

## What is the Key to Outstanding Performance?



# Project to Increase Production Capacity for Aromatics to Meet Growing Demand in Asia

The Nippon Mining Holdings Group has invested approximately ¥70 billion in new production facilities for aromatic products within its Kashima Oil Refinery in Ibaraki, Japan. This capital expenditures project has been carried out in anticipation of future growth in demand for aromatic products, particularly in the Asia region. With the opening of this new facility, the Japan Energy Group became the world's third-largest seller of paraxylene to external customers, reinforcing its position as one of Asia's leading petrochemical producers.

### Growing Demand for Polyester in Asia

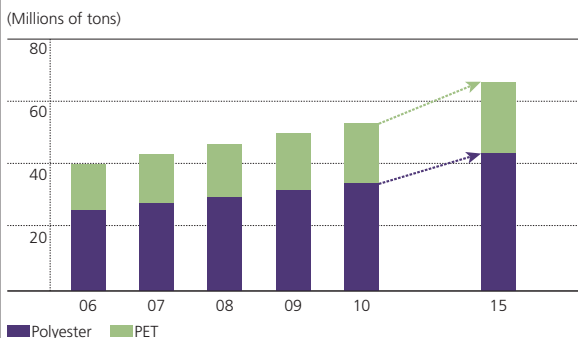
Aromatic products are a category of petrochemical products, which are classified as part of the downstream operations of the Petroleum business. These products are the base materials used in the manufacture of such synthetic fibers as polyester and nylon as well as synthetic resins, such as PET, which is a material used to make plastic bottles and food trays. The most common aromatics are known by the acronym BTX, which stands for benzene, toluene and xylene. Cyclohexane and paraxylene (PX) are relatively produced from benzene and xylene.

PX is oxidized and refined to produce purified terephthalic acid (PTA), which then undergoes polymerization with ethylene glycol (EG) to become polyester fiber or PET resin. Polyester fiber has excellent properties in terms of strength, processability and functionality, and, because it is relatively inexpensive compared with other synthetic fibers, demand for polyester is growing in the apparel field as a substitute for cotton. In the industrial arena too, it is the focus of growing demand for such applications as tire cord, as a substitute for nylon. Another growth area is PET resin, most of which is manufactured into PET bottles for use as soft drink and alcoholic beverage bottles.

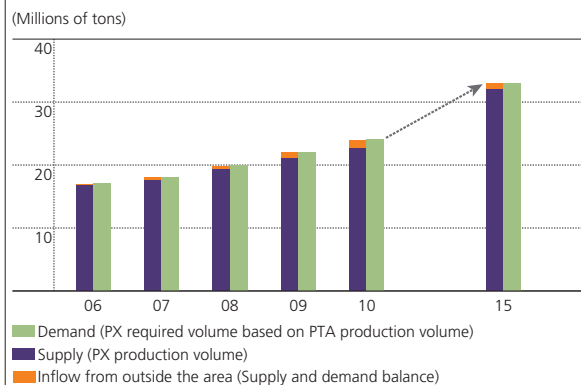
In recent years, the polyester market in Asia has been driven particularly by robust demand growth in China, resulting in steady market growth. It is estimated that demand for polyester in Asia will increase at an annual rate of 8% through 2015. To meet this rising demand, we believe that it will be necessary for PX production capacity to increase 1.5 million tons each year. In contrast, heavy naphtha, the base material used to produce PX, is a type of naphtha that can only be produced from the refining process for crude oil, and global crude oil refining capacity is expected to grow at an annual rate of only 2% to 3%. Therefore, from a structural perspective, the market situation for PX is expected to remain tight over the medium- to long-term.

Owing to significant plant capacity increases over the past several years, the PTA market has become oversupplied, leading to a slump in PTA prices since September 2007. Meanwhile, the price of naphtha, the raw material used to produce PX, has risen sharply, putting a severe squeeze on margins in the PX business. Despite this short-term situation, we believe that robust medium- to long-term growth in demand for polyester in Asia will drive demand for PX, and that PX margins will remain high.

