4 Value Creation | Steadily growing highly profitable and high-growth businesses

Focusing on business areas with high market share, strong profitability and sustainable growth

In addition to our proprietary technologies, know-how and skills, DNP leverages its unique partnerships to focus on business areas characterized by high market share, strong profitability and sustainable growth. These areas are designated as focus business areas in the next Medium-term Management Plan (FY2026–2028). By making proactive growth investments in these focus business areas, we aim to build a resilient business portfolio and drive long-term performance expansion and sustainable growth.

Creating business value and achieving sustainable growth through P&I Innovations

Under the concept of P&I Innovations, DNP leverages its proprietary P&I (technologies, know-how and skills), grounded in printing processes, as the core of its business while strengthening collaboration with diverse partners, including through M&A. Through repeated *TAIWA* (dialogue) and cooperation, we combine each other's technologies and expertise to create value that meets the needs of people and society, aiming to realize a "better future."

Focus business areas in the next Medium-term Management Plan

Value creation through P&I Innovations

	Business area	Profitability: FY2024 sales	Profitability: ROE	Growth potential: Market environment (CAGR 2024-2029)	Market share: Main products	P&I Innovations: P&I cultivated through printing – Proprietary technologies, know-how and skills –	P&I Innovations: *TAIWA* and cooperation – Partners that accelerate business –	P&I Innovations: New value like never before
Smart Communication	Information Security	177 billion yen	10% or more	Approx. 7% Information security market	Smart cards No.1 domestic share	• Information processing technologies (information security / image processing and recognition) • Microfabrication technologies (precision engraving / hologram / photolithography) • Post-processing technologies (plastic forming / laminating technologies)	Global rollout of technological strengths • Acquired Rubicon SEZC as a consolidated subsidiary (2025) Entered overseas government ID authentication service business • Capital and business alliance with MKSmart (2014) Vietnam's largest smart card manufacturer, strengthening competitiveness in the Southeast Asian market	◎ Expansion of authentication and IC card business into high-growth regions such as Africa, Asia and South America ◎ Provision of a digital key platform that uses cryptographic key technology to lock and unlock cars, homes and other devices with their smartphones
	Photo imaging	74 billion yen		Approx. 7% Photo related market	Dye-sublimation thermal transfer media for photo prints No.1 global share	• Information processing technologies (information security / media conversion / image processing and recognition) • Precision coating technology (coating) • Post-processing technologies (laminating technologies / transfer processing) • Project planning and design (photo service, photo cabinet)	Strengthening sales, planning and development systems in the global market • Acquired photo business from the Konica Minolta Group (2006) • Acquired digital photo printer business from Sony (2011) • Acquired all shares of Colorvision International (U.S.) and Sharingbox (Belgium) (2020)	◎ Operation of over 300,000 printers in more than 100 countries, providing approximately 5 billion photo prints annually ◎ A wide range of photo services and solutions such as theme park photography, fan photos, events and ID photos
Life & Healthcare	Mobility	71 billion yen		Approx. 13% High-end HMI market	Decorative films, molded parts	• Optical design technology • Precision coating technologies (coating / EB and UV curing / printing) • Post-processing technology (laminating technologies / transfer processing) • Project planning and design (decoration and aesthetic design)	Strengthening development and manufacturing capabilities for mobility molded parts • Acquired Tamura Plastic MFG as a consolidated subsidiary (2015) Development and manufacturing of mobility molded parts using decorative films • Acquired HIKARI METAL INDUSTRY as a consolidated subsidiary (2025)	◎ Development of eco-friendly mobility molded parts and exterior films as alternatives to painting ◎ Development of light-transmitting film compatible with in-vehicle Human-Machine Interface (HMI) applications
	Industrial high-performance materials	60 billion yen		Approx. 15% EV market	Battery pouches for lithium-ion batteries No.1 global share	• Precision coating technology (coating) • Post-processing technology (laminating technologies) • Materials development technology • Assessment and analysis	Expanding the battery pouch product range • Acquired Resonac Package as a consolidated subsidiary (2025) Combined, the two companies hold over 800 patents Expanding product applications to automotive, IT and energy storage system (ESS) use	◎ Provision of battery pouch exterior materials with strong technologies and patents across automotive, IT and ESS applications ◎ Development of exterior materials compatible with next-generation batteries, including all-solid-state batteries
Electronics	Digital interfaces	182 billion yen		Approx. 5% Digital interface market	Optical films for displays No.1 global share* Metal masks for OLED display manufacturing No.1 global share	Optical films • Optical design technology • Materials development technology • Precision coating technology (coating) Metal masks • Microfabrication technology (photolithography / etching processing)	Expansion of in-house production lines • Mihara Plant (Hiroshima): Introduced coating equipment capable of producing optical films up to 2,500 mm in width • Kurosaki Plant (Fukuoka): Operational production line for metal masks used in OLED displays, compatible with 8th-generation (G8) sizes	◎ Development of optical films with diverse functions tailored to device needs (anti-reflection and anti-glare) ◎ Development of products anticipating the growing demand for OLED displays in various smart devices
	Semiconductors	66 billion yen		Approx. 8% Semiconductor market	Photomasks for semiconductor production Top-level market share in the photomask merchant market	• Optical design technology • Microfabrication technologies (clean converting / patterning / photolithography) • Precision coating technology (coating)	Collaboration with partners for commercialization in cutting-edge fields • Partnerships with semiconductor manufacturers, equipment manufacturers, material manufacturers, research institutions, etc., including KIOXIA, Canon, imec, Rapidus, PDMC/X and STMicroelectronics • Invested in special purpose company for the purpose of acquiring shares of Shinko Electric Industries (2025), strengthening collaboration in semiconductor post processing	◎ Advanced semiconductor manufacturing technologies, including nanoimprint and extreme ultraviolet (EUV) ◎ Development of glass core substrates with TGV (Through-Glass Via) for next-generation semiconductor packages

■ A society where people can live safe, secure, healthy and well-being lives ■ A society where people can communicate comfortably
■ A society where people mutually respect each other ■ A society that realizes a balance between economic growth and the global environment

* In the case of anti-reflection film and anti-glare film used on the surface of displays

Focus Businesses

Information Security

Top market share in Japan for smart cards

Smart Communication

Business overview & DNP's strengths

Transformation toward a smart society—where people and things are connected across both cyber and physical spaces—is accelerating. DNP anticipates these trends, aiming to create a society where everyone can live more comfortably, safely and securely, often without even being consciously aware of the technology around them. Our strengths include a long-standing track record of rigorously managing vast amounts of sensitive information such as personal data, the technical expertise and operational capabilities as Japan's leading smart card vendor, and businesses that combine manufacturing with information services. These capabilities are the driving force that continues to earn the trust of our customers. Leveraging know-how cultivated in Japan, we are expanding globally, with a particular focus on emerging markets where economic growth is expected due to population increases and other factors.

Main products and services

Smart cards and digital keys

In 1983, DNP developed rewritable smart cards and has since become the leading smart card vendor in Japan. Building on cryptographic key technologies, we also provide a digital key platform that enables locking and unlocking of cars, homes, lockers and other devices via smartphones. For automotive applications, our solutions comply with the standard specifications established by the Car Connectivity Consortium (CCC).

BPO (Business Process Outsourcing)

Under a robust security environment, DNP offers BPO services that comprehensively support the business processes of companies, local governments and other organizations. We optimize clients' overall business operations while combining a diverse range of services to develop and deliver high-value, one-stop solutions.

Factory security and 3D secure

Leveraging the security expertise cultivated at our smart card factories and other sites, DNP provides factory security solutions to address the rapid rise in cyber threats. In preparation for its mandatory adoption in March 2025 in Japan, we have developed and are currently providing a 3D Secure authentication service for online credit card payments.

AI review and AI-Ready Data

DNP is developing a variety of AI-driven businesses. We offer AI review services that automate and streamline proofreading and compliance checks for corporate promotional materials, packaging, service terms and other documents. In addition, we are focusing on the AI-Ready Data service, which transforms unstructured corporate data into formats that generative AI can easily understand and utilize.

DNP's strengths

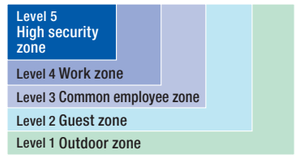
Proprietary ICT and security technology

DNP applies its proprietary technologies—developed through smart card OS and application development, as well as manufacturing process design—alongside approximately 1,800 ICT professionals to areas such as security software development, cryptographic key management, and the development of various products and manufacturing technologies. These capabilities are also highly regarded on the international stage.

