

# **19th World Petroleum Congress 2008**

## **A World in Transition: Delivering Energy for Sustainable Growth**

**Madrid, Spain  
29 June – 3 July 2008**

**Volume 1 of 3**

**ISBN: 978-1-61567-683-5**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2008) by the Energy Institute  
All rights reserved.

Printed by Curran Associates, Inc. (2009)

For permission requests, please contact the Energy Institute  
at the address below.

Energy Institute  
61 New Cavendish Street  
London W1G 7AR, UK

Phone: 44 (0) 20 7467 7100  
Fax: 44 (0) 20 7255 1472

[info@energyinst.org.uk](mailto:info@energyinst.org.uk)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## VOLUME 1

### PLENARIES

<b>Delivering Energy for Sustainable Growth: the European Perspective - The President of Rosneft Participated in the 19th World Petroleum Congress</b> .....	1
<i>S. Bogdanchikov</i>	
<b>Supplying Energy for Sustainable Growth: the European Perspective - Olariaga</b> .....	3
<i>C. P. de B. Olariaga</i>	
<b>Delivering Energy for Sustainable Growth: the European Perspective - Hayward</b> .....	8
<i>T. Hayward</i>	
<b>Palabras De La Presidenta De La Comunidad De Madrid En El Acto De Inauguración Del 19 Congreso Mundial Del Petróleo</b> .....	12
<i>E. Aquirre</i>	
<b>Palabras De Su Majestad el Rey en la Inauguración del XIX Congreso Mundial del Petróleo</b> .....	15
<i>J. Carlos</i>	
<b>Audience with His Majesty The King of Spain</b> .....	17
<i>A. Piebalgs</i>	
<b>Deliverability Challenges: Security of Supply and Demand Perspectives - de Margerie</b> .....	20
<i>C. de Margerie</i>	
<b>Deliverability Challenges: Security of Supply and Demand Perspectives - Khelil</b> .....	21
<i>C. Khelil</i>	
<b>Deliverability Challenges: Security of Supply and Demand Perspectives - Campi</b> .....	22
<i>J. Reyes-Heroles, M. T. C. Campi, C. Fu, C. Margerie, A. Yanovskii, C. Khelil, R. W. Tillerson</i>	
<b>Meeting Global Energy Supply and Demand Challenges</b> .....	26
<i>R. W. Tillerson</i>	
<b>Natural Gas - an Emerging Global Commodity - Cook (Not Available)</b> .....	29
<i>L. Cook</i>	
<b>Natural Gas - an Emerging Global Commodity - Meziane (Not Available)</b> .....	30
<i>M. Meziane</i>	
<b>Advancing Sustainability - Saville (Not Available)</b> .....	31
<i>F. Saville</i>	
<b>Advancing Sustainability - Lund (Not Available)</b> .....	32
<i>H. Lund</i>	
<b>Accessing Reserves and Investing in Infrastructure - Watson (Not Available)</b> .....	33
<i>J. Watson</i>	
<b>Accessing Reserves and Investing in Infrastructure - Gabrielli (Not Available)</b> .....	34
<i>S. Gabrielli</i>	
<b>Societal Expectation of the Oil and Gas Industry</b> .....	35
<i>H. Labelle</i>	

### BEST PRACTICE KEYNOTES

<b>Experience &amp; Lessons Learned from Largest Hydrocarbon Discoveries During the Past Decades - Masset</b> .....	39
<i>J. M. Masset</i>	
<b>Experience &amp; Lessons Learned from Largest Hydrocarbon Discoveries During the Past Decades - Subai</b> .....	40
<i>K. Subai</i>	
<b>Assessment of Global Oil and Gas Resources - Gautier</b> .....	49
<i>D. Gautier</i>	
<b>Assessment of Global Oil and Gas Resources - Kontorovich</b> .....	50
<i>A. Kontorovich</i>	

<b>Assessment of Global Oil and Gas Resources - Mathieu</b> .....	51
<i>Y. Mathieu</i>	
<b>Advanced Drilling and Completion - Bastos</b> .....	52
<i>B. Bastos</i>	
<b>Advanced Drilling and Completion - Kline</b> .....	57
<i>W. Kline</i>	
<b>Refinery Capacity Expansion vs. Grassroots Capacity - Martínez</b> .....	65
<i>I. G. Martínez</i>	
<b>Refinery Capacity Expansion vs. Grassroots Capacity - Maitra/ Raghavendran</b> .....	74
<i>P. P. Maitra, P. Raghavendran</i>	
<b>Refinery Capacity Expansion vs. Grassroots Capacity - Purves</b> .....	75
<i>T. Purves</i>	
<b>Asian Fuel Quality Overview (Not Available)</b> .....	81
<i>K. Klavers</i>	
<b>Motor Fuel Quality Strategies in Asia - Liu</b> .....	82
<i>Z. Liu</i>	
<b>Motor Fuel Quality Strategies in Asia - Malhotra</b> .....	83
<i>R. K. Malhotra</i>	
<b>Novel Approaches to Improve Energy Efficiency at Refineries - Milosevic</b> .....	92
<i>Z. Milosevic</i>	
<b>Novel Approaches to Improve Energy Efficiency at Refineries - Sigaud</b> .....	100
<i>B. Sigaud</i>	
<b>Role of Renewables in the Supply Mix - Rodrigues</b> .....	116
<i>A. P. Rodrigues</i>	
<b>Role of Renewables in the Supply Mix - Viteri</b> .....	117
<i>X. Viteri</i>	
<b>Review of Gas-to-Liquids (GTL) Technologies - Strauss</b> .....	118
<i>L. Strauss</i>	
<b>Review of Gas-to-Liquids (GTL) Technologies - Jacometti</b> .....	124
<i>J. Jacometti</i>	
<b>Gas Transportation Challenges - Miro</b> .....	125
<i>P. Miro</i>	
<b>Gas Transportation Challenges - Vasiliev</b> .....	126
<i>G. Vasiliev</i>	
<b>Insuring the Catastrophic Risk (Risk Management) - Robertson</b> .....	134
<i>M. Robertson</i>	
<b>Insuring the Catastrophic Risk (Risk Management) - Pierce</b> .....	152
<i>J. Pierce</i>	
<b>Transparency &amp; Openness - John McWilliams</b> .....	153
<i>J. McWilliams</i>	
<b>Transparency &amp; Openness - Kullerud</b> .....	154
<i>A. Kullerud</i>	
<b>NOCs and IOCs - Competing or Co-operating? - Abilio</b> .....	155
<i>S. Abilio</i>	
<b>NOCs and IOCs - Competing or Co-operating? - Pouyanné</b> .....	156
<i>P. Pouyanné</i>	
<b>Statistical Review of World Energy - Ruehl (Not Available)</b> .....	162
<i>C. Ruehl</i>	

## **FORUM 1: NEW FRONTIER EXPLORATION**

<b>Assessment of Oil Potential Resources in Predominantly Gas-bearing Regions, Areas &amp; Rock Complexes (example of Russian Far Eastern &amp; Siberian Sedimentary Basins)</b> .....	163
<i>V. Skorobogatov</i>	
<b>New Exploratory Frontiers in Brazil</b> .....	164
<i>M. Carminatti, B. Wolff, L. Gamboa</i>	
<b>The International Exploration Scorecard: A Look Ahead</b> .....	175
<i>R. Fryklund, A. Hayman</i>	
<b>The Emerging Paleogene Play: Deepwater Gulf of Mexico</b> .....	181
<i>V. Mathur</i>	

