

Process Evaluation/ Research Planning

Get the Competitive Edge

CHEMSYSTEMS Return on Analysis

2009/2010 PERP Program

Prospectus

www.chemsystems.com

CHEMSYSTEMS®

PROSPECTUS January 2011

Process Evaluation/ Research Planning 2009/2010 PERP Program

44 South Broadway, 4th Floor, White Plains, NY 10601-4425, U.S.A.
tel: + 1-914-609-0300, **fax:** + 1-914-609-0399

Nexant®, ChemSystems® and ChemSystems Online® are registered trade marks of Nexant, Inc.

CHEMSYSTEMS – a brand owned by Nexant, Inc. that provides support to decision makers in the petroleum, chemical and petrochemical industries

CONTENTS

SECTION	PAGE
1 Introduction to the Program	1
2 Value of the Program	2
3 Scope of the Program	3
4 Detailed Description of the Program	4
5 Costs and Subscription	5

APPENDIX	PAGE
A Subscription Terms and Conditions	6
B Contact Details	8
C Illustrative Table of Contents, Propylene Oxide (07/08-6)	9
D Illustrative Tables and Figures	13
E PERP Program Listings	16
F PERP Program 10-Year Title Index, 2000/2001 – 2009/2010	23
G Partial List of Clients	27

SECTION 1.



Introduction to the Program

The ChemSystems Process Evaluation/Research Planning (PERP) Program is a multi-client service that provides, by way of periodic reports, an analysis of technological and commercial trends and developments in areas of interest to the chemical and allied industries. Our PERP program is entering its 38th year of publication and is recognized globally as the industry standard source for information relevant to the chemical process and refining industries.

Our PERP program examines existing, developing, and embryonic technologies with emphasis on:

- Updates on major petrochemicals and polymers
- Early identification of commercially significant developments for these products
- Recognition of opportunities for new products and for innovative processes
- Realistic, commercially oriented economic evaluations
- Determination of the potential impact of R&D breakthroughs

In addition, our PERP reports cover:

- Strategic assessments
- Trends in chemical technology
- Process economics (new versus conventional technology)
- Process design
 - chemistry
 - process descriptions
 - flow diagrams
- Markets for new as well as established products
- Product applications
- Regulatory issues
- Regional supply/demand forecasts
- Regional capital listings by company

SECTION 2.



Value of the Program

Our PERP Program is unique in that it provides clients with process, techno-economic, and market information useful in both research and business planning. This information is used by clients for:

Identification of Opportunities

An early awareness of the significance of new technological developments is key to a company's planning activities. Our PERP reports pinpoint recent developments that clients and our staff believe are important, and then place these developments in an economic context. This provides clients with a reliable and readily accessible source of data for consistent analyses of new developments.

Project Planning

Companies considering new investment decisions will find our PERP reports useful as a basis for commercially realistic investment and operating data.

Process Research

Our PERP program is designed to aid effective research planning by making client companies aware, to the maximum extent possible, of other companies' technology development efforts and of the true current and future economics of new and existing processes.

Process Evaluations

Many types of companies, including operating companies, contractors, refiners, specialty and performance chemical manufacturers, find it essential to have reliable information available on the leading processes for making important chemicals. Our PERP Program contributions contain reliable data that has been acknowledged for over 37 years.

SECTION 3.



Scope of the Program

The structure and scope of our PERP program is designed to provide useful information to research planning and monitoring personnel on a variety of polymers, petrochemicals, commodity, specialty, and performance chemicals, as well as other topics of relevance to the chemical industry.

Two types of reports are published: Petrochemical Updates and Special Reports. Petrochemical Updates are designed to give state-of-the-art, up-to-date information on major petrochemicals and polymers. Emphasis is placed on existing commercial technology with information derived from licensors, literature, and non-confidential operating company data. The reports also cover new developments in the field. Each report contains an extensive commercial section, updating the latest application developments, supply/demand balances and regulatory issues. Strategic assessments, tying together the technical and commercial issues, are also discussed.

The Special Reports cover a variety of topics including new process technology, specialties, advanced materials, waste treatment, engineering advances. Subjects are chosen based on clients' requests and our review of literature and the industry. These reports provide a valuable insight into areas of economic value. As with the Petrochemical Updates, Special Reports cover both technology and the commercial picture.

A typical PERP format for a Special Report includes a discussion of the chemistry of the topic. Process designs and flowsheets based on the best available information are developed for the new technology and generally for the conventional technology against which it may compete. Economic projections for each are compared. The effects of changing raw material prices on the economics are estimated. The existing and potential markets are surveyed, usually on a tri-regional basis.

The table of contents for a recent PERP report is reproduced in Appendix C to illustrate the type of coverage provided. Appendix D contains an example of a cost of production table which is developed for these reports as well as typical plots relevant to process economics. A process flow diagram is also shown.

Titles of our reports from the 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, and 2009/2010 programs are given in Appendix F. An alphabetized list of titles, by keyword, of PERP reports published in the 2000/2001 – 2009/2010 programs is included to illustrate the breadth of our program (Appendix E).

SECTION 4.



Detailed Description of the Program

Our PERP Program for 2009/2010 will provide:

- Reports on advances in the technology, updates of current economics, strategic issues and market information for the major petrochemicals listed below:
 - Caprolactam
 - Acrylonitrile
 - HDPE
 - Phenol/Acetone/Cumene
 - Butadiene/Butylenes
 - Terephthalic Acid
 - Polycarbonate
 - Xylenes
- Twelve Special Reports, which cover technical and economic analyses of recent technical or commercial developments. The topics are chosen as the year progresses based on client input and searches of the patent, technical and commercial literature, as well as client suggestions. Subjects covered include polymers, specialty chemicals, fine chemicals, commodities, advanced materials, and chemical engineering. Conceptual process designs are developed for the new technology and for the conventional technology against which it may compete. Economic projections for each are compared. New clients may substitute any of the earlier reports for those published in this series. (See Appendices E and F.)

Tri-regional (North America, Western Europe, Japan) supply/demand information will be provided for certain of the products involved. Other countries may be included when pertinent.

SECTION 5.



Costs and Subscription

Subscription prices are for an annual company subscription to our PERP program. The standard subscription includes one paper copy of each PERP report and unlimited downloads of electronic reports from the www.chemsystems.com web site. Subscription prices are in U.S. dollars and are invoiced upon authorization. PERP subscriptions include:

- Consulting services (two man-days per year) of a Nexant consultant on subjects of interest to clients. Travel and living expenses, if applicable, will be reimbursed by the client at cost.
- Admission for up to five of client's employees at Nexant's *ChemSystems* training courses at a special rate, discounted from the public offering rate, to be advised by Nexant in advance of each course. Client will be responsible for all living and travel expenses of client's attendees.
- Special client price for previously published reports.
- The price for the 2009/2010 program year is US\$42,000.00.

The reports will be published individually in a hard-cover binding suitable for permanent storage.

One copy of each of the reports issued during the year is supplied. A complete extra set of reports may be purchased for US\$2,000.00. Additional copies of reports are available at the reproduction and handling cost of US\$250.00 per copy. Copies may be sent to different locations at the request of the client.

- Unlimited downloads of soft copies of all reports via a password-protected area within www.chemsystems.com are permitted at no extra cost.

Subscription Terms and Conditions

1. The undersigned (hereafter "Subscriber") hereby subscribes to purchase from Nexant, Inc. ("Nexant"), the *ChemSystems* Process Evaluation/Research Planning (PERP) Program for the 2009/2010 program year ("the Program"), in accordance with the following terms and conditions.

