

CHEMSYSTEMS **PPE PROGRAM**

Report Abstract

Quarterly Business Analysis

Quarter 2, 2011

Petrochemical Cost Price and Margin for Olefins, Polyolefins, Vinyls, Aromatics, Styrenics, Polyester Intermediates and Propylene Derivatives. Analysis for the United States, Western Europe, Middle East and Asia

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Nexant, Inc. (www.nexant.com) is a leading management consultancy to the global energy, chemical, and related industries. For over 38 years, ChemSystems has helped clients increase business value through assistance in all aspects of business strategy, including business intelligence, project feasibility and implementation, operational improvement, portfolio planning, and growth through M&A activities. Nexant has its main offices in San Francisco (California), White Plains (New York), and London (UK), and satellite offices worldwide.

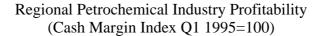
Nexant's Quarterly Business Analysis reports assess the current production economics for commodity petrochemicals, putting them into context with developments in the underlying market dynamics. A review of production economics in the Middle East has recently been added to the long running analysis of economics in Western Europe, United States and Asia. The reports are published as part of ChemSystems / Petroleum and Petrochemical Economics Programme (PPE). Subscriptions to the programme are available from www.chemsystems.com. For further details or to request a sample copy, please email chemsystems@nexant.com.

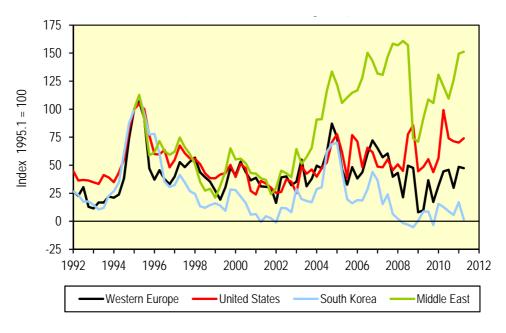
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WEAK ASIAN MARKETS AND INTENSE FEEDSTOCK COSTS CAP PETROCHEMICAL PROFITABILITY IN SECOND QUARTER

The global petrochemical industry started 2011 in a strong fashion, defying the sharp rise in crude oil prices. Profitability of the industry improved greatly in the first quarter of the year, with average margins in most regions rebounding to their highest since the global economic crash in the second half of 2008. However profitability in Asian markets fell sharply in the second quarter as slow demand for imports to China lengthened markets across the region. Average profitability in other regions remained at a peak; however most of the margin was captured in the cracker, after olefin prices raced to record highs. Downstream sectors showed increasing signs of weakness, as the recent surge in prices began to stress demand.

The cost of acquiring feedstocks remained a major concern through the second quarter. Continued political unrest in the Middle East and North African region lifted crude oil prices for the ninth month in succession in April. Brent FOB crude oil prices averaged US\$119 per barrel through April and May, a rise of over 13 dollars over the first quarter average. Naphtha prices were pushed above \$1 000 per ton. LPG prices remained at a discount to naphtha, yet the high value of propylene and C₄ co-products limited the processing of LPG at flexible crackers.





Petrochemical producers in most regions managed to maintain steady profitability, despite the renewed increase in the cost of acquiring feedstocks. Tight olefin markets pushed contract prices for the principle olefins (ethylene, propylene and butadiene) to record highs. Butadiene and



propylene were viewed as particularly tight in the United States, lifting contract prices more than \$325 per pound in April alone. Prices in other regions were soon pulled up as arbitrage opportunities opened. Strong olefin markets supported margins at the cracker, preserving profitability of integrated producers. Meanwhile, average profitability of the South Korean industry fell to a six quarter low, as markets lengthened considerably, with exports of derivatives hard to place in China.

European demand for petrochemicals opened the second quarter in a relatively strong manner, before slowing markedly as the quarter progressed. The European economy grew at 2.5 percent in the first quarter of the year, however rising fuel prices and the deepening debt burden in Some European countries depressed consumer confidence and spending. European petrochemical markets were balanced to tight at the start of the second quarter before production rates improved towards the end of the quarter as a busy period of maintenance was concluded. Strong margins, particularly at the cracker, deterred some operators from turning down operating rates, even as markets were observed to be weakening. The supply side lengthened appreciably into June, as moderating Asian demand directed larger quantities of imported material into Europe.

