**SK innovation**

As an operating holding company, SK innovation has five subsidiaries including SK energy, SK global chemical, SK lubricants, SK incheon petrochem, and operates E&P, battery, and materials businesses.

Based on the expansion of the Electric Vehicle market, SK innovation is establishing battery production facilities in Hungary to expand its presence in the global market, while also increasing the number of production facilities with superior technology in materials business in order to lead the global membrane market. By focusing our resources on the development of new growth engines for the future, SK innovation will accelerate the implementation of Deep Change 2.0 and become a Top Tier Energy and Petrochemical Company recognized around the world.

**E&P (Exploration and Production) Business**

E&P business is a series of business activities that involve searching for underground crude oil and natural gas and developing these resources for commercialization. As of December 2017, SK innovation operates 13 production blocks and 4 LNG projects in 9 countries and produces a daily average of 0.15 million BOE* worldwide, including in Peru and Vietnam, and has a total of 1.09 million BOE* of confirmed reserves (UP).

**Business Overview**

- **Production Blocks**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Name</th>
<th>Participating Since</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>Bill (Carmave)</td>
<td>1995</td>
</tr>
<tr>
<td>Vietnam</td>
<td>SK-Plymouth</td>
<td>2014</td>
</tr>
<tr>
<td>Libya</td>
<td>NC-174</td>
<td>2000</td>
</tr>
</tbody>
</table>

- **Exploration Blocks**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Name</th>
<th>Participating Since</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>04/20</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td>07/08</td>
<td>2017</td>
</tr>
<tr>
<td>Vietnam</td>
<td>LS-X/10</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>003</td>
<td>2008</td>
</tr>
<tr>
<td>Australia</td>
<td>WA-M480</td>
<td>1998</td>
</tr>
</tbody>
</table>

- **LNG Projects**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Name</th>
<th>Participating Since</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>Peruc LNG</td>
<td>2003</td>
</tr>
<tr>
<td>Yemen</td>
<td>Yemen LNG</td>
<td>1997</td>
</tr>
<tr>
<td>Qatar</td>
<td>Ras Laffan LNG</td>
<td>1999</td>
</tr>
</tbody>
</table>

**Major Business Activities**

- **Peru** — The first production from Block 8 in 1996, Block 88 and 56 started production in 2004 and 2008 respectively. With completion of LNG plant in 2010, SK innovation successfully completed vertical integration of the upstream value chain in Peru. Currently, Peru is the largest source of production volume and revenue for our E&P business.

- **Vietnam** — After acquiring exploration rights for Block 15-1 in 1998, exploration was undertaken and production started in 2003. In September 2014, the company successfully developed its fourth oil field, “Su Tu Nau”, and is currently developing “Su Tu Trang” while expanding its production volume in existing oil fields.

- **U.S.A.** — SK innovation began making inroads into the US unconventional oil and gas market by acquiring production assets in Oklahoma and Texas in 2014. The company is strengthening its foundation for growth and expanding its business based on its technical expertise and know-how.

**Major Products**

- **Battery and Materials Businesses**

  **Battery Division**

  The Battery Division develops, produces, and sells a cell·module·system for mid- and large-size batteries, which is used in electric vehicles and ESS Energy Storage System*. Based on our proprietary high-energy density and high-power technology, SK innovation supplies batteries to Hyundai and Kia Motors and Daimler AG. We also have a joint venture partnership with BAE (Beijing Automotive Industry Holding Co., Ltd.), China’s leading electric vehicle company.

  By the first quarter of 2018, the company plans to install a new 2.8GWh production line to expand capacity to 3.5GWh (equivalent to batteries for approximately 40,000 EVs). From the production lines that are expected to be completed, the company plans to produce EV batteries for Kia Motors’ Niro EV and Soul EV, and for leading auto firms in the domestic and overseas markets we have recently entered into a supply agreement. Additionally, we plan to build a 7.0GWh-capacity factor in Hungary, which is expected to start commercial production in early 2020.

