Press Release

Presse-Information ● Information de presse

DECHEMA e.V.
Theodor-Heuss-Allee 25
D-60486 Frankfurt am Main
Telefon (069) 7564-0
Telefax (069) 7564-201
E-Mail: presse@dechema.de
www.dechema.de

January 2007

Kontakt/Contact:
Dr. Christina Hirche
Tel. +49 (0) 69 / 75 64 - 2 77
Fax +49 (0) 69 / 75 64 - 2 72
E-Mail: presse@dechema.de

AchemAsia 2007
7th International Exhibition-Congress on Chemical Engineering and Biotechnology

Beijing / PR China, 14 - 18 May 2007

Trend Report No. 1: Growth of the Chinese chemical industry

Non-stop growth of the Chinese chemical industry

- **China ranks 3rd in worldwide chemical sales**
- **Chemical parks attract record investments**
- **Focus on sustainable economy and integrated product facilities**

The development of the chemical industry and the process industries in general is always an indicator of a country's economic growth. In China the chemical industry has long been on the fast track – and it is here that the best international know-how on technologies and equipment is in huge demand. For this reason some 500 exhibitors and 20,000 visitors from 25 different countries will be at the 7th AchemAsia International Exhibition-Congress on Chemical Engineering and Biotechnology from 14 to 18 May 2007 in Beijing, PR China, to exchange their ideas and experience and to extend their networks.

The chemical industry in the People's Republic of China had a turnover of 166 billion (thousand million) euros in 2005[a]. The country is now number three in the world rankings behind the US (448 billion euros) and Japan (217 billion euros). Germany had already dropped back to fourth place (153 billion euros) in 2004. China now has an 8.2% share of the world chemical market (about 2 thousand billion euros).

Chinese exports (26.3 billion euros) account for 3.1% of the world export market, and the country is now number eight in the rankings. The leading exporting nations are Germany, Belgium and the US. 7.2% of exports (63 billion euros) were shipped to China, which is now the world's fourth largest importer after the US, Germany and Belgium. In the worldwide chemical consumption rankings, China is number three behind the US and Japan (and ahead of Germany).

China still imports large quantities of petrochemicals, polymers, fine chemicals and special chemicals but is already a net exporter of pharmaceuticals, agrochemicals, detergents and body care products. Table 1 contains export/import figures for selected segments of the industry.

[a] All data on the chemical industry is based on *Chemiewirtschaft in Zahlen 2006*, Verband der Chemischen Industrie e.V. (VCI), Frankfurt am Main, July 2006

Table 1 PRC: Chemical exports and imports in 2005 [millions of euros]

Segment	Exports	Imports
Inorganic chemicals	5,095	2,886
Petrochemicals and derivatives	6,457	19,328
Polymers	2,577	27,742
Fine and special chemicals	4,706	8,493
Pharmaceuticals	4,005	2,340
Agrochemicals	2,256	1,160
Detergents and body care products	1,224	1,073
Total	26,320	63,022

Oil consumption in China reached 325.5 million tons in 2005. The country is now the world's second largest consumer of oil after the US, followed by Japan and the Russian Federation*2*. Chinese oil consumption has increased by a factor of 2.8 since 1990. China has the second largest refinery capacity in the world (312.3 million tons a year). Domestic oil production reached 182 million tons in 2005 (6th in the world). Because this only covers around 56 percent of demand, large amounts of oil had to be imported. Strong demand has resulted in large increases in the price of oil. The annual average price of crude oil more than doubled between 2003 and 2006, rising from $28.8 a barrel to over $70.

Regarding natural gas, China was not among the top ten consumers and producers in 2005. Consumption was only 43.2 billion cubic meters, which is less than 0.02 percent of worldwide consumption[b]. This scenario is likely to change drastically during the next few years. There is little doubt that China will become a big importer of natural gas. 84 percent of the natural gas which was used for domestic consumption in 2005 came from domestic sources. The known reserves only amount to 1.509 thousand billion cubic meters, which is less than one percent of world natural gas reserves (nearly 173 thousand billion cubic meters).

The chemical industry in China continues to expand. Foreign investment is a significant factor which is driving growth. BASF alone invested more than two billion euros in China between 2001 and 2005. Together with its partners, BASF invested around four billion euros in China during this period. The largest project was construction of the integrated chemical complex Nanjing with BASF's partner SINOPEC at a total cost to date of $2.9 billion. BASF and SINOPEC are planning further expansion at the site. BASF intends to invest around one billion dollars in the Asian-Pacific region between 2006 and 2009.

Bayer will spend $1.8 billion between 2003 and 2009 including a large investment at the Caojing chemical industrial park. Production facilities for polycarbonate and polyurethane and a splitter for methylene diisocyanate (MDI) and for hexamethylene diisocyanate (HDI) will go online in September 2006.

