20 DSM in China: In Touch with Evolving Needs in the Specialty Chemicals Market

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20.1 Introduction

What is required from a global chemical company like DSM in a complex and multi-facet country like China? It is the necessity to deal with a vast amount of change, which in the case of DSM China, has been mostly caused by the far reaching portfolio restructuring of its corporate parent.

Back home in Europe DSM changed from a state-owned company into a public company. It was transformed from a mining operation into a chemical and then a biochemical conglomerate. DSM learned to operate in a fast-paced world, using its strengths in the global market to enter China.

In China DSM has therefore not organically grown to its present size. It obtained many businesses, sites, and employees as a consequence of corporate portfolio changes. Flexibility is a must in a fast-changing economy like China’s, and DSM’s unique history shows how its core competencies have developed and can be applied again in this new market.

As a consequence, DSM has a flexible investment policy. It likes to give its staff more responsibilities compared to others. DSM expatriates stay longer than average in China and thus demonstrate their commitment to the country. DSM treats their staff more equally than other companies do. Flexibility is the basis of DSM’s success in China, and has made it possible to breed a pool of excellent Chinese managers who combine the company’s core strategies.

20.2 Royal DSM – From Coal to Biotechnology

From Mining ...

When Dutch State Mines started to operate with only six employees in 1902, it was the start of a key state-owned company in the Netherlands, established to en-

¹ The author especially thanks Ari van der Steenhoven, Chief Representative and General Manager of DSM in China from 1992 until 2004. Ari gave valuable input and provided a lot of insights regarding DSM's early growth years in China. Ari started DSM's operations in China in 1992 with only one assistant, and when he retired in 2004 DSM China had grown into an organization with more than 3,000 employees and various joint ventures, wholly owned entities and sales offices.
sure that the country would have enough coal to fuel its economy without having to import from its neighbors. Coal was then, as it is now for China, of vital importance to the country’s economic and strategic development, and DSM was poised to be a key player.

From 1906 DSM started to produce coal and mine after mine was opened in the southern part of the Netherlands. In just a few decades, DSM became the most important player in the Dutch coal mining industry, operating next to a small number of private mines. The company also started to develop coal-related chemical products. It was a first diversion into a new industry. In 1927, the American magazine Fortune called the proposal for a fertilizer plant an “obvious Dutch madness”. But it was this ‘Dutch madness” that was the beginning of a strategy of change and diversification that became the key to the transitions DSM would have to deal with more often in the century to come.

... to Chemicals ...

The focus on chemical products developed slowly as long as the mining industry thrived in the first half of the 20th century. In 1930 DSM produced its first fertilizer, ammonia, at the rate of 120 tons per day. Initially this new business developed at a modest pace because the Second World War and economic hardship cut short development prospects for all of Europe. In 1952 DSM opened its first plant for caprolactam, a product for which it would later gain a leading global position. In the 1950s DSM set up plants for urea fertilizers and the first high-pressure polyethylene plant. Through these investments DSM contributed not only to the economic upswing that began in the Netherlands in the 1960s, but saw also its own business enter a period of high growth. In the early 1960s, the first naphtha cracker started operation and the first melamine plant was built, later to be one of the other core activities of DSM. A second caprolactam plant was opened in Augusta, USA, in 1965.

The ability to deal with change became very urgent in the relatively prosperous 1960s as DSM’s mines ran out of exploitable coal and had to close down one after another, the first in 1966 and the last in 1973. In 1969 a full-scale restructuring of DSM took place as it changed into a modern company with six divisions and 33,000 employees. DSM had to earn itself a new place in the economy under entirely new conditions. Its approach to sales changed as, from 1968, it started to license third parties to sell and produce melamine.

... to Biochemicals ...

Another important shift came in the 1970s as DSM expanded into biotechnology. In 1973, the same year as its last mine was closed, DSM started to sell DL-phenylglycine to the Dutch fermentation specialist Gist-Brocades as the key raw material for semi-synthetic penicillins.

Resins followed as products for the coatings industry in 1983. However, the 1980s became the decade of biotechnology for the company with the acquisition of Andeno, a manufacturer of side-chains for antibiotics. Fine chemicals became
an additional focus. DSM and Tosoh formed a joint venture, Holland Sweetener, for the production of the artificial sweetener aspartame.

Its listing as a public company in 1989 crowned a period of profound corporate change.

Mergers and acquisitions speeded up in the 1990s and DSM expanded by acquiring the chemical activities of Dutch ACF Chemie and Bristol-Myers Squibb, the polyolefins business of Veba, Vestolen and Dutch fermentation specialist Gist-Brocades in 1998.

