



# CHEMSYSTEMS® PROSPECTUS

*Price, Margins, and  
Costs in an Era of High  
Oil Prices*



# **CHEMSYSTEMS®**

## **PROSPECTUS July 2011**

# **Price, Margins, and Costs in an Era of High Oil Prices**

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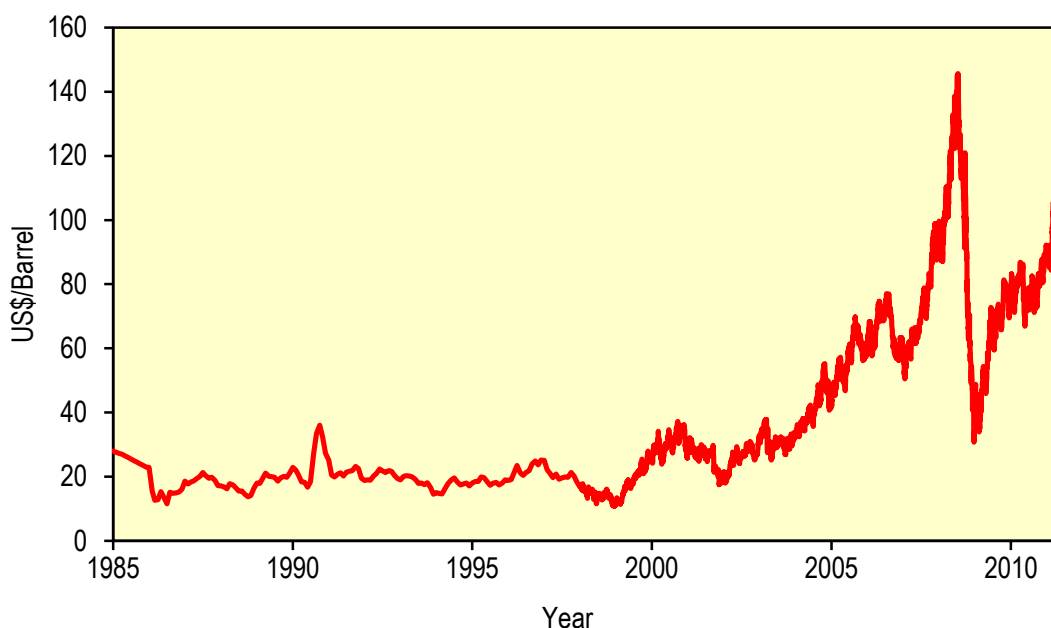
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## 1.1 OVERVIEW

Over the past five years, it has become more apparent that crude oil prices near or above \$100 per barrel have possibly become a fact of life that may permanently become the norm rather than the exception. Indeed, many forecasters have voiced the opinion that long term crude oil prices in excess of \$150 per barrel are no longer unlikely expectations.

Not only have crude oil prices risen to above \$100 per barrel on several occasions since 2007, the volatility of the price increased dramatically. Within the last five years, prices fell more than \$100 per barrel in less than six months from a high of \$140 per barrel to a low of almost \$30 per barrel following the dramatic 2008 economic collapse of the global financial situation. Subsequently, in only three years the price had once again risen to more than \$112 per barrel despite generally sluggish economic recovery in many western economies. The volatile and generally high oil prices of the past decade contrast greatly to the general stability and crude price within the \$20 to \$40 per barrel range of the previous three decades.

**Figure 1.1 WTI Crude Oil Price**



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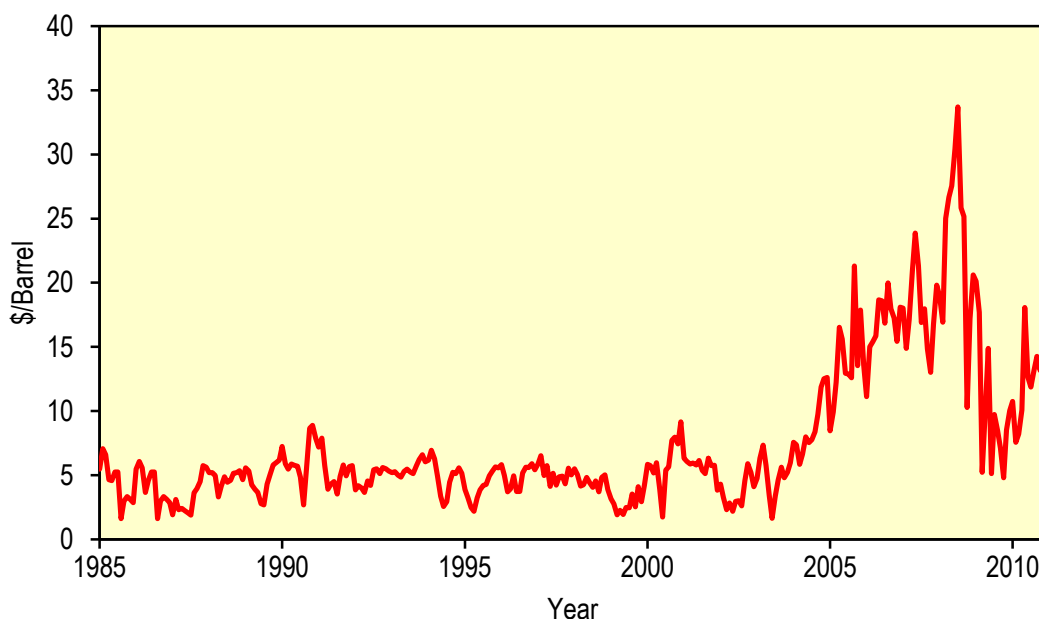
### 1.1.1 Energy and Fuel Prices

Not unexpectedly, prices for direct derivatives crude oil, such as gasoline, heating oil, jet fuels, etc., closely mirrored the wildly changing crude oil prices. In the United States, gasoline prices rose to historic highs above \$4 per gallon and even above \$5 per gallon in some locations, causing widespread sticker shock that noticeably slowed, and at times threatened, to derail the fragile recovery. More importantly, the high consumer prices for fuel products heightened the awareness that high energy and fuel prices might become a new permanent reality.

