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TEXAS A&M ENGINEERING EXPERIMENT STATION

TEXAS A&M UNIVERSITY | TEXAS A&M UNIVERSITY at QATAR

Qatar Nationals Supported by the ORYX GTL Excellence Program

REVIEW OF THE ORYXGTL EXCELLENCE PROGRAM

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TAMUQ in collaboration with founding supporter ORYX GTL has launched the program on October 20th, 2015, to prepare highly skilled engineers and technical staff needed to lead and operate Qatar's world-class industrial facilities

Advance Qatar's leading role in GTL field and excellence program in natural gas processing for value-added chemicals and fuels.

Develop courses/programs in the area of GTL as well as synthetic fuels characterization and processing. Provide professional services and training courses within Qatar in areas relevant to GTL.

Support Qatar's 2030 vision in building human and research capital in the clean energy field.

Service and research

- Formulate and characterize GTL synthetic fuels and chemicals
- Develop new generation products from ORYX GTL syn-crude
- Investigate techno-economic assessments of GTL related products and processes

Teaching, and training

- Develop special courses and training programs within TAMUQ
- Establish student internship programs in ORYX GTL
- Enhance student research experiences in TAMUQ
- Establish special GTL programs for graduate students of TAMUQ
- Support ORYX GTL recruitment efforts

Community service

- Support ORYX GTL Community Awareness Programs about GTL and the global search for cleaner Vision

ORYX GTL
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ORYX GTL Gas-to-Liquid Excellence Program

IT'S TIME FOR TEXAS A&M

ORYX GTL
QP • SASOL joint venture
أوريكس لتحويل الغاز إلى سوائل المحدودة
ORYX GTL Limited

Vision 2030
THE FUTURE IS OURS TO SEE

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TEACHING & COMMUNITY OUTREACH PROGRAMS

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Summer Engineering Academy Program 28June - 9July 2015

- Four high school students participated in this program in our Fuel characterization lab (FCL). The two weeks program aimed to familiarize the prospective students with gas and fuels technology. The program (see attachments) included hands-on engineering activities and experiments.

- Participants:

  - Amna AlSada, Abdulla Alhemaidi, Fatma AlSubaiey and Yousef Abdulla

- **Upon completion of this Program, students learned about:**

  - Characterizing liquid fuels from different sources (conventional and renewable fuels)

  - Fuel properties

  - Blending of fuels to achieve targeted property enhancements

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Summer Engineering Academy Program
28June - 9July 2015








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ORYX GTL SCHOOL & COMMUNITY ORIENTATION PROGRAMS

The TEES Gas and Fuels Research Center (GFRC), under the umbrella of the ORYX GTL Gas-to-Liquid Excellence Program, launched an outreach program to educate middle and high school Qatari students about the role of natural gas in the global energy market. The program presents simple models to students about the technologies used for natural gas utilization in Qatar. GFRC researchers visited the Arrazi Elementary School, Al Wakrah Girls Preparatory school, Tariq bin Ziyad Secondary School and Gharnata Girls Preparatory fall of 2016 (see copy of brochure used in the program).

ORYX GTL
Excellence Program

Qatar has vast natural gas reserves and hosts the most advanced existing plants and refineries in gas-to-liquid (GTL) technology and liquefied natural gas (LNG), as well as several chemical and petrochemical plants.

This unique environment motivated Texas A&M at Qatar to produce skilled researchers and engineering graduates in a field of national interest to Qatar, the region, and the world. The ORYX GTL – Gas-to-Liquid Excellence Program aims to prepare the highly skilled engineers and technical staff needed to lead and operate Qatar's world-class industrial facilities.

Mission

To educate and prepare students for national and international leadership roles in industry, government, and academia; to attract top students to chemical engineering; to define and develop new directions in chemical engineering fundamentals and practices, and in chemical engineering education and curricula; to be a valuable resource and service base; and to provide leadership in solving problems of social and economic importance.

Vision

To be a high-impact program continuously advancing the art and science of chemical engineering through creation and dissemination of knowledge.

About GTL at Texas A&M at Qatar

Dr. Nimir Elbashir's research team is establishing a world-class research foundation in order to build a state-of-the-art center of excellence in gas processing, petrochemicals and catalysis areas. The team's major accomplishment in the GTL area involves the creation of the Texas A&M Fuel Characterization Lab, one of the most advanced regional labs in this field. The lab plays a critical role in supporting the formulation and marketing of synthetic fuels and chemicals that Qatar produces. To achieve this, lab researchers design new fuel blends and advanced reactor technologies to improve the characteristics and market value of synthetic fuels and value-added chemicals obtained from natural gas.

