



Downstream Operations



Growing with the times and Innovative diverse operations

Importing & Refining

As Taiwan's domestic production of crude oil yields only extremely low volumes, CPC needs to import virtually all of the crude it refines to supply its domestic market. To ensure stability, CPC works to both maximize procurement on long-term contracts and to diversify its sources of crude.

Imports of crude oil reached 136.89 million barrels in 2021: 52.63% from the Middle East, 38.96% from USA, and 7.98% from Africa. In recent years, to meet with the more stringent environmental laws, low sulfur crude oil still makes up some crude oil imports.

To import crude oil, CPC has installed offshore mooring pontoons to unload large oil tankers at Shalun in Taoyuan and at Dalinpu in Kaohsiung. The company has also built

dedicated tanker loading/unloading berths in the ports of Kaohsiung, Taichung and ShenAo.

Continuing improvement in oil product quality

CPC now operates two refineries in Taiwan — at Taoyuan and Dalin — with a combined daily refining capacity of 600,000 barrels of crude. Following government policy for industry relocation, the Kaohsiung Refinery, an integrated refining and petrochemical production and storage complex with a daily refining capacity of 220,000 barrels of crude as well as 500,000 tons of ethylene annually, ceased operations in late 2015. Upon closure, its refining activity was transferred to the expanded Dalin refinery, and its ethylene production to the then new Third Naphtha Cracker in the Linyuan Petrochemical Complex.

The Dalin Refinery became operationally independent from the Kaohsiung Refinery in 1996. After expansion, there are now 4 offshore mooring pontoons as well as large and small wharves for handling both imports and exports, holding a daily capacity of up to 400,000 barrels of crude. The Taoyuan Refinery came on stream in 1976; after engineering revamping and building the additional second topping unit, its daily refining capacity is now 200,000 barrels of crude. In 2021, the total refined products was 8.581 million kiloliters of gasoline, 2.041 million kiloliters of aviation fuel, 4.949 million kiloliters of diesel, 2.072 million kiloliters of fuel oil, and 361 kilotonnes of LPG.

Taiwan's increasingly stringent standards of environmental protection are largely in response to the demands of its people out of concern for their quality of life. At the same time, they exhibit increasing demand for a diverse range of oil-derived products. The company has gradually built additional refining facilities, such as reforming units, isomerization units, and gasoline/diesel desulfurization plant, an aviation fuel processing facility, together with normal paraffin, alkylation and residual fluid catalytic cracking (RFCC) units. CPC also plans to build VDU, SDA units and aromatic hydrocarbon extraction units in order to offer domestic consumers even better products and to improve production efficiency.

Optimization of refining to reduce pollutant emission

The EPA called for reductions in the sulfur content of gasoline and diesel fuel to under 10ppmw, of the aromatic hydrocarbon content of gasoline and diesel fuel to under

35vol%, and of the olefin content of gasoline to under 18 vol%, by 2011. By 2008, CPC had constructed a 30,000 barrels per day pyrolysis gasoline and hydro-desulfurization unit at the Taoyuan Refinery; a 20,000 barrels per day pyrolysis gasoline and hydro-desulfurization unit at the Dalin Refinery by 2009; and a 40,000 barrels per day diesel hydro-desulfurization unit at the Dalin Refinery by 2010. Furthermore, in 2011, a 18,000 barrels per day pyrolysis gasoline unit was moved from the Kaohsiung Refinery to the Dalin plant.

CPC began increasing its heavy oil conversion rate with the construction of an RFCC unit with a capacity of a 80,000 barrels per day at the Dalin Refinery. CPC also completed its testing and began volume production in 2013. CPC completed testing of the alkylation plant with a capacity of 14,000 barrels per day and began volume production in mid-2013; its operation has increased the value of our product and improved gasoline quality. In addition, to cope with the problem of acidic gas generated in the production process and to reduce the emission of the pollutant, CPC invested in the construction of a sulfur plant with a daily output of 250 tons, which started to produce qualified sulfur products at the end of June 2014.