<b>Mesozoics of the South Western Margin of India: A Frontier Exploration</b> .....	191
<i>M. N. Duggirala, R. Bastia, S. Tenepalli, M. Akella, R. Verma, K. D'Silva</i>	
<b>U.S. Geological Survey Circum-Arctic Resource Appraisal: Estimating Potential Additions to Reserves in the Highest Northern Latitudes</b> .....	203
<i>D. Gautier</i>	
<b>Global Deepwater: The Story So Far</b> .....	204
<i>I. Cross, M. Dyer</i>	
<b>Regional Mapping of Potential Jurassic Source Rocks in the Deepwater Gulf of Mexico (U.S.A. and Mexico): Implications for Hydrocarbons Exploration</b> .....	205
<i>C. Bartolini, A. S. Monclu</i>	
<b>Frontier Exploration in Oman Mountains with Innovative Field- and Geophysical Techniques</b> .....	206
<i>G. B. Árgyelán, L. Csontos, Á. Sasvári, T. Pocsai, G. Kovács</i>	
<b>South-eastern Gulf of Mexico (Deep Waters): One of the Last Big Petroleum Provinces?</b> .....	232
<i>J. G. L. Rivera, J. R. S. Arango, J. O. L. Quintero</i>	
<b>The Petroleum Potential of the Khatanga – Anabar Region, Siberian Arctic</b> .....	233
<i>N. Sobolev, A. Shmanjak, E. Petrov, B. Cramer, K. Piepjohn</i>	
<b>Geological Modelling of the Offshore Orange Basin, West Coast of South Africa</b> .....	255
<i>C. Campher</i>	
<b>Innovative Technological Solutions for 3D Exploration in Complex Areas</b> .....	256
<i>M. Thibaut, A. Jardin, C. Sulzer</i>	
<b>Petroleum Potential of Forearc Basins</b> .....	257
<i>R. Lutz, K. Berglar, I. Struss, S. Schloemer, B. Cramer, J. Winsemann, C. Gaedicke, Y. S. Djajadihardja</i>	
<b>Northern Mediterranean Sector: Entering New Exploration Phase?</b> .....	258
<i>H. Dobrova, P. Gawenda</i>	
<b>New Structural and Geophysical Model-driven Frontier Exploration Success in Pakistan's Kohat Plateau</b> .....	259
<i>I. Csiki, K. Lorincz, L. Csontos, A. Ali</i>	
<b>The Brazilian Equatorial Margin: the Next Deep Water Frontier</b> .....	275
<i>O. P. Neto</i>	
<b>Tanzania Deepwater Exploration: A New Challenge in East Africa</b> .....	276
<i>V. Martinez, L. B. Teixeira</i>	

## **FORUM 2: INCREASED OIL AND GAS RECOVERY**

<b>Management of Mature Fields - A Key for the Energetic Future</b> .....	277
<i>P. Charlez</i>	
<b>Innovative Management Practices to Revitalize Oil and Gas Fields in Argentina</b> .....	289
<i>N. Benítez, F. Temprano, A. Rattia</i>	
<b>Successful IOR Implementation at the Gullfaks Field</b> .....	302
<i>R. Helland, L. K. Stronen, K. Festervoll, El O. Youness</i>	
<b>Advanced Completion Technologies Result in Successful Extraction of Attic Oil Reserves in a Mature Giant Carbonate Field</b> .....	308
<i>A. I. Al-Towailib, S. Lyngra, U. F. Al-Otaibi</i>	
<b>Benchmarking Operating Efficiency to Enhance Production from Mature Fields</b> .....	319
<i>J. C. Alba</i>	
<b>Waterflooding New Opportunities in Mature Fields: Integrated Methodology of Optimization</b> .....	324
<i>J. Negron</i>	
<b>Geological Model of the Chihuido de la Salina Field in Front of the Thrust of the Neuquen Fold and Thrust Belt</b> .....	325
<i>L. Vitarella, J. FantÁn, M. Azcurra</i>	
<b>Implementation of IOR Scheme to Arrest Production Decline and Boost Recovery Factor</b> .....	326
<i>S. Bhattacharya</i>	
<b>An Update and Perspective on Field-scale Chemical Floods in Daqing Oilfield, China</b> .....	327
<i>H. Pu, W. Wang, Q. Xu</i>	
<b>Preventing Scale Deposition in Mendoza Norte Production Wells</b> .....	328
<i>E. Curci, G. Palma, G. Villarroel</i>	
<b>Genetic Algorithms and Ant Colony Approach for Gas - Lift Allocation Optimization</b> .....	329
<i>M. Zerafat, S. Ayatollahi, A. Roosta, H. Jahanmiri</i>	
<b>Issues and Solutions to Cost-effective Sustainable Production from Mature Fields</b> .....	330
<i>R. Ibatullin, R. Khisamov, N. Ibragimov, S. Takhautdinov</i>	

### **FORUM 3: APPLICATION OF ADVANCED E&P TECHNOLOGY IN CHALLENGING FIELD DEVELOPMENTS**

<b>Neural Networks and their Applications in Lithostratigraphic Interpretation of Seismic Data for Reservoir Characterization</b> .....	331
<i>V. Singh, A. K. Srivastava, D. N. Tiwary, P. K. Painuly, M. Chandra</i>	
<b>State of the Art of Oil Fields Surface Facilities Technologies</b> .....	350
<i>M. Mastandrea, J. M. Pandolfi</i>	
<b>The Study and Application of Fault-sealing in Complex Faulted-block Development</b> .....	361
<i>S.-J. Dou</i>	
<b>Lithofacies Prediction and Permeability Values Estimation from Conventional Well-logs Applying Fuzzy Logic - Case Study: Alwyn North Field</b> .....	368
<i>M. Rezaei, B. Movahed</i>	
<b>Nanofluid Coreflood Experiments in the ARAB-D: On the Road to Developing in-situ Reservoir Nanodevices</b> .....	390
<i>M. Kanj, J. J. Funk, N. Al-Afaleg</i>	
<b>New Advancement of Exploration Theories on the Superimposed Basin of West China - Taking Tarim Basin as an Example</b> .....	398
<i>Q. Meng, X. Pang</i>	
<b>Using Integrated Wireless Nanosensors in Oil Pipeline Integrity Monitoring and Report</b> .....	399
<i>B. Umeadi, K. G. Jones</i>	
<b>Geomechanical Effects While Drilling Salt Wells by Finite Element Analysis</b> .....	400
<i>F. Mackay, F. Botelho, N. Inoue, S. Fontoura</i>	
<b>Study on Improvement of Water Flooding Effect of Naturally Fractured Low Permeability Field</b> .....	401
<i>H. Pu, D. Yin</i>	
<b>Rejuvenation of Oil &amp; Gas Fields Involving Brownfield and Greenfield Development Strategies: A Case Study</b> .....	402
<i>D. Soni, N. Asija</i>	
<b>4C Seismic Anisotropy Integration for Fracture Characterization of Carbonate Reservoirs Applied in Idd El Shargi Field, Offshore Qatar</b> .....	403
<i>E. Maili, C. Condie, S. Kerns, A. Rajvanshi, K. Habib, R. Narayanan</i>	
<b>Reservoir Uncertainties Assessment for Development Project Evaluation and Risk Analysis</b> .....	404
<i>V. Singh, M. Hegazy, L. Fontanelli</i>	
<b>Navigating the "Fog of Reservoir Uncertainties" to Decision Making with Advanced Mathematical Models in New Field Development</b> .....	405
<i>T. Pham, F. Al-Ajmi, M. Al-Shehab</i>	

### **FORUM 4: UNCONVENTIONAL PETROLEUM RESOURCERS**

<b>Technical Challenges for Tight &amp; Sour Gas</b> .....	406
<i>M. Lepoutre</i>	
<b>Recovering Unconventional Gas Deposits Can Result in Large Gas Volume Increases</b> .....	422
<i>G. Wylie</i>	
<b>The Canadian Long Lake Project Integrating SAGD, Cogeneration and Upgrading Technologies to Develop Athabasca Bitumen</b> .....	436
<i>J. Birdgeneau</i>	
<b>Unconventional Petroleum Resources in Brazil: An Overview</b> .....	444
<i>S. Anjos</i>	
<b>An Integrated Approach to on Site/in situ Upgrading</b> .....	456
<i>P. Pereira-Almao, S. Larter</i>	
<b>Evaluation of Steam Stimulation Production Technology for Light Oil in Low Permeability Oilfield</b> .....	462
<i>H. Pu, D. Yin</i>	
<b>Portland-polymer Cementing Composites Submitted to Mud Acid Attack</b> .....	463
<i>A. Nobrega, A. E. Martinelli, D. M. de A. Melo, J. C. de O. Freitas, B. do N. eSilva, J. H. do Nascimento</i>	
<b>Development of Tar Sand Resources in Nigeria: Current Trends, Issues and Outlook</b> .....	464
<i>O. Olafuyi, O. Bello</i>	
<b>Age of Chemistry in Production of Conventional and Unconventional Hydrocarbons</b> .....	465
<i>I. Lakatos, J. Lakatos-Szabó</i>	