... to a New DSM

2000 was another key year in DSM’s development as the company called together 100 of its top managers to analyze the company’s strengths and weaknesses in a major ‘Corporate Strategic Dialogue’. The result of that meeting, called ‘Vision 2005’, was the blueprint for a new DSM (Fig. 20.1).

Fig. 20.1. DSM - Vision 2005

Since then, petrochemicals have been divested and, in 2003, DSM bought the Vitamins and Fine Chemicals division of Roche. This allowed the company to expand its specialties portfolio to 80 percent of total revenue, one of the targets of Vision 2005. The target of EUR 10 billion in revenue for 2005 will most likely not be met and, because of the economic downturn at the beginning of the new century, market capitalization has also suffered. However, DSM is back on the right track. The group posted annual sales of nearly EUR 7.8 billion (including the acquisition of the Vitamins & Fine Chemicals division of Roche – renamed DSM Nutritional Products) in 2004 and generates a strong positive net cash-flow. DSM currently employs approx. 24,000 people in more than 100 countries.
... to a Global Specialties Leader

After a century of successful transformation, the DSM of today is the leading supplier of chemical and biological intermediates as well as nutritional products to the life sciences industries, and has strong market positions in performance materials and industrial chemicals. DSM creates innovative products and services which help to improve the quality of life by being applied in a wide range of end markets and applications such as human and animal nutrition and health, cosmetics, pharmaceuticals, automotive and transport, coatings, construction, housing and electronics.

In 2002 DSM celebrated its centennial and received the title “Royal DSM” from the Dutch monarchy.

DSM today ranks among the global leaders in around 75 percent of its portfolio. It is the global market leader in vitamins, antibiotics, caprolactam, melamine, and many other specialty chemicals and plastics, a key strategy that also explains its current success in those fields in China (Fig. 20.2).

| DSM 2004 |
| --- |
| Globally active “multi-specialty” chemical company |
| • More than 200 locations, approx. 24,000 employees |
| ➢ Leadership positions in approx. 75% of the portfolio |
| ➢ R&D spend above EUR 300 million |
| ➢ Solid balance sheet |
| • Net debt EUR 337 million |

2003 key data*:

- Sales: EUR 7,752 million
- EBITDA: EUR 1,013 million
- EBIT: EUR 489 million

Fig. 20.2. DSM 2004

DSM has changed from a state-owned mining operation to the commercially viable biochemical conglomerate it is today (Fig. 20.3), from a domestic operator to an internationally renowned company. Many of its current Chinese partners, suppliers and customers face similar monumental changes today, and often aspire to change from a domestic to a global player. DSM has gone through these changes and its expertise and management style is based on its experience in dealing with them. That makes DSM feel at home in China.
20.3 The Early Years of DSM in China

When DSM in the Netherlands was expanding its range of chemical products and looking for markets abroad, China was an obvious place to go. In 1963 DSM’s licensing subsidiary *Stamicarbon* licensed the first grass-roots urea plant with a capacity of 1000 tons per day to China.

Even during the Cultural Revolution (from 1966 to 1976), which made business difficult and isolated China from the outside world, *Stamicarbon* continued to license urea technology to China. In 1978 China’s leader Deng Xiaoping said that the country would open its economy again but international business remained cautious. Only when Deng’s plans took shape and the first ‘Special Economic Zone’ was opened in Shenzhen in 1980 did international interest in China re-emerge.

DSM then started to deploy its strategy of licensing local partners for those products for which DSM had a leading position. In 1980, *Stamicarbon* licensed its melamine technology to Sichuan Chemical Works (SCW) for 40 tons per day, the first such deal with a Chinese producer. SCW is today one of the leading melamine producers in China and has constantly increased its capacity over the years.

Sinopec, China’s largest oil refinery and petrochemicals conglomerate, became DSM’s partner when, in 1986, *Stamicarbon* licensed its leading caprolactam technology to two companies that are now both Sinopec subsidiaries, Sinopec Nanjing...
and Sinopec Yueyang, for the production of 50,000 tons of caprolactam each per year. That cooperation not only developed into a profitable business deal but was also the foundation of a partnership that has lasted until today.

In 1986, DSM founded its first joint venture in China, an equal partnership with Red Lion from Beijing to set up a factory for powder coatings. Five years later, DSM sold its stake in that company, together with its global powder coatings business, to Akzo.

In 1991, DSM Stamicarbon intensified its licensing activities in China by establishing a strategic alliance with one of the country’s major design institutes and by deploying consultants. That was at the eve of a major wave of investment by foreign companies in China. At the time, following its successful stock market listing, DSM was ready for international expansion and thanks to its experience and partnerships in China in the 1980s was able to ride this wave successfully.