In addition, the No. 3 Hydro-desulfurization Unit at the Dalin Refinery was expanded to increase its high-sulfur crude refining capacity, lowering the cost of crude oil procurement and stabilizing the quality of the RFCC-unit's feedstock. The revamped unit began operation in March 2017, which increased the production to 40,000 barrels per day.

To cope with the consequences of the Kaohsiung Refinery closure, the Dalin plant's capacity was expanded to include a 150,000 barrels per day atmospheric crude oil distillation unit (CDU); a 50,000 barrels per day condensate fractionating unit (CFU); a 40,000 barrels per day diesel hydro-desulfurization (DHDS); unit and a 30,000 barrels per day kerosene hydro-desulfurization (KHDS) unit. These units completed performance testing and began mass production in 2018, in so doing eliminating worries of the raw materials shortages (due to the closure of the Kaohsiung Refinery) needed for the future survival and development of Taiwan's petrochemical industry. With the completion of that expansion project, the capacity of the Dalin Refinery was boosted from 300,000 barrels per day to 400,000 barrels per day at present, raising CPC's overall daily crude oil refining capacity to 600,000 barrels per day.

To improve the refining configuration of Dalin Refinery, meet the standards of marine fuel oil for IMO 2020, the increasingly strict requirements imposed by domestic environment regulations for emissions of air pollutants, and to strengthen its competitiveness in asphalt market, CPC plans to construct a vacuum distillation unit (VDU) and a solvent deasphalting (SDA) unit at Dalin Refinery, along with Polymer-Modified Asphalt and asphalt cutback production facilities, asphalt storage facilities, an asphalt blending system, and a revamping of the No.9 diesel hydrodesulfurization unit and associated equipment. CPC aims to increase its competitiveness in domestically and overseas by these efforts.

Reduction of benzene in gasoline to meet regulatory requirements

With the awareness of the need for environmental protection and concerns over air pollution, the Environment Protection Administration (EPA) has enforced stricter standards for automobile gasoline. Since July 1, 2020, benzene levels in petroleum have gradually been reduced from 1.0 vol. % to 0.9 vol. %. The EPA plans to reduce benzene to less than 0.8 vol. % in future. In response to energy transition and the regulatory limits for benzene content of gasoline, CPC first invested in the project to create a 0.3 wt. % ultra-low sulfur fuel oil and asphalt cutback production center. In 2020, CPC produced an investment plan for the production of gasoline with a reduced benzene content and high quality products. The company will build a unit to extract aromatics content from pyrolysis gasoline with capacity of 32,000 barrels per day (including an aromatization unit) and its accessory equipment, including storage tanks and utility systems, in order to make its gasoline products comply with regulatory requirements and increase CPC's competitiveness in domestically and overseas.

The UN Climate Change Conference (COP26) held in 2021 urged governments to aggressively accelerate their actions toward the goal of energy conservation and carbon reduction. The official and private departments in Taiwan have also continued promoting the carbon emission reduction policies and investments in renewable energy. To respond to the call for a reduction in carbon emissions, CPC has planned to set up a carbon capture demonstration unit in Dalin Refinery. By doing so, CPC will reduce carbon emissions and make real progress in environmental protection.

CPC in Petrochemicals

CPC's major petrochemical production facilities are its Linyuan Petrochemical Plant run by the Petrochemical Business Division as well as the Taoyuan and Dalin refineries operating under its Refining Business Division. The RFCC units in the two refineries at Dalin and Taoyuan produce propylene products, while the naphtha crackers and butadiene extraction units at the Linyuan Petrochemical Plant produce ethylene, propylene and butadiene products. Aromatics extraction units produce benzene, toluene and mixed xylene. Currently, CPC's annual production capacities for basic petrochemical raw materials are 1.07 million metric tons of ethylene, 1.194 million tons of propylene, 158 thousand metric tons (KTA) of butadiene, 274 KTA of benzene, 321 KTA of toluene and 507 KTA of mixed xylene.