  **Materials Division**

  The LiBS Division has been leading the global separator market with superior technology, boasting such achievements as the development of the world’s first 5um thin film and commercialization of the world’s first ceramic coating separators (CCS). As of February 2016, the division owns eleven production lines. The company plans to start construction by expanding two additional lines, targeting completion by the end of 2019, to increase production capacity to over 500 million m²/year. To solidify its market leadership, the company also added a third and fourth coating lines for CCS, which provide higher performance than traditional lithium-ion battery separators (LiBS).

  Moreover, the FCCL Division has developed and built a mass-production facility using our proprietary continuous curing technology to obtain a quality and cost advantage and is leading the growth of the business to expand supply to global institutions and diversify our client base.

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*Note 1) an energy storage system (ESS) temporarily stores mass produced electricity to be used later when needed.

*Note 2: as of early 2017

**Sustainability Performance Review**

- **Oil Discovery in the South China Sea**

  SK innovation had made its first oil discovery as an operator in Block 17/03 in the South China Sea. In December 2017, SK innovation drilled its first exploration well into 2,014m depth and found 34 km oil pay. The oil production of the well was tested up to 3,750 barrels per day. SK innovation plans to drill follow-on appraisal wells to assess reserves and commerciality of the project. Once the commerciality of the project is secured, SK innovation will use it as a platform for growth into other areas in the South China Sea.

**Business Overview**

- **Major Business Activities**

- **Battery Division**

- **Materials Division**

**Major Products**

- **Battery**

- **LiBS**

- **FCCL**

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**E&P Innovation & Subsidiaries**
The oil refining business is currently enjoying sound refining margins due to increasing demand for major petroleum products, but the business environment is expected to be more competitive due to uncertain oil price fluctuation and plans for building new or additional refining facilities in regions. Against this backdrop, SK energy is concentrating on securing sustainable and differentiated competitiveness by innovating its business model.

To stay ahead of the changing market conditions, SK energy has engaged in various endeavors, including acquiring the gas wholesale business from SK networks and streamlining the production and sales strategies, simplifying the distribution structure to maximize business efficiency, and establishing the Vacuum Residue Desulfurization (VRDS) facility. In addition, the company is pursuing environmental values by reducing sources of pollution. Going forward, SK energy will continue to innovate to become more competitive, establish shared infrastructure, create social value, and achieve global growth, to become the Top Tier Energy Company in the Asia Pacific region.

SK energy has a leading competitive edge in the asphalt market, based on its excellent technology and market position as the asphalt market leader in Korea. SK energy is strengthening its position as the asphalt market leader in the region. In 2017 SK energy has independently developed, commercialized, and patented a first for a modified asphalt (SBS PMa), a product that has the capability to transform diesel and naphtha into high value-added products, thereby providing flexibility to the changing market conditions and diversifying the company’s income stream.

In a move to proactively respond to this shift and strengthen the competitiveness of its petroleum business, SK energy has confirmed plans to build a vacuum residue desulfurization facility with a daily production capacity of 40,000 barrels in the SK Ulsan Complex. The company is targeting commercial operation by July 2020. This move to invest in a desulfurization facility, which will increase production of eco-friendly petroleum products, is not only in line with SK innovation’s management principle of creating social value, but is also a preemptive action, considering new environmental regulations. This new facility will not only be used for low sulfur content fuel but will also have the capability to transform diesel and naphtha into high value-added products, thereby providing flexibility to the changing market conditions and diversifying the company’s income stream.

In November 2017, the company acquired SK networks’ petroleum wholesale business, in order to create marketing efficiencies under the integrated production – distribution – sales strategy. This includes the entire wholesale business, with the 2,175 individually operated gas stations, distribution network and personnel, and assets. The business will supply 34 million barrels of petroleum products into the domestic market on an annual basis.

