

Review of Operations



Consolidated net sales for fiscal 2003, ended March 31, 2003, increased 6.7 percent to ¥608,880 million. Sales in the electronic materials and components segment increased. This reflected higher sales in recording devices, where growth was spurred by a recovery in the market share of TDK's HDD heads, and higher demand for capacitors and inductive devices, which is being fueled by the digitalization of audio and visual equipment and the increasing use of electronics in automobiles. Sales in the recording media & systems segment declined slightly. In optical media, higher demand for CD-Rs and DVDs negated falling MD demand and lower sales prices of CD-Rs, resulting in largely flat sales. Meanwhile, lower sales of audiotapes, due to falling demand, could not be fully offset by rising sales of tape-based data storage media for computers, and software.

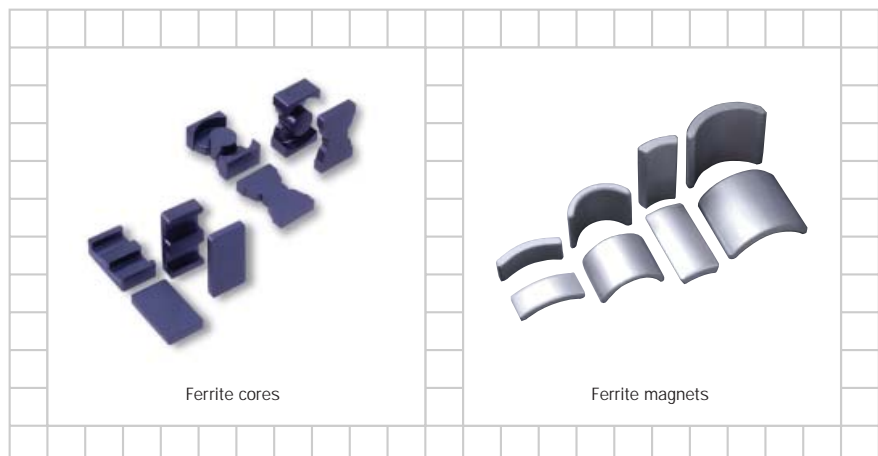
Electronic Materials and Components Segment

In the electronic materials and components segment, net sales increased 9.2 percent to ¥472,529 million. This was due to higher sales in recording devices, where growth was spurred by a recovery in the market share of TDK's HDD heads, and higher demand for capacitors and inductive devices, which is being fueled by the digitalization of audio and visual equipment and the increasing use of electronics in automobiles.



[Product Overview] The electronic materials sector is broadly divided into two product sectors: capacitors, and ferrite cores and magnets.

Multilayer chip capacitors, the mainstay product of the first category, are produced by alternately stacking many layers of electrodes, consisting mainly of palladium or nickel, and dielectric material, mainly barium titanate or titanium oxide. The standout feature of these capacitors, which are designed to store electrical energy, is that each of the layers is no thicker than several to tens of micrometers. The ability to form such thin layers is one of TDK's greatest strengths and is critical to capacitor performance because energy storage increases with the number of layers. Multilayer chip capacitors store and discharge electric charges in the circuits of electronic devices. They are



used to smooth out and stabilize electrical current, eliminate electromagnetic interference, or “noise,” and allow alternate current to pass while blocking direct current, a process known as coupling. The multilayer chip capacitors produced at TDK are made of ceramic materials.