As a pioneer of the upstream petrochemical business in Taiwan, CPC has continued to invest in a variety of upstream petrochemical businesses to drive the development of domestic petrochemical industry, which has contributed to the economic miracle of Taiwan. In recent years, it has been dedicated to equipment upgrade and capacity expansion in order to reduce the shortage of petrochemical raw materials supply. Starting in 2005, CPC implemented the "New No. 3 Naphtha Cracker" project at the Linyuan Petrochemical Complex, with a total investment of over NT\$40 billion. This new No. 3 Naphtha Cracker started to produce ethylene that meets specific standards in 2013 with an ethylene capacity of 720 KTA, propylene capacity of 370 KTA and butadiene capacity of 100 KTA. It is a supplier of petrochemical raw materials to both downstream businesses in Linyuan Industrial Park, and businesses in Renda Industrial Park, whose supply was originally provided by the No.5 Naphtha Cracker, creating economic benefits that are worth around NT\$ 100 billion per year. CPC plans to evaluate the expansion of petrochemical production capacity based on market demand, so as to fully supply basic raw materials for downstream players.

Refining-petrochemicals integration with low-carbon transformation

In response to the growth of global electric vehicles market and support government's energy transition policy, CPC has conducted integration of its refining and petrochemical businesses, and it has reduced its production of gasoline and diesel and has produced more chemicals. In addition, CPC has reduced the severity of pollution from its plants, decreased the energy consumption of its operations and it has strengthened safety at its facilities, through the supply of raw materials among different business units, and its plan to create a synergy of its resources and public

facilities through high-degree integration. In addition, the implementation of carbon capture, utilization and storage technology (CCUS) is under evaluation to establish a low-carbon operation field.

Towards high value materials in line with policy

In the face of the challenges posed by climate change and depletion of natural resources, CPC actively complies with the government's "Circular Economy" Policy by turning petrochemical by-products used as fuel or previously regarded as industrial waste into value-added products.

For example, the utilization of the heavy oil from naphtha cracker for soft-carbon material production to supply the lithium battery industry, and the purification of Dicyclopentadiene (DCPD) from pyrolysis gasoline for wind turbine blade production.

CPC aims to create benefits for both economic development and environmental protection by adhering to the principles of sustainable operations, which is also an important element in its efforts to surmount the challenge of industrial transformation.

Marketing CPC Petroleum Products

CPC's marketing of refined petroleum products in its domestic market is primarily focused on the transportation sector—specifically the gasoline, diesel, fuel oil and aviation fuel. In 2021, its sales of those products in Taiwan totaled 16.74 million kiloliters in volume and generated revenue of approximately NT\$ 351.8 billion. Automotive gasoline accounted for the largest share at approximately 53.6%, followed by diesel at about 27.9%, fuel oil at about 12.7% and aviation fuel at around 5.8%.

Taiwan's internal market for refined petroleum products is divided chiefly between CPC and the Formosa Plastics Group and competition between the two continues to grow increasingly intense. CPC has worked hard at leveraging the advantage of its marketing network, and to protect its market share, by consolidating its gas station network. Of the 2,512 sites operating in Taiwan at the end of 2021, 623 were directly run by CPC and other parties, and 1,292 were privately-owned by CPC franchisees, adding up to a total of 1,915 sites. Their sales as a part of the total market volume breaks down as 79.4% gasoline, 77.2% diesel, 95.7% fuel oil and 59.1% aviation fuel, with the overall market share being 78.8%.

Storage and transportation network meets the requirements of all areas

In terms of storage and transportation, CPC not only runs its own gas stations, but also operates aviation fueling stations at all of Taiwan's airports: Songshan, Taoyuan, Kaohsiung, Taichung, Hualien, Taitung, Kinmen, and Penghu. Around the coast, it has marine bunkering stations for international vessels at Keelung, Suao, Taichung, Kaohsiung, and Hualien ports.

