Information Communication

Business Strategies

Our Information Communication segment is composed mainly of Books and Magazines, Commercial Printing, Business Forms, and Education and Publication Distribution. The segment combines individual strengths to solve communication-related problems for businesses and consumers.

Progress in digitalization and networking technologies is creating new opportunities for expanding our businesses worldwide. With the printing technologies as our core strengths, we will continue to take the customer's point of view as we develop diverse businesses across various boundaries, including those related to information media and business processes, regions and languages, people and organizations.

Basic Strategies

In order to enable consumers to enjoy abundant and pleasant communication, we will continue to create new, consumer-oriented business opportunities by combining the strengths that we have cultivated through our various businesses.

For example, we can use published content to add value to sales campaigns and catalogs. Also, we apply advanced information security techniques that we developed for our Business Forms operations to the improvement of customer confidence in other areas, such as customer information management in B to C businesses and market research. By making use of strengths like these that we have cultivated over the course of many years, we can continue providing original products and services that no one else can offer. Furthermore, by increasing cooperation with Group-affiliated bookstores, we can use consumer preferences and behavior as a basis for implementing more effective measures that will induce readers to come into bookstores and create opportunities for them to come into contact with books

DNP's focus is on solving problems in order to increase the comfort, safety, reliability, and global reach of communication from one business to another, between businesses and consumers, and from consumer to consumer.

Main Policies

Hybrid Production Solutions and Hybrid Bookstore Networks

→ Page 36

In order to vitalize the publishing market, DNP does not limit its viewpoint to that of a manufacturer (i.e. a printing company) but also focuses on such areas as improving efficiency in marketing, sales, and distribution, and on bolstering customer service. We are promoting "hybrid production solutions" that integrate the production of various formats such as paper books, electronic book content, and print-on-demand books, and a "hybrid bookstore network" that links physical bookstore chains with an online bookstore that sells printed books and an online e-book retail service.

Develop Cross Media Communications Businesses

→ Page 37

We are reinforcing cross media communications businesses that respond to the increasing diversification of information media, including the rapidly growing areas of social media and digital signage. In the case of our electronic catalog production/distribution system, DNP is increasing the synergistic benefits of handling both paper and electronic media by constructing optimized data bases and automating production processes so as to shorten lead times and reduce costs.

Develop and Expand Unique DNP Communication Channels

→ Page 38

DNP is reinforcing information services that directly approach the consumer. In addition to operating "Elne" customer loyalty point service and "Orikomio!" e-flyer service, in December 2011 we formed a capital and business tie-up with All About, Inc. DNP compiles and analyzes consumer information on its own and links this information to corporate customers' products and services to offer solutions that are beneficial to both the senders and receivers of information.

Business Process Outsourcing (BPO) Businesses

→ Page 40

DNP is focusing on winning comprehensive orders for providing the entire spectrum of corporate business processes. Our goal is to use the technologies and knowhow that we cultivated through the handling of personal media like direct mail and notifications in order to lighten our customers' load in such areas as on-demand printing and all types of back-office operations including market research, planning and development, content production, operation of data centers and customer service centers, and promotional material envelope-stuffing and mailing.

Security Solutions including NFC

→ Page 41

DNP leads the market in many security-related areas, such as smartcard production and issuance, and the development of smartcard operating systems and applications. We intend to enhance our unique security solutions, which make use of our strength in smartcards. We are stepping up our involvement with the international standards for Near Field Communication (NFC) that are likely to be used increasingly widely in smart phones. DNP aims to join forces with various companies and offer a growing number of NFC-based services, as part of our broader goal of supporting safe and secure lifestyles by providing advanced information security solutions.

Structural Reforms

Boost competitiveness through such measures as consolidation of pre-press units

In October of 2011, we consolidated four Group companies that handle pre-press operations like data production and plate making. We will boost our competitiveness through increasing each plant's operational efficiency and evening out its work volume, integrating redundant functions, and achieving synergistic benefits by sharing technologies and expertise. In addition, we will optimize the allocation of production equipment and specialized human resources as needed.

Boost profitability through optimization of production control systems

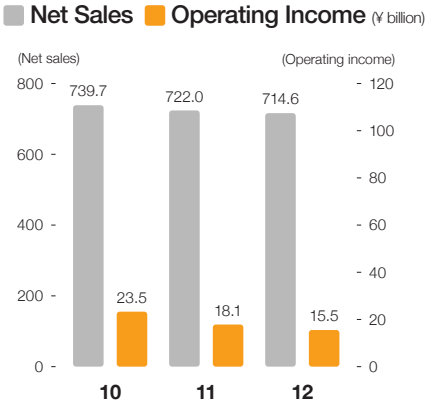
Aiming for overall optimization, we will work on optimizing our "vertical work flow" by addressing every operation from planning and production to delivery, at Information and Communication production bases throughout Japan. We aim to improve efficiency, boost in-house production rates, and increase profitability by optimizing production sites through such steps as reinforcing the functioning of our production control center, which provides comprehensive oversight for production systems throughout the DNP Group, and uniformly managing the allotment and/or concentration of production jobs according to each plant's capabilities and conditions.

Financial Results

Financial Highlights

(¥ billion, %)

	2010.3	2011.3	2012.3
Net sales	¥ 739.7	¥ 722.0	¥ 714.6
Operating income	23.5	18.1	15.5
Operating income margin	3.2%	2.5%	2.2%



Fiscal Term through March 2012: Business Environment and Summary of Financial Results

DNP's Books and Magazines business was affected by the ongoing slump in the publishing market. Magazines were hit particularly hard, with sales falling below 1 trillion yen in the fiscal year ended March 2012. DNP made the most of its integrated manufacturing line and succeeded in increasing book sales for the second year in a row. Magazine sales, however, declined.

Commercial Printing was affected by big drops in corporate advertising budgets in the wake of the Tohoku–Pacific Ocean Earthquake. Recovery was slow, and companies were reluctant to hold sales promotion campaigns or events out of consideration for victims of the disaster. Overall, sales of pamphlets, flyers, and catalogs, etc. were lackluster.

Our Business Forms division enjoyed increased sales of smart cards and other products used in telecommunications, transportation, and electric money applications. On the other hand, as businesses send more of their notifications electronically and make headway toward reducing costs, we have seen less demand for information processing services (IPS) that handle every step of customer communication from data input of personalized mail to printing and mailing.

Our Education and Publications Distribution business posted higher net sales, thanks largely to the previous term's addition of Bunkyodo Group Holdings Co., Ltd. as a consolidated subsidiary, and thanks to measures that made good use of Japan's largest book-selling network.

Overall, the business environment surrounding the Information Communication segment remained harsh, with sluggish personal consumption leading to more intense competition and lower unit prices. The segment posted 714.6 billion yen in net sales, which was down by 7.3 billion yen, or 1.0%, from the previous term. Operating income was 15.5 billion yen, reflecting a drop of 2.7 billion yen or 14.6%. The operating income margin decreased by 0.3 point, from 2.5% in the previous term to 2.2%.

Portrait of Divisions

Books and Magazines

As the slump in the publications market continued, domestic sales of books and magazines in the fiscal term ended March 2012 declined by 3.2% from a year earlier, to 1,797.2 billion yen (according to the Research Institute for Publications). Although book sales were very close to the previous-year level (820.7 billion yen) thanks to the release of a large number of strong sellers, magazine sales dropped by 5.9%, falling below the 1-trillion level to 976.5 billion yen. Not only was there a drop in the number of magazines sold, but the number of magazines that ceased publication far outstripped the number of new titles.

Meanwhile, now that the Japanese market for electronic publications has grown to 63 billion yen per year, a Japanese government body called Innovation Network Corporation of Japan joined forces with some 300 major publishing and printing companies to form Digital Publishing Initiatives Japan Co., Ltd. in April 2012. This represents the establishment of a framework necessary for the promotion of electronic publishing businesses such as digitalizing published materials, distributing them to electronic book stores, managing copyrights, etc. DNP intends to cooperate with these moves towards digitalization and will promote the spread of electronic books. In May 2012, we began operating a "hybrid bookstore network" that links physical bookstores chains including Maruzen CHI Holdings Co., Ltd., Junkudo Co., Ltd. and Bunkyodo Group Holdings Co., Ltd., with our "honto" e-book sales service and "bk1," an Internet-based mail-order bookstore. We are working to revitalize the long-languishing magazine industry by producing electronic magazine content and developing various types of systems, and by using magazine brands to cultivate business overseas.

Commercial Printing

Japanese advertising expenses declined in the fiscal term ended March 2012 due to the effects of the Tohoku-Pacific Ocean Earthquake. Advertising outlays recovered for a while around the summer, but slumped again and failed to reach full recovery due to slowdowns in overseas economies, a stronger yen, major flooding in Thailand, and other factors.

Sales by DNP's Commercial Printing business also declined relative to the previous year, but began to steadily recover in the second half of the term. Amidst this environment, we are promoting a "cross media communication" business that uses a variety of media formats to give consumers the information they want at the times when they want it.

Furthermore, we are strengthening cooperation between business units and addressing digital signage and social media in addition to paper media as we focus on winning orders for business process outsourcing (BPO) whereby we handle a full range of business services on customers' behalf, including marketing and content production, operation of data centers, and performance of back office functions.

Business Forms

The environment surrounding business forms was grim given that corporations were cutting expenses, shifting customer notifications to the Internet, and seeking smaller numbers and fewer types of products in this category. On the bright side, the need for information security is increasing, not only in Japan but all over the world.

DNP has long led the market in smart card technology and authentication technologies. We combine this advantage with our strength as a manufacturer of products like holograms in order to develop safe, reliable and convenient security solutions. We also intend to cooperate with relevant companies in order to expand services using the near field communications (NFC) international standard that is expected to be increasingly widely used in smart phones and other devices. Now that information networks reach beyond national borders, DNP will also promote its security-related businesses worldwide.

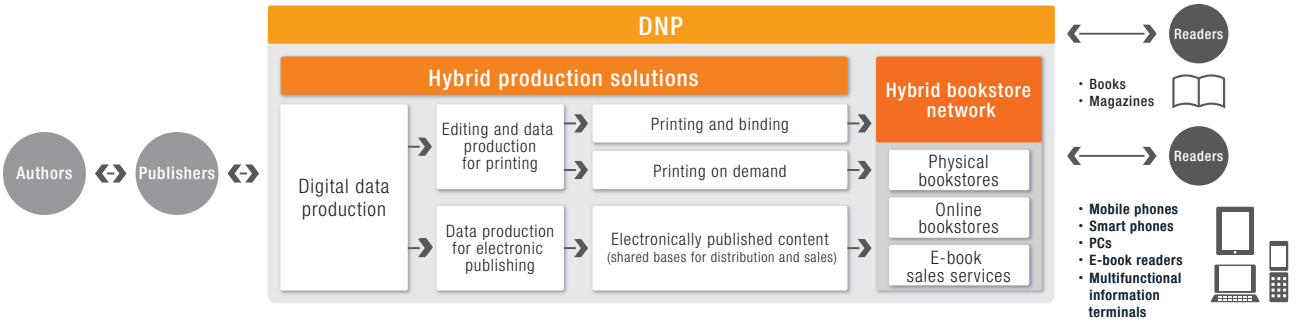
01

Expanding Hybrid Production Solutions and DNP's "Hybrid Bookstore Network"

Rather than approaching the market only from the standpoint of a manufacturer, DNP offers total support as the Japanese publishing industry's "No.1 partner." This includes helping with the planning of marketing projects, sales and distribution of both electronic and paper books, and customer service. DNP began digitizing its printing processes as far back as the early 1970s. Our aim is to make the most of our wealth of experience as we focus on hybrid production solutions that offer one-stop service related to content production for paper and electronic books, and on-demand printing of small lots of publications.

