental contribution of our electronic components more transparent. We are therefore quantifying both the CO₂ emissions produced at the manufacturing stage of a product and the CO₂ emission reduction achieved when the product is being used. We are also calling upon the industry to standardize such procedures.

Since people are at the basis of all our efforts, we attach the highest priority to the development of human resources. Our ideal employee is self-motivated, aware of issues, and able to challenge with received wisdom. We also want to foster a global outlook, for example by giving young and promising staff members the opportunity to spend time abroad.

A strong and solid company is one that can innovate through their products. It is vital to create products that do not simply repeat a pattern but rather enable new solutions and bring something to the table, through aspects such as size, quality, cost, and reduction of environmental impact. We see the development of highly innovative new materials and components as our contribution to society. By fulfilling its responsibilities, TDK aims to become an even stronger company.

I hope that you will find this report interesting reading, and heartily welcome your comments and suggestions.



Business Outline

Corporate Information

Corporate Name: TDK Corporation

Corporate Headquarters:

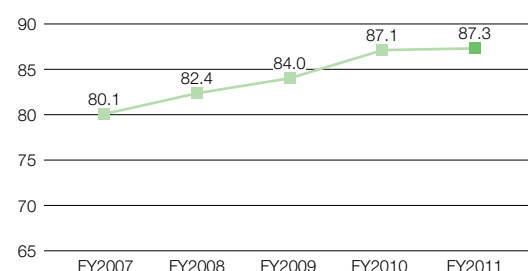
1-13-1, Nihonbashi, Chuo-ku, Tokyo, 103-8272, Japan

Date of Establishment: December 7, 1935

Paid-in Capital: 32,641,976,312 yen (As of March 2011)

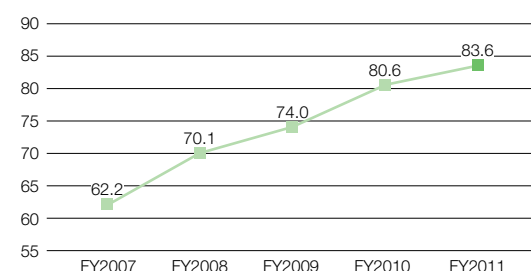
Ratio of Overseas Sales

(Unit: %)



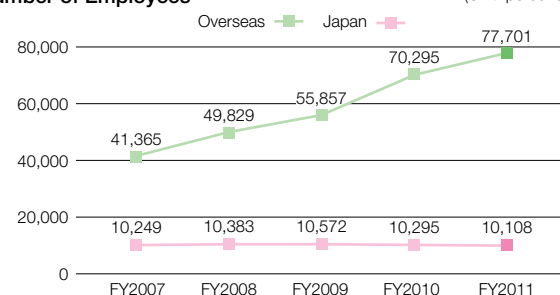
Ratio of Overseas Production

(Unit: %)

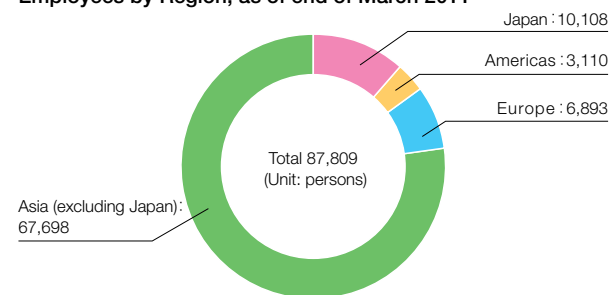


Number of Employees

(Unit: persons)



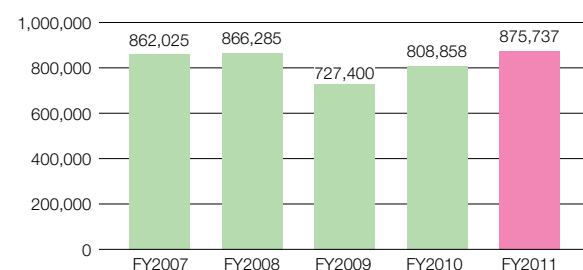
Employees by Region, as of end of March 2011



Transition of Major Financial Indicators

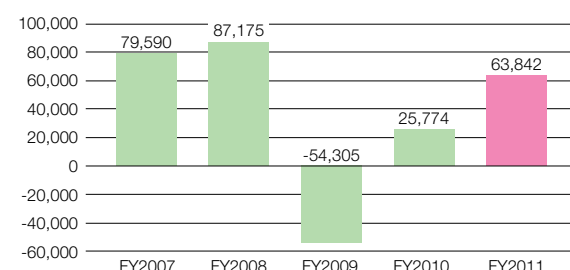
Net Sales

(Unit: million yen)



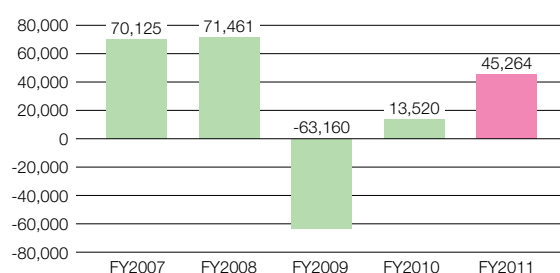
Operating Income (Loss)

(Unit: million yen)

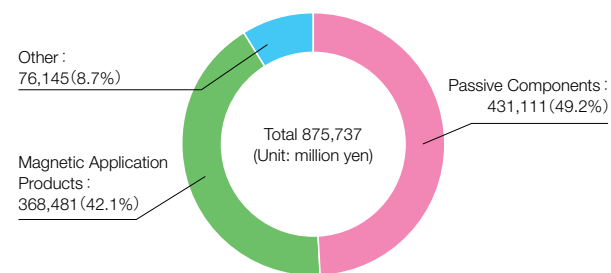


Net Income (Loss)

(Unit: million yen)



FY2011 Net Sales by Industry Segment (Percentage Distribution)



Editorial Policy

This report was created with the aim of promoting understanding of the TDK Group's CSR (Corporate Social Responsibility) activities among its stakeholders.

Characteristics of CSR Report 2011

Through its products and processes, the TDK Group aims to help solve the challenges facing society today. This brochure features two highlight reports which, along with general information, are intended to illustrate what TDK does.

Highlight 1 illustrates how TDK products used in eco cars and realized through our core technologies bring about beneficial effects for society at large. Furthermore, the report looks at the spirit of craftsmanship that informs the relationship between the people who make the products, those who market them, and the entire staff who support them.

Highlight 2 introduces the gist of the new "TDK Environmental Action 2020" platform that is an embodiment of TDK's vision for the environment. We also talk with an expert providing insights into what sort of environmental activities will be expected of the TDK Group from now on.

Report Format

The report is available as a booklet and a collection of web site pages, in slightly different format to match the requirements of the respective media.

Brochure: Digest version focusing on the most important aspects of the TDK Group's CSR activities which are of particular interest to stakeholders.

Web site: More complete coverage centered on activity reports for FY 2011. Also provides more detailed data.

Period Covered

FY 2011 (April 1, 2010 – March 31 2011)

Some activities outside of this period are also covered.

Organizations Covered

TDK Group*

*TDK Group: TDK Corporation and 127 consolidated subsidiaries in Japan and overseas

Major Organizational Change During Covered Period

None

Publication of CSR Report 2011

September, 2011 (the previous issue: October 2010, the next issue: September, 2012 to be scheduled)

Contact

CSR Promotion Office: +81-3-5201-7115

Cover Page Design

The image represents various people living a vivacious life in a green environment. This also relates to pages 1 and 2, which portray TDK Group members working within a global framework and contributing to solving society's issues through technology.

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TDK's Technological Innovations: Creating Solutions for Global Issues

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TDK Environmental Action 2020 platform
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Opening up New Vistas for Sustainable Society with TDK Products

Components made by TDK are found in products all around us, touching upon a wide range of fields: mobile phones and home information appliances, automobiles and rail transport equipment, energy systems for wind power and solar power generation, and much more. TDK's core technological expertise brings out the full potential of the source materials. By constantly improving the quality and performance of our electronic components, we open up new vistas and help to make bold visions a reality. We see this as our way of working towards a better world.

Energy

Creating, storing, converting, and distributing energy are essential tasks.

TDK promotes the use and more widespread acceptance of clean, renewable energy sources such as solar power and wind power.

Neodymium magnets with superior characteristics

The TDK lineup offers materials with optimized properties for the respective application. This includes drive motors for hybrid electric vehicles, magnets for energy saving home appliance and industrial equipment motors, magnets for wind power generation systems and more.

■ Main applications
Wind power generators, industrial equipment motors, HEV/EV drive motors, electric power steering systems

High-capacitance aluminum electrolytic capacitors

These capacitors are designed for high capacitance and are especially suited for smoothing and noise suppression applications in power supplies. They are also for high-current applications in wind power generation systems and related products.

■ Main applications
Solar power, wind power

Compact AC-DC power supply for LED equipment

These power supplies for LED lighting systems not only feature highly compact dimensions, a low-profile form factor, and light weight, they also provide superior resistance against dust and water droplet. This makes them particularly suitable for outdoor LED lighting, LED sign boards and similar uses. The lineup includes a range of different types optimized for various applications.

