

ALA

5-aminolaevulinic acids (ALA)

ALA is a natural and important amino acid and it has an important role as a raw material used for the production of haem in the blood and chlorophyll in the plant body. It is used as an enhancer of fertilizer to promote plant growth. It is also used in photodynamic cancer therapy, and is expected to be applied in the sectors of pharmaceuticals for both humans and animals and animal feed in areas, such as prevention of anemia in pigs and improvement of disease resistance in fish. The market for ALA is highly expected to grow into a huge one that can be equal to the size of the markets for main amino acids in the future. Cosmo Oil has established a low-cost method for manufacturing ALA and has begun to supply it to the fertilizer and pharmaceuticals markets, where the company is also involved in the development and sales of new applications for the material.

<Fertilizer Sector>

Company Name: Cosmo Seiwa Agriculture Co., Ltd. (100% invested by Cosmo Oil)

Lines of Business: Manufacturing and marketing of high-functional fertilizers containing ALA as an active ingredient for agriculture (Pentakeep V Series)
Manufacturing and marketing of high-functional fertilizers containing ALA as an active ingredient for home gardening (Pentagarden Series)

<Pharmaceutical, Cosmetics and Health Food Products Sectors>

Company Name: SBI ALApromo Co., Ltd. (15% invested by Cosmo Oil)

Line of Business: Development and marketing of pharmaceutical, cosmetics and health food products containing ALA as an active ingredient.

API

The American Petroleum Institute gravity, or API gravity is a measure of the density of a crude oil liquid. If its API gravity value is greater, it indicates that a larger quantity of lighter and more highly value-added distillate products (gasoline, kerosene, jet fuel and diesel fuel) is likely to be distilled from the liquid, which is priced higher in the market.

CARB Diesel Fuel

It refers to diesel fuel with much less environmental impact, which can meet the rigorous quality standards established by the California Air Resources Board (CARB) of the U.S. The CARB diesel fuel has a lower viscosity level, a higher cetane value and a lower aromatics content than diesel fuels available in Japan.

By securing diesel fuel tanks in California, Cosmo Oil in April 2007 launched its CARB diesel fuel wholesale business in the U.S.

Car Care Merchandise

It includes car inspection, repair, lubricating oil change, and car wash services, tires, batteries, accessories, and other automotive products and services, which represent the value added merchandise.

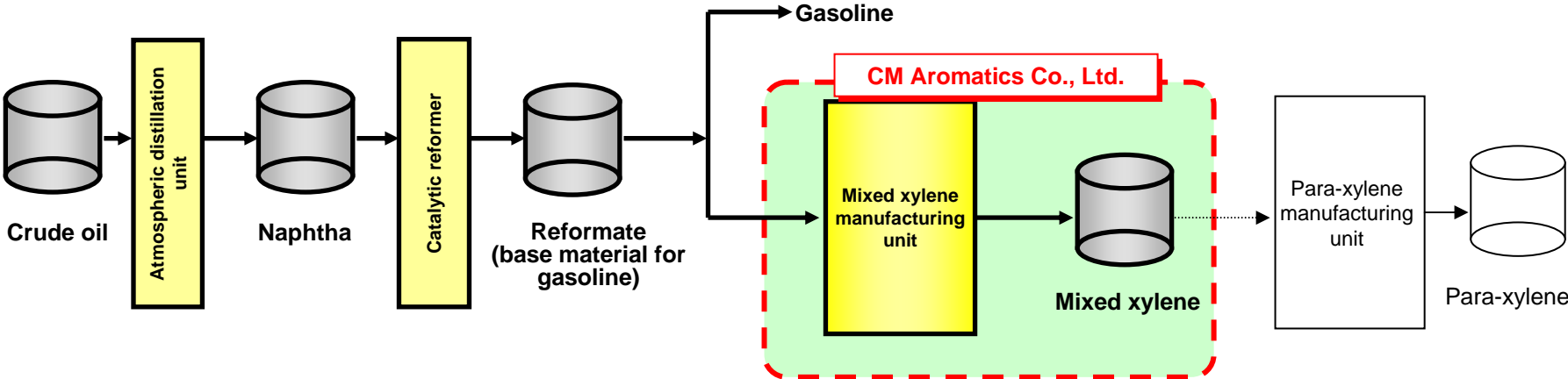
CM Aromatics Co., Ltd.