Furthermore, the projection of prices for individual refined fuel products across different geographic regions became more difficult. Historically reliable price predictors such as constant deltas, constant price spreads, or constant margins, were becoming inaccurate as the underlying crude costs and price volatility increased.

A spread of about \$5 per barrel over crude oil price was an accurate predictor of heating oil price for more than two decades prior to 2005. After 2005, the usefulness of such simplistic predictors diminished. Even with time-consuming and elaborate adjustments based on other industry factors, the usefulness of such simplistic approaches diminished.

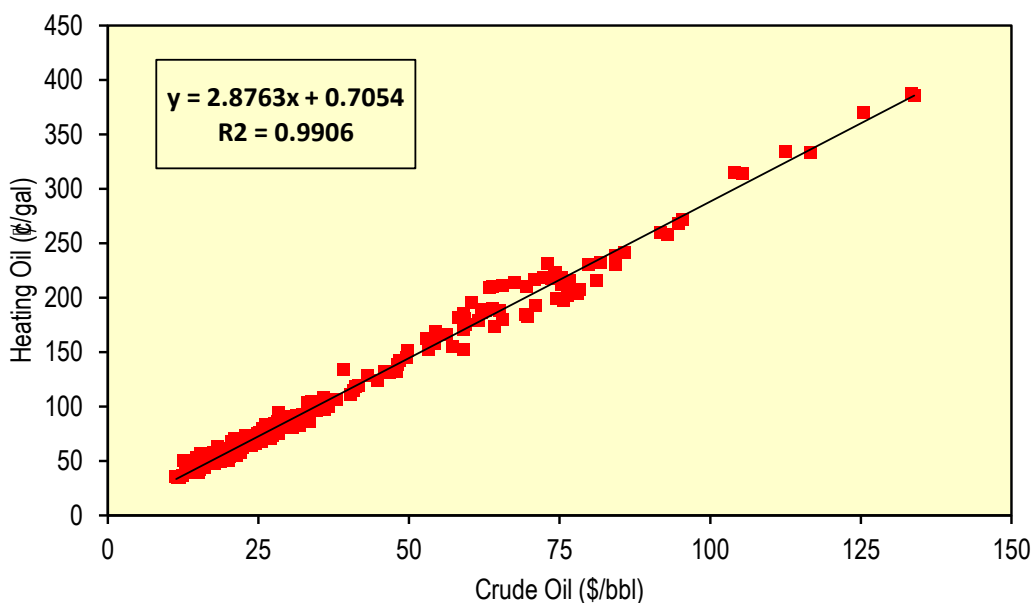
**Figure 1.2 U.S. Heating Oil/Crude Oil Spread**  
(US\$ per barrel)



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The volatility and wide price swings in crude oil prices after 2005 did reveal a more powerful predictive methodology for projecting fuel prices. For many of the primary fuel products produced in refineries, there is a surprisingly high mathematical correlation between crude oil price and many of the major refinery fuels, including gasoline, heating oil, kerosene, jet fuel, residual fuel, naphtha, etc. The historical narrow range of crude oil prices prior to the turn of the century had masked some of these more robust relationships. What is surprising is how accurate these correlation factors can be in predicting fuel pricing and profitability even across periods of highly volatile, rapidly changing prices that have characterized the petroleum based energy and chemical industries. Mathematical correlation factors ( $R^2$ ) higher than 0.99 are found for many of the finished fuels.

**Figure 1.3 U.S. No. 2 Distillate Wholesale/Retail Price, 1985-2011**  
(Cents per gallon)



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Correlation factors higher than 0.99 are extremely good predictors of petroleum-based finished fuels given any specific crude price forecast scenario. The surprisingly close match between predicted and actual heating oil price over the past 25 years, including the highly volatile post 2007 time frame, attests to the accuracy of the relationship. Given an accurate prediction of crude oil pricing, it would have been possible to project extremely accurate heating oil prices (rarely off by more than a few cents per gallon), even though the tumultuous rise and fall of crude oil prices in the past five years.