We are also developing a "hybrid bookstore network" that combines three sales formats: an e-book sales service, Internet-based mail-order bookstore, and physical bookstores. In 2010, DNP launched "honto," an e-book sales service that delivers content to smart phones and tablet PCs, offering Japan's largest selection of e-book titles in a variety of genres including comic books, literature, and nonfiction. In 2012, we integrated our online bookstore, "bk1," and began serving as a genuine hybrid bookstore network with links to physical bookstores.

Partly in response to growth in the market for electronic books, DNP aims to create a service that makes consumers "certain to find a book they want to read" and "able to read the book they want in the format they want."



Examples

Starting up a full-fledged hybrid bookstore network

In June 2012, 2DFacto Inc., a joint-venture company established by DNP, NTT DoCoMo, Inc. and Maruzen CHI Holdings Co., Ltd., launched a common point service for customers of its "honto" hybrid bookstore network and physical bookstores operated by Junkudo Co., Ltd., Maruzen Co., Ltd., and Bunkyodo Group Holdings Co., Ltd. The result of the integration of Japan's largest physical bookstore network, which is operated by the DNP Group, with honto, which sells both electronic and paper books online, is Japan's first full-fledged hybrid bookstore service.

By offering the following services, we intend to bolster both the electronic and paper publishing markets.

① "Hybrid point service" that enables customers to receive customer loyalty points whether they buy through the honto website or at a physical bookstore
② Hybrid "My Bookshelf" program that automatically records customers' purchases whether they are made through honto or a physical bookstore
③ "Hybrid Bestseller List," Japan's largest sales trend tracking service, combines results from honto and physical bookstores
④ E-mailed information about each customer's favorite bookstores; "honto" website information on book reviews by bookstore employees and point-of-purchase displays at the physical bookstores


honto point card

Home page of DNP's "honto" e-book sales service's website


Maruzen's main bookstore in Tokyo's Marunouchi district

02 Cross Media Communications Business

DNP's Commercial Printing business produces promotional materials including flyers, catalogs, websites, point-of-purchase advertising, and event and campaign-related materials. The business environment surrounding this field has changed dramatically due to Japanese demographic trends (such as increasing average age and decreasing birth rate), the shift from mass media to Internet-based corporate advertising, and other factors. At the same time, information media has become more diverse while use of highly interactive social media has spread rapidly, resulting in much more active communication from consumers' side.

DNP uses multiple, diverse communication channels to develop its "Cross Media Communications Business," which provides consumers with optimal content at optimal timing. By combining information media including printed matter (paper), websites, and digital signage, we improved the efficiency and lowered the cost of delivering high-quality business-to-consumer communication.

Examples › DNP's new "Mikata" system efficiently produces and distributes electronic catalogs by taking advantage of DTP data formatted for printing

In recent years, we have seen growing demand from manufacturers and distributors for the production of electronic catalogs that are easily searchable, offer voice and video explanations, and can be downloaded to devices like smart phones and personal computers. However, the adoption of electronic catalogs was hindered by the high cost and technical challenges involved in constructing huge product databases and developing convenient features such as easy searchability and management of browsing history.

DNP has applied the expertise and original information technologies that we cultivated in our long years of catalog production to the development of our "Mikata" system for efficiently producing and distributing electronic catalogs. Mikata makes it possible to efficiently produce both paper and electronic catalogs by automatically creating a database of product information—text and images—during the production of desktop publishing (DTP) data used for printing on paper.

Mikata automatically generates meta-tags that facilitate management of various types of merchandise-related content, such as text, images, video and audio files, used in the production of all kinds of promotional tools. By assigning the same meta-tags for data used in both DTP files and electronic catalog files, catalogs can be produced in half the time required when using conventional methods, and costs can be reduced by about one third.

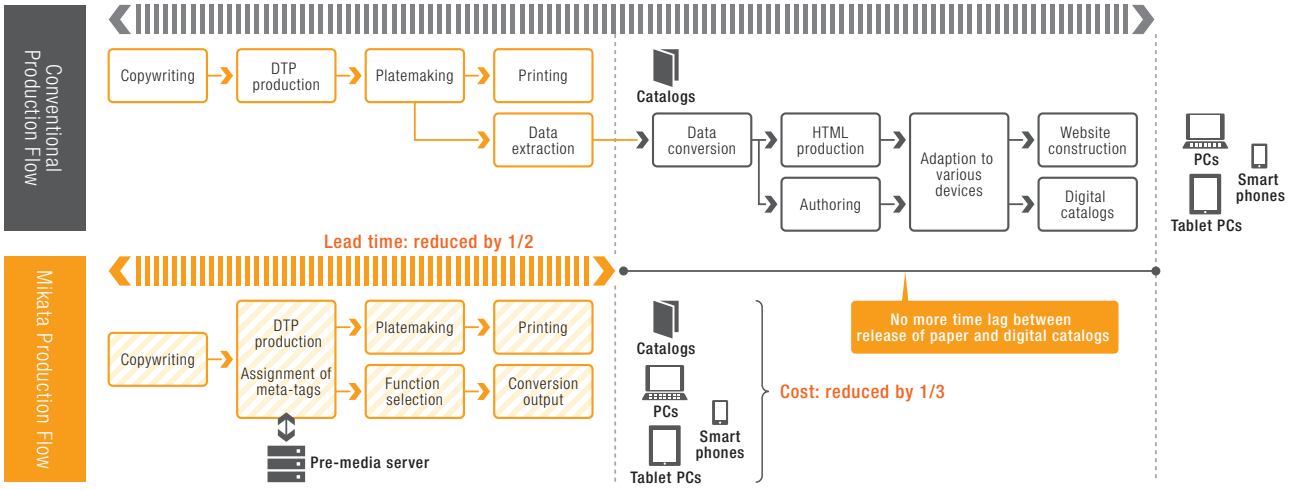
Corporate clients can use DNP's cloud service for distributing electronic catalogs via the Internet, which relieves them of the need to set up their own server, thereby reducing initial costs. Other features include a multi-functional viewer that supports multiple devices (e.g. for viewing on smart phones or tablet PCs) and various sales support functions that link catalog data to corporate ordering systems.

DNP will continue to use Mikata to develop its electronic catalog business as part of our Cross Media Communications Business, which combines paper and digital media to deliver optimized content with optimized timing.

left:
Multi-functional viewer support multiple devices

right:
Orders can be placed directly from page view

Advantages of using DNP's "Mikata" system for producing and distributing electronic catalogs



03 Development and Expansion of Unique DNP Communication Channels

Among DNP's media businesses are an Internet-based point service "Elne," an information site "OTOJO.JP" that provides off-line experiences for women in their twenties and thirties, and a shopping support service "Orikomio!" that mainly provides information from advertising flyers. In December 2011, DNP formed a capital and business alliance with All About, Inc. and began enhancing services offered through its "All About" web-based general information service. The site offers authoritative content provided by "guides" who have specialized information and experience related to a variety of topics.

DNP views these services as channels for communication with consumers. Given the continual appearance of new types of information media and the spread of social network services and other forms of communication, it has become very difficult for corporations to know how consumers are contacting information. DNP makes use of its various communication channels to increase communication with consumers, allowing us to promote more effective marketing and to partner with corporations in deepening our understanding of consumers.

In the future, we will develop comprehensive solutions that combine Internet-based services with printed matter and other forms of content as well as in-store events and other sales promotional activities.

Elne is a "point service" website operated by DNP affiliate DNP Social Link Co., Ltd. that is used by over 1.3 million members. Elne-linked smart phone applications have been appearing in rapid succession.

"All About" is a comprehensive information site that debuted in 2001. While Internet services place great value on word-of-mouth information, this site offers authoritative content provided by "guides" who have specialized information and experience. It has proven to be popular with consumers and businesses.

"OTOJO.JP" information site for women in their twenties and thirties supports corporate marketing efforts by organizing off-line events.

Example

Orikomio! shopping support service mainly provides information from advertising flyers via the Internet

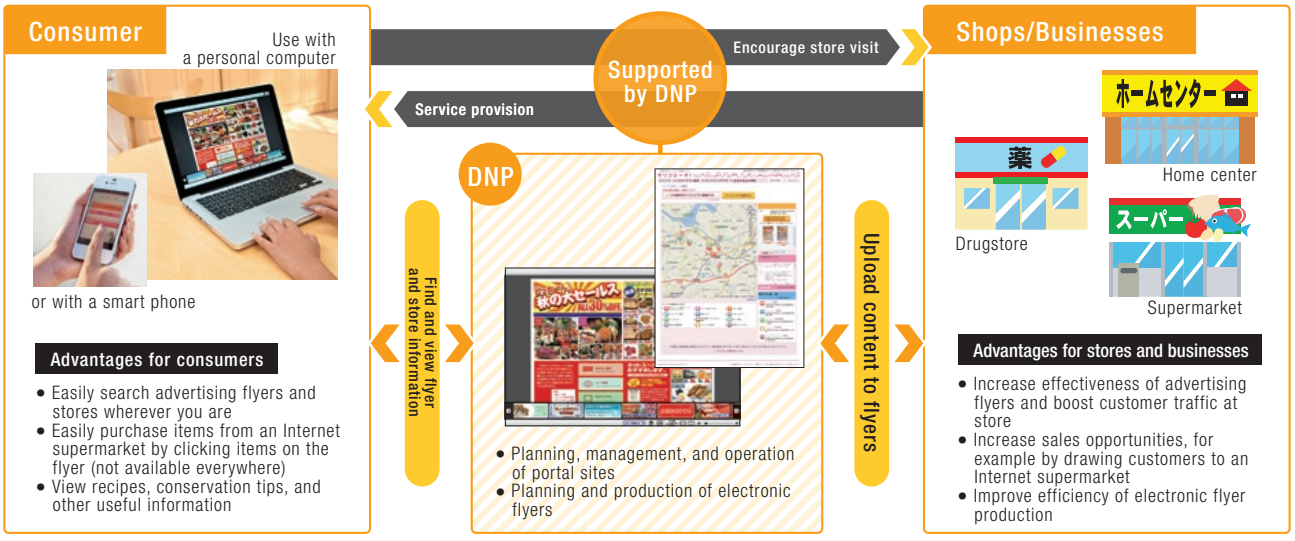
DNP's advertising flyer service, which offers flyer content in both electronic form via the Internet and in stores, in addition to conventional paper flyers, is meeting increasing demand from shops and other businesses that seek cost-effective sales promotion tools. Since DNP launched it in 2001, Orikomio! meets that demand by helping consumers with their shopping, mainly by allowing them to use the Internet to easily search and view information from advertising flyers from all over Japan.

By simply entering a ZIP code, consumers can access information from flyers from the nearest supermarkets, drugstores, home centers and appliance stores. In September 2011, we launched a "Shopping Link Flyer" service that allows users to easily purchase an item viewed in an Internet flyer by clicking on the item, thereby opening a link to an Internet supermarket. In the past, it was necessary to either go to a physical store or log on to a mail-order site in order to purchase an item viewed in an Internet flyer. By allowing users to purchase items directly from a flyer, "Shopping Link Flyer" brings consumers and businesses closer together.