A joint venture company established by Cosmo Oil and Maruzen Petrochemical Co., Ltd. to procure the base material to manufacture mixed xylene and to store and market it.

Date of establishment: April 1, 2005

Capital: ¥100 million

Invested by: Cosmo Oil at 65% and Maruzen Petrochemical Co., Ltd. at 35%



Coker Unit

A new unit to be built at the Sakai Refinery of Cosmo Oil as part of its facility upgrading investment (at a total capital investment amount of some ¥100 billion and the unit scheduled for becoming operational in Fiscal Year 2010). In addition to the Coker unit, a Coker Distillate hydrodesulfurization unit will also be newly built. These units, when completed, will be used to produce naphtha, jet fuel and diesel fuel from an asphalt fraction.

These efforts are expected to provide benefits, such as cost reductions in the refining process by using heavy crude oil (by taking advantage of heavy-lighter crude oil price gaps, or price gaps between heavy crude oil and light crude oil aimed at maintaining the same distillate production rates as conventional by using lower-priced heavy crude oil) and an increase in refining margins with a shift to the production of intermediate fractions from that of a heavy oil fraction (by taking advantage of light-heavy distillate product price gaps, or price gaps between oil product and heavy fuel oil aimed at improving rates of producing more highly value-added lighter distillates), thereby improving profitability at the company.

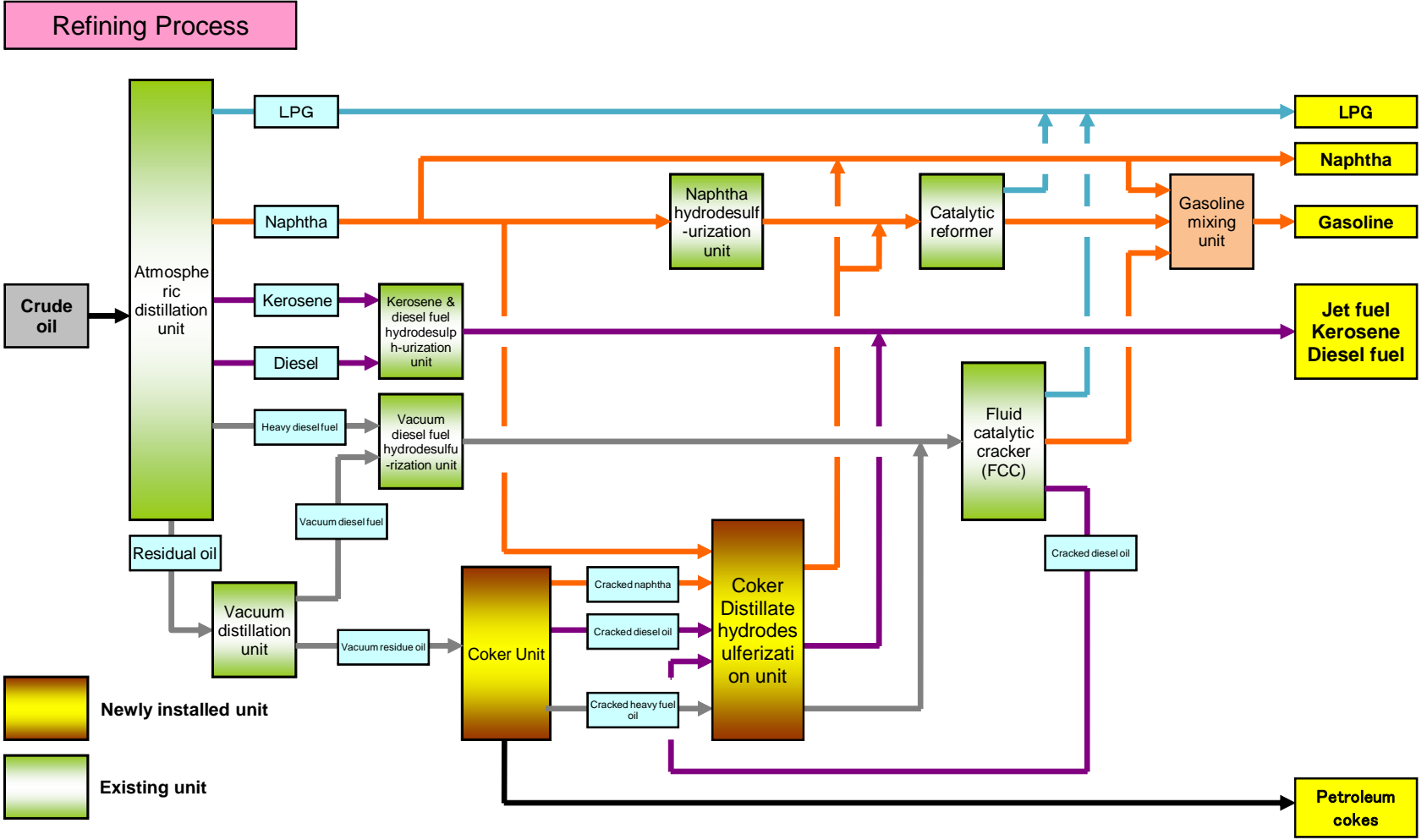
<Outline of the New Facilities to Introduce>