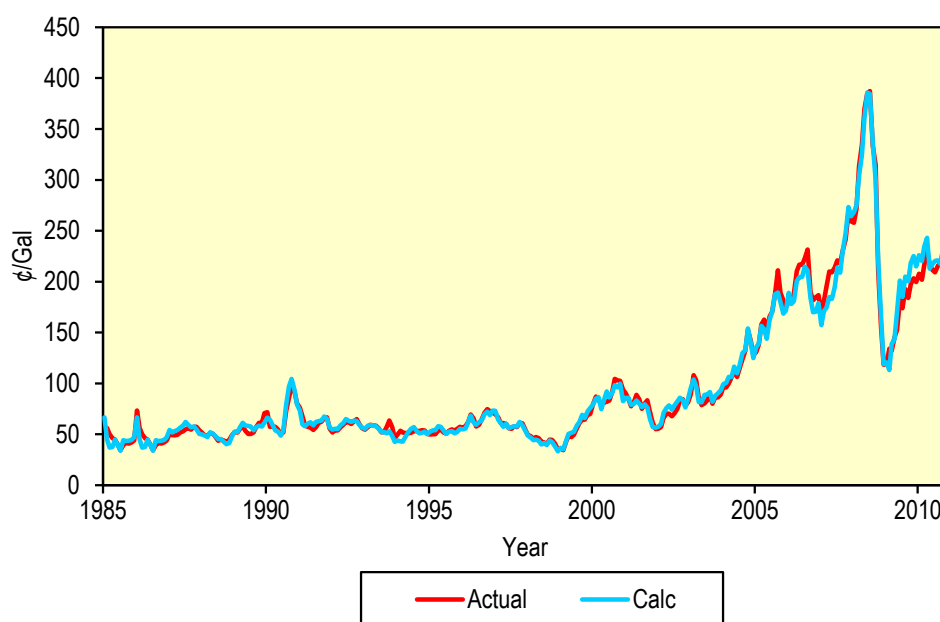
### 1.1.2 Chemical Prices

Although this methodology works well for fuels, products can provide accurate projections of pricing and profitability for oil refining, it unfortunately does not yield such high correlation factors for most petrochemicals. Chemicals, particularly those further down the supply chain or those produced by non-petroleum feedstocks, yield correlation factors below 0.90, which alone is insufficient to produce accurate forecasts.

Fortunately, Nexant continues to develop the proven techniques and modeling methodologies that it has successfully applied for many years to understand and project pricing trends within the petrochemical sector. Over the course of 40+ years, a substantial knowledge base of price cost and market data have been accumulated within our reports, studies and multi-client subscription services and databases. Combining the methodologies, principals and understanding of underlying drivers developed over the decades of analysis, with the more accurate historical relationships that the extreme variations in crude oil pricing has revealed provides an extremely powerful methodology for accurately tracking and predicting chemical prices. Chemical prices are controlled by two competing major drivers. The first is the cost driven pressure that results

from the manufacturing economics that sets a floor on prices that can support profitable manufacture of any given chemical product. If actual prices fall below such minimum price levels, producers will eventually start to shut down capacity or exit the business. The second driver is the market pressures exerted by multiple producers in markets that are periodically either over-supplied, which lowers profitability until the least efficient producers eventually leave the market, or under-supplied, which raises the profitability to the point where new producers are lured into entering the market. These competing pressures tend to drive most chemical sectors toward an equilibrium supply/demand balance that justifies modest profits for all in the long term.

**Figure 1.4 U.S. No. 2 Heating Oil Price**



By combining this vast resource of market, technical and economic data with the correlation techniques that have recently been developing for fuel and energy price projecting, Nexant has extended the forecasting power of both chemical driver mechanisms that work well for chemical markets with the correlation drivers that work well for fuel and energy markets. This has resulted in an extremely robust and accurate methodology for systematically reassessing chemical price relationships that result from rapidly changing global macroeconomic and energy price scenarios.

In essence, the methodology incorporates a first step of using the correlation methodology to produce an initially rough but useful first approximation of prices for a vast array of chemical and energy products. These initial approximations are used to determine costs of production that are based on feed and byproduct costs based on the first round price estimates. When combined with accurate capital requirements, operating rates and market balance factors for each chemical, new cost and market adjusted prices can be determined for each chemical. When performed on a very large array of chemical products, this procedure will yield an entirely new set of price

estimates that have been refined to take into account the historical correlations, cost driven constraints, and market driven adjustments. This second generation set of prices represent a more realistic and more consistent set of prices for all of the chemicals considered.

These production cost and market adjusted price estimates are then used to further adjust the initial price estimates that were originally estimated via correlation. Since the cost of production calculations depend on the prices of the feedstocks and byproducts, using these improved estimates rather than the original correlated-only estimates and repeating the entire iterative process yields an even more consistent set of prices in a third pass through the entire set of chemicals. This process can be repeated iteratively until no further price changes are seen.

