

Abu Dhabi, U.A.E.
November 1-2, 2006

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H.E. Yousef Omayr bin Yousef, CEO,
ADNOC, UAE

Conference Chair:

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The Petroleum Institute, UAE

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Prof. Saleh Al Hashimi,
Prof. Peter Rodgers,
The Petroleum Institute, UAE

Prof. Ashwani Gupta,
University of Maryland, USA

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University of Stuttgart, Germany

Prof. Gregory Jackson,
Prof. Reinhard Radermacher,
University of Maryland, USA

Prof. Reinhold Lang,
University of Leoben, Austria

Dr. Kiichiro Ogawa,
The Institute of Applied Energy, Japan

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Mr. Ali Awada, ADCO, UAE
Mr. David Dalton, BP, UAE
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Under the Patronage of
H.H. General Sheikh Mohammed Bin Zayed Al Nahyan
Crown Prince of Abu Dhabi and Deputy Supreme Commander
of the United Arab Emirates Armed Forces



أدنوك
ADNOC

شركة بترول أبو ظبي الوطنية



ENERGY 2030

An International Conference
on Energy Resources
and Technologies

The Petroleum Institute in Abu Dhabi, UAE, will host the First International Energy 2030 Conference, a forum dedicated to addressing Energy Resources and Technologies in 2030, on November 1-2, 2006. The conference is sponsored by Abu Dhabi National Oil Company (ADNOC) and selected affiliate companies, including ADCO, ADGAS, ADMA-OPCO, GASCO, TAKREER, and ZADCO. The conference is co-sponsored by MASDAR, Abu Dhabi Future Energy Company. The forum will be held at the Officers Club in Abu Dhabi.

The primary focus of the conference is to share views and information that can serve to be of pivotal importance in the strategic planning of research and development in the oil and gas industries and the broader energy areas, including energy availability and usage, transport, and environmental issues.



The Petroleum Institute, Abu Dhabi, UAE





The Technical Program comprises of 18 Invited Lectures by top executives and distinguished experts from academia and industry around the world, and a 40-Poster Exhibition held for the two days of the Forum. Invited Speakers will express their views on current and emerging Energy Resources and Technologies that are likely to serve as critically important contributors to the Energy supply in various sectors twenty five years from now.

Held in parallel with Invited Talks, the Poster Exhibition is contributed by 16 renowned organizations from North America, Europe, Asia and the Middle East. The posters are organized under eight topical areas:

- * Oil and Gas Exploration, Production, and Economics
- * Natural Gas Processing and Treatment
- * Energy Utilization, Efficiency, Sustainability and Recovery
- * Fuel Cell Technologies
- * Solar Energy Utilization
- * Biomass Fuel Production
- * Monitoring and Industrial Applications
- * Environmental Initiatives

Final Program

31 October 2006

20.00

Dinner for Invited Speakers

Day One - Wednesday 1 November 2006

07.00

Attendee Registration and Coffee

OPENING ADDRESS

08.00

Opening Address

HE Mohammad bin Dhaen Al Hameli,
Minister of Energy, UAE

08.15

Welcoming Remarks

HE Yousef Omais bin Yousef, CEO, ADNOC, UAE
and Chairman of the Board of The Petroleum Institute, UAE

SESSION I: Oil and Gas Supplies: Status and Future Directions

Chair: Prof. Michael Ohadi, The Petroleum Institute, UAE

08.30



Production of Global Hydrocarbon Liquids: Is There a Near-term Peak?

Dr. Rick Vierbuchen, Vice President, Caspian/Middle East
Region, ExxonMobil Exploration Company, USA

09.05



Is There an Impending Oil Shortage?

