

## R&D Activities and Intellectual Property



As a technology-centered company, we realize that strengthening R&D capabilities is one of our most important management strategies for achieving sustainable growth. Two approaches help us to create both products that resolve our customers' technological issues and products that are unprecedented, innovative, and lead the market: the developing of functional materials and related processing technologies that leverage our proprietary technological capabilities, and a market-dialogue style of research that emphasizes user needs. Going forward, we will further strengthen our R&D systems to accelerate the speed of product development and create new technologies.

### R&D Achievements

In the fiscal year under review, R&D expenses incurred by the Group amounted to ¥6.8 billion. The following is an overview of the principal R&D activities conducted by each operational segment.

#### Printing and Industrial Materials Products

##### Printing and Variable Information Materials

As part of its efforts in developing environmentally friendly products, LINTEC has newly developed a label material made from a PET film comprising more than 80% recycled PET resin. The material uses PET that has been re-formed through a mechanical recycling process, and we are beginning to promote it as a new fixture of our environmentally friendly label materials product lineup.



Mechanically recycled PET label materials

##### Industrial Materials

LINTEC has developed a new automotive film, which adds a touch of luxury to automobile window glass and also prevents the glass from shattering into fragments if broken. The film filters out light close to visible light with a wavelength between 900nm-1200nm, and maintains a high level of transparency while demonstrating outstanding insulation properties.

In industrial machinery-related products, our development activities are focused on labeling systems for the automated application of the adhesive labels that are our core products. In the fiscal year under review, we developed a semi-automatic packaging and address labeling device, in addition to a labeling device equipped with a full-color printer, for the logistics and mail-order industries.

#### Electronic and Optical Products

##### Semiconductor-Related Materials

LINTEC is pushing forward with its DBG+LE system, a fusion of our dicing before grinding (DBG) system, which allows for the creation of thinner large-scale integration (LSI) chips, and our LE tape, which functions as both dicing and die bonding tape. This has resulted in the realization of multilayer LSI chips and LINTEC is contributing to increased density of LSI packaging through measures such as the integration of this technology in solid state drives (SSDs), which represent an alternative to conventional hard disk drives (HDDs).

In the electronic equipment-related products, we are focusing our efforts on the development of an application device to improve the efficiency of tape use in the wafer back grinding and wafer dicing back-end semiconductor fabrication processes. In the year under review, we newly developed a vacuum laminator that enables compatibility with both the surface unevenness of the wafers of power devices and the through-silicon via (TSV) process. Moreover, we also developed and released a new multiwafer mounter, which is capable of processing ultra-thin wafers without using Back Grinding (BG) tape.

### Optical Functional Materials

We are continually engaged in the development of adhesives for use in mobile devices, such as optically clear adhesive sheets for use in polarizing films and touch screens, and anti-shatter films. Moreover, through a unique optical design we have created a specialized light diffusion film that controls the scatter of light. By offering special customization to meet customer demand, we have sharpened our competitive edge and anticipate the technology to be adopted for display and signage applications. We aim to expand sales of these products while continuing to develop new functional adhesives and coatings.



Conventional reflective LCD (left) and reflective LCD using LINTEC light diffusion film

### Paper and Converted Products

In specialty papers, we have developed four new colors of Japanese-style fancy paper. The new colors are pale, pastel hues based on Japan's four seasons. We also pushed forward with the development of a water-repellent paper for envelopes.

In release materials, we aim to enhance our existing range of environmentally friendly products and have been pushing ahead with the development of a solvent-free release paper formula. Moreover, concerning release film formulation, we have launched a new product that significantly reduces the volume of organic solvents used in the dilution process. We have also refined the anti-static formula of process film for



Japanese-style fancy paper

electronic device production, establishing an improved formula that offers excellent substrate adhesion and can be combined with various release formulas.