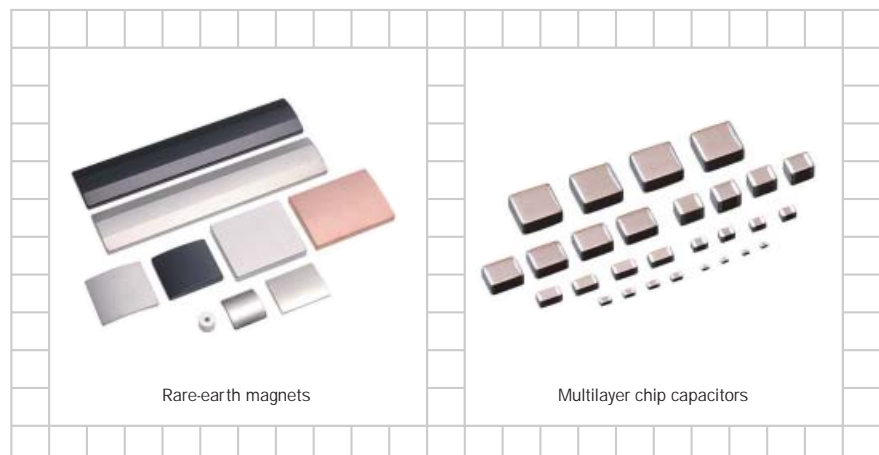
Ferrite is an electronic material that is mainly used as a magnetic material. Consisting primarily of ferric oxide, ferrite also includes cobalt, nickel, manganese or other metals to obtain precisely the desired properties. As ferrite is produced by sintering powder materials, it is called a magnetic ceramic. Ferrite is broadly divided into two types. One is soft ferrite, which is used in cores for transformers and coils. By improving the characteristic of soft ferrite, it is possible to make smaller, lighter and more efficient transformers and coils. The other type is hard ferrite. This material is used chiefly to make magnets that are essential to the operation of motors in office equipment, audio and visual products, automobiles and other widely used products.

TDK has also commercialized rare-earth magnets, consisting mainly of metals such as samarium and neodymium. Extremely powerful in relation to their small size, rare-earth magnets are used in small, voice coil motors (VCMs) for HDDs and other high-end products.

[Results] Sector sales rose 4.4 percent to ¥168,949 million.

In **capacitors**, sales of multilayer chip capacitors, which account for the majority of capacitor sales, increased on the strength of the digitalization of audio and visual equipment and increasing use of electronics in automotive applications mentioned above. Hampering further growth were calls for price discounts from customers.

In **ferrite cores and magnets**, overall sales of ferrite cores slipped year on year, despite strong demand for cores used in LCD backlights and power supplies for audio and visual products. The drop in sales was the result of the failure of demand to recover for cores used in IT-related information and communications applications, and lower sales of deflection yoke cores, a key component of TVs and computer monitors, as well as other products due to stiff competition. Magnet sales increased as firm demand from the automobile and parts fields carried over from the previous fiscal year. Overall, sales of ferrite cores and magnets edged down slightly year on year.



Rare-earth magnets

Multilayer chip capacitors

Electronic Devices

[Product Overview] The electronic devices sector is broken down into three broad categories: inductive devices, high-frequency components, and power supplies and other products.

The main products in the inductive devices category are coils, transformers and EMC components. Coils, which are typically made by winding a wire around a ferrite core, produce a magnetic field when an alternating current passes through the wire. TDK manufactures two types of coils. In one, wire is wrapped around a ferrite core. The other type is multilayer coils, which are a solid block of materials in which a coil pattern is formed by using thick or thin film printing processes to stack different materials in precise patterns. Transformers, which place two or more coils in a single circuit, use electromagnetic coupling to step up and down AC voltage or convert impedance. EMC components, such as noise filters, combine coils (inductors) and capacitors to control noise, which can prevent electronic devices from functioning properly.

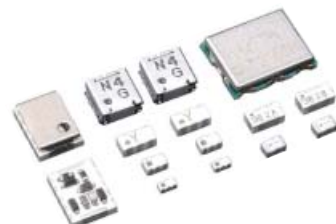
High-frequency components are chiefly used in circuits for mobile phones and other devices that handle high frequency signals. In mobile phones, voice frequencies must be modulated and demodulated at extremely high frequencies. TDK produces isolators that use ferrite to control the movement of these signals, and VCOs (voltage-controlled oscillators) that produce frequencies required for transmission and reception in mobile phones. This category also consists of diplexers that split and combine signals of differing frequencies in mobile phones. These products are made of capacitors, coils, semiconductor devices and other components.

In power supplies, TDK offers switching power supplies that convert alternating current into direct current, DC-AC inverters that convert direct current into alternating current, and DC-DC converters that alter DC voltages.

