IGCC FUJIAN PROJECT

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Gasification Technologies 2007
San Francisco, October 14-17, 2007
The Fujian Refining and Ethylene Project
(Quanzhou, Fujian Province, China)

- The revamping of the existing refinery from 4 to 12 million tons-per-year.
- A new 700 kT/Y PX aromatic complex.
- A 800 kT/Y ethylene plant.
- Other petrochemical plants.
- An IGCC Plant.
Joint Venture Participation

- Saudi Aramco-Sino Company: 25%
- ExxonMobil-China: 25%
- Fujian Petrochemical: 50%
Joint Venture Participation

FRPCL
IGCC Project Management contract (PMC)

Management scope:
- Management and Coordination of Technology Licensors
- Open-art process design packages
- Management of detail engineering, procurement, construction and start up
The Fujian IGCC complex will be the first fully integrated plant in China and one of the largest oil-based IGCCs in the world.
Fujian IGCC Plant

The IGCC plant is based on partial oxidation licensed by Shell Global Solutions.

Main characteristics:

- Hydrogen production: 80,000 Nmc/h
- Steam production: 5136 (11MPa)T/d 7.7(3,7MPa)T/d
- Power production: 280 MW
IGCC Project Main Contractor

Main Contractor
SNEC
Sinopec Ningbo Engineering Company Limited
China

Main Contractor Partner
Snamprogetti SpA
Italy
Technical support for:
• Air Separation Unit
• Partial oxidation
• Acid gas treatment
• Procurement Services

Main Contractor Partner
Tecnicas Reunidas
Spain
Technical support for:
• Cogeneration Unit
• Procurement Services
Main Contractor for FEED and EPC phases

- ExxonMobil China Petroleum and Petrochemical
- Fujian Petroch. Company
- Snamprogetti
- ExxonMobil
- Fujian Petroch. Company
- Tecnicas Reunidas
- Lurgi
- Linde
- Shell GS
- SNEC
- Saudi Aramco Sino Company

- Owners
- Main Contractor
- Main Contractor Partners
- Licensor
Fujian IGCC Plant
Air Separation

Main Features:
Oxygen Production: 1200 T/d
Oxygen purity: 99.8%
Number of train: 2
Licensor: Linde
Fujian IGCC Plant
Gasification

Main Features:
- De-Asphalted rock: 2177 T/d(rated)
- 2400 T/d(design)
- Syngas Production: 4850 T/d(rated)

<table>
<thead>
<tr>
<th>Data on Dry</th>
<th>%wt maf</th>
<th>Data on Dry</th>
<th>%wt maf</th>
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<tbody>
<tr>
<td>Carbon</td>
<td>84.01</td>
<td>Nitrogen</td>
<td>1.00</td>
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<tr>
<td>Hydrogen</td>
<td>8.02</td>
<td>Sulfur</td>
<td>6.82</td>
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<tr>
<td>Oxygen</td>
<td>0.15</td>
<td>Ash</td>
<td>0.18</td>
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</tbody>
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Syngas Production: 4850 T/d(rated)

<table>
<thead>
<tr>
<th></th>
<th>% mol</th>
<th>% mol</th>
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<tbody>
<tr>
<td>CO2</td>
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<td>CO2</td>
</tr>
<tr>
<td>CO</td>
<td>50.17</td>
<td>N2</td>
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<tr>
<td>H2</td>
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<td>Ar</td>
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<tr>
<td>CH4</td>
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<td>HCN</td>
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<tr>
<td>H2S</td>
<td>1.55</td>
<td>NH3</td>
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<tr>
<td></td>
<td></td>
<td>H2O</td>
</tr>
</tbody>
</table>

Train number: 3 (one hot stand by)
Licensor: Shell Global Solution
Fujian IGCC Plant
Shift reaction

Main Features (H₂ Case):
Sour Shift Reaction
Shifted gas production: 2630 T/d
Main Features:
- Physical Solv.: Rectisol
- Number of Section: 2
- Shifted gas treated: 1980 T/d
- Raw Syngas treated: 3443 T/d
- Licensor: Lurgi
Fujian IGCC Plant
PSA

Main Features (H₂ Case):
Hydrogen Produced: 80,000 Nmc/h
PSA Yield > 90%
Tail gas used as fuel in Boilers
Fujian IGCC Plant
Combined Cycle

Main Features:
Produced Power: 280MW
Steam production: 5144 T/d
n°2 Steam Turbines 30MW/each
n°2 Gas Turbines 130MW/each
Type 9E General Electrics
Fujian IGCC Plant
Plant construction
THANKYOU

Snamprogetti SpA

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