20.4 The 1990s and the New Millennium

20.4.1 Overview

DSM’s four global business clusters: life science products, nutritional products, performance materials and industrial chemicals, are all four represented in China, albeit to different degrees, and make use of the DSM strategy of focusing on achieving global or at least European market leadership for most of its products. China is a cornerstone in DSM’s international network that has seen its importance grow year after year since the early 1990s.

A network of representative offices support that work. The first was officially opened in 1993 in Beijing; others followed in Shanghai in 1994, Guangzhou in 1995 and Shenzhen in 1999.

DSM focused initially on increasing and improving its manufacturing facilities in China, often targeting the domestic market. Now it is also becoming an international trader, procuring materials in China from increasingly sophisticated domestic producers to sell them abroad.

But let’s go back to the different DSM business groups and their performance in China. To various degrees they all contribute to the current success of DSM. Some – like the resins plant DSM took over from BASF – are even star performers, although they often started as loss-making operations. Thanks to its flexible way of dealing with strategic investments, DSM is now the only fully integrated producer of nylon 6 in China, although not always through majority-owned entities.

DSM’s total revenues from China reached more than EUR 420 million in 2004. The company now employs more than 3,000 people in China.
20.4.2 Performance Materials

From a strategic point of view DSM had decided already in the early 1990s, to focus on high-value added intermediate polymers for the growing industries in developed and developing countries such as electronics and automotive. Building on its innovation strengths, DSM has directed its research & development resources to intermediates, and therefore sold industrial consumer products such as engineering plastic forms and shapes, coatings etc. The existing portfolio of the “Performance Materials” cluster consists of engineering plastics, structural resins, coatings resins, as well as elastomers. All these products require detailed knowledge of polymer chemistry as well as broad application know-how to fulfill the requirements of increasingly sophisticated customers.

Performance materials have been a success story within DSM. In two decades it has built up market share through mergers and acquisitions, diversification and globalization. It has created leading positions, also in Asia and China. Except for elastomers which DSM still successfully exports to China, DSM has built a strong presence in all its other performance materials businesses in China.

Its DSM Engineering Plastics division was formed in 1992 after the company acquired the engineering plastics business of Akzo in the Netherlands, giving it a position in polyamides and polysteres. The acquisition included compounding operations in Evansville, USA and Stony Creek, Canada.

A foothold in the Asian market was created as early as 1990 with a small team operating from Singapore that had the task of growing the regional market for Stanyl, a high-temperature polyamide developed by DSM. At the same time, marketing partnerships were initiated in Japan. DSM’s position in Asia was further strengthened by the establishment of new entities in South Korea and Taiwan in 1996.

About midway through the 1990s, the DSM Polypropylene (DPP) business group invested in a 50/50 joint venture with Jiangnan Mould Co. in China. Jiangsu DSM Specialty Compounds (JDSC) produced a large variety of polypropylene compounds for the automotive, construction and other industries. The location in Jiangyin, Jiangsu province was logical because the molding operation supplying Shanghai Volkswagen was established in the same location. In 1996, the joint venture added polyamide 6-based engineering plastics to its portfolio, allowing DSM to increase its ownership to 60 percent.

Three years later, in 1999, DSM Polypropylenes withdrew from this business and DSM Engineering Plastics took over the Jiangyin plant, bought out its partner and changed the name to DSM Engineering Plastics Jiangsu Co. (DEPJ). The site is now the business group’s core manufacturing center for its range of polyamides, high-temperature polyamides and polysteres. It serves all the division’s needs in China and Southeast Asia.

DSM enhanced its presence in Japan in 1997 through a sales and marketing joint venture with Japan Synthetic Rubber (JSR). In 2003 DSM acquired full control of this company and renamed it DSM Japan Engineering Plastics. Earlier, in 1999, DSM Engineering Plastics India was established in Pune.
Another signal about the growing importance of the Chinese market in this business group was the transfer of the Asia headquarters of *DSM Engineering Plastics*, responsible for all sites and markets in Asia, from Singapore to Shanghai in 2000. In addition to further strengthening DSM’s capabilities to serve customers in China and the rest of Asia, a regional application development center was established in Jiangyin in 2003.

From China *DSM Engineering Plastics* now serves the fast-growing automotive, electrical, electronics and packaging film markets all over Asia. The main products include Akulon (polyamide 6), Stanyl (polyamide 46), Arnitel (co-polyester elastomers) and Arnite (thermoplastic polyesters).

