Management Topics 1

Major Investments in Growth

Aggressively Investing in Areas Indispensable for Lifestyle and Social Developments in an Attempt to Further Expand Business

The Group is attempting to further expand business through aggressive investments seizing opportunities in areas indispensable for lifestyle and social developments where demand and business growth are expected in the future.

Shintech (U.S.) is moving forward with the construction of an ethylene production plant, one of the main raw materials used in PVC. This is the first ethylene plant built in the United States by a Japanese chemical company. The plant, currently under construction at Shintech's industrial site in Louisiana, will produce 500,000 tons of ethylene annually. This approximately US$1.4 billion investment is scheduled for completion in the first half of 2018. With the completion of this ethylene plant, we will expand the integrated production system from PVC raw materials, firmly establishing our position as the world's largest polyvinyl chloride manufacturer.

In the Silicones Business, we have more than a 50% market share in Japan. We expect global demand for high-performance silicone products to increase. Accordingly, we are investing nearly ¥20.0 billion in Gunma, Niigata and other areas of Japan to upgrade equipment used in each stage of mass production, from R&D to prototyping.

Furthermore, with respect to photoresists, an indispensable photosensitive resin used in the manufacture of semiconductor devices, increased production of semiconductor devices and advances in miniaturization are driving increased demand. Aiming to expand the photoresist business, Shin-Etsu Chemical is investing approximately ¥13.0 billion in the construction of a new plant in Taiwan, one area where demand is growing. In conjunction with the existing Naoetsu plant, this will enable the dispersion of risk across two manufacturing bases.

Major Investments Completed This Year or Still Ongoing

PVC/Chlor-Alkali Business

United States (Louisiana)

Enhancing PVC and Raw Materials Plant Production Capacity

Investment amount

US$500 million

End of 2015: PVC plant completed

March 2016: Vinyl Chloride Monomer (VCM) plant partially completed

Autumn 2017: VCM plant scheduled for completion

Annual production capacity of VCM increased by 300,000 tons, caustic soda increased by 200,000 tons and PVC increased by 300,000 tons. After facility expansions are complete, the Louisiana plant and the existing Texas plant's combined annual PVC production will increase to 2.95 million tons.

Construction of New Ethylene Plant

Investment amount

US$1.4 billion

Mid-2018: Scheduled for completion

Annual ethylene production capacity will be 500,000 tons. This investment will further strengthen the raw materials–based integrated production system being developed.

Shintech (U.S) Plaquemine plant

Asia Silicones Monomer Limited (Thailand)

Shin-Etsu Silicones (Thailand) Ltd.

SE Tylose USA, Inc.

In addition, we established a joint venture company in China with the largest fiber optical product manufacturer in China. With an investment totaling nearly ¥12.5 billion, we will construct a fiber optical preform plant.

Silicones Business
Japan (Gunma Prefecture)

Construction of New Facility at the Silicone-Electronics Materials Research Center

Investment amount
¥5.0 billion

February 2016: Completed

As the core of Shin-Etsu Chemical's Silicones Business, this R&D center works with technical service bases in Asia, the United States and Europe to strengthen the development of products meeting customer demands.

Silicones Business
Japan (Gunma and Niigata prefectures)

Enhancing the Production Capacity of Silicone High-Performance Products

Investment amount
¥20.0 billion

Summer 2017: Scheduled for completion

Expanding facilities at all levels, from R&D and prototyping to mass production to meet rising global demand for high-performance silicon products.

Silicones Business
Thailand (Rayong Province)

Enhancing the Production Capacity of Silicone

Investment amount
¥20.0 billion

In 2018: Scheduled for completion

We are increasing silicone monomer production capacity by 50% in Thailand, from 70,000 tons to 105,000 tons annually. At the same time, we are increasing silicone polymer production capacity by 40% in Thailand, from 54,000 tons to 74,000 tons annually.

Specialty Chemicals Business
United States (Louisiana)

Construction of a New Cellulose Plant

Investment amount
US$120 million

End of 2015: Completed

SE Tylose expanded hydroxyethyl cellulose (HEC) production capacity by 50%, from 18,000 tons to 27,000 tons annually.

Electronics and Functional Materials Business
Vietnam (Haiphong)

Construction of a New Rare Earth Magnet Plant

Investment amount
¥12.0 billion

End of 2015: Phase 1 completed
End of 2016: Phase 2 scheduled for completion

This investment will increase rare earth magnet sintering process annual production capacity by 50%, or 2,000 tons. This will enable us to meet an expected rise in demand mainly in automotive applications and utilize multiple production bases, which will contribute to stable supplies.

Electronics and Functional Materials Business
Taiwan

Construction of a New Photoresist-Related Products Plant

Investment amount
¥13.0 billion

Second half of 2017: Scheduled for completion

In addition to meeting rising demand for photoresists due to increased semiconductor device production and advances in miniaturization, the establishment of multiple production bases will contribute to stable supplies.

