SABIC ACQUIRES DSM'S POLYOLEFINS AS A PART OF PETROCHEMICALS BUSINESS – CMR Inc. Analysis

Dr. Balaji B. Singh; Dr. Faisal H. Syed

Chemical Market Resources, Inc.

1120 NASA Rd.1, Ste 340, Houston, TX 77058

Tel: 281-333-3313; Fax: 281-333-3361; Web: www.CMRHouTex.Com

EXECUTIVE SUMMARY

SABIC is well on its way of fulfilling its strategic initiative of becoming a global leader in the polyolefins industry. On April 3, 2002, SABIC announced that it had reached an understanding with DSM on the purchase of DSM's petrochemicals division, including DSM's polyolefins businesses and related process technologies. The acquisition will undoubtedly strengthen SABIC's presence in the polyolefins industry, at present in Europe and will position them to be a Global leader in future.

SABIC's long-term globalization strategy is based on taking full advantage of its leading feedstock position to produce the lowest comparative cost products. The strategy is being implemented in three stages:

Stage 1 – expand the oil production/refining function to production of basic 6 and level I derivatives – implemented successfully during the mid to late eighties through SABIC,
Stage 2 – expand the level I derivatives to downstream polymers to position their excellent raw material cost position and expand to the overseas markets, especially the markets where the transportation and logistics offer advantages (Europe, MidEast and Indian subcontinent) - implemented successfully in the mid to late 90s,
Stage 3 – expand their presence to Europe and North America. Under this plan they have created several selling/trading functions in Europe and North America providing SABIC with an excellent opportunity to establish their presence as a global player with excellent technology, markets, and raw material position.

The current acquisition of DSM is a step towards implementation of the stage 3 strategy. This acquisition positions them very well in the global chemicals and plastics industries, enabling SABIC to produce more of the higher value-added petrochemicals and polymers in their quest for becoming a Global leader.

Future Direction – The Globalization trend initiated by most of the North American organizations in the mid-80s has improved the global communications, market planning, and optimization of the product/technology/information transfer. All of these issues were driven by "Lowest Cost option to deliver the best goods with profit maximization".

The first decade of Globalization focused on: (1) capacity improvements in the advanced nations to meet the growing demand in the developing regions (Asia, China, Middle East) and (2) technology transfer and grass-roots capacity development in the developing regions to reach a self-sufficiency.

The developing regions leap-frogged the technological developments and overcame the self-sufficiency in a very short time and began to emphasize on "export marketing". Their lower cost position, proximity to the basic raw materials helped them develop products for the developed regions albeit at a lower cost position. This "clash" of goals between the developed and developing nations contributed significantly to the current transition in the markets. SABIC is an example of this efficient system. SABIC has and will continue to expand its presence in Europe and North America, and is well positioned to be a Global leader.