Prof. Michael Economides, University of Houston, USA

09.40



Natural Gas and Alternative Technologies: Tools for a Natural Gas Security Strategy

Ms. Melanie Kenderdine, Vice President, Gas Technology
Institute, Washington Operations, USA

10.15

Summary Questions and Answers

10.40

Coffee break

SESSION II: Energy Efficiency and Sustainability

Chair: Prof. Reinhard Radermacher, University of Maryland, USA

10.55



Future Energy Supply and Environment Protection - a Challenge for Large Scale Power Generation

Prof. Klaus Hein, University of Stuttgart, Germany

11.30



Clean Power Generation from Wastes using High Temperature Air Combustion Technology

Prof. Ashwani Gupta, University of Maryland, USA

12.05



United States Air Force Energy Strategy for the 21st Century

Mr. Michael Aimone, P.E., Assistant Deputy Chief of Staff for
Logistics, Installations & Mission Support, Headquarters
United States Air Force, USA

12.40



Sustainable Future in Japan - from Energy Technology Aspects

Dr. Kiichiro Ogawa, The Institute of Applied Energy, Japan

13.15

Lunch

14.30

Summary Questions and Answers

SESSION III: R & D Focus and Education to Prepare for 2030's Energy Needs

Chair: Prof. Reinhold Lang, University of Leoben, Austria

- 14.55  **Future Research Needs in the Oil and Gas Industries**
Dr. Francois Kalaydjian, Institut Francais du
Petrole, France
- 15.30  **Educating The Energy Engineer of 2030**
Prof. Michael Ohadi, Acting Executive Director
and Chief Academic Officer, The Petroleum Institute, UAE
- 16.05 **Summary Questions and Answers**
- 16.15 **Tour of The Petroleum Institute**
- 19.30 **Reception and Gala Dinner**

About the Venue

Energy 2030 will be held at The Officers Club in Abu Dhabi, United Arab Emirates, a Five Star Hotel with 600 spacious and comfortable Rooms and Suites, luxurious outlets and outstanding recreation facilities.

The Officers Club
Abu Dhabi, U.A.E.
Tel: +9712 4415 900 Fax: +9712 4415 666
<http://www.afoc.mil.ae/home.htm>



Abu Dhabi is the name of both the capital city of the United Arab Emirates (UAE) and the largest of the seven individual emirates that make up the country. The UAE was created as a federation and became a unified independent sovereign state in 1971. With some 10% of the world's known oil reserves, Abu Dhabi ranks as the richest of the emirates and a global economic powerhouse in its own right.

For further information, please visit
<http://www.abudhabitravelbureau.com>



Day Two - Thursday 2 November 2006

07.00 Attendee Registration and Coffee

SESSION IV: Alternative Fuels and Renewable Energies

Chair: Mr. Michael Aimone, P. E., Headquarters United States Air Force, USA

- 08.00  **The Masdar Initiative**
Mr. Sultan Ahmed Al Jaber, CEO, Abu Dhabi Future Energy
Company (ADFE), UAE
- 08.35  **Hydrogen and Fuel Cells: A Vision of our Energy Future**
Prof. Peter Edwards, University of Oxford, UK
- 09.10  **Strategies for Advanced Oil Utilization**
Prof. Stefan Schleicher, University of Graz, Austria
- 09.45  **The Future of Nuclear Energy**
Prof. Mujid Kazimi, Massachusetts Institute of Technology, USA
- 10.20 **Coffee Break**
- 10.35  **Opportunities and Perspectives for Plastics
in Coming Fossil Fuel and Solar Energy Scenarios**
Prof. Reinhold Lang, University of Leoben, Austria
- 11.10  **Advances in Photovoltaic Science and Technology
for Solar Electricity**
Dr. John Poate, Colorado School of Mines, USA
- 11.45 **Summary Questions and Answers**
- 12.15 **Lunch**

SESSION V: Environment and Energy Economics

Chair: Prof. Stefan P. Schleicher, University of Graz, Austria

- 13.15  **Energy Supply, Technology Development and Business Models
- A Case Study from the Seismic Industry**
Prof. Karl Berteussen, The Petroleum Institute, UAE
- 13.50  **Environmental Performance within ADNOC
and its Group of Companies**
Mr. Hazem Abuahmad, ADNOC, UAE
- 14.25  **New Consumer-Driven Realities in Oil Markets**
Prof. Garis Dalton, The Petroleum Institute, UAE
- 15.00 **Summary Questions and Answers**
- 15.30 **Closing Address**