As of the end of 2021, CPC operated 14 product distribution centers located country-wide at Keelung, Shimen, Hsinchu, Taichung, Taichung Harbor, Wangtian, Minxiong, Tainan, Fengde, Qiaotou, Suao, Hualien, Huxi, Kinmen and Matsu. They supplied products to gas stations in their surrounding areas with a total of 17,716,000 kiloliters of product over the course of the year. CPC has three chemical analysis centers/petroleum laboratories in Keelung, Taichung and Kaohsiung, plus six testing laboratories, which are in charge of testing products for quality control, and altogether these handled 28,994 samples in 2021. The transportation department transported 11,566,000 kiloliters of oil in 2021, and the total distance covered was 39,783,000 kilometers.

Integrated operation Mobile payment convenience

In terms of gas station operation, CPC is unquestionably the market leader by virtue of offering the consumers superior-quality services across the board differentiating it from its competitors. The company further leverages its service advantage by implementing total customer experience management by having created and maintained a culture of hygiene of lavatories, vigorously promoting VIP membership cards, introducing new business lines and services in line with contemporary trends, and reinforcing customer relationship management. CPC has taken the lead in offering card-based self-service refueling as a means of lowering operating costs and working around the difficulty of recruiting filling station attendants. At the same time, as promoting a multi-service business model featuring a diversity of offerings, the company has boosted non-operating income by strengthening cross-industry alliances.

Because of the popularity of mobile payments, CPC introduced and promoted contactless payment (Near-field Communications, NFC) in June 2018. With a view to

optimizing the mobile payment program, CPC's own payment tool, CPC Pay, was released on November 12, 2019. It can be considered to be a pioneer of an app exclusively designed for making mobile payments at gas stations. CPC Pay combines diverse functions, such as payment, membership services, special offers, and vehicle-related services. Users can access a variety of information efficiently using CPC Pay, and the brand value of CPC and the loyalty of consumers have enormously improved.

In order to provide customers with a variety of ways to pay, since July 15, 2020 CPC gas station customers are able to use six third-party payment services for e-payment transactions at the full-service areas: Line Pay, Line Pay Money, Pi Mobile Wallet, JKOPay, O'Pay, GAMA PAY. Furthermore, complying with the government's policy, CPC has newly added Taiwan Pay mobile payment services (restricted to debit cards and bank accounts) since March 31, 2021. CPC provides a more convenient petrol-filling service to its customers with wireless barcode readers, which allows customers to accomplish the payment without leaving their cars.

In order to improve the user experience of CPC Pay, customers have been able to add VISA/MasterCard/JCB credit cards to their CPC Pay since December 29, 2020. CPC has continued to optimize the CPC Pay functions and it has launched promotional campaigns that feature its use in order to increase customers' willingness and in turn forge a brand identity to its customers.

Diverse services bring record high performance

The multi-service business model for gas stations comprises the provision of car-washing, quick maintenance, CUP&GO coffee, on-site convenience stores, and the sale of superior-quality products. In response to the green energy policy, we are actively developing charging and swapping stations for electric vehicles. Currently, 774 stations have been built, and more stations are planned to be built in 2022. As of 2021, there are 273 stations offering car washing services, 67 stations offering quick maintenance services, and 61 stations selling CUP&GO coffee. In 2021, the gross profit of the diversification business exceeded NT\$1.29 billion with, Kuo-Kuang scooters, and intake valve cleaners for cars and diesel vehicles, and other vehicles selling more than two million bottles, and the sales of eco-friendly laundry detergent and dishwashing detergent reached 700,000 bottles and 270,000 bottles respectively. Mid-Autumn Festival moon cake gift boxes set a sales record of 134,000 boxes, and more than

580,000 cups of CUP&GO coffee was sold. This fully demonstrates the channel value of gas stations, and diversified services have been recognized by customers.

In regard to customer service, in 2000, CPC set up the 0800-036-188 customer hotline to coordinate the handling and response of customer issues, after the integration of a variety of professional services provided by different internal units. The 1912 CPC service hotline came into use in 2011, an English-language service was added in 2020, and a Taiwanese-language service in 2021, expanding the company's window for communication with the public.

