



# Korea's First and Largest Energy & Chemical Company

SK innovation

As one of the most distinguished energy and chemical companies in Korea and a company with five subsidiaries and two business units, SK innovation aims to become a global leading company through continuous innovation in its portfolio. SK innovation E&P(exploration and production) business strives to generate stable profits by ensuring balanced growth in core regions and establishing a business model based on differentiated technical capabilities. B&I(battery and I/E material) business boosts the value of business by securing differentiated technical competitiveness and achieving innovation in cost competitiveness. In the E&P business, SK innovation will accelerate the growth to "Global Top Tier E&P Company" based on North America by utilizing M&A and building an additional platform, while B&I business will continue business value-up by expanding the order of EV batteries and making business from new material items.

## E&P(exploration and production)

### Business Overview

#### Production Blocks

Country	Project Name	Participating Since
Peru	8	1996
	88(Camisea)	2000
	56	2004
Vietnam	15-1	1998
U.S.	SK Plymouth	2014
	SK Permian	2014
Libya	NC-174	2000

#### Exploration Blocks

Country	Project Name	Participating Since
China	04/20	2015
	17/03	2015
Vietnam	15-1/05	2007
	123	2008
Australia	WA-34R	1998

#### LNG Projects

Country	Project Name	Participating Since
Peru	Peru LNG	2003
Yemen	Yemen LNG	1997
Oman	Oman LNG	1996
Qatar	Ras Laffan LNG	1999

### Major Business Activities

As of December 2016, SK innovation operates 12 blocks and 4 LNG projects in 9 countries and has secured crude oil proven reserves(1P) of a total 550 million barrels.<sup>1)</sup>

**Peru** Peru is the country that contributes the most, in terms of production volume and profitability to SK innovation's E&P business. SK innovation built a vertically integrated local production system after first producing crude oil from Block 8 in 1996. We manage the whole value chain from oil exploration to sale of products.

**Vietnam** After acquiring exploration rights for Block 15-1 in 1998, SK innovation has executed the entire process from exploration and to development and to commercial production since 2003. In September 2014, the company developed its fourth oil field, Su Tu Nau where it is currently producing oil.

**U.S.** SK innovation began making inroads into the US market by acquiring production assets in Oklahoman and Texas in 2014. By acquiring unconventional E&P technology and expertise in the US, we were able to expand our business capacity. Drilling has resumed in the Oklahoma block leading to higher expectations on an increase in production volume. Operational efficiencies, such as reducing drilling time, have also been achieved successfully.

**China** In 2015, SK innovation was the first Korean company to participate in the South China Sea Block Project(04/20, 17/03). Recognizing the significant cost and geographical potential that both blocks have, the company has fully supported the development of the project by establishing a separate branch in Shenzhen and conducting joint development with the China National Offshore Oil Corporation(CNOOC).

<sup>1)</sup> As of 2015 end



Vietnam 15-1 block ocean platform view

## Batteries and Information & Electronic Materials(B&I)

### Business Overview

<b>Major Products</b>	 <p>Batteries</p>	 <p>FCCL</p>	 <p>LiBS</p>
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### Major Business Activities

#### Battery Division: Increasing Supply of EV Batteries

SK innovation completed its investment in a third production line in 3Q 2016, securing capacity of 1.1GWh to supply batteries for up to 40 thousand electric vehicles per annum. In 4Q 2016, the company decided to construct a second battery plant in Seosan, South Chungcheong Province. Once the new No. 4 to 6 production lines, which total 2.8GWh is completed, total capacity will reach 3.9GWh (equivalent to batteries for approximately 140 thousand EVs) by 2018. Off the expanded No.1 to 3 lines, batteries for high-quality EVs in Korea and abroad will be supplied. This includes KIA SOUL EV, BAIC Motors EV 200 and recent orders signed for future Hyundai Motor Company and Mercedes-Benz electric vehicles.