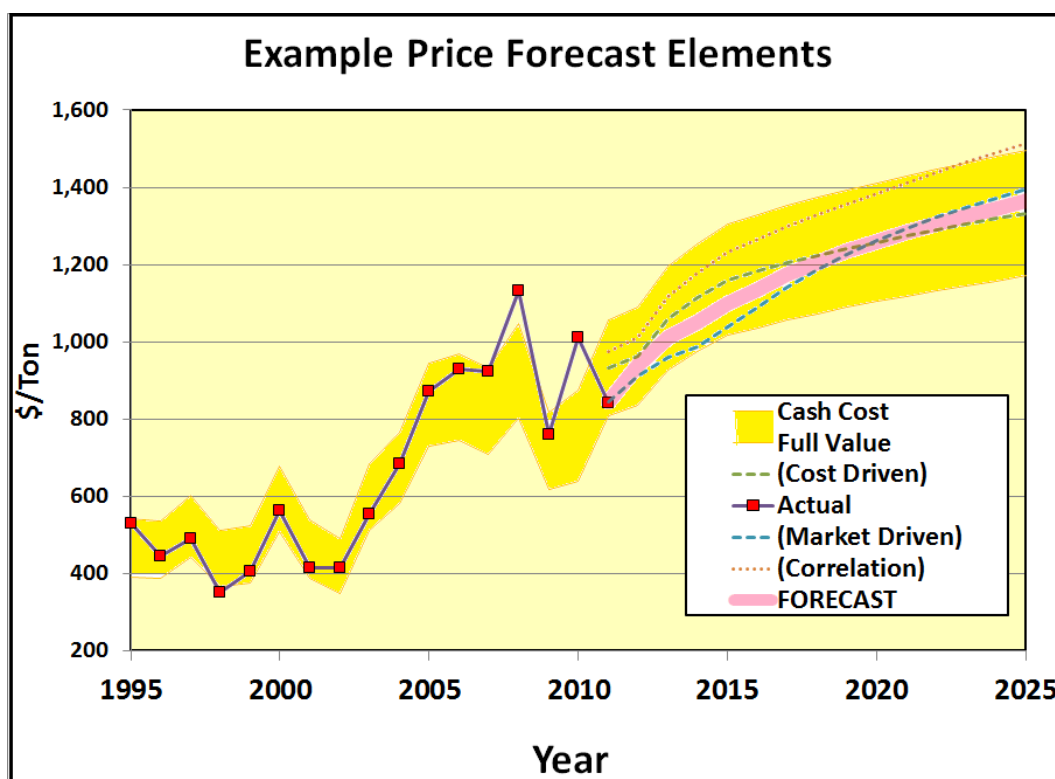
The truly unique and useful aspect of this methodology is that the new adjusted prices can then be recycled back to the start of procedure in which the initially correlated results are replaced with the market and production cost adjusted ones. These are then used to recalculate new cost of production ranges. Each such iteration will create ever more accurate projections for downstream products since their raw materials prices will now reflect both correlation and market and cost influences. The process is iterated until no further changes for any chemical occurs between subsequent iterations. The real power of such an iterative methodology is that it assures that all prices are fully consistent with all other prices. Thus, even if the absolute forecasts are somewhat inaccurate, (i.e., the starting assumptions for crude oil prices), the relative price spreads will remain logically consistent and coherent.

Relative pricing is often more important than absolute prices for understanding aspects of the business such as profitability, regional differences, trade options, and substitutability of different materials.

Additional advantages and business oriented insights accrue from the fact that the methodology automatically accommodates and compensates for short term price excursions as well as long term trends. In the short range, actual prices may exist which are outside the range of profitable returns for a chemical manufacture, but in the longer term, addition of new capacity or shut down inefficient capacity will tend to bring prices and cost plus moderately profitable return on manufacture into line.

Finally, because of the scope and magnitude of Nexant's continually developing business data knowledge base, much of the process can be automated. The burden of extensive data entry and the time for extraordinarily complex and lengthy calculations can be dramatically reduced. Typical price and cost information obtained is illustrated in the figure below, which highlights both long and short term price projection in relation to manufacturing costs that would apply under consistent macroeconomic assumptions.

Figure 1.5 Typical Price Forecast Output



Price projections obtained in this manner yield useful insights into not only the market prices, but also the relationship of actual price to the manufacturing costs and market conditions. This yields further insights into the underlying business factors and strategic implications in the respective chemical business sectors, thus providing a robust analytical tool for understanding both manufacturing and market factors for each chemical. Furthermore, since such detailed price cost and market information can be made available in such a rapid and efficient manner, such integrated, self-consistent information can be used to readily analyze a wide variety of potential economic scenarios.

### 1.1.3 Chemical Price Modeling in a High Oil Environment

The robustness of Nexant's price forecasting and its ability to rapidly provide consistent price scenarios for a very wide range of products and geographies, driven by a small number of underlying macro-economic input assumptions, allows us to investigate the change in chemical industry prices, margins and costs for many of the important petrochemicals to examine the future impact of future high oil price scenarios. High future oil prices may change the future price, and therefore, the competitiveness of some chemicals more than others. Such changes might result in significant and fundamental changes in the industry if crude prices continue to rise and remain at a high level.

Sustained higher oil prices might enhance inter-polymer substitution among the major commodity polymers. Capital intensive manufacturing processes will be impacted less than feedstock intensive processes, energy intensive processing will suffer and non-petroleum based products will be favored. Geographic price differentials might also be altered. This study highlights those differences that are likely to have the largest impact on current chemical producers or consumers.

The iterative modeling methodology guarantees that all conclusions and projections will be realistic and completely self-consistent in a manner not possible with other predictive methodologies.

## 1.2 VALUE PROPOSITION

Sustained periods of high energy and oil prices will have a significant effect on the entire chemical industry. Generally higher feedstock costs increase costs for the manufacture of most petrochemicals, which could impact profitability of the industry across the board. Even more importantly, high oil prices have been shown to have differing impacts on different chemical which will impact certain sectors of the industry more than other. In order to evaluate the impact on individual producers, it is necessary to develop the impact of costs and prices differently for each individual chemical.

By examining the price implications of higher oil prices on a large number of chemical and fuel products, this report highlights which sectors of the chemical and oil industry will be most severely altered in future environments characterized by higher oil prices. By understanding this, sensitivity chemical and oil companies can plan accordingly for changes that anticipated. Reliable indicators of the relative profitability for certain type of chemical producers or indicators of the relative competitiveness of various chemicals might help companies maximize the positive impacts and minimize the negative impacts.

Analysis of the recent trends that have already become apparent in the recent periods when oil prices have risen to \$100 per barrel or higher have already changed the relative profitability of various sectors. Refining profits have soared during these periods, while profits of many chemical producers did not fare as well. Significant changes in the relative value of gas versus petroleum based chemicals also changed the outlook for many downstream derivatives. Energy intensive product prices rose more than less energy intensive derivatives. The attractiveness of bio-based derivatives also increased. These and many other impacts of high oil prices can be expected to become even more important if the frequency or duration of oil price spikes become more features of future economic scenarios.