- (1) Coker unit - Processing capacity of 25,000 BD
- (2) Coker Distillate hydrodesulfurization unit - Processing capacity of 42,000 BD

<Outline of Production Capacity Expected>

Naphtha: 250,000 kl/year; Jet fuel: 700,000 kl/year; Diesel fuel: 350,000 kl/year; and Petroleum cokes: 400,000 kl/year

<Refining Process Chart After Introduction of Coker and Other Units>



Concentrated Solar Power (CSP) Generation

This technology uses mirrors and other devices to concentrate sunlight to make heat, which creates steam that turns a turbine to generate electricity. It is expected to rapidly grow in the future. CSP generation technology is largely classified into three types, as follows:

1. Trough System (technology currently commercialized on a large scale):

This system uses semi-cylindrical reflective troughs arrayed on the ground to concentrate light directly in front of the troughs onto slender heat-collecting tubes, through which industrial oil or molten salt is passed and heated. The heat creates steam that turns a turbine to generate electricity.

2. Tower-Top System (technology commercialized in Spain for the first time in the world in 2008):

This system uses reflective mirrors, called heliostats, that track the sun as it moves through the day and reflects the energy to a solar receiver installed at the top of a tower. The concentrated light heats water, producing steam that turns a turbine to generate electricity.

3. Beam-Down System (the newest technology under development; currently under research and development by Cosmo Oil):

This system has evolved from the tower-type technology. Sunlight reflected from a central reflective mirrors installed on the top of a tower is collected to a solar receiver on the ground. Placing the solar receiver on the ground is expected to reduce both tower construction costs and solar receiver operating costs.

Cosmo Gasoline Mileage

A frequent customer program as part of the Cosmo The Card system, which offers cardmembers certain rebates based on the amounts of their purchases of automobile fuel, kerosene, and car care products and services, when their cardmember accounts are settled on a regular basis.

This program helps increase sales of car care products and services and automotive fuel sales at the same time.

The program compels customers to visit Cosmo SSs on a continued basis, as well as to use their Cosmo The Card functions.

Cosmo The Card

Cosmo Oil's proprietary credit card that is available only at Cosmo Oil SSs.