■ Main applications
LED equipment (lighting, sign boards, etc.)

Smartphones

Smartphones and other mobile communication devices are creating a new culture of mobility. The amazingly small dimensions, light weight, and advanced functions of today's smartphones are made possible by an assortment of some 500 small chip components and modules.

Thin-film common mode filters

These noise suppression components make use of sophisticated thin-film technology. They are found in interfaces such as USB and HDMI* that can transfer large volumes of video and audio data at high speeds and with superb quality.

*HDMI: A digital video and audio input/output interface standard for home appliances and audiovisual equipment

■ Main applications
Mobile communication devices, home information appliances

Multilayer ceramic chip capacitors

These chip type capacitors support high circuit integration. Alternating layers of dielectric ceramics and internal electrodes contribute to small dimensions and high capacitance ratings.

■ Main applications
Various electronic devices (in power supply circuitry, signal circuitry, for noise countermeasure, etc.)

SAW filters/RF modules for high-frequency circuits

SAW filters make use of the Surface Acoustic Wave effect to pass only signals for a specific frequency. RF modules allow shrinking the dimensions of mobile communication devices even further.

■ Main applications
Mobile communication devices, home information appliances

Eco Cars

Eco cars including hybrid electric vehicles (HEVs) and electric vehicles (EVs) are the wave of the future. Electronic components from TDK designed for key applications in such vehicles provide high performance and outstanding reliability, which in turn makes driving safer and more pleasant.

* See also "Highlight 1 - TDK's Technological Innovations: Creating Solutions for Global Issues" starting on page 13.

High performance thin-walled anisotropic ferrite magnets

Ferrite magnets are widely used in motors and similar, offering superb cost effectiveness. TDK's Magnets provide industry-leading performance, even with some types that are less than 2 mm thick, utilizing an innovative and proprietary manufacturing method.

■ Main applications
Compact DC motors for automobiles, motors for home appliances and industrial equipment, and various other motors

DC-DC converter for HEV/EV applications

The high voltage of the main battery bank in a hybrid electric vehicle must be converted to a lower voltage to drive other electric and electronic equipment of the car. DC-DC converters are power devices used to charge an auxiliary battery for this purpose. Their increased conversion efficiency greatly contributes to fuel economy.

■ Main applications
HEVs, EVs, plug-in HEVs

e-mobility / high-accuracy current sensor

This sensor detects both the charge current and the discharge current of automotive batteries and contributes to power savings. A Hall element on a doughnut shaped magnetic core allows highly accurate measurements in a non-contact configuration.

■ Main applications
HEVs, EVs, plug-in HEVs

CSR of TDK Group

To ensure that TDK continues to earn the trust of society, all employees in their daily activities are implementing the corporate motto and pursuing the corporate ethics.

Corporate Philosophy

Corporate Motto	Contribute to culture and industry through creativity
Corporate Principles	<p>Vision Always take a new step forward with a vision in mind. Creation and construction are not born without vision.</p> <p>Courage Always perform with courage. Performing power is born by confronting contradiction and overcoming it.</p> <p>Trust Always try to build trust. Trust is born from a spirit of honesty and service.</p>

Management philosophy inspired by the company's roots

The magnetic material “ferrite” was invented in Japan in 1930 by Dr. Yogoro Kato and Dr. Takeshi Takei of the Tokyo Institute of Technology. “True Japanese industry was born of innovative vision,” this statement by Dr. Kato inspired Kenzo Saito to found TDK Corporation (originally known as Tokyo Denki Kagaku Kogyo K.K.) with the purpose of marketing this original material invented in Japan.

At the time, it was of course as yet unclear whether “ferrite” would have a future, so the foundation demanded “courage” and the will to pursue a “vision.” As a result of joint research by the Tokyo Institute of Technology and TDK, a product

called a “ferrite core” was produced and applied for the first time worldwide in 1937 in a number of Japanese wireless communication units and radios. By the end of the war, as many as 5 million units had been shipped by TDK, thereby gaining the “trust” in the society.

“The spirit of creating entirely new things of value by starting at the fundamental level of the material” has defined TDK from the beginning, and it still is the trait that sets the company apart. It is also reflected in the Corporate Motto formulated in June 1967, “Contribute to culture and industry through creativity.”



Dr. Yogoro Kato (left) and Dr. Takeshi Takei



TDK's first president, Kenzo Saito



World's first ferrite cores



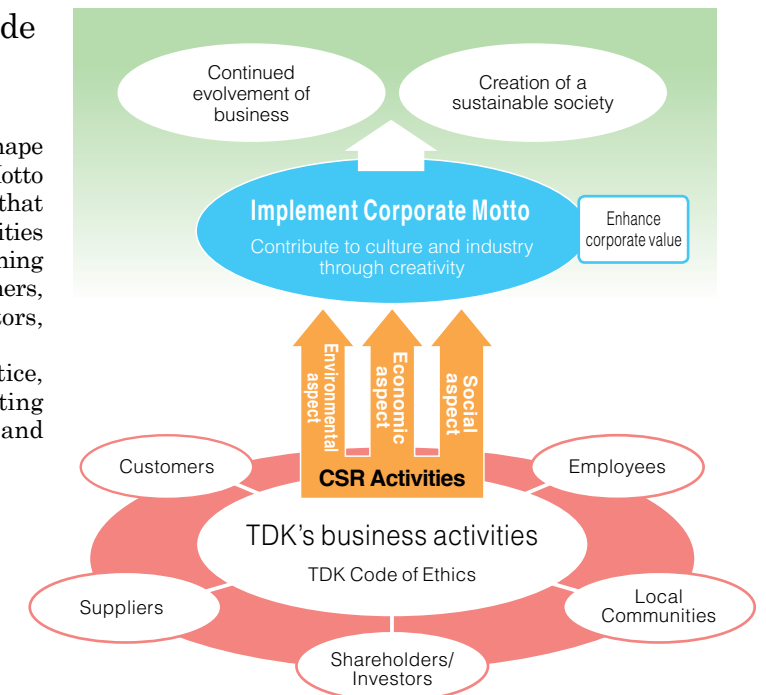
TDK's first plant at Kamata in Tokyo

Positioning of TDK CSR and Code of Ethics

For the TDK Group, CSR efforts take shape through the “Implementation of our Corporate Motto and the pursuit of corporate ethics.” This means that CSR activities are promoted through business activities based on the TDK Code of Ethics, always maintaining proper channels of communication between customers, suppliers, employees, share-holders and investors, local communities and other stakeholders.

By putting our Corporate Motto into practice, the value of the business increases, contributing both to the “Continued evolvement of business” and the “Creation of a sustainable society.”

* For the complete text of the TDK Code of Ethics, please refer to the following URL.
http://www.global.tdk.com/about_tdk/code_of_ethics/



Key CSR Action Items

The four action items shown right have been identified by the TDK Group as especially important due to their impact on society at large and on the company.

1. Technological innovation and impressive quality product creation aimed at solving major issues facing society
2. Fostering human resources who can implement action item 1.
3. Conducting supply chain management from CSR perspective
4. Harmonic coexistence with the environment

CSR Promotion Structure

CSR activities of the TDK Group are conducted under the guidance of the Business Ethics & CSR Committee and its subordinate organization, the CSR Task Force.

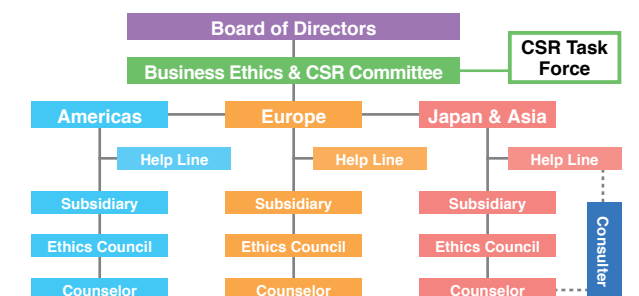
Business Ethics & CSR Committee

The Business Ethics & CSR Committee reports directly to the Board of Directors. The committee is comprised of the Administration Group General Manager and Function Managers from the Management Review & Support Dept., Finance & Accounting Dept., Human Resources Dept., General Affairs Dept., Legal Dept., Corporate Communications Dept., Corporate Planning Dept., CSR Promotion Office, as well as the Chief Compliance Officer (CCO) of TDK-EPC. The mission of the committee is to promote awareness of the TDK Code of Ethics. This is achieved by implementing training programs and carrying out many other activities aimed at the employees of TDK Group companies all over the world. It identifies problem points and attempts to find solid and lasting solutions.

CSR Task Force

The CSR Task Force operates under the umbrella of the Business Ethics & CSR Committee. There are eleven functions that correspond to the main topics of CSR activities. In response to issues identified by the Business Ethics & CSR Committee as relevant to CSR in the industry, the Task Force implements a broad scope of CSR related activities.