<b>Technical and Economic Feasibility Study of Transport and Upgrading Options for the Development of a Heavy Oil Field in Peru</b> .....	482
<i>J. Guittan, J. G. Gomez, A. Mancera, G. Pena, J. A. Cadena, D. O. Bueno</i>	
<b>The Heavy Oil Conundrum: Challenges in Transforming Giant Resources to Supplies</b> .....	483
<i>P. Stark, K. Chew, P. Jackson</i>	

## **FORUM 5: RESERVOIR MONITORING**

<b>Geospectra Infrasonic Passive Differential Spectroscopy (IPDS): An Optimized Technology for Direct Detection of Hydrocarbon Reservoir in Structural and Non-structural Traps, Efficient Tool for a Well-founded Enhanced Oil Recovery and Reservoir Monitoring</b> .....	484
<i>M. Makhous, K. Akrawi, E. D. Rode</i>	
<b>A New Method for Reservoir Characterization Using Temperature Transient Tests</b> .....	485
<i>J. Siavoshi, H. Bahrami</i>	
<b>Reservoir Monitoring by Microseismic Measurements in Saudi Arabia</b> .....	498
<i>S. Dasgupta, M. Alfaraj, M. Jervis</i>	
<b>Reservoir Monitoring with InSAR Technology</b> .....	499
<i>J. Granda, A. Arnaud, G. Cooksley</i>	
<b>Constraining Reservoir Models to Production and 4D Seismic Data - Application to the Girassol Field, Offshore Angola</b> .....	506
<i>F. Roggero, O. Lerat, D. Y. Ding, P. Berthet, F. Lefeuvre, P. Perfetti, C. Bordenave</i>	
<b>The Core Techniques of Reservoir Geophysics</b> .....	530
<i>S. Qu, N. Dong, Z. Liu</i>	
<b>Campos Basin, Albacora Leste Block: Study of Static and Dynamic Model of Caratinga Reservoir</b> .....	531
<i>R. G. C. Lara, J. O. L. Nunes, G. F. dos Santos, R. M. Vasques, C. L. Ortega, R. A. L. Di Virgilio</i>	
<b>Reservoir Engineering Aspects of Integrated Operations</b> .....	532
<i>L. Reis, L. C. da Silva</i>	
<b>Nonlinear Dynamics Methods for Passive Seismic Data Interpretation.</b> .....	533
<i>S. Turuntaev, A. Novikov</i>	

## **VOLUME 2**

## **FORUM 6: CARBONATE RESERVOIRS**

<b>Alberta Carbonates - the Third Trillion</b> .....	534
<i>J. McDougall, E. Isaacs, J. M. Alvarez</i>	
<b>A Multi-disciplinary Approach to Developing a Highly Faulted, Densely Fractured, Low Permeability Carbonate Reservoir, Offshore Qatar</b> .....	546
<i>J. Johnston, S. Al-Baker, C. Condie, T. Popescu, A. Rajvanshi</i>	
<b>The Ekofisk Field: Achieving Three Times the Original Value</b> .....	560
<i>H. Hermansen</i>	
<b>Carbonate Reservoirs in Brazilian Sedimentary Basins</b> .....	568
<i>A. Spadini</i>	
<b>A New Strategic Approach for Increasing the Production Capacity and Solving the Corrosion Problem in Some Carbonate Reservoirs: From the Bioengineering Sight</b> .....	584
<i>O. Akyener, L. Kenar, S. Sevli</i>	
<b>Investigation of Water Coning in Naturally Fractured Oil Reservoirs</b> .....	585
<i>J. Foroozesh, D. Barzegari, S. S. Ayatollahi, A. Jahanmiri</i>	
<b>High Resolution Stratigraphy Framework for Carbonatic Deposits of Terciary of the Campos Basin</b> .....	586
<i>M. R. Diaz, E. Pereira</i>	
<b>Fracture Modeling of a Giant Carbonate Oil Field in Iran</b> .....	587
<i>M. S. Abedi</i>	
<b>Similarities and Differences Between Waterflooding Performances of Naturally Fractured Carbonate and Sandstone Reservoirs at Samara Region Mature Oil Field in Russia</b> .....	588
<i>A. Fomina, B. Kolganov, G. Kovaleva, S. Agrafenin, A. Shashel</i>	
<b>Carbonate Reservoir Hydraulic Fracture Treatment in Oil and Gas Field, Uzbekistan</b> .....	589
<i>H. Sun, X. Cao, R. Li, G. Liu</i>	

<b>Integration of Borehole Resistivity Image Logs and Seismic Attributes for Fracture Prediction in Carbonate Reservoirs.....</b>	<b>590</b>
<i>M. Frass</i>	
<b>A Fully Integrated Approach for the Development of Rock Type Characterization, in a Middle East Giant Carbonate Reservoir.....</b>	<b>591</b>
<i>A. A. Askari</i>	

### **FORUMS 7: LATEST ADVANCES IN BOTTOM-OF-THE-BARREL CONVERSION PROCESSES**

<b>Facing the Future of Refining: Repsol YPF Cartagena Refinery Expansion .....</b>	<b>592</b>
<i>M. F. Gonzalo, J. S. Valles</i>	
<b>A New Method of Processing Heavy Oil: Residue Decarbonization Technology (RDCP).....</b>	<b>609</b>
<i>J. Liang, Y. Zhang</i>	
<b>Eni Slurry Technology: A New Process for Heavy Oil Upgrading.....</b>	<b>614</b>
<i>A. Delbianco, S. Meli, L. Tagliabue, N. Panariti</i>	
<b>The Advanced EUREKA Process: Environment Friendly Thermal Cracking Process.....</b>	<b>623</b>
<i>T. Ohba, I. Shibutani, J. Inomata, H. Nagata, R. Watari</i>	
<b>HRH: Nano Catalytic Process to Upgrade Extra Heavy Crude/Residual Oils.....</b>	<b>641</b>
<i>J. Zarkesh, R. Hashemi, M. Ghaedian, H. R. Khakdaman, S. J. Ahmadpanah, S. Khadzhiev, H. Kadiev</i>	
<b>Less Crude Oil, More Superior Products .....</b>	<b>654</b>
<i>J. Liu</i>	
<b>Intelligent PIG with Ultrasonic Testing Capabilities for Internal Inspection of Fired Heater Process Tubes.....</b>	<b>655</b>
<i>C. Blanco-Pinzon, S. Lyon</i>	
<b>Heavy Oil Processing - Fluid Motion Solutions.....</b>	<b>656</b>
<i>K. Wilson, I. Robbins, D. Meyer</i>	
<b>Pertaminas Refinery Optimization Planning in Downstream Industry (Refinery Unit Processing No. IV and V Bottom Upgrading RCC Projects Planning .....</b>	<b>657</b>
<i>S. Armansyah, A. S. Syarofie</i>	
<b>Residue Upgradation Using Depolymerization Catalyst .....</b>	<b>658</b>
<i>M. Kotagiri, S. Shah, R. Kumar, P. Thakkar, R. R. Sita, A. Zadgoankars</i>	
<b>Promising Technologies of Heavy Oils and Natural Bitumens Processing .....</b>	<b>659</b>
<i>E. Telyashev</i>	
<b>Preparation and Application of a Novel Resid Cracking FCC Catalyst based on in-situ Synthesis from Kaolin Caly.....</b>	<b>661</b>
<i>H. Zhao, H. Liu, B. Wang, X. Gao</i>	
<b>Lurgis MPG Technology As Applied for the North West Upgrader Project: A Hydrogen Source for Refineries.....</b>	<b>662</b>
<i>M.-M. Weiss, D. Ulber, S. Walter</i>	