↔ Triple Card (or Affinity Card), Cosmo The Card Opus

The card provides great benefits for the three parties customers, dealers (SSs) and Cosmo Oil, respectively, as follows:

Customers: Immediate card issuance, cashless payment for purchases at the SS, the rebate program (please refer to the "Cosmo Gasoline Mileage" program), card loan, and many other benefits available

SS: Actively issue new cards at the time of SS opening to set up a system so that customers will come back to Cosmo SSs and use the cards repeatedly.

Marketing activities by utilizing POS (point of sales) data gathered through card use would help dealers enhance the ways they operate their SSs and increase sales.

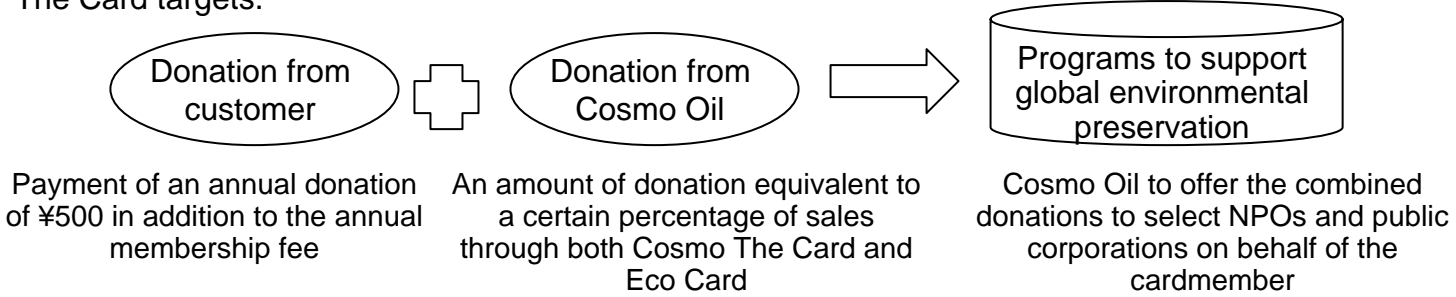
The card also makes it easy for SSs to process customer payments and offers the issuer's commission lower than credit sales companies'.

Cosmo Oil: Enhancement in marketing tools and SS management is expected to bring more sales and more card commission revenues.

Cosmo The Card “Eco” (or Eco Card), Cosmo the Card Opus

Cosmo Oil’s proprietary card provides an opportunity for cardmembers to “join environmental programs” in addition to enjoying benefits offered by the regular Cosmo The Card and Cosmo the Card Opus .

The Eco Card is designed to acquire new customers highly sensitive to environmentalism in addition to attracting Cosmo The Card targets.



* In addition to the above, the Eco cardmember will receive the Cosmo Oil Environmental Report and the Cosmo Oil Green Report providing information about the company’s environmental activities and how to use the financial donations.

Cosmo The Card Sales Ratio

The ratio of the volume of automobile fuel oil sales to Cosmo The Card members against such total sales at an SS. An SS with a higher card sales ratio would mean that it is supported by a larger number of customers on a continued basis.

Cosmo The Card Opus

Starting June 2006, “Cosmo the Card Opus” was issued in affiliation with AEON Credit Service Co. Ltd.

Co-branded with no annual fee international brands (VISA, MasterCard, JCB), the line-up will be able to accommodate a range of customer needs.

↔ Cosmo the Card (A non-international brand card, limited for use at Cosmo and affiliated SSs)

Cosmo The Card Triple

A credit card issued through a tie-up with a credit card company

↔ Please refer to “Cosmo The Card” and “Cosmo the Card Opus.”

Dealer

SS operator

Independent SS operator.

Dealer Head Office NV Index

Objective: This index is designed to raise cost awareness at the dealer head office (dealer administrative management department) of an SS operator in order to help it enhance its management (establish such an operating organization that can grow profitability even in a hostile business environment that may reduce operating margins). Every year, a new target index level is recommended by Cosmo Oil to each SS operator.

