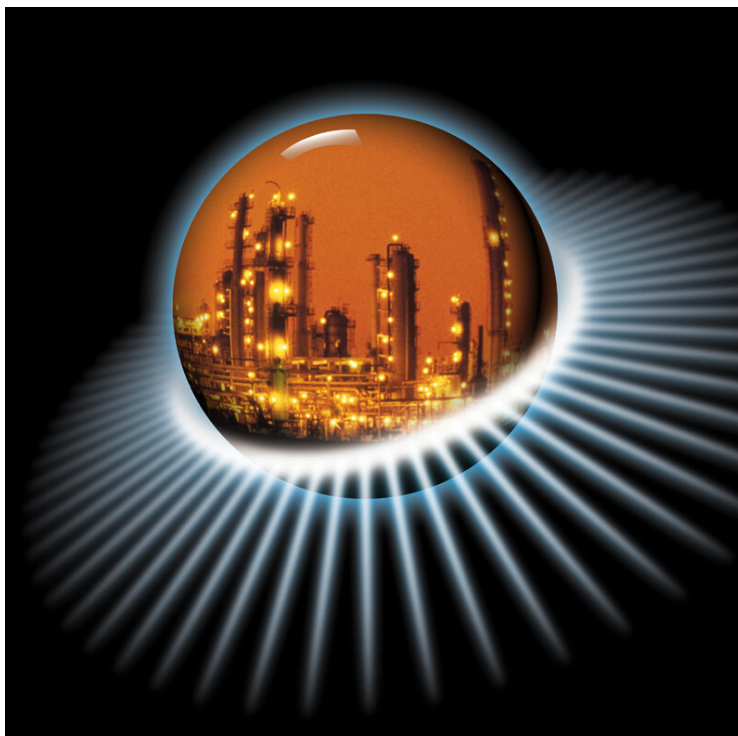


Americas – West Europe – Middle East – Asia



CHEMICAL COMPANY ANALYSIS (CCA)

Chemical Market Associates, Inc.

www.cmaiglobal.com

Independent advisor to petrochemical industry participants in strategic and commercial planning, feasibility and financial studies, due diligence support, competitive and market analysis.

CMAI Headquarters

11757 Katy Freeway, Suite 700, Houston, TX 77079

Tel: 1-281-531-4660, FAX: 1-281-531-9966

CMAI New York

400 Columbus Ave, Suite 145 South, Valhalla, NY, 10595

Tel: 1-914-579-0010, FAX: 1-914-579-0011

CMAI Asia

69 Duxton Road, 2nd Floor, Singapore 089528

Tel: 65-6226-5363, FAX: 65-6226-5157

CMAI - China

Suite 404, Building B; Golden Eagle Mansion; No. 1518 Minsheng Rd, Pudong New Area
Shanghai, PRC 200135; Tel: 86-21-6163-5470, Fax: 86-21-6854-5741

CMAI Europe

14 Waterloo Place, 1st Floor, London England SW1Y 4AR

Tel: 44-207-930-9818, FAX: 44-207-930-9819

CMAI – Europe GmbH

Königsallee 94; D-40212 Düsseldorf, Germany

Tel: 49-211-7100810, Fax: 49-211-71008120

CMAI Middle East

P.O. Box 500395, Dubai, UAE

Tel: 971-4-391-2931, FAX: 971-4-391-6476



OBJECTIVE

The chemical industry has undergone many structural changes in the last decade and will continue to evolve into the twenty-first century as the effects of globalization and industry maturation take hold. The nature of the business is also changing as new alliances are formed, breaking the strict dependence on technology and product line integration as a means of achieving a competitive position in the industry. Participants and observers of the global petrochemical industry, more than ever, need timely and accurate analyses and forecasts to keep ahead of the rapidly changing environment.

The ***Chemical Company Analysis (CCA)*** is an in-depth assessment of chemical producers aimed at increasing our clients' knowledge and understanding of the chemical industry structure and dynamics. The major objective of the **CCA** is to evaluate major chemical producers and the business areas/products in which each producer participates and competes in light of the current and forecast global market environment. The 2005 and subsequent editions of the **CCA** build on the experience of CMAI's extensive market and business advisory expertise within the petrochemical industry.

CCA clients receive comprehensive, concise and current evaluations and perspectives on key producers in the global chemical industry, focusing on:

Competitive positioning

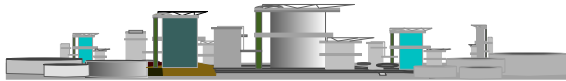
- company strategic direction
- market orientation/emphasis of competitors
- competitor strengths and weaknesses

Business area structure/market characterization

- sources of competitive advantage
- industry structure and capacity
- demand and end-use application summaries
- market supply/demand forecast
- producer-driven market dynamics

Manufacturing environment

- upstream/downstream integration and effects
- intra-company manufacturing synergies
- important production positions
- historical, current and future production capabilities
- participation in subsidiaries and joint ventures



SCHEDULE

<u>2010 Edition</u>	<u>Publication Date</u>
• Bayer	March 2010
• Reliance	June 2010
• BASF	September 2010
• Dow Chemical	December 2010

