SHORT COURSE
IN

Coal Conversion and Gasification

Module in the
Postgraduate Masters Programme for Industrial Personnel

LEADERSHIP IN FUEL & ENERGY TECHNOLOGY

Five-day course
or
Daily attendance

9 – 13 NOVEMBER 2009

Hosted by
School of Chemical and Metallurgical Engineering,
University of the Witwatersrand

In association with
North-West University
Sasol Technology, and the
Fossil Fuel Foundation of Africa

*

Venue:
Room 333, Richard Ward Building (Next to Senate House)
East Campus

OBJECTIVES OF THE COURSE

The objectives of this course are

- ***to provide a sound basis*** for the understanding of coal conversion processes and products
- ***to describe equipment used*** in coal gasification and conversion processes
- ***to present the impact of coal quality*** on coal gasification and conversion processes
- ***to review case histories*** of coal gasification and conversion processes in South Africa and relevant local issues
- ***to create an awareness of the current and future trends*** surrounding coal conversion and gasification, with their impending environmental constraints.
-

MOTIVATION AND BACKGROUND TO THE COURSE

The market value of products from coal conversion processes, coupled with the future demands of both South African and global consumer industries, will have a direct effect on global economies.

Unlocking the formula for the extraction of value-added products from coal not only affects our lives today, but - with current advances in technology and impending environmental necessities - global business tomorrow.

The value of hydrocarbons from coal affects every facet of the South African industrial and consumer industry, both directly and indirectly - from petrol to steel, aluminum, nuclear graphite and a multitude of domestic and industrial products (explosives, plastics, paints, textiles, food and cosmetic base chemicals) to name but a few.

The direct profits from the sale of these products run into billions of US Dollars, based solely on South African production. This does not take into account the derived down-the-line profits from consumer industries or the future associated with global expansion of this technology.

The basis of this economy is coal gasification. Coal gasification by its simplest definition is the liberation of hydrocarbons in one form and the recombination in other forms to extract optimal value.

South Africa has led the world in utilising the gasification of coal to extract this value. From the early 1950's and the birth of Sasol, the growth in the extracted value of converted coal products has been exponential. Coupled with the diminishing availability and quality of crude oil resources, the success of Sasol in South Africa is currently redefining the importance of coal world wide.

For the above reasons, the pure definition of coal as a commodity fossil FUEL is fast becoming both out dated and a misnomer. The true value of coal in its broadest sense must now be considered.

WHO SHOULD ATTEND THIS COURSE

- Geologists
- Quality controllers and chemical analysts
- Mineral (coal) resource managers
- Mining engineers and mine planners
- Coal processing and beneficiation engineers
- Chemical engineering and mechanical engineering personnel
- Metallurgical engineers
- Marketing and trading personnel
- Industrial combustion, heat and power generation and gasification engineers
- Fuel technologists
- Engineering manufacturers
- Financial funding agencies
- Government and company policy planners
- Researchers and lecturers in academia.

COURSE ADVISORS AND COORDINATORS

Prof Nikki Wagner, *University of the Witwatersrand*
Prof Rosemary Falcon, *University of the Witwatersrand*
Prof John Bunt, *Sasol/North-West University*
Prof Johannes van Heerden, *Sasol Technology*

COURSE PROGRAMME

DAY 1 – 9 NOVEMBER 2009

PRINCIPLES, PROCESSES AND TECHNOLOGIES FOR GASIFICATION AND CARBON CONVERSION

- Registration
- Process technologies: Review of gasification processes and plant technologies.
- Introduction to gasification: Chemical reactions.
- Process technologies: Coal Liquefaction.
- Underground gasification – principles and potential.

DAY 2 – 10 NOVEMBER 2009

COAL GASIFICATION AND CONVERSION FOR SYNGAS PRODUCTION

- Registration
- Conversion of coal to syngas via the Sasol process.
- Impact of coal properties on gasification.
- Production of coal for gasification: mining and beneficiation perspective.
- Conversion of syngas to a variety of chemical products.
- Case study: Koppers-Totzek gasification in South Africa.

DAY 3 – 11 NOVEMBER 2009

GASIFICATION PRODUCTS, BY-PRODUCTS AND THE ENVIRONMENT

- Registration
- Pyrolysis of coal
- Fundamentals of pitch chemistry – tar, pitch and coke formation
- Gasification ash
- Environmental aspects around a gasification plant
- Clean Coal Technologies for Gasification.
- Environmental footprint from a gasification plant

DAY 4 – 12 NOVEMBER 2009

THE FUTURE – NEW TECHNOLOGIES AND GLOBAL ISSUES

- Registration
- Gasification and Power Generation – the Future.
- Future opportunities for gasification.
- The relevance of coal gasification and its future potential as an environmentally sound technology in the co-production of energy and chemicals with CO_2 minimisation.
- Closing discussion and syndicated project allocations.