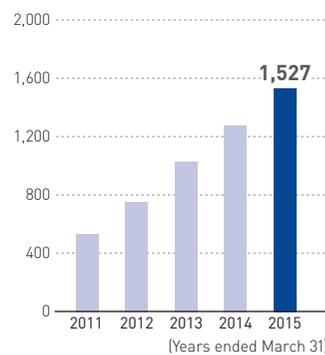
### Intellectual Property Activities

The LINTEC Group aims to increase corporate value by developing original products that meet customer needs. We therefore rank intellectual property, such as patents, trademarks, and design rights, which we have acquired through these development activities, as important management resources. While placing the utmost emphasis on respecting the rights of other companies, the Intellectual Property Department, Research & Development Division promotes strategic Companywide intellectual property activities. These activities include seeking to uncover new invention candidates at R&D sites for the purpose of expanding intellectual property rights, which are the lifeline to a technology-centered company.

Accordingly, while planning the linkage of things such as patent portfolio building for our foundation and growth business domains, and support for M&A activities, with our business strategy, we aim to improve profitability based on intellectual property.

#### Number of Patents Registered in Japan

\* Patents held at the end of the fiscal year (cumulative)



## Human Resources



The LINTEC Group employs approximately 4,500 people (on a consolidated basis) in 16 countries and regions around the world. Diverse human resources are the Group's asset, and its strength is characterized by a corporate culture nurtured over an 80-year history, which values "harmony among people" and "stand out of the crowd" individuality in its employees, in addition to a deeply rooted awareness of innovation across the entire company. LINTEC strives to create a pleasant working environment for everyone and is engaged in the enhancement of its systems and the education of its employees.

### Respecting Human Rights and Diversity

The LINTEC Group avoids discriminatory treatment of employees based on race, creed, gender, education, nationality, religion, or age, thereby respecting the diversity of individuals. In the areas of recruitment and employment, the Group complies thoroughly with labor laws and regulations, including the prohibition of unfair discrimination, child labor, and harassment, and is pushing forward with the creation of workplace environments where all employees can happily and actively do their jobs.

### Employment of Disabled Persons

The Group's disabled persons employment ratio for the year ended March 31, 2015 was 1.78%, which was below the legally mandated rate of 2.0%. Going forward, we will strive to increase our disabled persons employment ratio through measures such as the improvement of on-site facilities as required.

### Rehiring System

To expand working style options for its employees, the Group has introduced a job return program to rehire ready-to-work employees who had previously resigned for personal reasons such as childbirth, nursing care of a family member, or the transfer of a spouse to a different location. We have also introduced a system to rehire employees who wish to continue working past the mandatory retirement age of 60, on fixed-term one-year contracts up to a maximum age of 65.

### Work-Life Balance

LINTEC is working to help employees to balance their professional and personal lives, so that employees are able to perform their jobs with peace of mind and exercise their full abilities. In addition to the establishment of no-overtime days, which aims to deter employees from working excessively long hours, and the implementation of a flextime system, LINTEC is

also working toward the enhancement of programs that allow employees to match their working style to their lifestyle. This includes expanding the field of eligibility for and lengthening the period of shorter work hours for childcare and family care programs, and the introduction of a paid social contribution time-off program. Furthermore, in order to encourage employees to take more paid leave from the fiscal year ending March 31, 2016, we have introduced a system that requires employees to designate in advance three days that they will take as paid leave over the year.

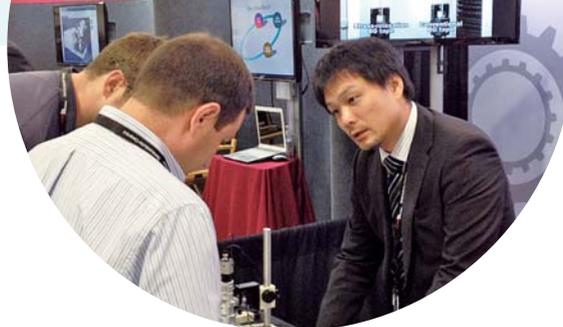
### Employee Education

LINTEC has introduced Companywide rank-based training programs, which are human resource education programs tailored to individual employee's years of continuous service and careers. Moreover, with objectives such as promoting second-language acquisition and encouraging women to play a more active role in the workplace, we hold theme-specific group and correspondence training courses to promote the education of global human resources and the career progression of female employees. Furthermore, we are also engaged in efforts to boost Companywide employee understanding of various themes, such as the environment, product quality, the business continuity management system (BCMS), and CSR, through e-learning programs offered via the Company's intranet.