*DSM Coating Resins (DCR)* entered mainland China in 1996 by setting up a 50/50 joint venture - *DSM Eternal Resins (Kunshan) Company Ltd.* - with Eternal Corp from Taiwan as its partner. This illustrates how partnerships can evolve into Asia-wide networks.

DSM started to produce powder coating resins in Taiwan. Eternal was identified as an innovative specialty chemicals producer with a leading position in powder coating resins, state-of-the-art technologies and a strong R&D team. The same company became a minority partner for a manufacturing joint venture in Kaohsiung in Taiwan. Both companies jointly entered China by constructing a facility with an annual capacity of 20,000 tons in Kunshan, Jiangsu province. This plant is presently being expanded significantly. Both the Taiwan and Jiangsu joint ventures are now part of the integrated supply bases of DSM’s global powder coating resins business, with additional sites in Augusta, USA; Santa Margarita, Spain; and Schoonebeek, the Netherlands. All sites, including those in Jiangsu and Taiwan, apply DSM’s global standards for quality, safety, health and environmental protection and are certified to both ISO 9001 and ISO 14001. Powder coatings will continue to grow rapidly because they are more environment-friendly than conventional solvent-based coating technologies. They even provide special advantages over waterborne coating technologies. China’s new emphasis on supporting leading, environmentally friendly technologies will further boost the opportunities for DSM’s coating resins business in China.

*DSM Composite Resins (DRS)* – the largest supplier of unsaturated polyester (UP) in Europe and no.3 globally – acquired the UP resins business of BASF in 1999, and through that acquisition also obtained BASF’s Chinese entity Jinling BASF Resins (JBR), a 50/50 joint venture with Jinling Petrochemicals Co, a SINOPEC subsidiary in Nanjing. The joint venture was renamed *Jinling DSM Resins Co. (JDR)* and at the time of the acquisition produced 5,000 tons of structural unsaturated polyester resins and gelcoats each year. However, the market for these products was posting double-digit growth. DSM saw good opportunities and in time succeeded in turning around this loss-making operation. The basic materials are important in the automotive, train components, marine infrastructure and construction industries. *JDR* has increased its annual capacity several times in recent years to nearly 35,000 tons. Further expansions are being planned. In 2003 *DRS* increased its equity ownership in *JDR* to 75 percent.
20.4.3 Industrial Chemicals

The Industrial Chemicals cluster has undoubtedly less strategic importance for DSM than the other 3 clusters. On the other hand DSM is the global technology and market share leader in two key industrial chemicals, caprolactam and melamine; and both products are significant cash contributors to DSM’s overall performance. Consequently DSM has concentrated on achieving the same leading positions it had built in Europe and in the Americas, also in Asia; and again China became the key focus area.

For DSM the new millennium in China started with important investments by DSM Fiber Intermediates (DFI). In 2000 DFI acquired a 25-percent equity stake in the nylon 6 plant (annual capacity: 45,000 tons) of Xinhui-Meida, the leading producer of nylon 6 in China that is listed on the Shenzhen stock market. The new joint venture was named Meida-DSM Co. and started operation in 2001. DSM, itself a leading global producer of nylon 6 and the main raw material caprolactam, invested strategically to supply the new joint venture with captive caprolactam, which had previously been imported into China. DSM had been supplying Xinhui Meida since 1993 and the joint venture was a logical way to consolidate this excellent relationship. By taking a minority share, DSM showed again its flexibility in its investment strategy at a time when most foreign companies would only accept a majority share in state-owned enterprises or a wholly foreign-owned venture, if the regulations would allow this.

DFI further expanded in this area by acquiring a 60-percent stake in the caprolactam plant operated by Nanjing Oriental Chemical Corporation of SINOPEC Nanjing. The plant had been using DSM technology since 1986 and is today one of the leading caprolactam producers in China with an annual capacity of 75,000 tons. The company is now called DSM Nanjing Caprolactam Corporation (DNCC).

Thanks to this chain of strategic investment in caprolactam and polyamides, DSM is now the only fully integrated nylon 6 producer in China, although not all entities are majority-owned. Also, not all supplies are captive. DSM is an active merchant supplier, too. However, significant volumes of caprolactam are converted into nylon 6 at Xinhui Meida and some of Xinhui Meida’s nylon 6 is used in engineering plastics at DEPJ in Jiangyin.

DSM’s licensing business, Stamicarbon, is still active in China. Its advanced 2000plus™ technology for a grassroots urea plant was licensed in 2001 to CNOOC, China’s third largest and most dynamic petrochemicals company. Successfully commissioned in the first quarter of 2004 the plant – located on the island of Hainan with a daily capacity of 2,700 tons – represents the largest single-stream urea plant in China. DSM Melamine has announced the start of joint venture negotiations with CNOOC to build a melamine plant with an annual capacity of 120,000 tons at the same location.