Nexant will provide to Subscriber the following information and services in connection with the Program (collectively, the "Program Information"):

 - (a) Eight Petrochemical Updates, identified below, which review current technology, trends, and market conditions for the following products:
 - Caprolactam
 - Acrylonitrile
 - HDPE
 - Phenol/Acetone/Cumene
 - Butadiene/Butylenes
 - Terephthalic Acid
 - Polycarbonates
 - Xylenes
 - (b) Twelve reports prepared by Nexant covering selected fields including polymers, specialty chemicals, fine chemicals, commodities, advanced materials, and advances in chemical engineering procedures.
 - (c) Consulting services of a Nexant consultant for up to a total of two man-days. Travel and living expenses, if applicable, will be reimbursed by Subscriber to Nexant at cost within thirty days of submission of a written notice.
 - (d) Admission for up to five of Subscriber's employees at each of Nexant's Annual Petrochemical Seminars in the United States and Western Europe at a special rate, discounted from the public offering rate, to be advised by Nexant in advance of each seminar. Subscriber will be responsible for all living and travel expenses of Subscriber's attendees.
2. While the information supplied by Nexant to Subscriber in connection with the Program will represent an original effort by Nexant, based on its own research, it is understood that portions of the reports will involve the collection of information available from third parties, both published and unpublished. Nexant does not believe that such information will contain any confidential technical information of third parties but cannot provide any assurance that any third party may, from time to time, claim a confidential obligation to such information.
3. The Program information will be retained by Subscriber for the sole and confidential use of Subscriber and its 51 percent or greater owned affiliates in their own research and commercial activities, including loaning the reports on a confidential basis to third parties for temporary and specific use for the sole benefit of Subscriber.
4. Subscriber further agrees that it will use reasonable efforts to keep the Program Information in the reports 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 Subscriber, or which is received by Subscriber in good faith from a third party without an obligation of confidentiality.
5. Subscriber shall not republish any of the report except within its own organization or that of its 51 percent or greater owned affiliates. Subscriber further agrees to refrain from any general publication of the Program Information, either directly or through its affiliates, so as to constitute passage of title into the public domain or otherwise jeopardize common law or statutory copyright in the Program Information.
6. In consideration of the Program Information, Subscriber will be billed by and shall pay to Nexant a total subscription fee of US\$42,000.00 (forty-two thousand U.S. dollars). Subscriber shall have the option of being invoiced the total amount upon signing this Subscription Agreement or in two equal installments, one upon signing this Subscription Agreement and the second six months later. Amounts are due upon receipt of invoice and payable within thirty (30) days. Late payments shall accrue interest at the rate of 1.5% per month. Fees quoted do not include any applicable sales tax, or use or value added tax, all of which are for the account of Subscriber.
7. Subscriber shall receive one (1) hard-cover bound copy of each 2009/2010 program report and access to electronic downloads of each 2009/2010 program report via a password-protected area from www.chemsystems.com. All rights and limitations described above apply equally to hard copy and electronic versions of the reports. Additional copies of any 2009/2010 Program hard-cover bound report can be obtained by Subscriber at US\$250.00 each. An additional full set of hard-cover bound reports for the 2009/2010 Program Year can be obtained for US\$2,000.00.
8. Unless specified otherwise, there are no warranties of any kind for reports and consulting services provided under this Agreement. Nexant's total liability under this Agreement is limited to the total amount paid to Nexant for the reports.
9. This Agreement will be governed by the laws of the State of New York, United States of America.

Contact Details

AMERICAS

Nexant, Inc.

44 South Broadway
White Plains, NY 10601-4425
U.S.A.

Attn: Ms. Heidi Junker Coleman
Multi-client Programs Administrator
Tel: + 1-914-609-0381
Fax: + 1-914-609-0399
e-mail: hcoleman@nexant.com

EUROPE

Nexant Ltd.

Griffin House
161 Hammersmith Road
London, W6 8BS
United Kingdom

Attn: Dr. Alexander Coker
Manager, PERP Program
Tel: + 44-(20)-7950-1570
Fax: + 44-(20)-7950-1550
Email: acoker@nexant.com

ASIA

Nexant Asia Ltd

22nd Floor, Rasa Tower 1
555 Phahonyothin Road
Kwaeng Chatuchak, Khet Chatuchak
Bangkok 10900
Thailand

Attn: Mr. Andrew Spiers
Senior Vice President
Tel: + 66-2-793-4618
Fax: + 66-2-937-0144
Email: aspiers@nexant.com

TOKYO

Nexant, Inc. - Japan

Yoshida Building 7F
1-2-2 Hirakawa-cho, Chiyoda-ku
Tokyo 102-0093
Japan

Attn: Mr. Ko Matsushita
Associate
Tel: + 81-3-3237-3383
Fax: + 81-3-5212-1708
Email: kmatsushita@nexant.com

Illustrative Table of Contents

Propylene Oxide (07/08-6)

APPENDIX C.

Section	Page
1 Executive Summary	1
1.1 INTRODUCTION	1
1.2 CHLOROHYDRIN PROCESS	2
1.3 ETHYLBENZENE HYDROPEROXIDE WITH STYRENE CO-PRODUCT (POSM)	5
1.4 CUMENE HYDROPEROXIDE WITHOUT CO-PRODUCT	9
1.5 EPOXIDATION WITH HYDROGEN PEROXIDE	14
1.6 ECONOMIC ANALYSIS	17
1.7 COMMERCIAL	19
1.7.1 United States	19
1.7.2 Western Europe	20
1.7.3 Asia Pacific	21
2 Conventional Technology	23
2.1 INTRODUCTION	23
2.2 CHLOROHYDRIN INTEGRATED WITH CHLOR-ALKALI	24
2.2.1 Chemistry	24
2.2.2 Process Description	26
2.3 NON-INTEGRATED CHLOROHYDRIN PLANT	30
2.4 ETHYLBENZENE HYDROPEROXIDE WITH STYRENE CO-PRODUCT	31
2.4.1 Chemistry	31
2.4.2 Process Description	34
2.5 CUMENE HYDROPEROXIDE WITHOUT CO-PRODUCT	38
2.5.1 Chemistry	38
2.5.2 Process Description	43
2.6 EPOXIDATION WITH HYDROGEN PEROXIDE	48
2.6.1 Chemistry	49
2.6.2 Dow Patent	50
2.6.3 Degussa/Uhde Patents	52
2.6.4 Process Description	53
2.7 PROPERTIES, STORAGE, AND HANDLING	56
2.8 HEALTH AND SAFETY	58
3 Developing Technology	59
3.1 SUMMARY OF PROPYLENE OXIDE PATENT ACTIVITY	59
3.2 BASF	60
3.1 DEGUSSA/UHDE	62
3.2 DOW	63
3.1 LYONDELL	64
3.2 SHELL	67
3.1 SUMITOMO	68
3.2 OTHER	70