<u>2009 Edition</u>	<u>Publication Date</u>
• LyondellBasell*	May 2009
• Ineos*	July 2009
• Nova Chemicals*	August 2009
• Sumitomo Chemical	November 2009
• Sasol	December 2009
• SABIC	January 2010

*Includes special financial performance analysis

<u>2008 Edition</u>	<u>Publication Date</u>
• ChevronPhillips	May 2008
• Braskem	June 2008
• PetroChina	July 2008
• Total Petrochemicals	August 2008
• Borealis	January 2009
• Mitsubishi Chemical	February 2009

Supplemental 2008 Edition Report:

- Dow Chemical October 2008

<u>2007 Edition</u>	<u>Publication Date</u>
• Lyondell	March 2007
• DuPont	June 2007
• SINOPEC	September 2007
• ExxonMobil Chemical	December 2007
• Shell Chemical	January 2008
• Westlake	March 2008
• Titan	April 2008

Supplemental 2007 Edition Report:

- LyondellBasell Industries November 2007



<u>2006 Edition</u>	<u>Publication Date</u>
• NPC-Iran	March 2006
• Formosa	April 2006
• Nova Chemicals	June 2006
• BASF	October 2006
• INEOS	November 2006
• SABIC	January 2007

<u>2005 Edition</u>	<u>Publication Date</u>
• Huntsman	February 2005
• Innovene	April 2005
• Basell	May 2005
• Dow	November 2005
• Reliance	December 2005
• Arkema	February 2006

Reports can be purchased individually or on a full Edition basis. To order, please contact any of the CMAI offices listed on the back of the title page.

The individual segments within each analysis shed light on the company's strategic business position from various angles including:

- **Strategic Direction** offers a concise summary of the key issues impacting the company's current and future business position
- **Corporate Overview** presents company ownership profile, subsidiaries and joint ventures, business structure, analysis of earnings, R&D spending, and capital expenditures
- **Business Position** includes company SBUs, product and trademark identification, and key industry segment analyses with identification of major market participants, global supply/demand forecasts, competitor & portfolio analyses
- **Manufacturing Locations** provide the configuration & description of main manufacturing complexes (including subsidiaries & joint ventures), chemical feed/product transfers, and capacity tables
- **Material Flows** reveal the level of product integration indicating the surplus/shortfall of major chemical raw materials

A more detailed description of the individual sections together with a sample table of contents is provided on the following pages.



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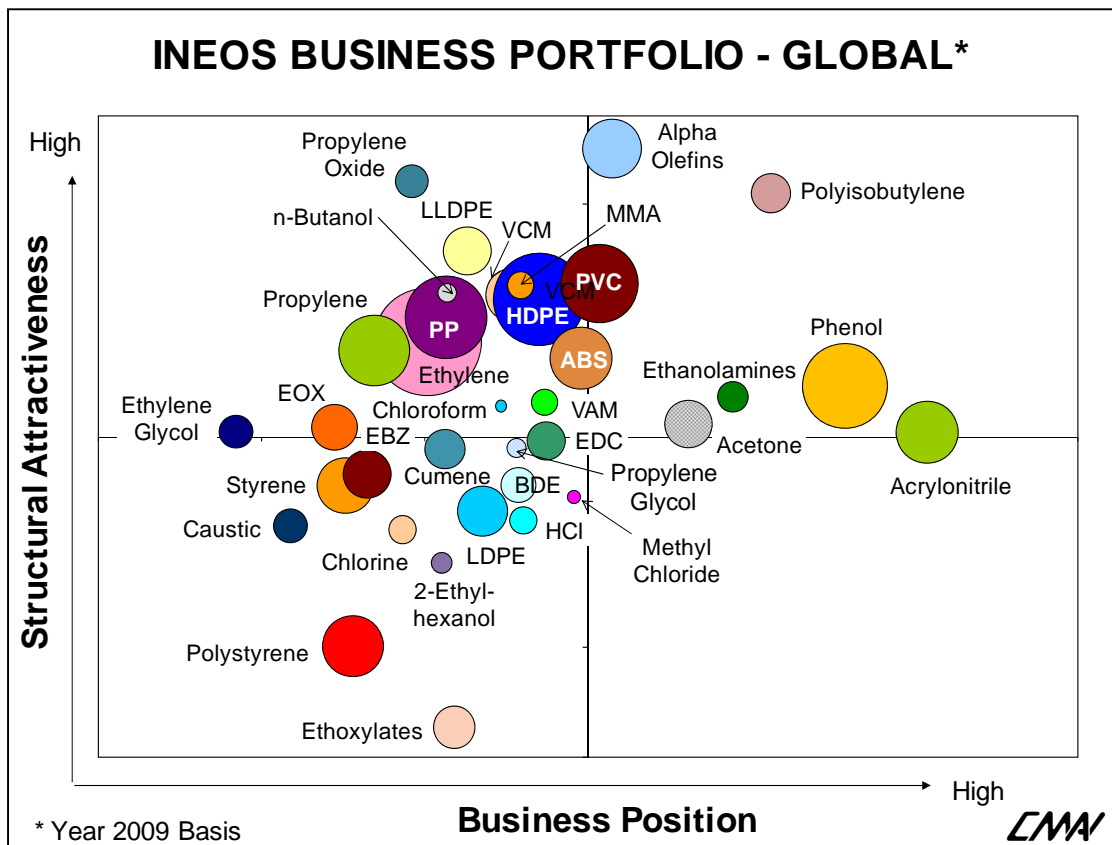
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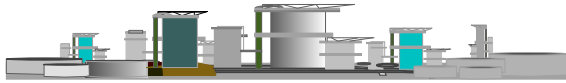