The study has a target completion date of Q1 2012. The pre-publication cost of the study is US\$20,000.00 (twenty thousand U.S. dollars). After publication, the price will rise to US\$25,000.00 (twenty-five thousand U.S. dollars).

This study's objective is to assess the commercial, technical, cost structure, and historical margins associated with an extended list of chemical product businesses. This study examines the impact of high oil price on future chemical prices and profitability. The effect will not be equal across all sectors of the chemical industry. This study specifically addresses the crucially important question of which sectors of the chemical industry will benefit and which will suffer if petroleum prices remain high for longer periods of time.

## **2.1 OVERVIEW**

The study pools Nexant's macroeconomic market and chemical industry knowledge gained over 45+ years of consulting to develop forecasts for the near term outlook for the global chemical industry using its highly specialized price forecasting modeling.

## **2.2 SCOPE OF WORK**

In undertaking the study, we will perform the following steps in analyzing the impact of the high crude oil prices on the global chemical industry:

- Develop two alternative scenarios for future crude oil price and medium-term global economic growths forecast for several regions for the years 2011 to 2030.
- Develop relationships between demand for each of 50 major petrochemicals based on the macroeconomic expectations of each region using Nexant's proprietary price modeling system and 10 years of historical data.
- Use the price relationships for product prices to determine which manufacturers or process may have lower margins in the high oil scenario than would otherwise have been expected in lower crude oil price scenarios.
- Independently evaluate any structural changes, substitution of one product for another or change in expected market size that may represent sectors most impacted by the higher price scenario.

The study is designed to highlight the markets, technologies and historic margins associated with the high oil prices scenarios. This will provide companies considering investment with a quantitative, as well as qualitative, base of historic information and future price projection on a large number of important chemicals to support their decision-making process.

The study will not only provide a consistent set of chemical price projections for a large number of important chemical products, it will also allow subscribers the opportunity to quickly determine and pinpoint the competitive advantages or disadvantages impact of different crude price scenarios on their specific business situation.

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Petroleum is an extremely important material for the chemical industry because it is one of the largest sources of feedstocks for almost all of the various finished products that define the chemical business sector. The basic chemical building block chemicals are often derived directly from petroleum products produced in refineries that process the crude oil into finished energy products and chemical building blocks, which are in turn, processed to form downstream derivatives with increasingly more desirable physical properties down the product chains. A large part of the economic driving force behind the chemical industry is the value added in these processing steps all along the product chains that are the backbone of the industry. The prices for the finished products and intermediates along the way and the costs for their manufacture largely determine the profit that can be extracted from the business.

It is important to understand the relative pricing and how changing economic factors alter the price relationships between the fees, materials, and products produced. This is an extremely complex problem to understand as there are so many different factors which influence the prices and profit margins.

Since crude oil prices, which had been relatively stable for many years, have risen to very high levels in more recent times, the industry is struggling to understand how significantly higher crude feedstock cost will impact the profitability of the industry. One of the consequences will be that different chemicals will be affected by different amounts, so historically stable price relationships may change.

Using Nexant's robust price forecasting modeling tool we can examine how the higher petroleum prices will alter the downstream derivative prices. We can measure the economic impact changing crude oil prices on individual chemical operations.

To utilize Nexant's price forecasting model, we must first accumulate a large amount of market data regarding supply, demand, trade, manufacturing, operations, operating costs, capital investment requirements, transportation logistics, and the historical price relationships between raw materials, energy, labor, capital, and product values that are important in determining the profit for much of the chemical industry.

The methodology that Nexant has developed over many years first takes historical relationships into account. For some materials, this is enough to project forward future trends. More often, one must consider the conflicting pressures of shortages or surpluses, manufacturing cost or product value, and other macroeconomic pressures such as economic growth, prosperity or stagnation.

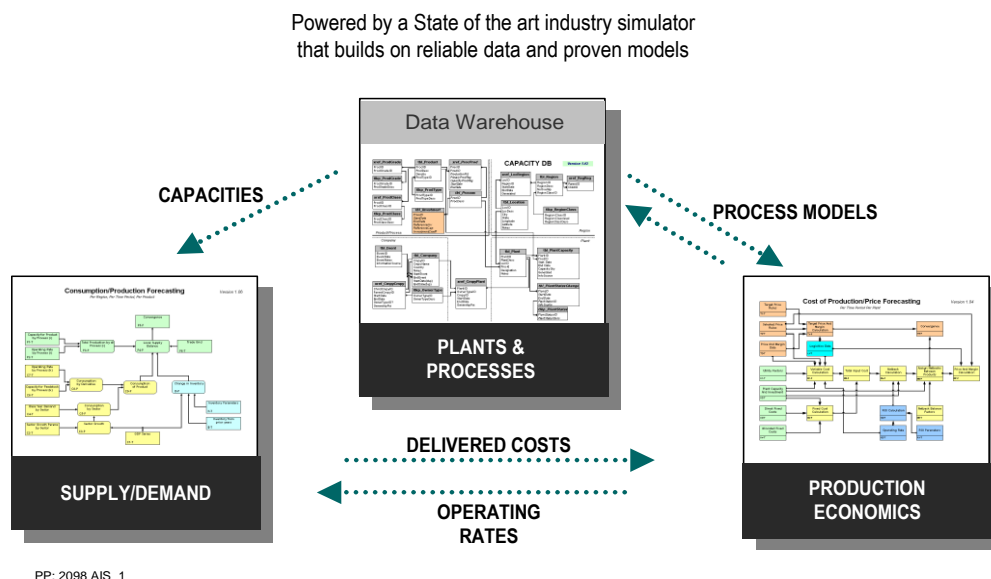
Our study compiles all the necessary information regarding market, technology and financial factors that are required for projecting future price trends. Nexant then applies different external macroeconomic input trends, including mainly the oil price scenario. When we then model the relative pricing for a large number of important feedstock, intermediate and finished product chemicals, we can then see if any permanent structural changes would be expected in a high oil price world versus a low oil price world.