#### I/E Materials Division: Increasing the Development of Differentiated Products

Since completing the sequential stretching process for separators in 2007 for the first time in the world, SK innovation has been leading the global separator market with superior technology, such as developing the world's first 5µm thin film and commercializing the world's first ceramic coating separators(CCS). In 2016, the company embarked on expanding capacity to support annual production of 330 million m<sup>2</sup> to satisfy demand from China and other global markets. To solidify its market leadership, the company also added a third and fourth unit for CCS, which provide higher performance than traditional lithium-ion battery separators(LiBS). In addition, SK innovation is planning to grow the circuit material business by releasing differentiated products, such as ultra-thin film and thick film products that require the continuous development of FCCL technology and customized low-k products, to broaden our global customer base.



Battery Cell Production



Production of LiBS at SK innovation Jeungpyeong Plant

# Korea's Leading Oil Refiner Competing on the Global Stage

## SK energy

Amid a global low-growth environment, the oil refining business enjoys sound refining margins, due to increasing demands for major petroleum products such as gasoline. However, the company is likely to face a more competitive business environment because of uncertain oil price expectations and new additions of refining capacity in the region. Against this backdrop, SK energy is concentrating all efforts to secure sustainable and differentiated competitiveness by innovating its profit structure and establishing a forward-looking business structure. As part of these efforts, the company reinforces the status as No.1 asphalt provider in the region by supplying locally customized asphalt in China and continues value-up in the gas station network based on drive-thru style to generate new profit sources and raise competitiveness in sales. SK energy will leap forward to become "Regional Top R&M Company" by increasing the competitiveness of the Ulsan Complex, establishing and upgrading to a swift and flexible operating system, and strengthening global partnerships.

### Business Overview



#### Petroleum Business

As Korea's No.1 oil refinery, SK energy supplies petroleum products in Korea and overseas through its world-class Ulsan Complex. Moreover, the company has strengthened the speed and flexibility of the value chain, in order to take preemptive action when necessary amid an uncertain business environment. In addition, we sell petroleum products through our gas stations to individual and corporate customers in Korea, and provide corporate cargo drivers with SK's comprehensive solution Netruck as a unique customer service.

#### Fuel

Premium gasoline, regular gasoline, diesel, kerosene

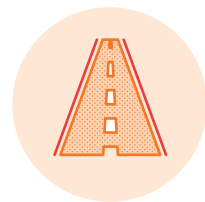


#### LPG Business

For LPG business, SK energy boosts customer loyalty by introducing a differentiated retail customer care program, with the aim of reinforcing long-term competitiveness and securing a stable business foundation. In addition, customer relationship management(CRM) programs have been introduced at LPG refilling stations to boost network competitiveness and brand value. Going forward, SK energy is committed to reinforcing marketing capabilities to ensure sustainable growth and high margins in the future.

#### Gas

LPG



#### Special Products Business

SK energy has a leading competitive edge in the asphalt market, based on its excellent products and services. A prime example is SBS Polymer Modified Asphalt(SBS PMA), a product that the company independently developed, commercialized, and patented for the first time as a refiner in Korea.

#### Asphalt

Superphalt  
Regular asphalt



Front view of the plant from the main building of SK energy Ulsan Complex

## Major Business Activities

### Solidifying its Position as the No.1 Asphalt Provider in the Region

In 2016, SK energy produced and sold a total of 2.57 million tons of asphalt, including exports of 1.87 million tons and domestic sales of 700 thousand tons in Korea. Exports to China reached 1.25 million tons, enabling the company to maintain its No.1 position among importers in the Chinese market. Based on China's massive infrastructure development plan, asphalt demand for road pavements are expected to increase, resulting in an increase in company's Chinese exports. SK energy has concentrated its asphalt research and local marketing capabilities at SK Asphalt(Shanghai) Co., Ltd. to provide customers with high-quality asphalt with the best service. Moreover, the company not only supplies asphalt tailored to local markets from five local production bases, such as Ningbo, Chongqing and Hefei, but it is also diversifying its sales channels in China by increasing local sales through leasing tank terminal to local Chinese customers. In Japan, we exported 410 thousand tons, making us the No. 2 supplier after JX Nippon Oil & Energy. In addition, the company also supplies 210 thousand tons of asphalt to other markets, such as Southeast Asia, further solidifying SK energy's position as the No.1 asphalt provider in the region.