Green gas stations Environmental inclusion and mutual benefit

The global trend towards environmental protection means there is now an emphasis on constructing buildings in a way that is sustainable. Various terms "ecological buildings" in Japan, "eco-buildings" or "sustainable buildings" in Europe, and "green buildings" in the USA and Taiwan, they all aim to protect ecological systems, encourage a mutually beneficial relationship between the structures and the environment, conserve energy and reduce both pollution and overall environmental impact. These sustainable design and green concepts align with CPC's dedication to achieving sustainability in its operations. CPC launched a program to green its gas stations in 2013. As of December 2021, 67 gas stations had received "green building" certification.

Natural Gas Supply

CPC promotes natural gas as the fuel of the future, in keeping with Taiwan's policy aim of energy diversification. It is based on its inherent advantages in terms of high thermal efficiency, low pollution profile, and convenience that allows for safe handling. A new era of clean energy for Taiwan was ushered in with the completion of the country's first LNG receiving terminal in Kaohsiung's Yongan District in 1990, and a second-phase expansion project was completed in December 1996, boosting the capacity to 4.5 million tons annually; A third-phase expansion project to satisfy demand from independent power producers (IPP) as well as consumer and industrial end-users in northern Taiwan commenced in July 1996. In addition to terminal-area expansion, this involved laying a 36-inch diameter, 238 km long undersea pipeline from the Yongan

plant to Tongxiao. Its completion in December 2002 expanded CPC's annual LNG handling capacity to 7.44 million tons.

Increasing handling capacity to meet requirements

With the primary purpose of supplying natural gas to the Taiwan Power Company (Taipower), industrial firms and household users in central and northern Taiwan, CPC built a LNG receiving terminal sited close to Taichung's Port West Pier 13 and the hinterland, with capacity of three million tons; three LNG storage tanks each of 160,000 kiloliter capacity; gasification and gas supply facilities; and a 135-kilometer, 36-inch sea long-distance gas transportation pipeline from Taichung Harbor through the Tongxiao distribution center to the Datan metering plant. This plan was launched on July 13, 2009. The recently-completed Taichung LNG Terminal Phase II Investment Project calls for the construction of three additional 160,000 kiloliter above-ground storage tanks, plus another gasification facility at the terminal itself; a 26-inch, 21.8 km terrestrial gas pipeline between the terminal and the Wuxi Separation Station; and a further switching station linked to the existing 26-inch pipeline at the Wuxi site. The project will boost the annual LNG handling capacity of the Taichung terminal to over six million tons and ensure a stable, dependable supply of natural gas during the winter's often inclement monsoon period, as well as—and partly because of—greater storage capacity in terms of the number of days' supply of LNG on hand.

Currently, Taiwan government policies to phase out nuclear power plants and to reduce greenhouse gas emissions mandate 50% of Taiwan's total electricity to come from natural gas by 2025. To help reach this target, CPC will lease Wharves 11 and 12 and their associated facilities from the Port of Taichung to create the Taichung LNG Terminal's second dedicated LNG-unloading wharf. Execution of its Phase III expansion module will add two 180,000 kiloliter above-ground storage tanks and their associated gasification plant. These projects are expected to improve the unloading energy and gas supply stability upon completion.

In order to comply with the "Capacity of Self-provided Storage Tanks for Natural Gas Production or Import Enterprises" revised on August 27, 2019, and the requirements to increase the number of storage tank capacity days and business inventory days year-on-year, CPC will continue with the Taichung Receiving Terminal New Pier & Terminal Expansion exterior Taichung Harbor Investment Project (which will add four above-

ground full-capacity 180,000 kiloliter LNG storage tanks, gasification facilities, and two LNG-unloading wharves and other related facilities). After completion of the land reclamation of the North Reclamation Area (III) and the South Reclamation Area (IV)-2, the Nanti Rd.-crossing pipelines will connect to the existing plant area to support each other. It is expected that after the completion at the end of 2028, the overall equipment utilization rate can be reduced and the gas supply stability and safety can be improved.