CSR Promotion Structure



Overview of FY 2011 Activities and FY 2012 Action Plan

The TDK Group, in order to obtain the continued trust of society, has identified action items that are particularly important in terms of CSR. We establish yearly action plans around these items and work to implement them through our business activities.

This section provides an overview of what we have achieved for FY 2011 and what we are working on and planning for FY 2012.

Each item is applied to the entire PDCA cycle to ensure that activities mesh on a higher level.

Item		Action Plan FY 2011	Action results for FY 2011	Planned activities for FY 2012	
1	Technological innovation and impressive quality product creation aimed at solving major issues facing society	<ul style="list-style-type: none">Information disclosure and promotion of environment-conscious products ("Eco Love" products)Sales ratio: 15% and more	<ul style="list-style-type: none">Constantly updated web site for products of environment-conscious products ("Eco Love" products)Sales ratio: approx. 23%	<ul style="list-style-type: none">Information disclosure and promotion of environment-conscious products ("Eco Love" products)Sales ratio: 30% and more	
2	Fostering human resources	Innovative craftsmanship training	<ul style="list-style-type: none">TDK Monodzukuri tradition seminars	<ul style="list-style-type: none">Continue TDK Monodzukuri tradition seminarsOverseas	
		Development of global human resources	<ul style="list-style-type: none">Cross-cultural communication training including IMD training	<ul style="list-style-type: none">Cross-cultural communication training including IMD trainingBolster overseas training frameworkBolster language study programs	
		Promoting diversity	<ul style="list-style-type: none">Educational training for implementationAction plan implementation in various departments	<ul style="list-style-type: none">In-company educational activities for female staff empowerment (discussion sessions with female management members, lectures by external speakers)Action plan implementation in various departments	<ul style="list-style-type: none">Continue action plan implementation in various departmentsStrengthen management trainingStrengthen female staff training
		CSR penetration and execution	<ul style="list-style-type: none">Implementation of e-learning (Japan), completion of implementation preparations (China)Intensive training	<ul style="list-style-type: none">Implementation of e-learning (Japan), completion of implementation preparations (China)Intensive training (Japan, China, Korea)	<ul style="list-style-type: none">Continue to implement e-learning (Japan) and widen implementation areasContinue and enlarge scope of intensive training
3	Conducting supply chain management from CSR perspective	Promoting CSR procurement	<ul style="list-style-type: none">Improved CSR check sheet for suppliers	<ul style="list-style-type: none">Implementation of improved CSR check sheet for suppliers	<ul style="list-style-type: none">Improve and provide guidance for CSR check sheet for suppliers
		Correspond to conflict minerals	<ul style="list-style-type: none">Response to inquiries and requests for survey from customers	<ul style="list-style-type: none">Swift response to customer inquiries and survey requests regarding conflict minerals, following the passing of the Dodd-Frank Act<ul style="list-style-type: none">Established a framework for responding to customersCarried out a survey among suppliers	<ul style="list-style-type: none">Gather information and assess trends regarding legal regulations for conflict mineralsProvide proper response for customer and suppliers
		CSR response to customers	<ul style="list-style-type: none">Implementation of regular TDK CSR 'Self Checks' at manufacturing sitesResponse to CSR survey and auditing requests from customers in a timely manner	<ul style="list-style-type: none">Implementation of regular TDK CSR 'Self Checks' at manufacturing sitesResponse to CSR survey and auditing requests from customers in a timely manner	<ul style="list-style-type: none">Enhance management level and implementation of regular TDK CSR 'Self Checks' at manufacturing sitesResponse to CSR survey and auditing requests from customers in a timely manner
4	Harmonic coexistence with the environment	Promote environmental activities	<ul style="list-style-type: none">Promote environment oriented activities based on "TDK Environmental Action 2015"<ul style="list-style-type: none">Preventing global warmingManaging wasteEnvironmental risk managementConducting external environment activitiesPromoting the creation of environment-conscious products	<ul style="list-style-type: none">Promote environment oriented activities based on "TDK Environmental Action 2015"New medium to long term plan "TDK Environmental Action 2020"	<ul style="list-style-type: none">Promote environment oriented activities based on "TDK Environmental Action 2020"

FY 2011 Topics

1 Technological innovation and impressive quality product creation aimed at solving major issues facing society

For effective, to-the-point research and development, TDK is concentrating its technological resources on three key market segments: "communications," "automobiles," and "environment & energy." Covering the entire spectrum from basic research to practical implementation, we are engaged in R & D that leads to highly original technology and products. Breakthroughs such as next-generation of multilayer ceramic chip capacitors and highly advanced components for hybrid electric and electric vehicles are our way of helping to solve crucial challenges that face society today. In the environment sector, we are constantly expanding the ratio of our "Eco Love" products.



* For information on environment-conscious products from TDK, please visit our web site:
<http://www.global.tdk.com/csr/ecolove/index.htm>

3 Conducting supply chain management from CSR perspective

To promote CSR oriented procurement as a component manufacturer, the "TDK CSR Self-Check" program based on the EICC* and JEITA* CSR guidelines is being implemented at major manufacturing sites of the TDK Group.

For suppliers, we are conducting the CSR check sheet through the Supplier Partnership System. The check sheet was revised to enhance supplier's CSR activities.

* EICC: A code of conduct established in 2004 by the Electronic Industry Citizenship Coalition in the U.S.

* JEITA: Japan Electronics and Information Technology Industries association. Published a supply chain CSR promotion guidebook in 2006.

2 Fostering human resources

TDK has been aiming to develop "self-sustained human resources." We implemented a variety of programs aimed at helping people discover and develop their potential. Within the larger context of promoting diversity, there were also programs for management to deepen understanding of women's empowerment in the workplace, and talks by external speakers on the topic. Through training programs on different levels, intensive seminars, and e-learning we impart the concept that CSR is only viable when all employees implement it in their work and put the concept into practice.



Lecture by external speaker on achievements of female employees



IMD (International Management Development) seminar

4 Harmonic coexistence with the environment

The TDK Group has established the "Environment Charter" that formulates our fundamental approach towards sustainable development. In FY 2011, based on the "TDK Environmental Action 2015" which is a blueprint for concrete measures, we identified five action items and worked mainly on aims such as improved energy management at overseas manufacturing sites.

For FY 2012, we have newly formulated the "TDK Environmental Action 2020" that focuses on environmental contribution through our products.

TDK's Technological Innovations: Creating Solutions for Global Issues

In the world of automobiles, the shift to hybrid electric vehicles (HEVs) and electric vehicles (EVs) and similar forms of transport is well under way, with the aim of solving global environment issues. Electronic components used in such cars must be compact, lightweight, as well as highly efficient and reliable. This special report deals with the field of car electronics which is a major focus of TDK's operations. We talked with developers of key components and introduce the opinions of people who are involved in contributing to society through their work.

What makes TDK automotive components special?

Development at TDK does not mean simply shuffling around existing ingredients. We start from scratch, i.e. the raw materials and use our expertise to meet the wide and varied needs of our customers. We also define our own, highly demanding quality standards, so that TDK can provide products with full confidence.

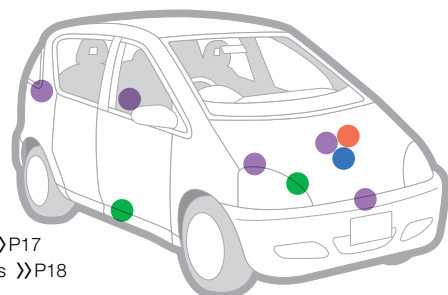
Market needs

- Compliance with stricter fuel economy regulations
- Move away from fossil fuels
- Improved safety
- Improved comfort

Technology based solutions

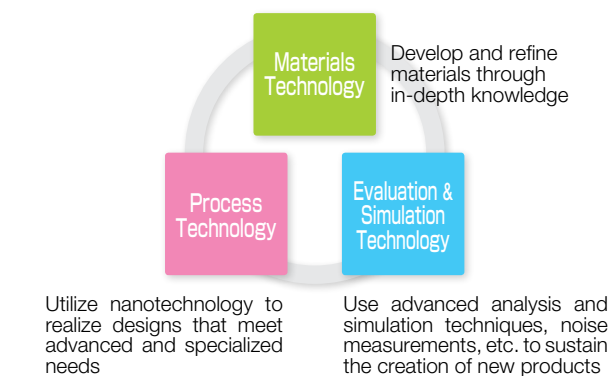
- Smaller dimensions and lighter weight
- High efficiency
- High reliability
- Move away from rare metals

- Capacitors >>P15
- Magnets >>P16
- Current sensors >>P17
- DC-DC converters >>P18



"Three core technologies" from TDK

TDK products are solidly based on three core technologies. Materials technology is the starting point and the source of our product power. Process technology brings out the potential of each material to the fullest. Evaluation & simulation technology allows us to utilize our accumulated know-how for pushing the envelope and blazing new trails. These three aspects are closely interwoven and enable us to create innovative, outstanding products that help solve important issues facing today's society.