In 2002 and 2003, Stamicarbon also sold three licenses for major revamps of urea plants to China, each leading to capacity increases of between 40 and 50 percent.
20.4.4 Health and Nutrition

DSM has realized in the early 1990s that especially in the western world, health and nutrition would become key growth areas, fueled by the needs of an ageing and increasingly health-conscious population. In addition to innovative performance materials and cash-contributing industrial chemicals, DSM has therefore engaged in becoming a leading supplier to the health care and nutrition industries, however, with the emphasis on “supplier”. DSM never had the resources nor the skills, and therefore never the intention to become a pure pharmaceutical or food company. DSM’s core competences in chemistry, chemical engineering and biosciences enabled it, nonetheless, to build its position as the largest global supplier of chemical and biological intermediates to the pharmaceutical, agriculture and food/feed industries. Naturally the global macro trends of health and nutrition are also rapidly emerging in China. Through acquiring the leading antibiotics producer Gist-Brocades in 1998 and the Vitamins & Fine Chemicals division of Roche in 2003 DSM also obtained a strong manufacturing base for these intermediates in China. The “Life Sciences Products” and “Nutrition” clusters have meanwhile also become cornerstones of DSM’s China strategy.

20.4.5 Life Sciences Products

Investing in its own manufacturing facilities has marked many of DSM’s activities in China. By very carefully picking strong and ambitious Chinese partners, DSM has invested heavily in its future in this challenging market. However, the key for a manufacturer are the Chinese partners and their qualities. Shandong Zibo Xinhua Chemferm Industrial Pharmaceutical Co. Ltd was DSM’s first anti-infectives joint venture, created in 1995 in the city of Zibo, Shandong province. The foreign partner, Chemferm, was a joint venture between DSM Anti-Infectives (DAI) and Dutch fermentation specialist Gist-Brocades and held 51 percent of the joint venture. Shandong Xinhua Pharmaceutical Group, the Chinese partner, held the remaining 49 percent.

The joint venture started to produce cefalexin and cefradine. These are 7-ADCA-based cephalosporins, a family of leading beta-lactame antibiotics. The joint venture was appreciated much by the provincial authorities and won high acclaim. In 1997 it was awarded the title of “foreign-invested enterprise of advanced technology”. In 1999, it was awarded the title “best foreign-invested medical enterprise of the Shandong province” and in 2002 “high and new technology enterprise of the Shandong province”.

Compared with industrialized countries, China’s consumption of antibiotics still lags and the demand for modern products keeps on increasing. In 2000 Xinhua-Chemferm increased its capacity significantly and is now one of the leading producers of bulk cephalosporins in China.

The acquisition of Gist-Brocades by DSM in 1998 signaled another turn in DSM’s China business. Gist-Brocades, the Dutch fermentation and enzyme specialist, held leading positions in food specialties, antibiotics, yeast, and bakery in-
gredients. Through this acquisition, DSM Anti-Infectives (DAI) became the sole owner of Chemferm, thus gaining a 51-percent share in Xinhua Chemferm and a 50-percent share in Zhangjiakou Gist Brocades (ZGB), a joint venture which Gist-Brocades had entered into with Zhangjiakou Pharmaceuticals Co. in 1997. ZGB manufactured penicillin G, the corn- or sugar-based raw material for all beta-lactame antibiotics, as well as 6-APA, a key intermediate, and its derivatives, the leading antibiotics amoxicillin and ampicillin.

ZGB was split into two separate companies in 2001. ZGB remained a 50/50 joint venture between DAI and Zhangjiakou Pharmaceutical and concentrates on the production of penicillin G.

In addition to ZGB, Zhangjiakou DSM Hayao Pharmaceutical Co (DHA) was formed. Harbin General Pharmaceutical Co., one of the leading Chinese pharmaceuticals producers, was invited to enter the joint venture and took 37 percent of the equity. DSM also holds 37 percent and Zhangjiakou Pharmaceuticals Co. the remaining 26 percent. DHA obtains most of its penicillin G from ZGB and concentrates on manufacturing the intermediate 6-APA and the semi-synthetic antibiotics amoxicillin and ampicillin.

DHA produces the highest-quality semi-synthetic penicillin on the Chinese market and is even occasionally invited to advise the Chinese State Drug Agency on cGMP-related issues. (cGMP= current Good Manufacturing Practices).