نبذة عن تحويل الغاز إلى سوائل
في جامعة تكساس إي أند أم في قطر

أوريكس جي. تي. أل
برنامج التميز في تحويل
الغاز إلى سوائل

تمتلك دولة قطر موارد هائلة من الغاز الطبيعي، كما يتواجد على أرضها أحدث المحطات والمصانع وأكثرها تطوراً في مجال تكنولوجيا تحويل الغاز إلى سوائل (GTL) والغاز الطبيعي المسال (LNG)، بالإضافة إلى العديد من مصانع الكيماويات والبتروكيماويات.

الرسالة

الرؤية

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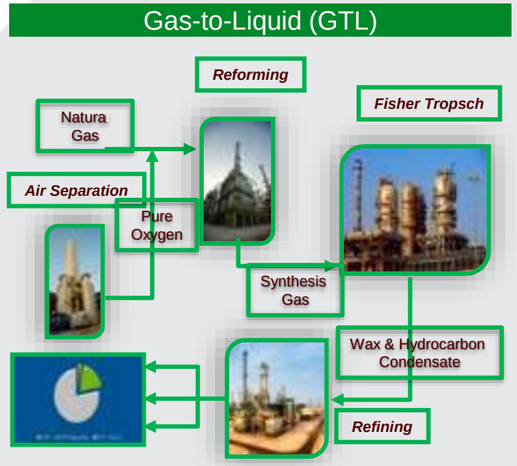
ORYX GTL SCHOOL & COMMUNITY ORIENTATION PROGRAMS

To support STEM program and orientation on natural gas roles in energy market

Fall 2016		
Arrazi Boys Preparatory school	Oct. 23,16	
AlWakrah Girls Preparatory school	Nov. 13,16	
Tariq bin Ziyad Secondary school	Nov. 27, 16	
Gharnata Girls Preparatory school	Nov. 27, 16	
Spring 2017		
Amna Bint Wahab Girls Preparatory school	March, 2017	
Rouda bnt Mohammed Secondary school	April , 2107	
Musab bin Omair Secondary school	May, 2017	



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Arrazi Boys Preparatory school (Around 60 students attended)
October 23, 2016

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AlWakrah Girls Preparatory school (Around 90 students attended) November 13, 2016

مدرسة الوكرة الاعدادية المستقلة للبنات
Al Wakrah Independent Preparatory School For Girls

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Tariq bin Ziyad Secondary school (Around 80 students attended)
November 27, 2016

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Gharnata Girls Preparatory school (Around 90 students attended) November 27,2016

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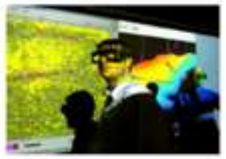
NEW GRADUATE AND UNDERGRADUATE COURSE

Chemical Engineering, CHEN 489-689 Gas and Petrochemicals Processing

Chemical Engineering and Petroleum Engineering, CHEN 459/ PETE 489 Midstream in Oil and Gas Industry and natural Gas Processing Treatment and Processes

Upstream

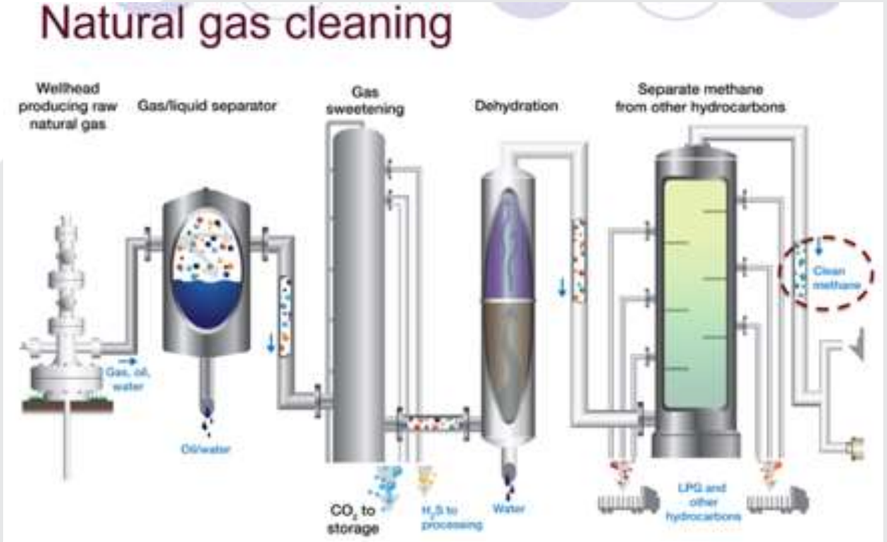


Exploration
Identify, pursue, capture, and evaluate high-quality exploration opportunities