- Authentication and ID management
- Cybersecurity
- Monitoring and management
- Cryptographic key management
- IoT and devices
- Security consulting and education

Robust security framework

At DNP's manufacturing and development sites, we combine physical measures—such as surveillance cameras and access restrictions—with comprehensive cybersecurity measures, employee training and operational protocols to establish a highly advanced and robust security framework. This approach has earned top-tier ratings for business continuity and risk management.



One-stop service

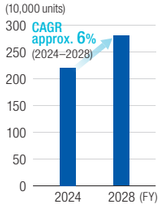
DNP serves a wide range of industries, including finance and securities, public services and social infrastructure, as well as various manufacturers, distributors and retailers. We provide a comprehensive suite of functions, from consulting to the design, development and operation of solutions, delivered through a one-stop service model.

Consulting phase
↓
Solution provision phase
↓
Operational support phase

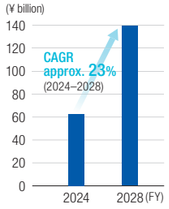
Market environment

The information security market is expected to grow steadily, driven by ongoing digital transformation (DX), the rise of online payments, and businesses' increasing need to address challenges such as cyberattacks and labor shortages.

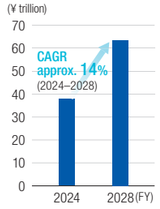
Forecast of domestic shipments of vehicles equipped with digital keys



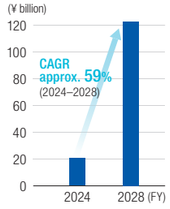
Domestic plant security market forecast



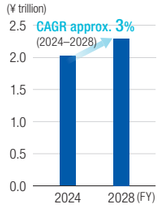
Domestic online payment transaction volume forecast



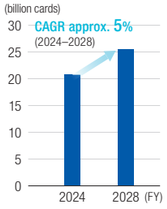
Domestic corporate AI-Ready Data market forecast



Domestic Non-IT BPO market forecast



Global financial card market forecast



Market forecasts are calculated based on DNP's own estimates added to the references.
* References: Statistics Bureau, Ministry of Internal Affairs and Communications; Ministry of Economy, Trade and Industry, etc.

Growth strategy

- **Provide high-value services to the market by effectively combining products and services.**
- **Increase market share by leveraging the strengths of DNP's Information Security business and fostering collaborative relationships with partner companies.**
- **Accelerate investment in promising markets, including emerging countries where economic growth is expected due to factors such as population increases.**

TOPICS

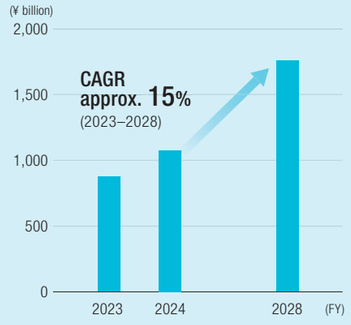
Acquisition of Rubicon SEZC, a provider of government ID authentication services

—Strengthening initiatives in high-growth markets across Africa, Asia and South America—

In July 2025, DNP acquired a 75% stake in Rubicon SEZC, a company that provides government ID authentication services that register and authenticate individuals' personal information, primarily in Africa, and brought it into the DNP Group. By combining DNP's strengths in authentication and security technologies—including the manufacture and issuance of various smart cards, card printers, anti-counterfeiting holograms and biometric devices and software—with Rubicon's Laxton-branded ID authentication business that leverages biometric information, we aim to maximize synergies.

DNP has previously expanded its information security-related businesses globally, including its investment in MKSmart, one of Vietnam's largest card manufacturers (2014), and the establishment of a joint venture, PT. Wahyu DNP Bureau, with Wahyu Kartumasindo International, one of Indonesia's leading IC and cash card manufacturers (2016). Rubicon provides end-to-end services—from consulting and biometric data enrollment to the development and maintenance of authentication devices and software—and has been implemented in more than 50 countries and regions worldwide. By joining the DNP Group, Rubicon will help deliver authentication and security services to governments in Africa, Asia and South America, with a target of achieving cumulative sales of ¥140 billion in overseas government ID authentication services by fiscal year 2030. The DNP Group will continue contributing to a safe and secure smart society on an increasingly global scale.

Forecast of government biometric authentication market (global)



Source: DataIntelo Solutions LLP

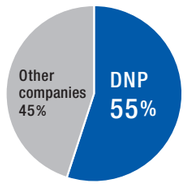
Rubicon SEZC's devices and software for registering and authenticating individuals' biometric information (face, fingerprints, iris)

Signing of the contract with Rubicon SEZC in Amsterdam, the Netherlands in June 2025. Yoshiki Numano, Senior Corporate Officer of DNP (left) and Lyle Laxton, CEO of Rubicon SEZC (right).

Performance trends and future outlook

Business expansion leveraging No. 1 market share

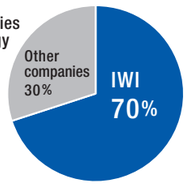
Number of dual interface cards manufactured in Japan



We have the leading share of smart cards in Japan

Excerpt from Fuji Chimera Research Institute, *Digital ID/Authentication Solutions Business Market Research Handbook 2024*
FY2023 results, volume basis

Number of major credit card companies using the technology (surveyed by IWI)



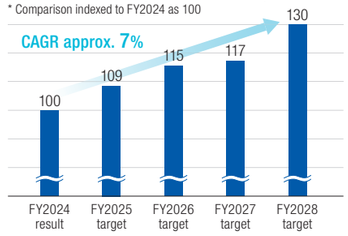
FEP* Intelligent Wave (IWI, part of the DNP Group) has the leading share in Japan

* Abbreviation of Front End Processor, a system that connects to card companies and various payment networks, and authenticates card usage during card payments.
FY2023 results

Planning sales growth at an approximate CAGR of 7%

Information Security business sales plan

* Comparison indexed to FY2024 as 100



Focus Businesses

Photo Imaging

Global top share in dye-sublimation thermal transfer media for photo prints

Smart Communication

Business overview & DNP's strengths

Applying our precision coating and printing technologies, DNP developed dye-sublimation thermal transfer media in 1985. Today, we continue to supply these products globally for photo printing, maintaining a leading market share worldwide. DNP constantly anticipates changes in how people enjoy photography, developing diverse businesses that enhance not only the value of printed products but also the experiential value for users. Through our manufacturing and sales sites in Japan, North America, Europe and Asia, we oversee a wide range of activities from planning to providing various products and services. These include services that allow photos to be taken and printed at tourist sites and events, as well as high-security network services for applying for and issuing ID cards—continuing to bring smiles and reassurance to people.

Main products and services

Dye-sublimation thermal transfer products

DNP offers a wide range of photo printers and media under the DNP brand. Approximately 5 billion photo prints are produced annually, and over 300,000 printers are in operation across more than 100 countries worldwide.

Dye-sublimation thermal transfer media

Dye-sublimation digital photo printer

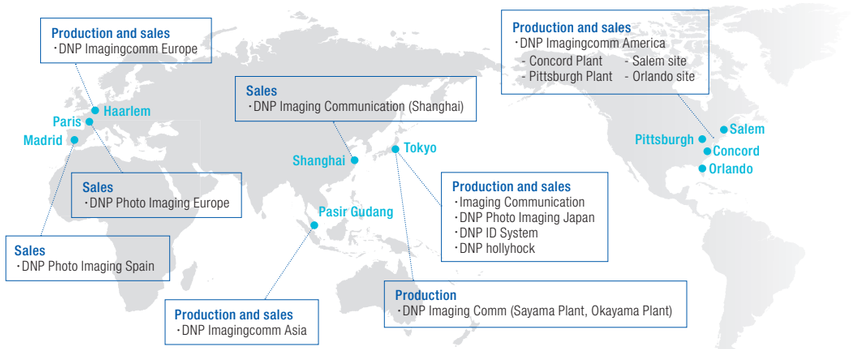
Photo services and solutions

Through "Ki-Re-i," one of Japan's leading ID photo booth, DNP provides services such as facial data collection via networks and profile photo creation. We also offer a wide range of photo services at theme parks, event venues and other locations, including sharingbox, Colorvision and Innovative Foto.