### 20.4.6 Nutritional Products

Thanks to the acquisition of the global Vitamins and Fine Chemicals division of Roche in 2003, DSM entered the field of nutritional products in China. Also part of the acquisition was the former Roche (China) Ltd. holding company with a number of branch offices, two wholly owned ventures for citric acid and fine chemicals and a majority-owned joint venture for vitamins in China.

The acquired business is now called DSM Nutritional Products (DNP) and is run as a separate global DSM division. More than 7,000 employees worldwide generate nearly EUR 2 billion in revenue and the acquisition already contributes significantly to DSM’s annual earnings.

Roche Vitamins in China has quite a long history of its own, starting in 1982 when a delegation from the Swiss headquarters visited China. In 1984 the first feed premix plant (Beijing Huadu) with an annual capacity of 200 tons was opened. This was followed in 1987 by Shanghai Xinyang Vet. Concentrates, a feed concentrates joint venture with the Shanghai Agricultural Bureau with an annual capacity of 200 tons. A third feed concentrates plant with the same capacity was later built in Beijing.

The first Roche (representative) office was established in Shanghai in 1993. Two years later, the first joint ventures - Roche Sunve (RSV) and Roche Taishan (RTV) - were established.

In 1996, Roche formed the Roche China Holding in Shanghai. This was very early as holding companies only came into vogue some years later. Roche did so to benefit from the favorable investment and tax incentives which the Shanghai
government granted foreign companies setting up holding companies in the city. After acquisition by DSM, the holding was renamed *DSM (China) Limited*.

Two additional joint ventures were created: Roche New Asiatic (RNV) for vitamin B6 in 1996 and Roche Zhongya Wuxi (RZC) for citric acid in 1997. Roche Fine Chemicals Limited (RSFL) was established in 2001 for the innovative green tea extract TEAVIGO.

In 2001, the three Shanghai-based joint ventures (RSV, RTV and RNV) were merged into RVSL - Roche Vitamins (Shanghai) Limited - with two production sites at Gonglu and Xinghuo. The company’s main products are VA, VE, and VB6 and it is the first company in China not to use benzene as solvent.

The merger illustrates how corporate restructuring is taking place at DSM. Smaller production units and minority stakes have been changed into majority stakes and consequently merged into a coherent chain of operations.

### 20.4.7 The DSM China Road Map

DSM has eight joint ventures, three wholly owned companies (*Table 20.1*), and six wholly owned sales offices in China, together employing more than 3,000 people.

*Table 20.1. DSM businesses in China*

| NAME                                | LOCATION             | OWNERSHIP | ACTIVITIES                   |
|-------------------------------------|----------------------|-----------|------------------------------|
| Xinhua-Chemferm Pharmaceutical Co. Ltd. | Zibo (Shandong)      | 51%       | Antibiotics                  |
| ZJK GB Pharmaceutical Co. Ltd.      | Zhangjiakou (Hebei)  | 50%       | Penicillins                  |
| ZJK DSM Hayao Pharmaceutical Co. Ltd. | Zhangjiakou (Hebei)  | 37%       | Penicillins, 6-APA           |
| DSM Engineering Plastics Jiangsu Ltd. | Jiangyin (Jiangsu)  | 100%      | Engineering plastic compounds|
| DSM Eternal Resins (Kunshan) Co. Ltd. | Kunshan (Jiangsu)    | 50%       | Powder coating resins        |
| Jinling DSM Resins Co. Ltd.          | Nanjing (Jiangsu)    | 75%       | Unsaturated poly-ester resins|
| DSM Citric Acid (Wuxi) Ltd.          | Wuxi (Jiangsu)       | 100%      | Citric acid                  |
| Xinhui Meida DSM Nylon Chips Co.     | Xinhui (Guangzhou)   | 25%       | Nylon 6 chips                |
| DSM Nanjing Caprolactam Co.          | Nanjing (Jiangsu)    | 60%       | Caprolactam                  |
| Roche Vitamins (Shanghai) Ltd.       | Shanghai             | 63%       | Vitamins, feed/food premix   |
| DSM Fine Chemicals (Shanghai) Ltd.   | Shanghai             | 100%      | TEAVIGO green tea extracts   |
20.5 DSM and China in the Asian Century

The 21st century is already being called the Asian Century. In the year 2002 DSM has developed a China strategy for the years 2003 to 2008. It has been further expanding its “Vision 2005” to include China by strengthening all four strategic clusters, extending its global leadership positions, and exploiting the momentum currently found in China and the rest of Asia. The strategy for China involves three major phases.