Development
Develop safe, cost-effective facilities for oil & gas fields identified by Exploration

Production
Oil and gas fields in production

Midstream

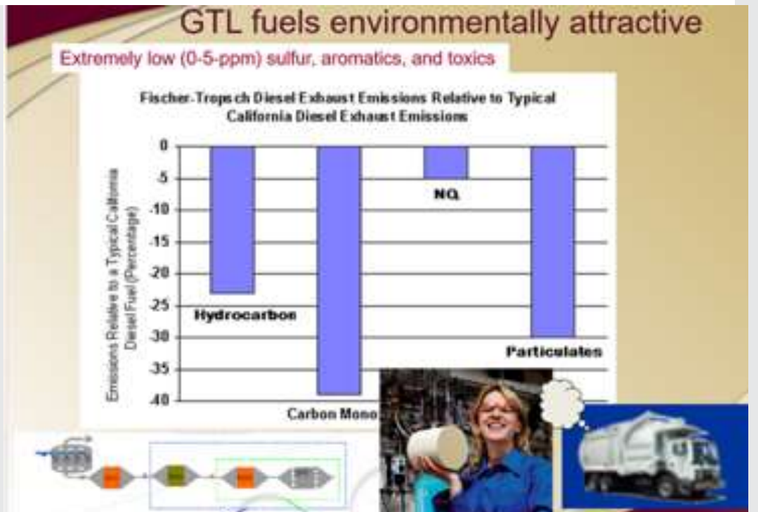


Downstream

Refining & Supply
Efficient network to provide clean fuels, lubricants, and other high-value products

Fuels Marketing
Products sold to customers around the world

Lubricants & Specialties



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SPECIAL COURSE ON NATURAL GAS PROCESSING TECHNOLOGIES

HAMAD BIN KHALIFA UNIVERSITY

BLOCK I

Global Energy Market

Qatar's Energy Resources and Its Potentials

Dr. Nimir O Elbashir
Chemical Engineering, Texas A&M University at Qatar

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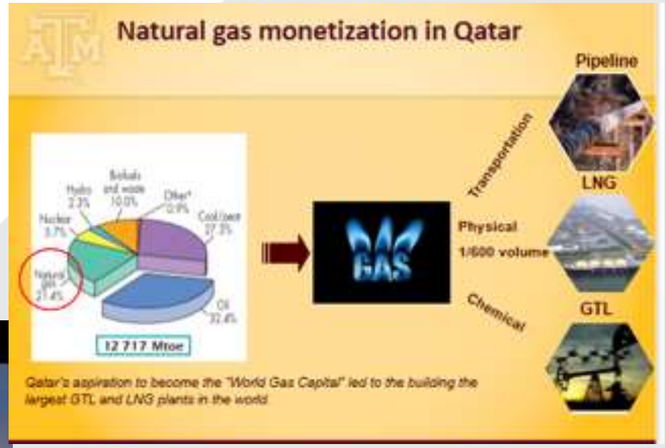

Hamad bin Khalifa University's
Executive Master in Energy and Resources

Block IV
Catalysis and the Petrochemical Industry

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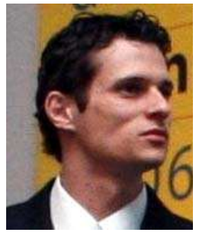
ORYX GTL Excellence in Chemical Engineering Seminar Series



Dr. Dr. Rafael de Pelegrini Soares
the Federal
University of Rio Grande do Sul
January 17, 2017
Improving the user experience with equation oriented process simulators

Dr. Wolf Arlt
University of Erlangen
October 9, 2016
Safe and dense chemical storage of renewal energy via the hydrogen route: Liquid Organic Hydrogen Carrier

Dr. Tobin J. Marks
Northwestern University
January 25, 2016
Heterogeneous meets homogeneous catalysis: Cooperative properties of Electrophilic Organometallic Ensembles

Dr. James Spivey
Louisiana State University
September 7, 2015
Development of high-temperature Pyrochlore catalysts for methane conversion: Options for reforming with Co2

Dr. Michael R. Hoffmann
February 16, 2015
Development of Integrated Reactor Systems for the PV-Powered Treatment of Domestic Wastewater Coupled with the Simultaneous Production of Molecular Chlorine and Hydrogen.