Grasping the true needs of customers to build a win-win relationship

I belong to the Automotive Marketing Group. I present products to customers both in Japan and overseas, visit plants to assess requirements, and provide follow-up. If I want customers to see the advantages of our products, I of course first have to thoroughly know and understand them ourselves. I therefore work closely together with the technical departments and communicate not only by email and telephone but also often face-to-face.

One of the main tenets that I stick to when dealing with customers is to always keep a promise. Often this also means that, when asked to provide such and such a product, I will not simply accept the customer's description and say "can do." I first have to explore the background for the request and get a firm grip of what is actually required, and what TDK can do towards meeting the requirement. In order to enable a fuller assessment, design engineers sometimes will come along on our customer visits.

In building a relationship with a customer, I aim for a scenario that comes out as win-win, that is beneficial to them and to us. And I am most proud

and happy when the customer recognizes our efforts by selecting our product, or when I get calls assuring us that "TDK is a company we depend on." This puts our day-to-day work in a larger context involving a connection among numerous people.

TDK-EPC Corporation
Electronic Components Sales &
Marketing Group
Automotive Sales Strategy Group 2

Takahiro Chihara

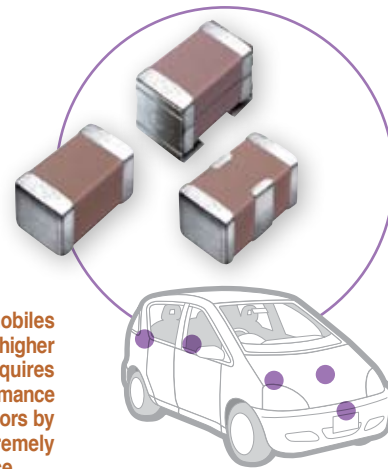


Capacitors

Materials Technology Process Technology

Quickly responding to market needs with quality products providing high capacitance and stable performance in high-temperature environments

Capacitors are important components that serve to store an electrical charge. Primarily used in automobiles are multilayer ceramic chip capacitors which are becoming increasingly smaller while providing higher capacitance. For example, the harsh environment inside the engine compartment of a car requires components that can resist strong shocks and vibrations, while also maintaining their rated performance over an extremely wide temperature range—from bitter cold to searing heat. TDK outpaced competitors by introducing the X8R class of multilayer ceramic chip capacitors which are guaranteed to withstand extremely high temperatures, and the company continues to develop capacitors with even greater performance.



TDK-EPC Corporation
Ceramic Capacitors Business Group
Applied Products Department, Design Section

Atsushi Takeda (left),
Takeru Yoshida (right)



Down-to-earth research and development

The basic parameters of a capacitor are its capacitance rating, i.e. how much electricity it can store, and its temperature characteristics, which refers to how stable the capacitance remains at various temperatures. Multilayer ceramic chip capacitors achieve high capacitance by integrating numerous dielectric and electrode layers in a sandwich-like configuration. The X8R type from TDK features characteristics that change only by a maximum of 15 percent over a range from -55 to +150 degrees centigrade. Based on the technology developed for this existing product line introduced in 2001, development of capacitors with higher capacity through increasing the number of layers is under way.

Severe restrictions exist regarding the thickness of a product, since this is part of its specifications. Making improvements therefore demands highly advanced technology. For example, having to fit some 600 plus layers into a 2.5 mm space presents the question of how to shave off some tenths of a micron per layer. At the same voltage rating, the thinner the dielectric the shorter the life of the capacitor. To reduce thickness by half, life of material must be extended by a factor of 10. Such difficult and sometimes conflicting goals are approached through extended test runs in close collaboration with the Materials & Process Development Center. Even if the material on its own tests fine, results may differ when it is tightly packed in hundreds of layers. These complexities make multilayer ceramic chip capacitors a highly challenging field.

Towards an even wider temperature range

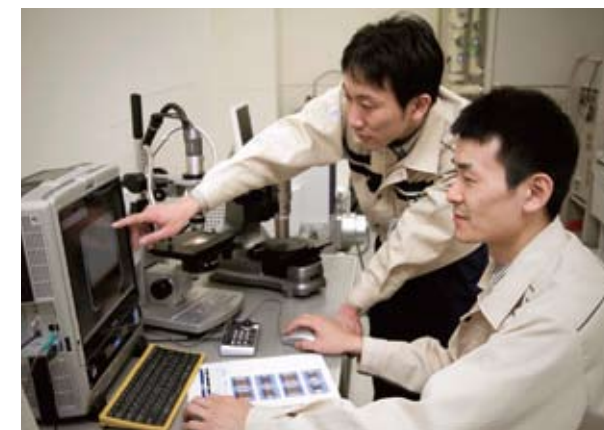
Products that will be used in the automotive environment where high temperatures are to be expected must maintain their reliability for many years after installation. Even seemingly minor

aspects, such as the terminals that link the capacitor to the circuit board, must be developed with great care. Many dozens of test samples are produced and evaluated according to some 10 to 20 performance parameters. This process can frequently take as long as a year.

An increasingly frequent request from customers these days is for multilayer ceramic capacitors that can withstand even higher temperatures than current products. This has to do with the fact that components in DC-DC converters, namely power supply equipment found not only in automobiles but also in various household appliances and other products, increasingly use silicon carbide*, a material offering performance characteristics that do not deteriorate even at 150 degrees centigrade and higher. Multilayer ceramic chip capacitors used in the peripheral circuitry of DC-DC converters therefore also need to maintain their performance into this temperature range. TDK is determined to rise to the challenge again. A spirit of boldly entering new realms is essential. The occasional failure comes with the territory and should not be feared. However, the important thing is to learn from failures and build momentum towards the next step.

The components that we create are almost never actually seen by the consumer. But without these components, many of the end products being used in society simply would not function. This inspires us to do our best each and every time.

* Silicon carbide: A compound of carbon and silicon that is renowned for its hardness, heat resistance, and chemical stability.

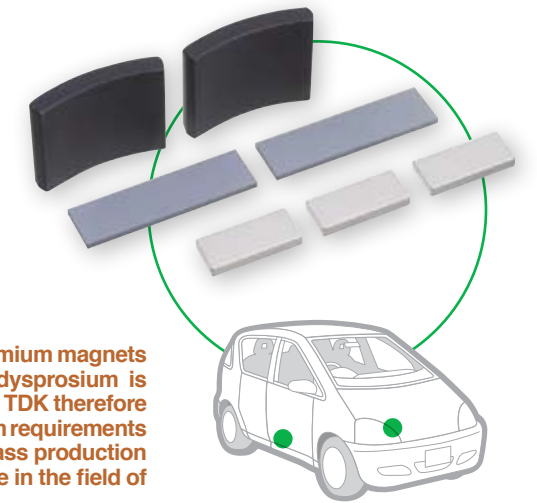


Magnets

Materials Technology Process Technology

New processes reduce reliance on rare earth materials and open up new possibilities for magnets and motors

Dysprosium, a rare earth material, is indispensable for manufacturing neodymium magnets which are the strongest permanent magnets. However, since nearly all dysprosium is sourced from China, a stable supply may not always be assured. Since 2006, TDK therefore has been working on a new manufacturing process which reduces dysprosium requirements to about 20 to 50 percent as compared to conventional methods. In 2010, mass production using the new process has started. This development is relevant for example in the field of motors for electric vehicles, where neodymium magnets play a crucial role.



TDK Corporation
Ferrite & Magnet Products Business Group
Product Development Department, Product Development Section 1

Makoto Iwasaki



Bringing a new process to mass production

I was involved with development of the process from the beginning and have now overseen its move into mass production. Neodymium magnets require doping with dysprosium to achieve heat resistance, but there is also a negative effect, because the more dysprosium is used, the less magnet performs. Because dysprosium is very rare and therefore costly, a method that would allow reducing dysprosium use has long been a theme in the industry.

Normally, a neodymium magnet is formed by pulverizing an alloy containing dysprosium and then applying heat treatment. By contrast, with TDK's new method called HAL (High-Anisotropic field Layer), the magnet is first shaped to the required size, and only then is the dysprosium dispersed on the surface. This allows us to achieve the same high heat resistance and coercivity while using significantly less dysprosium.

The major hurdle that had to be overcome on the way to applying this process to mass production was finding a method for reliable quality management. So far, the quality of magnet material used to be evaluated in lot units. However, with the HAL process the characteristics of the neodymium magnets can differ, depending on the size and shape of the magnet. Therefore, quality management needs to be more granular, looking at the individual magnet. This idea paved the way for the breakthrough to mass production.

Once we got to this point, all of our team members strongly felt that the new method would change the way we think about neodymium magnets, that it would bring about a sea change in the magnet industry. The realization of mass production capability became a major project that involved almost all sections within the Ferrite & Magnet Products Business Group dealing with metallic magnets. Marketing and materials procurement, production technology, and various other sections



contributed valuable information and advice. For this I feel truly thankful.