In other products, TDK manufactures products such as sensors and actuators, as well as chip varistors. Sensors are measurement devices that produce an electrical signal that varies in accordance with a specific parameter such as humidity or printer toner level. Actuators, are products that convert electrical energy into mechanical energy for such applications as buzzers. Chip varistors protect electronic circuits from abnormal voltages, such as static electricity and pulses, that can cause equipment to malfunction.



Coils (Inductors)



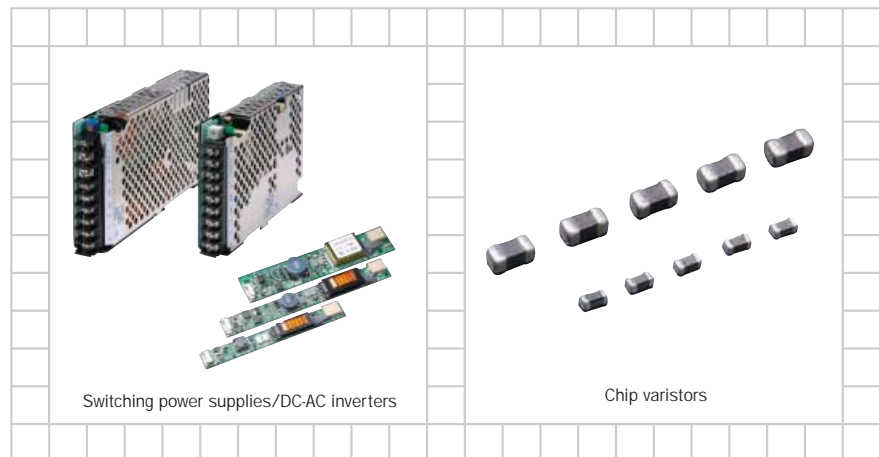
High-frequency components

[Results] Sector sales increased 6.4 percent to ¥112,729 million.

Inductive devices, the largest product category in this sector, recorded higher sales, reflecting the growing use of automotive electronics as well as growth in demand for digital audio and visual products such as DVD players and digital still cameras. These are the same factors that are driving growth in the capacitor sector. This allowed TDK to absorb the effects of price discounts and production cutbacks, mainly by manufacturers of audio and visual products, in the fourth quarter.

Sales of **high-frequency components**, a large proportion of which are used in communications applications, particularly mobile phones, were hamstrung by a soft mobile phone market. While sales volumes have been trending upward since the summer of 2002, following a period of parts inventory reductions by customers, demands for price reductions from customers have been more severe than in other electronic components sectors due to the continuing supply glut. Overall, sales increased, but they did not increase to the same extent as volumes.

In **other products**, sales increased. Sales of DC-DC converters for video game systems were higher for the year despite cutbacks to production levels beginning in the latter half of the third quarter. Power supplies for LCD projectors and other PCs and peripherals also benefited from strong demand. The sector was further boosted by brisk sales of actuators and chip varistors used in PCs and peripherals and in communications products.



Recording Devices

[Product Overview] The recording devices sector is divided into two categories: heads for HDDs, the mainstay of the sector, and other types of heads. HDD heads employ a thin-film construction and magneto-resistive (MR) material to “read” signals recorded on hard disks. MR refers to the phenomenon in which a material’s electrical resistance varies when exposed to a magnetic field. The commercialization of HDD heads using this MR effect has made it possible to “read” signals recorded on hard disks at much higher areal densities. At present, GMR (Giant-MR) heads, which have higher playback sensitivity than conventional MR heads, are the mainstream technology in the HDD head market.

Other heads includes magnetic heads used in floppy disk drives (FDDs) and thermal printer heads.

[Results] Sector sales climbed 19.7 percent to ¥175,986 million. One factor was a recovery in TDK’s share of the HDD head market as 40 gigabyte/disk HDD heads won back customers. Additionally, the average number of heads used per HDD did not decline as rapidly as had been expected. Total demand remained high as a result, and sales climbed. Sales of other heads fell due to a drop-off in demand and other factors.

During fiscal 2003, demand for HDD units and HDD heads rose over 10 percent despite only a slight increase in demand for PCs. The demand for HDD units seems to be the result of increased repurchase demand for HDD units as well as the main demand for PCs, and new demand for video game consoles and HDD video recorders. Regarding demand for HDD heads, the average number of heads used per HDD hardly declined due to a slower-than-expected transition from 40 gigabyte/disk HDD heads to 80 gigabyte/disk HDD heads.