DNP's strengths

Global sites and supply chain

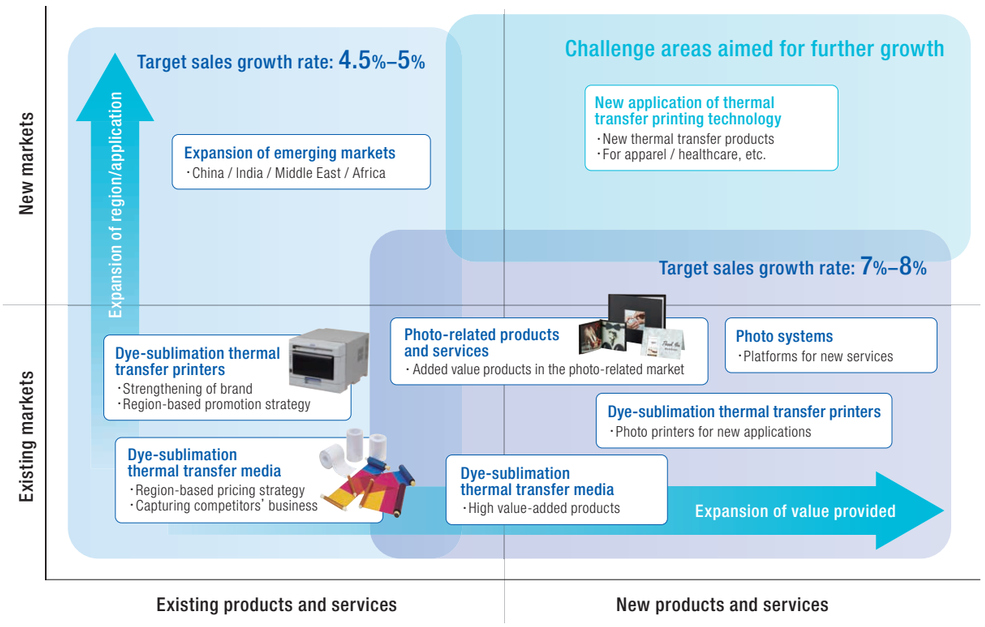
DNP launched its photo business in the United States in 2004 and has since expanded its global sales, product development, manufacturing and distribution networks through proactive M&A and other initiatives. Leveraging the development of locally tailored value and strategically located production, we continue to strengthen our business presence worldwide, including in emerging markets.



Growth strategy

- **In the global market, DNP will pursue both the expansion of regions and applications, focusing on emerging countries such as China and India, and the expansion of value provided, including in photo-related markets and new services.**
- **Expand businesses that enhance user experience and convenience, such as services leveraging popular characters or artists and services utilizing high-security networks.**
- **Pursue further growth by exploring applications of thermal transfer technologies.**

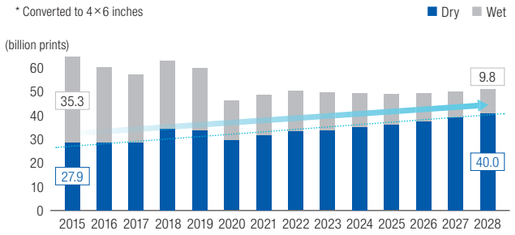
"Bring smiles & peace of mind across the world by realizing various ideas."



Market environment

Number of photo prints worldwide

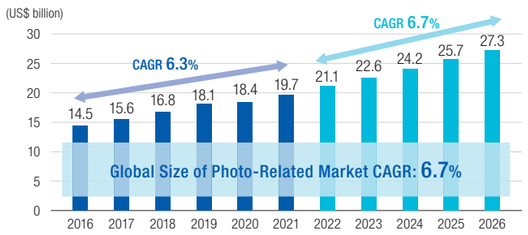
While the overall photo print market, including silver halide prints, is shrinking, dry processes such as dye-sublimation and inkjet are experiencing growth. DNP's dye-sublimation products, which hold the leading global market share, offer advantages in small-batch and on-demand printing.



Estimated by DNP based on the report from Schoeller, Photographic Consultants (2024)
Forecasts from 2022 onward

Global photo-related market trends

The proliferation of smartphones has led to a global increase in the number of photos taken, fueling continued growth in the photo-related market. Demand is also expanding for products that enable people worldwide to preserve and enjoy special moments and memories in photo books, calendars and other items.

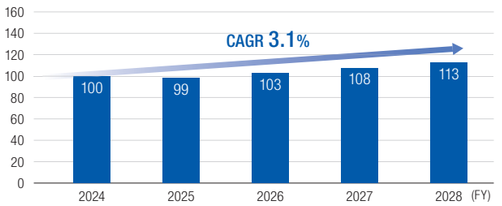


* Surveyed by IMARC Services Private Limited (2022)

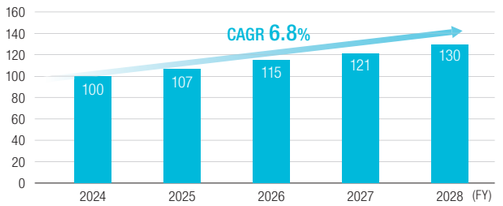
Performance trends and future outlook

DNP continues to achieve sustained growth in sales and profit by leveraging its global No. 1 share in dye-sublimation thermal transfer media. Amid concerns over volatility in the U.S. market, we are executing strategies focused on areas that the DNP Group can control. Through fiscal 2028, we plan for annual revenue growth of approximately 3.1% and operating income growth of around 6.8%.

Sales (Growth potential indexed to FY2024 as 100)



Operating income (Growth potential indexed to FY2024 as 100)



Focus Businesses

Mobility

Life & Healthcare

Business overview & DNP's strengths

DNP leverages its decorative materials for mobility interiors and exteriors, as well as battery pouches for lithium-ion batteries, as foundations for developing and providing a broad range of products and services that support extended driving range for electric vehicles (EVs), self-driving and comfortable mobility environments. Anticipating market changes, we capitalize on our proprietary material processing technologies, including converting technology, while actively expanding our business through M&A and strategic partnerships with companies that bring diverse strengths. As part of our growth strategy, we focus on the development of decorative films, expansion to molded parts, challenging new opportunities and the transformation of our business model, harnessing the synergies of All DNP to create and deliver new value.

Synergies of All DNP		Business growth strategy

• **Life & Healthcare**
  • Mobility: Decorative films for interior and exterior applications, leveraging strengths in high-design printing
  • Industrial high-performance materials: Battery pouch, photovoltaic modules
• **Smart Communication**
  • Strengths in advanced ICT and information security technologies
• **Electronics**
  • Strengths in various types of optical films, electronic devices and molds/molding
	Strengthening collaboration with partners that bring diverse strengths	■ Development of decorative films
		■ Expansion to molded parts
		■ Challenging new opportunities
		■ Transformation of business model

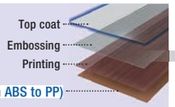
Main manufacturing processes for decorative films: DNP's scope

Design and aesthetic/function planning → Decorative film production → Molding and processing → Assembly through delivery

Development of decorative films

Anticipating market changes such as the advancement of Human-Machine Interface (HMI) driven by digitalization and growing environmental demands, we develop a wide range of interior and exterior products.

Mono-material recyclable
・Polypropylene (PP) substrate
Film substrate (from ABS to PP)



Exterior film
・Two-tone roof
・Paint substitute
・Lighting module

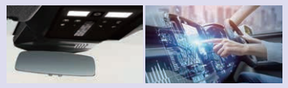
Light-transmitting film
・Seamless design
・High-end HMI

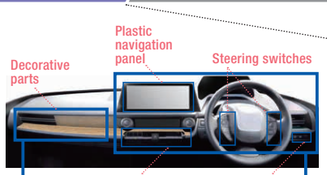
Expansion to molded parts

With the addition of Tamura Plastic MFG. Co., Ltd. (2015) and HIKARI METAL INDUSTRY CO., LTD. (2025) to the DNP Group, we entered the molded parts market and are expanding our business into the high-end HMI sector.

Utilization of recycled materials and eco-friendly materials
Market share: Aim to grow from 50% now to 70% or more

High-end HMI parts
Market share: Aim to grow from 40% now to 50% or more





DNP Tamura Plastic (2022)
Expansion from decorative film market to molded parts market

DNP Hikari Kinzoku (2025)
Expansion to high-end HMI parts
(Sites) Japan: Nagoya; Overseas: Danyang, China

All DNP Synergy
Challenging new opportunities by collaborating with three business segments and working alongside external partners

Challenging new opportunities

We actively enter fields with high growth potential and profitability, including software and information services, electrification and self-driving.

Software
DNP's ICT and security technology and collaboration with partners

micware
August 2024: Business and capital alliance
Entering the market for in-vehicle device software and connected infrastructure development

Electrification
DNP's electronics technology

Wireless power supply coil (while parked and while driving)

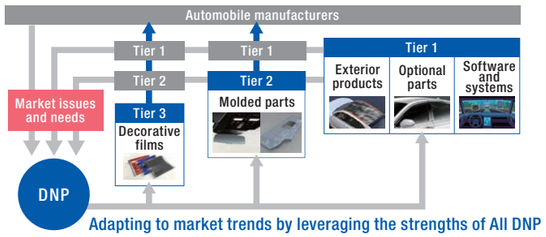
Services (MaaS)
DNP's business network and collaboration with partners

citras
Ryukyu Nissan Motor Co., Ltd.
June 2025: Franchise agreement
Participation in the car sharing business

Self driving
Currently considering entry into the self driving systems area

Transformation of business model

By broadly identifying and analyzing challenges and needs, primarily in the automotive market, we strive to ensure that DNP secures the optimal position for each product and service. We also develop and provide products and services that deliver essential value across the entire industry.