Mass production outlook for other products

Currently, mass production using the HAL process has started for products used in industrial equipment and home appliances, but intensive efforts to laterally expand it to other products are ongoing. In particular, neodymium magnets are indispensable for low-pollution vehicles such as electric cars and hybrids. In the automotive environment where high temperatures, strong vibrations and other severe conditions are the norm, high reliability is a key aspect. We are aiming to establish a mass production framework for the new technology, taking these special demands into account.

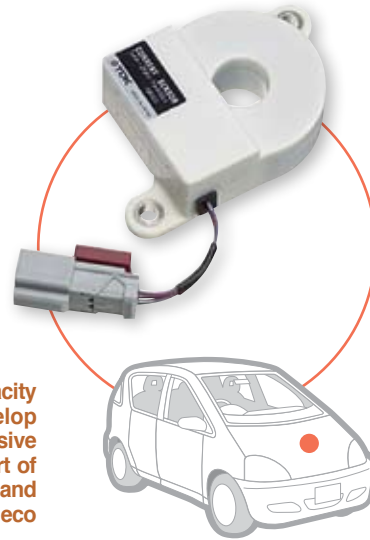
Neodymium magnets which are mainly used in motors of various kinds should be designed from the outset with the desired characteristics of the motor for the respective application in mind. Rather than simply fulfilling a list of required specs, this will allow us to propose optimal solutions. The problem should not be tackled in isolation, looking only at magnets or only at motors. We need to find common ground, also with the motor designers at the customer. The HAL process which allows individual management of magnetic characteristics for each magnet has enormous practical application potential in this regard.

Current Sensors

Process Technology Evaluation & Simulation Technology

Increased accuracy of current measurement boosts performance and makes energy use notably more efficient

In hybrids and electric vehicles, correctly assessing and controlling remaining battery capacity is crucial for improved fuel economy. With this in mind, TDK set out in 2002 to develop current sensors that would help to protect the battery bank from overcharging and excessive discharging, thereby extending battery life. 2005 saw the successful mass production start of a current sensor for hybrid vehicles, featuring a maximum measurement tolerance of 1% and a measurement range of ± 200 amperes. With the aim of extending the technology to other eco cars, a wide range of products is currently under development.



TDK-EPC Corporation
Sensors Business Group
Sensor Department

Teiichiro Oka



Realizing higher product reliability

I am in charge of design verification and customer follow-up. It was in 2007 that TDK was selected as a supplier of current sensors for a new model hybrid electric vehicle from a major manufacturer. Right from the outset, the customer presented us with strict demands in terms of the reliability and performance required for automotive use. Thanks to our accumulated technological know-how, we were able to meet the lead-free stipulation for soldering and circuit components. We also were able to greatly reduce power consumption by adopting a single power supply design using 5 V.

The magnetic balancing method used by TDK for current detection by principle provides high precision, but there is still the risk of tolerances due to the various circuit parts used in the sensor. It is also possible that a component selected to fulfill a certain purpose at one point may interfere with another part or section, leading to unforeseen consequences. To achieve performance that is 100 % assured, aspects such as circuit design and parts selection were often worked on and reworked carefully by all members of our team in a long, laborious process. At times like these, it is fortunate that we have a constructive work environment and like to help each other out. In the end, this made it possible for us to overcome the various difficulties.

Because the various auto manufacturers implement latest proprietary technology in their eco cars, standardizing a sensor for current measurements is a difficult task. By applying TDK's broad know-how that takes manufacturing aspects into consideration already from the design stage, we are working on a viable solution. Detailed customization to meet the respective demands of customers is of course possible and necessary, but in the medium to long term, standardization to cover the greatest common factor is a requirement of sound product policy. The resulting cost reduction then



flows back as an advantage to the entire automotive industry.

Developing the next-generation current sensor

At the moment, we are working on the next generation of sensors that may use different current detection elements. Most current sensors at the moment have a Hall element and make use of the Hall effect (electromotive force generated when a magnetic field is applied to a conductor or semiconductor through which an electric current flows), but in future these may be replaced by sensors with an MR element using the magnetoresistive effect. Their higher sensitivity to the magnetic field should enable the construction of new sensor types that have cost advantages over current products. TDK is applying MR element know-how acquired through the development of magnetic heads for hard disk drives to develop and market current sensors for a wide range of applications.

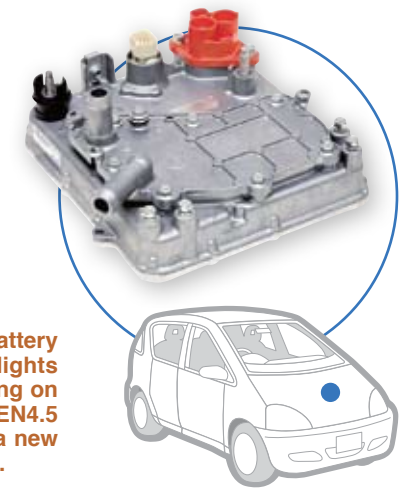
The most talked about application at the moment of course is eco cars, but current sensors can be used to achieve efficient energy use also in other areas. In future, Smart Grid and eco house related applications are on the horizon, and we are also preparing to meet latent demand for sensors to be used in various other electric products. Through these efforts, I hope to contribute more and more to improving the environment.

DC-DC Converters

Materials Technology Process Technology Evaluation & Simulation Technology

Products with smaller size and lower weight will contribute to improved fuel economy and longer battery life in eco cars

Hybrid electric and electric vehicles must convert the 100 - 400 V of the main battery bank to 14 V for operating various other electrical equipment in the car such as lights and windshield wipers. As the first company in the industry, TDK started working on DC-DC converters for this purpose in 1995. In 2009, the latest models of the GEN4.5 series went into mass production. Featuring thoroughly redesigned parts and a new form factor, these are 45% lighter and 1% more efficient than their predecessors.



TDK Corporation
Technology Group
Device Development Center
EV Development Group

Masahiro Gamo



Collaboration with other departments is the key

I began to work in this sector by joining the Generation 4.5 (GEN4.5) development team. TDK is classifying the basic circuitry of DC-DC converters into generations, starting with Generation 3 (GEN3) which went into mass production in the year 2001. Subsequent to Generation 4, development of Generation 4.5 began in 2005 with a formidable goal, namely to halve both weight and cost of the units. This seemed almost impossible at the outset, but for people working in research and development, comments such as "no way" or "not doable" merely pose a challenge to think about how to begin approaching such a goal.

As a result of various attempts and intensive deliberations, a way to make significant progress was finally discovered: we decided to unify the power components and control board which formerly had used a two-stage configuration. In concrete terms, this meant a re-evaluation of more than 500 parts, looking at them one by one and thinking about how to make them smaller or even eliminate them. At the same time, transformers were also integrated on the control board. The ferrite



type PC95 transformer from TDK was selected as main transformer because of its wide temperature range extending from 25 to 120 degrees centigrade and its low-loss characteristics. This product was developed by the TDK Magnetics Business Group upon special request, using a ferrite material that is about 16 % lighter than the material in Generation 4 products. Because TDK is not only a developer of DC-DC converters, but also a transformer manufacturer and a ferrite manufacturer, we have a distinct advantage when it comes to creating products with a special combination of features.

Getting the most out of proprietary technology

After building more than ten prototypes, Generation 4.5 was finally completed. In recognition of the contribution to fuel economy and battery life afforded by its compact dimensions and light weight, the series won the "Conference for the Promotion of Monodzukuri*1 Co-Chair's Award" in the Sixth 'Cho' Monodzukuri Innovative Parts and Components division, a program sponsored by Nikkan Kogyo Shimbun Ltd.*2 As developers, we are proud of the simple elegance of GEN4.5 which does away with all superfluous elements, and our customers seem to agree. That the products also received a third-party prize is an additional source of pride for all those who were involved in the project.

Currently, the implementation of GEN4.5 in a wide range of car models is under preparation, and as developers we have started looking towards Generation 5. For products to be widely accepted in the marketplace, low cost is another crucial factor in addition to compact size. With regard to both of these aspects, TDK is in the fortunate position of being able to utilize its own materials technology. We should leverage this advantage to devise unique products. Close cooperation with other departments is essential while we pursue the central task of electronic components and materials development, to create not only advanced DC-DC converters but many other kinds of products that make a difference and contribute something to the world at large.

*1: "Monodzukuri" is craftsmanship in manufacturing with special emphasis on continual improvement.