Orikomio! is compatible not only with personal computers but also with rapidly spreading smart phones and other mobile devices, and DNP has developed an application that enables use of the service outside the home or office. The application uses the GPS function on a smart phone or other mobile device to search for stores near the consumer's current location and deliver their flyer content with directions for each store. We have also added convenient features that allow users to register "favorite shops" and to easily access shops that came up in recent searches.

We intend to keep improving Orikomio! to make it even easier and more pleasant to use, and to add features that support consumers' shopping. For example, we will coordinate with physical stores to offer new services and provide forums through which users can exchange information with each other.

Orikomio! shopping support service



Simple and easy-to-use electronic advertising flyer viewer works with smart phones and other mobile devices as well as personal computers

04

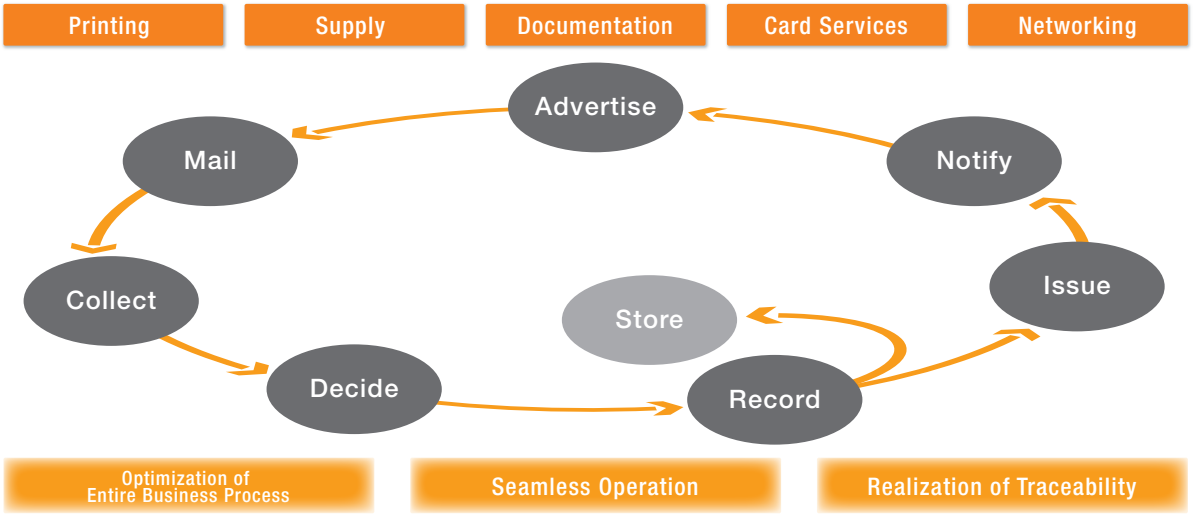
Expanding Business Process Outsourcing (BPO) —a Business Based on Corporate Clients' Trust in DNP

As points of contact with consumers have expanded, companies have come to handle an enormous amount of information, including personal information. This information must be appropriately managed and output in optimal formats. DNP seeks to meet these needs by offering comprehensive business process outsourcing (BPO) services that take on a portion of corporate clients' business processes. By making the most of DNP's comprehensive corporate strength, we can provide companies with a full complement of indispensable services including processing of massive amounts of data, production of output in various formats, envelope-stuffing, mailing, and customer service center operation.

We are expanding DNP's BPO business mainly by combining the following five types of service:

① Printing: providing personal information in printed form
② Supply: storing printed matter; selecting material and mailing in response to individual requests
③ Documentation: collecting and digitizing consumer information from application forms, etc., and providing it to businesses
④ Card services: producing and issuing smart cards in a highly secure environment
⑤ Networking: supporting communication between businesses and consumers, as well as information-sharing within a single business

DNP can meet the rigorous quality standards that are especially important to financial institutions including banks, insurance companies, and credit card companies, as well as telecommunications companies and distribution companies. We aim to expand our BPO business on the strength of the track record that we have established by producing large lots and many orders of direct mail, monthly statements, and other personalized media.



Example › Insurance Company: Full outsourcing of printing operations

Insurance companies are saddled with an obligation that grows heavier year by year—to produce and mail massive amounts of printed matter that is personalized for each policyholder, such as insurance certificates and policies. More and more companies are choosing full outsourcing to DNP in order to make these operations more efficient and less costly. DNP's BPO services have received high marks for offering good quality and advanced information security based on DNP's cutting-edge technologies, along with the same degree of flexibility that an insurance company would have if it handled these operations in-house.

Example › Bank: Outsourcing of all processes related to opening new accounts

A growing number of banks are outsourcing to DNP the full range of operations needed for opening new accounts without interfacing with a bank teller. This full range of services includes everything from mailing blank application forms in response to a consumer's request, receiving completed application forms and checking identity, etc., entering data from application forms and issuing and mailing cash cards, all the way to operating customer call centers. By having one provider for all the entire process, an applicant's traceability can be verified before opening the account.

05 Security Solutions and Near Field Communication (NFC)

Recent years have seen strong demand for safer, more appropriate handling of sensitive corporate information and consumers' personal information. DNP began to develop smart cards more than 30 years ago, in 1981, and has always been the leader in the Japanese smart card market. We have actively promoted the development and use of operating systems and application software for smart cards, data encrypting and authentication systems, and other information network-related systems.

We have also worked to strengthen security from the manufacturing side, primarily through secure printing of holograms and other devices aimed at preventing counterfeiting of valuable items such as stock certificates, vouchers, and various types of cards. There are only a few companies in the world besides DNP that are capable of producing Lippmann holograms, which are extremely effective at preventing counterfeiting.

DNP's unique "hard" (manufacturing-related) and "soft" (information processing-related) technologies help us develop better security solutions for Japan, Asia, Europe, and the rest of the world.

Example ›› Using NFC* to provide smart card/smart phone hybrid services

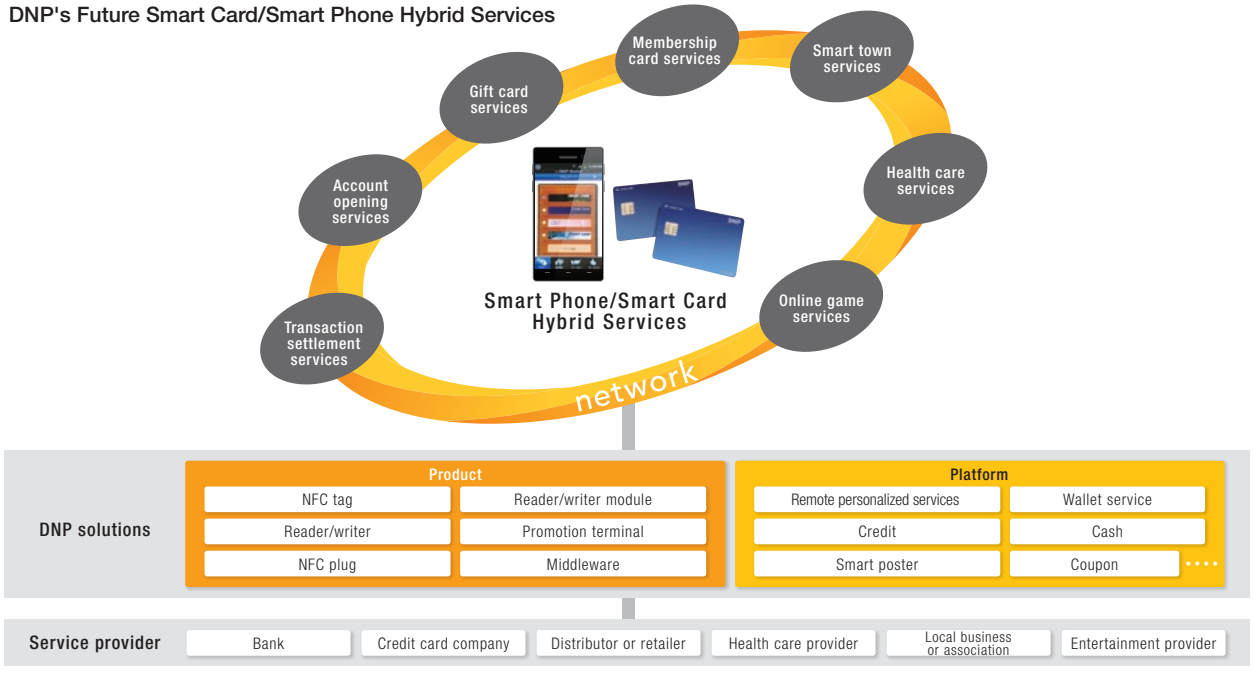
Near Field Communication (NFC) is an international standard that is expected to be used increasingly widely in Japan and elsewhere. Use of smart phones is spreading rapidly, and now that more smart phones have NFC functionality, we expect that the infrastructure for using NFC will be put in place within a short time. In addition to electronic transaction settlement, NFC-enabled smart phones can be used for various types of promotional and marketing purposes.

DNP intends to make the most of the technologies and expertise that we gained through our smart card business, along with our strength in NFC technology, to provide consumers with smart card/smart phone hybrid services. For example, by holding an NFC-enabled smart phone near a poster or digital signage on the street or in a store, a consumer can obtain relevant coupons or information about bargains. We also offer uniform management of a variety of services such as smart phone-based transaction settlement, including application of coupons and loyalty points, and we are developing platform services that support related operations.

At home, refrigerators, televisions, health appliances and other devices can be fitted with NFC reader/writers so that consumers can obtain useful information by holding their smart phone up to the device. For example, when an NFC-enabled smart phone is held near an NFC tag (contactless IC tag) attached to a refrigerator, it can read information from the tag, access relevant websites, and receive maintenance service.

DNP will team up with telecommunications carriers, credit card companies, and other relevant parties to develop NFC-based services and related business in Japan and abroad.

DNP's Future Smart Card/Smart Phone Hybrid Services



* Near Field Communication (NFC) is an ISO (International Standards Organization) standard which defines a technology for enabling wireless communication that operates at 13.56 MHz over short distances. It is compatible with the FeliCa technology that is widely used in Japan for electronic money and transportation cards, etc., Japanese smart cards, ISO/IEC14443 Type A/B proximity cards that are widely used for governmental applications in Japan and abroad, including Japanese identity cards and driver licenses.

Lifestyle and Industrial Supplies

Business Strategies

The Lifestyle and Industrial Supplies segment is composed of three business divisions: Packaging, Lifestyle Materials, and Industrial Supplies (which is further divided into Information Media Supplies, Advanced Optics, and Energy Systems). The segment plays a vital part in our corporate clients' manufacturing processes and provides products that are important in the daily life of consumers. DNP will continue to apply and develop printing technologies in order to work on developing new fields like environmental preservation, energy, and life sciences, which have the potential to help resolve social problems.

Basic Strategies

In recent years, consumers have become concerned that their lifestyles be environmentally friendly, at the same time that they insist on safety and peace of mind regarding their food, clothing, and housing. Conservation of energy and resources, supporting clean energy, and adopting universal design principles that make products easy to use for the maximum number of people are all important considerations. In response to the diverse needs of corporate clients and consumers, the Lifestyle and Industrial Supplies segment will continue to develop and supply a wide range of products that are important to people's daily lives and products that are indispensable to the manufacturing processes of our corporate clients. In addition to ensuring safety and ease of use, we will reduce negative impact on the environment and energy supplies throughout each product's life cycle, including manufacture, use, and disposal.

DNP takes a very broad view of the "printing" field. We have designated areas of great social concern, such as environmental preservation, energy, and life sciences, as new fields in which we intend to provide cutting-edge, original products. We will speed up the development of these new businesses by making use of DNP's original technologies and by actively forming alliances with companies and research institutes that have relevant strengths.