The initial years of the strategy (2003 to 2005) are characterized by significant capacity expansions of existing plants in China. Since 2004 (and ongoing) DSM China concentrates on supporting DSM divisions that are still underrepresented and helping them enter the Chinese market. The later years of the strategy will focus on DSM becoming a more active player in the local supply chains in China. The target is at least to double sales by 2008 (from 2002). The key is DSM’s human resources strategy, since developing excellent Chinese managers is the basis for any successful business in China.

DSM will continue its successful strategy of expanding in those areas in China where it is already a global market leader, flexibly combining organic growth, acquisitions and alliances.

Since the opening of its first representative office in China in 1993 DSM has grown sales from US$ 20 million to more than EUR 420 million in 2004 including DSM Nutritional Products, and has emerged into a leading specialty chemicals manufacturer in China. While still exporting from China, DSM now increasingly also serves the Chinese domestic market with many of its products from its Chinese manufacturing sites, e.g. vitamins, antibiotics, coating and structural resins, engineering plastics, and caprolactam.

DSM is still successfully importing its global leadership products to China from European, American or other Asian manufacturing sites, e.g. melamine and synthetic rubbers. DSM does not see China simply as a low-cost manufacturing location for export purposes, but aims to be a successful, committed, long-term supplier of innovative products from China-based manufacturing sites to the Chinese domestic market. That domestic market still holds enormous, untapped potential for its products.

20.5.1 Expansion of Capacity in China

Of DSM’s total business in China (more than EUR 400 million in 2003), 40 percent was accounted for by local production and 60 percent by imports, mainly from Europe. However, sales from local production will increase rapidly in the next few years. This will be achieved through a number of strategic projects which DSM is presently undertaking in China.

DSM Fiber Intermediates is expanding its caprolactam capacity at DSM Nanjing Chemical Company (Jiangsu province) from 75,000 tons per year in 2003 to
140,000 tons by 2005. Construction for this project has already started and will allow DSM to further grow its already strong market share in China.

Since 1999, DSM Engineering Plastics has twice increased its compounding capacities at its Jiangyin plant in Jiangsu province. A state-of-the-art application development facility has been opened at the same site. This will allow DSM to accelerate its market penetration as a supplier of high value-added engineering plastics to fast-growing markets in China such as the automotive, electric and electronics, building materials and packaging films sectors.

DSM Composite Resins has announced an increase in capacity of unsaturated polyester resins in Nanjing by at least 50 percent within the next three years.

DSM Melamine has announced that it has entered into joint venture negotiations with CNOOC, the third largest Chinese petrochemical company, to build a global-scale melamine plant with an annual capacity of 120,000 tons near the CNOOC urea plant on Hainan Island. DSM Stamicarbon licensed this urea plant in 2001.

Late in 2004 DSM announced a major strategic alliance with one of the leading Chinese pharmaceuticals companies, North China Pharmaceutical Group Company (NCPC). DSM will buy a minority share of NCPC Ltd. which is NCPC’s core affiliate listed at the Shanghai stock exchange, and will establish global scale joint ventures with NCPC in the area of vitamins and antibiotics.

### 20.5.2 Developing New Markets in China

Compared with their global market shares, some of DSM’s businesses are still underrepresented in China. The company is now working on market strategies to improve the positions of these businesses in China. They include DSM Fine Chemicals, DSM Pharmaceutical Products, DSM Dyneema and DSM Food Specialties.

DSM has become an integral part of the Chinese industrial manufacturing and pharmaceutical supply chain, based on its broad knowledge of the Chinese market and long-term customer relationships. This gives DSM the possibility of exploiting the business opportunities offered by the Chinese market, such as the ever growing demand for transport, feeds, functional food, dietary supplements, drugs, personal care products, medicines, communication systems and housing. DSM sees vast growth potential in all those sectors to which the chemical and pharmaceutical industries are major suppliers.

The Asian Century has begun and DSM will use its talented people as well as its leading products and technologies to participate in the unlimited opportunities.

### 20.6 China and DSM – Managing the Future

In the past decade the chemical industry in China has seen double-digit growth every year, much higher than the official annual growth of GDP. As a witness to this unprecedented growth, DSM is eager to participate in this very promising sec-
DSM expects sustainable growth for the near future, but this is unlikely to be linear. For that reason, apart from being first and foremost an enthusiastic participant in the Chinese market, DSM will also carefully manage its investment policy and the related investment risks. Laws and policies set by central government show a keen awareness of the dangers threatening the country’s development, but often the leverage to push through necessary changes in a timely fashion is lacking. What possible problems do we see?

**20.6.1 In Health Care**

The emergence of the SARS virus in 2003 served as a much needed wake-up call. While both the humanitarian and economic damage caused by the SARS epidemic were limited compared with earlier assessments, it showed that there are other very realistic risks around the corner.