Strategic Direction

The company's **Strategic Direction** in key chemical business areas is identified and discussed within the global context. **Strategic Direction** provides CMAI's evaluation of the company's position in its various businesses and the direction/opportunities the company is likely to pursue in the near future. The chapter also includes brief summaries of the major conclusions pertaining to the company's financials, geographic focus, technology positions, manufacturing sites, as well as future investment/rationalization plans.

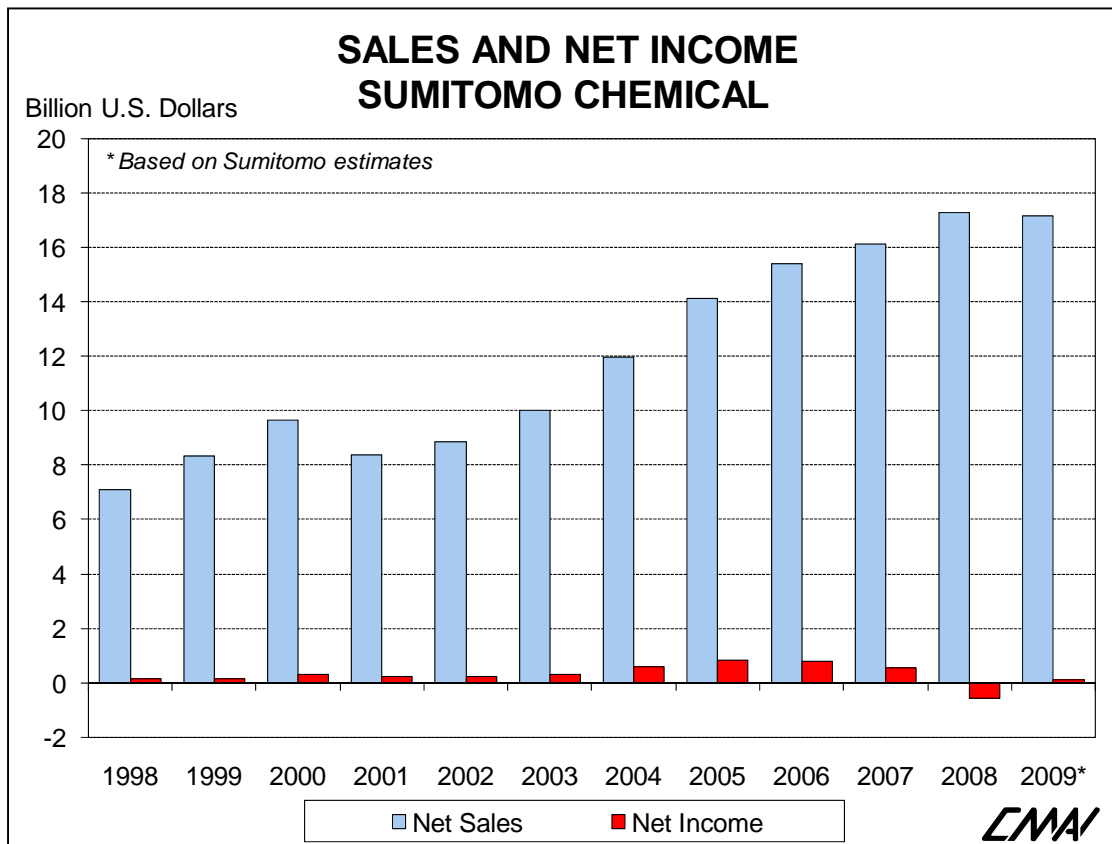
By cross-referencing CMAI's global market analyses with a company's business positions, based on a quantitative evaluation of site integration, announced expansions/closures, plant age, technology, geographic focus and other factors, CMAI is able to build an overall view of the company's strengths and weaknesses in select products/business areas as well as its potential future strategic moves. In essence, the merging of market and company analyses allows CMAI to prepare unique evaluations of a company's potential opportunities and strategic direction supported by rigorous attention to company and product market constraints and opportunities.





Corporate Overview

A **Corporate Overview** provides a broad perspective of the chemical producer beginning with the corporate history and development of the organization into its present-day structure. This is followed by a discussion of the company's financial results in view of the global petrochemical business cycle and major economic trends.



The company's overall operations are characterized by sales and operating performance. Its major chemical business areas are identified and their individual sales performance profiled where possible. The company's geographic coverage and recent developments toward its global participation are reviewed and presented to highlight trends over time.