### **FORUM 8: NEW PROCESSING ROUTES TO RE-BALANCE DIESEL/GASOLINE AT REFINERIES**

<b>Efficient Use of Biofuels As Blending Components in Automotive Fuels: A Strategy to Reduce Gasoline/Diesel Imbalance in Spain .....</b>	<b>663</b>
<i>F. F. Lores, M. B. López</i>	
<b>Future Fuels Directions: Refinery Evolution to HCCI Production .....</b>	<b>673</b>
<i>D. Rundell, S. Randick</i>	
<b>Prospects of the Refining Sector in the Mediterranean Region .....</b>	<b>682</b>
<i>L. Guarrera</i>	
<b>Unicracking Technology Advances for Re-balancing Diesel Gasoline Production .....</b>	<b>705</b>
<i>S. Simpson, V. Thakkar, D. Ackelson, L. Wang</i>	
<b>EU Refineries Challenges to Cope with Supply/Demand Scenarios at the 2015 Horizon.....</b>	<b>719</b>
<i>J.-F. Larivé</i>	
<b>New Modern Refinery in South Eastern Europe: Serbia Case Study .....</b>	<b>728</b>
<i>O. Ocic</i>	
<b>Production of Medium Distillates from Naphtha.....</b>	<b>729</b>
<i>R. R. Mesa, J. P. G. Martin, D. L. Fernandez, L. G. Bajos</i>	



<b>Technology Selection for Clean Gasoline Production</b> .....	730
<i>Z. Liu, Y. Zhang</i>	
<b>Reduction of the Aromatics and Benzene Content in Reformates at the Semiregenerative Reforming Units a Perspective Way of the Optimum Alkylate Production</b> .....	731
<i>M. Levinbuk, S. Netesanov, A. Lebedev, V. Zuber, M. Melnikov, V. Khavkin</i>	
<b>Challenges and Technological Opportunities for the Oil Refining Industry: A Brazilian Refinery Case</b> .....	732
<i>G. Gomes, A. S. Szklo, D. A. C. Branco</i>	
<b>INDALIN+: A Process for Production of Auto LPG and High Quality Gasoline</b> .....	733
<i>S. K. Das, D. Bhattacharyya, V. Krishnan</i>	
<b>Optimization of Product Portfolio Along with Refinery Expansion/Modernisation Project - A Case Study</b> .....	734
<i>C. Mazhuvanchery</i>	
<b>Increasing Gasoil/Gasoline Ratio Production</b> .....	735
<i>L. G. Medeiros</i>	
<b>Increase in Gasoline Production Capacity of Oil Refineries</b> .....	736
<i>M. Sattarin, M. Bayat, M. Teymouri, A. A. Pasban</i>	
<b>Dimerization and Trimerization of 2-Methylpropene (Isobutylene) to High Quality Fuels Over H-Zeolite-Y Catalysts</b> .....	737
<i>M. Al-Kinany, H. Al-Megren, M. Al-Dosary, S. Al-Drees, F. Al-Shehri, A. M. Al-Hamdan, R. Al-Rasheed</i>	
<b>Synthesis and Study of Nanostructured Metal-supported Catalysts in Hydroconversion of n-Alkanes</b> .....	738
<i>V. Akhmedov, S. Al-Khowaiter</i>	

## **FORUM 9: LATEST ADVANCES AND NOVEL PROCESSES FOR DEEP DESULPHURIZATION**

<b>A Kinetic Study on Biodesulfurization of Di-Benzothiophene in a Down Flow Jet Loop Bioreactor with Coaxial Draft Tube</b> .....	739
<i>M. Sohrabi, A. M. Jamshidi</i>	
<b>Non-conventional Technologies for Fuel Desulphurization</b> .....	751
<i>D. Tuli, A. Kumar</i>	
<b>INDSORG Process for Desulphurization of Cracked Gasoline Feed Stocks</b> .....	760
<i>S. Kumar, A. C. Pulikottil, A. Sharma, B. R. Kumar, M. Santra, B. Kumar, B. Basu, S. Makhija, A. Kumar</i>	
<b>Hydroprocessing Catalyst Solutions to Meet Diesel Demand and Quality</b> .....	769
<i>R. Leliveld, S. Olivier</i>	
<b>Novel Low Pressure Process for Aviation Turbine Fuel Production Through Hydrotreating Route</b> .....	776
<i>A. Sharma, R. P. Gupta, M. Santra, B. Kumar, B. Basu, A. Kumar</i>	
<b>Synthesis, Characterization and Diesel HDS Performance of NiMo Catalysts Supported on ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> Composite Oxides</b> .....	777
<i>Z. Dengqian, D. Aijun, Z. Zhen, W. Guofu, G. Zhenyong</i>	
<b>Investigation of FCC Gasoline Upgrading on Pt-Pd/USY Catalyst</b> .....	778
<i>J. Hancsók, S. Magyar, A. Holló, A. Thernesz</i>	
<b>Ionic Liquids: Microwave Synthesis and Application in Diesel Desulfurization</b> .....	789
<i>R. Sarin, A. K. Arora, S. K. Puri, A. P. Singh, A. A. Gupta, R. K. Malhotra</i>	
<b>A New Titania Catalyst Prepared by the Multi-gelation Method for Ultra-deep Hydrodesulfurization of Diesel Oil</b> .....	790
<i>S. Inoue</i>	
<b>Making Process Intensification a Reality: A Major Initiative by HPCL, India</b> .....	791
<i>S. Gandham, M. Kotagiri, D. P. Rao, N. Kaistha, B. K. Namdeo, P. Thakkar</i>	
<b>Competitive Adsorption of Nitrogen Compounds in Hydrodesulfurization of 4,6-dibenzothiophene</b> .....	792
<i>R. Boesen, N. von Solms, K. Knudsen, M. Michelsen</i>	
<b>Development and Commercial Application of RS-1000 Catalyst for Diesel Ultra-deep Hydrodesulfurization</b> .....	793
<i>X. Long, X. Gao, X. Liu, Z. Wang, H. Nie, Y. Shi, D. Li</i>	
<b>Thermophilic and Mesophilic Micro-organisms Capable of Heavy Crude Oil Biodesulfurization</b> .....	794
<i>S. Torkamani, I. Alemzadeh, J. Shayegan, S. Yaghmaei</i>	
<b>Meeting New ULSD Challenges by Use of Own HDS Simulation Tools</b> .....	795
<i>M. A. G. Carreno, J. M. Parraga, D. C. Chacon, F. A. de Benito, B. B. Allue, M. S. Martinez</i>	

## **FORUM 10: UNCONVENTIONAL CRUDE OILS AND FEEDSTOCKS TO REFINERIES**

<b>Biofuels 2.0: Catalytic Conversion of Ligno-cellulosic Biomass</b> .....	796
<i>P. O'Connor</i>	
<b>Renewable Raw Materials for Fuels and Petrochemicals Production</b> .....	803
<i>A. Pinho, M. Almeida, K. Maeshiro, F. Mendes</i>	
<b>Next Generation Technologies for Upgrading Oil Sands Bitumen to High Value Products While Minimizing Environmental Impacts</b> .....	809
<i>D. du Plessis, R. Hill</i>	
<b>Hydrocarbon Fractions from Plastic Wastes for Refinery and Petrochemical Industry</b> .....	822
<i>N. Miskolczi, L. Bartha, A. Angyal, I. Valkai</i>	
<b>Alberta Oil Sands - Production and Use of Synthetic Crudes</b> .....	832
<i>M. Ashar</i>	
<b>Increasing Brazilian Refineries Flexibility: The Use of Non-conventional Technologies for Upgrading and Processing Heavy and Acid Crude Oils, the Petrobras Approach</b> .....	837
<i>E. M. Moreira, M. R. R. Oddone, G. Torres, P. Juarez, B. Renato</i>	
<b>Assessment of Different Technologies for Heavy Crude Oil Pipelines Transportation</b> .....	838
<i>J. C. Dominguez, L. Reboredo, M. L. Graziadio</i>	
<b>Study on the Reasons for Forming of the Floccules in Hydrotreated Base Oil</b> .....	839
<i>X. Cheng, T. Huang, H. Gao</i>	
<b>Technology Gaps and Challenges for Processing High Asphaltene-high Metal Containing Crudes</b> .....	840
<i>M. M. Ramirez</i>	
<b>Unconventional Fluid Catalytic Cracking Feedstock: Influence of Polymer Wastes Addition to Vacuum Gasoil on Gasoline and C2-C4 Yields</b> .....	841
<i>A. O. Omoniyi, A. Gomez-Sierrana, A. Marcilla</i>	
<b>Thermal Analysis of Brazilian Heavy Oil and Ultra-heavy Residues Obtained in Molecular Distillation by DSC Evaluation</b> .....	842
<i>O. J. Celis, J. A. B. Hernandez, E. L. M. Arias, A. L. J. Munhoz, R. M. Filho</i>	
<b>New PETROBRAS Technology for Normal Paraffins Production from Vegetable Oils</b> .....	843
<i>A. E. F. Fontes, A. Lima, M. Lima, N. Pereira</i>	