Electronics and Functional Materials Business
China (Hubei Province)

Construction of a New Fiber Optical Preform Plant

Investment amount
¥12.5 billion

End of 2016: Scheduled for completion

Shin-Etsu Chemical entered a joint venture with YOFC, China's largest fiber optical and optical cable company. We will leverage our strength in preforms to meet expanding demand for optical fiber in China.

Electronics and Functional Materials Business
Japan (Fukui Prefecture)

Construction of a New Photomask Blanks Plant

Investment amount
¥7.0 billion

End of 2016: Scheduled for completion

This investment will increase annual production capacity by approximately 20%. In addition to meeting rising demand for mask blanks due to increased semiconductor device production and advances in miniaturization, the establishment of multiple production bases will contribute to stable supplies.

Management Topics 2

Building the Foundation for a Strong Corporate Structure

Going Beyond Cost Reductions to Enhance Competitiveness through Manufacturing Technology Innovations

Fumio Akiya
Vice Chairman
In charge of Semiconductors,
Technologies and Environment Control & Safety

The Shin-Etsu Group has engaged in rationalization efforts to stably provide customers with high-quality products and realize high profitability.

As the promotion of rationalization contributes to the creation of a strong corporate structure during economic downturns, former president Kanagawa established and activated the "G Committee" in 1992 based on his concept and determination after the collapse of the bubble economy. The object of the G Committee activities is to lower expenses and reduce costs by improving manufacturing technologies at Shin-Etsu Chemical's four plants. Former vice president Koyanagi was the first chairman of this committee.

Based on our engineers' understanding of the essence of technology, the G Committee engaged in the promotion of laborsaving, automation and facility renovations. While promoting cost reductions through rationalization, we also rapidly implemented thorough repairs to ensure safety.

Initially, some had the mistaken impression that rationalization would cause workplace morale to decline, but once the engineers understood that the committee's proposals would contribute to earnings as specific rationalization costs, there was a complete turnaround and these activities provided motivation to engineers, who ambitiously engaged in rationalization.

These initiatives had a major effect in a variety of ways. Successful rationalization efforts at one plant were deployed at other plants, promoting the exchange of technologies between plants. Rationalization ideas were shared among plants, giving rise to a competitive atmosphere, the effects of which cannot be calculated in monetary terms.

Since being appointed as chairman in 2004, I have extended the G Committee activities conducted until now at Shin-Etsu Chemical's four plants to manufacturing subsidiaries across Japan.

The first step was to raise engineers' awareness. There are a variety of factors with unspecified causes that have both positive and negative impacts on current processes, thus there was resistance to the risks accompanying changes to these processes. I regularly visit each plant to provide guidance directly to young engineers, which I consider part of my role as committee chairman. Rather than simply maintaining the status quo, I want to emphasize that engineers should not accept that the current processes are the best. The mission of every Shin-Etsu Chemical engineer is to improve current processes, reduce costs, increase quality and reap the rewards of enhanced productivity. At present, engineers continue to be engaged in rationalization, verifying risks related to process changes from the collection and analysis of data.

In this way, the G Committee will go beyond cost reductions and engage in a variety of activities aimed at strengthening our corporate structure and achieving waste elimination, energy conservation, quality consistency and engineering developments. These long-term efforts have led to manufacturing technology reforms that contribute to strengthening the competitiveness of the Shin-Etsu Group.

Shin-Etsu Chemical Kashima plant

Environmental Control and Safety Audits (Kashima Plant, Ibaraki, Japan)

Auditors from the Headquarters Environment Control and Safety Department and each plant monitor Shin-Etsu Chemical's four plants and two domestic Group company plants. They conduct reports on the implementation status of environmental and safety management plans and conduct onsite inspections to confirm equipment safety measures.

Management Topics 3

Research and Development Meeting Social Demands

Aiming for Sustainable Growth and the Resolution of Social Issues through Research and Development

Toshinobu Ishihara

Senior Managing Director

In charge of New Functional Materials and Patents,
General Manager, Research & Development Department

The Group engages in R&D activities focused on a variety of themes based on our Corporate Mission Statement: "The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advancement of industry and society by providing key materials and technologies." We view R&D capabilities as an important "asset" that will ensure the future of the Group and society. Research themes are carefully selected primarily on the basis of whether they meet next-generation needs and for their distinction in terms of not being researched by other companies. Thus, we have successfully achieved the development of many "world's first" materials. In recent years, social demands have called for automobiles that are safer, more fuel efficient and with lower emissions. Using materials for automobiles as an example, I would like to introduce Group technological development initiatives focused on magnets that will contribute to the resolution of social issues.