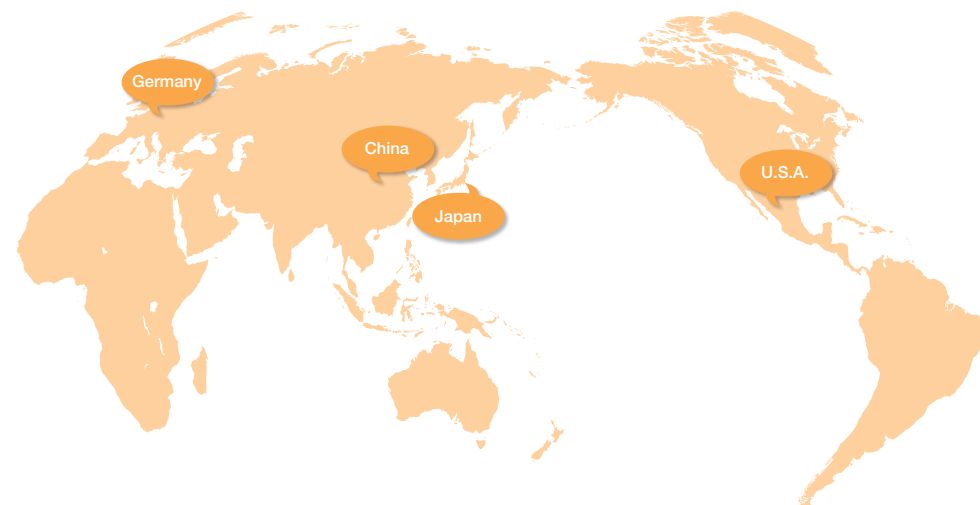
*2: Daily Newspaper, specialized in business and industry (Japanese language only)

The People Behind the Products

The Role of Technological Innovation in Society

Before TDK products reach our customers, many people around the world have already been involved in myriad ways.

We asked some of these people to comment on how they see their daily work within the larger context of creating products that contribute to society through technological innovation.




Highlight 1 – TDK's Technological Innovations: Creating Solutions for Global Issues

Germany
EPCOS AG
Product Development
Pressure-Transmitters (SEN PD PS T)

Bert Hundertmark

My work Developing new fuel sensors for the pressure transmitter department




Most sensor development is done according to customer specifications, and one needs to be fully aware of new challenges and their applications. This also relates to the development of a range of sensors designed to maintain high accuracy of the fuel system over time when adopting new fuels. Through the development of fuel sensors that are also found in HEVs etc., enabling the use of fuels that are kind to the environment, I hope to contribute to the preservation of the fossil fuel resources of our planet.

Germany
EPCOS AG
Front End Production Pressure
Sensors (SEN O PS P ST)

Birgit Nowak

My work Front-end process supervisor for the pressure sensor




The pressure sensors which are my specialty already are shaped to facilitate application by the customer, but I am currently proposing innovations regarding materials and processes. Our goal is not only to reduce material and energy consumption during the manufacturing process but also to enable customers to realize more compact and efficient designs by making our sensors even smaller and more capable.

Germany
EPCOS AG
Product Marketing Sensors (SEN PM)

Holger Hegner

My work Marketing of temperature and pressure sensors for automobiles



My mission is to enable customers to design their products making optimum use of the performance specs and know-how that we can provide. This is indispensable for combining comfortable drive performance with environment-friendliness. Automotive sensors are used in a wide range of applications. We not only aim to reduce energy consumption by optimizing sensor control, we also pay close attention to weight reduction, ease of recycling and other aspects. By improving the fuel economy of HEVs and EVs, we do our part in helping to solve automobile related problems.

Japan
TDK Corporation
Ferrite & Magnetic Products Business Group
Planning Management Department, Procurement Strategy Section

Kazuya Sakamoto

My work Magnet materials procurement, and procurement strategy planning



When procuring raw materials, it is of course necessary to obtain and analyze a vast amount of information. I also try to actually visit source locations and ascertain the reliability of information through various means. In the field of HEVs and EVs, Japan is playing a leading role and has the potential to contribute to society through many beneficial products.

Japan
TDK Corporation
Ferrite & Magnetic Products Business Group
Production Technology Department, Production Technology Section 1

Hiroshi Miyasaka

My work Introduction and improvement of metallic magnet processing equipment



My aim is to realize facilities that excel in terms of machining precision, production capacity, and cost. Magnets play an important role in motors, generators, and many other power source devices. By introducing better manufacturing equipment and supplying large quantities of high-performance magnets, I believe TDK can contribute to more efficient use of energy and the realization of an energy-saving society.

Japan
TDK-EPC Corporation
Electronic Components Sales & Marketing Group
Chubu Region Marketing Strategy Section

Kuniyoshi Tsukijima

My work Marketing of magnet products to car manufacturers and car electric equipment manufacturers



Neodymium magnets for HEVs are custom-produced according to customer specifications. Right from the beginning, we must therefore be clear about customer's requirements and propose the best technical solutions through TDK technology. Communication between the business groups is essential, so that manufacturing and marketing go hand in hand. Through the sale of high-performance neodymium magnets, we contribute to the spread of HEVs and hope to help build a better global environment.

Japan
TDK-EPC Corporation
Ceramic Capacitors Business Group
Capacitor Products Group, Large Capacity Product Section

Yoshitomo Matsushita

My work Ceramic capacitor product design



Ceramic capacitors are often thought of as general-purpose products, leading to a tendency to look towards existing lineups. However, when we develop products, we always keep customers' expectations with regard to specs, quality, and cost in mind. While we do not directly deliver to end users, our work is guided and inspired by the thought of having people use products that incorporate TDK components.

Japan
TDK-EPC Corporation
Ceramic Capacitors Business Group
Quality Assurance Strategy Department, Quality Assurance Section 1

Yukinori Takaki

My work Development follow-up for new ceramic capacitor



Passive components supplied by TDK are indispensable in automobiles, household appliances, and many other products surrounding our daily lives. By improving the reliability of these parts, we help to reduce breakdowns and contribute to ensuring consumer safety and trust. Preventive measures and risk assessment already during the development stage, along with cooperation among developers, are the tools which I apply to enhance the reliability of product development.

China
TDK (Shanghai) International Trading Co., Ltd.
SCM Dept. IS Group

Kumi Zhu

My work Automotive marketing IS (Inside Sales)



Operating as an information center, we must be able to swiftly provide to-the-point proposals, which requires us to have a clear image of our work. The team members' mission is to tackle a task however difficult it may seem, and work towards achieving customer satisfaction. Information sharing and team work are therefore essential for providing good services to the customer.

Japan
TDK-EPC Corporation
Ceramic Capacitors Business Group
Procurement Section

Atsushi Kudo

My work Materials procurement for chip capacitor products



As society at large keeps evolving, the environment for materials procurement also has undergone a major change in the past few years. To achieve the most important goals of cost reduction and stable supply, team work is the key, with all members working towards the same objective. I take pride in working to ensure stable materials procurement, so that customers can continue to use our products in full confidence.

Japan
TDK Corporation
Power Systems Business Group
Management Group, Development Purchasing Team

Hisanori Yatomi

My work Parts supply activities for EVs power supplies



I participate in the design review process from the initial product development stage and make proposals related to cost reduction and green procurement. The age of HEVs and EVs dominance is just about to begin. Parts and materials that I helped to procure are used in the production of high-performance and cost-effective power supplies for EVs. This in turn should contribute towards countering global warming and preserving precious resources.

Japan
TDK Corporation
Power Systems Business Group
EV Power Supply Business Unit, Quality Management Group

Fumitomo Ueno

My work Quality assurance of DC-DC converters and chargers for HEVs and EVs applications




Because our department is involved with quality assurance for parts that are crucial for eco cars carrying precious human cargo, we are pursuing a policy of zero defects, which we try to ensure through a completely reliable quality system. By doing so, we want to protect the safety of eco car drivers and passengers, and also contribute to reducing the environmental load and moving towards a low-carbon society by promoting increased HEVs and EVs acceptance.

U.S.A.
TDK Corporation of America
Sales Mid East Region

Jeremy Jungman

My work Marketing of chargers and DC-DC converters for EVs



The U.S. has taken a strong initiative to significantly reduce automotive emissions and greenhouse gases. TDK technology has enabled us to bring low-cost, high-performance DC-DC converters as well as chargers and other products for electric vehicles to the market. As an industry leader, we contribute to the reduction of CO₂ emissions through our activities in the EVs sector.

Highlight 2

New Environmental Vision

TDK has established the TDK Environment Charter, consisting of the Basic Principle on the Environment and the Basic Policy on the Environment, as our entire group's environment policy. In line with the Charter, TDK formulates environmental action plans as the fundamental framework for implementing specific environmental activities. TDK Environmental Action 2015 plan, the second-stage platform has been progressing favorably. In response to the rapidly changing social climate, we have now formulated the third-stage platform called TDK Environmental Action 2020, and have started to implement it from April 2011.



TDK Environmental Action 2020 platform

Achieving carbon neutrality by FY 2021

The TDK Environmental Action 2020 sets a goal for achieving carbon neutrality based on environmental activities centered on environmental contributions through products, which is a first in the electronic component industry. The TDK Group aims to reduce CO₂ emissions caused by operations at manufacturing

sites as much as possible. At the same time, TDK actively contributes to the reduction of CO₂ emissions by society at large, through the group's products and know-how. The goal for these activities is to have the contributions to emission reduction exceed actual emissions by the end of FY 2021.