Main Policies

Packaging: Expand global business with focus on advanced, eco-friendly products

Page 46

Aiming to realize a sustainable society along with an abundant consumer lifestyle, we intend to enhance our lineup of eco-friendly and highly functional products, and to develop our businesses not only in Japan but around the world. We will also concentrate on analyzing consumers' awareness and usage of packaging for foods and household items in order to continue creating the value that consumers demand.

We consider our Innovative Barrier (IB) film, a transparent film with excellent barrier properties, to be a strategic product that we will develop not only for food packaging, but also for medical and pharmaceutical products as well as for industrial materials. In addition, we will concentrate on developing other eco-friendly products, like the world's first polyethylene terephthalate (PET) film made from sugar cane-derived material, which we introduced in 2011, and products that are sensitive to other types of social awareness, such as packaging products based on universal design.

Lifestyle Materials: Realize solutions for all types of "living spaces"

Page 48

The Lifestyle Materials division addresses every type of "living space" where people conduct their lives, including homes, offices, medical and nursing care facilities, commercial facilities, hotels, automobiles, and trains, etc., for which we offer comprehensive solutions. With DNP's original EB (electron beam) coating technology among its strengths, the division strives to realize the durability that is a basic function of living spaces. In other words, it works to improve ease of maintenance and deliver long-lasting beauty.

Lifestyle Materials pursues a wide range of businesses that address the entire living space supply chain from the design phase. These include measuring and assessing living environment quality, analyzing, evaluating, and proposing space designs based on considerations like *Kansei* (emotional) engineering, and developing original construction techniques. In addition to developing new products such as metal paneling that reduces electricity usage by effectively reflecting and diffusing light, we will also make use of our global sales network to promote expansion of our businesses overseas, especially to Europe and developing countries.

Industrial Supplies: Realize sustainable growth by providing diverse products

Information Media Supplies : Page 50

We aim to broadly expand this sector with a focus on photo print-related businesses. In dye-sublimation thermal transfer printing media (color ink ribbons and receiver paper), we want to use our coherent global framework for manufacturing and sales to boost sales of DNP brand products and to increase our share of the world market. We will also focus on developing, operating, and expanding PrintRush self-service printing systems and Ki-Re-i photo ID kiosks.

Advanced Optics (Optical Films): Page 52

Advanced Optics provides products with diverse functions, with a special focus on anti-reflection films for LCD and other optical films for flat-panel displays. The division's core technology is optical design. It provides a wide range of products and solutions for controlling optical properties by using "clean converting" technologies that are made possible by the application and development of techniques such as patterning or high-precision, thin film coating.

In response to recent trends in the display market, such as increasing resolution, multi-functionality, and energy efficiency, we have been focusing on developing new products with greater added value, such as 3D display components and ultra-low reflection film.

Energy Systems: Page 53

Due to increased demand for clean sources of energy, there is a growing market for lithium-ion batteries, photovoltaic cells, and similar products. DNP is actively promoting its energy-related business in the world market.

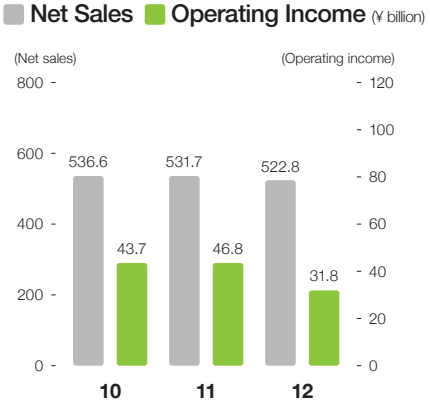
In April 2011, we opened a plant in Kitakyushu, Fukuoka Prefecture, where we make soft packs for lithium-ion batteries and photovoltaic module components, thereby tripling our conventional production capacity for these products. We are working on improving the functionality and lowering the cost of back sheets and encapsulants used in photovoltaic cells. Although DNP is already the world's largest provider of soft packs for lithium-ion batteries, we intend to expand our business by supplying more components for batteries used in mobile devices, electric cars, and home-use storage batteries.

Financial Results

Financial Highlights

(¥ billion, %)

	2010.3	2011.3	2012.3
Net sales	¥ 536.6	¥ 531.7	¥ 522.8
Operating income	43.7	46.8	31.8
Operating income margin	8.1%	8.8%	6.1%



Fiscal Term through March 2012: Business Environment and Summary of Financial Results

In the fiscal year ended March 2012, we still saw significant impact from the Tohoku–Pacific Ocean Earthquake despite a gradual recovery in personal consumption. Market conditions remained severe, due to factors like concerns about the reliability of power supplies, higher prices for films and other raw materials, deflation, and a strong yen.

Our Packaging business gave priority to supplying daily-use items like foods and household items, while tending to refrain from launching new products. Demand for paper containers and cups declined. On the other hand, we saw increased demand in some areas, such as aseptic PET plastic bottle filling systems, the bottle preforms used in such systems, and packaging made with functional films.

Lifestyle Materials got a boost from a second consecutive year of growth in housing starts. In addition, increased demand for eco-friendly products made with DNP's unique EB coating technology helped this sector exceed the previous year's sales.

Industrial Supplies saw growth in sales of energy-related products, such as soft packs for lithium-ion batteries and back sheets for photovoltaic modules, and in dye-sublimation thermal transfer recording media (color ink ribbons and receiver paper) for photo printers. Because of a worldwide slump in sales of large LCDs used primarily in televisions and resulting production adjustments by LCD panel makers, we registered a big drop in sales of anti-reflection films used on displays.

Net sales for the Lifestyle and Industrial Supplies segment as a whole declined by 1.7%, or 8.9 billion yen, from the previous fiscal year to 522.8 billion yen. Operating income for the segment fell by 15.0 billion yen or 32.0% from the previous term to 31.8 billion yen. This was due to higher prices for raw materials—especially petroleum products like films and resins—in addition to the drop in sales of optical films. The operating income margin fell 2.7 points from the previous year's 8.8%, to 6.1%.

Portrait of Divisions

Packaging

In Japan and abroad, consumers are becoming more aware of issues like the endangered environment, shrinking energy supplies, food safety, health, and medical care. There is strong demand for eco-friendly, healthful, and very safe products, and we expect this trend to become even more pronounced in the future.

DNP was quick to respond to this trend, and we will continue to concentrate on developing eco-friendly products like biomass plastic packaging made with plant-derived material, as well as products that incorporate universal design principles. The new environmentally friendly plant building that we started up in Tanabe, Kyoto Prefecture in November 2011 uses heat pump technology to reduce CO_2 emissions and energy usage. Together with our plant in Fukushima Prefecture, we will continue to strengthen our supply system, including consideration for business continuity plans.

Lifestyle Materials

Helped by tax incentives and other government policies that led to increased sales of Tokyo-area condominiums, housing starts in the year ended March 2012 increased 2.7% year on year to around 840,000 units, marking a second consecutive year of growth. There is growing demand for eco-friendly, health-friendly decorative materials and other high-added value products with excellent design and functional properties.

Amid this business environment, DNP will continue to develop and expand its share of the market for floor and wall coverings, room dividers, residential equipment, entry doors, exterior products, and other high-added value products. We intend to further expand our Lifestyle Materials business by entering the market of housing for the elderly, actively developing the home-improvement market, adding to our lineup of external products, taking our automotive electron beam (EB) coating products to the global market, and reinforcing sales of Ellio steel plate for railway cars.

Industrial Supplies

Information Media Supplies

In the fiscal term through March 2012, this business was affected by a downturn in domestic demand for photo prints and by the yen's appreciation on world currency markets, which hampered exports. Nevertheless, sales of dye-sublimation thermal transfer printing media increased relative to the previous fiscal term, partly thanks to our acquisition of Sony Corp.'s commercial printer business. Demand also increased for exports of monochrome ribbons for printing bar codes (thermal resin-type transfer printing media). Going forward, we will expand this business by using our global, uniform framework for developing, producing, and selling media and systems in order to solve problems for corporate clients and consumers.

Advanced Optics (Optical Films)

The environment surrounding these products remained harsh, with a worldwide slump in demand for flat-panel displays, including LCD and PDP (plasma display panel) televisions, leading to prolonged production adjustments by LCD panel makers. The fiscal term through March 2012 was marked by sluggish demand for display-related products in general, including anti-reflection films for LCDs, contrast improvement films for PDPs, and projection screen components, and sales fell below previous-year levels. In the future, in addition to maintaining our large market share on the strength of outstanding technology, we will focus on developing new products that make use of clean converting techniques, with original optical design methods as our core technology.

Energy Systems

Government subsidies led to increased demand for photovoltaic cells, and we sold more photovoltaic module components to both domestic and Chinese manufacturers. Sales of soft packs for lithium-ion batteries remained solid, with demand growing mainly for smart phones and other mobile products. In the future, we expect increasing demand for electric cars. We will take the consumer's viewpoint of energy-related issues and continue to develop products and applications aimed at resolving problems faced by corporate clients, consumers, and society as a whole.

01

Packaging: Creating New Value Centered around Environmental Preservation and Advanced Functionality

DNP participates from the earliest stages of planning all kinds of packaging products, and actively provides ideas for designing packages with various qualities such as ease of use, good label legibility, durability, protection of contents, and ability to attract attention on a store shelf. DNP's comprehensive packaging business makes use of our flexible manufacturing framework with production bases in Japan and overseas to supply products on a just-in-time basis, to design and manufacture aseptic filling systems, and even to develop functional films and other specialized materials.

Manufacturers of foods, beverages, medical supplies, pharmaceuticals, electronic components—and any other company that has "things to wrap"—are all potential customers. We are expanding this business by making products easy for consumers to use and by meticulously meeting the needs of client companies.

Examples of DNP's packaging products (left: for the Japanese market, right: for non-Japanese markets)

Focus » Take advantage of the opportunities presented by changing lifestyles

In Japan and elsewhere, recent years have brought major changes in people's awareness and behavior in their daily lives. Manufacturers and distributors are faced with the urgent task of responding to these changes. DNP offers a variety of services—like our "Shoku-MAP" system of analyzing marketplace trends by monitoring consumers' actual eating habits—that analyze consumer behavior and awareness as a basis for formulating product and marketing strategies. Since we base our engagement in every aspect of the packaging business, from planning and design to research, development and production, on findings from these analyses, changes in consumer lifestyles represent major opportunities to expand our business.

In our development of packaging products, we aim for advanced functionality in areas like content preservation and durability, and at the same time we take care to provide optimal functionality that meets the needs of people in each country and locality where the products will be used. We also focus on applying "universal design" principles in order to make products comfortable and easy to use for as many people as possible, and on minimizing the burden that our packaging products place on the environment.

On the "advanced functionality" front, we are working to expand the market for our Innovative Barrier (IB) film®, a transparent vapor deposition film that prevents the permeation of moisture and oxygen. Concerning universal design, we have established our own guidelines and are working on product development that may lead to the formation of industry standards. We have also been very successful in commercializing aseptic packaging systems that can preserve package contents for long periods of time without damaging their flavor or aroma, as well as eco-friendly products like packaging material made of biomass (plant-derived) plastic.

Going forward, we will speed up development of packaging applications that respond to Japan's increasingly aging society, such as packaging for medical and pharmaceutical products with consideration for functionality, universal design, and environmental impact. We will also build on our success in making our local DNP subsidiary, the No.1 packaging manufacturer in Indonesia, in order to accurately grasp the needs of developing markets and respond to their growing demand, primarily in Asia.