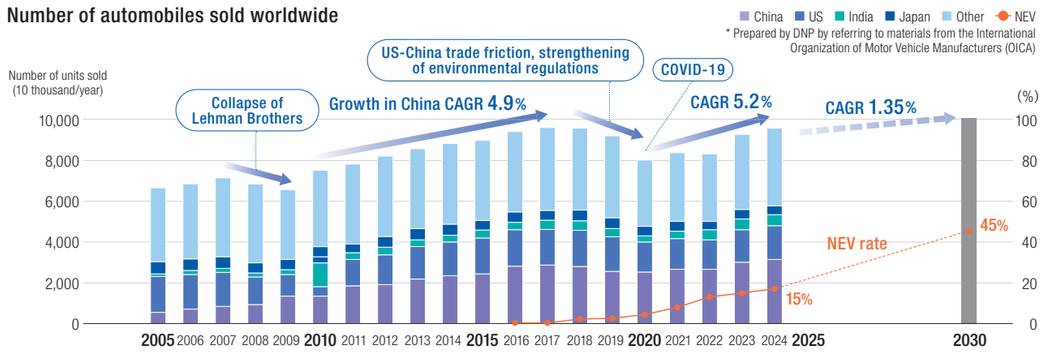


Adapting to market trends by leveraging the strengths of All DNP

Market environment

Leveraging the momentum of the automotive market, often described as experiencing a "once-in-a-century transformation," we aim to further refine DNP's unique strengths and deepen collaboration with partners to create new value.

Number of automobiles sold worldwide



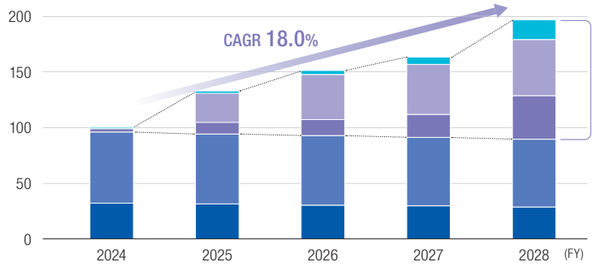
Keywords for transformation						
Environment	Reduction of CO_2 emissions (reduction of targets of 30%–65% in each country and region)					
Electrification/NEV	Hybrid vehicles			Electric vehicles		Fuel cell vehicles
Self driving	Lv.0	Lv.1	Lv.2	Lv.3	Lv.4	Lv.5
Telecommunications and software	Higher speed telecommunications / improvement of semiconductors and computing power			SDV / OTA / HMI / digital interfaces		
Services	Owned / segregated transportation systems			Sharing / MaaS / self-driving taxis		

Performance trends and future outlook

- Leveraging the strengths of All DNP and deepening collaboration with partners that bring diverse capabilities, we advance our business growth strategies: development of decorative films, expansion to molded parts, challenging new opportunities and transformation of business model.
- By quickly identifying and analyzing global market trends and consumer needs, we develop and deliver new value from the optimal position for each product and service.
- We accelerate business growth through increased market share and expanded applications for existing products, as well as entry into new areas.
- We strengthen and expand our business foundation through proactive capital investment, M&A and transformation of business models.

Aiming to achieve significant growth by capturing trends in the market

Sales (Comparison indexed to FY2024 as 100)



New products and new areas

Overseas sales percentage: Expected to be 70% or more. We will also expand into areas other than automotive in the future.

- New areas
- New molded parts (HMI)
- New interior and exterior film products
- Molded parts
- Interior decorative films

Focus Businesses

Industrial High-Performance Materials:

Life & Healthcare

Business overview & DNP's strengths

A battery pouch serves as the outer casing for lithium-ion batteries, designed to protect the internal components. DNP has achieved key features for this product, such as high insulation, superior sealing and airtightness, through its unique combination of technologies. Being a film-type material, it is lighter and more versatile compared to conventional metal can types. Consequently, the market for battery pouches has expanded, particularly for IT devices like smartphones and tablets, as well as for automotive applications such as electric vehicles (EVs). To meet the anticipated growing demand, DNP will increase its production capacity both domestically and internationally. By leveraging its strengths in unique converting technologies and proprietary patents, DNP aims to maintain and strengthen its position as the global leader in market share. Additionally, we will work toward establishing ourselves as the industry's de facto standard and enhancing our presence in the global market.

DNP's strengths in realizing essential functions for battery pouches

- ○ High sealing and airtightness to prevent electrolyte leakage
- ○ High water vapor barrier property to prevent moisture ingress
- ○ High moldability to increase battery capacity
- ○ High insulation to support high voltage and large batteries
- ○ Heat resistance and stability at high temperatures to ensure stable operation in harsh environments

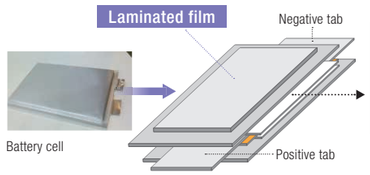
+

DNP's strengths in enhancing competitiveness

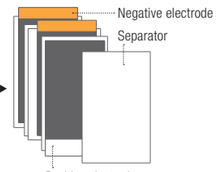
- ○ Global standard
- ○ Stable track record even for use with large-scale batteries
- ○ Certified to IATF 16949 automotive quality management systems

Product image and product lineup

Laminated cell structure



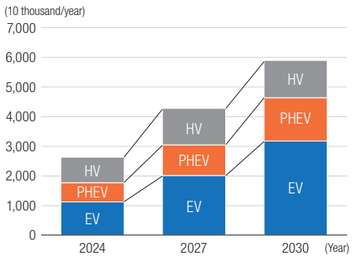
Laminated electrode



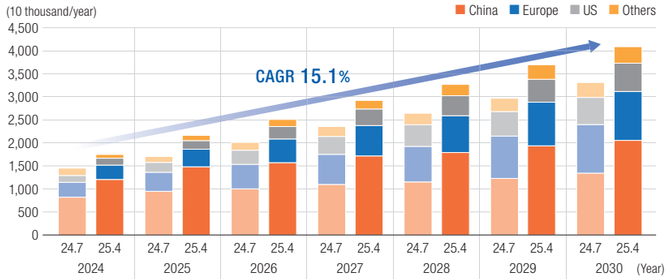
Market environment

- ■ Global sales of new EVs are trending upward, and the medium- to long-term shift toward electrification remains unchanged.
- ■ Environmental regulations, such as stricter CO_2 emissions standards in Europe by 2030, are driving long-term expansion of efforts to reduce environmental impact.
- ■ Automakers are pursuing diversified strategies that include EVs, plug-in hybrid vehicles (PHEVs) and hybrid vehicles (HVs), increasing options for end users.

EV, PHEV and HV sales volume



Regional sales of EVs and PHEVs (Comparison Between July 2024 and April 2025 Forecasts)



DNP's forecasts based on Global Data, MarkLines/national policies, automaker press releases, etc.

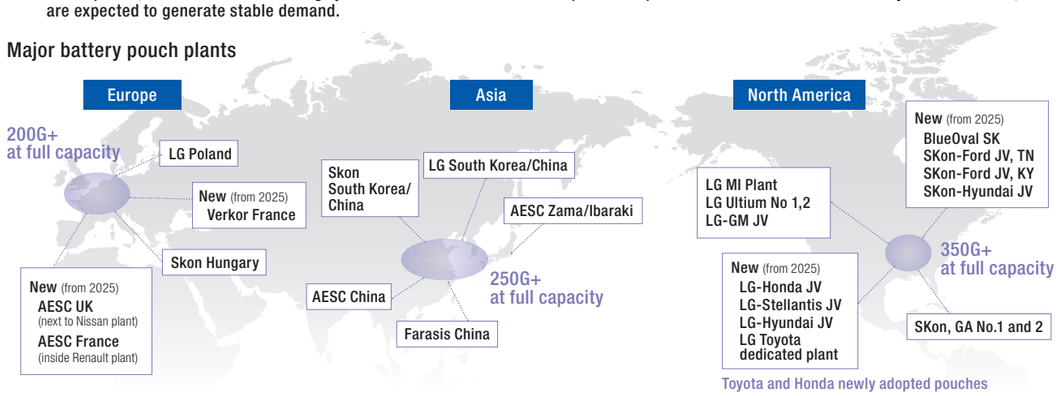
Battery Pouches for Lithium-Ion Batteries