Description: Have each SS operator understand the management policy of minimizing SS operating expenses and of maximizing automobile fuel oil sales at the same time.

This and the SS NV Index are combined into the Dealer NV Index, which indicates the level of management capabilities of an SS operator.

Please refer to “Dealer NV Index” and “Total NV Index.”

Dealer NV Index

Dealer NV Index refers to a combination of the SS NV Index and Dealer Head Office NV Index.

→ Please refer to “SS NV Index.”

→ Please refer to “Dealer Head Office NV Index.”

Desulfurization Catalyst

The typical desulfurization process is such that sulfur (S) is removed in the form of hydrogen sulfide by reacting the sulfur contained in crude oil with hydrogen (H).

A catalyst is used to promote this chemical reaction.

Eco Card

→ Please refer to “Cosmo The Card ‘Eco.’ “

→ Please refer to “Cosmo The Card.”

FCC (Fluid Catalytic Cracking Unit)

FCC stands for fluid catalytic cracking unit.

This is a secondary decomposition unit designed to produce a larger quantity of lighter fuel oil fractions (mainly the gasoline fraction).

F Index

An index that dealers use to manage their SSs (or to raise their cost awareness)

The primary objective of introducing this index is to have each dealer understand the ratio of the gross margin of sales of the value added merchandise (including statutory car inspection, lubricating oil change, car wash, tires, batteries and accessories and other services and products) to labor cost to draw their greater attention to cost.

An SS with a larger index would be stronger with value added sales.

Every year, Cosmo Oil provides each dealer with a target F index to meet.

$$\text{Calculation method} = \frac{\text{Value added gross margin}}{\text{Labor cost}} \times 100$$

E.g., F Index value of more than 100%: A value added gross margin is offset by labor cost.

F Index value of more than 120%: Labor is more than offset by a value added gross margin. = Strong SS.

- Please refer to “SS NV Index.”
- Please refer to “Dealer Head office NV Index.”

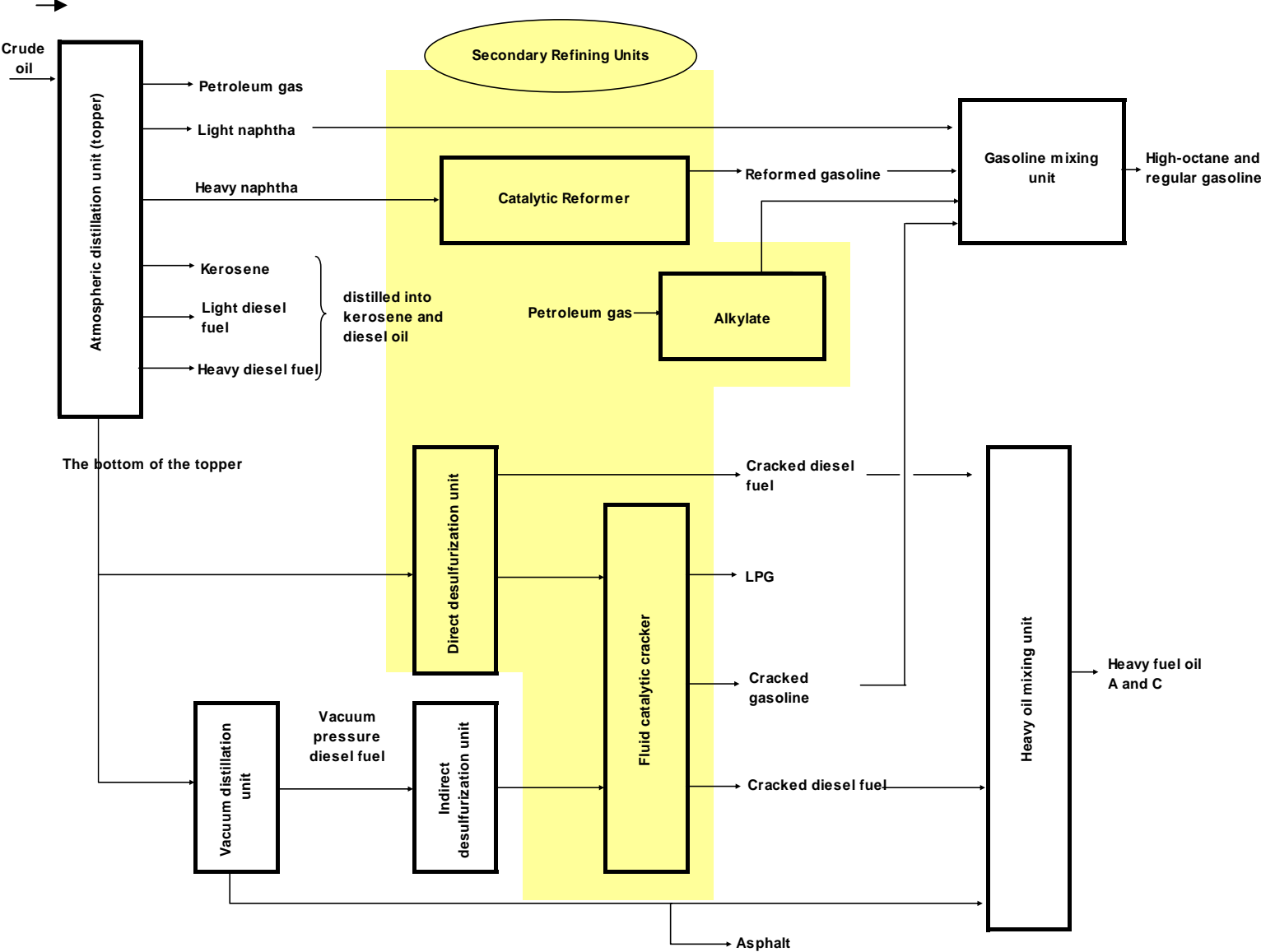
GTL (Gas To Liquid)