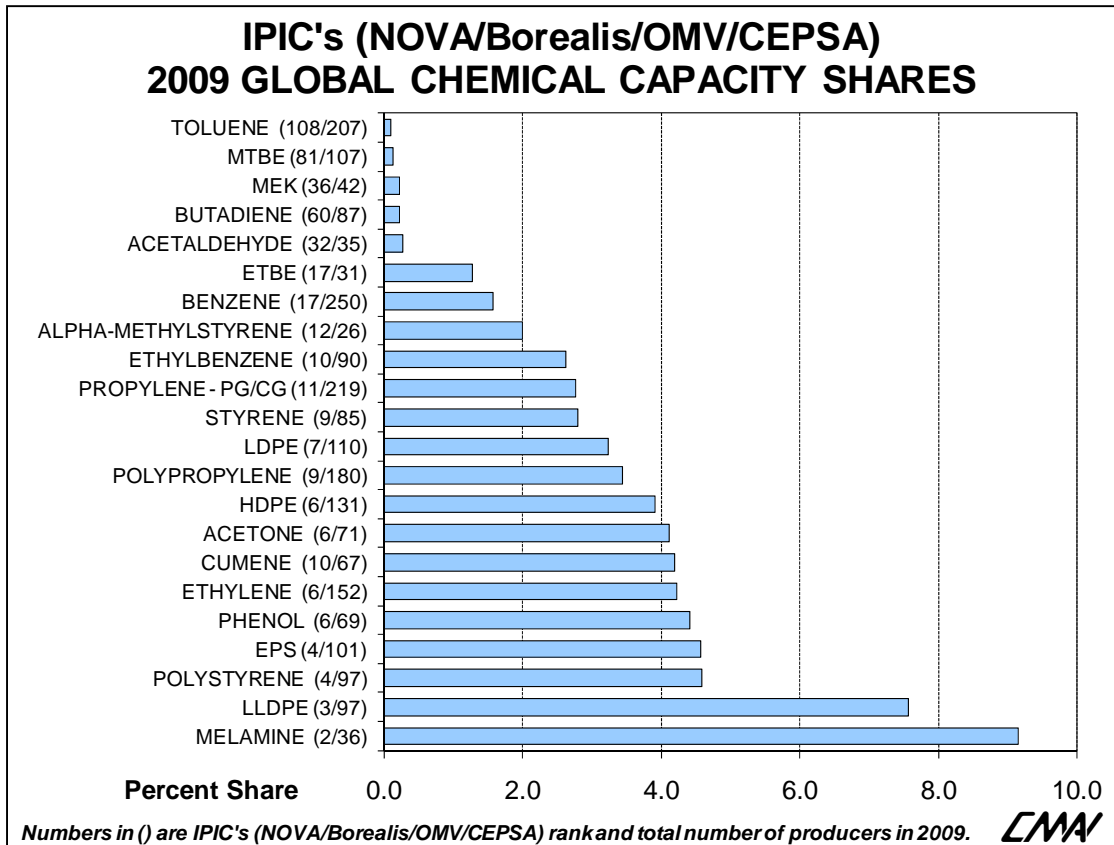
Recent research and development efforts are reviewed in terms of annual dollar spending and direction (e.g., catalysis, life sciences, materials), including an historical perspective of R&D spending. Also, capital expenditures are reviewed, identifying annual dollar spending and the status of major capital projects. Major acquisition and divestiture activities impacting the chemical operations of the company are identified, as well as any subsidiaries and joint ventures.



Chemical Business Positions

Chemical Business Positions includes a Company Business Overview, an Industry Segment Analysis and a Company Portfolio Analysis.