Poster Exhibition

Topical Area I: Oil and Gas Exploration, Production, and Economics

Oil and Gas in the UAE: Present and Future Production

M. Sirat and Y. Sun, The Petroleum Institute, UAE

Quantifying the Value of Data before the Measurements are Done; as Applied to Oil Exploration and Production

K. A. Berteussen, The Petroleum Institute, UAE

Carbonate Reservoir Characterization – An Integrated Approach

J. F. Frederick Sarg, Colorado School of Mines, USA

Manual versus Software Assisted History Matching: Advantages and Limitations

S. G. Ghedan¹, O. E. Gunal¹, A. P. Gibson², I. Sener², A. Diab³, and R. W. Shulze-Riegert³

¹*The Petroleum Institute, UAE*

²*Abu Dhabi Company for Onshore Oil Operations (ADCO), UAE*

³*Scandpower Petroleum Technology, Germany*

Oil Market Stability in Times of Fear and Greed

D. Garis, The Petroleum Institute, UAE

How High Oil Prices Help to Shift Peak Oil into the Future

P. A. Nawrocki and D. Garis, The Petroleum Institute, UAE

Topical Area II: Natural Gas Processing and Treatment

Stranded Natural Gas Utilization by Fischer Tropsch Synthesis

S. Al-Hashimi and A. Nafees, The Petroleum Institute, UAE

Improved Performance of Gas-Sweetening Processes

B. R. Palmer, N. A. Darwish, S. Al Hashimi, T. Al Ameri, and N. Al Qasa, The Petroleum Institute, UAE

Novel Methods for Sour Gas Treatment

R. M. Baldwin¹, B. R. Palmer¹, and J. D. Way²

¹*The Petroleum Institute, UAE*

²*Colorado School of Mines, USA*

Process and Plant Design for 99% Sulfur Recovery from Sour Gas

M. Sassi, B. Palmer, Y. El-Wahdi, A. Ramsey, A. Al-Nuaimi, and S. Al-Harethi, The Petroleum Institute, UAE

Topical Area III: Energy Utilization, Efficiency, Sustainability and Recovery

Use of Low Grade Heat for Energy and Water Recovery

M. Buchholz, C. Ghiasi, and F. Ziegler, Technische Universität Berlin, Germany

Combined Heat and Power/Integrated Energy Systems

R. Radermacher and J. Orlando, University of Maryland, USA

Systematic In-Process Modification Approach for Enhanced Waste Energy Recovery in Gas Plants

S. Al-Hashimi¹, A. Nafees¹, M. B. Nouredin², A. S. Aseen², and A. H. Qahtani²

¹*The Petroleum Institute, UAE*

²*Saudi Aramco, Saudi Arabia*

Agitated Fluidized Bed Thermochemical Energy Storage for Industrial Waste Heat Recovery System

J. Darkwa, Nottingham Trent University, UK

Integrated Systems Optimization Consortium

R. Radermacher, and V. Aute, University of Maryland, USA

Alternative Cooling Technologies and Applications Consortium

Y. Hwang and R. Radermacher, University of Maryland, USA

Design of Energy Efficient Air-Conditioned Buildings: A Challenging Era

E. E. Khalil, Cairo University, Egypt

A Framework to Reduce Energy Consumption of Manufacturing Equipment

M. B. Yildirim¹, J. Twomey¹, L. Whitman¹, H. Liao¹, and J. Ahmad²

¹*Wichita State University, USA*

²*The Petroleum Institute, UAE*

Thermal Design for Sustainability of Air Cooled Heat Sinks

A. Bar-Cohen¹ and M. Iyengar²

¹*University of Maryland, USA*

²*International Business Machines, USA*

Topical Area IV: Fuel Cell Technologies

Solid Oxide Fuel Cells – Evaluating Performance for Light Hydrocarbons

G. Jackson, R. Walker, B. Eichhorn, M. Sukeshini, M. Pomfret, O. Demircan, B. Habibzadeh, and S. Decaluwe, University of Maryland, USA