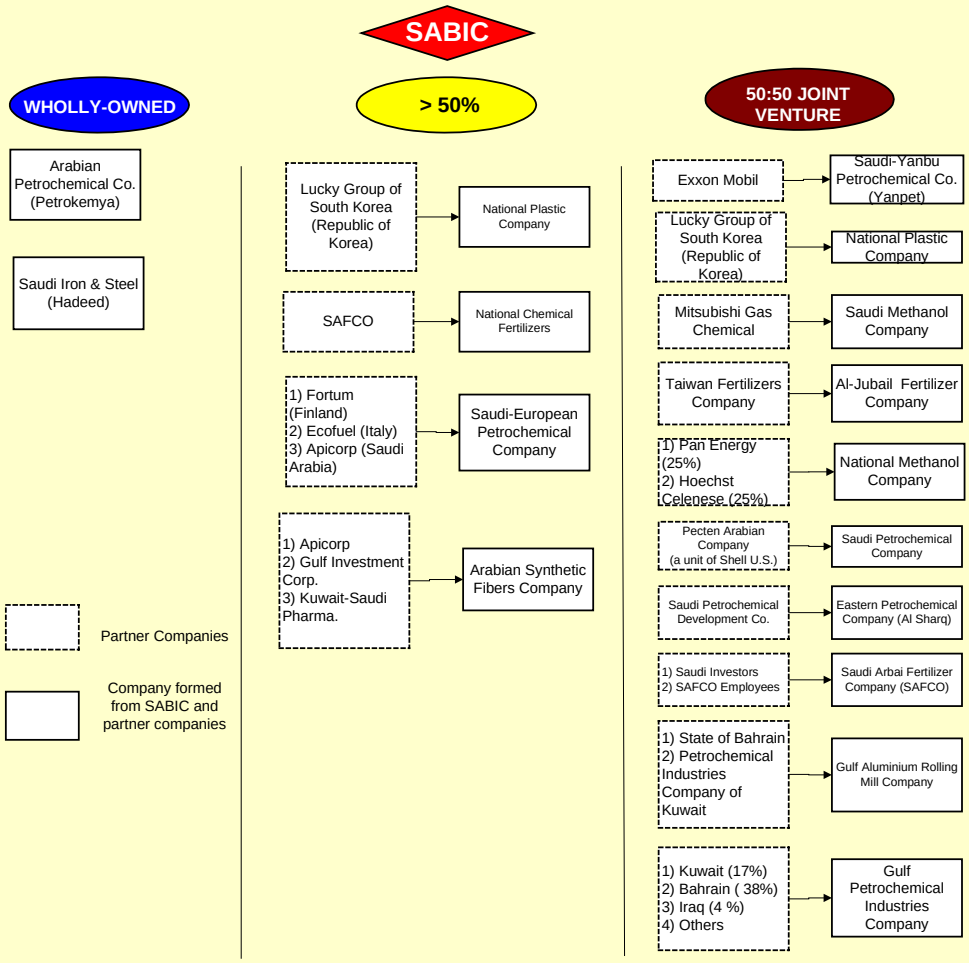
The immediate impact of SABIC's acquisition will be felt in Europe. Europe has set the trend in the last five years in terms of: (1) commodity polyolefins being looked upon as an industry to exit from, (2) most major organizations – Shell, BASF, DSM, Eni, Statoil trying to get a step closer to the feed stocks by attempts to limit their activities to selected level I petrochemical derivatives, and (3) moving away from the technological innovations in polyolefins. In this scenario, SABIC has lot to gain because, this acquisition provides them an opportunity to: (1) solidify their position in Europe, which can be a launching pad for China, Asia and their future globalization plans, and (2) move to more technological innovations in polyolefins to set themselves up as the leading players in technology. The current acquisition gives them a running start in the Northern Europe. Depending upon Eni's future, SABIC also stands to gain a position in Southern Europe if that acquisition goes through. This also positions SABIC to be a synergistic advantage in entering the North American markets.

OBJECTIVES

The major objective of this analysis is to present: (1) a background on SABIC's polyolefins businesses (pre-acquisition), (2) the resulting organization (post-acquisition) and (3) the impact of the acquisition on the global polyolefins industry.

SABIC (Saudi Basic Industries Corporation)

SABIC is a leading international petrochemical company and the largest non-oil producing company in the Middle East. Headquartered in Riyadh, Saudi Arabia, the



Source: Chemical Market Resources, Inc.

company is 70% state-owned, and 30% privately owned (20% private sector; 10% Gulf Cooperation Council). Since its foundation in 1976, it has been concentrated mainly in the Middle East. However, SABIC's overall strategy is to become a leading global supplier. SABIC has a large manufacturing network within Saudi Arabia and Bahrain through its 16 affiliated companies and 18 industrial complexes.

Exhibit 1 shows the entire subsidiary network under the SABIC umbrella. Global SABIC's main businesses are segmented into five principal sectors: (1) Basic Chemicals, (2) Intermediates, (3) Polymers, (4) Fertilizers, and (5) Metals.

In the polyolefins sector, SABIC has five main complexes, including: (1) Saudi-Yanbu Petrochemical Co., (2) Al Jubail Petrochemical Co., (3) Arabian Petrochemical Co., (4) Sharq Eastern Petrochemical Company, and (5) IBN ZAHR. The company overview and polyolefin product outline is as follows:

Saudi-Yanbu Petrochemical Company (YANPET)

Saudi Yanbu Petrochemicals Company (YANPET) owns the plant. Established in 1980, YANPET is a 50-50 joint venture between SABIC and ExxonMobil, and currently employs 1,200 employees. It came on stream in 1985 and is a fully integrated facility (inexpensive ethane and ethylene source). The company produces the following polyolefin products: (1) LLDPE, (2) HDPE, and (3) PP. Manufacturing site is at Yanbu, Saudi Arabia.