Global top market share

Growth strategy

- ■ **Leverage pouch-type battery plants, scheduled to start operations in Europe and the US in 2025–2026, as a driver of growth.**
  - **These plants, often established through joint ventures or contract-based partnerships between automakers and battery manufacturers, are expected to generate stable demand.**

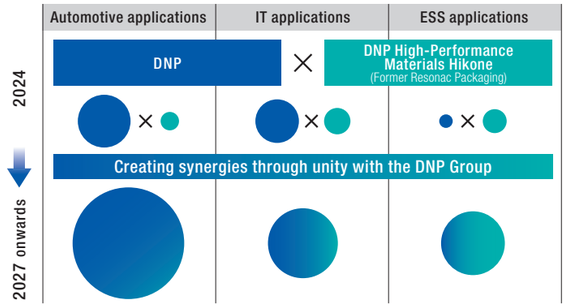
Major battery pouch plants



Toyota and Honda newly adopted pouches

- ■ **Expand synergies with DNP High-Performance Materials Hikone (former Resonac Packaging), consolidated into the Group in February 2025**
  - **Operate across all product areas: automotive, IT devices and energy storage systems (ESS)**
  - **Leverage All DNP to integrate strong patents and technologies, creating robust entry barriers and enhancing competitiveness against other companies and alternative technologies**

Expansion of product lineup through the realization of synergies



- ● The DNP Group has achieved global top market share for battery pouches used in automotive and high-end IT applications.

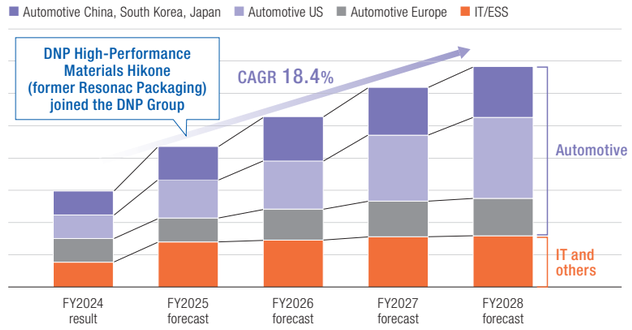
&

- ● Former Resonac Packaging, strong in ESS and producing e-cigarettes and mid-range products.

- ● Together, the two companies hold over 800 patents, and by integrating their manufacturing know-how, technology development and production strengths, they further enhance their competitive advantage.

Performance trends and future outlook

- ■ **From February 2025: Expand product areas through synergies following the consolidation of DNP High-Performance Materials Hikone (former Resonac Packaging) into the Group.**
- ■ **2025–2026: Accelerate business growth, leveraging the full-scale start of new battery plants in Europe and the U.S.**
- ■ **Medium- to long-term outlook: Anticipate market trends and consumer needs to develop and deliver higher-value products and services, contributing to a "better future."**



Focus Businesses

Digital Interfaces: Optical Films for Displays

Global top market share*

* In the case of anti-reflection film and anti-glare film used on the surface of displays

Electronics

Business overview & DNP's strengths

DNP provides optical films for displays with diverse functionalities by leveraging our proprietary optical design and converting technologies (material processing). From large displays to those in smaller devices, we offer a broad range of products tailored to various applications. We anticipate global trends, manufacturer requirements, and consumer expectations, continually striving to achieve even higher functionality. We hold the world's leading market share in anti-reflection (AR) and anti-glare (AG) films, and also offer retardation films that enhance contrast and expand viewing angles. Additionally, we are expanding production capacity through initiatives such as introducing the world's widest equipment to accommodate larger displays. Going forward, we aim to continue delivering displays with more vivid colors and improved usability, realizing comfortable lifestyles.

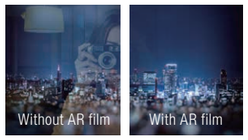
Value creation process of optical films

Trends	DNP's solutions	Impact on society
■ Increased size of TVs and other displays ■ Increased scope of use, higher functionality ・Low reflection ・Scratch resistant ・Anti-glare and high definition ・Foldable	■ Optical design technology to control light, and material and coating technology → **Top share of the global market for optical films for displays***	■ Provides displays with more vivid colors ■ Expanded scope of use of devices and enhanced usability → **Realizing comfortable lifestyles**

*In the case of anti-reflection film and anti-glare film used on the surface of displays

DNP's strengths (manufacturing process of key products)

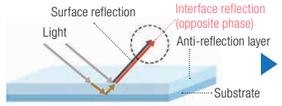
Anti-Reflection (AR) Film



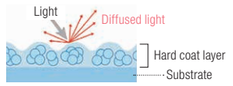
Anti-Glare (AG) Film

Conventional AG　　High anti-glare AG

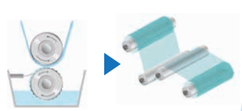
Material design & optical design → Precision multi-layer coating → Roll-to-roll → Imparting diverse functionalities



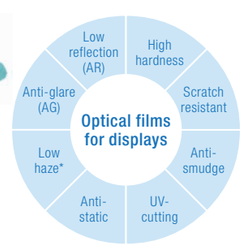
The interference between surface reflection and interface reflection is utilized to reduce the amount of reflected light.



When light hits uneven surfaces, it scatters, which decreases the reflection of external light.



By advancing precision coating technology for uniformly applying functional materials onto film substrates, optical design, and materials development capabilities—and integrating these areas of expertise—DNP has built a rich lineup of optical films with diverse functionalities.

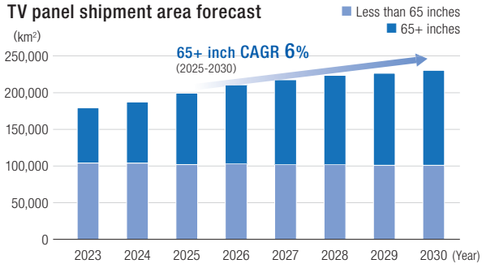


* Low haze: a state of high transparency with minimal light scattering.

Market environment

- **The demand for optical films used in large displays is increasing because of the growing size of TVs and other displays.**
- **We are increasing our production capacity to ensure a consistent supply.**

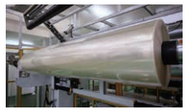
TV panel shipment area forecast



Source: Omdia Display Long-Term Demand Forecast Tracker 1Q25 Pivot with 4Q24 Result

Business environment	• Increased size of TVs 2025→2030 Overall TV panel size CAGR: 3% 65+ inch CAGR: 6%
Opportunity	• Increasing demand for high function optical film for large-screen TVs
DNP's strengths	• Large-scale technology, advanced functionality technology, optical design technology that controls light reflection, materials, and coating technology. • Extensive production lineup to accommodate various film substrates. • In-line multilayer coating production equipment to produce high functionality and high quality products. • Ability to provide a stable supply of high-quality products while pursuing high productivity. Key initiatives We will enhance our production capacity and ensure a stable supply by initiating the operation of a second ultra-wide line capable of handling widths of up to 2,500 mm, which is scheduled to commence in September 2025.

Image of the Mihara Plant (Hiroshima Prefecture), where a new wide-range coating device has been added

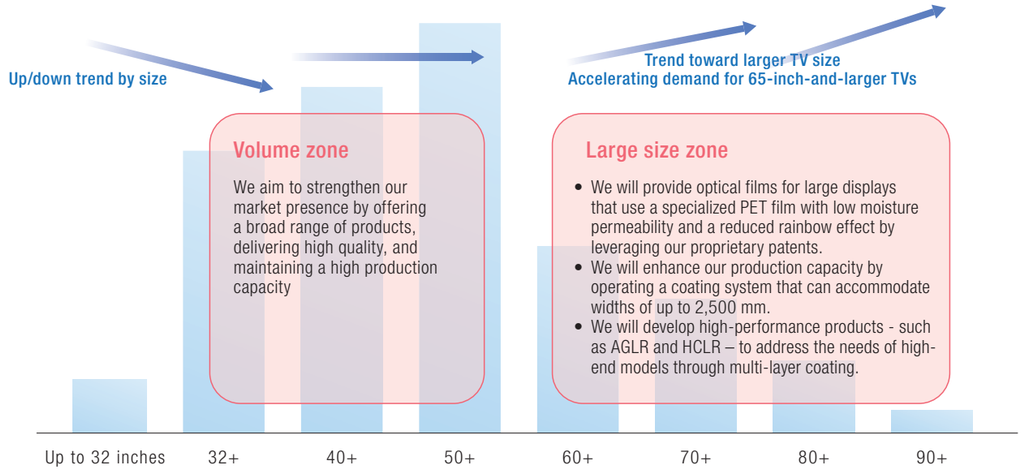


Part of our coating device

Growth strategy

- **We aim to further expand our market share by increasing our production capacity for high-performance, high-quality products utilizing inline multi-layer coating.**
- **Respond to diverse needs of manufacturers and consumers by supporting a variety of film substrates**
  - **Capable of handling TAC (triacetylcellulose), acrylic and PET (polyethylene terephthalate)**
  - **Utilize DNP's proprietary patents to employ a special PET with low moisture permeability and reduced rainbow effect for large displays**

Image of number of units shipped by television size



The visibility of the display is significantly enhanced with the reduction of glare.