### Enhancing the Network Value Adding Value via QSR Drive Thru

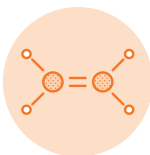
SK energy has continuously enhanced the value of its gas station network by analyzing the commercial district of each location and identifying and positioning the best complimentary business for the gas station to strengthen its competitiveness. Through these efforts, these gas stations are able to increase asset efficiency, boost customer traffic by hosting popular outlets, and create new revenue sources by engaging in non-gas businesses. Of the directly managed and independently owned SK gas stations nationwide the company operates 72 gas stations(accumulated basis) that have completed this transformation. Since 2014, the main complimentary business has been QSR(Quick Service Restaurant) drive thru, which has a high synergy with gas sales. Customers find it convenient to visit the gas station to not only fill their tanks, but also enjoy their favorite fast food. In addition, these QSR-drive-thru-combined gas stations are visually more appealing and recognizable, while the drive-thru provides joyful experience for the customers.

# Creating a New Future in the Chemical Industry for Customers

## SK global chemical

SK global chemical will step-up growth in the global market, with a key focus on China, the country with the largest demand and growth potential for chemical products. The company will not only continue to reinforce its existing China businesses and carry out strategic cooperation with local companies, but also expand partnerships with global petrochemical firms. Moreover, with the goal of maximizing future profits, SK global chemical will focus on improving its product portfolio by identifying a wide variety of new growth options, including strengthening performance chemical products and high value-added businesses. Through these efforts, SK global chemical will emerge as a global chemical company with marketing platform focused on China and a portfolio of high value-added products based on technology.

### Business Overview



#### Olefin Business

Starting with the first NCC(Naphtha Cracking Center) in Korea in 1972, the business currently has the capacity to produce 860 thousand tons of ethylene. This business steadily supplies key petrochemical feedstock, such as ethylene, propylene and butadiene to Ulsan Complex, various domestic petrochemical plants, and overseas customers.



#### Aromatics Business

The aromatics business produces and supplies various aromatic products, such as benzene and paraxylene, which are used to make general goods, construction material, electronics and textiles. As a result of continuous investment in facilities, the business enjoys the top level of production capacity(3 million tons p.a.<sup>4)</sup>) in the region. 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.



#### Performance Chemical Business

The performance chemicals business produces solvents used in a wide range of products from household goods to high-tech products. The division has independently developed specialty chemical production technology used in products, such as dearomatized products that do not have toxic ingredients for humans. Based on our marketing network and technology know-how accumulated across three decades, we focus on developing customized customer products and supporting the improvement of user technology.



#### Polymer Business

The polymer division specializes in the production of Linear Low Density Polyethylene(LLDPE)<sup>1)</sup>, High Density Polyethylene(HDPE)<sup>2)</sup> and Polypropylene(PP)<sup>3)</sup>, which it sells approximately 800 thousand tons per year. The division will proactively penetrate the high-end market by creating new customer value through products, such as the high-performance polyethylene Nexlene™. Moreover, it also plans to strengthen customer contact by providing market intelligence and technical support.



#### EPDM Business

The EPDM Division produces and supplies EPDM (Ethylene Propylene Diene Monomer), a high value-added synthetic rubber with outstanding resistance to foul weather, heat 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.

1) LLDPE: Linear Low Density Polyethylene, which is used in packaging and agricultural film, wire coating, civil engineering and construction pipes and sheets.

2) HDPE: High Density Polyethylene, which is used in containers, food packaging film, water treatment or chemical plants, and vessel civil engineering pipes.

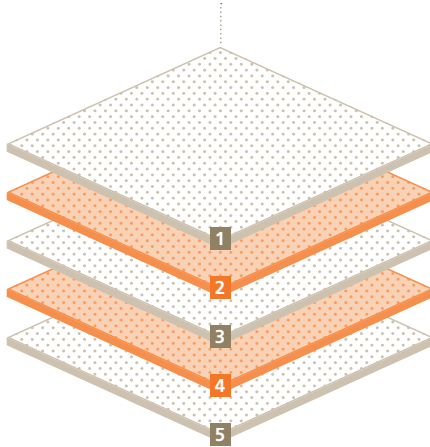
3) PP: Polypropylene, a plastic used to make various types of containers, experiment tools, megaphones, and automobile parts.