The Group's magnet technologies contribute to the improved performance of the motors used in hybrid electric vehicles (HEVs), plug-in hybrid vehicles (PHVs), fuel cell vehicles (FCVs) and electric vehicles (EVs). In particular, the rare earth magnet technologies (grain boundary diffusion method) developed by the Group ahead of other companies offering high heat resistance and high magnetic field strength are used in the motors of the aforementioned vehicles, improving performance and contributing to the resolution of the following social issues.

Contributing to the Realization of Weight Reduction and Fuel-Efficient Vehicles

The spread of HEVs, PHVs, FCVs and EVs encourages the reduction of fuel usage or the promotion of fuel efficiency. Furthermore, the Group's silicone technologies contribute to lighter weight vehicles as high weather resistant silicone parts able to withstand harsh conditions can be used to replace conventional metal parts.

Contributing to the Realization of Low and No Emission Vehicles

Encouraging the spread of HEVs, PHVs, FCVs and EVs also contributes to lowering or eliminating vehicle emissions. The Group's onboard lithium-ion battery anode technology also contributes to the spread of EVs and PHVs.

Contributing to the Realization of High Safety

Advances in vehicle driving electronic controls are increasing safety by providing emergency assistance to drivers who are slow to react or make errors of judgment.

Automobile-Related Products Example

Engine/Drive Systems

Silicones
- Insulation, encapsulation and heat dissipation materials for PCU devices used in HEVs and FCVs
- Hoses and other molded rubber products

Rare earth magnets
- HEV and EV drive motors and generators

Cellulose
- Additive to ceramic molding products for exhaust gas purification

Electrical Systems

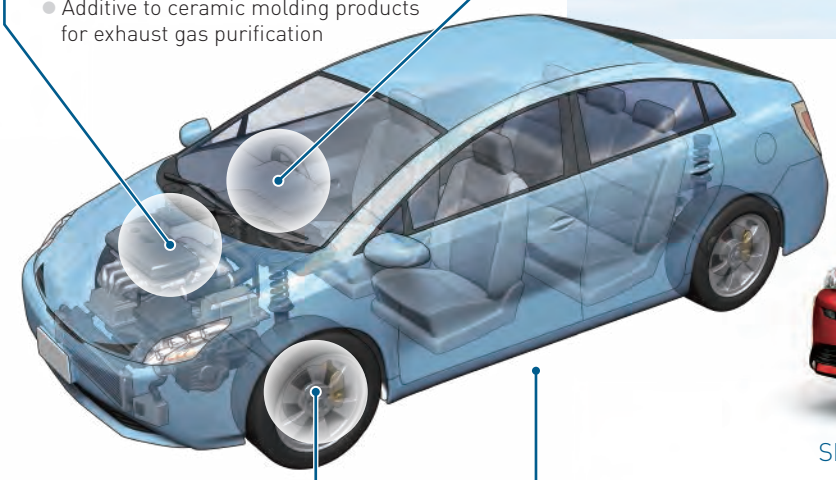
PVC
- Wire harness coverings

Silicones
- Adhesives, seals, encapsulation, protection materials for electric/electronic parts

Rare earth magnets
- Electric power steering
- Electric car air conditioners
- Electromagnetic clutches

Organic electronics materials
- Encapsulation materials for various sensors

Input devices
- Power windows
- Audio switches



Shin-Etsu Chemical Group products used in the fourth-generation Prius

Underbody

Silicones
- Brake part lubricants

Rare earth magnets
- Motors for 4WS system
- Electro-hydraulic brake boosters

Other

PVC
- Console boxes, rear partitions, interior and exterior parts

Semiconductor silicon
- IC substrate materials for electrical products

Silicones
- Automotive paints, airbag fabric coatings, etc.

Rare earth magnets
- Hard disk drives for car navigation, etc.

Organic electronics materials
- Sealant for LED headlamps, etc.

Liquid fluoroelastomers
- O-rings for fuel systems and other molded rubber products

Cellulose
- Molding builder for battery parts

Thomson Reuters "Top 100 Global Innovator 2015" worldwide intellectual property award ceremony. Jun Watanabe, General Manager of the Patent Department (right), receives the award from Yoshiko Tanahashi, Director, Thomson Reuters Japan (left). The Shin-Etsu Group's protection capabilities of intellectual property through patent applications have a strong reputation. This is the fifth year in a row we have received this award.

Patents by Region

Patents Acquired
(in the fiscal year ended March 31, 2016)

Japan	616
North America	282
Asia/Oceania	602
Europe	270
Other	9
Total	1,779

Patents Held
(Cumulative as of March 31, 2016)

Japan	7,027
North America	2,850
Asia/Oceania	4,190
Europe	3,035
Other	27
Total	17,129

R&D Expenses