Understanding the differences will allow chemical industry decision makers to make appropriate adjustments to strategies to minimize the negative effect of high oil or maximize the positive opportunities that the changing industry structure might present.

#### 4.1 NEXANT'S CHEMSYSTEMS SIMULATOR

The price forecasts developed by Nexant are generated by a comprehensive database engine that simulates global industry market dynamics, techno-economics, and profitability for all key petrochemicals. The simulator ensures a rigorous convergence on consistent sets of projections that satisfy all the influencing business rules, such as discussed in the scope. This is unique in chemical industry consulting, providing greater confidence in consistency.

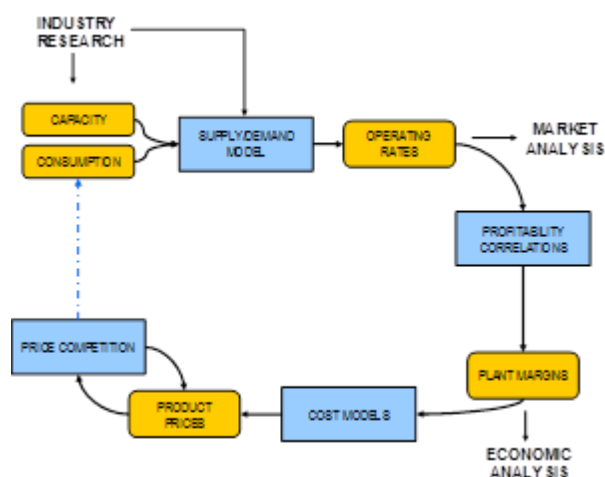
**Figure 4.1 Global Industry Simulators**



The simulation methodology utilized for this study has been reliably used to generate other offerings including *ChemSystems Online*® and the *ChemSystems Petroleum and Petrochemical Economics (PPE)* Program. The simulation model is an experience-based database running commodity petrochemical business logic algorithms to produce multi-scenario simulations of the global industry.

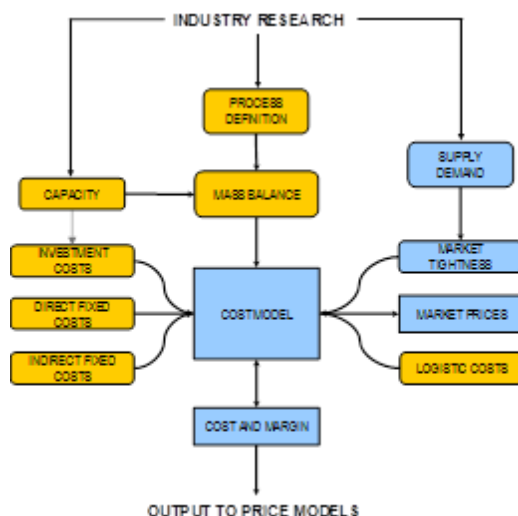
The integrated *ChemSystems Online*® Simulator simultaneously develops, as illustrated in Figure 4.2, forecasts of regional consumption, production, imports, exports and inventory changes for all commodity petrochemicals in all countries/regions.

**Figure 4.2 ChemSystems Simulator Simplified Logic Diagram**



The simulator is integrated from end-use markets back to petrochemical feedstocks. It considers inter-material competition, inter-regional price relationships, chain margins, product substitution, logistical costs and trade drivers. Costs and prices are integrated from crude oil, natural gas, and petrochemical feedstocks to downstream products. One of the functional blocks, depicted in Figure 4.2, has been expanded below (Figure 4.3) to illustrate the interconnectivity of these drivers and the complex relationships that are built into Simulator algorithms.

**Figure 4.3 ChemSystems Simulator Functional Blocks**  
(Simplified cost model logic diagram)



Nexant's *ChemSystems* simulator delivers step change improvements in market forecasting and business/corporate planning, while reducing the resources and time required to evaluate multiple hypotheses and scenarios.

The three key takeaways that this methodology now provides are:

1. The automation of combining historical correlations with up-to-the-minute market and economic information allows for extremely rapid, timely and accurate analyses and projections for a large number of petrochemical products.
2. The resultant forecasts are assured to be totally self-consistent with each other, which allows for meaningful analysis of price relationships, relative profitabilities, and comparative strategic implications for a wide cross section of chemical products, regardless of their position along the chemical supply chain.
3. Scenario evaluation, such as the evaluation of price trends as a function of crude oil price expectations covered in this study, will yield accurate and useful insights into the key strategic and competitive implications of each scenario considered.

### 5.1 NEXANT'S STRENGTHS

Nexant is well positioned to perform this type of strategic analysis. We have a 45 plus year history as a premiere industry consulting firm. The company has assisted clients in the chemical, refining and energy industries to improve their competitive position and overall business performance. The strengths of our international management consultancy reside in a multi-faceted approach that combines commercial, technological and strategic capabilities.