Electrocatalyst Research for Low Temperature Fuel Cells

V. M. Schmidt¹, X. Xie², and Z. Ma²

¹*Mannheim University of Applied Sciences, Germany*

²*Shanghai Jiao Tong University, China*

Waste to Electricity via Fuel Cells

R. J. Remick, Colorado Fuel Cell Center, Colorado School of Mines, USA

Direct Methanol Fuel Cell (DMFC): A Teaching Experiment for Future Engineers

P. Kalinowski, A. Goharzadeh, A. Molki, and M. M. Ohadi, The Petroleum Institute, UAE

Topical Area V: Solar Energy Utilization

Solar Energy System Application at ADNOC Facilities

A. Al Alili¹, I. Kubo¹, P. Kalinowski¹, and R. Radermacher²

¹*The Petroleum Institute, UAE*

²*University of Maryland, USA*

Solar Powered Adsorption Refrigeration System for Air Conditioning Purposes

A. Al-Alili, The Petroleum Institute, UAE

An Improved Power Converter for ADNOC Solar Power Supply

A. R. Beig and M. Poshtan, The Petroleum Institute, UAE

Topical Area VI: Biomass Fuel Production

Hydrogen Generation from Various Biomass Using Hydrothermal Gasification

Y. Ishida¹, T. Hasegawa¹, K. Kitagawa¹, and A. K. Gupta²

¹*Nagoya University, Japan,*

²*University of Maryland, USA*

Hydrogen Production from Wastes, Biomass and Coal using High Temperature Steam Gasification

R. Buczynski, K. Sangtong-Ngam, I. Ahmed, J. Gmurczyk, and A. K. Gupta, University of Maryland, USA

Biomass Gasification Methanol Synthesis

A. El Gamil¹, A. Saad¹, A. Al Moghrabi¹, M. Al Aqqad¹, T. Ibrahim¹, and A. Taher²

¹*American University of Sharjah, UAE*

²*Aqua Engineering Co. LLC, UAE*

Kinetic Study of High Temperature Steam Gasification of Biomass

R. Buczynski, K. Sangtong-Ngam, I. Ahmed, J. Gmurczyk, and A. K. Gupta, University of Maryland, USA

Topical Area VII: Monitoring and Industrial Applications

Insulation Condition Monitoring of Electric Machines Using Time-Frequency Analysis

B. Barkat, N. Al-Musabi, and M. Poshtan, The Petroleum Institute, UAE

Improvement of Fluidized Bed Bottom Ash Cooler Performance in CFB Boiler

R. S. Amano¹ and X. Lu²

¹*University of Wisconsin-Milwaukee, USA*

²*Chongqing University, China*

Benefits of Expandable Tubular in the Petroleum Industry

A. C. Seibi, The Petroleum Institute, UAE

Improved CSI Fed Induction Motor Drive for Oil Pumps in ADNOC

A. R. Beig and M. Poshtan, The Petroleum Institute, UAE

Topical Area VIII: Environmental Initiatives

Technologies Which Make Geological CO₂ Storage a Reality Today

M. Sengul¹, M. Elkadi², A. Pillay² and C. Francis²

¹*Schlumberger Carbon Services, UAE*

²*The Petroleum Institute, UAE*

A Simplified Model for Pollutant Emission Prediction from a Gas Turbine Combustor

M. Sassi, Y. El-Wahdi, and A. Ramsey, The Petroleum Institute, UAE

Comparison of Engine Performance and Pollutant Emissions of Gasoline Versus CNG Driven Vehicles

M. Sassi, S. C. Fok, and I. Kubo, The Petroleum Institute, UAE

Fire Dynamics and Safety

D. G. Lilley, Lilley & Associates, USA

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