This acquisition will streamline the production and sales strategy of petroleum products, as well as simplify the distribution structure to maximize management efficiency. We also aim to improve operations and the quality of our marketing activities, supply and demand structure, after-service, and other services to enhance the satisfaction of our distribution partners and customers.
SK global chemical

SK global chemical is expanding its business portfolio in the global petrochemical market by focusing on China, the largest market in the world. The company is strengthening its marketing platform by establishing a T&S&D (Technical Service & Development) Center in China, and expanding technology-based high-value-added businesses in the North American and European markets to secure new growth engines for the future. To this end, we aim to strengthen our fundamental competitiveness by improving the profit and business structure of our existing businesses while expanding our portfolio through global partnerships and creating value for our customers by providing solutions in the global chemical market.

Business Overview

Olefins Business

Aromatics Business

Performance Chemical Business

Polymer Business

EPDM Business

In 1972, starting as the first NCC (Naphtha Cracking Center) in Korea, our Olefin business currently has the capacity to produce 860 thousand tons of ethylene annually. In addition, in 2004, we established a joint venture with Chinese state-owned oil company, Sinopec, we newly established a petrochemical joint-venture production facility in Wuhan, Hubei Province, which is producing 800 thousand tons of ethylene per year. Our Olefin business steadily supplies key petrochemical feedstock, such as ethylene, propylene, and butadiene to both domestic and overseas customers.

The aromatics business produces and supplies various aromatic products, such as benzene and para-xyylene, which are used as raw materials for high-tech products. As a result of continuous investment in facilities, the business is one of the top producers in the region (3-million tons p.a.). In addition, the aromatics business strives to grow into a top player in the global market by expanding its trading business and reinforcing its market leadership.

The performance chemicals business produces solvent products used in a wide range of products, from household goods to high-tech products. The division has independently developed specialty chemical production technology, such as innocuous and deodorized products. Based on our marketing network and technology know-how accumulated over the past thirty years, we focus on developing customized products and technological support for our customers.

The polymer division is specialized in the production of high-performance materials, including: Linear Low-Density Polyethylene (LLDPE), High Density Polyethylene (HDPE), and Polypropylene (PP), which is sold approximately 800 thousand tons per year. The division aims to expand the product portfolio and create new customer value by entering into the high-value-added business segment with the high-performance polyethylene fiber™, Ethylene Acrylic Acid (EAA)™ and Poly Vinylidene Chloride (PVDC)™. In addition, we aim to enhance our relationship with the customers by providing various technical support and relevant information.

The EPDM Division produces and supplies EPDM (Ethylene Propylene Diene Monomer), a high-value-added synthetic rubber which is most widely used for automobile parts with its outstanding resistance to heat, weather, and corrosive ozone. The division aims to both strengthen its competitiveness in the global market including China, and boost customer satisfaction through continuous quality control and technical support.

Major Business Activities

In 2017, SK global chemical successfully acquired Dow Chemical’s Ethylene Acrylic acid (EAA) business and Poly Vinylidene Chloride (PVDC) business, thereby moving a step closer to become a global packaging chemical company. Both EAA and PVDC are core materials in multi-layer packaging film. The market entry barrier is high and currently only limited numbers of suppliers exist in this area. Therefore, this business is expected to grow continuously with the increasing packaging demand in China and other emerging markets.

EAA is a type of tie layer material that is primarily used as packaging adhesive for polyethylene. As part of this M&A deal, SK global chemical acquired production facilities in Freeport, Texas, U.S.A. and Tarragona, Spain. PVDC is a type of barrier layer material that is used in processed meat refrigeration and freezer packaging, which requires a superior water-tight and oxygen-tight matter property. The production facility is located in Midland, Michigan, USA.

Through strategic investment in future growth businesses, namely high packaging functional materials and automotive materials, SK global chemical aims to create synergy with existing businesses, and to become a global market leading player by securing advanced core technologies.