Dr. Rafigul Gani
The Technical University of Denmark
November 27, 2014
A new paradigm for chemical engineering

Dr. Mark Hotlzapple
Texas A&M University (TAMU)
November 12, 2014
Modified Claude process for producing liquid natural gas

Dr. Ali Cinar
Illinois Institute of Technology (IIT).
October 19, 2014
Agent-Based Techniques for Process Modeling, Supervision & Control

Dr. J W Niemantsverdriet
Syngaschem BV and Eindhoven University of Technology.
March 17, 2014
Mechanistic insight in Fisher-Tropsch synthesis catalysis from surface science synchrotron & computational studies

Dr. Doros Theodorou
National Technical University of Athens (NTUA)
March 16, 2014
Multiscale modeling of polymer-matrix nanocomposites

Dr. Roy Johnsen
Norwegian University of Science and Technology (NTNU)
February 27, 2014
Hydrogen embrittlement of corrosion resistant alloys in oil & gas environment

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RESEARCH

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ORYX GTL
Gas-to-Liquid
Excellence
Program

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EFFICNET DESIGN OF GTL AVIATION FUELS

NOOF ABDALLA, MSC STUDENT

Designing Fuel

- Computer Aided Model developed by DTU
- Composition of Shell Pearl Kerosine (SPK) along with additives are determined through the developed model and their relevant target properties are predicted

Blending to Prepare Surrogate Mixtures

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- Blends of SPK prepared in FCL

Experimental Analysis According to ASTM Standards

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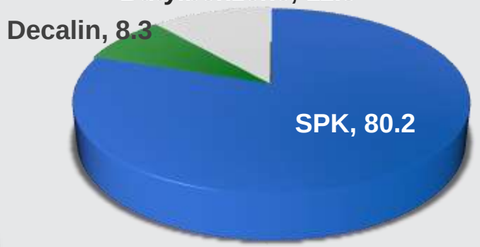
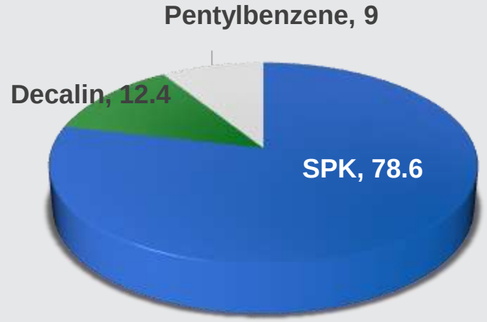
- Different properties are to be tested, e.g: Lower Heating Value (LHV), Flash point, Reid Vapor Pressure (RVP), Density, Kinematic viscosity, Heat of Vaporization, and Heat of combustion.

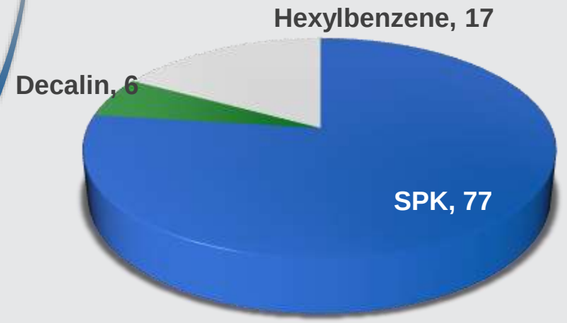
Blend-1



Blend-2



Blend-3



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TRAINING

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Electrical Transformers and Switchgears; Faults, Inspection, Testing, Maintenance and Troubleshooting (Sept 18-21, 2016)

- This course introduces the principles of design, testing, operation and maintenance of transformers in power systems and provide the participants with the necessary knowledge on the power and distributed transformers typically used for oil and gas industry.

- This course has been designed to provide participants with an understanding of the proper construction, operation, and maintenance of power transformers, while emphasizing on the technology related to power transformers used within the industry power systems.

- Four ORYX GTL technical staff have been sponsored by the program

Participants:
Rashid Battal R B Al- Dosari
Yaqoub Hamza A M Hashem
Abdulla AbdulRahman M A Khalil
Jose Ramesis Coyco Medina