Company Business Overview



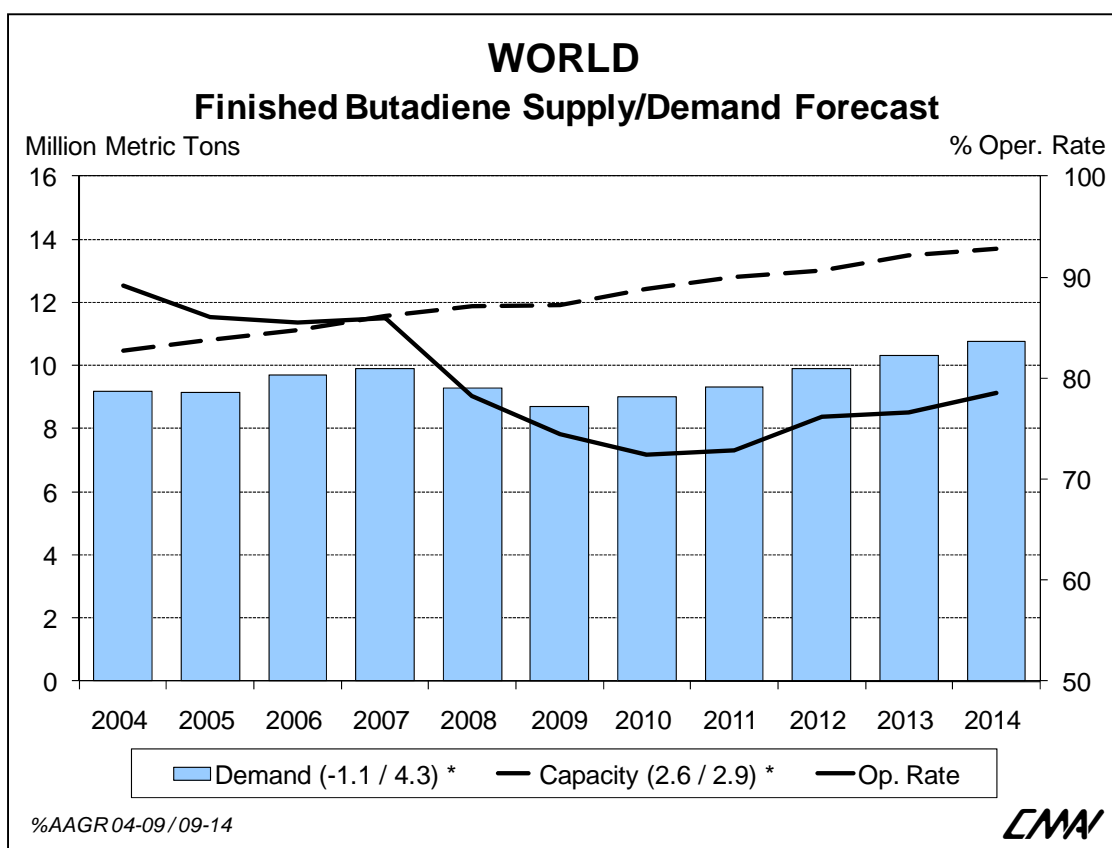
The **Company Business Overview** contains an overview summarizing key company business segments and a product/business area profile. It also includes a profile of the company's market share in these businesses based on global manufacturing capacity. The Company Business Overview provides further detail for each of the business segments outlined in the overview. Key products are identified along with trademarks where available. End-use applications for the products are provided.



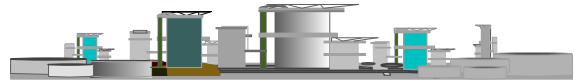
Industry Segment Analysis

The **Industry Segment Analysis** provides background information on the business areas in which the company participates. This section of the report is organized using CMAI's standard business area definitions. Information is provided on each overall business area, as well as for each individual major product within each business area.

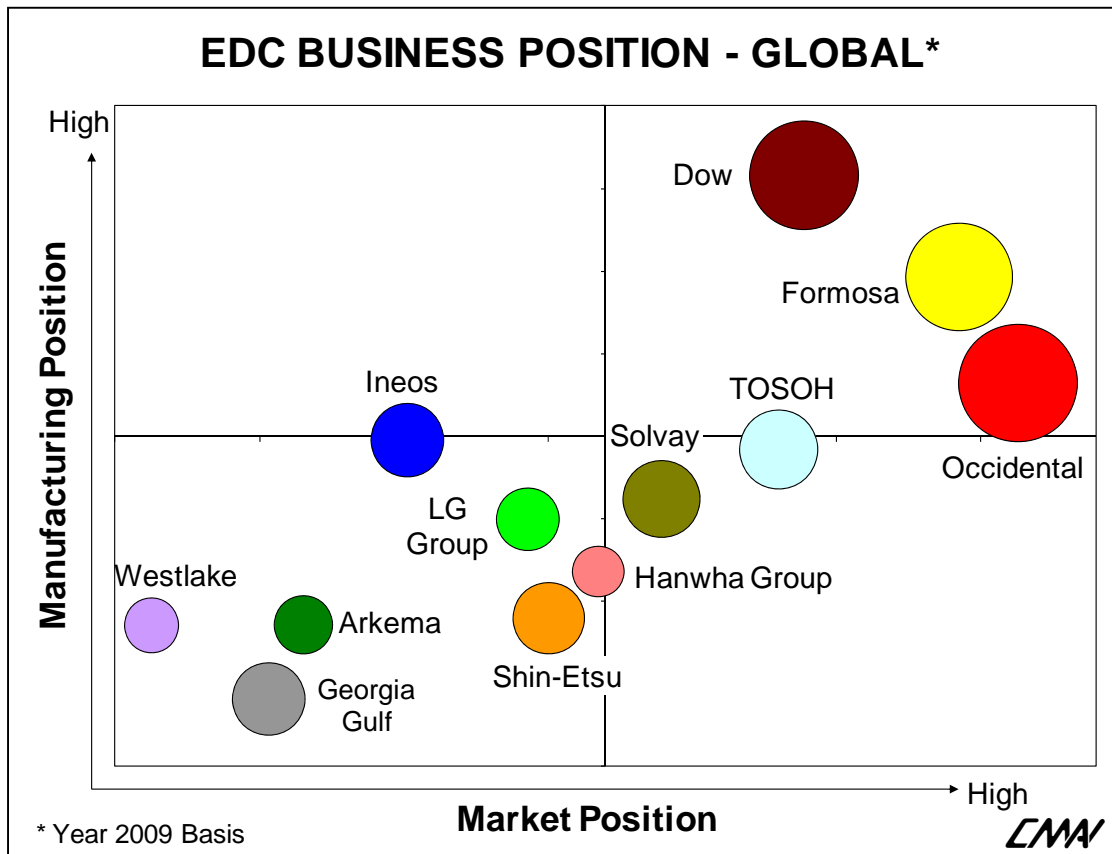
An industry overview block diagram is provided as an introduction to the processing sequences encountered in each business area. Following this overview, the business area analysis is divided into chemical product profiles, containing analytical segments that assess the business and competitive characteristics of the major chemical products. Each chemical segment comprises two sections: **Global Market Overview** and **Competitive Positioning**.