4	Economic Analysis	71
4.1	BASIS	71
4.1.1	Pricing Basis	71
4.1.2	Investment Basis	72
4.1.3	Cost of Production Basis	72
4.2	ECONOMIC ANALYSIS	73
4.2.1	Hydrogen Peroxide-Based Propylene Oxide (HPPO)	73
4.2.2	Chlorohydrin (CHPO)	75
4.2.3	POSM	75
4.2.4	Sumitomo's Cumene Hydroperoxide Process	75
4.2.5	Summary	80
4.3	SNSITIVITY ANALYSIS	81
4.3.1	Pricing	81
4.3.2	Capital Investment	85
4.3.3	Economy of Scale	86
5	Commercial Analysis	88
5.1	APPLICATIONS	88
5.2	UNITED STATES	90
5.2.1	Consumption	90
5.2.2	Supply	90
5.2.3	Supply, Demand, and Trade	91
5.3	WESTERN EUROPE	92
5.3.1	Consumption	92
5.3.2	Supply	93
5.3.3	Supply, Demand, and Trade	93
5.4	ASIA PACIFIC	94
5.4.1	Consumption	94
5.4.3	Supply	94
5.4.3	Supply, Demand and Trade	96
Appendix		Page
A	List of Acronyms and Abbreviations	A-1
B	Nexant's <i>ChemSystems</i> Capital Cost Estimates	B-1
C	PERP Title Index	C-1

Figure		Page
1.1	Propylene Oxide Capacity Share by Technology, 2008	1
1.2	Summary of PO Economics – (400 kta, USGC, first quarter 2008)	17
1.3	Summary of PO Economics, 5-year Average versus First Quarter 2008 (400 kta), USGC	18
1.4	United States Propylene Oxide Consumption, 2007	19
1.5	West European Propylene Oxide Consumption, 2007	20
2.1	Propylene Oxide Capacity Share by Technology, 2008	23
3.1	Propylene Oxide Patent Activity	59
3.2	Block Flow Diagram for U.S. Patent 7,173,143	61
4.1	Summary of PO Economics	80
4.2	Propylene Price History	81
4.3	Sensitivity of PO Economics to Propylene Price	82
4.4	Sensitivity of PO Economics to Hydrogen Peroxide Price	82
4.5	Styrene Price History	83
4.6	Sensitivity of PO Economics to Styrene Price	84
4.7	Summary of PO Economics – 5-year Average versus First Quarter 2008 (400 kta, USGC)	85
4.8	Sensitivity of PO Economics to Capital Investment	86
4.9	Sensitivity of PO Economics to Economy of Scale	87
5.1	Propylene Oxide Industry Structure Overview	89
5.2	United States Propylene Oxide Consumption, 2007	90
5.3	West European Propylene Oxide Consumption, 2007	92

Table	Page	
1.1	Selectivity in Ethylbenzene Oxidation	6
1.2	Comparison of Hydroperoxidation Parameters	12
1.3	ISBL Capital Buildup – Propylene Oxide	17
1.4	North American Propylene Oxide Supply, Demand, and Trade	20
1.5	West European Propylene Oxide Supply, Demand, and Trade	21
1.6	Asia Pacific Propylene Oxide Supply, Demand, and Trade	22
2.1	Aqueous Effluent	31
2.2	Selectivity in Ethylbenzene Oxidation	32
4.1	Feedstock and Byproduct Prices	71
4.2	ISBL Capital Buildup – Propylene Oxide	73
4.3	Cost of Production Estimate for: Propylene Oxide Process: BASF-Dow HPPO	74
4.4	Cost of Production Estimate for: Propylene Oxide Process: Chlorohydrin (Integrated with Chloro-alkali)	76
4.5	Cost of Production Estimate for: Propylene Oxide Process: Chlorohydrin (Non Integrated with Chloro-alkali)	77
4.6	Cost of Production Estimate for: Propylene Oxide Process: POSM	78
4.7	Cost of Production Estimate for: Propylene Oxide Process: Sumitomo Cumene Hydroperoxide	79
5.1	U.S. Propylene Oxide Capacity, 2007	91
5.2	North American Propylene Oxide Supply, Demand, and Trade	92
5.3	West European Propylene Oxide Capacity, 2007	93
5.4	West European Propylene Oxide Supply, Demand, and Trade	94
5.5	Asia Pacific Propylene Oxide Capacity, 2007	96
5.6	Asia Pacific Propylene Oxide Supply, Demand and Trade	97