Conventional AG film

AGLR film with enhanced anti-glare performance

Performance trends and future outlook

2024 result

Significant growth driven by an increase in the shipment area of optical films.

Background
- Larger TV panels
- Changes in the supply chain
- Increased TV sales due to consumer goods replacement subsidies in China
- A spike in shipments due to US tariff policies

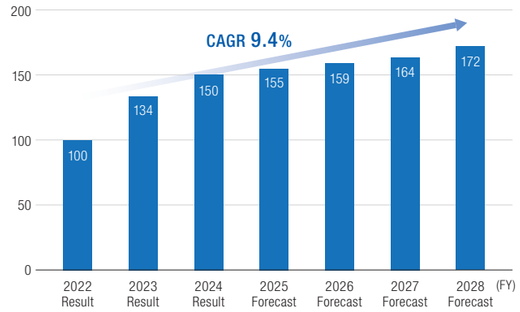
2025 forecast

Demand is expected to continue following 2024.

Future outlook

We expect increasing demand for wide, multi-layer, high-value-added products manufactured using wide-width coating equipment, reflecting the trend toward larger displays.

Sales (Comparison indexed to FY2022 as 100%)



Focus Businesses

Digital Interfaces: Metal Masks for Electronics

OLED Display Manufacturing

Global top market share

Business overview & DNP's strengths

Metal masks are key components used in the deposition method, the current standard for manufacturing small- to medium-sized OLED displays. They are essential for forming red, green, and blue (RGB) organic materials on substrates. In recent years, OLED adoption has expanded from smartphones to tablets, laptops, and automotive devices, driving expectations for further market growth. DNP began developing metal masks in 2001, leveraging its proprietary photolithography and etching technologies. Having contributed to the OLED display market since its early days, DNP now holds a leading global market share. We will continue to support diverse needs, including thinner, lighter, and higher-resolution displays.

DNP's core technologies (Vapor deposition process in OLED display manufacturing)

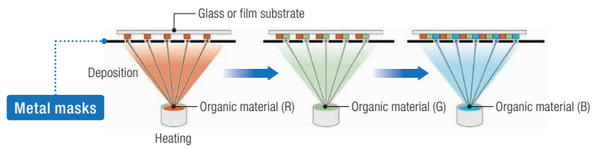
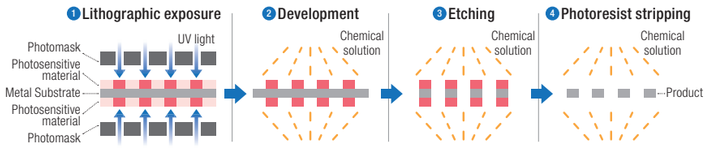


Image of an OLED display manufactured using metal masks

Trends	DNP's solutions	Impact on society
■ Increasing demand for smartphones ■ Increasing use in small and medium devices ・Smartwatches ・Laptops ・Tablets ・Automotive	■ High-definition metal masks are manufactured using proprietary photolithography and etching processing technologies. **DNP has obtained the top global market share particularly for smartphones**	■ Realization of thinner, lighter and higher resolution displays ■ Expansion of possibilities for new applications using flexible form factors **Realizing comfortable lifestyles**

Conceptual diagram of general photolithography and etching processing technologies

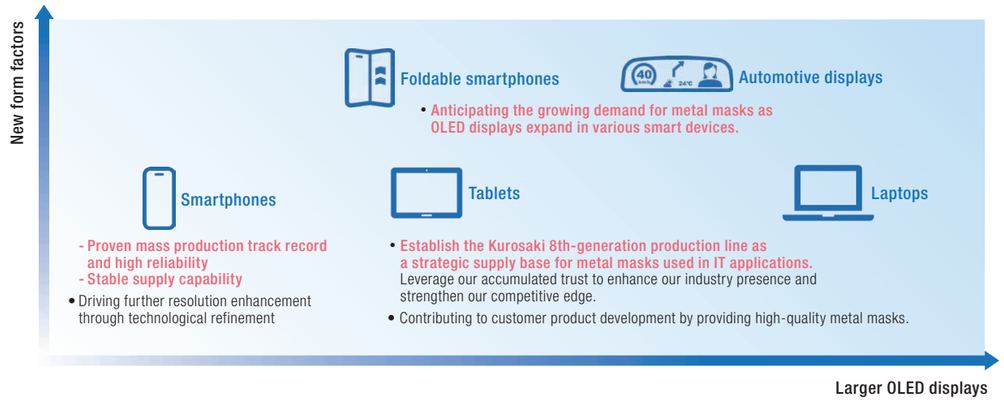


Metal masks originated from the technology used to create printing stamps. Through continuous refinement of the technology used to make plates for more beautiful and vivid printing, this technology evolved into high-precision microfabrication technology.

Growth strategy

- **Leverage technological strengths and patent strategies to maintain and enhance global market leadership**
- **Anticipate the growing demand for metal masks as OLED displays expand in various smart devices.**
- **Contribute to the evolution of displays by providing high-quality and reliable metal masks.**

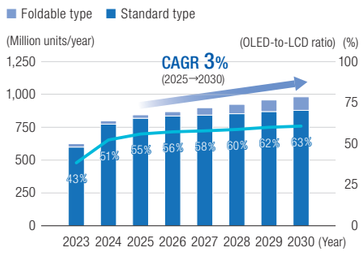
Business environment	• While the smartphone market has reached maturity, - The percentage of OLED display use in smartphone displays is growing - The new form factor of foldable displays has emerged • **The adoption of OLED displays in tablets, laptops, and automotive displays is growing, leading to an increase in size.**
Opportunity	• Requirement for even higher-definition OLED displays • Increasing demand for 8th-generation metal masks
DNP's strengths	• High-precision photolithography and etching processing technologies. • Superior technological development capabilities. • Ability to provide a stable supply of high-quality, high-definition products. • Extensive patents and know-how related to materials, manufacturing methods and products. Key initiatives **Strengthening our 8th-generation production line, primarily for IT applications** **The 8th-generation metal mask production line (Kurosaki, Fukuoka Prefecture) began operations in May 2024 and continues to manufacture products for customer applications.** - Timely delivery of products according to customers' needs and plans. - Ongoing enhancement of quality and production capacity.



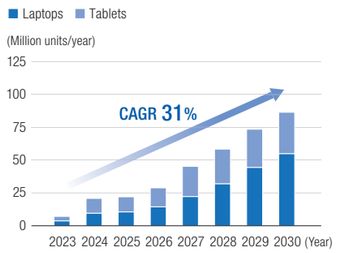
Market environment

- **The use of OLED displays in smartphones is growing.**
- **Adoption of OLED displays is expanding in tablets, laptops, and automotive displays**

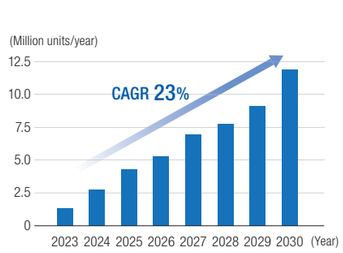
OLED panel shipment forecast for smartphones



OLED panel shipment forecast for tablets and laptops



OLED panel shipment forecast for automotive displays



Source:Omdia Display Long-Term Demand Forecast Tracker 1Q25 Pivot with 4Q24 Result

Performance trends and future outlook

- **DNP will continue to adapt to changes in the display market and ensure stable supply.**
- **Through the execution of our growth strategy, we plan to achieve a CAGR of 9.3%, surpassing the market growth rate.**

2024 result

Sales fell due to the post-surge adjustment after strong development demand in fiscal 2023.

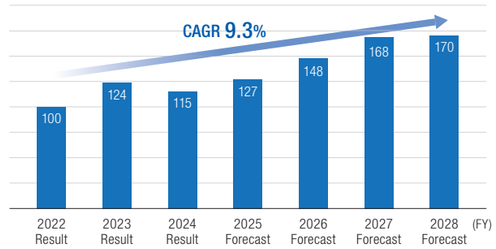
2025 forecast

The trend of increasing OLED panel adoption in smartphones and other devices continues.

Future outlook

We expect increased demand for IT devices such as tablets and laptops.

