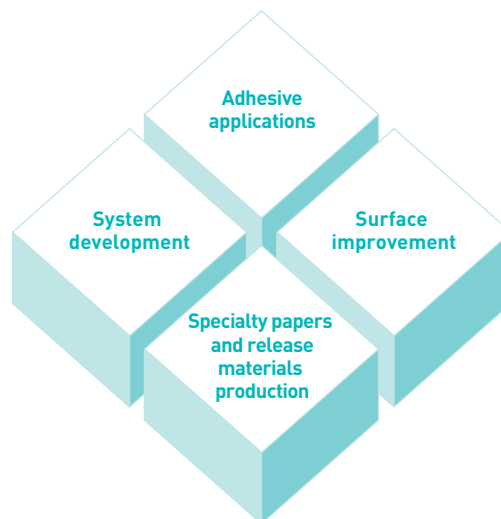


R&D Activities and Intellectual Property

Basic R&D Policy

By developing functional materials and related processing technologies that fuse our four core technologies in a sophisticated manner and conducting research that emphasizes dialogue with markets regarding user needs, we are working to resolve customers' technological issues, and through this process are developing many innovative, market-leading products.

As a technology-centered company, we realize that strengthening R&D capabilities is one of our most important management strategies for achieving sustainable growth. Therefore, we are developing new high-value-added products and environmentally friendly products with a particular focus on growth businesses while also working to accelerate LINTEC's globalization.



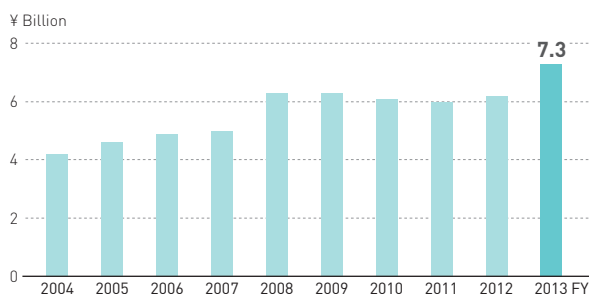
R&D System

The LINTEC Group's R&D function is focused in the Research Center within the Research & Development Division, which has approximately 200 research personnel. With a complete array of the very latest analytical equipment, pilot coaters, and clean-room facilities, the Research Center collaborates closely with production engineering divisions to develop a range of coatings and other products. In the fiscal year 2014, we plan to invest in the further construction of Research Center buildings to bolster our R&D system. Our Ina Technology Center, also part of the Research & Development Division, develops and manufactures a wide variety of equipment, particularly semiconductor-related equipment, and also label printing machines and labeling machines. The Group also has an R&D base in Boston, in the United States, which mainly studies creative technologies with possible application to adhesive products and industrial-use multilayer materials, and researches the commercialization of these technologies. We are not only conducting in-house R&D but are also proactively furthering technological alliances between industry, government, and academia. Our goal is to develop new technologies and products by integrating different technological areas.

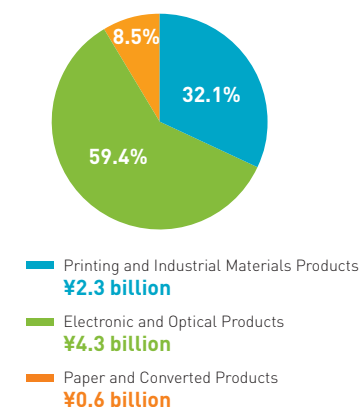
Successful R&D Initiatives in the Fiscal Year under Review

In the fiscal year under review, the R&D expenses incurred by the Group amounted to a total of ¥7.3 billion. The following is an overview of the principal R&D activities conducted by each operational segment.

R&D Expenses



R&D Expenses by Operational Segment in FY2013



Printing and Industrial Materials Products

Printing and variable information products

In order to meet demand for labels, such as POP and eye-catching labels, that allow easy reuse or recycling of containers after being removed, we developed label materials using new adhesives. We launched these label materials, which are strongly adhesive yet leave little glue when removed, as the REPOP brand. We also added silicone low-adhesion items, which make sticking easier, to our REPOP series lineup, making possible expansion to a variety of other applications.

In printing equipment-related products, we are developing printing machines that are optimally suited to the special characteristics of the Company's label materials. In the year under review, we continued to improve the LPM-300 intermittent letterpress and develop low-priced printing machines for the Chinese market. We also worked to develop equipment that combines roll-to-roll web handling technologies and processing technologies.

Industrial and material products

We developed new manufacturing technologies for PV backsheets, used to protect the backs of PV modules, launching the highly durable Reflekt series, which does not use any adhesives in forming the multilayer structure. We also developed the new product LAG JET U-IJ E-2203RC, a material for large-sized digital printing used for glass decoration purposes. It is a silicone low-adhesion item that makes possible clean and easy sticking through the release of air bubbles and water.

In industrial equipment-related products, meanwhile, our development activities are centered on labeling systems for the automated application of adhesive labels using LINTEC's label materials. In the fiscal year under review, we continued to focus on the development of equipment for the automobile, distribution, and mail-order industries.

Electronic and Optical Products

Semiconductor-related materials

Through the DBG+LE system that combines dicing before grinding (DBG) system technology with LE tape technology, which can create tape that functions as both dicing tape and die bonding tape, we made possible even thinner large-scale integration (LSI) chips with more layers, which are suitable for solid state drives (SSDs) that are an alternative to hard disk drives.

In electronic equipment-related products, our development activities are centered on application equipment that facilitates the efficient use of the protection tapes for wafer surfaces and dicing tapes used during semiconductor chip manufacturing back-end processes. In the fiscal year under review, we continued to focus development efforts on equipment compatible with ultrathin silicon wafers as well as on processing methods and environmentally friendly equipment.