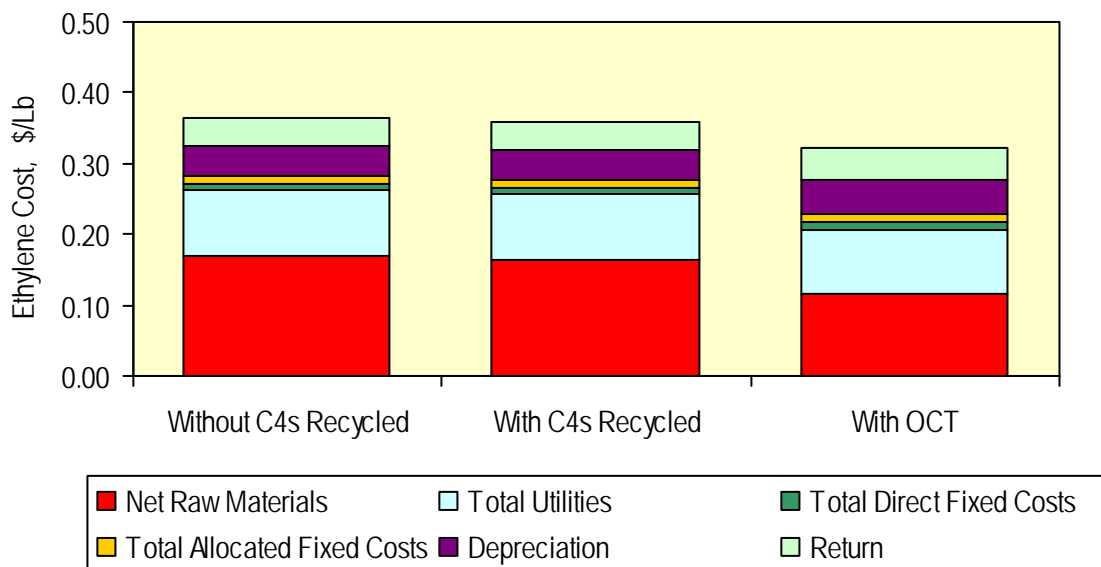
Illustrative Tables and Figures

**Table D.1 Cost of Production Estimate for: Styrene
Process: Catalytic Dehydrogenation**

		CAPITAL COST			MILLION U.S. \$		
Plant Start-up	1Q2008			ISBL		102.6	
Analysis Date	1Q2008			OSBL		46.2	
Location	USGC			Total Plant Capital		148.7	
Effective Capacity	1,600.0 Million Pounds/Yr			Other Project Costs		37.2	
	725.8 Thousand Metric Tons/Yr			Total Project Investment		185.9	
Operating Rate	100 Percent			Working Capital		128.0	
Throughput	1,600.0 Million Pounds/Yr			Total Capital Employed		313.9	
PRODUCTION COST SUMMARY							
				UNITS	PRICE		ANNUAL
				Per Lb	U.S. \$		COST MM
				Product	/Unit	Per Lb	U.S. \$
							Per MT
RAW MATERIALS	Ethylbenzene (10% ROCE)	Lb	1.0511	0.6319	0.6642	1,062.72	
	Catalysts & Chemicals	U.S.\$	1.0000	0.0035	0.0035	5.60	
					0.6677	1,068.32	1,472.0
BYPRODUCT CREDITS	Benzene	Lb	0.0040	0.5942	(0.0024)	(3.80)	
	Toluene	Lb	0.0170	0.5024	(0.0085)	(13.67)	
					(0.0109)	(17.47)	(24.1)
					0.6568	1,050.85	1,447.9
	NET RAW MATERIALS						
UTILITIES	Power (Purchased)	kWh	0.0118	0.0724	0.0009	1.37	
	Cooling Water	M Gal	0.0112	0.1235	0.0014	2.20	
	Steam (Gas), 600 psig	M Lb	0.0008	16.1587	0.0121	19.39	
	Steam (Gas), 200 psig	M Lb	0.0001	14.3339	0.0016	2.52	
	Steam (Gas), 50 psig	M Lb	0.0023	14.1105	0.0323	51.70	
	Fuel Gas	MMBtu	0.0001	9.3233	0.0013	2.09	
					0.0495	79.27	109.2
	NET RAW MATERIALS & UTILITIES				0.7063	1,130.12	1,557.2
	VARIABLE COST					0.7063	1,130.12
							1,557.2
DIRECT FIXED COSTS	Operators,	15.0 Men	47.04	Thousand	U.S. \$	0.0004	0.71
	Foremen,	3.0 Men	53.40	Thousand	U.S. \$	0.0001	0.16
	Supervisors,	1.0 Men	64.44	Thousand	U.S. \$	0.0000	0.06
	Maintenance, Material & Labor		4.00	% of ISBL		0.0026	4.10
	Direct Overhead		45.0	Labor & Supervision		0.0003	0.42
						0.0034	5.45
	TOTAL DIRECT FIXED COSTS					0.0020	3.27
ALLOCATED FIXED COSTS	General Plant Overhead		60.0	Direct Fixed Costs		0.0009	1.49
	Insurance, Property Tax		1.0	Total Plant Capital		0.0030	4.76
						0.7127	1,140.33
	TOTAL ALLOCATED FIXED COSTS						1,571.2
	CASH COST						
	Depreciation @	10.0 % for ISBL & OPC	5.0	% for OSBL	0.0102	16.28	22.4
	COST OF PRODUCTION					0.7229	1,156.61
	Return on Total Capital Employed (Incl. WC) @		10.0	Percent	0.0196	31.39	43.3
	COST OF PRODUCTION + ROCE					0.7425	1,188.00
							1,636.9

O109_00101.0008.4104-tables.xls/T5.6

Figure D.1 Ethylene Cost of Production – C₄ Cracking Options
(USGC, second quarter 2006)



C:\Q406_00101.0006.4112_Charts.xls\F4.2

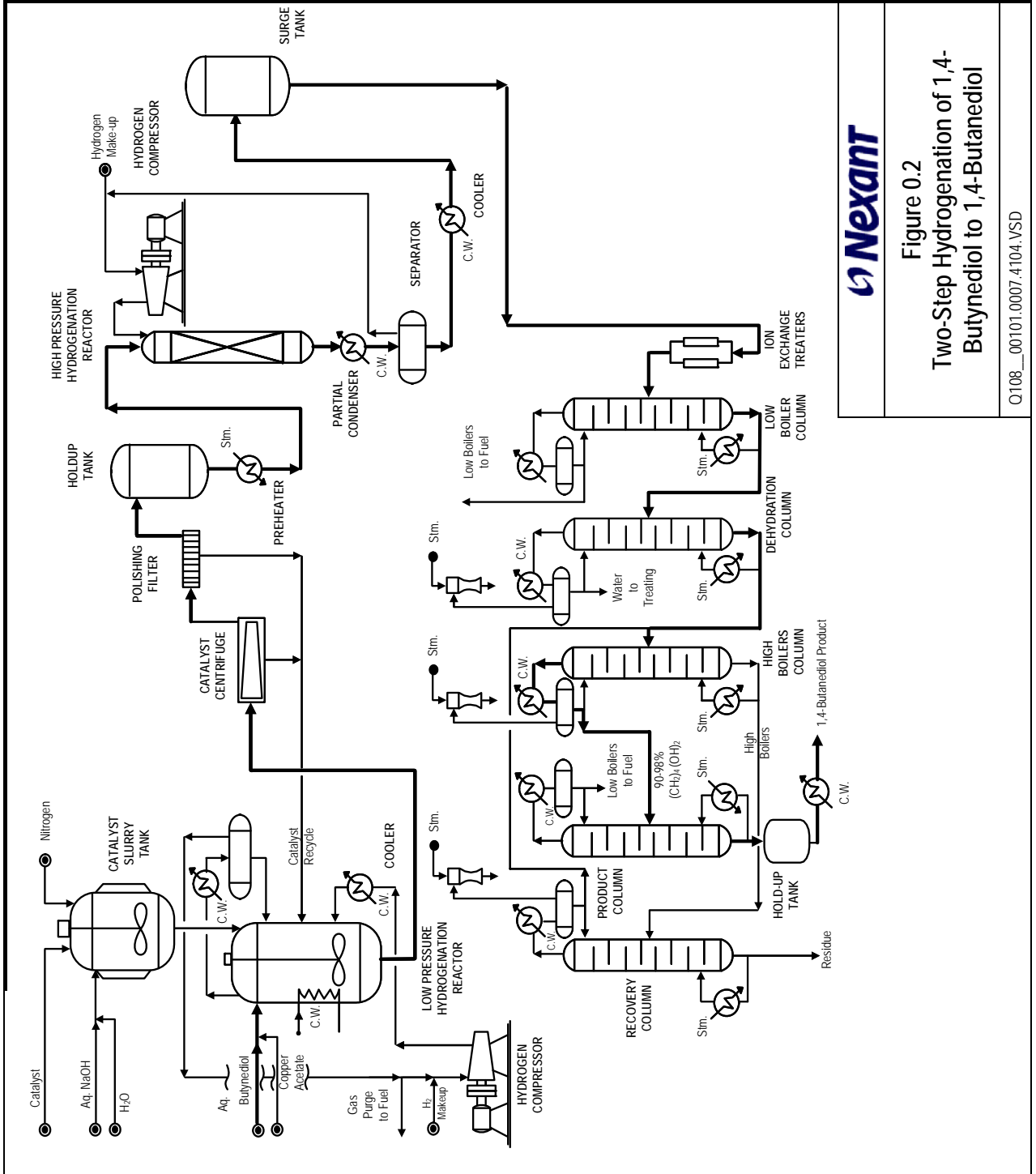


Figure 0.2
Two-Step Hydrogenation of 1,4-
Butanediol to 1,4-Butanediol

C108_00101.0007.4.104.VSD

PERP Program Listings

2009/2010 PERP PROGRAM

PETROCHEMICAL UPDATES

Publication Date

09/10-1	Caprolactam
09/10-2	Acrylonitrile
09/10-3	HDPE
09/10-4	Phenol/Acetone/Cumene
09/10-5	Butadiene/Butylenes
09/10-6	Terephthalic Acid
09/10-7	Polycarbonate
09/10-8	Xylenes

SPECIAL REPORTS

09/10S1	Epichlorohydrin
09/10S2	Safety in the Chemical and Refining Industry
09/10S3	Coal Bed Methane
09/10S4	Biobased Commodity Feedstocks
09/10S5	Phosphate and NPK Fertilizers
09/10S6	Catalytic Processing of Crude Residue
09/10S7	Acrylic Fiber
09/10S8	"Green" Glycols and Polyols
09/10S9	Cyclic Olefin Copolymers
09/10S10	Non-Sequestration Utilization Options for CO ₂
09/10S11	Carbon Monoxide
09/10S12	Renewable Liquids as Steam Cracker Feedstocks

2008/2009 PERP PROGRAM**PETROCHEMICAL UPDATES****Publication Date**

08/09-1	LDPE	December 2009
08/09-2	Adipic Acid	February 2010
08/09-3	Acrylic Acid	July 2010
08/09-4	Vinyl Chloride/Ethylene Dichloride	September 2009
08/09-5	Ethylene	September 2009
08/09-6	Ethanol	March 2010
08/09-7	Methyl Methacrylate (MMA)	March 2010
08/09-8	Ethylene Oxide/Ethylene Glycol (EO/EG)	December 2009