## **FORUM 11: REFINERIES IN THE DIGITAL ERA: WHAT IS NEXT IN AUTOMATION, CONTROL, OPTIMIZATION**

<b>Asset Integrity Management in the Digital Age</b> .....	844
<i>S. Adair, E. Filmlter, F. Mahlangu</i>	
<b>Delivering Improved Refinery Availability and Utilisation by Means of Model Based Operations Support Tools</b> .....	853
<i>R. Calder, H. Gulati, S. Parker, D. Thomas</i>	
<b>Rigorous Refinery-wide Optimisation: A Case Study for Petronor</b> .....	861
<i>A. López-Rodríguez, P. Jiménez-Asenjo, A. Arteagabeitia, J. M. Martínez-Cámara, C. Aguilar</i>	
<b>The Refiner's Squeeze: Making Investments in People and Technology to Optimize Short-term Capacity</b> .....	873
<i>P. Potts</i>	
<b>Efficiency Improvement and Emissions Reduction in Refinery Boilers and Furnaces</b> .....	878
<i>M. Morales, F. Rodríguez, E. Tova, M. A. Portilla, L. Cañadas, J. L. Vizcaino</i>	
<b>Maintenance Friendly Automation Systems - the Way to Go</b> .....	889
<i>M. Shenai, M. Shenai</i>	
<b>Comparing Different Methods for Calculating the Number of Gas-phase and Liquid-phase Transfer Units in Distillation</b> .....	890
<i>P. Jouybanpour, N. Kasiri</i>	
<b>Tanks High Level Protection</b> .....	891
<i>F. Al-Sahan</i>	
<b>Correction Factors in Measuring Oil Volumes</b> .....	892
<i>R. N. B. Felipe, G. G. de Medeiros, N. F. da S. Jãnior, R. C. T. dos S. Felipe</i>	
<b>Pinch Analysis in Refinery Operations</b> .....	893
<i>R. Hernandez</i>	

<b>Batch Sequencing in Scheduling of a Real-world Pipeline Network</b> .....	894
<i>L. Yamamoto, L. V. R. de Arruda, F. Neve-Jr, N. Libert</i>	
<b>Hydraulic Decoking Automation</b> .....	895
<i>R. Helm, D. Meyer, I. Robbins</i>	

## **FORUM 12: PROGRESS IN OLEFIN PRODUCTION**

<b>Maximizing Propylene Production in a FCC Unit</b> .....	896
<i>R. L. Mora, M. P. Pascual, M. Miranda</i>	
<b>New Olefin Production Technologies in SINOPEC SRIPT</b> .....	908
<i>J. Teng, R. Wang, Z. Xie, Y. Gan</i>	
<b>Recent Impacts of Light Olefin Demands on Refining Processes</b> .....	918
<i>P. C. dos Santos, P. Seidl, S. Borschiver</i>	
<b>Expansion of Petrochemical Plants at OMV's Burghausen Refinery</b> .....	927
<i>A. Purgstaller</i>	
<b>MTP® - the On-purpose Propylene Technology for a Changing Feedstock Environment</b> .....	931
<i>T. Wurzel, H. Kömpel, M. Rothaemel, W. Liebner</i>	
<b>Mathematical Modeling of Separation of Propylene and Propane and Selection of the Best Membrane by the Model</b> .....	941
<i>F. Z. Ashtiani, T. Kaghazchi, I. Dashti</i>	
<b>FDFCC-III Process for Propylene Production</b> .....	942
<i>S. Yan, L. Wang, F. Meng, L. Zhang, L. Qiao</i>	
<b>Modification of the Ethylene Plant in Maoming</b> .....	943
<i>Z. Lei, C. Li, Z. Wang, X. He</i>	
<b>Value Addition from CFU by Optimization of Stripper Parameters</b> .....	944
<i>J. N. Sukanandan, D. Roy</i>	
<b>Enhanced Propane Recovery - A Case Study</b> .....	945
<i>R. K. Singh, D. Roy</i>	
<b>Petrochemical Industry and Project Development in Indonesia 2008-2011</b> .....	946
<i>S. Armansyah</i>	
<b>Propane/Propene Separation by Selective Adsorption on Porous Coordination Polymers</b> .....	947
<i>S. Ernst, A. Wagener</i>	
<b>Study on the Interaction of Y and ZSM-5 for Propylene Enhancement and Its Application</b> .....	948
<i>W. Ding, C. Liu, J. Cai, D. Wang</i>	

## **FORUM 13: NON-CONVENTIONAL GAS (CBM, HYDRATES, GASIFICATION OF COAL/HEAVY-OIL BOTTOMS)**

<b>India's R&amp;D Efforts for Developing Natural Gas Hydrates as an Energy Resource</b> .....	949
<i>P. Kumar, M. V. Lall, V. K. Sibal</i>	
<b>Technology Innovation and the Importance of Unconventional Gas Resources in Canada</b> .....	973
<i>E. Isaacs</i>	
<b>Natural Gas Production from Tight Gas Formations: A Global Perspective</b> .....	983
<i>R. F. Aguilera, T. Harding, F. Krause</i>	
<b>Critical Success Factors of CBM Development - Implications of Two Strategies to Global Development</b> .....	1001
<i>A. Chakhmakhchev, R. Fryklund</i>	
<b>Unlocking the Potential of CBM: An Exploration of Alberta's Royalty Treatment of Unconventional Gas</b> .....	1012
<i>G. Demian</i>	
<b>Swapping Methane by Flue Gas in Gas Hydrates Through Unconsolidated Porous Media</b> .....	1036
<i>D. Huh, J. Lee, H. Lee</i>	
<b>Underground Natural Gas, Liquid Petroleum Gas or Petroleum Storage in Abandoned Coal Mines</b> .....	1037
<i>S. Nagy, J. Siemek, S. Rychlicki</i>	
<b>New Dimensions in CBM Well Cementation: Case Histories of Successful Implementations of Lightweight Cement Slurries</b> .....	1038
<i>D. Dasgupta, S. Banerjee, V. K. Jain</i>	
<b>Coal-bed Methane Using in Poland - the Present State and Perspectives</b> .....	1039
<i>J. Stopa, S. Rychlicki, S. Nawrat</i>	

**FORUM 14: STATE OF THE ART ON RENEWABLE (WIND & SOLAR)  
SOURCES OF ENERGY**

<b>The Prospects for Offshore Renewable Energy</b> .....	1040
<i>J. Westwood</i>	
<b>La Política de la Union Europea sobre Energias Renovables</b> .....	1041
<i>D. F. de Gatta Sanchez</i>	
<b>World Wind Energy Outlook</b> .....	1042
<i>P. Brun</i>	
<b>Cost Reduction Opportunities for the PV Industry by Operational Excellence in the March Towards Grid Parity</b> .....	1043
<i>E. Mera, A. Granada</i>	
<b>Solar Photovoltaics and Fuel Cells: Valuing the Contribution of Distributed Energy Resources to the State of California, U.S.A.</b> .....	1044
<i>L. S. Schell</i>	
<b>Renewable Energy Sources as Panacea to the Global Environmental Problems</b> .....	1064
<i>L. Gada</i>	
<b>Combination of Solar Energy and LPG in Energy Efficient Houses</b> .....	1073
<i>M. Munecas, I. Leiva, I. Palacio</i>	
<b>Construction and Tests of Solar Stoves for the Devoid Communities of the Great River of North-Brazil</b> .....	1074
<i>J. Moura</i>	
<b>Electricity Generation from Waste Gas - a Bio-thermal Case Study</b> .....	1075
<i>J. McQueen</i>	
<b>Geothermal Water - Renewable, Ecologically Acceptable and Multipurpose Energy Potential</b> .....	1076
<i>S. Horvat, A. Getliher</i>	
<b>Renewable Energy Development in China</b> .....	1077
<i>S. Wang, M. Li, J. Yan</i>	