4) p.a.: per annual

## Major Business Activities

### Ethylene Acrylic Acid(EAA)

Functional adhesive copolymer primarily used in the adhesive layer of multi-layered film material, such as aluminum foil packaging



- 1** LLDPE, Nylon, PET, etc.
- 2** EAA
- 3** Foil, PET, etc.
- 4** EAA
- 5** LLDPE, Nylon, PET, etc.

### Penetrating the High Value-added Packaging Business

SK global chemical is committed to transforming into a high value-added chemical business strongly resilient to market cycles in order to realize the vision of becoming a top global energy and chemical company. As part of this strategy, the company signed an agreement to acquire Dow Chemical's Ethylene Acrylic Acid(EAA) business in February 2017. Under the agreement, the company will acquire two global production facilities — the Freeport production facility in Texas, U.S. and Tarragona production facility in Spain — as well as manufacturing technology, intellectual property and trademark rights for the business. EAA is a type of adhesive copolymer primarily used as a packaging adhesive with aluminum foil and polyethylene. Advanced markets, such as the U.S. and Europe, account for the majority of the demand, because of high entry barriers to the technology. In addition, the business is likely to enjoy continuous growth on the back of strong demand from emerging market, such as China.

By creating synergy with its existing business, SK global chemical has acquired the capability to expand its portfolio in the high value-added packaging business. Moreover, it expects to diversify its high value-added product line-up using the advanced core proprietary technologies gained through the acquisition. We will lead the high value-added chemical market in emerging countries, such as China, by continuing strategic investments required for business innovation.



Front view of SSNC(SABIC SK Nexlene Company) Ulsan Plant

# Global Top Lubricants Provider Pursuing Endless Innovation and Change

## SK lubricants

SK lubricants has gradually built-out its global presence, resulting in most of its lubricant products being exported to overseas markets in the U.S., Europe and Asia. In addition, SK lubricants built base oil capacity in Europe and Asia to underscore its position as a leader in the global premium base oil market. Furthermore, the company is consistently strengthening its marketing competitiveness with major customers. In the lubricant business, demand for premium lube oil is on the rise, due to tighter environmental regulations in the global market. Moreover, we will expand our presence in target markets, such as China and Russia, and accelerate growth by pursuing a wide range of partnerships. Through such efforts, SK lubricants aims to become a global top-tier company.

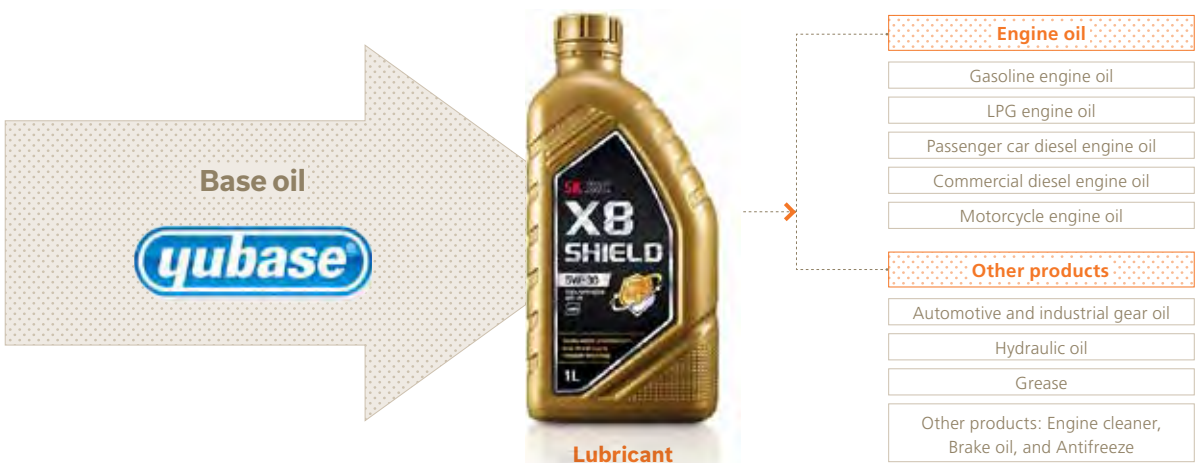
### Business Overview

#### Base Oil Business

SK lubricants developed its premium lubricant base oil YUBASE with its own proprietary technology and began operation of its first VHVI (Very High Viscosity Index) base oil plant in 1995. Thereafter, the company has enhanced the quality of its products through continuous technology development, ultimately positioning itself as a leader in premium base oil by exporting products to 50 markets around the world, including the U.S. and Europe.