**Strategic Planning** - Nexant has guided clients in addressing the challenges of the business environment by evaluating and formulating formal plans and venturing into new areas.

**Process Technology/Economic Evaluation** - Nexant has evaluated refinery, chemical and polymer plant technologies and operations as well as the feasibility of many grassroots projects for global companies to help improve their competitive position, both domestically and internationally, link economic competitiveness with product compatibility and market needs, and enhance long-term project planning capabilities.

**Market and Commercial Forecasting** - Nexant's strong experience base with global companies in chemical, refining and energy industries has been applied in formulating parameters and methodologies used to identify opportunities for clients to stimulate growth and enhance competitive position. Studies on market size, growth, intermaterial competition, and new product development have been conducted for polymers, intermediates, specialty and fine chemicals, feedstocks, petrochemicals, and refinery products.

**Financial and Pricing** - Nexant has completed a number of financial projects for global companies and governments that involved a full range of advisory, valuation and due diligence activities including industry/business analysis, cash flow and margin projections, model development, and project feasibility analysis.

Nexant is eminently qualified for this assignment by virtue of:

- Long experience with similarly challenging finance, technical, and market assignments involving many diverse facilities in multinational locations
- Extensive work for clients in America, Europe, and Asia
- Knowledge of and experience with chemicals, petrochemicals, natural gas-based chemicals, specialty and performance chemicals, organic and inorganic chemicals, and bio-based technology and businesses
- A global, experienced staff of chemical engineers and chemists

## 5.2 BACKGROUND

Nexant was established on January, 2000 and prior to that date, the staff of Nexant operated as a separate consulting group within a major engineering company. Nexant is now an independent company owned by a number of investors. Nexant acquired ChemSystems, Inc. on September 1, 2001, and the combined entity ("Nexant") now has access to even more enriched and extensive experience and resources, offering services that include:

- Master planning/feasibility studies
- Technology evaluation
- Techno-economic and commercial analyses
- Financial evaluation (cash flow modeling, etc.)
- Benchmarking
- Monitoring project implementation

Nexant is very well qualified to undertake the technical, commercial, economic and financial evaluations, from its own offices, without the need to subcontract. Owing to its extensive experience, and known for its "out-of-the-box" thinking, Nexant's *ChemSystems* Group has also received the honorable award of "**Best Large Consultancy**" by the British Consultants and Construction Bureau. This award was contended by a number of companies; however, Nexant was judged the winner for its outstanding contribution in developing a real-time, on-line chemical industry simulator. Nexant's *ChemSystems* Group is now part of Nexant's Energy & Chemical Consulting (E&CC) division.

## 5.3 DESCRIPTION OF SERVICES

Nexant is a specialist, not a generalist company. Areas of expertise for the E&CC Division (of which the ChemSystems Products are a part) are the energy and process industries, including oil refining, natural gas, petrochemicals, polymers, chemicals, pharmaceuticals and fertilizers. Our business has been built upon providing broad management consultancy services to leading companies active in these industries, and also to banks, suppliers, governments and others interested in these sectors.

Nexant's strengths lie in its combination of techno-economic, commercial and strategic capabilities. These "competencies" are described below, followed by an outline of the practice areas into which the E&CC Division is organized.

### 5.3.1 Technology/Economics

From its foundation in chemical engineering and industrial chemistry, Nexant offers distinctive expertise in process technology and economic analysis. Assignments may be performed on a separate, stand-alone basis or as input to broader consulting engagements.

Services include:

- Economic and Financial Analyses of Projects or Businesses
- Valuation of Assets or Businesses
- Technical Audit of Existing Facilities
- Project Feasibility/Planning
- Technology Innovation and Assessment
- Comparative/Competitive Technology Audit and Appraisal
- Process Design and Cost Estimation
- Technology Availability, Screening, Licensing Arrangements
- Contractor Pre-Qualification, Evaluation and Selection
- Project Management Including Resident Advisory Services
- Price, Margin, and Profitability Forecasting

This discipline is supported by comprehensive economics, cost and price databases.

### 5.3.2 Commercial

Based upon a technical and commercial understanding of the industries we serve, Nexant supports clients through a variety of market and commercial activities. As with our techno-economic work, these commercial assignments may be performed on a stand-alone basis, but are more normally an input to broader consulting engagements.

Services include:

- Feedstock and Product Market Analysis
- Marketing And Market Research
- Supply/Demand Analysis and Forecasting
- Studies of Trends and Future Markets
- "Benchmarking" of Costs and Competitiveness
- Medium and Long Range Planning

The commercial discipline is supported by databases of global supply, demand, and capacity developments in all major petrochemicals.

## 5.4 STRATEGIC PLANNING

Industry specific expertise and an understanding of world market forces distinguish Nexant's work in Strategic Planning. Various innovative tools and methodologies tailored to the energy and process areas are used to challenge conventional thinking. Nexant extends its traditional project team approach to engaging clients directly in the Strategic Planning process. Interactive client consultant relationships promote consensus, a critical factor for successfully developing pragmatic, implementable solutions.

Services include:

- Definition of Corporate and Business Visions
- Portfolio Planning
- Entry Strategy Evaluation
- Diversification, Acquisition, Divestment Studies
- Competitive Analysis and Business Positioning
- Global Competitiveness
- Trade Flow and Impact Studies

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## 6.2 AUTHORIZATION FORM, TERMS AND CONDITIONS

### Subscription Terms and Conditions

1. The undersigned (hereafter "Client") hereby subscribes to purchase from Nexant, Inc. ("Nexant"), Nexant's study, ***"Price, Margins, and Costs in an Era of High Oil Prices"*** (The "Subscribed Report"), in accordance with the following terms and conditions.