DAY 5 – 13 NOVEMBER 2009

PLANT VISIT WITH DISCUSSIONS

- Visit to Sasol's Secunda petrochemical plant.

COAL CONVERSION AND GASIFICATION

9 – 13 November 2009

REGISTRATION

FIVE-DAY ATTENDANCE

FEE: R6 900-00+VAT = R7 866-00 per week

Email registration to:
MRS L STEPHENSON. VAT No: 4270185251
Tel: 011 447 1490 Cell: 083 679 0697 Email: lstephenson@mweb.co.za

NAME:…….. **TITLE**……..

AFFILIATION ……

COMPANY…… ……

ADDRESS……

TEL:……**FAX**…… **MOBILE**……

EMAIL:……

ACCOUNTS CONTACT PERSON……

ACCOUNTS TEL NUMBER……

ACCOUNTS EMAIL ADDRESS……

COMPANY VAT NO: ……

NB: ATTENDANCE IS STRICTLY SUBJECT TO PAYMENT PRIOR TO THE COURSE

BANKING DETAILS: ***Please fax a copy of the deposit slip or EFT to (011) 447 6148 or email address above***
Fossil Fuel Foundation of Africa (Project Courses)
Bank: ABSA
Branch Code: 632 005
Account No: 919 978 4837
Ref: 1109CC - Coal Conversion

CANCELLATION OF THIS REGISTRATION

Cancellation may be made in writing 7 days prior to this course, whereon a 25% cancellation fee will be charged. No refund or credit will be issued within the 7 days of the course. Registrations are transferable. Invoices will be sent once registration forms have been submitted. KINDLY NOTE: ATTENDANCE IS STRICTLY SUBJECT TO PRIOR PAYMENT

COAL CONVERSION AND GASIFICATION

9-13 November 2009

REGISTRATION

DAILY ATTENDANCE

FEE: R1 420-00+VAT = R1 618-80 per day

DAY 1……. DAY 2……. DAY 3……. DAY 4……. DAY 5…….

Email registration to:
MRS L STEPHENSON. VAT No: 4270185251
Tel: 011 447 1490 Cell: 083 679 0697 Email: lstephenson@mweb.co.za

NAME:……TITLE……..

AFFILIATION ……

COMPANY……..

ADDRESS……

TEL:……FAX……EMAIL:……..

ACCOUNTS CONTACT PERSON……..

ACCOUNTS TEL NUMBER……

ACCOUNTS EMAIL ADDRESS…….

FFF MEMBERSHIP ….Yes/No…… Membership No……

COMPANY VAT NO: ……..

NB: ATTENDANCE IS STRICTLY SUBJECT TO PAYMENT PRIOR TO THE COURSE

BANKING DETAILS: ***Please fax a copy of the deposit slip or EFT to (011) 447 6148 or email address above*** **Fossil Fuel Foundation of Africa (Project Courses)**
Bank: ABSA
Branch Code: 632 005
Account No: 919 978 4837
Ref: 1109CC - Coal Conversion

CANCELLATION OF THIS REGISTRATION

Cancellation may be made in writing 7 days prior to this course, whereon a 25% cancellation fee will be charged. No refund or credit will be issued within the 7 days of the course. Registrations are transferable. Invoices will be sent once registration forms have been submitted. KINDLY NOTE: ATTENDANCE IS STRICTLY SUBJECT TO PRIOR PAYMENT

INVOICES WILL BE SENT ONCE REGISTRATION FORMS HAVE BEEN SUBMITTED. KINDLY NOTE: ATTENDANCE IS STRICTLY SUBJECT TO PRIOR PAYMENT

PROVISIONAL PROGRAMME FOR 2010

• February	- Coal Quality and Utilisation	- MINN 7023
• March	- Economic Geology of SA Coal	- MINN 7028
• May	- Coal Preparation	- CHMT 7002
• May	- Coal Exploitation	- MINN 7047
• July	- Coal Combustion	- CHMT 7004
• September	- Coal and the Environment	- MINN 7048
• November	- Coal Management and Marketing	- CHMT 7006
•		

NB: Courses are subject to cancellation or date changes. Please check via "Technical Enquiries" Mrs Maggie Blair margaret.blair@wits.ac.za and 011 717 7387.

For academic purposes, contact the relevant Schools at the University of the Witwatersrand (Mrs Vanessa Moodley 011 717 7521 and Mrs Mona Shah 011 717 7409).

For non-academic purposes contact Mrs Lesley Stephenson 011 447 1490 or lstephenson@mweb.co.za