#### Lubricant Oil Business

SK ZIC, the company's leading brand in the lubricants business, adopts a tailor-made marketing and localization strategy, reflecting the characteristics of each export market. Moreover, we try to maximize profits by capturing growth opportunities in emerging markets. The company was the first Korean energy company to build an independent lubricant plant overseas (Tianjin, China). In addition, it is emerging as a global brand with its products being recognized internationally by receiving the top quality levels from the two major quality assessment institutions (American Petroleum Institute, International Lubricants Standardization and Approval Committee) in the world.





LBO Plant of ILBOC Spain(joint company of SK lubricants and Repsol)

**Major Business Activities**

**The Launch of SK ZIC X8 Shield**

In December 2016, SK lubricants released SK ZIC X8 Shield, product with remarkably improved engine protection performance. ZIC X8 Shield is based on the company's premium lube oil and high-end Group V lube base oil. In light of the fact that consumers put priority on engine protection performance when selecting lube oil. SK ZIC X8 Shield adds organic tungsten to the mix, differentiating itself from regular lubricants. With this combination, we developed a "Double Shield Technology," which improves wear resistance and achieves 27% better performance in engine protection when compared to other products. As a result, the company has been able to increase the satisfaction level of customers who put priority on engine protection. Upon the launch of the product, the company gained public attention by conducting multi-channel marketing, including its "Double Protection" ad campaign, across a multiple number of platforms, such as the Internet and SNS. Going forward, SK lubricants will present a broader spectrum of products to increase the scope of choice for consumers.

**"Double Protection" Ad Campaign**







# Korea's Leading Energy & Petrochemical Company

## SK incheon petrochem

SK incheon petrochem was established in 2013 as a result of a spin-off of SK energy's Incheon Complex. The company is responsible for the stable supply of energy to the Seoul metropolitan area and the Incheon International Airport. In 2014, SK incheon petrochem expanded production to include condensate-based high value-added products such as paraxylene. In addition, the company uses its geographical location to export to China and Southeast Asia with future plans to further penetrate the global market. In 2016, the company boosted production efficiency, laying the foundation to generate stable profits. SK incheon petrochem will continue to strive to become a global top-tier oil and petrochemical company with world-class per capita productivity by adopting rigorous process control and environmental management standards

### Business Overview

#### Petroleum Business

SK incheon petrochem provides customers with eco-friendly and high-quality products by adopting an upgraded refining process, improving production facilities, and conducting continuous research on advanced technology for petroleum products, to embody the management philosophy that highlights customer satisfaction and quality first.

#### 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) and benzene, via naphtha catalytic reforming processes. This creates a stable profit base for the company, which enhances the sustainability of the business.

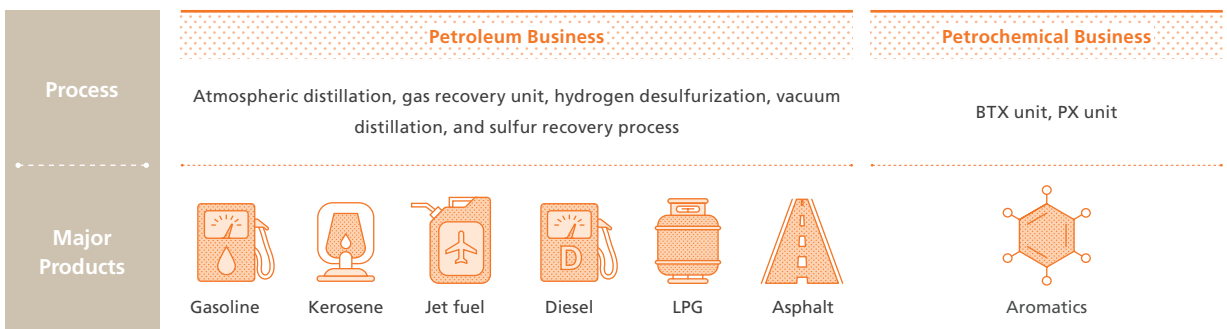
### Major Business Activities

#### Highest Operating Profit in Corporate History

In 2016, SK incheon petrochem recorded its highest operating profit in its history. This record was the result of the strong commitment of all employees to introduce more economic, low-cost crude by improving feed flexibility, to increase margins by producing more high value-added finished and semi-goods, and to engage in cost savings. In addition to achieving excellent financial performance, the company has continued its efforts to engage in social contribution and policy cooperation with its community in order to create a sustainable business environment based on the trust and support of the local community.