Biomatek® packaging products made with material derived from plants

Packages made with IB film®, a material that serves as an excellent barrier against oxygen and moisture

›› Start up of a new cutting-edge, eco-friendly soft packaging plant in Kyoto

Focus also on developing paper and film hybrid products that take advantage of the best qualities of both materials

At the new plant that we started up in Tanabe, Kyoto Prefecture in November 2011, we have begun manufacturing "soft packaging" made of film with outstanding functional properties. Because DNP's soft packaging prevents the permeation of moisture and oxygen and safely preserves contents for a long time, it is widely used for packaging toiletries, daily household items, and medical and pharmaceutical products in addition to juices, sake, and other beverages, and foods including snacks, ice cream, and instant foods.

DNP has long manufactured paper containers for solids and liquids at the Tanabe Plant. With the opening of the new facility in Tanabe, we will be using paper and film at the same site, which will allow us to efficiently provide the best quality products. While DNP was already making drink packs that require technologies for both paper containers and soft packaging, the new production framework will allow us to focus on making "hybrid products" that offer the best properties of both paper and film.

New factory in Kyoto Prefecture

Reducing CO_2 emissions, energy consumption, and other forms of negative environmental impact

As consumers become more concerned with protecting the Earth's environment, DNP has formulated a concrete plan and is taking active steps to preserve the environment. As part of that effort, our new plant uses heat pump*1 technology as a source of thermal energy. By integrating thermal media produced by heat pumps into drying equipment that DNP designed and manufactured itself, we were able to reduce usage of petroleum, natural gas, and electric power at the plant, leading to significant reductions in CO_2 emissions. This is the first case of heat pump technology being applied to drying equipment on printing machines in Japan.


Cutting-edge production equipment in the new factory

Aiming for a recycling-oriented factory, we also adopted cutting-edge equipment for collecting and reusing volatile organic compounds released by solvents during the printing process. We use some of the collected chemicals as fuel, which we burn in a special boiler that allows us to recycle the heat that it produces. This is one example of how we aim to minimize the burden that our business activities place on the environment, including from the standpoint of Life Cycle Assessment.*2

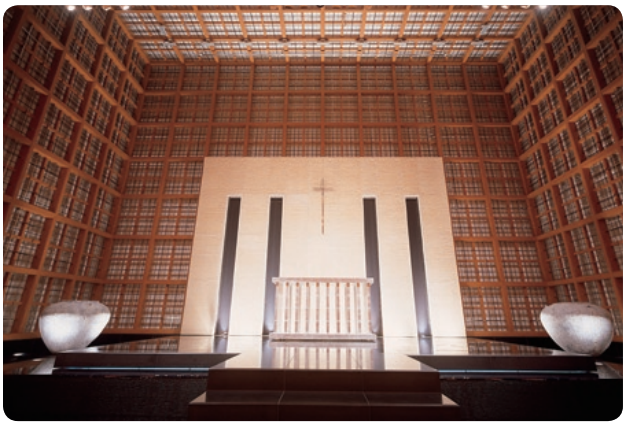
The establishment of this new plant gives us a major base in western Japan for the production of paper containers, including paper containers for liquid, and soft packaging. We made a business continuity plan (BCP) to strengthen our supply system in coordination with our plants in Izumisaki, Fukushima Prefecture, and elsewhere.

*1: Heat pump: a device commonly used in refrigerators and air conditioners; heat pumps extract naturally occurring thermal energy as if by pumping, i.e. by repeating "evaporate→ compress → condense → expand cycles
*2: Life Cycle Assessment: a method of assessing an industrial product's environmental impact by measuring resource consumption and waste volume at every phase of its life cycle, including production, usage, and disposal

02 Lifestyle Materials: Developing Solutions for Every Kind of Living Space

DNP's Lifestyle Materials Operations develops and supplies a wide range of products and services for any company, whether in Japan or abroad, that deals in "dwelling spaces," which includes homes, offices, medical or nursing care facilities, automobiles and railroad cars. As we develop this business, we keep in mind a number of concepts that are indispensable to the development of living styles and living spaces for the future. These include environmental and energy conservation, safety and security, health and comfort, aging, dependability, computerization, and online connectedness.

DNP has filed more than 900 patent applications related to our proprietary EB (electron beam) coating technology, and the advanced, eco-friendly products that we make with this technology have inspired high praise from both corporate clients and consumers. By networking with a large number of firms involved in living spaces, we provide total solutions that address every step from living space design to evaluation and inspection, as well as development and problem resolution related to construction methods and systems.



Hotel interior decor using Ellio products

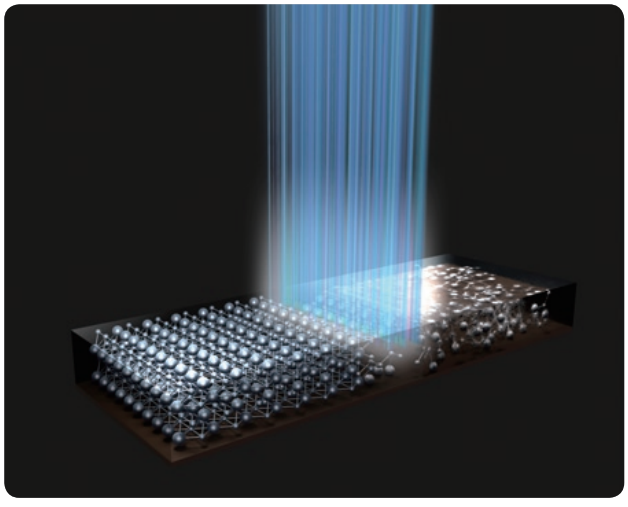
Residential interior using DNP products

Focus » Developing highly reliable products

DNP's EB products have been greatly appreciated in the marketplace for their overwhelmingly superiority in many respects, including scratch resistance, soil resistance, outstanding durability, and ease of maintenance. They have set a new de facto standard for interior materials including wall and floor coverings.

In February 2011, we began full-fledged sales of "EB cloth" wall covering by emphasizing its many advantages. Besides the superior scratch and soil resistance that all EB-coated products share, EB cloth's particular advantages include ultra-low content of volatile organic compound (VOCs) and easy workability due to light weight (40% lighter than DNP's vinyl chloride wall coverings). In addition, EB cloth strongly resists cracking even when the wall beneath it moves. The new material has won high praise from throughout the supply chain, including consumers, builders, and distributors, and has already been established as a new genre of wall coverings.

We have also applied EB coating technology to the development of air-cleaning products that promote health and comfort, and energy-saving products like "High-reflective, Light-diffusing Ellio" material that efficiently reflects and diffuses natural and artificial light. DNP views today's increased concerns about the global environment and energy supplies as opportunities to be seized as we expand our Lifestyle Materials-related business fields in Japan and overseas.



EB (Electron Beam) coating technology
EB coating technology uses the safe, environmentally friendly energy of electron beam exposure to impart enduring functionality to resin. The technology makes it possible to provide products with superior abrasion and soil resistance, photo-resistance, durability, and stability. EB coating is an eco-friendly, next-generation technology that, during the production process, uses relatively little energy, reduces CO_2 emissions, and produces coatings without the use of solvents.

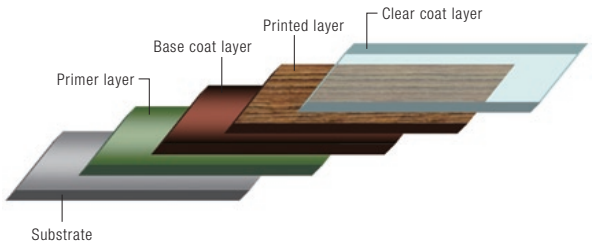
»» "Ellio" coated steel plates, stainless, and aluminum products by direct printing are gaining popularity

Ellio metal products that bestow design and functional benefits

Ellio products—part of the wide assortment of DNP products that contribute to comfortable dwelling spaces—are the result of combining special steel plate developed by Nippon Steel Corporation with DNP's printing technologies. In addition to steel plate, Ellio produces a variety of directly printed metal products including stainless steel and aluminum.

These products display authentic-looking wood or other textures with a luxurious feel, while preserving the fire resistance and other benefits of metal. Ellio decorative metal products have come to be used in a wide variety of applications including residential front doors, kitchen and modular bath wall panels, decorative interiors for hotels, office buildings and elevators, railway interiors in Japan and overseas, and exterior panels for refrigerators and furniture.

Structure of a typical Ellio product



Improving product development by fusing substrate (metal sheet) development with advanced printing technologies
We use DNP's proprietary methods of directly coating/printing on steel plate, stainless steel, aluminum and other metals to develop and manufacture products with high added value.

Examples of Ellio products in use

Upper left: Interior of reserved ("Green") car on Tohoku Shinkansen Hayabusa bullet train; upper right: entrance door; bottom: building exterior

New energy-saving products

In recent years, office buildings and other large public buildings have been designed to be increasingly active in their use of natural light as a way of reducing the amount of energy required for lighting. In response to demand for energy conservation, DNP developed functional metal paneling that we began marketing in June 2012 as "High-reflective, Light-diffusing Ellio." The product is used on walls and/or ceilings where it effectively reflects natural or artificial light and diffuses this indirect light to every corner of a space, thereby reducing the amount of energy required to produce sufficient illumination.

In the future, we intend to make efficient use of the sun's light and heat and other sources of natural energy to develop decorative materials that provide excellent insulation from heat and light.

High-reflective, Light-diffusing Ellio (right) compared with standard room divider Ellio (left)
By scattering indirect light into every corner of a space, a greater degree of illumination can be achieved under the same lighting conditions.

03

Information Media Supplies:

Global Expansion Centered around Photo Print Business

DNP began manufacturing and selling information media supplies in the 1980s, after applying coating technologies that we cultivated through our printing business to the successful development of two types of thermal transfer printing media—dye-sublimation and thermal resin. DNP holds the largest share of world markets for both dye-sublimation media (primarily color ink ribbons for photo printers, card printers, etc.) and for thermal resin-type media (mainly monochrome ribbons for printing barcodes).

We have been expanding DNP's worldwide Information Media Supplies business, partly by actively pursuing M&As that provide synergistic benefits through the combination of our own strengths with those of other companies. In 2006, we acquired the Konica Minolta Group's ID photo business and photography-related product manufacturing and sales businesses. In July 2008, we acquired Sony Chemical & Information Device Corp.'s barcode printing business, and in April 2011 we acquired Sony Corp.'s commercial-use digital photo printer business, as part of the global expansion of our business.