Al Jubail Petrochemical Co. (KEMYA)

This is another equally split venture between ExxonMobil and SABIC, which began production in 1984. Ethylene source is provided by SADAF. At Al Jubail, company manufactures the following polyolefins: (1) LDPE, (2) LLDPE, and (3) HDPE.

Arabian Petrochemical Co. (PETROKEMYA)

This subsidiary is fully owned by SABIC. Located in Al Jubail, the company produces: (1) LLDPE, and (2) HDPE.

Sharq Eastern Petrochemical Company

This is also a 50:50 joint venture between Mitsubishi Corporation and SABIC. Main ethylene source is being supplied by PETROKEMYA, and main polyolefin products include: (1) LLDPE, and (2) HDPE.

IBN ZAHR

This is a Saudi-European Petrochemical venture. Partners ownership is as follows: (1) SABIC (70%), (2) Neste Oy-Finland (10%), (3) Ecofuel-Italy (10%), (4) Arab Petroleum Investment Corporation APICORP (10%). At its Al Jubail facility, the company manufactures polypropylene.

SABIC PRE-ACQUISITION

SABIC is one of the largest exporters of plastics in the world. With its 5% of global polymers market share, company exports to 88 countries in the world. It is involved in manufacturing of the following polyolefins: (1) LLDPE, (2) LDPE, (3) HDPE, and (4) PP.

Exhibit 2 presents the company's PE and PP capacities by technologies in the Middle Eastern region.

SABIC's total world capacity for these polymers is in excess of 9 billion pounds. Its share of the world capacity is as follows:

1. LLDPE 11.0% of global capacity
2. LDPE 2.1% of global capacity
3. HDPE 1.7% of global capacity
4. PP 1.0% of global capacity

PE MARKET STRATEGY

SABIC is one of the largest global polyethylene producers (7,146 MM Lbs). With the recent LDPE expansion in 2000, KEMYA is a fully integrated petrochemical company offering the full benefits for polyethylene manufacturing.

In LDPE, the company offers high clarity film grades in numerous film applications: (1) packaging (light and medium produce bags, frozen food textile), (2) laundry film, (3) coatings, (4) molded goods, (5) and others.

Exhibit 2
SABIC – PE & PP Capacities, Saudi Arabia, 2001

Company	Process Tech./Type	Capacity (MM Lbs)
Polyethylenes		**7,146**
HDPE		**2,783**
KEMYA	Unipol, Gas Phase	660
YANPET	Unipol, Gas Phase	2,123
LDPE		**480**
YANPET	Exxon, High Pressure	480
LLDPE		**3,883**
KEMYA	Unipol, Gas Phase	1,353
SHARQ	Unipol, Gas Phase	1,650
YANPET	Unipol, Gas Phase	880
Polypropylene		**1,980**
IBN ZAHR	Unipol, Gas Phase	1,408
YANPET	Unipol, Gas Phase	572
SABIC, TOTAL		**9,242**

Source: Chemical Market Resources Inc.

SABIC is adding another 1.76 billion pounds of LLDPE/HDPE capacity, expected to be operational in 2004.

Through diversified LLDPE product lines, the company manufactures the following grades: (1) film and clarity (butene copolymers), (2) injection molding, (3) rotational molding, and (4) high performance (HAO copolymers).

SABIC's HDPE product line offers various HDPE grades, including: (1) injection molding grade, (2) blow molding, and (3) film grades (hexane copolymers).

SABIC currently dominates the Middle Eastern market for PE and want to maintain that position. The population of the region is expected to grow from 175 to 250 million in the next 15 years. SABIC plans to substantially increase its capacity to keep up with this rise in population and in per capita consumption.

SABIC also wants to continue to exploit its low feedstock cost position and grow to be the largest producer of polyethylene in the world. In addition, SABIC is planning to further diversify its portfolio into all major polyethylene markets and move toward higher value-added products.

PP MARKET STRATEGY

With a total production capacity of about 1,980 million pounds of polypropylene (PP), SABIC produces a full range product lines, including: (1) homo polymers, (2) impact copolymers, and (3) random copolymers.