Liquefied fuel oil manufactured based on natural gas.

It includes almost no sulfur or any other impurities, so that it is expected to provide one of the clean energy resources in the future.

Heavy Fuel Oil Desulfurization Units (Direct and Indirect)

Units designed to recover sulfur from what is in the bottom (or heavy fuel oil) of the atmospheric distillation unit
Please refer to “Desulfurization Catalyst” as well.



Heavy-Lighter Crude Oil Price Gap

It refers to a price gap between heavy crude oil and light crude oil. As this price gap has been becoming wider these years, a refinery is expected to increase its competitiveness if it has facilities capable of cracking lower-priced heavy crude oil.

(\$ /API / B)

	1995	2000	2003	2004	2005	2006	2007
Heavy-lighter crude oil price gap	0.15	0.20	0.14	0.44	0.72	0.75	0.74

Note: Please refer to “Coker Unit (vacuum residue cracking unit)”

Hyundai Oilbank Co., Ltd. (HDO)

HDO is an oil refining and marketing company based in the Republic of Korea, accepting a capital investment by IPIC. Established in 1964, HDO processes crude oil at 390,000 barrels a day and markets fuel oil products with an about 19% share in the domestic market. As part of its joint projects with IPIC, Cosmo Oil in April 2008 signed a memorandum of understanding for comprehensive and strategic cooperation of the oil business with HDO.

IPIC

Established in 1984, International Petroleum Investment Company is a wholly owned energy-related investment subsidiary of the Emirate of Abu Dhabi. IPIC is specialized in making long-term investments in oil and gas-related businesses outside Abu Dhabi. It owns about 20% of Cosmo Oil shares by accepting a third-party allotment offered by Cosmo Oil.

IPP (Independent Power Producer)

Electricity wholesale business

Cosmo Oil has built a 200,000-kw power station adjacent to its Yokkaichi Oil Refinery, currently supplying electric power to Chubu Electric Power Co. starting from July 2003.