Degussa plans to invest "hundreds of millions of euros" at the multi-user Shanghai Industrial Chemical Park by 2009 and build a large integrated production facility for special Plexiglas® products and the intermediate methylmethacrylate (MMA). A polyester plant and a colorant plant went into operation at this site in June 2006. Degussa opened an R&D center in Shanghai in 2004, and the company plans to spend 20 million euros to expand the center by the middle of 2007.

To provide direction for economic growth, the Chinese government has been following a strategy of establishing development zones which focus on different industries. A whole series of chemical industrial parks have been built, and they are still expanding. Despite the economic boom, there are serious problems which still need to be addressed. The list of challenges includes a further increase in labor productivity, sufficient supplies of water and

[b] ExxonMobil Central Europe Holding, Oeldorado 2006, Hamburg, 2006

energy including gas, sustained improvement in environmental protection and protection of intellectual property.

Chemical industrial parks in Germany and China

The first thing you notice when you compare chemical industrial parks and parks with chemical activities in Germany and China is that some of the development zones in China are significantly larger than the chemical parks and regions in Germany and many other European countries. However, site density (the number of companies or facilities per surface area) is significantly higher in Europe. BASF's integrated chemical complex in Ludwigshafen, the Bayer chemical park, the Marl chemical park and the Höchst chemical parks are some examples. Site density in the former German Democratic Republic is significantly lower than on the Rhine axis or in the Rhine-Ruhr area.

Table 2 shows a comparison of selected German chemical regions and Chinese chemical industrial parks. The consolidation of individual German sites into chemical regions is consistent with the level of cooperation between the sites and regional cooperation within the framework of the European Chemical Regions Network (ECRN). The Höchst industrial park, which does not belong to any regional network, and ChemCologne, which includes 200 companies on both side of the so-called Rhine Axis, are not included in the table.

Table 2 A comparison of selected German chemical regions and Chinese chemical industrial parks

Chemical region / Industrial zone	State(s) /Province	Total industrial surface area [ha]	Available space [ha]	No. of sites	Highlights/specialties
German chemical regions					
Central German Triangle	Sachsen-Anhalt, Sachsen, Brandenburg	5,500	500	six	CeChemNet Network
ChemCoast (North Germany)	Schleswig-Holstein, Niedersachsen	(no data)	1,400		
ChemSite	Nordrhein-Westfalen	1,400	240	six	public-private partnership
Bayer Chemical Park	Nordrhein-Westfalen	1,300	0.5-20	three	
BASF integrated chemical complex Ludwigshafen	Rheinland-Pfalz	1,000		one	production, energy and expertise partnership
Chinese Development Zones			*thereof Chemical industrial parks*		
TEDA/TEDA West	Tianjin	12,260	2,700	five	fine chemicals
Nanjing (two sites)	Jiangsu	4,500	Changlu: 2,600 Yudai: 1,900	one	basic and fine chemicals polymers, pharmaceuticals petrochemicals, logistics
Shanghai (Caojing)	Shanghai	2,940	2,940	three (sites)	petrochemicals, polymers

A number of strategies are used to manage chemical parks in Germany. The most common solution is an independent site management company which either provides infrastructure only (roads, rail lines, pipe bridges and possibly pipe lines and a waste water treatment facility) and has responsibility for site marketing or which offers a complete package of infrastructure, energy and media supply, disposal and a whole range of services including security and fire services.

Either the site management companies are the major shareholders at the site (Leuna and Höchst) or a single company owns the site. Utilities companies such as NUON of Holland and MVV of Mannheim have now entered the market. At some chemical parks, the dominant company provides infrastructure and services without establishing a separate site management company (BASF and Dow). Concentration on specific value-added chains, for example polymer production at the Dow Value-Parkâ and the BASF plastics center of expertise in Schwarzheide, is a distinguishing feature of some sites. Added emphasis has been placed recently on networking between industry and the scientific community. The Fraunhofer pilot production facility for polymer synthesis and processing at the Schkopau Value-Parkâ is a good example of this form of collaboration.

In China along side the multi-functional development zones, the chemical industrial parks (CIPs) are special zones which focus on one industry, namely chemicals. Chemical industry parks were set up as satellite sites at Economic and Technological Development Zones (ETDZ) or as separate, independently operated industrial parks. The main goals include restructuring and improvement of technological standards in the Chinese chemical industry and promotion of regional economic development by making investment more attractive to foreign and domestic companies. Production plants which do not comply with new environmental protection standards are also sometimes relocated to areas outside the cities.

In spite of the more specific focus, the general development goals and the administrative setup are similar to the other types of industrial parks. A study conducted by the China Petroleum and Chemical Industry Association (CPCIA) in 2004 listed 17 chemical industry parks in China. The locations Shanghai (Caojing), Nanjing und Tianjin (TEDA) are national level parks, and the others are managed at the provincial level. Most chemical industry parks are in the eastern coastal regions.

(See also Trend Report no. 2 “Chemical industrial parks in China”.)

www.dechema.de
www.achemasia.de
www.achemasia.net