**FORUM 15: RECENT DEVELOPMENTS IN BIO-FUELS**

<b>The Effect of Fuel Additives on Biodiesel (B-100) Long Term Oxidative Stability and Performance</b> .....	1078
<i>I. Abou-Nemeh</i>	
<b>Tree Borne Oil Seeds: Potential Biodiesel Resources in India</b> .....	1087
<i>R. Sarin, M. Sharma, K. C. Dohhen, S. K. Puri, A. A. Gupta, R. K. Malhotra</i>	
<b>Petrobras' Initiatives for Glycerin Co-produced with Biodiesel</b> .....	1093
<i>M. L. Drachmann</i>	
<b>The Uses of Simulation in Delivering Quality Biofuels to the Retail Market</b> .....	1102
<i>R. Calder, D. Earp, H. Gulati</i>	
<b>PETROBRAS - An Energy Company and the Brazilian Biofuel Program</b> .....	1109
<i>F. Torres</i>	
<b>Biodiesel - A Futuristic Approach for Energy Security in India</b> .....	1110
<i>D. J. Katakty</i>	
<b>Validation of Ethanol Production from Sugar Cane and Cassava by Small Scale Farmers</b> .....	1111
<i>B. M. Rodrigues</i>	
<b>Logistics Infra-structure Plan for Ethanol Exportation</b> .....	1112
<i>G. R. de Carvalho, M. P. de F. Rodrigues, R. C. Davariz</i>	
<b>Most Recent Developments in Biodiesel Infra-structure. A Practical Case Showing How to Distribute 80 Million Litres</b> .....	1113
<i>L. Silberman, L. A. da S. Kauer</i>	
<b>The Use of Biofuels in Central Europe</b> .....	1114
<i>T. Vuk, A. Thernesz, G. Wilde</i>	
<b>Production of Biodiesel and Family Agriculture</b> .....	1115
<i>G. Mendes, B. Carvalho, D. Leal, J. Fausto, M. Santana, R. Pires</i>	
<b>Bio-oil Production from Biomass by Fast Pyrolysis: Full Scale Plant Experience</b> .....	1116
<i>G. Maioli, P. Gilligan, M. Brosio, J. M. EberlÃ©</i>	
<b>Optimization of the Biodiesel Production from Castor Oil and Influence of the Temperature on the Rheological Behavior of Its Blends with Diesel Fuel</b> .....	1117
<i>F. P. Fagundes, C. R. O. Souto, S. I. G. de Medeiros, A. de S. Silva, M. Costa</i>	

<b>Preparation of Polymeric Supports for Biodiesel Production - Influence of Swelling Degree and Size Particle.....</b>	1118
<i>F. P. Fagundes, A. de S. Silva, S. I. G. de Medeiros, M. Costa, C. R. O. Souto, E. L. F. Vidal</i>	

### VOLUME 3

#### **FORUM 16: NATURAL GAS AS A TRANSPORTATION FUEL**

<b>Development of CNG Infrastructure - India's Experience.....</b>	1119
<i>A. Gumber</i>	
<b>Use of Natural Gas As Fuel for Ships.....</b>	1140
<i>K. M. Sandaker</i>	
<b>Adsorbed Natural Gas Technology Development for Transportation Fuel.....</b>	1153
<i>M. M. Akbarnejad</i>	
<b>The Increasing Role of LPG and Natural Gas As Transportation Fuels in Algeria .....</b>	1164
<i>S. Akretche</i>	
<b>Application of CNG As a Transportation Fuel for Cleaner Environment.....</b>	1182
<i>T. Antony</i>	
<b>CNG As a Transportation Fuel in India .....</b>	1183
<i>D. J. Katakya</i>	
<b>Challenges of Culturally Adapting to the Use of Natural Gas As Vehicular Fuel in Peru: Its Impact on the Family Economy and Its Effects on the Hydrocarbon Trade Balance of the Country .....</b>	1184
<i>R. Segovia, M. Zuñiga, J. Risco</i>	
<b>Autogas (Butane and Propane) As Another Natural Alternative on Clean Transport in Spain and Worldwide.....</b>	1185
<i>I. P. Prada</i>	

#### **FORUM 17: BALANCING THE REGIONAL GAS SUPPLY & DEMAND EQUATIONS**

<b>EU Common Natural Gas Market. Is That Possible?.....</b>	1186
<i>J. M. Egea, F. Herrera</i>	
<b>Global LNG Outlook - Challenges and Opportunities .....</b>	1187
<i>S. Ghouri</i>	
<b>Perspectives to the Southern Cone Gas Balance Using a Game Theory Approach .....</b>	1202
<i>J. T. Naveiro, F. M. de A. Mendes, P. L. N. Medina</i>	
<b>Central and Eastern Europe's Answer to Energy Dependency .....</b>	1218
<i>B. Lakatos</i>	
<b>LNG, Helping Balance Regional Markets (Not Available).....</b>	1219
<i>A. A. Jbara</i>	
<b>LNG Hub Harbours: A Proposal for Regional Energy Offer/Demand Balance Improvement .....</b>	1220
<i>I. Sanchidrian, J. M. G. Muina, C. Sanchidrian</i>	
<b>Underground Gas Storages (UGS) As an Element of the Safety Energy System .....</b>	1221
<i>S. Nagy, J. Siemek, S. Rychlicki</i>	
<b>Supply and Demand Evolution of Natural Gas Liquids in Peru and Its Effects on the Local and Regional Energetic Matrix.....</b>	1222
<i>R. Segovia, J. Risco, M. Zuñiga</i>	
<b>Technical and Economical Evaluation of Alternatives for Natural Gas Transportation .....</b>	1223
<i>M. A. L. Bendezu</i>	
<b>Gas Transit Via Ukraine to Europe: Security and Reliability .....</b>	1224
<i>A. Andriievskiy, O. Draganchuk, Z. Osinchuk</i>	
<b>The Role of Turkey in Regional Gas Transportation .....</b>	1225
<i>A. Kesikli</i>	
<b>At the Crossroads: Hungary-Ukraine Cooperation in Contributing to the Natural Gas Balance of the European Union.....</b>	1226
<i>P. Kiss</i>	

## **FORUM 18: MONETIZING UNDERUTILIZED GAS RESOURCES (GTL, LNG)**

<b>Technology Evaluation Methodology for Stranded Gas Monetization Options</b> .....	1227
<i>R. Coll, E. Carbón, J. Delgado</i>	
<b>Successfully Financing Sustainable LNG Growth in Changing Global Markets: Lessons from Nigeria</b> .....	1238
<i>V. Eromosele</i>	
<b>GTL.F1 Progress Report: Slurry Bed FT Technology Demonstration Leaps Ahead at Mossel Bay</b> .....	1246
<i>M. Wagner</i>	
<b>GTL - Delivering the Premium</b> .....	1282
<i>M. Schnell, J. Naylor</i>	
<b>Greenhouse Gas Mitigation for a Gas-to-Liquids Plant</b> .....	1283
<i>C. Lowe, S. Heimel, S. Reddy, S. Vyas</i>	
<b>Bioko Island As the Regional Gas Hub for the Eastern Gulf of Guinea</b> .....	1296
<i>A. Soulsby, G. N. Lima</i>	
<b>Integration of CCGT Plant and LNG Terminal</b> .....	1297
<i>A. Bulte, J. M. Mayo</i>	
<b>Present Situation and Prospects of LNG Industry in China</b> .....	1298
<i>Y. Xing, M. Liu</i>	
<b>The Use of Micro Channels As an Alternative Technology to Increase the Viability of Offshore GTL</b> .....	1299
<i>E. F. Sousa-Aguiar, M. Montes</i>	
<b>Utilizing LNG Cold for Extracting Value Added Products from LNG</b> .....	1300
<i>D. Roy</i>	
<b>Non-FT GTL, Iranian Natural Gas Reservoirs Monetization</b> .....	1301
<i>L. Shirazi, H. Manafi, E. N. Lay, A. Borhani</i>	