Light-Heavy Distillate Product Price Gap

It refers to a price gap between light distillate product, or oil distillates (such as gasoline, kerosene, diesel fuel, jet fuel, etc.) and heavy distillate product, or heavy fuel oil. A refinery is expected to increase its competitiveness if it can improve rates of producing more highly value-added lighter distillates.

(\$ / BBL)

	2000	2001	2002	2003	2004	2005	2006	2007
Light-heavy distillate product price gap (JET FUEL-HSC)	9.90	6.60	5.80	8.00	22.50	27.00	32.00	32.08

Note: Please refer to “Coker Unit (vacuum residue cracking unit)”

Mileage, Mile

→ Please refer to “Cosmo Gasoline Mileage” program.

Mixed Xylene

A raw material used to manufacture para-xylene. Mixed xylene is mainly produced based on reformat (base material for gasoline) that is manufactured by an oil company.

→ Please refer to “Para-xylene.”

Number of Cards in Force

The net number of “Cosmo The Card” cardmembers after the deduction of the number of ex-cardmembers.

The actual number of cardmembers as of today.

→ Please refer to the “Total Number of Cardmembers Issued.”

Para-Xylene (PX), Mixed Xylene (MX)

Aromatic compounds that are used to manufacture PET bottles and polyester textile products.

* CM Aromatics Co., Ltd. is involved in manufacturing mixed xylene.

Sales Unit, or SS Sales Unit

A monthly sales volume of automobile fuel oil per SS

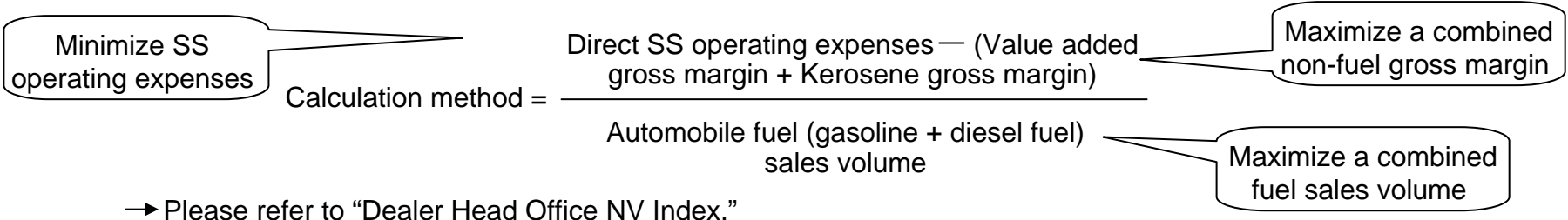
SS NV Index

This refers to a management evaluation index that provides navigation for SS operators to strengthen their management of SSs (or to build the management basis to improve profitability even if they face such an unfavorable business environment that may reduce operating margins).

The primary objective of the introduction of this index is to have SS operators understand the management policy of minimizing costs to operate an SS, while maximizing a value added gross margin (to be earned from selling statutory car inspection, lubricating oil change, car wash and other services and tires, batteries and accessories and other products) and gasoline and diesel fuel sales.

Every year, a new target index is recommended by Cosmo Oil to each dealer.

A dealer would become stronger if it achieves a smaller index value (or even minus figures).



→ Please refer to “Dealer Head Office NV Index.”

Sulfur-Free Gasoline and Diesel Fuel

Gasoline and diesel fuel containing 10 ppm of sulfur or less, respectively.

Topper

An atmospheric distillation unit. Generally speaking, the crude oil processing capacity of an oil refinery is represented by its topper’s processing capacity per day.

Total Number of Cards Issued

The cumulative number of “Cosmo The Card” cards issued so far, including the number of cardmembers who have been withdrawn.

Please refer to “Number of Cards in Force.”

Total NV (Navi) Index

Total NV Index refers to a combination of the SS NV Index with the SS Operator NV Index.

- Please refer to “SS NV Index” and “SS Operator NV Index.”
- Please refer to “Dealer Head Office NV Index.”