Achieving carbon neutrality—the TDK way

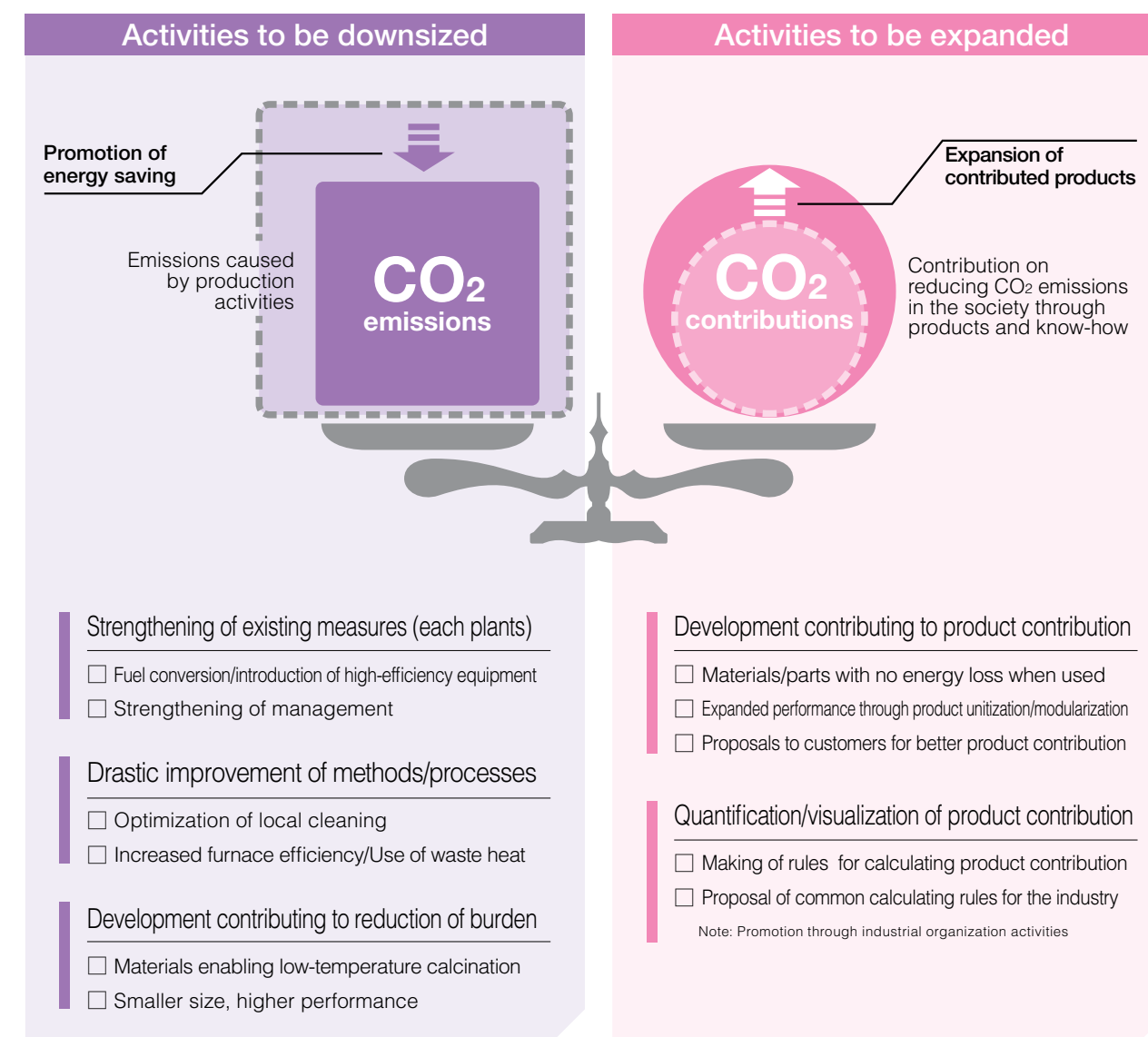
CO₂ emissions (environmental load) due to manufacturer operations
 – (minus) reduction of CO₂ emissions through products (environmental contributions) ≤ zero

There are many different aspects both to environmental load and environmental contributions, but the “TDK Environmental Action 2020” identifies energy source CO₂ reduction as the major element and defines carbon neutrality as a state of balance in this regard.

Working towards carbon neutrality

To achieve the stated goal, intensive efforts are needed both to reduce the environmental load and to increase the environmental contributions. We have therefore set down specific action items in both fields. To reduce the environmental load, manufacturing sites need to use highly efficient equipment that is tightly managed and controlled. Furthermore, the development of new materials and new processes to increase manufacturing efficiency will also be pursued with increased vigor. To increase environmental contributions, the development of products that ensure low

energy losses during use and that provide expanded functionality through unit integration and modular construction is essential. Creating innovative products that reduce environmental impact is a high priority. At the same time, we are in the process of establishing assessment methods to numerically quantify the environmentally beneficial effects of electronic components and make the evaluation process more transparent. We are also promoting the standardization of such assessment methods in consultation with industry associations.



Practical and effective environmental activities

The “TDK Environmental Action 2020” platform not only defines the above mentioned carbon neutrality goal, it also comprises action items for other aspects that remain of high importance, such as conserving limited resources, effective use of water and other resources, and reducing environmental impact through

social contributions.

The entire TDK Group is working towards these aims. Each fiscal year, we assess the results achieved in various areas and review the targets for the future, to constantly elevate our environmental activities to a higher level.

What We Need to Do for the Environment Now

—Dialog with an Expert—

In September 2010, TDK became the first electronic components manufacturer to receive a special award under the environmental assessment scheme of the Development Bank of Japan (DBJ). In 2011, TDK formulated the TDK Environmental Action 2020 platform focusing on environmental contributions through its products, and began to implement it from April of the same year. We invited Mr. Keisuke Takegahara, Head of the Environment / Corporate Social Responsibility Promotion Office of the DBJ for an exchange of opinions regarding TDK's new vision for the environment and our environmental initiatives.



Outlining TDK's environmental activities from an outside perspective

Takegahara: The environmental ranking of the Development Bank of Japan was introduced as a concept for assessing the value of corporations, taking into account non-financial information as well. Out of the approximately 120 evaluation criteria that we use, let me cite two which are especially important: "Does the company have a system in place for properly managing environmental risks?" and "Does the company link its environmental stance to its core business and use it as an incentive for growth?"

TDK has an excellent Environmental Management System in place, and also sends a clear message with its "Eco Love" and "Super Eco Love" product classification. It is evident that the company, rather than resting on its laurels, is always repositioning its aims for a higher target, therefore we gave it the top ranking.

Shiokawa: Thank you for your kind words which will motivate us to try even harder.

Open-minded corporate culture inspires "TDK Environmental Action 2020"

Shiokawa: In April, we established the new TDK Environmental Action 2020 platform and embarked on its implementation. The platform introduces environmental contributions through products as a new topic and proposes the goal of achieving carbon

neutrality by FY 2021.

Takegahara: If one focuses only on CO₂ emissions, one can lose sight of the value brought by end products to society. In this regard, establishing environmental contributions as a new aspect and looking both at environmental load and the environmental contributions strikes me as a good approach.

Shiokawa: More than 40 years ago, TDK started to produce magnetic and optical media products aimed at end users, such as audio and video tapes and CD-Rs which were well received. Through this side of our business, we came into contact not only with manufacturers of end products but also directly with consumers. This led to a culture of open-mindedness within the company and prompted us to always think not only of our corporate customers but also of consumers and society at large.

This allows us to ask ourselves, what then is the best course of action, with the entire society in mind? In the past, concern for the environment meant mainly anti-pollution measures and compliance with regulations, such as acquiring ISO14001 certification. However, this kind of "reactive stance" is not sufficient for creating something new. As a result of extended and wide-ranging internal discussions about ways of moving from such a mindset to a more "proactive engagement" with the environment, we hit upon the thought of aiming for carbon neutrality. By this we mean a target where the environmental load really is zero, surpassing legal requirements. In the electronic component sector, we are the first company to make a commitment to achieve the challenging goal.

Takegahara: CSR by definition is a "responsibility," not an "obligation." Therefore simply aiming to keep within the law is not enough. It seems to me that proactively setting targets like TDK is doing with its carbon neutrality policy is the proper way that CSR should be handled.

Shiokawa: I believe that such things come about quite naturally in our company. This may well hark back to the days when the company was founded.

Takegahara: An open-minded culture that gives rise to ideas, and the determination to translate these into action within the context of the core business – that seems to be TDK's strength.

What we can do from a midstream position in the industry

Shiokawa: The majority of TDK's operations involves sourcing materials and parts to build components which are then supplied to companies producing end products. This could be characterized as a "midstream" position. We cannot afford to only focus on ourselves, rather we always need to keep the bigger picture in mind. Therefore, engaging in environmental activities naturally has a special meaning for us. Determining the needs of society comes first, and then we consider how the most effective way to make a contribution through our own products.

Takegahara: Working in a midstream position within the industry while also keeping track of the business to consumer angle can be challenging. While it is very important to produce goods that fulfill society's needs, sometimes society itself is not even clearly aware of what its needs are. However, there is the belief that if performance and price are equal, then consumers will prefer a product that is environment-friendly. The industry is expected to provide suggestions along these lines. If the contribution of electronic components to the environment can be made more transparent, the reduction in overall CO₂ emissions afforded by TDK products and thereby the improvement in the quality of life for consumers could be a strong point of appeal.