CPC has constructed an extensive natural gas transmission and distribution system on Taiwan's western side. It comprises approximately 2,221 kilometers of terrestrial trunk pipeline, extending from Pingtung in the south to Keelung in the north; and which includes eight supply centers, one transfer center and 50 distribution stations along its length. Current plans are centered on the goal of constructing interlocking ring-shaped networks to produce a figure-of-eight configuration. This will involve laying down a 238-kilometer undersea pipeline from the Yongan LNG Terminal to Tongxiao and a 500-kilometer terrestrial pipeline onwards from Yongan to Taoyuan. In addition, after the 36-inch undersea gas pipeline from the Taichung LNG plant to Datan power station has come on stream, it will be linked with terrestrial pipelines in central and northern Taiwan to form another circular formation, thus completing the planned island-wide, integrated figure-of-eight natural gas transmission network.

Gas supply by area increases system security

In compliance with government policies to phase out nuclear power plants and to create an environmentally-friendly, low-carbon environment, CPC plans to set up three gas-fired generating units at Datan Power Station. To generate abundant energy for Datan Power Station, the commodity sectors in the north and other customers of the power station, CPC plans to set up a third LNG terminal in Kuantang Industrial Centre, comprising reception facilities which can hold up to three million metric tons of import quantum, two LNG storage tanks each of 160,000 kiloliter capacity; gasification and gas supply facilities to connect with the existing gas supply system.

CPC's Third LNG Receiving Terminal project got under way in 2016 and is currently scheduled to come on stream in June 2025. In the future, with the three terminals-one each in northern, central and southern Taiwan-supplying natural gas to users in their respective areas, there should be some reduction in the cost and risk of transmitting gas over long distances. The figure-of-eight combined undersea and terrestrial gas

pipeline network will enhance both the safety and stability of gas supply through its transfer and backup functions. The completion of this third LNG receiving terminal project will enable CPC to construct and operate a national level natural gas supply system that is fully functional, stable and safe.

Towards net zero, introducing carbon neutral LNG

As a first step toward energy transition and net zero, CPC received its first carbon neutral LNG cargo in 2020. To ensure the credibility of the net zero products, high quality nature-based carbon credits have been used to offset the overall greenhouse gas (GHG) emissions of the relevant LNG cargo, including exploration, transmission, liquefaction, shipping, regasification, distribution and end-use. In 2021, CPC received the PAS 2060 third-party validation report, a globally recognized carbon neutrality standard. In the future, CPC will keep endeavoring in importing carbon neutral LNG, not only to reduce our carbon intensity, but also to provide a net-zero solution for our customers in Taiwan.

Global strategy for a stable gas supply

CPC has devoted considerable efforts diversifying its sources of LNG imports to ensure a stable supply of natural gas for Taiwan. The source of LNG imports is all over the world, including the Middle East, the Asia-Pacific region, Russia, Australia, North America, Central and South America, Africa and Europe.

In addition to mid to long-term LNG procurement contracts, CPC acquires additional supplies through short-term/spot transactions to achieve the security and diversification of gas supply in Taiwan. In 2021, CPC imported most of its LNG from Qatar, Papua New Guinea, Australia, the United States and Russia.

OTHER PRODUCTS

Liquefied petroleum gas-make use of great quality and achieve excellence

CPC's long-standing monopoly in the LPG market was broken when the government opened it up to competition in 1999. Formosa Petrochemical Corp. began competing with CPC as a producer and importer. In response to market competition, CPC has maintained its leading market share in the household gas market by making full use of

its quality advantages, north-south transport, storage systems, comprehensive marketing, retail network, full grasp of international market price fluctuations and reductions in procurement costs. In selling industrial gas, the company aims to raise the quality of its customer service and to promote the value of its products so as to both retain existing customers and win new ones.