Training session to promote the active involvement of female employees

# Partnerships



The LINTEC Group boasts a very wide product lineup and conducts transactions with numerous customers and suppliers. We build trusting relationships with suppliers as a partner that aspires toward mutual development, and convey peace of mind and reliability to our customers by developing products that meet their needs, maintaining a stable supply of these products, and endeavoring to improve product quality and service. Moreover, we are also actively engaged in the development of products through collaboration with customers and cooperation with industry, government, and academia.

## Conducting Thorough Quality Management

The LINTEC Group has acquired ISO 9001 certification, the international standard for quality management systems, for its major sites in Japan and overseas. In addition, we are working to further reinforce our quality assurance system by expanding ISO 9001 to other departments and acquiring integrated certification for related sites. We also strive to prevent quality problems by conducting design reviews, a method for checking materials under development at each stage of the production process from the perspective of different divisions. As a result of such initiatives, when comparing major quality problems by year, if year ended March 31, 2004 is set as a base of 100, problems declined to 14 by the fiscal year ended March 31, 2015.

**Major Quality Problem Rates by Fiscal Year**  
(2004 set as a base of 100)



## Efforts toward Business Continuation

The Company is engaged in building a system capable of either continuing or soon restarting business operations even if struck by a disaster. In March 2014, all the Company's bases in Japan and one of its subsidiaries, TOKYO LINTEC KAKO, INC., obtained certification under ISO 22301:2012, the international standard for business continuity management systems (BCMS). LINTEC holds BCMS study meetings and drills at each site so that, in the event of a natural disaster or accident that disrupts

business operations, we can ensure the safety of our employees before promptly recommencing the supply of products, in addition to minimizing any effect on our stakeholders, including our customers.

LINTEC is continuously evaluating its suppliers' ability to continue their businesses, as raw materials are critical in securing a stable supply of products for our customers. At the same time, we request that our suppliers introduce a business continuity plan (BCP) and establish a management system to implement it.

## Fair Transactions

The LINTEC Group has a basic policy for fair and transparent transactions based on the principle of free competition between all suppliers, and we are engaged in procurement activities that comply with all relevant laws and regulations and social norms. We select suppliers by evaluating not only quality, price, punctuality, stability of supply, technology, and service, but also the environmental preservation and CSR efforts of these suppliers.

## Green Procurement

The LINTEC Group is committed to procurement that aims to reduce environmental impact, through thorough chemical substance management for raw materials, parts, and secondary materials. On procuring a new material or implementing a new regulation, we ask for suppliers' understanding in conducting ingredient examinations to monitor for the presence of regulated substances. For the year ended March 31, 2015, we implemented ingredient examinations to monitor for the presence of substances regulated by REACH\* in the procurement of approximately 12,000 items.

\* REACH Regulation: Registration, Evaluation, Authorization and Restriction of Chemicals. This is a European Union regulation to address the production and use of chemicals.

## Social Contribution Activities



The LINTEC Group is supported by society and local communities. Recognizing that it is a part of this, and through various social contribution activities, the Group returns some of the profits it has made through its corporate activities to society. Going forward, we will endeavor to maintain harmony with society by actively engaging in social contribution activities as a good corporate citizen.

### Support for Disabled Persons

LINTEC holds various support activities on an annual basis for disabled persons living in Itabashi-ku, Tokyo, where our head office is located. The baseball-viewing event in April 2015 marked the ninth time the event has been held, and a total of 118 disabled persons, including their helpers, were invited to Tokyo Dome to watch a professional baseball game. On this occasion, we also invited 385 elementary school students belonging to local youth baseball teams and their leaders. Before the game began, the children engaged in fielding practice, base running on the playing surface, which will be remembered by many. In September 2014, we hosted a jazz concert with the aim of deepening interactions among attendees through music, regardless of whether they had or did not have a disability. This was the fourth time that we hosted this concert and, on this occasion, it was enjoyed by approximately 650 people, comprising disabled persons living in Itabashi-ku, in addition to other local area residents.