REPOP



Semiconductor-related equipment

Our Growth Foundation

R&D Activities and Intellectual Property

Optical functional materials

We developed adhesives for polarizing films and touch screens used in mobile products. We also developed special films that can control the region of diffusion through proprietary optical design. We have expectations that these materials will be used in displays and digital signage applications.

Paper and Converted Products

In specialty papers, we developed the new high-grade white printing paper Nuage, which is suitable for offset printing, mimeograph printing, and a wide variety of imprinting such as laser, inkjet, and thermal transfer, as well as being optimal for on-demand printing. We also developed parking ticket paper that excels in being easy to feed, punch, and apply magnetic coating to.

In release materials, with the goal of enhancing our lineup of environmentally friendly products, we launched two new release papers that are produced with non-solvent formulations. We also developed a coating that curtails decreases in optical properties by preventing compounds leaking from polyester films in hot environments.

Intellectual Property Activities

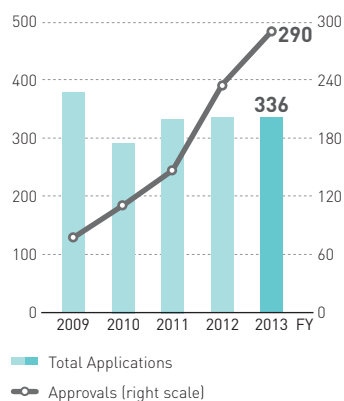
The LINTEC Group aims to increase corporate value by developing original products that meet customer needs. We therefore realize that intellectual property, such as patents, trademarks, and design rights, are important management resources. Further, we have established the Intellectual Property Department within the Research & Development Division. This department promotes strategic Company-wide intellectual property activities that are absolutely essential to our existence as a technology-centered company by handling patent application processes, vigilantly monitoring these rights to prevent infringement, participating in product development from the first stages, and seeking to uncover new invention candidates at R&D sites.

The Company places the utmost emphasis on observing the intellectual property rights of other companies as well as increasing the number and quality of patent applications and rights acquisitions. Accordingly, we are working to expand and build our portfolio of patents for foundation businesses and growth businesses, to provide intellectual property support for operations shifting to overseas locations, and to train more employees with a view to advancing and accelerating development processes. Through those efforts, we aim to improve profitability based on our intellectual property.



Nuage

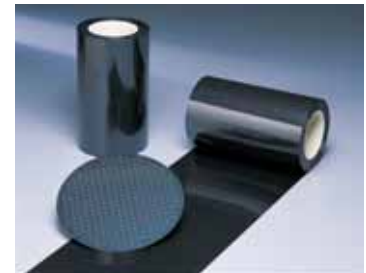
Patent Applications and Approvals (Japan)



R&D Topics

At the forefront of semiconductor-related tape development

LINTEC's semiconductor-related business began in 1984 with the development of a fixing tape product to be used in the wafer cutting process. It was a tape called dicing tape that held the wafer firm with great adhesive strength at the time of cutting and then after cutting was irradiated with ultraviolet rays to reduce the adhesive strength, making it possible to cleanly and easily pick up the chips one by one. LINTEC's technology, which allowed predictable control of adhesiveness, created a revolution in the industry, and the Company has since launched many such high-performance products onto the market under the Adwill (Adhesion Level at Will) brand. LINTEC boasts the highest market share in the global dicing tape market and is also establishing a strong position in the surface protection tape field.



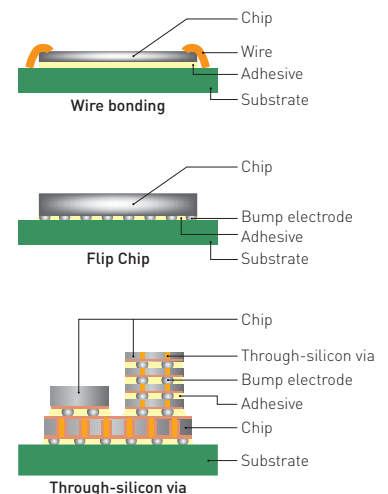
Semiconductor chip manufacturing back-end processes



Recently in the semiconductor industry, in order to make the semiconductor package even smaller and slimmer and to simplify processes, rather than using the wire bonding method whereby chips are connected to the substrate with wires, it is becoming common to use either the flip chip mounting or the through-silicon via method. In the flip chip mounting, bump electrodes are formed on the circuit side of the chip, and the chip is flipped so that the circuit side is facing downward when it is mounted on and connected to the substrate. In the through-silicon via method, holes are made in the chips themselves and electrodes passed through the chips, which are layered, so as to connect each layer to the substrate. Accompanying the common use of these methods, as large bump electrodes are formed on the circuit side and reverse side of the wafer, development of surface protection tape and dicing tape able to withstand unevenness on both sides has become a major research theme.

LINTEC is also expanding its development to include the field of materials directly used in the composition of semiconductor packages. An example is adhesive used for chip mounting and stacking. As mounting technologies evolve, demand is arising for adhesives that allow bump electrodes to completely break through and come into contact with lower layers. We are also developing and proposing unique products based on our entirely proprietary ideas and technologies, such as back surface protection tape with improved heat dissipation for use in flip chip mounting and sealant tape that can be used in a wider range of fields than difficult-to-handle liquid resins. We will continue to leverage the special features of our adhesive tapes and bring innovation to semiconductor manufacturing processes going forward.

Various methods for mounting chips



Back surface protection tape for flip chip mounting