SPECIAL REPORTS

08/09S1	Air Separation Technology	February 2010
08/09S2	Phosphoric Acid	April 2010
08/09S3	Unconventional Natural Gas	July 2009
08/09S4	Thermoplastic Fabrication Processes	March 2010
08/09S5	Direct Coal Liquefaction	March 2010
08/09S6	BPA-Free Baby Bottle Resins	December 2009
08/09S7	"Green" Acetyls	July 2010
08/09S8	Alternative Routes to Propylene	December 2009
08/09S9	PET Bottle to Bottle Recycling	March 2010
08/09S10	Gas to Ethylene	September 2009
08/09S11	Developments in <i>para</i> -Xylene Technology	December 2009
08/09S12	Styrene Block Copolymers	January 2010

2007/2008 PERP PROGRAM

PETROCHEMICAL UPDATES		Publication Date
07/08-1	LLDPE	October 2008
07/08-2	Methanol	November 2008
07/08-3	Hydrogen Peroxide	May 2009
07/08-4	Styrene/Ethylbenzene	March 2009
07/08-5	Polyethylene Terephthalate	March 2009
07/08-6	Propylene Oxide	November 2006
07/08-7	Polyvinyl Chloride (PVC)	September 2008
07/08-8	Maleic Anhydride	February 2009
SPECIAL REPORTS		
07/08S1	Polybutylene Terephthalate	September 2008
07/08S2	Developments in Biodiesel Production Technologies	September 2008
07/08S3	Dimethyl Ether Technology and Markets	November 2008
07/08S4	Developments in Non-Phthalate Plasticizers	August 2008
07/08S5	Olefins via Enhanced FCC Processes	December 2008
07/08S6	Nylon 6 and Nylon 6,6	February 2009
07/08S7	Linear Alkyl Benzene (LAB)	January 2009
07/08S8	Sulfuric Acid	December 2008
07/08S9	Developments in TDI Process Technology	September 2008
07/08S10	Floating LNG Production	December 2008
07/08S11	"Green" Propylene	January 2009
07/08S12	Competing Feedstocks for VCM Production	January 2009

2006/2007 PERP PROGRAM**PETROCHEMICAL UPDATES****Publication Date**

06/07-1	Acetic Acid	March 2008
06/07-2	Polypropylene	November 2007
06/07-3	Propylene	January 2008
06/07-4	1,4-Butanediol/THF	March 2008
06/07-5	Alpha Olefins	April 2008
06/07-6	Benzene/Toluene	July 2007
06/07-7	Bisphenol A	November 2007
06/07-8	Oxo Alcohols	July 2007

SPECIAL REPORTS

06/07S1	Hydrogen Production in Refineries	October 2007
06/07S2	Hydrogen Peroxide-Based Propylene Oxide	December 2007
06/07S3	Urea	October 2007
06/07S4	Glycerin Conversion to Propylene Glycol	March 2008
06/07S5	Biomass Gasification	April 2008
06/07S6	Phthalic Anhydride	August 2007
06/07S7	Benefits of Refinery/Petrochemical Integration	September 2007
06/07S8	ABS Resins	August 2007
06/07S9	Aromatic Polyamides (Polyaramids)	May 2008
06/07S10	NGL Extraction Technologies	December 2007
06/07S11	"Green" Polyethylene	March 2008
06/07S12	MTBE/ETBE Update: Technical and Commercial Effects of U.S. MTBE Phaseout	May 2008

2005/2006 PERP PROGRAM**PETROCHEMICAL UPDATES****Publication Date**

05/06-1	Vinyl Acetate	August 2006
05/06-2	Acrylonitrile	October 2006
05/06-3	HDPE	December 2006
05/06-4	Phenol/Acetone/Cumene	March 2007
05/06-5	Butadiene/Butylenes	January 2007
05/06-6	Terephthalic Acid	December 2006
05/06-7	Polycarbonate	July 2006
05/06-8	Xylenes	August 2006

SPECIAL REPORTS

05/06S1	Biogasoline	December 2006
05/06S2	Thermoplastic Wood Composites	April 2007
05/06S3	Styrene from Ethane and Benzene	November 2006
05/06S4	Acetylene-Based VDM	February 2007
05/06S5	Coal to Olefins	April 2007
05/06S6	Optimizing Aromatics Production	February 2007
05/06S7	Polyolefin Elastomers	February 2007
05/06S8	Trends in Plasticizers	March 2007
05/06S9	Acetylene Production Technologies	April 2007
05/06S10	On-Purpose Octene-1	April 2007
05/06S11	Ammonia	February 2007
05/06S12	LNG Receiving Terminals	January 2007

2004/2005 PERP PROGRAM**PETROCHEMICAL UPDATES****Publication Date**

04/05-1	LDPE	June 2005
04/05-2	Methyl Methacrylate	March 2006
04/05-3	Caprolactam	February 2006
04/05-4	Polystyrene	February 2006
04/05-5	Ethylene Oxide/Ethylene Glycol	January 2006
04/05-6	Acrylic Acid	February 2006
04/05-7	Ethylene	September 2005
04/05-8	Ethanol	January 2006

SPECIAL REPORTS

04/05S1	Fuel Switching with NGLs/Small Scale LNG	August 2005
04/05S2	EPDM	May 2005
04/05S3	Crystalline High Temperature Polymers	February 2006
04/05S4	Impact of Supply Chain IT Applications on the Refining Industry	April 2006
04/05S5	Nylon Fiber Spinning Technology	December 2005
04/05S6	Polypropylene Compounding	December 2005
04/05S7	Reducing Costs in PET Manufacture	July 2005
04/05S8	Gas Processing and NGL Extraction: Natural Gas Conditioning	March 2006
04/05S9	Unconventional Heavy Oils	November 2005
04/05S10	Formaldehyde and Derivatives	January 2006
04/05S11	Epoxy Resins	December 2005
04/05S12	Phenol/MEK Co-Product Process	February 2006

2003/2004 PERP PROGRAM**PETROCHEMICAL UPDATES****Publication Date**

03/04-1	LLDPE	January 2005
03/04-2	Polyvinyl Chloride (PVC)	March 2004
03/04-3	Adipic Acid	November 2004
03/04-4	Methanol	December 2004
03/04-5	Hydrogen Peroxide	October 2004
03/04-6	VCM/EDC	December 2004
03/04-7	Maleic Anhydride	February 2005
03/04-8	Styrene/Ethylbenzene	November 2004

SPECIAL REPORTS

03/04S1	Acetic Anhydride/Cellulose Acetate	June 2004
03/04S2	Ethylene via Catalytic Ethane Partial Oxidation	July 2004
03/04S3	Super Absorbent Polymers (SAP)	April 2004
03/04S4	Developments in Syngas Technology	February 2005
03/04S5	Polyether Polyols	October 2004
03/04S6	Medium Quality Terephthalic Acid	October 2004
03/04S7	Propylene Refineries	January 2005
03/04S8	PET Fiber Spinning Technology	August 2004
03/04S9	Specialty LDPE Copolymers	December 2004
03/04S10	Advances in LNG Technologies	October 2004
03/04S11	Coal Gasification Technologies	January 2005
03/04S12	Amorphous High Temperature ETPs	December 2004

PERP Program 10-Year Title Index, 2000/2001 – 2009/2010

APPENDIX F.