Nexant will provide to Client the following information and services:

(a) Access to electronic downloads of the report via a password-protected area from the web site, [www.chemsystems.com](http://www.chemsystems.com). Nexant will provide users of the service with a user name and password. Subscriber will inform Nexant if any of its employees who are registered users leave Subscriber's employment.

(b) One (1) bound paper copy of each Subscribed Report on publication.

2. While the Subscribed Report will represent an original effort by Nexant based on its own research, it is understood that portions of the Subscribed Report will involve the collection of information from third parties, both published and unpublished. Nexant does not believe that the Subscribed Report will contain any confidential technical information of third parties. Nexant does not warrant the accuracy or completeness of information.

3. The information disclosed in the Subscribed Report and the terms of this Agreement will be retained by Client for the sole and confidential use of Client and its 51 percent or greater owned affiliates except those parents or affiliates which are engaged in the business of marketing research, management consulting, or publishing or are subsidiaries of such firms (Permitted Subscribers). However, the Permitted Subscribers may use said information in their own research and commercial activities, including loaning the data on a confidential basis to third parties for temporary and specific use for the sole benefit of Subscriber. It is the responsibility of Client to notify Nexant of 51 percent or greater owned affiliates requiring access to the Subscribed Report. Breach of this covenant of use shall entitle Nexant to terminate this Agreement immediately with no obligation to return any portion of the Subscription Fee.

4. Client further agrees that it will use reasonable efforts to keep the Subscribed Report for its sole use; however, this restriction shall not apply to information which is or becomes generally available to the public in a printed publication, which is already in the possession of Client, or which is received by Client in good faith from a third party without an obligation of confidentiality.

5. Client shall not republish all or any portion of the Subscribed Report. Client further agrees to refrain from any dissemination of the Subscribed Report, either directly or through its subsidiaries and affiliates, so as to constitute passage of title into the public domain or otherwise jeopardize common law or statutory copyright in said Subscribed Report.

6. The Subscribed Report is delivered, inter alia, via the Internet. The Agreement does not include provision of hardware or software to allow Client employees to view the Internet sites, download data, etc. The software requirements include an Internet browser (Netscape 4.7 or higher or Microsoft Internet Explorer IE version 5.0 or higher). Some changes to the configuration of the user's browser, and windows control panel, may be required for optimal use of the products. The web site that houses the products uses software including Flash Plug-in version 4.0 or higher and may pass applets to the user. Client firewall restrictions may inhibit access to Subscribed Report or the performance of the products. Nexant is not responsible for restrictions to use of the Subscribed Report imposed by Client firewall(s).

7. There are no warranties of any kind for the Subscribed Report provided under this Agreement and there shall be no liability for consequential or indirect damages. Nexant's entire liability under this Agreement is limited to the total amount paid to Nexant for the services.

8. Nexant does not accept responsibility for the accuracy of the information in the Subscribed Report. Client is responsible for use of the information contained in the Subscribed Report and Nexant will not be responsible for any reliance Client places on the contents thereof.

9. A person who is not a party to this Agreement shall have no right to enforce any of its terms.

10. By signing the Authorization, Nexant and Client agree that the Proposed Table of Contents, Authorization and Terms and Conditions represent the complete agreement between them regarding the Subscribed Report. No change, modification, extension, termination or waiver of this Agreement, or any of the provision herein, shall be valid unless made in writing and signed by duly authorized representatives of the parties.

11. This Agreement and the relationship between the parties shall be governed by and interpreted in accordance with the laws of the state of New York, United States of America.

12. Upon authorization, Client will be billed by and shall pay to Nexant a total of US\$20,000.00 (twenty thousand U.S. dollars). Client shall be invoiced the full Subscription Fee upon signature of this Agreement. Amounts are due upon receipt of invoice and payable within thirty (30) days. If payment is not made within 30 days from the date of invoice, Client will be subject to late payment charges. Such charges will be calculated at a monthly rate of 1.5 percent of the invoice amount, compounded for each period or part period of 30 days that the invoice remains unpaid. Fees quoted do not include any applicable sales tax, or use or value added tax, all of which are for the account of Client.

## Authorization Form

If the foregoing terms are acceptable, please sign below to confirm subscriber's agreement and return to Nexant.

### AUTHORIZATION

#### AGREED TO AND ACCEPTED:

**SUBSCRIBER:** .....

Name: .....

Title: .....

Address: .....

.....

.....

Phone: .....

Fax: .....

Email: .....

Date: .....

Signature: .....

#### AGREED TO AND ACCEPTED:

**NEXANT, INC.**

Name: .....

Title: .....

Address: .....

.....

.....

Phone: .....

Fax: .....

Email: .....

Date: .....

Signature: .....

**Price, Margins, and Costs in an Era of High Oil Prices**

US\$20,000 .00

Extra hard copies of the report are available at US\$500.00 each

US\$\_\_\_\_\_ number of extra copies

Total amount

US\$\_\_\_\_\_

We shall pay Nexant, Inc. the applicable fee stated above plus applicable taxes (including but not limited to VAT, withholding tax and any other applicable deductions).

If your company requires a purchase order number, please provide the number below:

Purchase Order Number: \_\_\_\_\_

NEXANT, INC., *ChemSystems* Products  
44 SOUTH BROADWAY, 4th Floor  
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FAX: 1-914-609-0399

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