As a state-owned enterprise, CPC undertook its mission of implementing LPG price levels set by government when there were price hikes during the COVID-19 pandemic in 2021, in order to reduce their impact to domestic industry and economy. Meanwhile, CPC has complied with the government's LPG safety reserve policy to increase storage tank turnover rate and revenue. At the same time, it endeavors to reinforce both occupational safety and environmental protection protocols as part of its mission to stabilize LPG supply in the domestic market and deliver operational performance.

CPC LUBRICANTS: expanding business territory and multiple international certifications

CPC's Lubricants Business Division (LBD) was founded on March 16, 1999. CPC is now the leader in Taiwan's lubricants market with two brands: CPCLUBE ("a brand with mission"), Mirage ("professional automotive lubricants") and it sells its products to both domestic and overseas consumers. In terms of the domestic market, the LBD now has over 30 distributors and sells its products at over 600 domestic gas stations directly operated by CPC and leading hypermarket chains, providing comprehensive, convenient and diversified after-sales support.

In addition to cultivating its domestic market, the LBD is also vigorously expanding in the Asia-Pacific region: China, Philippines, Indonesia, Vietnam, Myanmar, India, Thailand, Australia, Congo and Surinam all have distribution outlets and direct customers. To circumvent the ASEAN tariff barrier to non-members, CPC has worked with a domestic warehousing company to set up Maxihub Corporation in Vietnam's Tong-Nai Province as a joint-venture. This company will specifically operate facilities for receiving and warehousing of petrochemicals, and lubricant blending, and it is projected to begin operating in 2022.

With the gradual rise of electric vehicles and the shrinking of the automotive lubricants market, marine engine oil has become an important direction of future development for LBD. In the past few years, the certification team has obtained over 60 important international certifications, including MAN ES, WinGD, Wartsila, YANMAR, J-EN, MTU,

Bosch Rexroth, Parker Denison, etc. In 2019, 2020, and 2021, CPC's lubricant products were not only awarded the National Brand Yushan Award for Best Product, but they also won the Reader's Digest "Reputable Brand" gold award in the lubricant category for three consecutive years. It shows that LBD is seen as a trustworthy brand by the general public.

SOLVENTS & CHEMICALS: breaking into the international market and the development of green products

CPC created its Solvent and Chemical Business Division in April, 1999. It mainly produces petroleum solvents, additives for refinery processes, and a variety of products in small packages at the Chiayi plant. The Division outsources the production of specialty coatings to a producer in Kaohsiung. In terms of sales, its four major product lines include asphalt, solvents, chemicals, additives and coating for storage tanks, pipeline equipment.

The asphalt products the Division produces are of high-quality, have a good reputation, and are mainly used for domestic pavement projects. In 2021, it took about 55% domestic market share. In response to climate change, the Division has continued to produce Polymer-Modified Asphalt that can adapt to high temperatures and wet weather, and it has invested in new asphalt storage tanks in recent years, in order to further enhance its asphalt production and storage system and improve domestic road quality.

Solvents produced by the Division include Aliphatic Hydrocarbon solvents, aromatics solvents, toluene, mixed xylene and a variety of products in small packages. Thanks to its sound development capabilities and technologies, complete transport and storage system, and the quality of its premium products, the Division had about 60% market share in 2021. It is the market leader in the domestic petroleum solvents industry.

Chemicals produced by the Division include normal paraffin, octene dimate, methanol, etc. In particular, its normal paraffin has not only been sold to domestic detergent producers as a raw material, but it has also been exported to China, India, the U.S and some European countries during the COVID-19 pandemic, successfully expanding its business territory by satisfying the needs of different international customers with adjustments to the product ingredients.

In order to meet processing needs and occupational safety and environmental regulations, CPC has developed its own additives and specialty coatings to meet the maintenance and operational needs of its refineries, in order to reduce the operating processing risks. In 2019 and 2020, CPC's intake-system cleaners and fluorinated paint won the National Brand Yushan Award for Best Product.

CPC has actively integrated the sales channels of its specialty chemicals and solvent products, refined its services to improve its product quality and image, and has committed itself to the development of new green products and new business in the pursuit of sustainable development, in line with the international community's continuing push for carbon-reduction.

2022

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