This index is intended to be a handy and convenient tool for quickly identifying PERP reports of interest. It should be noted, however, that this is a title index only. For a more complete search, dating back to 1972, the full subject indices should be used. See your local technical information service department for the PERP subject indices or contact Nexant. To browse all Nexant *ChemSystems* reports, please visit: www.chemsystems.com

Title	Report	Date	Title	Report	Date
ABS Resins	06/07S8	08/07	Biomass Gasification	06/07S5	04/08
Acetic Acid	06/07-1	03/08	Biotech Route to Lactic Acid/Polylactic Acid	00/01S3	05/02
Acetic Acid	02/03-1	09/03	Bisphenol A	06/07-7	11/07
Acetic Anhydride/Cellulose Acetate	03/04S1	06/04	Bisphenol A	01/02-6	09/02
Acetone/Phenol/Cumene	09/10-4	*	Block Copolymers, Styrene	08/09S12	01/10
Acetone/Phenol/Cumene	05/06-4	03/07	Bottle to Bottle Recycling, PET	08/09S9	03/10
Acetone/Phenol/Cumene	01/02-2	10/02	BPA-Free Baby Bottle Resins	08/09S6	12/09
Acetylene Production Technologies	05/06S9	04/07	Butadiene/Butylenes	09/10-5	*
Acetylene-Based VCM	05/06S4	02/07	Butadiene/Butylenes	05/06-5	01/07
Acetyls, "Green"	08/09S7	07/10	Butadiene/Butylenes	01/02-3	12/03
Acrylamide	01/02S10	11/02	Butadiene Rubber/Styrene Butadiene		
Acrylic Acid	08/09-3	07/10	Rubber (SBR/BR)	02/03S1	12/03
Acrylic Acid	04/05-6	02/06	Butanediol, 1,4-/THF	06/07-4	03/08
Acrylic Acid	00/01-7	05/01	Butanediol, 1,4-/THF	02/03-7	01/04
Acrylic Fiber	09/10S7	*	Butylenes/Butadiene	09/10-5	*
Acrylonitrile	09/10-2	*	Butylenes/Butadiene	05/06-5	01/07
Acrylonitrile	05/06-2	10/06	Butylenes/Butadiene	01/02-3	02/03
Acrylonitrile	00/01-6	03/02	Caprolactam	09/10-1	*
Adipic Acid	08/09-2	02/10	Caprolactam	04/05-3	02/06
Adipic Acid	03/04-3	11/04	Carbon Monoxide	09/10S11	*
Advances in LNG Technologies	03/04S10	10/04	Catalytic Processing of Crude Residue	09/10S6	*
Air Separation Technology	08/09S1	02/10	Cellulose Acetate/Acetic Anhydride	03/04S1	06/04
Alkyl Benzene, Linear (LAB)	07/08S7	01/09	Chemical and Refining Industry, Safety in the	09/10S2	*
Alkylbenzene, Linear (LAB)	01/02S8	05/03	Chlor Alkali	01/02S4	03/03
Alpha Olefins	06/07-5	04/08	Coal Bed Methane	09/10S3	*
Alpha Olefins	02/03-4	01/04	Coal Gasification Technologies	03/04S11	01/05
Alternative Routes to Propylene	08/09S8	12/09	Coal Liquefaction, Direct	08/09S5	03/10
Ammonia	05/06S11	02/07	Coal to Olefins	05/06S5	04/07
Amorphous High Temperature ETPs	03/04S12	12/04	Commodity Feedstocks, Biobased	09/10S4	*
Aniline/Nitrobenzene	02/03-2	06/03	Competing Feedstocks for VCM Production	07/08S12	01/09
Aromatic Polyamides (Polyaramids)	06/07S9	05/08	Compounding, Polypropylene	04/05S6	12/05
Aromatics Production, Optimizing	05/06S6	02/07	Copolyester and Copolyamide Elastomers,		
Barrier Monomers for PET	02/03S12	12/03	Thermoplastic	02/03s9	10/03
Benefits of Refinery/Petrochemical Integration	06/07S7	09/07	Crystalline High Temperature Polymers	04/05S3	02/06
Benzene, Styrene from Ethane and	05/06S3	11/06	Cumene/Phenol/Acetone	09/10-4	*
Benzene/Toluene	06/07-6	07/07	Cumene/Phenol/Acetone	05/06-4	03/07
Benzene/Toluene	02/03-5	04/03	Curtailing Coke Formation in Ethylene	01/02-2	10/02
Biobased Commodity Feedstocks	09/10S4	*	Furnace Tubes	02/03S10	06/03
Biodiesel	02/03S2	12/03	Cyclic Olefin Copolymers	09/10S9	*
Biodiesel Production Technologies,			Desulfurization Technologies, Novel	00/01S8	10/02
Developments in	07/08S2	09/08	Developments in Biodiesel Production		
Biogasoline	05/06S1	12/06	Technologies	07/08S2	09/08

* To be published

APPENDIX F.