The **Global Market Overview** provides an analysis of the global demand and supply for each product extending over five years into the past and the future. This includes average annual growth rate estimates for the forecast years together with capacity utilization rates. The top ten current global producers are listed on a shareholder basis, indicating the degree of market concentration.

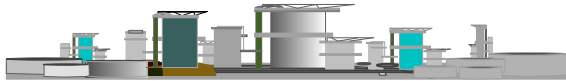


The **Competitor Position Assessment** provides an analysis of the competitive position of the major industry producers for each product. The producers are analyzed along two dimensions: manufacturing position and market position. CMAI rates each producer along both dimensions using a quantitative methodology. The methodology employs a set of factors and relative weighting that is designed to reflect the important competitive criteria for each product. Each producer is assigned a quantitative value representing its strength in each competitive criterion. The results are plotted in matrix form using both of the competitive dimensions, with the size of the bubble representing the relative capacity share for the producer.



Company Portfolio Analysis

The **Company Portfolio Analysis** provides a summary assessment of the company's industry position and a corresponding evaluation of the structural attractiveness of each product area. The quantitative analysis of a company's portfolio is then assessed in light of current and future market developments as well as strategic business plans announced by the company under review.

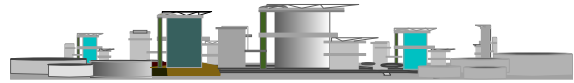


Major Chemical Manufacturing Locations

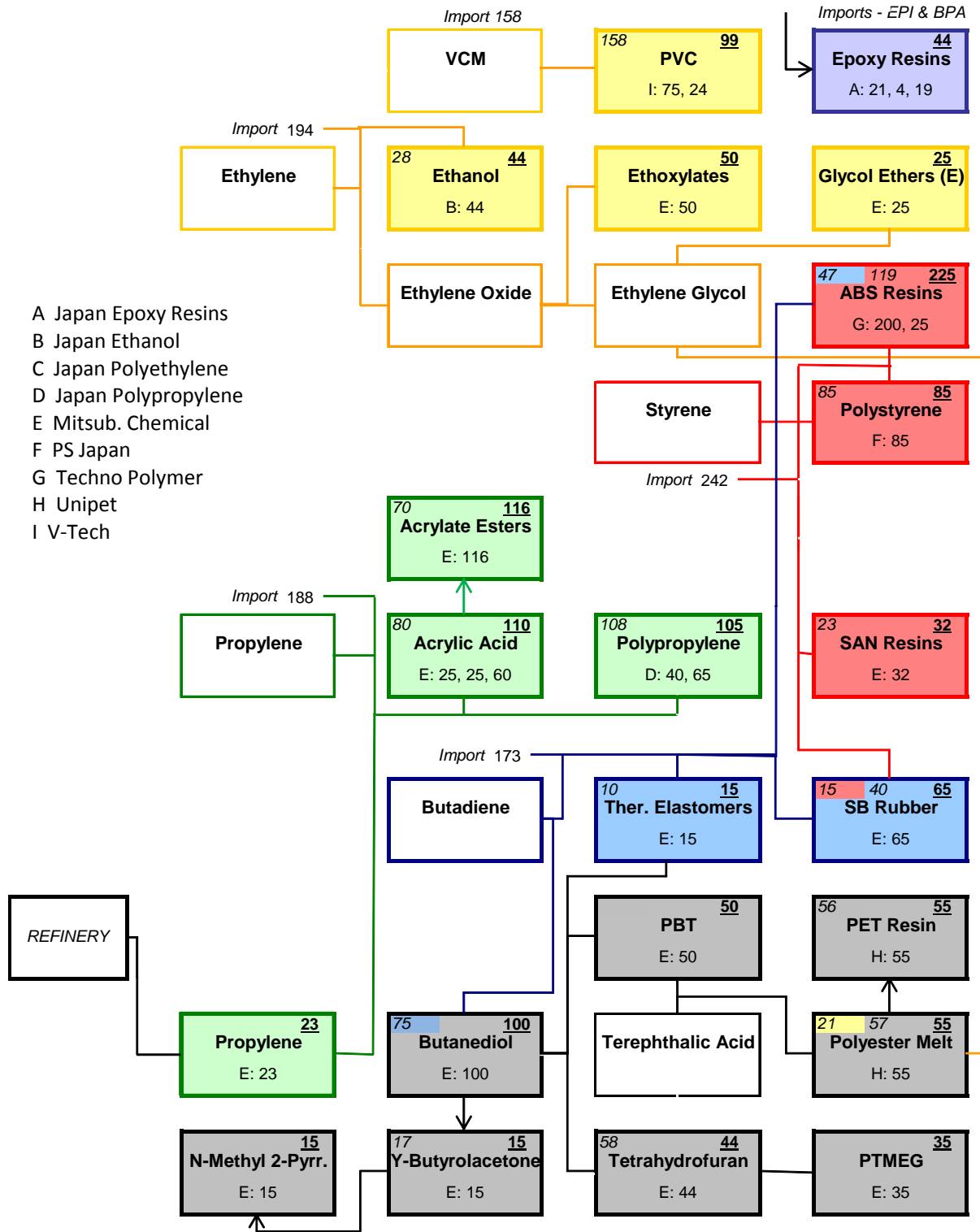


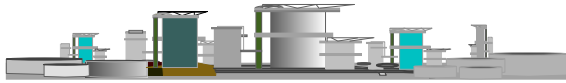
Major Chemical Manufacturing Locations present the configuration and description of the major global chemical production complexes, which the company operates, including major subsidiaries and joint ventures. These configurations are presented in block flow form, detailing major material flows. Also, intra-company chemical product transfers among the manufacturing sites are identified. Capacities for each of the company's major products are summarized from both an historical perspective and five-year forecast based on announced expansions and acquisitions.

Major Chemical Manufacturing Locations also includes an analysis of the company's material balance for major products and feedstocks showing capacity at each manufacturing location. This analysis is developed at nameplate capacity for each product representative of CMAI's estimate of the business position for the producer, quantifying site shortages/surpluses for each chemical.



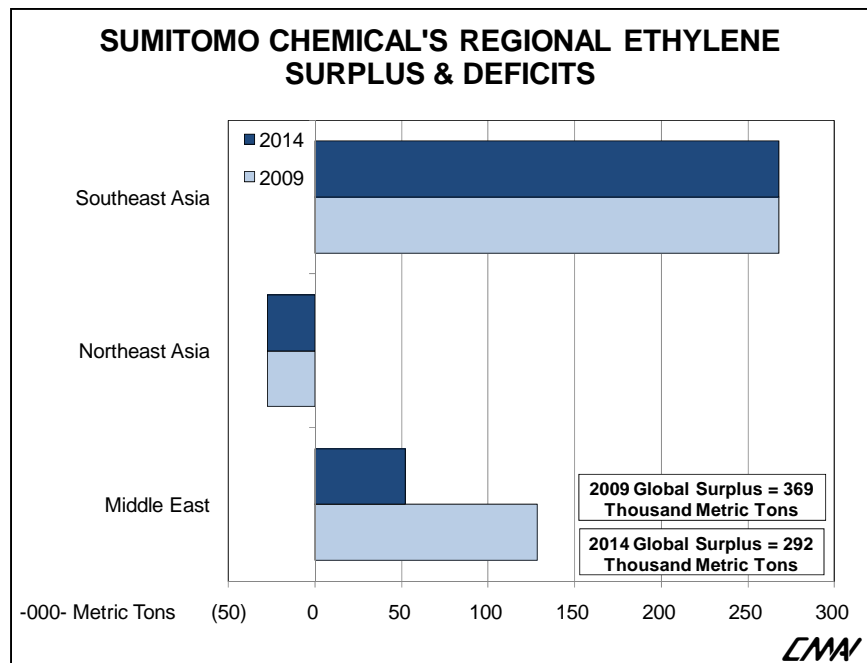
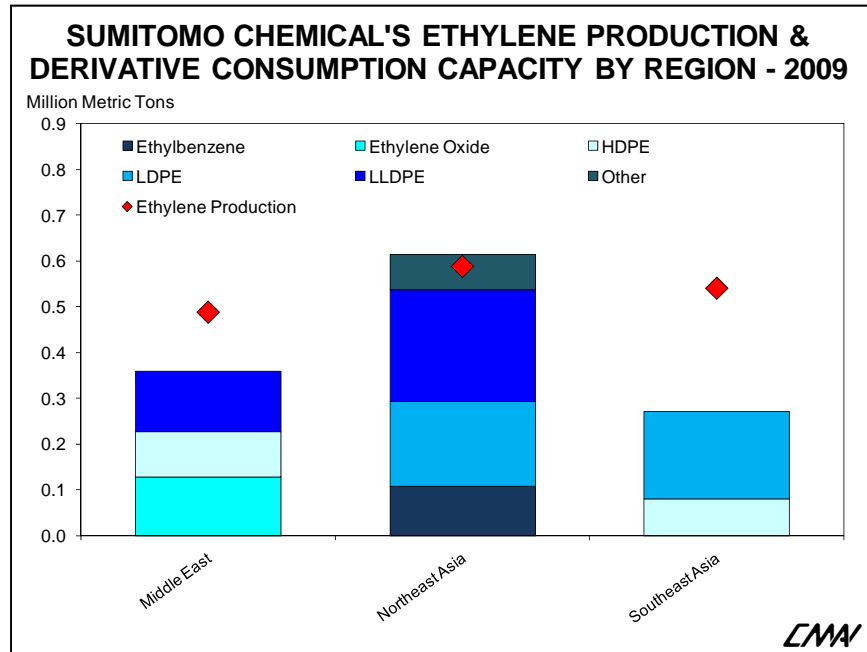
Mitsubishi Chemical at Yokkaichi