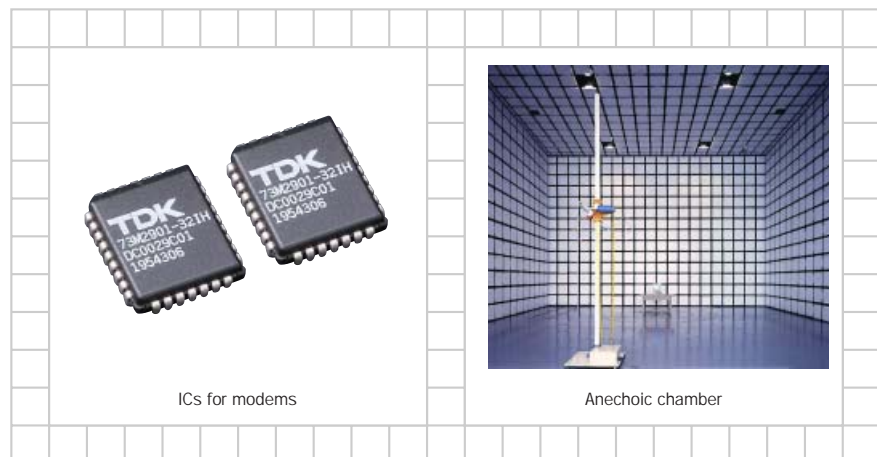


Semiconductors and Others

[Product Overview] In the semiconductors and others sector, two of the main products are semiconductors and anechoic chambers.

Semiconductors represent ICs for cable TV set-top box modems, LAN devices and other ICs used for communications. These products are designed at U.S.-based TDK Semiconductor Corp. Anechoic chambers are rooms in which the walls are covered in ferrite tiles that absorb electromagnetic waves. These spaces, designed to block electromagnetic waves emanating from outside as well as to control reflections of electromagnetic radiation within the chamber, facilitate the evaluation and testing of noise in electronic devices, including those used in automobiles.

[Results] Sector sales declined 17.9 percent to ¥14,865 million, reflecting a sharp drop in sales of semiconductors for set-top box modems and LAN/WAN applications due to the continuing low levels of investment in communications infrastructure equipment. Another factor was lower sales of anechoic chambers due to a string of project cancellations and postponements prompted by the global economic downturn and uncertain economic outlook.



Recording Media & Systems Segment

[Product Overview] In the recording media & systems segment, the main products are audiotapes, videotapes, optical discs, tape-based data storage media for computers and software.

TDK supplies several types of optical discs, including write-once CD-Rs and 4.7 gigabyte DVDs that can hold approximately 7 times more data than their CD counterparts, although having the same 12cm diameter. TDK has also commercialized a Blu-ray Disc that can store huge volumes of data. These discs are being seen as the next generation of optical media.

In tape-based data storage media for computers, TDK has commercialized a product that has been verified under LTO Ultrium 2 standards, making it compatible with magnetic-tape backup equipment meeting the LTO* (Linear Tape-Open) standard.

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[Results] Segment sales edged down slightly by 0.9 percent to ¥136,351 million. There were several reasons. Audiotape sales shrank further from the previous fiscal year as the long-term decline in demand continued due to the market shift to optical media. While there is a similar long-term decline in demand for videotapes due to the rising popularity of optical media and DVD software, sales rose slightly during the year, boosted by demand stemming from the 2002 FIFA World Cup™. In optical media, demand for CD-Rs and DVDs was buoyant, but this strength was negated by falling MD demand and lower sales prices of CD-Rs, resulting in largely flat sales overall. Tape-based data storage media for computers, which obtained new-standard LTO (Linear Tape-Open) verification in the previous fiscal year, and software also recorded sales gains. This segment moved back into the black for the first time in three fiscal years as the results of major structural reforms began to show through. Looking ahead, TDK will build on this momentum by gaining certification for new tape-based data storage media standards and working on the commercialization of Blu-ray discs, which are referred to as the next generation in optical discs.