### Key Business Areas





# Optimizing Trading through a Global Network

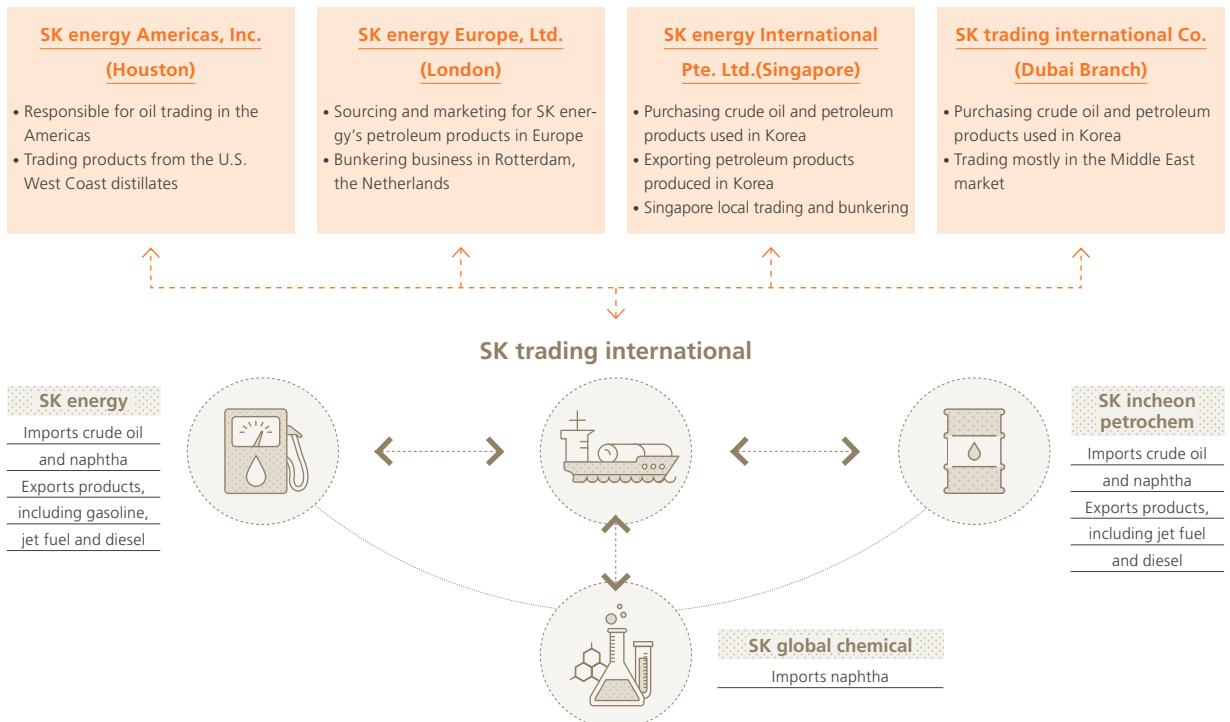
## SK trading international

Product specification is becoming more diverse, due to environmental regulations. Also, the export market within the region is gradually contracting, due to increase of local sourcing in major import countries and exports from the China and India. Against this backdrop, SK trading international has established a differentiated global trading business model based on advanced risk management techniques. In addition, the company monitors the market on a real-time 24/7 basis 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 to grow into a global trading company.

### Business Overview

SK trading international provides a global trading platform for SK innovation. For example, it imports crude oil and exports petroleum products for SK energy and SK incheon petrochem, and also sources naphtha for SK global chemical. Beyond simple importing and exporting, the company has established a branch in Dubai and 3 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.

### Global Network



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# *Dynamic and Responsible Performance for Tomorrow*

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