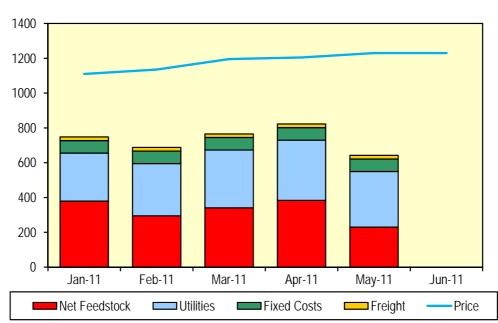
Petrochemical markets in the United States were viewed as balanced to tight through the second quarter. Demand remained relatively steady, however some moderation was observed as steep olefin price rises choked some sectors. Exports of propylene derivatives were particularly hard hit as the 15 cent per pound rise in April propylene contracts rendered exports uncompetitive. Lengthening Asian markets also restricted exports of ethylene derivatives. A short supply side helped keep U.S. markets in balance, as numerous outages at crackers and refineries (both planned and technical failures), restricted supplies of key olefin building blocks. A massive increase in value of propylene and C₄ co-products moved LPG to the lowest cost source of ethylene in the United States, replacing ethane as the most competitive feedstock.

Asian petrochemical markets weakened considerably in quarter two, with particular concern over the slowing demand for petrochemicals in China. The low volumes of petrochemicals imported into China raised alarm in international markets. Credit lines in China have been heavily curtailed, with the government's efforts to curb inflation. The current high price of many petrochemicals has compounded stress in the demand side, with many a smaller consumers having to reduce their purchasing. Power restrictions at end-use application facilities further impeded domestic demand for petrochemicals. Exporting regions such as Japan and South Korea were particularly hard hit. The Japanese production situation normalised in quarter two with the successful restart of several crackers and several derivative units. The overall Asian supply side was seen to be lengthening against the frail demand.

Average profitability of petrochemical production in the Middle East maintained the high level seen at the start of 2011, with netbacks of petrochemicals from principle export markets remaining high on continuing strength of international crude oil and energy prices. Meanwhile, feedstock costs remained less of a concern than in other regions, with long term fixed price contracts on ethane and considerable discounts on naphtha and LPG. Asian markets lengthened considerably, with weak demand from China as government initiatives to curb inflation restricted the ability of Chinese downstream producers to import. European markets offered more attractive netbacks, with prices easing modestly into May. Increasing volumes and material were exported into Europe to counter fragile Asian markets.



The strong industry wide performance achieved in Europe and the United States masks some very different trends across sectors of the industry. Most of the margin continued to be captured at the cracker, with profitability of non-integrated operations being severely squeezed. The intermediates and polymer sectors continued to struggle to add much value as feedstock costs firmed and olefin prices posted new record highs. Many market sectors were observed to be weakening, with consumption impacted by the sharp rises in prices through the year.



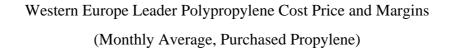
Western Europe Leader Naphtha Cracker Cost Price and Margins (Monthly Average)

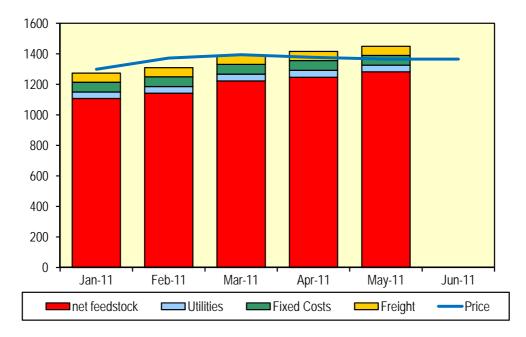
Monthly QBA_WE_14Jun11

European ethylene markets showed signs of weakening through the second quarter with the supply side lengthening as the volume of ethylene and derivatives imported from the Middle East increased as demand in Asian markets slowed. Domestic demand slowed slightly as contract prices increased for the seventh consecutive month, settling at a record high of ≤ 1230 per ton in May. Crackers processing heavy feedstocks benefitted from a sharp rise in C_3 and C_4 co-product revenue, offsetting the feedstock cost burden and closely matching the costs of processing lighter feedstocks. Naphtha cracker margins climbed to their highest since the third quarter of 2008, defying the underlying lengthening market.

Profitability of the polymer sector deteriorated considerably in the second quarter, as high costs restricted resin consumption by some convertors. Polyolefin margins were hit hardest as olefin contract prices settled at record highs in May. Leader polypropylene margins slipped to variable cost breakeven, achieving the third lowest margin of any quarter in the last two decades. Meanwhile, integrated producers continued to benefit from strong margins at the cracker, preserving profitability of integrated operations.







Nexant's Quarterly Business Analysis reports review production economics for petrochemicals in regional markets, and justify trends form underlying market developments. The QBA programme now includes monthly average production economics in the principle markets of Western Europe and the United States, where monthly contract settlements heavily influence industry profitability. The reports are published as part of ChemSystems / Petroleum and Petrochemical Economics Programme (PPE). Subscriptions to the programme are available from http://www.chemsystems.com.





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