Shiokawa: Since our components are used as components in end products made by other manufacturers, their value may be hard to realize for consumers. As a component manufacturer, we were wondering what options were open to us. We believe it's important to participate in an open exchange of opinions and information with end product manufacturers. Based on cooperation with other companies in the same industry, we are also promoting a new approach for quantifying and assessing the environmental impact of products over their entire lifecycle. Such an index is becoming essential also in the components industry.

Takegahara: In response to rising concerns about environmental performance, end product manufacturers are also making considerable effort in many ways. While working towards raising environmental performance, it is possible that energy consumption at the development and manufacturing stage may temporarily rise. But as an overall result, the environmental impact on society at large will decrease. Focusing only on the partial increase would not be a correct assessment of the problem.

Shiokawa: Yes, indeed. Along with highlighting



Keisuke Takegahara

After graduating from Hitotsubashi University Faculty of Law, Mr. Takegahara joined Japan Development Bank (now Development Bank of Japan Inc.). He holds his current position after assignments that include being located in Germany, working in the Research Department and Policy Planning Department, and as Manager of the CSR Promotion Office of the Public Solutions Department. Mr. Takegahara is also a member of several councils, including the Expert Committee for Environment and Economy of the General Policy Subcommittee of the Central Environment Council, and the Japanese Ministry of the Environment's Deliberative Committee on Target Industries and Services in the Survey on Environment Business Market Size and Employment Size.

other advantages of our products, we must find ways to demonstrate overall improvements in the energy balance. To this end, we are working on defining index values and other numerical indicators that will make environmental parameters more transparent.

Enhancing each other to further environmental initiatives

Takegahara: Currently the main focus is on CO₂ emissions, but one could also imagine defining numeric indicators for aspects such as preservation of rare metals and other scarce resources, biodiversity, and protection of human rights. Using its midstream position in the industry, I would encourage TDK to communicate closely on various aspects with companies both upstream and downstream.

Shiokawa: To this end, it is important that the people within the company are on the same page. Management is fully aware of this and is making strong efforts to get the message across to all members of the TDK Group.

Takegahara: On the other hand, the opinions of people outside the company, those who are at the information receiving end, are vital, too. All in the financial industry, including myself, have a responsibility here. Unless we endeavor to raise evaluation standards that allow us to correctly recognize environment related merits, the efforts of those working on environmental issues in the industry may go unrewarded.

Shiokawa: Outside recognition of our work really makes a difference for the people involved. It is a great source of inspiration and motivation.

Takegahara: When the value of proactive environmental activities such as those instituted by TDK is realized and an assessment framework is established, other companies can be expected to follow suit. This will become a positive trend that can only grow stronger when the evaluating side and the industry side cooperate properly to raise standards.

Opinion from the Third Party

Starting with the year 2011 edition, the TDK Group's CSR report is being presented as a brochure and a web site, with content matched to the respective format. The brochure's theme is "How TDK's technological expertise contributes to society." The report also introduces the profiles and opinions of various people in the workplace. The following third-party observer comments apply to both of the brochure and the web version.

Positive aspects of the CSR Report

The following two highlight reports clearly illustrate the principles of reactive and proactive CSR.

Highlight 1 – TDK's Technological Innovations: Creating Solutions for Global Issues

The stakeholders of a business enterprise have diverse needs and face diverse challenges. For example, consumers want products that provide safety, security, and make their lives more comfortable. Manufacturers have to build products that meet such needs, and they have to look for solutions not only within their own companies but also among their suppliers. TDK responds to the demands of various end product manufacturers, and is applying its advanced expertise in three key technology areas towards solving problems that society is facing. Highlight report 1 clearly illustrates the role played by technological innovation both with regard to society and the core competence areas of TDK. The company's dedication to solid technology was recognized by the Sixth 'Cho' Monodzukuri Innovative Parts and Components Award. I believe that this stance also extends to strategic proactive CSR which TDK implements through its core business operations.

Highlight 2 – New Environmental Vision

As a consequence of the Great East Japan Earthquake, companies need to redouble their efforts in engaging with environmental and energy related problems. Reduction of CO₂ emissions, saving energy, preserving valuable resources will become key responsibilities as industry and society at large move towards a more sustainable pattern. Within this context, the "TDK Environmental Action 2020" platform gives rise to great expectations. In particular, the proclaimed goal of achieving "carbon neutrality," a first in the electronic component industry, represents a combination of reactive CSR, namely the reduction of CO₂ emissions from manufacturing operations, with proactive CSR, namely the contribution to reduced CO₂ emissions through the company's products. President Kamigama of TDK also heads the Electronic Components Board of the Japan Electronics and Information Technology Industries Association (JEITA), which points to the fact that TDK has an important role to play as a trend setter in the industry. In a sign that much is expected of the company also by society, TDK has garnered a top ranking and is the first electronic components manufacturer to receive a special award under the environmental assessment scheme of the Development Bank of Japan (DBJ).

Junichi Mizuo

Professor, Surugadai University Faculty of Economics. Also visiting lecturer at Tokyo Institute of Technology Graduate School, Japan Association for Performance Excellence Vice Chairman, Japan Society for Business Ethics Study standing director, Business Ethics Research Center senior researcher, and alumni of Shiseido Co., Ltd. Book publications include Gyakkyo keiei nanatsu no housoku (Seven Management Principles for Times of Adversity, Asahi Shinsho) and CSR de keiiriyoku wo takameru (How CSR Can Improve Business Performance, Toyo Keizai).



Suggestions for going forward

I am looking forward to seeing CSR topics being integrated into TDK's annual SR report (Performance + Corporate Governance + CSR Information).

In recent years, a growing tendency originating in Europe is the integration of annual report data and CSR data into a more comprehensive type of report. This is related to various initiatives by entities in the corporate and financial world, such as the disclosure of ESG (Environmental, Social and Governance) information by SRI principals, the United Nations Global Compact, ISO 26000 etc.

The CSR report of TDK for the current year is divided into a brochure and web site, with highlight reports illustrating reactive and proactive CSR activities in response to demands and expectations by society. As mentioned above, since these are also strategic CSR activities implemented through the core business of the company, inclusion of the information in the annual report seems appropriate. On the other hand, disclosure of corporate governance information and ESG information is called for. Because this information is included in the company's annual review and in last year's CSR report, stakeholders may be required to keep track of various information channels.

The CSR Report in the format used until last year was useful as a brochure that provided a comprehensive overview of CSR activities and made it easy to understand what TDK is doing. If the dual approach of CSR report and web site is to be maintained, it is to be hoped that from next year the reports and other features will be systematically organized and issued as a "TDK Annual SR Report," along with ESG oriented performance information, corporate governance information, and CSR highlight articles. I believe this would provide more in-depth information disclosure for the diverse stakeholders and also fulfill accountability obligations.

Web Based CSR Activity Information

Information is provided in a comprehensive format centered on various activity reports in FY 2011. Detailed data are also included.

<http://www.global.tdk.com/csr/>

CSR Philosophy

Top Message
CSR of TDK Group
Overview of FY 2011 Activities and FY 2012 Action Plan
Corporate Governance
Compliance and Risk Management

Social Responsibility

Customer Relations
Supplier Relations
Employee Relations (Employment and Human Resources)
Employee Relations (Safety and Health)
Shareholders and Investor Relations
Local Community Relations
Sponsor Activities

Environmental Responsibility

Environmental Policy and Environmental Vision
Targets and Results
Environmental Management System
Environmental Risk Management
Outline of Environmental Load
Preventing Global Warming (Manufacturing)
Preventing Global Warming (Distribution)
Managing Waste
Promoting the Creation of Environment-conscious Products



* Web site with CSR activity information

How the Public Sees Us

Opinion from the Third Party
Awards Received in FY 2011
Investor Opinions

CSR Highlights

TDK's Technological Innovations: Creating Solutions for Global Issues
New Environmental Vision

CSR Data

A History of TDK's Environmental Activities
Facilities with ISO 14001 and OHSAS18001 Certification
Environmental Performance Data
Cost of environmental Protection
Environmental Performance Data by Site

Awards Received in FY 2011

<http://www.global.tdk.com/csr/recognition/csr07200.htm>

Blu-ray Disc™ honored with Emmy® Award for Technology and Engineering



TDK first electronic components manufacturer to receive special award under environmental assessment scheme of Development Bank of Japan



MMZ1005-E series of gigaspira beads wins 'Cho' Monodzukuri Innovative Parts and Components Award in electric and electronic components category



TDK Corporate Social Responsibility Report 2011

TDK CSR Report 2011



TDK Corporation

1-13-1, Nihonbashi, Chuo-ku, Tokyo 103-8272
CSR Promotion Office Tel: +81-3-5201-7115
<http://www.global.tdk.com/>



* This pamphlet is printed with vegetable oil ink and VOC-free ink.