Note 1) LLDPE: Linear Low-Density Polyethylene, which is used in packaging and agricultural film, wire coating, and engineering and construction gases and others.
Note 2) HDPE: High-Density Polyethylene, which is used in containers, fossil packaging film, water treatment or chemical plants, and vessel cell engineering pipes.
Note 3) PP: Polypropylene, a plastic material that is widely used in various types of consumer goods, engineering tools, high-pressure, and undersea related parts.
Note 4) EAA: Ethylene Acrylic Acid, a resin used as a packaging binder for adhesives for aluminum foil, polyethylene etc.
Note 5) PE/PP: Poly Vinylidene Chloride, the barrier film material that is a remarkable barrier to water and oxygen, and used in processed meat refrigeration and freezer packaging.

Night time at Sinopec-SK (Wuhan) Petrochemical Co., Ltd.
SK lubricants

SK lubricants has gradually expanded its global presence, resulting in its high-quality lubricant products being exported to over 50 countries. In joint venture partnerships with global companies, it has also built base-oil production facilities in Europe and Asia to underscore its position as a leader in the global premium base-oil market. Furthermore, the company continuously strengthens its marketing competitiveness with major customers.

Premium lube oil SK ZIC, the company’s leading brand in the lubricants business, has solidified itself as the No. 1 lubricant brand in Korea, by ranking top in the brand power survey for twenty consecutive years, and was awarded the Global Green Management Excellence Award. In addition, ZIC was recognized internationally by receiving the top-quality levels from two major quality assessment institutions: American Petroleum Institute (API) and International Lubricants Standardization and Approval Committee (ILSAC). Due to tighter environmental regulations in the global market, demand for premium lube oil is on the rise. SK lubricants plan to take advantage of this opportunity to expand its presence in target markets of China, Russia, and others, and accelerate growth by pursuing a wide range of partnerships.

Business Overview

— Base Oil
SK lubricants began operation of its first VHVI (Very-High Viscosity Index) base-oil plant in 1995. Currently the company’s Group III global base-oil market share is estimated to be 39.3%.

The company will continue to proactively invest and build capacity to solidify its position as the Global No. 1 Group III Player.

— Lubricant Oil
SK ZIC, the company’s leading brand in the lubricants business, has firmly positioned itself as the No. 1 lubricant brand in Korea, by ranking No. 1 in the brand power survey for twenty consecutive years. In the international market, the company employs a tailor-made marketing and localization strategy, reflecting the characteristics of each market to support the growth of the business. The company is also the first Korean energy company to build an independent lubricant plant overseas (Tianjin, China) to meet the rising demand for premium lubricant oil. In addition, we have increased supply to global auto manufacturers to expand our marketing network, and have been recognized for our technical expertise.

Major Business Activities

— Lubricant Sales in Global Market Posts 6.3% Growth
SK lubricants’ business recorded a 6.3% growth in 2017, compared to the previous year, using its global growth acceleration strategy. In the Chinese market, the company expanded its business field by starting supply to China’s largest diesel engine manufacturer, which resulted in over 21% growth, thereby demonstrating the potential for this market to become a sound source of growth for the business. This is especially notable considering the fact that annual growth in the major global lubricant market including China is less than 1%.

In addition, the company added Spanish company Repsol’s global top-tier synthetic motorcycle oil brand to the product line. SK lubricants also developed new distribution channels, enacted improvements to the existing business model, and established a production base in Germany to expand business into the European market. The company will continue to adopt new business opportunities and expand infrastructure for the company’s sustainable growth.
**SK incheon petrochem**

SK incheon petrochem has grown into one of the top Korean energy and petrochemical companies over the last half century, as Korea has successfully developed its industries. In July 2014, the company invested KRW 1.6 trillion to expand production with enhanced facilities that could produce condensate-based high-value-added products such as paraxylene (PX), which is the raw materials used in PET plastic bottles and synthetic fibers. In addition, SK incheon petrochem will continue to become the most productive company in Korea through fast and flexible decision-making processes and decisive action to enhance competitiveness and production optimization.

### Business Overview

**Petroleum Business**

With the focus on its management philosophy of “customer satisfaction” and “quality first,” SK incheon petrochem provides customers with eco-friendly and high-quality products by improving its production facilities and precision, and continuing technological innovation.