Dye-sublimation thermal transfer printing media

Thermal resin-type transfer printing media

Focus

We are actively expanding this business by making the most of our worldwide, integrated production and sales framework

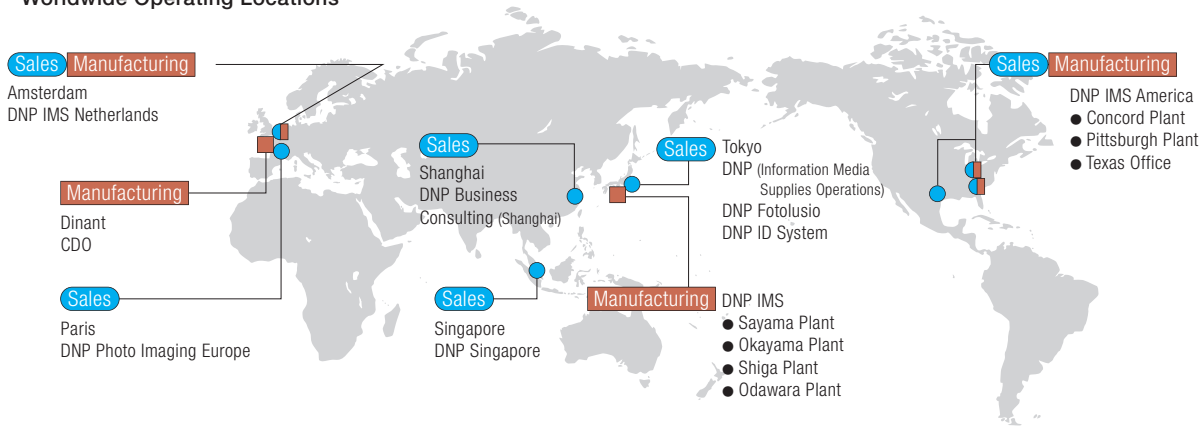
Due to the increasing popularity of smart phones and digital cameras, there has been a dramatic increase in the number of photos taken by consumers. As a result, demand for photo printing has been growing. Both at home and at print kiosks in retail stores, photo printers that use dye-sublimation thermal transfer printing media (color ink ribbons and receiver paper) have won high praise for their excellent speed and the durable prints that they produce. This type of printer is also more affordable to buy and maintain compared to photo printers that use silver halide.

Based on our "more than just a photo" concept, we are working to expand our photo print business primarily by applying and developing technologies and by creating new markets.

The market for barcodes is also expected to gradually expand. In order to build up business in this area, we are working on increasing our solutions-based business in addition to providing products and services by making the most of our overseas production bases.

In order to meet growing worldwide demand for both photo printing and barcodes, including in emerging markets, DNP intends to continue to respond meticulously to the needs of corporate clients and consumers by taking advantage of our uniform, global framework for developing, manufacturing, and selling related products and services.

DNP's Information Media Supplies Group Worldwide Operating Locations



The development of printing systems

In response to demand for photo printing in emerging markets marked by rapid economic growth, we developed the DS-RX1 printer, which offers the same characteristics as dye-sublimation thermal transfer printers at a far lower cost. We also developed media especially for use with this printer, and began selling the printer and dedicated media in May 2011.

The DS-RX1 can use dedicated software and a dedicated input terminal that allow it to output ID-sized photos and all types of photos that meet the needs of emerging markets.

DNP will develop sales of its DS-RX1 not only in emerging markets, but also in other markets around the world.

DS-RX1

DS-RX1 Features

- High resolution, high cost performance
- 30% reduction in electric power usage during printing (compared to existing printers)
- Dedicated software for use by multi-print services can add frames, make collages, produce ID photos, etc.
- Can be used with dedicated order terminal

We launched two Snap Lab photo printers, each with 10 interface languages

In October 2011, DNP began selling two models of Snap Lab photo printers that make photo printing a snap, not only at camera shops but at event venues and a variety of other locations.

Snap Lab's compact size makes it easy to install anywhere. This multifunctional digital photo printer can quickly handle every step from reception of image data and instructions to delivery of output with no need for connection to a computer. Its 10 interface languages include Japanese, English, French, German, and Chinese. Users can choose print sizes according to how they plan to use their photos. We intend to establish a market for this easy-to-use, high-quality photo printing service mainly in North America, Europe, and Japan, by gradually introducing the machines to amusement facilities, event venues, major appliance stores, and supermarkets, etc., in addition to camera shops.

Snap Lab DS-SL10

Snap Lab DS-SL20

Snap Lab Features: Models DS-SL10 and DS-SL20

- One compact, simple-to-operate unit handles every step from order-taking to output
- Multiple print size options
- Operable in 10 languages: Japanese, English, French, German, Italian, Spanish, Turkish, Greek, Chinese (simplified characters) and Korean. A maximum of six of these languages can be offered on the screen at any given time.
- Image correction feature enables automatic correction of facial complexion to natural skin tones
- Full selection of added-value prints, including matte finish, watermark, etc.

Easily print images from smart phones and tablet PCs

DNP now enables consumers in Japan to instantly print images from their smart phone or tablet PC, using PrintRush self-service printing systems generally found at major appliance stores and other retail stores. In addition to accepting data from conventional recording media, and by means of infrared or other wireless transmissions, since April 2011 PrintRush systems have been able to receive image data transmissions from devices that use iOS (iPhone and iPad), and since November 2011, they can also receive from smart phones using an Android OS. Smart phone users can download a free application developed by DNP that allows them to easily print photos from their phone using PrintRush. The application for iOS devices is available from Apple Inc.'s App Store, and the Android version is available from Google Inc.'s Google Play.

DNP will continue to work to introduce printing systems that offer new added value and greater convenience.

*iOS: The operating system used in mobile terminals made by Apple Inc., including iPhone, iPad, and iPod touch.
*Android OS: The operating system used in mobile phones first released by Google Inc. in November 2007.

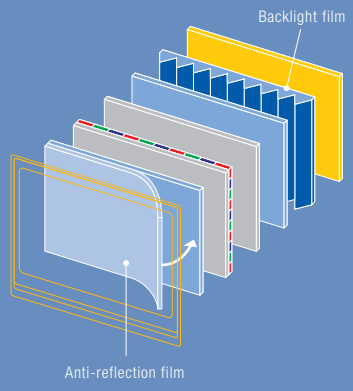
PrintRush self-service printing system

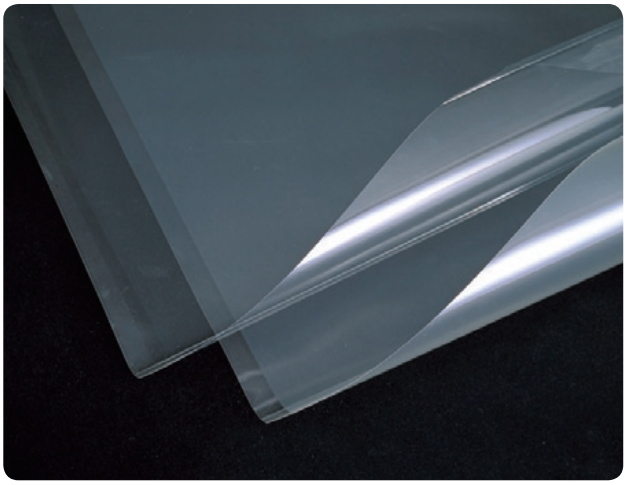
04

Advanced Optics (Optical Films): Providing Products and Solutions for Controlling Optical Properties through the Use of "Clean Converting Technologies"

DNP provides all types of optical films for use in flat-panel displays built into televisions, personal computers, and mobile terminals, etc. These films make use of clean converting technologies, particularly optical design technologies, that we cultivated through the design and development of a variety of materials and manufacturing processes. DNP controls the largest share of the worldwide market for anti-reflection films used on the outermost surface of electronic displays to guard against reflections from both interior and external light and thus make the displays easier to see. In the future, we intend to further expand our display-related business and make use of DNP's extensive manufacturing know-how and proprietary technology, etc. to develop new products and branch out into even wider fields of business.

DNP optical films used in a liquid crystal display





Anti-reflection films

Focus

Entering a variety of markets by developing products from a new perspective

While flat-panel display prices have been falling in recent years, there is growing demand for higher definition, better picture quality, multi-functionality including touch panels and 3D image displays, and energy-saving models. In answer to this demand, we built a new facility at our Mihara Plant in Hiroshima Prefecture, which we began operating in November 2011.

In addition to using a new production line to produce high-performance anti-reflection films that enable the display of sharper images, the new facility also manufacturers film components for 3D displays, for which there is increasing demand, and a variety of advanced optical films including highly scratch-resistant and soil-resistant optical films for touch panels.

We intend to continue making good use of the original DNP optical designs that we have accumulated, as well as precision thin-film coating, patterning, and other technologies in order to provide people-friendly components and solutions in a variety of markets, starting with environment and energy.

Mihara Plant in Hiroshima Prefecture

History of DNP's Production Bases for Anti-reflection Film

October	2001	Opened Okayama Plant
February	2004	Added production lines to Okayama Plant
May	2005	Added production lines to Okayama Plant
October	2006	Opened Mihara Plant
May	2009	Added production lines to Okayama Plant
November	**2011**	**Added production lines to Mihara Plant**

05

Energy Systems: Providing Diverse Products and Services in Response to the Growing Market for Clean Energy

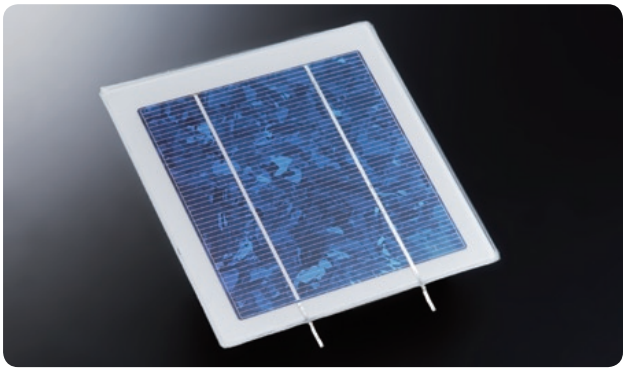
DNP positions energy as one of its new mainstay businesses in response to growing demand for clean sources of energy that replace fossil fuels, and in response to expansion in related markets.

DNP's main photovoltaic cell-related products are back sheets that prevent wind and rain from penetrating photovoltaic panels, and encapsulants that secure photovoltaic cells (power generation elements) and power collection wiring, and protect them from the outside environment. Our focus is on product development that will satisfy our clients' needs by advancing functionality and reducing costs.

We also offer lightweight, exceptionally durable "soft pack" external coverings for lithium-ion batteries made with flexible, easy-to-process multiplex film. These products have already captured the top share of world markets, and we intend to further expand this business through such applications as smart phones, tablet PCs, and other mobile devices, battery-assisted bicycles, electric cars, and home-use storage batteries.

In April 2011, we tripled our capacity to produce battery-related products by opening a new plant in Kitakyushu, Fukuoka Prefecture. By creating a very clean environment at the new plant, we increased the reliability of our products, and because we manufacture soft packs and photovoltaic cell components on the same production lines, we can flexibly adjust production in line with demand trends.

Soft pack used in lithium-ion batteries; lithium-ion battery module



Photovoltaic cell

Focus

Development of new products that improve the power generation efficiency of photovoltaic cells

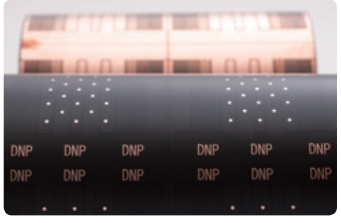
The problem with solar power generation is that it is so much more expensive than combustion and other conventional methods. This problem can be solved by improving power generation efficiency, and one way to do that is to use rear-contact photovoltaic cells, which are designed with all of the electrodes on the back of the unit. Conventional photovoltaic cells have power-collecting electrodes on both the front and back. Concentrating them on the back side of the cell increases the area available for sunlight reception, thus improving power generation efficiency.

In order to resolve the difficulties involved in forming tiny electrodes on the back side of each photovoltaic cell, DNP has been producing "bus-line sheet" by forming electrode circuits on film for use in rear-contact photovoltaic modules. After reviewing our production framework, we increased the production of bus-line sheet in July 2012. This simplifies the production process for photovoltaic module manufacturers, allowing them to form electrodes by simply applying bus-line sheet to an array of cells lined up to fit the size of the module.