PERP Program 10-Year Title Index, 2000/2001 – 2009/2010

Title	Report	Date	Title	Report	Date
Developments in Non-Phosgene Poly-Carbonate Technology	02/03S8	10/03	Fuel Cells, Stationary	02/03S6	11/03
Developments in Non-Phthalate Plasticizers	07/08S4	08/08	Fuel Sw itching w ith NGLs/Small Scale LNG	04/05S1	08/05
Developments in <i>para</i> -Xylene Technology	08/09S11	12/09	Gasification, Biomass	06/07S5	04/08
Developments in Propylene Oxide Technology	00/01S12	11/01	Gas Processing and NGL Extraction: Natural Gas Conditioning	04/05S8	04/06
Developments in PTA Production Technologies	00/01S7	02/02	Gas to Ethylene	08/09S10	09/09
Developments in Syngas Technologies	03/04S4	02/05	Glycerin	00/01S4	10/01
Developments in TDI Process Technology	07/08S9	09/08	Glycerin Conversion to Propylene Glycol	06/07S4	03/08
Dimethyl Ether Technology and Markets	07/08S3	11/08	Glycol Ethers	01/02S6	08/02
Direct Coal Liquefaction	08/09S5	03/10	"Green" Polyethylene	06/07S11	03/08
EDC/VCM	03/04-6	12/04	"Green" Acetyls	08/09S7	07/10
Elastomers, Polyolefin	05/06S7	02/07	"Green" Glycols and Polyols	09/10S8	*
Environmental Issues, Refinery of the Future as Shaped by	02/03S11	12/03	"Green" Propylene	07/08S11	01/09
EPDM	04/05S2	05/05	HDPE	09/10-3	*
Epichlorohydrin	09/10S1	*	HDPE	05/06-3	12/06
Epoxy Resins	04/05S11	12/05	HDPE	01/02-1	12/02
ETBE/MTBE Update: Technical and Commercial Effects of U.S. MTBE Phaseout	06/07S12	05/08	Heavy Oils, Unconventional	04/05S9	11/09
Ethane and Benzene, Styrene from Ethane Partial Oxidation, Ethylene via Catalytic	05/06S3	11/06	* High Temperature ETPs, Amorphous	03/04S12	12/04
Ethanol	08/09-6	03/10	High Temperature Thermoplastic Nylons	01/02S3	06/02
Ethanol	04/05-8	01/06	Hydrogen Peroxide	07/08-3	05/09
Ethanolamines	01/02S2	08/02	Hydrogen Peroxide	03/04-5	10/04
Ethylbenzene/Styrene	07/08-4	03/09	Hydrogen Peroxide-Based Propylene Oxide	06/07S2	12/07
Ethylbenzene/Styrene	03/04-8	11/04	Hydrogen Production in Refineries	06/07S1	10/07
Ethylene	08/09-5	09/09	Impact of Supply Chain IT Applications on the Refining Industry	04/05S4	04/06
Ethylene	04/05-7	09/05	Lactic Acid/Polylactic Acid, Biotech	00/01S3	05/02
Ethylene Dichloride/Vinyl Chloride	08/09-4	09/09	Route to	08/09-1	12/09
Ethylene Furnace Tubes, Curtailing Coke Formation in	02/03S10	06/03	LDPE	04/05-1	06/05
Ethylene, Gas to	08/09S10	09/09	LDPE	00/01-5	04/01
Ethylene Oxide/Ethylene Glycol	08/09-8	12/09	LDPE Copolymers, Specialty	03/04S9	12/04
Ethylene Oxide/Ethylene Glycol	04/05-5	01/06	Linear Alkyl Benzene (LAB)	07/08S7	01/09
Ethylene Oxide/Ethylene Glycol	00/01-2	11/01	Linear Alkylbenzene (LAB)	01/02S8	05/03
Ethylene, Propylene	00/01-4	06/01	Liquid Crystal Polymers	00/01S10	09/01
Ethylene via Catalytic Ethane Partial Oxidation	03/04S2	07/04	LLDPE	07/08-1	10/08
Extraction Technologies, NGL	06/07S10	12/07	LLDPE	03/04-1	01/05
Fabrication Processes, Thermoplastic	08/09S4	03/10	LNG Production, Floating	07/08S10	12/08
FCC Processes, Olefins via Enhanced	07/08S5	12/08	LNG Receiving Terminals	05/06S12	01/07
Fiber Spinning Technology, Nylon	04/05S5	12/05	LNG Technologies, Advances in	03/04S10	10/04
Fiber Spinning Technology, PET	03/04S8	08/04	Maleic Anhydride	07/08-8	02/09
Fischer-Tropsch Liquids as Steam Cracker Feedstocks	01/02S9	12/02	Maleic Anhydride	03/04-7	02/05
Floating LNG Production	07/08S10	12/08	Medium Quality Terephthalic Acid	03/04S6	10/04
Formaldehyde	00/01-8	04/01	MEK/Phenol Co-Product Process	04/05S12	02/06
Formaldehyde and Derivatives	04/05S10	11/06	Methanol	07/08-2	11/08
Fuel Cells for Transportation	02/03S5	12/03	Methanol	03/04-4	11/04
			Methanol to Olefins	00/01S9	01/02
			Methyl Methacrylate (MMA)	08/09-7	03/10
			Methyl Methacrylate (MMA)	04/05-2	03/06
			Modified Polyphenylene Oxide (MPPO)	02/03S3	03/03
			MTBE/ETBE Update: Technical and Commercial Effects of U.S. MTBE Phaseout	06/07S12	05/08

* To be published

APPENDIX F.

PERP Program 10-Year Title Index, 2000/2001 – 2009/2010

Title	Report	Date	Title	Report	Date
MTBE Phaseout on Chemical Markets, Impact of	00/01S2	06/01	(Polyaramids), Aromatic Polyamides	06/07S9	05/08
Nanocomposites, Thermoplastic	00/01S11	09/01	Polymers, Crystalline High Temperature	04/05S3	02/06
Natural Gas Conditioning, Gas Processing and NGL Extraction:	04/05S8	03/06	Polyolefin Elastomers	05/06S7	02/07
Natural Gas, Unconventional	08/09S3	07/09	Polyols, "Green" Glycols and	09/10S8	*
NGL Extraction Technologies	06/07S10	12/07	Polyols, Polyether	03/04S5	10/04
NGLs, Fuel Switching with/Small Scale LNG	04/05S1	08/05	Polyphenylene Oxide, Modified	02/03S3	03/03
Nitrobenzene/Aniline	02/03-2	06/03	Polyphenylene Sulfide (PPS)	02/03S4	04/03
Non-Phosgene Polycarbonate Technology, Developments in	02/03S8	10/03	Polypropylene	06/07-2	11/07
Non-Phthalate Plasticizers, Developments in	07/08S4	08/08	Polypropylene	02/03-3	08/03
Non-Sequestration Utilization Options for CO2	09/10S10	*	Polypropylene Compounding	04/05S6	12/05
Novel Desulfurization Technologies	00/01S8	10/02	Polystyrene	04/05-4	02/06
NPK Fertilizers, Phosphate and	09/10S5	*	Polystyrene/ABS	00/01-1	02/06
Nylon 6 and Nylon 6,6	07/08S6	12/09	Polytrimethylene Terephthalate (PTT)	01/02S7	10/02
Nylon Fiber Spinning Technology	04/05S5	12/05	Polyurethanes, Thermoplastic (TPUs)	02/03S7	05/03
Nylons, High Temperature Thermoplastic	01/02S3	06/02	Polyvinyl Alcohol	01/02S5	11/02
Octene-1, On-Purpose	05/06S10	04/07	Polyvinyl Chloride (PVC)	07/08-7	11/08
Olefin Copolymers, Cyclic	09/10S9	*	Polyvinyl Chloride (PVC)	03/04-2	03/04
Olefins, Coal to	05/06S5	04/07	Processing of Crude Residue, Catalytic	09/10S6	*
Olefins, Methanol to	00/01S9	01/02	Production Technologies, Acetylene	05/06S9	04/07
Olefins via Enhanced FCC Processes	07/08S5	12/08	Propylene	06/07-3	01/08
On-Purpose Octene-1	05/06S10	04/07	Propylene, Alternative Routes to	08/09S8	12/09
Optimizing Aromatics Production	05/06S6	12/07	Propylene, Ethylene	00/01-4	06/01
Oxo Alcohols	06/07-8	07/07	Propylene Glycol, Glycerin Conversion to	06/07S4	03/08
Oxo Alcohols	01/02-8	04/03	Propylene, "Green"	07/08S11	01/09
<i>para</i> -Xylene Technology, Developments in	08/09S11	12/09	Propylene Oxide	07/08-6	11/08
PET Bottle to Bottle Recycling	08/09S9	03/10	Propylene Oxide	02/03-8	11/03
PET Fiber Spinning Technology	03/04S8	08/04	Propylene Oxide, Hydrogen Peroxide-Based	06/07S2	12/07
PET Manufacture, Reducing Costs in	04/05S7	07/05	Propylene Oxide Technology, Developments in	00/01S12	11/01
Phenol/Acetone/Cumene	09/10-4	*	Propylene Refineries	03/04S7	01/05
Phenol/Acetone/Cumene	05/06-4	03/07	PTA Production Technologies, Developments in	00/01S7	02/02
Phenol/Acetone/Cumene	01/02-2	10/02	PTMEG/Spandex	01/02S11	12/02
Phenol/MEK Co-Product Process	04/05S12	02/06	Receiving Terminals, LNG	05/06S12	01/07
Phosphate and NPK Fertilizers	09/10S5	*	Reducing Costs in PET Manufacture	04/05S7	07/05
Phosphoric Acid	08/09S2	04/10	Refineries, Hydrogen Production in	06/07S1	10/07
Phthalic Anhydride	06/07S6	08/07	Refineries, Propylene	03/04S7	01/05
Plants as Plants	00/01S6	12/02	Refinery of the Future as Shaped by		
Plastic Beer Bottles	00/01S1	04/02	Environmental Issues	02/03S11	12/03
Plasticizers, Trends in	05/06S8	03/07	Refinery/Petrochemical Integration, Benefits of	06/07S7	09/07
Polyacetal	01/02S12	10/02	Refining Industry, Impact of Supply Chain		
Polybutylene Terephthalate (PBT)	07/08S1	11/08	IT Applications on the	04/05S4	04/06
Polycarbonate	09/10-7	*	Renewable Liquids as Steam Cracker		
Polycarbonate	05/06-7	07/06	Feedstocks	09/10S12	*
Polycarbonates	01/02-5	07/02	Resins, ABS	06/07S8	08/07
Polyether Polyols	03/04S5	10/04	Resins, Epoxy	04/05S11	12/05
Polyethylene, "Green"	06/07S11	03/08	Safety in the Chemical and Refining Industry	09/10S2	*
Polyethylene Terephthalate	07/08-5	03/09	(SBR/BR) Styrene Butadiene Rubber/		
Polyethylene Terephthalate	02/03-6	09/03	Butadiene Rubber	02/03S1	12/03
Poly(lactic Acid)/Lactic Acid, Biotech			Silicones	00/01S5	05/02
Route to	00/01S3	10/02	Small Scale LNG/Fuel Switching with NGLs	04/05S1	08/05
			Spandex/PTMEG	01/02S11	12/02
			Specialty LDPE Copolymer	03/04S9	12/04
			Stationary Fuel Cells	02/03S6	11/03