## **FORUM 19: BEST PRACTICES IN SUSTAINABILITY REPORTING**

<b>Reporting As a Cornerstone of Communication for Repsol YPF</b> .....	1302
<i>J. M. S. Cabrero</i>	
<b>Developing the Right Set of Sustainability Metrics for Oil and Gas Operations</b> .....	1321
<i>B. Beloff, K. Clarke-Whistler</i>	
<b>Key Success Factors in the Brazilian O&amp;G Supply Chain - Sustainability and New Challenges to SME</b> .....	1327
<i>R. Araujo, R. S. B. Araujo, E. Fernandes, P. S. R. Alonso, A. B. Machado</i>	
<b>Risk Management Practice by Use of Captive in Chinese Oil Industry</b> .....	1328
<i>P. Huang, M. Wu</i>	
<b>Towards an Even More Dynamic and Qualitative EITI ?</b> .....	1339
<i>A. M. D'Intignano</i>	
<b>Life Cycle Assessment (LCA) in Oil and Gas Industries As an Effective Sustainability Development Measure: Case Study - Sarkhoon Gas Treating Plant</b> .....	1344
<i>G. Bahmannia</i>	
<b>Development of Documents Control System</b> .....	1358
<i>G. Feinberg, S. Rojas, A. Fontana, G. Bursztyn</i>	
<b>Strategy, the Inevitable Choice of an Enterprise to Maintain Its Strength</b> .....	1359
<i>N. Li</i>	
<b>Application of Sustainability Concepts to Oil and Gas Exploration at Rainforest Ecosystems: The Petrobras Case in the Amazon Forest</b> .....	1360
<i>B. Leyen, F. Miller</i>	
<b>Determining an Organized Contractor Quality Evaluation System Through Quality-oriented Key Performance Indicators</b> .....	1361
<i>M. A. Dagnino, A. Ferrario</i>	

## **FORUM 20: CHALLENGES AND OPPORTUNITIES IN GHG EMISSIONS TRADING MARKETS**

<b>Strategies for Managing Environmental Risks in Carbon Energy Business - Perspectives on Clean Development Mechanisms and Emissions' Trading</b> .....	1362
<i>J. P. N. Giri</i>	

<b>CDM Projects Portfolios: The Economics</b> .....	1363
<i>I. Bachiller, J. M. Juez</i>	
<b>Monetizing Reductions in Greenhouse Gas Emissions: Opportunities in Carbon Credit Markets</b> .....	1378
<i>S. Deatherage</i>	
<b>Economic Modeling to Identify Emissions Reduction Opportunities at Carbon Energy Business During Fossil Energy Lead Time - Aligning the Value Chain of CDM &amp; JI on Long Term Emissions Trading and Carbon Energy Management in the Asian Context</b> .....	1391
<i>J. P. N. Giri, N. Giri</i>	
<b>Implications of Linking Emissions Trading Schemes on Market Participants</b> .....	1407
<i>P. Concessi, R. Cohen, J. Luciw</i>	
<b>Implications on the European Union Emission Trading Scheme (EU-ETS) of Capture Transport and Geological Storage Projects</b> .....	1416
<i>P. Coussy</i>	
<b>CDM After 2012 - Challenges and Opportunities for Latin America and the Caribbean</b> .....	1426
<i>J. Martin, M. Moyano, A. Mingst, V. Schmall</i>	
<b>General Situation of CO2 Emissions and Reduction in Refining and Petrochemical Industry of China</b> .....	1427
<i>X. Ying, J. Mao</i>	
<b>Certified Emission Reductions Trading Market in Brazil: Legal Issues</b> .....	1428
<i>R. C. C. dos Santos, Y. M. A. Xavier, O. dos S. S. Neto</i>	
<b>Achieving High Growth in a Low Carbon Economy - Fantasy or Reality?</b> .....	1429
<i>E. Madden, N. Walker</i>	

## **FORUM 21: HSE KEY ISSUES FOR THE OIL AND GAS INDUSTRY - IPIECA**

<b>Building Private Public Partnerships to Address Road Safety Issues</b> .....	1430
<i>H. Pervin</i>	
<b>Partnerships in the Oil &amp; Gas Industry: An IPIECA Perspective</b> .....	1445
<i>B. Doll, S. Depraz, H. Buckley</i>	
<b>Converting Major Hazards Into Minor Risks - a 21st Century Approach</b> .....	1458
<i>E. Harstad, R. Pitblado</i>	
<b>Joint Industry Programme on Exploration and Production Sound and Marine Life</b> .....	1467
<i>J. Campbell, R. Gentry</i>	
<b>Petrobras HSE Management System</b> .....	1471
<i>B. Espinosa, R. Azevedo, A. Glitz</i>	
<b>The Link Between Drug Testing and Safe Work Environments: Industry Expectations and International Standards</b> .....	1486
<i>M. E. Zaldivar</i>	
<b>The Nexen Ethics and Compliance Journey - a Canadian Corporation Helping to Set the Standard for Ethical Business Practices</b> .....	1487
<i>K. Schonfelder</i>	
<b>The Research of the Relationship Between the Organizations Safety Awareness and Its Relative Elements and the Organizations Safety Performance</b> .....	1488
<i>S. Li</i>	
<b>Ecologically Sustainable Offshore Operations in Manati Field, Brazil</b> .....	1489
<i>P. Miletto, R. Saavedra, A. Borella, J. Sperb</i>	
<b>Petroleum Pipeline Vandalization in Nigeria: Complementing Conventional Policing with Electronic Surveillance As a Panacea for Vandalization</b> .....	1490
<i>G. Ogueji</i>	
<b>Progress on the New Set of International Standards for the Oil and Gas Industries</b> .....	1491
<i>A. R. Johansen, M. P. Costellanos</i>	
<b>Actions of HSESR to Reduce Risks of Accidents During a Construction Site Into a Refinery in Operation</b> .....	1492
<i>S. R. Parazzi</i>	
<b>Principles for Assessing the Physical Fitness Requirements of Onshore and Offshore Workers</b> .....	1493
<i>M. Tipton, G. Milligan, J. House, M. Maeso</i>	

## **FORUM 22: ATTRACTING AND RETAINING FUTURE ENERGY PROFESSIONALS**

<b>An Industry Collaboration Model for Developing New E&amp;P Talent</b> .....	1494
<i>W. Cobb</i>	

<b>University Relations in Schlumberger: The Ambassador Program and Beyond...</b>	1499
<i>O. Peyret</i>	
<b>Recruiting and Retaining, a Question of Communication?</b>	1505
<i>T. Hagen</i>	
<b>Petrobras' Human Resources Breaking Ground</b>	1513
<i>G. Dunzer, M. Mundim</i>	
<b>Eyes on the Horizon: Engaging, Motivating, and Developing Energy Industry Young Professionals</b>	1532
<i>J. Etkind, T. Thomas, L. Tealdi, J. Donachie, L. Beugelsdijk</i>	
<b>Attracting and Retaining Future Energy Professionals (Not Available)</b>	1547
<i>E. Sprunt</i>	
<b>The Dual Blending Problem and New Organizational Learning Forms in Collaborative Work Environments</b>	1548
<i>E. Guldemond, K. T. Have</i>	
<b>Aligning Hearts and Minds at Hindustan Petroleum Corporation for Superior Business Results</b>	1549
<i>A. Sen, S. Rao</i>	
<b>Selling the Energy Industry to Tomorrows Energy Professionals</b>	1550
<i>S. Beacock</i>	
<b>How Project Management Office (PMO) Can Reduce the Risks of "Big Crew Change" in Oil Industry?</b>	1551
<i>H. Moghaddasi, G. Jergeas</i>	
<b>Seducing People and Creating Passion to Attract and Retain for the Future</b>	1552
<i>R. Andrade</i>	
<b>Meeting the Local Manpower Needs of the Oil &amp; Gas Sector in Africa: Challenges and the Academia-oil Company Synergy Imperative</b>	1553
<i>R. Akpojivi, P. Akumagba</i>	
<b>Development of Knowledge Retention Tools: A Strategic Approach to Meet the Impending Challenge of Skill Egress from the Industry</b>	1554
<i>P. Parab, S. Gandham</i>	
<b>The Fight for Talent in the Global Petroleum Industry: Perspectives of a 35-year Veteran</b>	1555
<i>M. Krenek, M. Boedewig</i>	
<b>Challenges of Talent Management in the Indian Oil and Gas Industry</b>	1556
<i>B. Roy, T. Antony</i>	
<b>A Bridge Between University and Energy Industry. ISEs Approach to Attracting and Training Future Oil &amp; Gas Professionals</b>	1557
<i>J. Pina, S. Tomas</i>	
<b>Putting Talent at the Heart of Your Strategy Can Mean Success in Frontier Markets</b>	1558
<i>L. Watt, C. Sloman, C. Markwardt</i>	