Meanwhile, another problem that has been in the spotlight is potential-induced degradation (PID), which causes a type of degradation in power generation performance. PID can occur when improved power generation efficiency leads to the generation of higher voltages and a leakage current is generated under hot and humid conditions. The properties of the encapsulants used in photovoltaic modules, especially moisture permeability and gas generation, are said to affect the modules' susceptibility to PID.

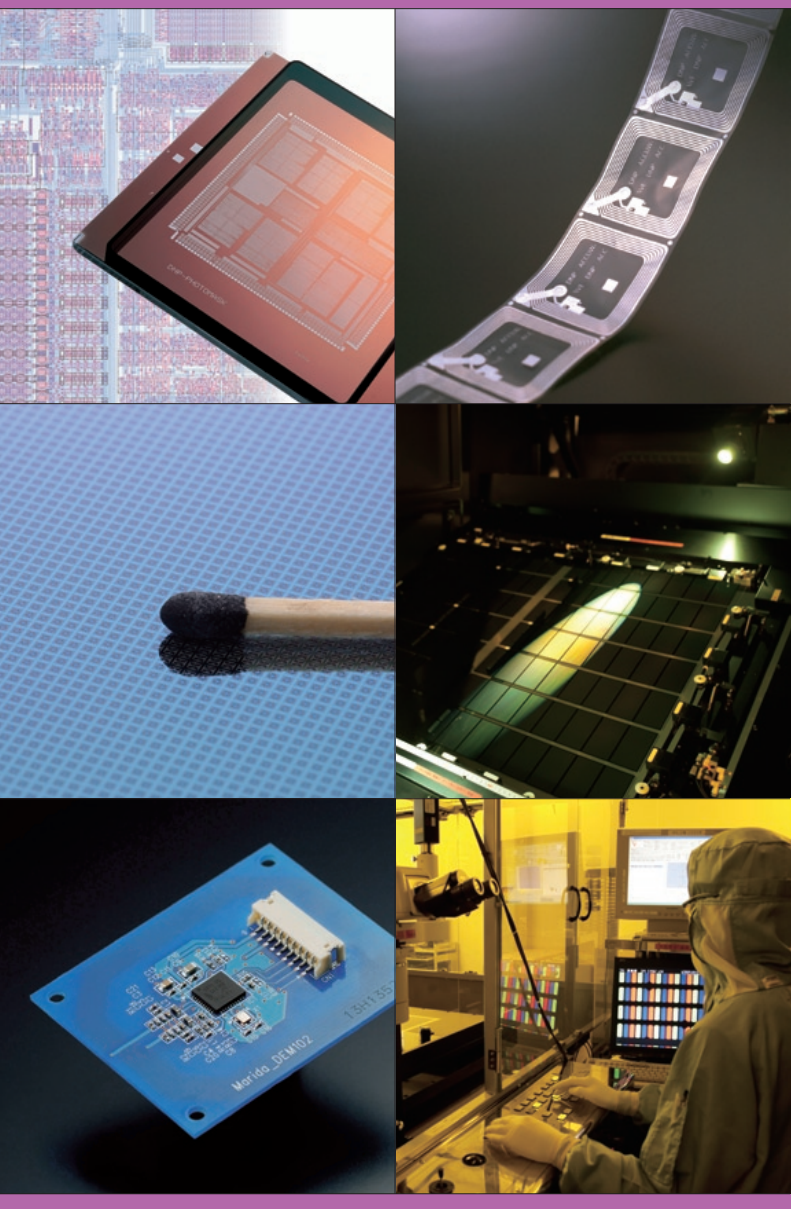
The water vapor barrier properties of DNP encapsulants have long been about ten times as strong as those of standard products on the market. For this reason and because DNP's encapsulants do not generate acidic gas, they have been attracting attention as outstanding encapsulants for preventing PID.

For the future, we will work actively to improve power generation efficiency by developing products like an all-in-one bus-line sheet and back sheet combination, and other products that meet the market's demands.



Bus-line sheet

Electronics



Business Strategies

The Electronics segment applies the most advanced printing technologies in the world, including microfabrication and patterning technologies, in order to provide a variety of key components for display products and electronic devices that sustain today's information society. We will carefully watch the rapidly changing business environment and construct optimized systems in order to develop products that meet the needs of clients and consumers in such product categories as color filters for liquid crystal displays (LCDs), photomasks (masters for making LSI circuits), and multilayer wiring boards.

Basic Strategies

A variety of household appliances and information devices like smart phones and tablet PCs have become widely used in today's world. When selecting these types of electronic devices, consumers seek convenience and new features based on cutting-edge technologies, so it is important for manufacturers to develop the newest technologies in response to the market's needs, and to establish stable supply frameworks.

The Electronics segment's basic strategy regarding product development is to work at developing new technologies with an eye toward next-generation products, and to supply the market with high-added value products with superior functionality. These cutting-edge products will primarily be developed and manufactured at our mother plant in Japan, but we will take a global point of view and flexibly consider the best locations, including overseas locations, for production of other products. We will also actively engage in collaboration with companies that have particular strengths in order to speed up our business development.

*1: nm (nanometer): one billionth of a meter
*2: Extreme ultra-violet (EUV) exposure: a technique for using ultraviolet rays with extremely short wavelengths to burn minute circuit patterns onto a wafer
*3: Nano-imprinting: a semiconductor manufacturing process that entails physically transferring a minute, nanometer-level pattern by pressing a template against a resin-coated silicon wafer
*4: MEMS(Micro Electro Mechanical System): a group of minute components made with semiconductor device microfabrication technologies

Main Policies

Display Components

Concentrate on the growing market for small- and medium-sized products, and on higher resolution

In the LCD market, LCD televisions have transitioned from the growth phase to a mature phase of their product lifecycle, so we can no longer expect the kind of major growth in this market that we saw in the past. Especially in the case of large-screen televisions, there is a strong feeling that panel production capacity is excessive. Prices have been falling, and the profit picture has been getting grimmer. At the same time, demand is still increasing for displays used in smart phones and tablet PCs, so we will continue to shift our color filter business toward small- and medium-sized products. We will make the most of the technical strengths and customer trust that we have cultivated over the years as we work to stabilize our business by focusing on providing the high resolution, high-quality products that are in demand for use in small- and medium-sized devices.

Enhance product lineup with entries like touch panel components

We will make the most of DNP's strengths as we promote the development of organic EL displays and other new products for markets where growth is likely. DNP already enjoys a large share of the market for metal masks used in the production of organic EL displays. We will also focus on developing new products, for example by providing touch panel sensors that contribute to the production of thinner, lighter smart phones and other devices.

Optimize production systems related to color filters

In order to stabilize our display-related business, we will continue to work on optimizing production systems, which includes consolidation of production bases. Specifically, we will strengthen our profit base by moving color filter production equipment from our plant in Otone, Saitama Prefecture, to our Mihara Plant in Hiroshima Prefecture, thereby concentrating production of small- and medium-sized products at the Mihara Plant.

In the fiscal year through March 2013, we plan to integrate the color filter business at our Sakai Plant in Hyogo Prefecture into Sakai Display Products Corp. (SDP). By creating a coherent production framework that will handle everything from components to complete LCD panels, SDP will stabilize production, lower costs, and improve its international competitiveness.

Electronic Devices

Expand overseas semiconductor photomask business and develop cutting-edge technologies

DNP's semiconductor photomasks have established a reputation for outstanding quality and have continuously controlled a large share of the global photomask market. More than half of DNP's photomask sales come from cutting-edge products with line widths of 45nm or less.*1 DNP's excellent capacity for technological development has earned us the solid trust of our customers, and we will focus on expanding this business in line with future demand for miniaturization.

Given the harsh market environment surrounding electronic devices, we will actively address demand overseas as well as in Japan. As overseas photomask production bases, we built a factory in Italy, where we have a business alliance with a major customer, followed by the opening of a new overseas plant in Taiwan during the fiscal term ended March 2011. We are increasing production in Taiwan, which will serve as our base for supplying advanced photomasks to the entire Asian region.

In response to increasing miniaturization of semiconductor products, we aim to make the most of our industry-leading technology development capabilities and the results of joint development with corporate clients in order to prepare a framework for developing and supplying cutting-edge photomasks with line widths of 22nm or less. We will also keep working on commercializing next-generation semiconductor lithography technologies such as extreme ultraviolet (EUV) exposure*2 and nano-imprinting.*3

Strengthen our business constitution by developing new products

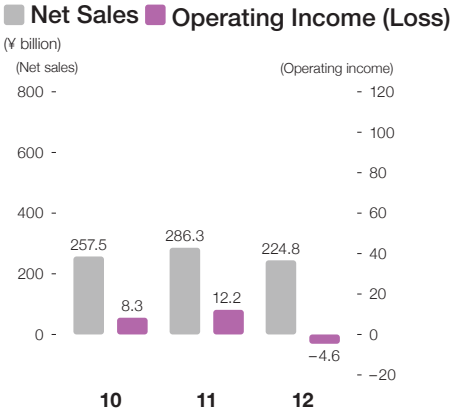
We intend to apply microfabrication, patterning, etching, and other technologies to the active development of a wide range of products in addition to photomasks, including components for hard disk drives, metal bases for LEDs, printed wiring boards with embedded components, and MEMS*4 products. Our aim is to identify and concentrate management resources on future growth areas, such as various types of electronic modules used in image processing, in order to construct a business framework that will allow us to secure profits regardless of fluctuations in the semiconductor market.

Financial Results

Financial Highlights

(¥ billion, %)

	2010.3	2011.3	2012.3
Net sales	¥ 257.5	¥ 286.3	¥ 224.8
Operating income	8.3	12.2	-4.6
Operating income margin	3.2%	4.3%	–



Fiscal Term through March 2012: Business Environment and Summary of Financial Results

According to one research company's figures for worldwide shipments of electronic devices in calendar 2011, shipments of LCD televisions to emerging countries such as China and Central and South America continued to grow, but the number of units shipped to developed countries decreased. In Japan, there was an especially sharp drop from the previous year due to the end of the government's "eco-point" program for promoting eco-friendly appliances and a winding down of replacement buying as part of the shift toward digital terrestrial broadcasting. Personal computer shipments inched up by 0.5% year on year, to 350 million units, while shipments of mobile phones increased 11% over the previous year, mainly due to the popularity of smart phones.

Given these trends, large LCD panels used in televisions remained in oversupply, leading to decreased profits for Japanese panel makers who were forced to implement large cutbacks in production. Although DNP continued to enjoy strong sales of small- and medium-sized color filters for smart phones and tablet PCs, there were big drops in value and unit price for large-size products used in televisions, as panel makers reduced production and LCD television prices declined.

Meanwhile, growth in the semiconductor market in the year ended March 2012 was limited to 0.4% from the previous year—a sharp decrease from the previous year's 32% growth—due to such factors as the Tohoku–Pacific Ocean Earthquake, major flooding in Thailand, and a downturn in the world economy. In Japan, the situation was exacerbated by a sharp rise in the yen's value, and sales declined relative to a year earlier.

DNP's Electronic Devices business worked hard to increase its share of the domestic market and to take advantage of overseas demand, but net sales of photomasks declined from the previous year. Sales of high-density build-up wiring boards used in devices such as smart phones increased, but partly due to supply chain disruptions resulting from flooding in Thailand, there were declines in sales of suspensions and other hard disk drive components, and lead frames, etc.

As a result, the Electronics segment's net sales amounted to 224.8 billion yen, representing a decrease of 21.5 % (61.5 billion yen) from a year earlier. The segment posted an operating loss of 4.6 billion yen, a drop of 16.9 billion yen compared to the previous year's operating income of 12.2 billion yen.