* To be published

APPENDIX F.

PERP Program 10-Year Title Index, 2000/2001 – 2009/2010

Title	Report	Date	Title	Report	Date
Steam Cracker Feedstocks, Fischer-Tropsch Liquids as Liquids as Styrene Block Copolymers Styrene Butadiene Rubber/Butadiene Rubber (SBR/BR) Styrene/Ethylbenzene Styrene/Ethylbenzene Styrene from Ethane and Benzene Sulfide, Polyphenylene (PPS) Sulfuric Acid Super Absorbent Polymers (SAP) Supply Chain IT Applications on the Refining Industry, Impact of Syngas Technologies, Developments in TDI Process Technology, Developments in Terephthalic Acid Terephthalic Acid Terephthalic Acid Terephthalic Acid, Medium Quality Thermoplastic Copolyester and Copolyamide Elastomers Thermoplastic Fabrication Processes	01/02S9 09/10S12 08/09S12 02/03S1 07/08-4 03/04-8 05/06S3 02/03S4 07/08S8 03/04S3 04/05S4 03/04S4 07/08S9 09/10-6 05/06-6 01/02-4 03/04S6 02/03S9 08/09S4	12/02 * 01/10 12/03 03/09 11/04 11/06 04/03 12/08 04/04 04/06 02/05 09/08 * 12/06 12/02 10/04 10/03 03/10	Thermoplastic Nanocomposites Thermoplastic Polyolefin (TPO) and Vulcanizate (TPV) Elastomers Thermoplastic Polyurethanes (TPUs) Thermoplastic Wood Composites Toluene/Benzene Toluene/Benzene Trends in Plasticizers Unconventional Heavy Oils Unconventional Natural Gas Urea Utilization Options for CO ₂ , Non-Sequestration VCM Production, Competing Feedstocks for VCM, Acetylene-Based VCM/EDC Vinyl Acetate Vinyl Acetate Vinyl Chloride/Ethylene Dichloride Wood Composites, Thermoplastic Xylenes Xylenes Xylenes	00/01S11 01/02S1 02/03S7 05/06S2 06/07-6 02/03-5 05/06S8 04/05S9 08/09S3 06/07S3 09/10S10 07/08S12 05/06S4 03/04-6 05/06-1 00/01-3 08/09-4 05/06S2 09/10-8 05/06-8 01/02-7	09/01 07/02 05/03 04/07 07/07 04/03 03/07 11/05 07/09 10/07 * 01/09 02/07 12/04 08/06 02/02 09/09 04/07 * 08/06 05/02

* To be published

APPENDIX G.

Partial List of Clients

Our clients represent a range of companies in the international energy, chemical, plastics and process industries. Although we work primarily with manufacturers, marketers and end users, our expertise frequently is called upon by aligned businesses and organizations, such as utilities, financial institutions, engineering service firms, trade associations and national/regional governmental entities. Representative clients include:

Acetex	Fluor Daniel
Air Products and Chemicals	FMC
AKZO Nobel	Foster Wheeler
Albemarle	General Electric
Aramco	Georgia Gulf
Argonne National Laboratory	BFGoodrich
Aristech	Grupo Ultra
Arkema	Henkel
Asahi Chemical	Hercules
Ashland Chemical	Huntsman Chemical
Atofina	Hyundai Petrochemical
Bahrain National Gas	ICI
Bangkok Bank	Idemitsu Petrochemical
Bankers Trust	Indian Petrochemical Company Ltd. (IPCL)
BASF	INEOS
Bayer	Institut Francais du Petrole
BOC Group	ISP
BP	C. Itoh
Caltex	Japan Synthetic Rubber
Campanhia Petroquimica Camacari (CPC)	Jet Propulsion Laboratory
Cargill	Johnson Matthey
CEFIC	Kaneka
Celanese	Kellogg, Brown & Root
Chevron Phillips Chemicals	Kemira Oy
Chiyoda	Korea Steel Chemical (KOSCO)
Ciquine Cia Petroquimica (CCP)	Kosco/Daewoo
Citibank	Kuwait Petroleum
Conoco	Lagoven
Copesul	Lanxess
Daicel	Louisiana Power and Light
Degussa	Lyondell Chemical Company
Dow Chemical	Maruzen
DSM	Makhteshim
DuPont	Metropolitan Capital
Dyno Industries	Millennium
Eastman Chemical	Mitsubishi Chemical
Electric Power Research Institute (EPRI)	Mitsubishi Corporation
ENAP	Mitsui Chemical
Engelhard	Monsanto
EniChem	Morgan Guaranty Trust
Enron	National Energy Administration (Sweden)
ExxonMobil	Neste Chemicals

New England Electric Company	RTZ
New York Power Authority	Ruhr Oil
New York State Energy Research & Development Authority	SABIC
Nippon Petrochemical	Saga Petroleum
Nippon Shokubai	Sasol
Nippon Steel Chemicals	Shaw Group
NL Chemicals	Shell Chemical
NOVA	Sinopec
Olin	Society of Plastics Industry (SPI)
OMV	Solar Energy Research Institute (SERI)
Orkem	Solutia
Pacific Gas & Electric (PG&E)	Solvay
Paine Webber	Southern California Edison
PDVSA	Sterling
Pequiven	Sumitomo
Petrobras	Sunkyong Industries
PetroChina	Symyx
Petrofina	Teijin
Petroleos Mexicanos (PEMEX)	Tessengerlo Chemie
Petroleum Association of Japan	Texaco
Petroleum Authority of Thailand	Tokyo Electric Power
Petroleum Energy Center (PEC)	Tonen
Petroquimica Argentina (PASA)	Tosoh
Phillips Petroleum	Trinidad and Tobago Oil (TRINTOC)
Polimeri Europa, S.p.A.	Ube
Price Waterhouse	UCB
Reliance	UOP
Repsol	U.S. Department of Energy
Rhodia	Washington Group

Nexant, Inc. appears on the register of consultants of the following international lending organizations, and has conducted projects in conjunction with many of them.

- The World Bank (IRBD, IFC and associated funds)
- Inter-American Development Bank (IDB)
- Asian Development Bank
- African Development Bank
- European Development Bank
- Kuwait Fund
- United Nations Industrial Development Organization (UNIDO)
- Industrial Development Centre for Arab Studies (IDCAS)
- British Ministry of Overseas Development (ODM)
- USAID