### Global demand forecasts for polyester and PET



### Paraxylene demand and supply outlook (Asia)



Note: Data for 2006 is based on results for Petrochemical Consultants International, while the data from 2007 is based on our estimates.



Kashima Oil Refinery's new petrochemical production facility

### New Facility Comes on Stream, Increases PX Production Capacity to 1.02 Million Tons

In response to robust demand in Asia for synthetic fibers and resins, the Company Group embarked on a strategy to take advantage of this demand growth, thereby bolstering the competitiveness and enhancing the profitability of its Petroleum business over the long term. This strategy principally involved investing approximately ¥70 billion in a new petrochemical complex at the Company Group's Kashima Oil Refinery, including the construction and installation of a condensate splitter, a PX plant and a catalytic reforming unit. The new facilities commenced commercial operations in January 2008.

Japan Energy and two partners formed a joint venture to pursue this project. Japan Energy took an 80% equity stake, while Mitsubishi Chemical Holdings Corporation and Mitsubishi Corporation each took 10% equity stakes, in Kashima Aromatics Co., Ltd., the company established as the management vehicle for the new business. Kashima Aromatics mainly uses a feedstock of natural gas condensate (a crude oil-like hydrocarbon that often accompanies natural gas production) to manufacture such products as PX, benzene and other aromatic hydrocarbons, as well as light naphtha. As part of this partnership arrangement, in principle, the Japan Energy Group will receive the aromatic products, Mitsubishi Chemical Corporation will receive the light naphtha produced and Mitsubishi Corporation will be responsible for procurement of the condensate feedstock and will cooperate

in marketing the aromatic products. Operation of the new petrochemical complex is fully entrusted to Kashima Oil Co., Ltd., meaning its operations are closely integrated with the existing Kashima Oil Refinery. The joint venture partners aim to bolster the competitiveness of the new company through this arrangement.

Along with full-scale operations of the project, the Group aromatics production capacity will be considerably bolstered. PX capacity increased 70%, from 600,000 tons per year (tpy) to 1.02 million tpy, and benzene capacity increased 58%, from 330,000 tpy to 520,000 tpy.

### Becoming One of Asia's Top PX Suppliers

The Company Group has long produced such aromatics and basic chemicals as BTX, PX and cyclohexane at its three refineries: Mizushima Oil Refinery (Okayama, Japan), Chita Oil Refinery (Aichi, Japan) and Kashima Oil Refinery. Through this new project, our aromatic products manufacturing capacity has achieved a dramatic increase compared with our previous level. The Company Group is now the world's number-three seller of PX to external customers and has established a position as one of Asia's leading PX suppliers. Looking ahead, backed by robust growth in demand, we plan to assess future opportunities for further PX capacity expansion, as we accelerate our build-up of the Petrochemical business.

### Rankings of Paraxylene Companies in 2008

#### Top ten suppliers worldwide by size

Rank	Company name	Production capacity (Thousands of tons)
1	Exxon Mobil (Japan, Singapore, Thailand, U.S., Europe)	3,120
2	Nippon Oil (Japan)	1,180
3	<b>Japan Energy Group (Japan)</b>	<b>1,020</b>
4	SK Corp (Korea)	750
5	S-Oil (Korea)	700
6	Lidon Chemical (China)	700
7	ATC (Thailand)	605
8	TPPI (Indonesia)	550
9	AMSB (Malaysia)	540
10	Chevron (U.S.)	500

Sources: Petrochemical Consultants International and Company data

#### Raising production capacity for aromatics

**Paraxylene** 600,000 tons >>> 1,020,000 tons per year

**Benzene** 330,000 tons >>> 520,000 tons per year

**Establish standing as one of Asia's leading petrochemical producers**

\* Includes equity allowance for overseas joint venture companies