IBN ZAHR receives its main source of propylene from PETROKEMYA. SABIC's recent PP production increase and debottlenecking will serve to market PP locally and in overseas markets. SABIC aims to capture the following markets: (1) automotive, (2) appliance, (3) textile, and (4) packaging.

With the recent completion of a 572 million pound PP unit at the YANPET site, the company plans to continue solidifying PP markets in the world. The company's overall PP strategy is to continue diversifying its product portfolio into other PP applications.

SABIC POST-ACQUISITION

The proposed sale of DSM polyolefins assets and technologies includes DSM Hydrocarbons B.V., DSM Polyethylenes B.V., DSM Polypropylenes B.V., DSM Polyolefine GmbH, DSM Hydrocarbons Americas Inc., and DSM Polypropylenes North America Inc. The sale also includes research and development entities related to petrochemicals, and associated polyolefins process technologies and licensing activities.

DSM HYDROCARBONS B.V.

The heart of DSM's European polyolefins business lies in the ethylene crackers that feed the polyethylene, polypropylene, and EP elastomers plants as well as other production facilities. Two steam crackers with a combined ethylene capacity of *ca.* 2.8 billion pounds are situated in Geleen and operated by DSM Hydrocarbons. Two other steam crackers, owned by Ruhr Oel, or ROG, a 50/50 joint venture between Veba Oel GmbH and Petroleos de Venezuela SA, supply ethylene and propylene to the polyethylene and polypropylene plants in Gelsenkirchen. The Gelsenkirchen crackers are connected to the Geleen site by the ARG ethylene pipeline.

DSM POLYETHYLENE

DSM Polyethylenes presently has a total capacity approaching 3.4 billion pounds, divided as follows: (1) LDPE – 1,342 million pounds, (2) HDPE – 1,100 million pounds, and (3) LLDPE – 924 million pounds. Included in the LLDPE numbers are the pounds of EXACT® octene-1 based plastomers produced by Dex-Plastomers V.O.F, the 50/50 joint venture with ExxonMobil.

Exhibit 3 lists polyethylene and polypropylene plant locations and production technologies for DSM. The Vestolen acquisition in 1997 brought DSM 3 HDPE lines each having a capacity of 110 million pounds per year. Since then DSM has expanded one of the lines by 50% to produce HDPEs with bimodal MWDs for use in pipe and sheet applications.

Geleen has 3 tubular reactors with a total capacity of 1,100 million pounds of LDPE within excess the largest line, which was installed in 1993, having a capacity of 440 million pounds. DSM produces a small amount of ultrahigh-molecular-weight polyethylene, UHMWPE, used primarily to produce its Dyneema® fibers. Dyneema is produced by DSM High Performance Fibers.

Exhibit 3
DSM – PE & PP Capacities, Western Europe, 2001

Company	Process Tech./Type	Capacity (MM Lbs)
Polyethylenes		**3,366**
HDPE		**1,100**
Geleen, Gelsenkirchen	Slurry	1,100
LDPE		**1,342**
Geleen	Tubular, autoclave	1,342
LLDPE		**924**
Geleen	Unipol, gas	660
	Compact, solution	264
Polypropylene		**2,411**
Geleen	Innovene, gas	517
	Mitsubishi-Yuka, slurry	704
Gelsenkirchen	Innovene, gas	750
	Hüls, slurry	220
	Unipol, gas	220
DSM, TOTAL		**5,777**

Source: Chemical Market Resources Inc.

DSM POLYPROPYLENE

Total annual polypropylene production capacity is in excess of 2.4 billion pounds. DSM expanded its polypropylene capacity as well in 1997 when it picked up the Vestolen assets. Vestolen was a relatively small player in polypropylene that focused on niche applications such as film and fibers. The Vestolen polypropylene assets comprised a 220 million pound UNIPOL® plant and 2 slurry lines, each having a capacity of 110 million pounds per year. The UNIPOL plant is slated for expansion to 330 million pounds per year. DSM has added a 517-million-pound plant at Geleen and a 750-million pound plant at Gelsenkirchen, using BP Amoco's (horizontal) gas-phase process technology (Innovene PP) to produce polypropylene homopolymers and random copolymers. A third Innovene PP plant with a capacity of 660 million pounds is slated for construction at Geleen.