**Petrochemical Business**

SK incheon petrochem uses naphtha derived from condensate or the refining process to produce high-value-added petrochemical products, such as PX (Paraxylene) via naphtha catalytic reforming processes. This creates a stable profit base for the company, which enhances the competitiveness of the business.

### Major Business Activities

**— Highest Financial Performance in Corporate History**

In 2017, SK incheon petrochem recorded its highest financial performance in its history. This record was the result of the company's commitment to Speed & Flexibility (increase purchase of low-cost spot crude oil through work process improvement, etc.) and to increase production of high-value-added productions through innovations in production efficiency, and to engage in cost savings. In addition, the company has continued to engage in innovative ways to realize social contribution and shared growth with the local community in order to create a sustainable business operation based on the trust and support of the local community.

### Processes

<table>
<thead>
<tr>
<th>Petroleum Business</th>
<th>Petrochemical Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric distillation, gas recovery unit, hydrogen desulfurization, vacuum distillation, and sulfur recovery process</td>
<td>BTX unit, PX unit</td>
</tr>
</tbody>
</table>

### Major Products

<table>
<thead>
<tr>
<th>Process</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline, Kerosene, Jet Fuel, Diesel, LPG, Asphalt</td>
<td>Aromatics</td>
</tr>
</tbody>
</table>

### Performance

#### Operating Profit (Unit: KRW 100 million)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit</td>
<td>496</td>
<td>7,745</td>
<td>3,966</td>
</tr>
</tbody>
</table>

#### Before Tax Profits (Unit: KRW 100 million)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit</td>
<td>638</td>
<td>2,920</td>
<td>3,472</td>
</tr>
</tbody>
</table>

**SK trading international**

The global market is becoming ever more complex, with new environmental regulations, export market contract, and competition with China and India, resulting in new demands on product specifications. To mitigate risk and navigate this rapidly changing environment, SK trading international has established a differentiated global trading business model based on an advanced risk-management framework. In addition, the company monitors the market in real-time to trade crude oil and petroleum products under the best terms and conditions.

Going forward, SK trading international will broaden its business portfolio by expanding strategic partnerships, while also introducing operational optimization based on market dynamics in order to secure business competitiveness with the goal of developing into a global trading company.

### Business Overview

SK trading international provides a global trading platform for SK innovation. The company imports crude oil and exports petroleum products for SK energy and SK incheon petrochem, and also sources naphtha for SK global chemical. Going beyond the import and export of goods, the company has established a branch in Dubai and three overseas subsidiaries in the Americas, Europe, and Singapore, to engage in business development, trading, and marketing. Based on these global networks, the company effectively manages the entire trading process from selecting the optimal oil type to contracting, shipping, and payment.

#### Major Business Activities

**Global Network**

- **SK energy Americas, Inc.** (Houston) - Responsible for oil trading in the Americas.
- **SK energy Europe, Ltd.** (London) - Source and market for SK energy’s petroleum products in Europe.
- **SK energy International Pte. Ltd.** (Singapore) - Procure crude oil and petroleum products used in Korea.
- **SK trading International Co.** (Dubai) - Procure crude oil and petroleum products used in Korea.

**Market in the Americas**

- **SK incheon petrochem** - Imports naphtha.
- **SK global chemical** - Imports crude oil and naphtha.
- **SK energy** - Exports products, including gasoline, jet fuel and diesel.

**Market in Europe**

- **SK energy** - Exports products, including gasoline, jet fuel and diesel.

**Market in Singapore**

- **SK energy** - Exports products, including gasoline, jet fuel and diesel.

In addition, we are enhancing our business models based on new trading methods that utilize scientific techniques and Big Data. Meanwhile, we are diversifying our suppliers for condensate and naphtha, in order to take a more proactive approach in dealing with the volatile petrochemical market. We are also building an advanced risk management system to effectively mitigate risks and optimize our management environment.