Portrait of Divisions

Display Components

Demand for LCD televisions is expected to continue to grow, particularly in developing countries, and LED-backlit televisions and 3D models are expected to become more widely used. However, downward pressure on retail prices is increasing, and growth rates are slowing. On the other hand, the market for small- and medium-sized panels is expected to continue its smooth growth, supported by the spread of smart phones and tablet PCs. In the small- and medium-sized market, it is essential to keep up with demand not only for greater production volume, but also for higher definition. In view of demand for new technologies like touch panels and organic EL displays, the market is counting on Japanese LCD panel manufacturers' excellent capacity for technological development. Panel manufacturers in Korea, Taiwan, and China, as well as in Japan, are stepping up efforts to adjust production so as to optimize the supply-demand balance for LCD panels of all sizes.

DNP's color filter business is concentrating on the growing market for small- and medium-sized displays. We will continue to respond with cutting-edge technologies to meet demand for higher definition, greater brightness, and thinner displays, etc.

Regarding our manufacturing framework, we consolidated operating locations through measures like relocating production equipment from our Otone Plant in Saitama Prefecture to the Mihara Plant in Hiroshima Prefecture. Among other structural reforms, we integrated the color filter business at our plant in Sakai, Osaka Prefecture into Sakai Display Products Corp.

We are also working to stabilize our display products business by enhancing our lineup of display products besides color filters. Specifically, we are concentrating on developing new products like metal masks used in organic EL display production and static electricity sensors for touch panels.

Electronic Devices

The semiconductor market is expected to see gradual recovery as manufacturers implement structural reforms and step up investment in further miniaturization. In recent years, as electronic devices have become more compact and sophisticated, ever more advanced technologies are required for creating the extremely fine circuit lines needed in the manufacture of today's semiconductors.

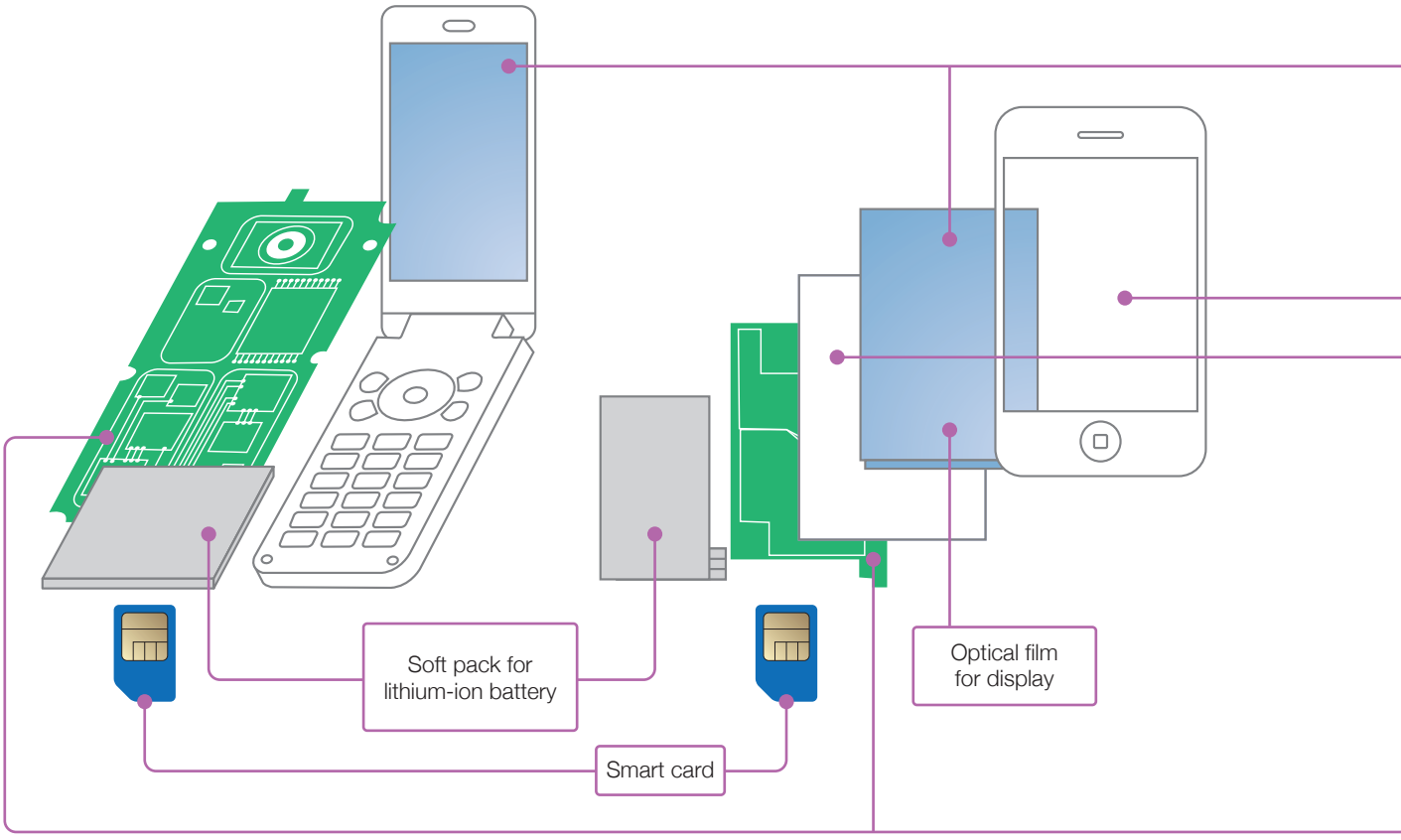
As line widths decrease, we aim to increase our share of the market for cutting-edge photomasks used for producing semiconductors, not only in Japan but also at our Taiwanese plant and other overseas operating locations. Besides moving ahead with mass production of 45nm products, which are the targets of increasing demand, we will also support photolithography techniques for making ultra-advanced under-40nm and under-30nm products, including a method that combines double patterning and ArF immersion. In addition, we are working with semiconductor manufacturers to speed up research and development of next-generation semiconductor lithography technologies like extreme ultraviolet (EUV) lithography and nano-imprinting.

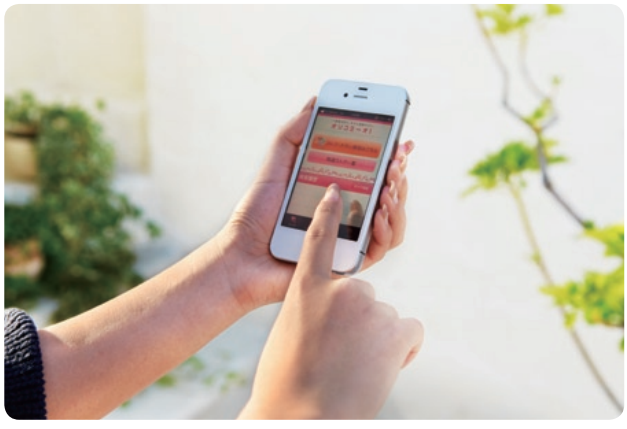
Amid growing demand for thin, compact semiconductor packages that enable high-density mounting of internal components, we aim to expand DNP's share of the market for etched electronic components, backed by such strengths as our unique B^2it buildup board technology. We will also actively pursue development of new products including metal LED substrates, hard disk drive components, electronic modules for image processing and other applications, and MEMS products.

DNP Electronics Products—a Part of Everyone's Everyday Life
DNP Products and Technologies Support Smart Phones and Tablet PCs

For more than half a century, DNP has been supplying a wide variety of electronic products, backed by our strength in printing technologies like photolithography and etching. DNP products and systems support many of the smart phones that have rapidly become popular in recent years, as well as other information devices that we consider to be a vital part of our lives.

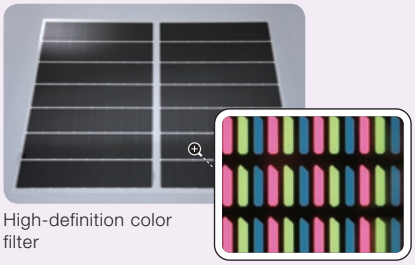
DNP's various products and systems contribute to improving the operation and functionality of all types of devices. For example, we supply high-definition color filters for small- and medium-sized liquid crystal displays, touch panel components, metal masks used in the manufacture of organic EL displays, photomasks and lead frames used in cutting-edge semiconductor products, and modules used in digital cameras.





High-definition color filters for small- and medium-sized LCDs

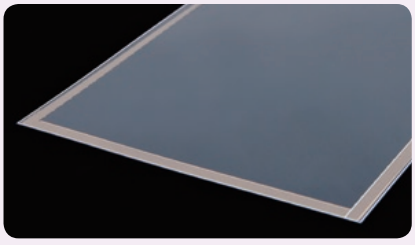
In order to display more beautiful images on the small screens of smart phones and tablet PCs, it is necessary to improve display resolution and brightness. DNP's color filters meet the market's demands for higher-definition, brighter, thinner, lighter displays, and the color filters we have supplied for smart phones and similar devices are winning high praise. Going forward, we will continue to provide high-performance color filters in response to increasing demand for portable information terminals and other small and medium size devices.



High-definition color filter

Touch panel components

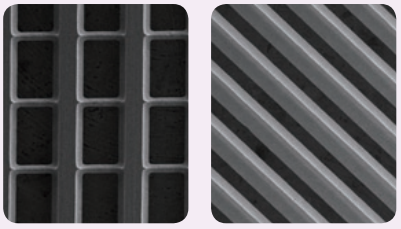
Because a growing number of information terminals use touch panels that can be operated by touching the screen with a finger, there is increasing demand for touch panel sensors that sense finger movement. As information terminals take on increasingly sophisticated functions, keeping them thin and light has become more of a challenge. DNP's touch panel sensors contribute to the production of thinner, lighter devices by dispensing with the usual glass or film substrate, thereby limiting its thickness and weight.



Touch panel sensor

Metal masks for manufacturing organic EL (electroluminescent) displays

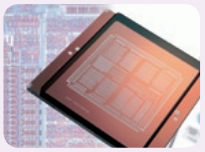
Organic EL displays, which offer advantages like a wider viewing angle and higher contrast, are being used increasingly widely, primarily in smart phones and other portable information devices. DNP supplies metal masks used in the vapor deposition method of manufacturing EL displays. DNP controls a large share of the market for the metal masks, which are indispensable to the vapor deposition process wherein colored organic EL elements (for example, RGB or red/green/blue) are applied separately.



Enlarged photo of metal masks used for making organic EL displays

Electronic devices

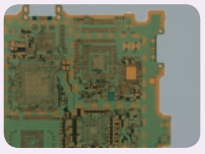
DNP makes use of printing technologies like microfabrication, patterning, and etching to provide a variety of products that meet the market's demand for thinner, more compact communication devices with improved functionality. Photomasks are masters for making system LSIs, flash memories, and other semiconductor products. In addition to producing cutting-edge 20nm photomasks, we are focusing on developing nanoimprinting and other next-generation technologies. We have also developed lead frames, which hold IC chips onto printed wiring boards and transmit electric signals, that are only 0.15mm thick, or one twentieth the thickness of conventional products. And we use DNP's unique B^2it (pronounced B-square-it) technology to realize even more compact, even higher-density printed wiring boards with embedded components for use in camera modules, motherboards, and other electronic devices.



Photomask used for making semiconductors

Lead frame

Printed wiring board with embedded components (for camera module, etc.)



Motherboard for a smart phone