Major Chemical Material Flows

CMAI tailors its capacity database to provide several important views of the company's operations. This involves the evaluation of the material balance around important first- and second-line derivatives (e.g., ethylene, ethylene oxide, etc.). The information is presented graphically and tabulated by company and location as well as by derivative application.





Sumitomo Chemical										
ETHYLENE INTEGRATION FOR 2009										
(-000- METRIC TONS)										
CAPACITY TO CONSUME ETHYLENE										
SHAREHOLDER	LOCATION	OWNERSHIP	Ethylene Capacity	Ethyl benzene	Ethylene Oxide	HDPE	LDPE	LLDPE	Other	NET
MIDDLE EAST										
SAUDI ARABIA										
Petro-Rabigh	Rabigh	50.0%	488	----	128	101	----	131	----	129
TOTAL - Saudi Arabia			488	----	128	101	----	131	----	129
TOTAL - Middle East			488	----	128	101	----	131	----	129
NORTHEAST ASIA										
JAPAN										
Ciba Styrene	Chiba	40.0%	----	33	----	----	----	----	----	(33)
Keiyo Ethylene	Chiba	22.5%	173	----	----	----	----	----	----	173
Nihon Oxirane	Chiba	60.0%	----	76	----	----	----	----	----	(76)
Sumitomo Chem.	Chiba	100.0%	415	----	----	----	185	198	72	(40)
Evolue Japan	Ichihara	25.0%	----	----	----	----	----	46	----	(46)
Sumitomo Chem.	Nihama	100.0%	----	----	----	----	----	----	5	(5)
TOTAL - Japan			588	109	----	----	185	244	77	(27)
TOTAL - Northeast Asia			588	109	----	----	185	244	77	(27)
SOUTHEAST ASIA										
SINGAPORE										
Chevron Phillips Singapore	Pulau Ayer Merbau	20.0%	----	----	----	80	----	----	----	(80)
PCS	Pulau Ayer Merbau	50.0%	540	----	----	----	----	----	----	540
TPC	Pulau Ayer Merbau	70.0%	----	----	----	----	192	----	----	(192)
TOTAL - Singapore			540	----	----	80	192	----	----	268
TOTAL - Southeast Asia			540	----	----	80	192	----	----	268
WORLD										
WORLD TOTAL			1,615	109	128	181	377	375	77	369

Note: Capacities are pro-rated for Sumitomo Chemical's ownership share.



Sumitomo Chemical ETHYLENE INTEGRATION FOR 2014 (-000- METRIC TONS)										
CAPACITY TO CONSUME ETHYLENE										
SHAREHOLDER	LOCATION	OWNERSHIP	Ethylene Capacity	Ethyl benzene	Ethylene Oxide	CAPACITY TO CONSUME ETHYLENE				NET
						HDPE	LDPE	LLDPE	Other	
MIDDLE EAST										
SAUDI ARABIA										
Petro-Rabigh	Rabigh	50.0%	650	----	170	151	----	278	----	52
TOTAL - Saudi Arabia			650	----	170	151	----	278	----	52
TOTAL - Middle East			650	----	170	151	----	278	----	52
NORTHEAST ASIA										
JAPAN										
Ciba Styrene	Chiba	40.0%	----	33	----	----	----	----	----	(33)
Keiyo Ethylene	Chiba	22.5%	173	----	----	----	----	----	----	173
Nihon Oxirane	Chiba	60.0%	----	76	----	----	----	----	----	(76)
Sumitomo Chem.	Chiba	100.0%	415	----	----	----	185	198	72	(40)
Evolve Japan	Ichihara	25.0%	----	----	----	----	----	46	----	(46)
Sumitomo Chem.	Niihama	100.0%	----	----	----	----	----	----	5	(5)
TOTAL - Japan			588	109	----	----	185	244	77	(27)
TOTAL - Northeast Asia			588	109	----	----	185	244	77	(27)
SOUTHEAST ASIA										
SINGAPORE										
Chevron Phillips Singapore	Pulau Ayer Merbau	20.0%	----	----	----	80	----	----	----	(80)
PCS	Pulau Ayer Merbau	50.0%	540	----	----	----	----	----	----	540
TPC	Pulau Ayer Merbau	70.0%	----	----	----	----	192	----	----	(192)
TOTAL - Singapore			540	----	----	80	192	----	----	268
TOTAL - Southeast Asia			540	----	----	80	192	----	----	268
WORLD										
WORLD TOTAL			1,778	109	170	231	377	522	77	292

Note: Capacities are pro-rated for Sumitomo Chemical's ownership share.