Sales (Comparison indexed to FY2022 as 100)



Focus Businesses

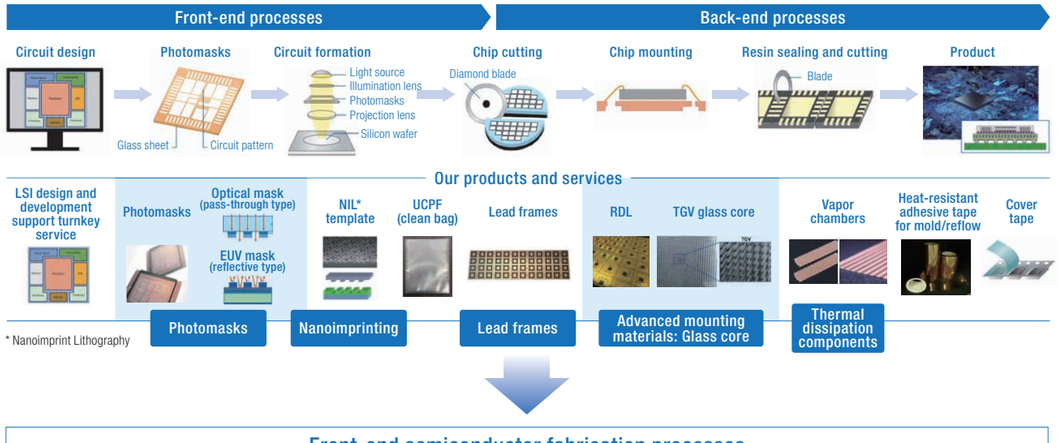
Semiconductors

Electronics

Business overview & DNP's strengths

DNP provides a wide range of products and services across the entire manufacturing process for semiconductor products, a market experiencing global demand growth with the expansion of generative AI, the metaverse, and data centers. We continuously refine and integrate our proprietary technologies, including microfabrication and precision coating, and actively pursue M&A and business partnerships with companies that bring complementary strengths to DNP, accelerating the creation of new value.

Semiconductor fabrication process and DNP's semiconductor-related products and services



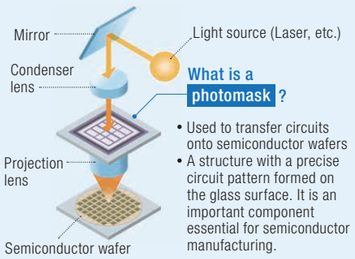
Front-end semiconductor fabrication processes

● Photomask

A photomask is a glass plate that functions like a photographic negative, using light to transfer intricate circuit patterns onto substrates. DNP has independently advanced microfabrication technologies cultivated through printing processes to provide a wide range of photomasks. Beginning with the successful development of vapor-deposited masks for transistors in 1959, DNP now offers photomasks capable of achieving patterns at the 2-nanometer (1 nm = one-billionth of a meter) level, contributing to the advancement of electronic products.

● Template for nanoimprinting

Nanoimprint lithography (NIL) is a technology in which a template (stamp) is pressed onto a substrate coated with UV-curable resin, transferring the circuit patterns on the template onto the resin as ultrafine protrusions and depressions. This method enables the production of next-generation semiconductor products and is attracting attention as a way to significantly reduce power consumption in the manufacturing process.



What is a photomask ?

- Used to transfer circuits onto semiconductor wafers
- A structure with a precise circuit pattern formed on the glass surface. It is an important component essential for semiconductor manufacturing.

Back-end semiconductor fabrication processes

● Lead frame

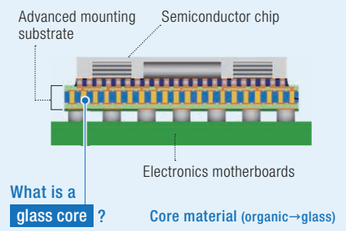
DNP began producing lead frames—the substrates used to mount and connect semiconductor chips—in 1964. Anticipating the growing demand for higher performance, increased functionality, and smaller, lighter semiconductor products, DNP has developed and provides a diverse range of lead frame solutions.

● Glass core

For semiconductor package substrates, glass is gaining attention as a core material due to its superior flatness and low warpage, addressing the need for finer circuit patterns and larger chips compared with conventional resin-based cores. This requires the formation of fine, high-density through-glass vias (TGVs) connecting the front and back surfaces of the glass. DNP combines its expertise in handling thin, large glass developed for LCD color filters with advanced microfabrication technologies to realize glass cores. Development in this area is being accelerated as a key growth-driving business.

● Thermal dissipation components and vapor chambers

As smartphones and other devices increase in capacity and functionality, effectively managing heat from components while maintaining space for long-lasting batteries has become a critical challenge. DNP has developed thin vapor chambers with hollow structures created by bonding metal plates, which efficiently transfer heat to reduce internal device temperatures. Precision etching is applied to achieve the thin, high-performance design required for modern electronics.



What is a glass core ? Core material (organic→glass)

Core substrates using organic materials are used in advanced mounting substrates employed in packages for high-performance devices. In order to solve future issues (flatness and warpage) associated with finer wiring and larger size of mounting substrates, core substrates made of glass instead of organic materials are gaining attention.

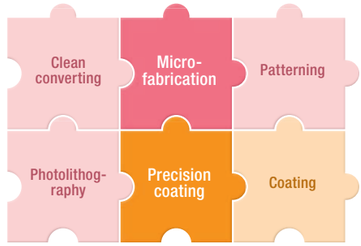
DNP's strengths

- ○ Offering a range of products and services throughout the entire semiconductor manufacturing process by leveraging proprietary technologies cultivated through printing
- ○ Accelerating value creation through strengthened alliances with external partners
- ○ Capability to address cutting-edge semiconductor manufacturing processes such as nanoimprint and extreme ultraviolet (EUV)
- ○ Developed a next-generation semiconductor package TGV glass core substrate
  - Applied and advanced technologies for handling thin, large glass and precision processing
  - Improved adhesion between glass and metal using a new method developed by DNP, achieving high precision and reliability

Examples of our core technology in Electronics

We utilize our distinctive optical design technology as the foundation, incorporating precision thin-film clean coating technology and converting technology, including LCD coating, to deliver optical film products with a wide range of functionalities.

This technology forms high-resolution replica images by exposing a photosensitive agent applied to the substrate's surface to light or electron beams, thus creating the original image.



This involves etching technology, where materials undergo chemical corrosion and removal to achieve the desired structure, and molding technology, utilizing molds made of metal, glass, or resin to replicate the material's uneven shape on a printed substrate.

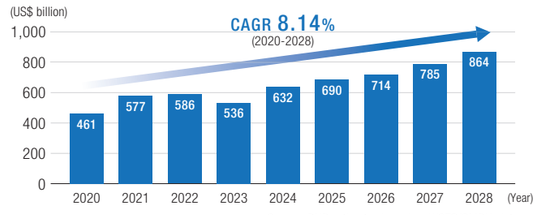
Wet coating is a process in which inked materials are thinly and uniformly applied to cover the surface of a substrate. When combined with substrate design technology, it allows for the creation of coatings with various functionalities.

Market environment

■ Photomasks: The photomask merchant market is also expected to grow steadily alongside the expansion of the semiconductor market.

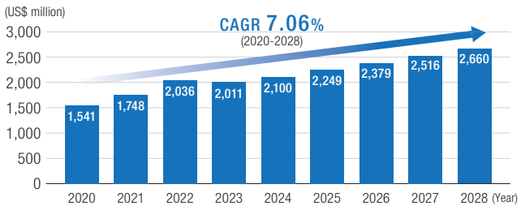
- **The semiconductor market is projected to grow at a CAGR of 8.14% from 2020 to 2028, driven by expansion in AI-related technologies and automotive applications.**
- **The photomask merchant market, which is one of DNP's business areas, is also expected to grow steadily in line with the expansion of the semiconductor market.**
- **Recently, growth in consumer and industrial equipment has stabilized, and US tariff policies may have some impact; however, the photomask merchant market—particularly for newly developed products—is expected to remain robust.**

Semiconductor market actual/forecasts



Source: DNP estimates based on WSTS/OMDIA data

Photomask merchant market actual/forecasts



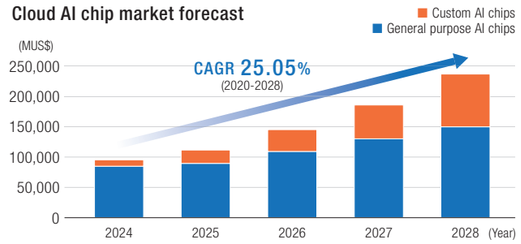
Source: DNP estimates based on SEMI data

The photomask market can be roughly divided into the internal (Captive) market, which targets semiconductor manufacturers' in-house production, and the external sales (Merchant) market, which targets semiconductor manufacturers that do not have their own in-house production divisions

■ Glass cores: Driven by advancements in AI and chiplet technology, as well as the trend toward larger package sizes, glass cores are attracting attention, and semiconductor manufacturers are increasingly adopting them.