DSM PROCESS LICENSING ACTIVITIES

Stamicarbon, established in 1947, is the subsidiary of DSM that licenses (1) the Urea 2000plus™ Process, (2) the MERE Process for mercury removal from gas condensates, (3) the BEB Process for converting 1,3-butadiene to ethylbenzene, and (4) 2 polyethylene-production processes: (i) the Compact solution process for producing linear polyethylenes and (ii) Clean Tubular Reactor technology for producing LDPE.

The Stamicarbon Compact Solution process was originally developed in the 1970s to produce HDPE. It was adapted in the 1980s to produce linear medium- and low-density polyethylenes based on butene-1 or octene-1 comonomers. The process is best known for producing octene-based copolymers that are premium-grade polyethylenes.

Stamicarbon says the residence time for the entire process is less than 30 minutes, enabling rapid product transitions, even across broad comonomer, melt index, or density changes. This is ideal for a producer of specialties polyethylenes where frequent transitions are a way of life.

Stamicarbon indicates the Compact solution process is capable of producing polyethylenes across a density range of 0.900 to 0.967 g/cm^3 and a melt-index range of 0.8 to 100 using propylene, butene-1, or octene-1 comonomers.

Stamicarbon is also actively pushing its clean tubular reactor technology as it becomes apparent that LDPE is still in demand because of its processability. The advent of difficult-to-process metallocene-based LLDPEs has made blending with LDPE a standard approach to overcoming processing difficulties. Stamicarbon began licensing the process in 1995.

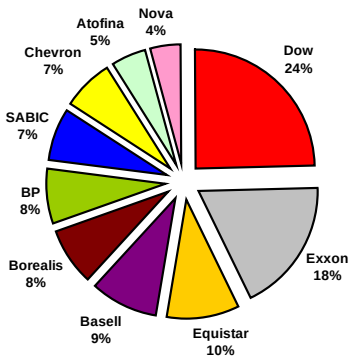
The Clean Tubular Reactor process is capable of being run on a single 660 million pound line. In fact, Pequiven, the joint venture between Mobil Chemical Company and Petroquimica de Venezuela S.A. licensed a 660 million pound line.

Stamicarbon claims to have improved its own tubular process over the years to the point that it could introduce the Clean Tubular Reactor process. The reactor is optimized so that fouling is virtually nonexistent, even for low MI products. This insures high quality, especially in terms of gel formation. Since reactor fouling is not a worry, construction

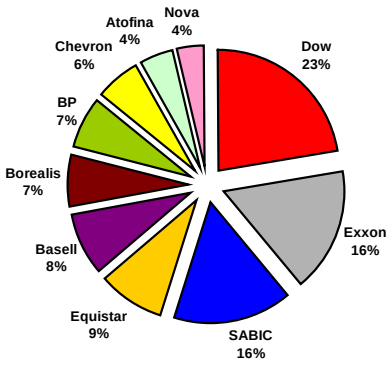
Exhibit 4

Major Global PE Producer Position

Pre-Acquisition



Post-Acquisition



Source: Chemical Market Resources, Inc.

costs are lower because there is no need for the equipment necessary to "pulse" the reactor to clean it. Stamicarbon reports capital costs are on the order of those required for a gas-phase reactor of similar capacity and operating costs are *ca.* 5% below existing tubular and gas-phase processes.

SABIC RESHUFFLING THE DECK – IMPACT ON THE POLYOLEFIN INDUSTRY

As a consequence of the acquisition, SABIC will increase its polyethylene and polypropylene capacities by 43% and 122%, respectively. The acquisition will also enable SABIC to capitalize on polyethylene and polypropylene capacities based in Western Europe, rather than the Middle East. (See Exhibits 4 and 5)

Prior to the merger, SABIC ranked the 7th largest polyethylene producer in the world, with production capacity based primarily in Saudi Arabia. The DSM acquisition will provide SABIC with 3,476 MM pounds of polyethylene capacity based in Western Europe. Post-acquisition, SABIC will become the 3rd largest PE producer in the world with capacity in excess of 11 billion pounds per annum.