Professional baseball-viewing event

### Activities at Each Work Site

In addition to cleanup activities around each work site, LINTEC is also engaged in various other social contribution activities with their roots in the community, including participating in and supporting local festivals, conducting plant tours, collecting and handling donations of money and products for municipalities as well as local groups and facilities, and holding tree-planting activities. Moreover, we have been organizing blood donations

for many years at work sites nationwide, which have become established among our employees as a social contribution activity that they can easily participate in.



Participation in local festivals (Awaodori)

### Support for Earthquake Disaster Reconstruction

LINTEC is engaged in activities to support reconstruction efforts after the Great East Japan Earthquake of March 2011. For the year ended March 31, 2015, we donated monetary support such as from our employees and the Company to disaster-stricken Ofunato City in Iwate Prefecture. These funds are being used to maintain the grounds at junior high schools within the city, which is flanked by the temporary housing of victims, and have been useful in improving the environment where students exercise. Moreover, we have been holding an event showcasing products from Fukushima Prefecture at our head office, thereby supporting producers in the disaster-affected area who are worried about the financial damage that could be caused to their livelihoods by harmful rumors or misinformation about the safety of foods from Fukushima Prefecture.



Fukushima produce exhibition at head office

# Environmental Preservation



**Under the slogan, “We have to broaden our scope when working to support the environment. There is only one earth” the LINTEC Group has established environmental management systems. We are committed to reducing environmental impact as an intermediary materials manufacturer and developing environmentally friendly products.**

## Environmental Management

The LINTEC Group has set up environmental management systems that conform with the ISO 14001 international standard at its major sites in Japan and overseas. We are now actively advancing plans to have our overseas bases certificated in an integrated manner. During the year ended March 31, 2015, the Florida factory of our U.S. subsidiary MADICO, INC., was newly certified and, to date, we have completed the integrated certification of a total of 23 sites in Japan and overseas. By making progress in obtaining global integrated certification for overseas Group companies, we will strengthen efforts toward Companywide environmental preservation.

## Reducing Environmental Impact

The LINTEC Group is working toward the realization of a sustainable society and the creation of products with low environmental impact. For the year ended March 31, 2015, despite an increase in our production volume, we reduced our total energy use by 1.2% from the previous fiscal year and surpassed our target for annual CO<sub>2</sub> emissions of 205,000 tons, by achieving a reduction to 202,000 tons. Furthermore, we are also engaged in efforts to reduce the amount of waste generated in our production activities and the amount of water used in the papermaking process, in addition to the implementation of measures to reduce the amount of volatile organic compounds (VOCs), including organic solvents, that are released into the atmosphere.

## Environmentally Friendly Products

The LINTEC Group has embraced the rise in environmental awareness of recent years, and continues to develop products to meet a wide range of environmental needs, including those that are conscious of reuse, recycling, and energy-saving principles. In doing so, the LINTEC Group will continue to offer a lineup of products that are environmentally friendly.

## High-Peel and Removable Label Materials

High-peel and removable label materials can be attached firmly to plastic containers without leaving a sticky residue when the label is peeled off, thereby contributing to the reuse and recycling of these containers. The products are also environmentally friendly from a design perspective, as the coating process uses the adhesives of a water-based emulsion type and does not use organic solvents.



High-peel and removable label materials

## Solar Insulation Film for Glass

Window films can be applied to window glass in buildings and automobiles for various effects. Of these films, our high-transparency type solar insulation film maintains the natural light inside the room and preserves the view through the window, while significantly cutting the thermal energy from solar radiation that causes internal temperatures to increase and improving the efficiency of air conditioners in the summertime.



Window films