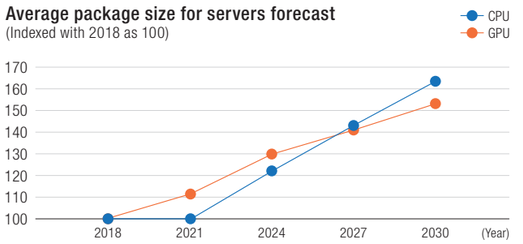
- **Against the backdrop of advancements in AI and the growing use of chiplets, package substrates for advanced devices are becoming larger.**
- **Demand for glass cores is emerging as a solution to the limitations of conventional organic (resin) cores in terms of warpage, flatness, and rigidity.**
- **From the second half of 2024, efforts to evaluate package reliability in preparation for glass core adoption are accelerating.**

Cloud AI chip market forecast



Source: Estimate by DNP based on various materials

Average package size for servers forecast
(Indexed with 2018 as 100)



Source: Estimate by DNP based on various materials

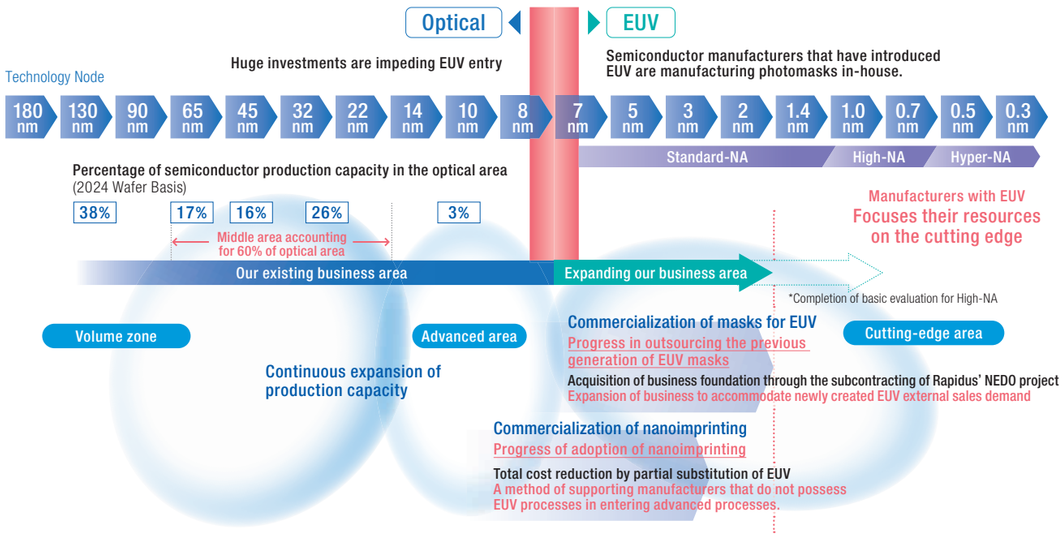
Semiconductors: Photomasks for Semiconductor Production

Top-level market share in the photomask merchant market

Electronics

Growth strategy

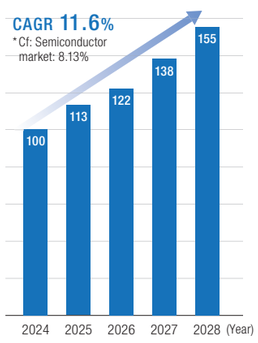
- As a merchant photomask manufacturer, DNP is strengthening its capabilities in cutting-edge areas with high market potential, in advanced areas with sustained growth, and in high-volume product segments, aiming to comprehensively cover the semiconductor market and achieve sustainable business expansion.
  - Using the subcontracting of Rapidus' New Energy and Industrial Technology Development Organization (NEDO) project as a business foundation, DNP aims to expand its operations to meet the merchant sales demand of newly established in-house manufacturers.
- DNP will further promote and strengthen its core competitive advantages—robust partnerships and continuous technological development—to create new value.



Performance trends and future outlook

- As a core product of DNP's semiconductor business, we will continue to make proactive investments in photomasks.
  - We plan to achieve growth exceeding that of the overall semiconductor market.

Sales plan indexed to 2024 as 100



FY2025 progress (comparing with previous IR-Day report)

Sales vs. FY2022

15% increase expected as planned

Investment from FY2023 to FY2025

Expected to implement ¥20 billion as planned
Expected to be 10% or overall sales as planned

Cutting-edge area

Masks for EUV
- Start of development of 2nm generation → resolution successful
- Start of shipment of masks for EUV with the launch of a pilot line at Rapidus
- Increase in inquiries from major manufacturers

Nanoimprinting
Increase in inquiries from various companies → start of evaluation work

Advanced to volume zone

Expected to secure 120% production capacity as planned (compared to FY2022)

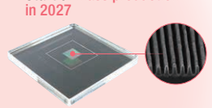
Growth drivers

Cutting-edge area FY2028 + ¥10 billion (vs. FY2024)

Commercialization of masks for EUV
Start of full-scale mass production in 2027

Photomasks for 2nm node EUV

Commercialization of nanoimprinting
Start of mass production in 2027



NIL Template

Advanced to volume zone

Continuous expansion of production capacity

Optical photomasks

FY2026-FY2028 Capital Investment Plan: ¥30 billion

Investment targets:
- Cutting-edge area: mass production of photomasks for EUV, accelerated development and commercialization of nanoimprinting
- Advanced to volume zone: Strengthening production systems to respond to two areas that are expected to continue to expand

Semiconductors: Glass Cores

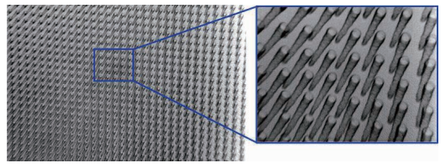
Electronics

Growth strategy

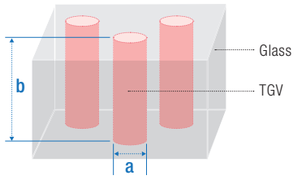
- As part of DNP's new portfolio for the semiconductor business, we will add glass cores.
  - Plan significant growth for glass cores as products that will drive the next generation of semiconductor-related businesses.
- We will gradually implement capital investments in line with the trend of semiconductor manufacturers increasingly adopting glass cores.
  - We anticipate starting mass production in 2028.

○ Actively offer a lineup of products that leverage DNP's technological advantages while meeting the high-quality standards required by semiconductor manufacturers.
○ Target high-value-added products featuring high aspect ratios and superior quality, achieving both large-capacity signal transmission and stable power supply through high-density Through-Glass Vias (TGVs), and advance stepwise preparations toward mass production.

TGV glass core



Aspect ratio (=b/a)



○ Promote development and commercialization centered on collaboration with partner manufacturers and other partners
○ From fiscal 2024, we are planning capital investment in line with the movements by semiconductor manufacturers and substrate manufacturers.

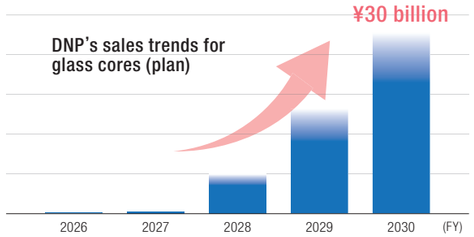
Main investment targets
- Pilot line: Scheduled to be completed at end of 2025 (Kuki City, Saitama)
- Full-scale mass production line: Planning large-scale investment assuming shift to mass production in 2028

Current status of pilot line

Performance trends and future outlook

- Semiconductor manufacturers are currently conducting evaluations aimed at mass production application.
  - The decisions on whether to adopt the technology are expected to be made from the end of 2025 to the first half of 2026.
  - Manufacturers are expected to gradually commence mass production from 2028.

DNP's sales trends for glass cores (plan)



TOPICS

DNP's next-generation semiconductor package TGV Glass Core Substrate wins Grand Prize in the Semiconductor Electronic Materials category of the Semiconductor of the Year 2023 awards organized by Sangyo Times, Inc.

The awards are presented in three categories—Semiconductor Devices, Semiconductor Fabrication Equipment, and Semiconductor Electronic Materials—and winners are selected by Sangyo Times reporters through a rigorous voting process based on criteria such as the novelty of the development, establishment of a mass-production system, societal impact, and future potential.

DNP's new fabrication method was highly praised for improving the previously challenging adhesion between glass and metal, achieving both high precision and reliability, and increasing design flexibility in controlling warpage and flatness, enabling support for larger semiconductor packages.

Presentation by a DNP employee