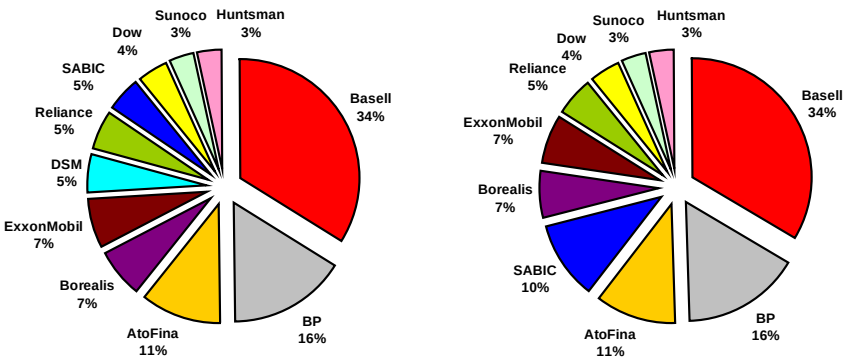
SABIC's polypropylene position will also be greatly enhanced. Prior to the acquisition DSM was the 8th largest PP producer and SABIC the 8th largest. After the acquisition, SABIC will become the 4th largest PP producer in the world with production capacities in excess of 4 billion pounds per annum. SABIC will also acquire North American distribution channels for PP based produced via DSM Polypropylenes North America.

The acquisition will also diversify SABIC's process technology platforms. Currently, SABIC exclusively utilizes Unipol PE and PP technologies. DSM, on the other hand, has a variety of licensed technology platforms including Unipol PP, Innovene® PP, Mitsubishi-Yuka PP slurry, Hüls PP slurry, and Nissan cascade PE processes. DSM also has self-developed solution and tubular PE technologies capable of producing higher value-added products such as octene-1 grade PE resins.

The acquisition of DSM will allow SABIC to greatly strengthen its global PE and PP market position, and to diversity its current polyolefins product portfolios. SABIC is committed to its globalization strategy, and will continue to penetrate global PE and PP markets by forming strategic partnerships and making acquisitions overseas.

Exhibit 5

Major Global PP Producer Position



Source: Chemical Market Resources, Inc.

IMPACT ON EUROPEAN MARKETS

SABIC's entry into European market comes at a point when the European petrochemical industry in general and polyolefins in particular are in transition. The recent mergers and acquisitions in Europe and the general squeeze on margins on polyolefins have made the major organizations look for strategies to exit the polyolefins and other level II derivatives to get closer to the feed stocks. All of the major players in Europe including: (1) Basell, (2) BASF, (3) ENI, (4) Borealis, and (5) Repsol are evaluating the strategies to exit the level II derivatives like polyolefins.

SABIC on the other hand is following its strategy of expansion in to Europe. Its objective is to become a leader in Europe and use it as a launching pad for further Global expansion into markets and technologies

The current acquisition gives them a running start in the Northern Europe. Depending upon Eni's future, SABIC stands to gain a position in Southern Europe if the Eni acquisition goes through. This also positions SABIC to be a synergistic advantage in entering the North American markets.

CONCLUDING REMARKS

SABIC has come a long ways from its start in 1976. Established to support Saudi Arabia's endeavor to promote and diversify its downstream petrochemicals industries, SABIC has reached self-sufficiency in a very short period of time. It has grown (via joint ventures, partnerships and also organically) by bounds in the past two decades to become a dominant manufacturer of polyolefins and other petrochemical derivatives.

In accordance with its stage 3 strategy, SABIC has started to expand its scope of production beyond the Middle East. The acquisition of DSM will give SABIC a strong foothold in the European polyolefins market, and position it to successfully enter the North America in the future. The acquisition will also allow SABIC to enter the technology licensing game, and strengthen its research and technology position. SABIC has indeed leap-frogged the technological developments needed for self-sufficiency, and is on its way of becoming a Global market and technology leader in the polyolefins industries.

Until mid-April 2002, SABIC was in negotiations with Eni for a possible joint venture with respect to Eni's petrochemical businesses held by Polimeri Europa Srl. However, the negotiations have been recently terminated. Eni is still committed to reducing its capital investment in the petrochemical sector, as is SABIC to global expansion. Thus it is quite possible that SABIC will acquire Eni's petrochemical assets in the near future, and gain a position in Southern Europe. This would solidify SABIC's presence in whole of Europe, and strategically position SABIC to enter the North and South American markets.