AIDS/HIV might be just another health danger that fortunately has been recognized as such by the current government. The stringent approach adopted by the government at the beginning of 2004 has been much applauded, but we still face a potential time-bomb that is waiting to be defused.

On a general level, the lack of health care and knowledge in rural areas still provides a dangerous climate for these and other diseases that can explode into disruptive epidemics.

**20.6.2 In Energy and the Environment**

Current economic growth, combined with rather inefficient energy consumption and rising oil and gas prices, might have an adverse influence on our industry as prices are rising constantly. The brownouts in the summers of 2003 and 2004 were an early warning of a risk that has been too long ignored.

For oil, China is dependent on the world market, but it has huge reserves of coal. Coal gasification is inexpensive and will provide the basis for a new wave of industrial development. Several plants have started up but suffer greatly from the current lack in railway capacity.

Great progress has been made in controlling pollution and in finding more efficient ways of using natural resources in the main cities, but just as in the case of many other serious threats to the country’s stability, only the first important steps have been made. Polluting industries have been moving to smaller towns, where it is harder to enforce environmental regulations.

**20.6.3 In Human Resources**

The sudden shortage of migrant workers in the Pearl River Delta in 2004 was a clear illustration of how closely rural poverty and economic growth are interlinked. Central government’s successful efforts to deal with the income gap be-
tween urban and rural areas have been one of the reasons for migrant workers to stay at home. In a huge and highly complex country like China, even positive measures can trigger side-effects that may have a temporary negative influence on other parts of the economy.

The labor shortage reflects how the widely discussed income gap between urban and rural areas and migration can not only cause social unrest, but also large-scale shifts in the labor markets that are hard to control.

The economic diversity of China makes it almost impossible to give an assessment that is valid for the whole country. Labor costs in Shanghai are about five times higher than in other parts of China. Some national figures for inflation, GDP etc. are of limited value. Wages on the east coast are not only increasing in general. Huge investments by BASF, Bayer, Shell, Exxon and BP, which each plan to invest EUR 3 billion or more in China in the coming years, add to the pressure on that section of the labor market on which we also rely. Many people will find employment, but large amounts of engineering capacity will be absorbed, too. The shortage of labor might therefore become a problem in the more educated labor force from which DSM and others recruit.

Significantly lower labor costs, about one fifth of those in the West, make China an attractive place to invest, although productivity is also lower. In addition, plants can be built at considerably lower cost in China, depending on a company’s ability to deal with local sourcing and local contractors.

20.6.4 In the Market Economy

Corruption remains an important problem facing the government in its efforts to move the country to a market economy with a more efficient allocation of resources. High-profile corruption cases in the media show concrete attempts by the government to deal with the problem. However, more such efforts must trickle through to day-to-day economic activity.

Chinese banks are also having trouble moving away from their past as instruments of the planned economy. Their non-performing loans – after a few years of reduction – seem to be on the way up again, increasing the vulnerability of the financial system. The government has been offering guarantees to safeguard the private citizen’s deposits, thus avoiding a major collapse. Large-scale panic runs on banks have been avoided, but seem possible. The current status of the financial system does not seem sustainable in the long term, as China moves closer to a true market economy. But also in this sector we see fundamental change, as foreign banks actively buy into Chinese banks and apply for wider business licenses.

The lack of protection of intellectual property is another indication that the road to a real market economy is a rocky one. Again, on a central level, efforts in setting laws and policies are rather impressive. However, on a working level, the loss of intellectual property as a result of staff departures is still a problem.

China has improved the protection of intellectual property since joining the World Trade Organization in 2001, with the Chinese Patent Management Office, the Industry and Commerce Administration and the Trademark Office working to-
together to enforce IP legislation. DSM welcomes and supports such moves, since they mitigate the risks of investments and will allow multinational companies to bring more and more advanced technologies to China.

### 20.7 Conclusion

Doing business in any part of the world involves risk and DSM does not see China as generally presenting a higher risk than other countries. The bigger threat would be if DSM did not seize opportunities, internationally or locally, while the competition did.

None of the risks are likely to escalate suddenly; they are here now but are contained and managed reasonably well by central government.

Balancing these risks against the huge potential offered by the Chinese market is a challenging task for all stakeholders interested in China, whether these are multinational companies, managers, politicians, scholars or scientists.

DSM is aware of the risks and includes thorough risk assessments in its growth plans for China. The company is already well-positioned in China and has ambitious plans. Executing these plans with the right amount of caution will further solidify DSM’s position as a leading international specialties company in China.