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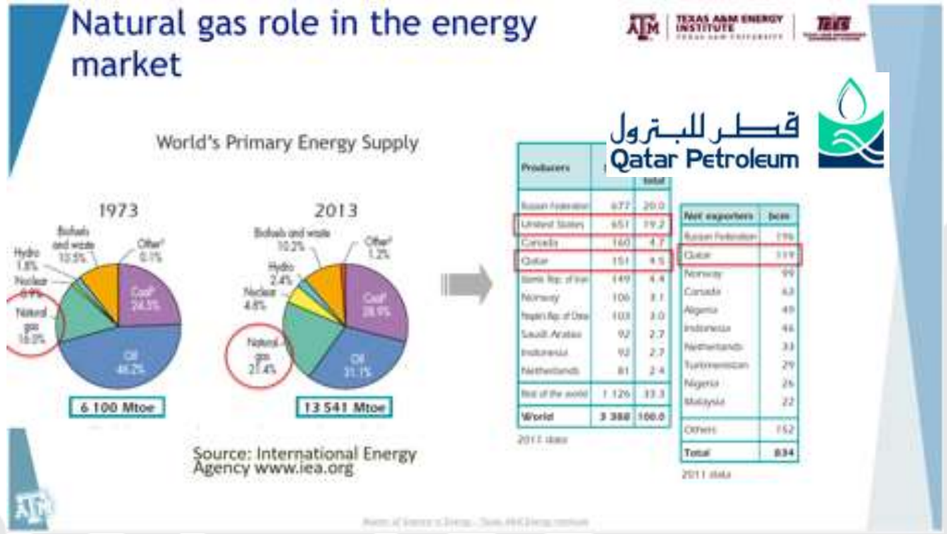
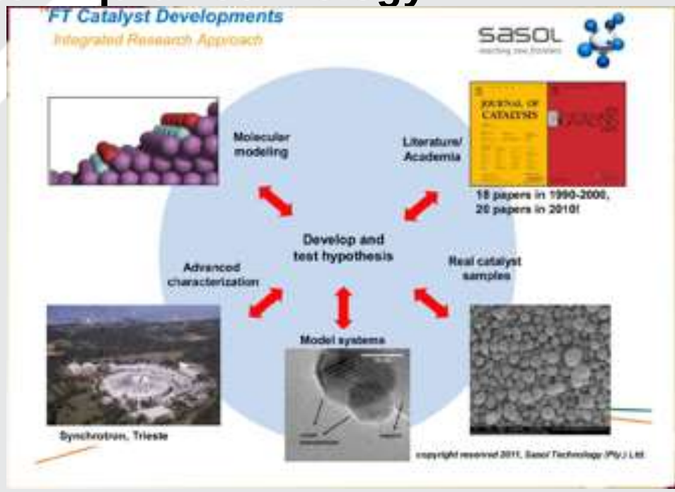
Special Course for ORYX GTL (Attended by 14)
Fundamentals of Gas-to-Liquid & ORYX GTL Plant
October 26, 2016

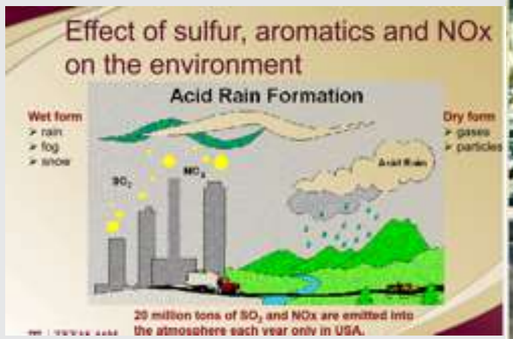
Session I:
Natural Gas Processing and Its Importance to the Energy Market: GTL versus LNG



Session II:
Sasol's Gas-to-Liquid Technology



Session III:
Environmental Impact of GTL Transportation Fuels



Session V:
Lab Session

Session VI:
Visualization of the ORYX GTL Plant

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Fundamentals of Gas-to-Liquid & ORYX GTL Plant
October 26, 2016

	Participant Name	Title
1.	Abdulrahman Ahmad M A Al-Ansari	Planner (SCHL)
2.	Ahmed Mohd A A Al-Neama	Senior Mechanical Engineer (DEV)
3.	Aisha Mohammed A M Al-Malki	Agreement Coordinator (DEV)
4.	Jawaher Dahwai Al-Shamari	
5.	Noor Khalifa Al-Suwaidi	
6.	Dana Zeyad O I Al-Dafaa	Contracts Specialist
7.	Daud Zailam Khan Bakaev	Loss control Supervisor
8.	Ibrahim Abdulrahman Al-Janahi	Contracts Coordinator (DEV)
9.	Khalid Suleiman O S Qush	Lead Planning Engineer (DEV)
10.	Maha Mohdjamalaldeen A A Mansoor	Senior Qatari Development Superv. (DEV)
11.	Mariam Mohammed A M Al-Motawa	Senior Internal Auditor (DEV)
12.	Mohamed Nasser H A AlHajeri	Contracts Coordinator (Dev)
13.	Mohammed Ahmed M A Rustom	Senior Contracts Coordinator (DEV)
14.	Tamador A.latif S A Al-Muslamani	Compensation & Policy Specialist (Dev)

TEES

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