**FORUM 23: COPING WITH THE IMPACTS OF NATURAL DISASTERS – LESSONS LEARNED**

<b>Integrating Crisis Management and Business Continuity in RasGas</b>	1559
<i>L. Satti, A. Al Modhaki</i>	
<b>Could a Predicted Natural Hazard Still Be Considered As "Force Majeure"?</b>	1574
<i>P. Benevides</i>	
<b>Coping with the Impacts of Natural Disasters in the Petroleum Sector - a Legal Perspective</b>	1587
<i>L. Zabbah</i>	
<b>Using Insurance Linked Securities to Mitigate the Financial Impact of Natural Disasters</b>	1600
<i>M. Gibson</i>	
<b>Effects of an Earthquake on the Oil Industry</b>	1607
<i>S. K. Roy</i>	

**FORUM 24: CARBON CAPTURE AND STORAGE – POLITICAL, TECHNOLOGICAL AND ECONOMICAL CONSTRAINTS**

<b>A Canadian Framework for Advancing CO2-EOR Projects and Managing Risks Associated with CCS Activities</b>	1616
<i>B. Lakeman, B. McGowan, M. Wilson, W. Gunter</i>	
<b>Oil and Gas Fields: An Opportunity for CO2 Storage or Not?</b>	1623
<i>J. Gale, T. Dixon, T. Aiken</i>	



<b>Harmonizing the Quantification of Greenhouse Gas Emission Reductions Through Oil and Natural Gas Industry Project Guidelines</b> .....	1624
<i>H. Kheshgi, T. Shires, M. Lev-On, R. Siveter, K. Ritter, T. Hochhalter</i>	
<b>Experience from Real CCS Projects - and the Way Forward</b> .....	1632
<i>O. Kaarstad</i>	
<b>Carbon Capture and Storage — Political, Technological and Economical Constraints</b> .....	1641
<i>E. H. Tørstad</i>	
<b>CCS System Flexibility: Options and Challenges</b> .....	1649
<i>H. Chalmers, M. Leach, J. Gibbins</i>	
<b>Capture and Conversion of CO2 from Fossil Fuels</b> .....	1650
<i>J. Miranda, C. Mota, L. C. Moura, A. Barbosa, M. A. Barreto</i>	
<b>Carbon Sequestration and Storage in Poland - Experiences and Forecasts</b> .....	1651
<i>J. Stopa, S. Rychlicki</i>	
<b>China: Utilization of Greenhouse Gas As Resource in EOR and the Storage of it Underground</b> .....	1652
<i>P. Shen, H. Jiang</i>	
<b>Perspectives for the Sustainable Use of Fossil Fuels in Brazil with Carbon Sequestration in Geological Reservoirs</b> .....	1653
<i>C. Santarosa, J. M. Ketzer, P. Cunha, T. Murce</i>	
<b>Carbon Capture and Storage Business Models</b> .....	1654
<i>H. Kheshgi, R. Siveter, S. Crookshank, P. Cunha, A. Lee, L. Bernstein</i>	

### **ADDITIONAL FORUM PAPERS**

<b>Oil Demand</b> .....	1655
<i>M. T. C. Campi</i>	
<b>The Close Connection Between Emissions Trading and CO2 Capture and Storage</b> .....	1660
<i>J. van der Veer</i>	

### **SPECIAL SESSIONS**

<b>Water &amp; Energy: A Sustainable Way - Marcos (Not Available)</b> .....	1664
<i>J. M. Marcos</i>	
<b>Water &amp; Energy: A Sustainable Way - Nebrera (Not Available)</b> .....	1665
<i>J. Nebrera</i>	
<b>Water &amp; Energy: A Sustainable Way - Reid (Not Available)</b> .....	1666
<i>A. Reid</i>	
<b>Water &amp; Energy: A Sustainable Way - Temprano (Not Available)</b> .....	1667
<i>F. Temprano</i>	
<b>Water &amp; Energy: A Sustainable Way - Guires (Not Available)</b> .....	1668
<i>J. M. Guires</i>	
<b>Water &amp; Energy: A Sustainable Way - Camera (Not Available)</b> .....	1669
<i>L. C. Camera</i>	
<b>Water &amp; Energy: A Sustainable Way - Jauregui (Not Available)</b> .....	1670
<i>C. F. Jauregui</i>	
<b>Cooperation Between Oil Producers and Service Companies - Llado (Not Available)</b> .....	1671
<i>J. Llado</i>	
<b>Social Responsibility and Human Rights - Lanaud (Not Available)</b> .....	1672
<i>R. Lanaud</i>	
<b>Social Responsibility and Human Rights - Kell (Not Available)</b> .....	1673
<i>G. Kell</i>	
<b>Social Responsibility and Human Rights - Brown (Not Available)</b> .....	1674
<i>W. Brown</i>	
<b>Gas Market Integration: A Perspective from the International Gas Union (IGU) Doumanian (Not Available)</b> .....	1675
<i>J. Doumanian</i>	
<b>Financing Sustainable Growth in the Oil and Gas Industry - van Meerbeke (Not Available)</b> .....	1676
<i>G. van Meerbeke</i>	
<b>Youth - Does the Industry Need an Image Makeover? - Rotchild (Not Available)</b> .....	1677
<i>L. Rotchild</i>	

<b>Youth - Does the Industry Need an Image Makeover? (Not Available)</b> .....	1678
<i>n/a</i>	

### **MINISTERIAL SESSIONS**

<b>Angola Ministerial Session 1 (Not Available)</b> .....	1679
<i>A. Kleier</i>	
<b>Angola Ministerial Session 2 (Not Available)</b> .....	1680
<i>M. Vicente</i>	
<b>Cuba Ministerial Session (Not Available)</b> .....	1681
<i>Y. G. Vera</i>	
<b>Iran Ministerial Session 1 (Not Available)</b> .....	1682
<i>G.-H. Nozari</i>	
<b>Iran Ministerial Session 2 (Not Available)</b> .....	1683
<i>G.-H. Nozari</i>	
<b>Iran Ministerial Session 3 (Not Available)</b> .....	1684
<i>G.-H. Nozari</i>	
<b>Iran Ministerial Session 4 (Not Available)</b> .....	1685
<i>S. R. Kassaizadeh</i>	
<b>Netherlands Ministerial Session (Not Available)</b> .....	1686
<i>M. van der Hoeven</i>	
<b>Qatar Ministerial Session (Not Available)</b> .....	1687
<i>n/a</i>	

### **ROUND TABLES**

<b>Donald Gautier - Round Table Session (Not Available)</b> .....	1688
<i>D. Gautier</i>	
<b>2007 PRMS: "Building on Consensus" (Not Available)</b> .....	1689
<i>W. Cobb</i>	
<b>International Sustainable Energy Exchange (Not Available)</b> .....	1690
<i>S. Dixson-Decleve</i>	
<b>Regulators and Industry Views (Not Available)</b> .....	1691
<i>J. Cooper</i>	
<b>Contribution of EU Refining (Not Available)</b> .....	1692
<i>I. Muller</i>	
<b>The Challenge that New Fuels/Biofuels and Their Quality Assurance Means for Logistic Systems (Not Available)</b> .....	1693
<i>M. Gomez-Marin</i>	
<b>Culture of the HSE Excellency (Not Available)</b> .....	1694
<i>J. Lafraia</i>	
<b>LNG-Enhancing Energy Diversity (Not Available)</b> .....	1695
<i>A. Al-Khulaiji</i>	
<b>Securing European Gas Supply - Rahal (Not Available)</b> .....	1696
<i>C. Rahal</i>	
<b>Securing European Gas Supply - Dispenza (Not Available)</b> .....	1697
<i>D. Dispenza</i>	
<b>Security of Supply in a European Perspective (Not Available)</b> .....	1698
<i>E. Bruysel</i>	
<b>Security of European Gas Supply - Reed (Not Available)</b> .....	1699
<i>P. Reed</i>	
<b>Infrastructure and Transport-Midstream Perspectives (Not Available)</b> .....	1700
<i>M. Kramer</i>	
<b>Energy Technology Perspectives 2008 (Not Available)</b> .....	1701
<i>N. Hirst</i>	
<b>Climate Change Implications for Business (Not Available)</b> .....	1702
<i>R. Gledhill</i>	
<b>Henry Derwent - Round Table Session (Not Available)</b> .....	1703
<i>H. Derwent</i>	

**Author Index**